

Aug 19, 1931

33

To the Committee on Graduate Study:

I submit herewith a thesis by Mr. Grover Warmbrod, "Some Problems in Marketing Tennessee Sweet Potatoes, with Emphasis on Cooperative Marketing." I recommend that this thesis be accepted for eighteen quarter hours credit in fulfillment of the requirements for the degree of Master of Science in Agriculture.

B. E. Oliver

Major Professor.

At the request of the Committee on Graduate Study, I have read this thesis and recommended its acceptance.

Frank B. Ward

Accepted by the Committee

Ph. H. H. H.
Chairman

SOME PROBLEMS IN MARKETING TENNESSEE SWEET POTATOES,
WITH EMPHASIS ON COOPERATIVE MARKETING

A THESIS

Submitted to the Graduate Committee
of the
University of Tennessee
in
Partial Fulfillment of the Requirements
for the Degree of
Master of Science in Agriculture

GROVER WARBROD

August 1931

PREFACE

The material contained herein is a continuation of the study of the marketing of sweet potatoes in Tennessee begun by the Experiment Station Staff of the Department of Agricultural Economics in the fall of 1929. A previous report, Preliminary Report on Marketing Tennessee Sweet Potatoes, was written in the spring and summer of 1930, by Mr. B. F. Lucas, under the supervision of C. E. Allred and S. W. Atkins of this department, and used by him to fulfil thesis requirements for a Master's degree. That report consisted largely of such phases as trends in acreage, production and yields in Tennessee and the United States; the consumption of sweet potatoes; market preferences; and the relative position of Tennessee shippers in the market. This report places emphasis on cooperative marketing in Tennessee, although treating such phases as prices, marketing functions, and the channels of marketing.

The outline for the study as completed in the two reports is presented below. The preliminary report consisted of Parts I and II and Chapter VI of Part III. This study covers the remaining 9 chapters.

PART I

Production

- I. Fundamental Considerations in the Production of Sweet Potatoes for the Market.
- II. Acreage, Production, and Yields in the United States.
- III. Acreage, Production, and Yields in Tennessee.

PART II

Consumption

- IV. The Sweet Potato as a Human Food.
- V. Quantity Consumed and Market Preference.

(continued)

103832

302am 1932 N.L.B. 1.25-

PART III

Some Phases of Marketing Other Than Cooperation

- VI. Relative Position of Tennessee Shippers in the Market.
- VII. Prices of Sweet Potatoes.
- VIII. Processing of Sweet Potatoes.
- IX. Storing, Grading, and Packing Tennessee Sweet Potatoes.
- X. Present System of Marketing Tennessee Sweet Potatoes and Their Distribution.

PART IV

Cooperative Marketing

- XI. Distribution, History, and Organizational Set-Up of Sweet Potato Marketing Associations in Tennessee.
- XII. Size, Functions, and Method of Operation of Tennessee Sweet Potato Marketing Associations.
- XIII. Some Factors Affecting Success and Failure of Tennessee Sweet Potato Marketing Associations.
- XIV. The Future of Cooperative Marketing of Sweet Potatoes in Tennessee.

PART V

XV. Summary

Much research remains to be done on the marketing phase of the study of the economics of the sweet potato industry. The problems on which future investigation should prove profitable, and that have occurred to the writer in the progress of this report, are outlined below

Some Problems for Future Study

- 1. Sweet potato storage on the farm and in commercial storage houses in Tennessee.
 - a. Costs
 - b. Quality of product
- 2. Other marketing costs of sweet potatoes including dealer's gross margins and net profits.
- 3. Causes for claims for allowances and deductions made by the terminal receivers upon the local shippers.
- 4. Causes for damages incurred in transit.
- 5. Distribution of shipments of the principal shippers of sweet potatoes in West Tennessee (to include markets other than the 66 principal markets on which the U. S. D. A. reports).
- 6. Effect of size of crop in competing states upon the distribution of Tennessee sweet potatoes.
- 7. Further study of the practices of growers as to time of selling and the causal factors.
- 8. Terminal market studies of:
 - a. Consumer desires and buying habits.
 - b. Dealer preference (continuation).
 - c. Grade differentials in a given market on the same day.

(continued)

9. Legal phases of cooperation as related to cooperative sweet potato associations.

Special acknowledgements are due to Professor C. E. Allred, Head of the Department of Agricultural Economics, under whose supervision the data have been collected and analyzed. Much assistance was rendered by Mr. S. W. Atkins, Assistant Economist, by his helpful suggestions and aid in collecting some of the data; also by Mr. E. J. Hopkins, Assistant Economist, in assistance given, especially in the survey of the Middle and West Tennessee areas; and by Mr. B. F. Lucas, former Research Assistant who aided in collecting data on the cooperative associations in the East and southern Middle Tennessee areas.

Acknowledgements are also due members of other departments, especially A. L. Jordan, Extension Marketing Specialist, and G. A. Shuey, Associate Chemist of the Agricultural Experiment Station. Special thanks are also due Mr. Nelson B. Rue, Chief of Tennessee Division of Markets, for furnishing inspection reports and helpful suggestions, and to Miss Mildred Gallaher for her painstaking care in constructing tables, charts, and maps, and in the preparation of the manuscript.

Many county agricultural agents, managers of cooperative associations, independent shippers of sweet potatoes, and farmers have contributed information. I take this means to express my appreciation for their hearty cooperation, without which some of this data would not have been available.

CONTENTS

	Page
Introduction	xix
Chapter I. Prices of Sweet Potatoes in the United States as a Whole and in Tennessee	1
1. Value of the Sweet Potato Crop	1
2. Trends in Prices of Sweet Potatoes in the United States	3
3. Prices of Sweet Potatoes in Tennessee and Comparisons with Other States and Sections	6
(a) Prices by Sections	8
(b) Prices by Crop Reporting Districts	22
4. Comparison of Price Trends of Sweet Potatoes with Price Trends of Other Farm Products	24
(a) Relation of Sweet Potato Prices to Irish Potato Prices	28
5. Retail Purchasing Power of Farm Price of Sweet Potatoes, 1919-1930	31
6. Relation of Acreage, Production, and Car-Lot Shipments to Prices of Sweet Potatoes	32
(a) Effect of Acreage on Price	32
(b) Effect of Price of Sweet Potatoes on Acreage the Following Year	35
(c) Effect of Production on Price	41
(d) Relation of Carlot Shipments to Price	48
7. Seasonal Prices of Sweet Potatoes	48
(a) Effect of Monthly Shipments on Seasonal Price	56
(b) Monthly L.C.L. Prices on Two Markets	60
8. The Retail Prices of Sweet Potatoes	64
(a) Factors Affecting Cost of Retailing Sweet Potatoes	64
(b) Retail Prices	68
(c) Retail Prices on Boston Market	68
9. Selling Sweet Potatoes Green Vs. Storing	75
(a) Advisability of Storing	75
(b) Selling on Early Market	76

	Page
10. Forecasting Prices of Sweet Potatoes	78
(a) Factors Affecting Annual Production	79
(b) Factors Affecting Demand	79
Chapter II. Processing Sweet Potatoes	81
1. Canning	81
2. Starch Manufacture	89
3. Syrup Manufacture	90
4. Other Products	92
5. Conclusions	93
Chapter III. Storing, Grading, and Packing	95
1. Principles of Sweet Potato Storage	95
2. Construction of Storage Houses	97
3. Management of Storage	99
4. Grades for Sweet Potatoes	101
5. Grade Defects	103
6. Shipping Point Inspection	105
7. Containers	106
(a) Hampers	106
(b) Other Containers	107
(c) Consumer Packages	107
8. Packing	109
(a) Packing in Hampers	109
Chapter IV. Present System of Marketing Tennessee Sweet Potatoes, and Their Distribution	111
1. Marketing Agencies and Methods of Selling	111
(a) Agents to Whom Growers Sell	113
(b) Agents to Whom Shippers Sell	113
(c) Methods of Selling	114
(d) Selling Green vs. Selling Cured	115
2. Storage Agencies	116

	Page
3. Grading and Packing	123
4. Transporting	125
(a) Loading in Cars	126
(b) Trucking	128
5. Advertising and Branding	127
(a) Possibilities of Consumer Advertising	128
(b) Trade Advertising	130
6. Production as Related to Marketing	130
(a) Disease Control	131
(b) Seed Selection	132
(c) Fertilizer	133
7. Seasonal Carlot Movement and Distribution	133
 Chapter V. Distribution, History, and Organizational Set Up of Sweet Potato Cooperative Marketing in Tennessee. .	 147
1. Introduction	147
2. Geographic Distribution of Associations - Active and Inactive	148
3. Date of Organizing Associations	154
4. Reasons for Organizing Associations	155
(a) Promotion of Production	155
(b) Improve Market Conditions	159
(c) Provide Storage and Curing Houses	160
5. Adherence to Fundamental Principles	161
(a) One Man, One Vote	162
(b) Voting Membership Restricted to Producers	163
(c) Limitation of Dividends on Capital Stock.	163
(d) Distribution of Savings on Patronage Basis.	165
(e) Open Business Methods and Democratic Management	166
(f) Legal Entity	167
6. Classification of Associations	168
(a) Grouped as to Marketing Functions	168
(b) Grouped as to Products Handled	169
(c) Grouped as to Type of Organization	170
7. System of Government, or Organization Structure of These Local Associations	170

8. Resume of Individual Associations	172
(a) West Tennessee Group	172
(b) McEwen Group	177
(c) Deaherd Group	180
Chapter VI. Size, Functions, and Methods of Operation of Tennessee Sweet Potato Marketing Associations . .	183
1. Size of Associations	183
(a) Number of Members	183
(b) Volume of Business	184
(c) Capitalization	186
2. Some Services Performed	187
(a) Assembling	189
(b) Storing	189
(c) Costs of Storing Sweet Potatoes	190
(d) Losses in Storing	194
(e) Grading, Packing, and Standardization	195
(f) Advertising	199
(g) Purchasing Supplies	199
3. Sales Policies	200
(a) Time of Selling	201
(b) Method of Sale	202
(c) Selling on Local Market	204
4. Pooling	205
(a) Making Returns to Growers	207
5. Duties of Officers	208
(a) Manager	208
(b) Board of Directors	208
(c) Other Officers	209
6. Information for Membership	209
 C Chapter VII. Factors Affecting the Success and Failure of Cooperative Sweet Potato Marketing Associations .	212
1. Introduction	212
2. Need for a Cooperative Enterprise	213
(a) Conditions Which Justify Organization	213
(b) Dealers Getting Too Large a Share	213
(c) Improving or Adding New Services	215
(d) Overpromotion Vs. a Real Need	217

	Page
3. Structural Organization and Financial Condition	218
(a) Membership Requirements	218
(b) Financing - Fixed Assets	219
(c) Financial Condition	222
(d) Operating Capital	224
4. Personnel of Officers	226
(a) Manager	226
(b) Directors and Other Officers	229
5. Characteristics of Membership	229
(a) Previous Experience in Cooperation	229
(b) Attitude toward Cooperation	230
6. Methods of Operation	231
(a) Services Rendered	231
(b) Efficiency	232
7. Competition	233
(a) Independent Agencies	233
(b) Local Markets	234
8. Volume of Business	235
9. Miscellaneous Factors	237
(a) Loss by Fire	237
(b) Loss by Failure to Collect Sale Price	237
(c) Loss from Improperly Constructed Storage	237
(d) Interference by Outsiders	238
10. Some Factors in the Failure of the Martin Cooperative Sweet Potato Association	238
11. History of One of the Most Successful Cooperative Sweet Potato Associations	240
(a) History of Organization	240
(b) Membership	241
(c) Financing	242
(d) Personnel of Officials	242
(e) Grading and Packing	242
(f) Storage	243
(g) Selling	244
(h) Miscellaneous	244
(i) Success Factors	245

Chapter VIII. The Future of Cooperative Marketing of Sweet Potatoes in Tennessee	246
1. Some Problems	246
(a) Prejudices Against Cooperatives	246
(b) Volume	246
(c) Competition of Dealers	247
(d) Storing	248
(e) Financing Fixed Assets	248
(f) Financing the Grower	249
(g) Education of Members	250
(h) Contracts	250
2. Prospects of Getting Higher Returns for Growers	251
(a) Increase the Gross Sales Price	251
(b) Reduce the Dealer's Margin	253
(c) Reducing Losses from Claims for Allowances and Deductions	254
Chapter IX. Summary	256
1. Phases Other Than Cooperation	256
(a) Price of Sweet Potatoes	256
(b) Processing Sweet Potatoes	257
(c) Present Marketing System	257
(d) Distributions of Shipments	258
2. Cooperation	258
(a) Reasons for Organizing	258
(b) Selling	259
(c) Operation and Management	260
(d) Present Activity	260
(e) The Causes of Failure	260
3. The Need for Cooperation	262
4. Success Factors	262
Appendix A. Retail Quotations on Sweet Potatoes - Boston Market, 1922-1930	264
Appendix B. Weekly Retail Prices of Irish Potatoes and Wholesale Prices of Sweet Potatoes on Boston Market, 1930	267
Appendix C. Active Sweet Potato Associations in Tennessee, 1930	268
Appendix D. Inactive Sweet Potato Associations in Tennessee, 1930	268

TEXT TABLES

Number	Page
1. Average Yearly Value of Vegetable Crops in the United States and Tennessee - 1926 to 1929	1
2. Value of Sweet Potato and Irish Potato Crops in Tennessee, 1926 to 1929	3
3. Yearly Farm Price of Sweet Potatoes in the United States with a Five-Year Moving Average	5
4. Relation of Weighted Average Farm Price to Dec. 1 Farm Price	6
5. Estimated Prices Producers Received for Sweet Potatoes in Tennessee	8
6. December 1 Farm Prices of Sweet Potatoes in Three Areas by States, 1915-1929	11
7. Average Estimated Price of Sweet Potatoes Received by Producers December 1 in Various States, 1914 to 1920; 1921 to 1925; and 1926 to 1929	12
8. Daily Range in Prices of Sweet Potatoes to Jobbers on the Chicago Market, Aug. 19, 1929, to April 11, 1930 .	15
9. Average Monthly Price Ranges of Sweet Potatoes in Various Markets, 1929 Crop	21
10. Index Numbers of Farm Prices, 1910-1931	24
11. Relation of Price of Sweet Potatoes to Price of Irish Potatoes	30
12. Relation of Price of Sweet Potatoes to Acreage and Production in the United States	34
13. Relation of Price of Cotton and Price of Sweet Potatoes to Acreage of Sweet Potatoes in Tennessee, 1900-1930	37
14. Relation of Production of Sweet Potatoes to Price in Tennessee	45
15. Estimated Monthly Prices Received by Producers for Sweet Potatoes in U. S., 1910-1929	50
16. Monthly Farm Prices of Sweet Potatoes in Tennessee . . .	51

Number	Page
17. Relation of Production of Sweet Potatoes to Increase in Price of Crop After November 15 for U. S. and Tennessee Production	56
18. Car-Lot Shipments and Price of Tennessee Sweet Potatoes by Months, 1922 to 1929	59
19. Monthly Average L. C. L. Price of Sweet Potatoes on Chicago Market, 1919 to 1929	62
20. Monthly Average L. C. L. Price of Sweet Potatoes on New York Market, 1919 to 1929	62
21. Amount of Sweet and Irish Potatoes/Average Retail Customer Bought per Purchase in Knoxville	65
22. Frequency of Purchasing Stock of Irish and Sweet Potatoes by Some Knoxville Groccerymen	65
23. Estimated Length of Time Sweet Potatoes Will Keep in Retail Stores	66
24. Length of Time Sweet Potatoes Are Handled by Knoxville Groceries	66
25. Average Percentage of Total Sales of Sweet Potatoes by Seasons as Expressed by 57 Knoxville Groccerymen	67
26. Actual and Forecant Retail Prices of Sweet and Irish Potatoes in Knoxville	68
27. Average Weekly Retail Price of Sweet Potatoes at Boston, 1926 - 1930	70
28. Average Monthly Farm Price of Sweet Potatoes in Virginia and Delaware, 1924 to 1930	71
29. Comparison of Yield of Sweet Potatoes Harvested Early and Late	77
30. Value and Volume of Canned Sweet Potatoes in the United States	83
31. Sweet Potatoes Canned by States, 1909-1925, Standard Cases	86
32. Percentage of Potatoes Not Meeting Size Requirements	104
33. Agent to Whom Producers Sell Sweet Potatoes in Tennessee	113
34. Channel of Sale of Tennessee Sweet Potatoes, 1930	114

Number	Page
35. Preference of 76 Tennessee Growers as to Selling Sweet Potatoes Cured or "Green", by Areas	115
36. Reasons Given by Growers for Preference as to Selling Cured or "Green" Potatoes	115
37. Sweet Potato Storage in Tennessee by Counties	117
38. Method of Grading Tennessee Sweet Potatoes by Growers	124
39. Loss in Storage from Black Rot	131
40. Monthly Distribution of Carlot Shipments of Sweet Potatoes by Crop Years, 1928, 1929, and 1930	134
41. Carlot Unloads of Sweet Potatoes at Sixty-Six Principal Markets, 1927-1930	142
42. Summary of Unloads of Sweet Potatoes at Various Markets, 1921-1930	143
43. Sweet Potato Cooperative Associations Organized by Years, 1913 to 1930	155
44. Reasons as Given by Persons Interviewed for Organizing Sweet Potato Associations in Tennessee	160
45. Value of Shares of Stock in Sweet Potato Cooperative Associations	162
46. Number of Incorporated and Unincorporated Sweet Potato Associations in Tennessee	167
47. Classification of Sweet Potato Associations According to Marketing Functions	168
48. Sweet Potato Associations Classified According to Products Handled	169
49. Size of Active Cooperative Sweet Potato Associations as Indicated by Membership, Capitalization, Storage Capacity and Actual Volume Stored	185
50. Trend in Sweet Potato Storage of 13 Sweet Potato Cooperative Marketing Associations of the Decherd Group in Middle Tennessee	186
51. Charge per Bushel for Storage Space by Cooperative Sweet Potato Associations, 1930	190
52. Costs of Operating Sweet Potato Storage Houses	191
53. Shrinkage of Nancy Hall Sweet Potatoes in Storage	193

Number	Page
54. Cost of Storing Sweet Potatoes Due to Shrinkage	193
55. Activities of Cooperative Sweet Potato Associations to Improve Field Grading and Packing	195
56. Party Grading Potatoes Preparatory to Selling	196
57. Authority Exercised by Associations Over Grading and Packing Sweet Potatoes	197
58. Extent to Which Standard Grades Were Used by the Associations	198
59. Estimated Cost of Grading Sweet Potatoes in 8 Cooperative Associations	199
60. Cooperative Sweet Potato Associations Assuming Selling Function	201
61. Agents To or Through Whom Cooperative Associations Sold Sweet Potatoes	203
62. Market Information Received by Cooperative Sweet Potato Associations	210
63. Approximate Indebtedness on Sweet Potato Cooperative Storage Houses, 1931	223
64. Previous Experience in Similar Work and Other Occupations of Managers of Sweet Potato Associations, 1930	227
65. Length of Period Served by Managers of 22 Sweet Potato Associations, 1930	228
66. Previous Experience of Members in Cooperative Marketing at Time of Organizing Associations	230
67. Volume of Sales of Two West Tennessee Sweet Potato Associations	236
Appendix	
A. Retail Quotations on Sweet Potatoes - Boston Market, 1922-1930	264
B. Weekly Retail Prices of Irish Potatoes and Wholesale Prices of Sweet Potatoes on Boston Market, 1930	267
C. Active Sweet Potato Associations in Tennessee, 1930	268
D. Inactive Sweet Potato Associations in Tennessee, 1930	268

CHARTS IN TEXT

Number	Page
1. Average Total Value of Vegetable Crops, 1926-1929, in U. S. and Tennessee	2
2. Prices of Sweet Potatoes in U. S., 1899-1929, and Five- Year Moving Average	4
3. Prices: Monthly Price of Sweet Potatoes in Tennessee with Twelve-Month Moving Average	7
4. Comparison of Prices of Sweet Potatoes by Sections, 1915-1928 (Dec. 1 Price to Farmers)	10
5. Estimated Price per Bushel of Sweet Potatoes for the U. S., Tennessee, Highest (Arizona), and Lowest (Georgia) - Dec. 1 Price: 1899 to 1929	15
6. Prices of Tennessee Sweet Potatoes and Four Competing States, 1914-1928	14
7. Price Range: Comparison of Tennessee, New Jersey, Virginia, Indiana, Illinois, and Alabama Price Ranges on Chicago Market - Aug. 19, 1929 to Apr. 11, 1930	19
8. Index Numbers of Farm Prices, U. S., 1910-1928 (Basis, Aug. 1909-July 1914)	26
8A. Index Number of Farm Prices of Sweet Potatoes, Fruits, and Vegetables, and All Groups, 1929 to March 1931	27
9. Relation of Price of Sweet Potatoes to Price of Irish Potatoes in the United States, 1893-1929	29
10. Farm Prices of Sweet Potatoes and Index of Retail Prices of Commodities Farmers Buy	31
11. Relation of Acreage of Sweet Potatoes to Farm Price of December 1 in U. S., 1900-1929	33
12. Relation of Price of Cotton and Price of Sweet Potatoes to Acreage of Sweet Potatoes in Tennessee	36
13. Acreage of Sweet Potatoes in Southern States as Related to Price of the Previous Cotton Crop	38
14. Relation of Price of Cotton in Tennessee to the Acreage of Sweet Potatoes the Following Year	39

Number	Page
15. Relation of Sweet Potato Farm Price December 1 to Production in U. S., 1900-1929	40
16A. Factors Influencing Price of Sweet Potatoes in U. S.- Curve I: Annual Changes in Price of Sweet Potatoes as Related to Production	42
16B. Factors Influencing Price of Sweet Potatoes in U. S.-Curve II: Variation from Curve I as Related to Change in Price Level of All Farm Commodities	43
16C. Factors Influencing Price of Sweet Potatoes in U. S.-Curve III: Variation from Curve II As Related to Change in Irish Potato Production	44
17. Price: Relation of Production of Sweet Potatoes in Tennessee to Price Received by Producers	46
18. Relation of Carlot Shipments to Price of Sweet Potatoes in U. S., 1917-1929	47
19. Price Received by Producers for Sweet Potatoes, by Months, Average for 1910-1913, 1914-1920, and 1921-1925, U. S.	49
20. Monthly Farm Price of Sweet Potatoes in Tennessee, Average for 1910-1913, 1914-1920, 1921-1925	52
21. Price Received by Producers for Sweet Potatoes by Months, United States, 1914, 1922, 1924, 1926 and 1927	54
22. Farm Prices of Sweet Potatoes in Tennessee by Months, 1914, 1922, 1924, 1926 and 1927	55
23. Relation of Monthly Carlot Shipments and Price Received by Producers in U. S., 1922 and 1924	57
24. Relation of Monthly Shipments and Monthly Farm Prices of Sweet Potatoes in Tennessee, 1922 and 1924	58
25. Monthly L. C. L. Price of Sweet Potatoes on Chicago Market, 1922, 1924, 1926 and 1927	61
26. Monthly L. C. L. Price of Sweet Potatoes on New York Market, 1922, 1924, 1926 and 1927	63
27. Comparison of Average Weekly Retail Price at Boston and Average Monthly Farm Price in Virginia and Delaware, 1926-1930 .	69
28. Comparison of Weekly Retail Price at Boston and Monthly Farm Price in Virginia and Delaware, 1924 and 1927	72
29. A Comparison of Retail Prices of Sweet Potatoes at Boston and Farm Prices in Delaware and Virginia, 1924 and 1925 1	73

30. Price Ranges: Comparison of Retail and Wholesale Price of Sweet Potatoes and Retail Price of Irish Potatoes, Boston Market, 1930	74
31. Canning: Value and Volume of Canned Sweet Potatoes in the United States	82
32. Agencies and Channels of Distribution of Tennessee Sweet Potatoes	112
33. Monthly Distribution of Carlot Shipments of Sweet Potatoes, Crop Year 1929	135
34. Monthly Distribution of Carlot Shipments of Sweet Potatoes, Crop Year 1929	136
35. Monthly Distribution of Carlot Shipments of Sweet Potatoes, Crop Year 1930	137
36. Unloads of Sweet Potatoes at Seven Markets Originating in Tennessee, 1921-1930	144
37. Tennessee Shipments Unloaded at Markets Other Than Above Seven, 1921-1930	144
38. Sweet Potato Cooperative Associations Organized by Years, 1913 to 1930	156

MAPS IN TEXT

Number	Page
1. Farm Prices of Tennessee Sweet Potatoes by Crop Reporting Districts, 1924	23
2. Location of Sweet Potato Canneries in the U. S. in 1929	84
3. Canning Factories in Tennessee - 1929	85
4. Farm Sweet Potato Storage in Tennessee - 1922	119
5. Commercial Sweet Potato Storage in Tennessee - Private and Cooperative in 1922	120
6. Cooperative Sweet Potato Storage, 1930	122
7. Unloads of Tennessee Sweet Potatoes at Principal Markets, 1928	139
8. Unloads of Tennessee Sweet Potatoes at Principal Markets, 1930	140
9. Unloads of Tennessee Sweet Potatoes in Principal Markets, Average 1927-1930	141
10. Stations from Which Sweet Potato Carlot Shipments Were Made in 1916	149
11. Stations from Which Shipments of Sweet Potatoes Were Made in 1927	150
12. Location of Sweet Potato Associations in Tennessee - Both Active and Inactive, 1930	152

INTRODUCTION

Tennessee ranks high among the states in the production and shipments of sweet potatoes. In this state the crop is an important source of farm income, particularly in the northwest.

This study has been made largely to determine the factors that have been responsible for either the success or failure of cooperative associations that have been engaged in storing and selling sweet potatoes, and to determine the factors that affect price. This investigation was prompted largely by the reported failure of a great many associations, the decline of others, and the dissatisfaction with returns from the crop as expressed by growers.

In order to get an understanding of the history and present status of cooperation in the sweet potato industry, field records were obtained on 50 cooperative associations located in each of the commercial producing areas in the state. This required the time of two men for a period of about six weeks. They traveled approximately 2800 miles. The data on the associations in southern East and southern Middle Tennessee were obtained in the spring of 1930. Those in West and the other parts of Middle Tennessee were visited in the fall of 1930. Separate field blanks were used for the active associations and the inactive associations. More complete data were secured on those that were active. Information was secured on such phases as early history and development, organizational set-up, methods of operation including storage, and sales policies, methods of financing, success factors, and present problems. Somewhat similar data were secured for the inactive associations but in considerably less detail. An effort was made to get such data as was thought necessary for an under-

standing of the causes of failure. Some difficulty was experienced in getting of all the data desired because of either lost records, or the removal from the community of those that knew the most about the associations.

In most cases the information secured has been checked by interviews with two or more persons. During the writing of the report it was necessary to clear up some details by correspondence with the managers and officials of some of the associations.

For the material in the chapter on prices of sweet potatoes the data collected by the U. S. Department of Agriculture has been drawn upon quite heavily. The available works of other Agricultural Experiment Stations on the subject have been reviewed, some of which have been used in the preparation of this report.

Questionnaires were sent to some retail grocers in Knoxville to determine some of the factors affecting the price and the cost of selling sweet potatoes. Returns from 57 grocery men have been tabulated and analyzed.

CHAPTER I

PRICES OF SWEET POTATOES IN THE UNITED STATES AS A WHOLE AND IN TENNESSEE

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Value of the Sweet Potato Crop. 2. Trends in Prices of Sweet Potatoes in the United States. 3. Prices of Sweet Potatoes in Tennessee and Comparison With Other States and Sections. 4. Comparison of Price Trends of Sweet Potatoes With Price Trends of Other Farm Products. 5. Retail Purchasing Power of Farm Price of Sweet Potatoes. | <ol style="list-style-type: none"> 6. Relation of Acreage, Production and Carlot Shipments to Prices of Sweet Potatoes. 7. Seasonal Variations in Prices of Sweet Potatoes. 8. Retail Prices of Sweet Potatoes. 9. Selling Sweet Potatoes Green Vs. Storing. 10. Forecasting Prices of Sweet Potatoes. |
|--|---|

1. Value of the Sweet Potato Crop

The total value of the sweet potato crop in the United States is exceeded by only one other vegetable, the Irish potato. The average yearly value of vegetable crops in the United States and in Tennessee from 1926 to 1929 is given in Table 1 and is presented graphically in Chart 1.

Table 1
Average Yearly Value of Vegetable Crops in the United States and
Tennessee - 1926 to 1929 (a)

	Value in U. S.	Value in Tennessee
Irish potatoes	\$402,699,000	\$4,357,113
Sweet potatoes	76,920,000	4,045,912
Tomatoes	44,648,000	2,211,627
Lettuce	29,557,000	
Cabbage	21,137,000	305,054
Cantaloupes	20,850,000	37,888
Peas	19,788,000	74,900
Onions	19,565,000	(b)
Beans (green)	15,377,000	259,744
Asparagus	14,814,000	(b)
Celery	12,962,000	(b)
Watermelons	10,969,000	(b)

^a Source: The Yearbook of Agriculture, 1930. The value of Irish and sweet potato crops in U. S. and Tennessee is as given in this report for farm value as of Dec. 1. Value of other crops was computed by multiplying the average seasonal price by the total production.

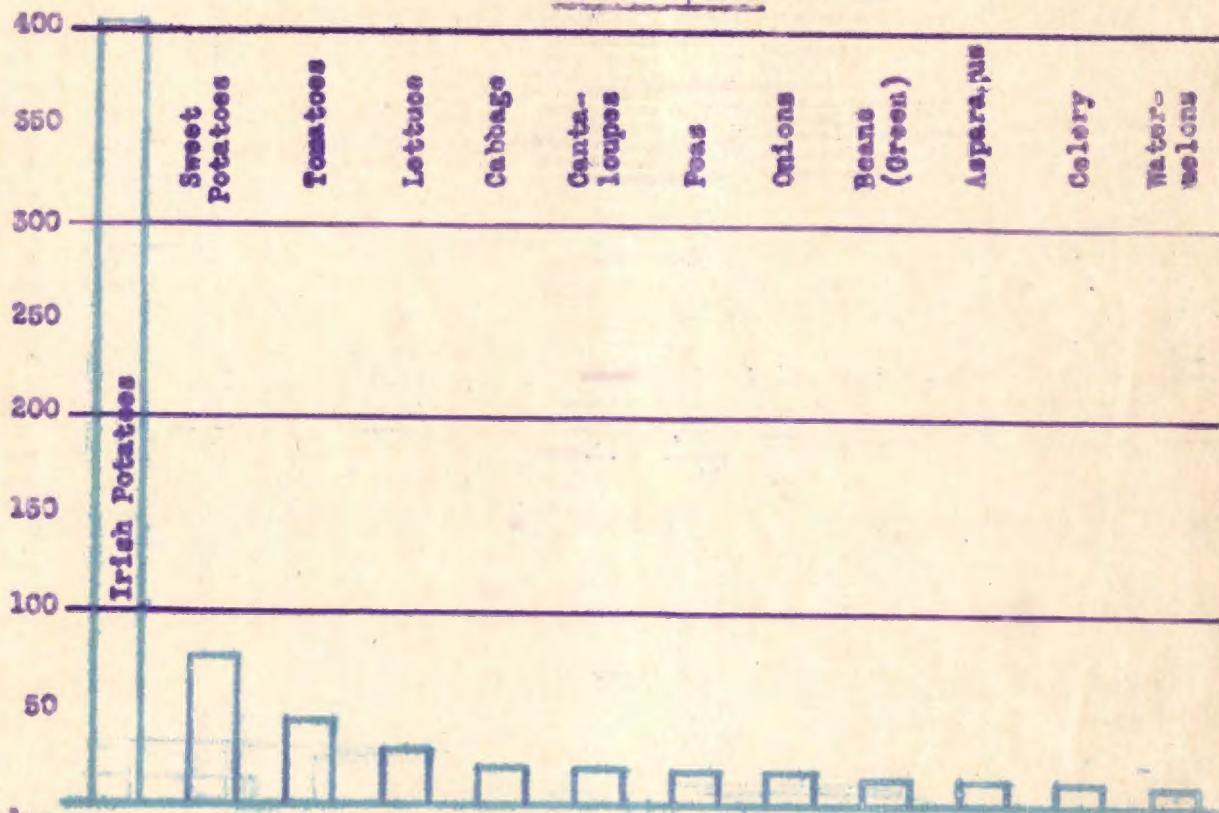
^b Not given.

Chart 1

Average Total Value of Vegetable Crops, 1926 - 1929, in U. S.
and Tennessee.

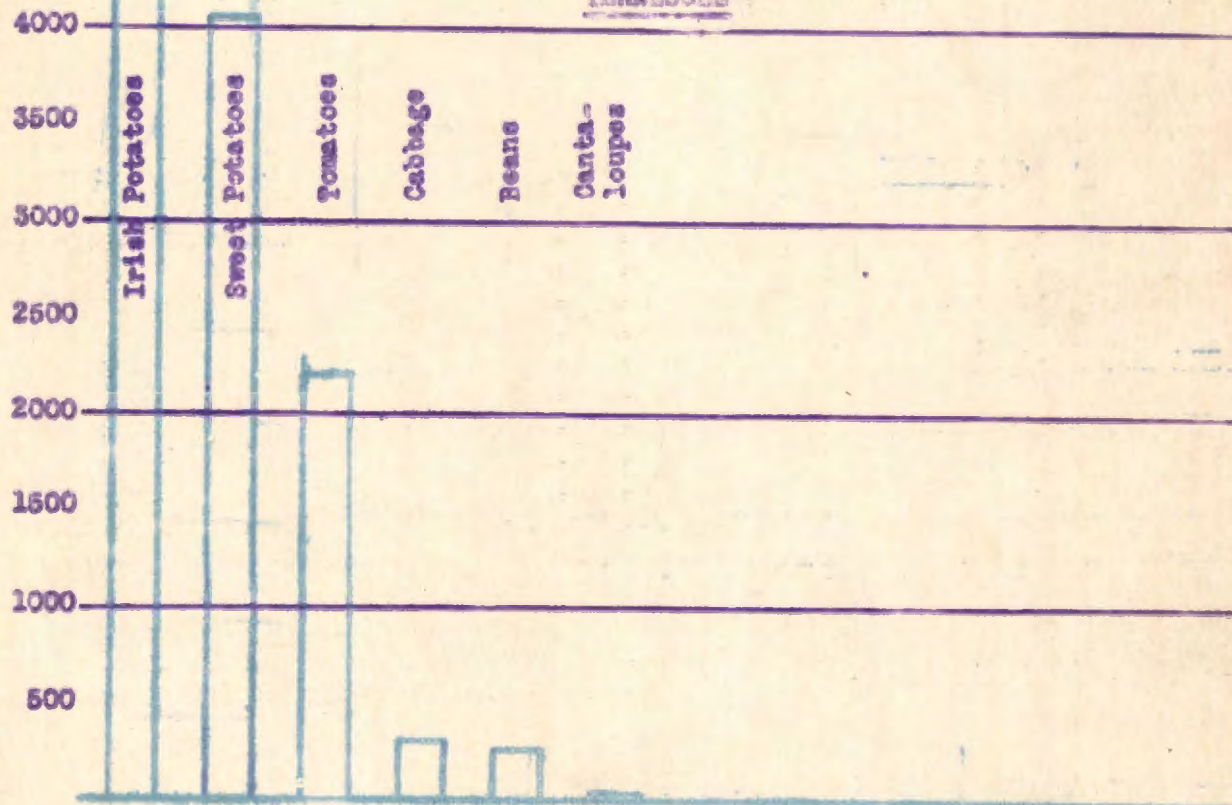
Value
(000,000)

UNITED STATES



Value
(000)

TENNESSEE



As shown in Table 1 and Chart 1 the value of the Irish potato crop in the United States far outranks that of any other vegetable, with the sweet potato easily ranking second. In Tennessee the Irish potato also holds first place in the value of vegetable crops but here the relative value of the sweet potato is much greater than in the U. S., being a rather close second. In fact, in two of the years, 1926 and 1928, it outranked the Irish potato crop, as is shown in Table 2.

Table 2
Value of Sweet Potato and Irish Potato Crops in Tennessee, 1926 to 1929 (a)

Year	Value Irish Potato	Value Sweet Potato
1926	\$4,286,100	\$4,305,000
1927	4,633,200	3,998,400
1928	3,677,400	3,700,250
1929	4,839,750	4,180,000

^a Source: Yearbook of Agriculture 1930. Computed as in Table 1.

The total value of any crop is dependent upon two factors, namely, production and price. The trends of production have been discussed in a previous report.¹ This chapter will deal with the other factor, price and its trends, and with the factors causing price fluctuations.

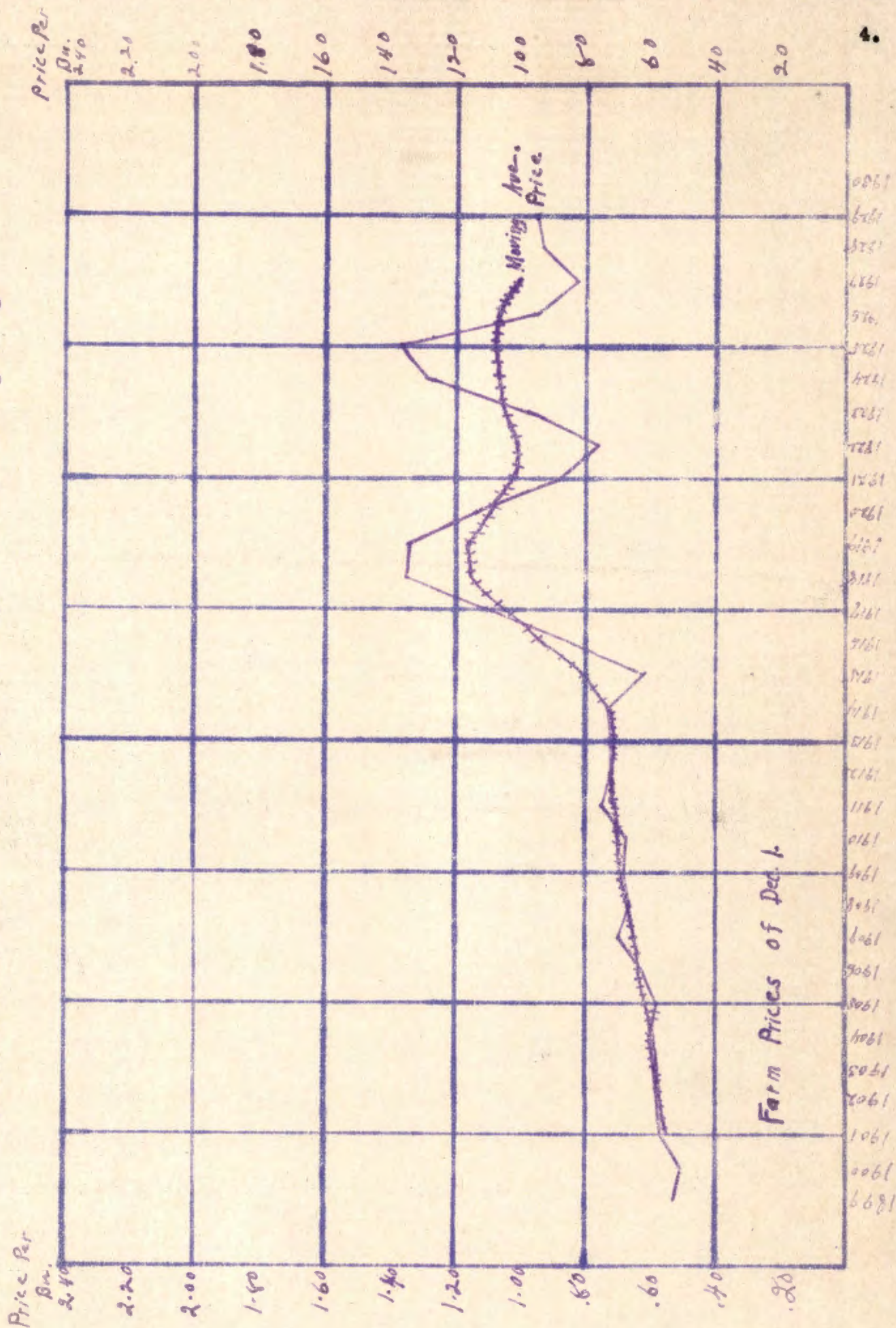
2. Trends in Prices of Sweet Potatoes in the United States

The prices of sweet potatoes received by producers in the United States from 1899-1929 is given in Chart 2 and Table 3. As is shown in Chart 2, sweet potato prices were fairly stable with a gradual upward trend from 1899 to 1915. Since then there have been some severe fluctuations in ^{the} actual price from year to year. The trend of prices turned upward rather abruptly during

¹ Allred, Atkins and Lucas, Preliminary Report on Marketing Tennessee Sweet Potatoes, pp. 17-120.

Chart 2

Prices of Sweet Potatoes in U. S., 1899 - 1929, and Five-Year Moving Average.



the war period, 1915 to 1918 and 1919. Since 1919 the trend was slightly downward. From the appearance of the chart there seems to be a tendency toward price cycles.¹ Picking out the years prices were at the peak we would

Table 3

Yearly Farm Price of Sweet Potatoes in the United States With
a Five-Year Moving Average (a)

Year	Price Dec. 1 (cents)	5 Year Moving Average Price (cents)	Year	Price Dec. 1 (cents)	5 Year Moving Average Price (cents)
1899	53.0		1914	73.0	73.0
1900	50.6		1915	62.1	80.6
1901	57.5	55.5	1916	84.8	93.2
1902	58.1	57.0	1917	110.8	105.5
1903	58.3	58.5	1918	135.2	115.7
1904	60.4	59.5	1919	134.4	116.4
1905	58.3	61.8	1920	113.4	109.6
1906	62.2	63.4	1921	88.1	102.2
1907	70.0	65.0	1922	77.1	101.1
1908	66.1	66.8	1923	97.9	105.7
1909	68.5	69.4	1924	128.8	107.1
1910	67.1	70.0	1925	136.4	108.2
1911	75.5	71.3	1926	95.5	107.2
1912	72.6	72.2	1927	82.5	100.5
1913	72.6	71.2	1928	93.0	
			1929	95.0	

^a Source: Farm Price of Dec. 1 Yearbook of Agriculture, 1927 and 1930.

have 1925, 1918, 1911, and 1907. Considering the moving average 1901 might also be classed as a peak year, there being a greater difference between the actual price that year and the five-year average than any year following, until 1907. Picking out the low years we would have 1927, 1922, 1915, 1910, and 1905. The number of years between peak years would be 7, 7, 4, and 6 respectively, while between low years we would have 5, 7, 5, and 5 years respectively. Thus, it appears that the average cycle is approximately six years.

The prices given in Table 3 and Chart 2 are farm prices as of December 1. The December 1st price is compared with the average weighted price received by producers throughout the year in Table 4 in order to show the relationship between the two prices. The average weighted price is higher than the December 1st

¹ In a study of cycles the trends should preferably be eliminated and corrections made for seasonal variations, but that has not been possible in this case because of lack of time.

farm price each year of the series, the difference ranging from 8.1¢ per bushel in 1916 to 31.4¢ per bushel in 1920. The percentage variation ranges from 8.8%

Table 4
Relation of Weighted Average Farm Price to Dec. 1 Farm Price (a)

Year	Average Weighted Price (cents)	December 1 Price (cents)	Amount by which weighted average price exceeds Dec. 1 price	
			Cents	Per cent
1910	78.7	67.1	11.6	14.8
1911	92.2	75.5	16.7	18.1
1912	85.6	72.6	13.0	15.1
1913	84.0	72.6	11.4	13.6
1914	84.6	73.0	11.6	13.7
1915	75.4	62.1	13.3	17.7
1916	92.9	84.8	8.1	8.8
1917	122.3	110.8	11.5	9.4
1918	150.0	135.2	14.8	9.9
1919	161.7	134.4	27.3	16.9
1920	144.8	113.4	31.4	21.7
1921	110.9	88.1	22.8	20.6
1922	97.4	77.1	20.3	20.8
1923	121.7	97.9	23.8	19.9
1924	152.4	128.8	23.6	15.5
1925	165.9	136.4	29.5	17.8
1926	120.3	95.5	24.8	20.6
1927	106.5	82.5	24.0	22.5
1928	113.1	91.5	21.6	19.1
1929		94.5		

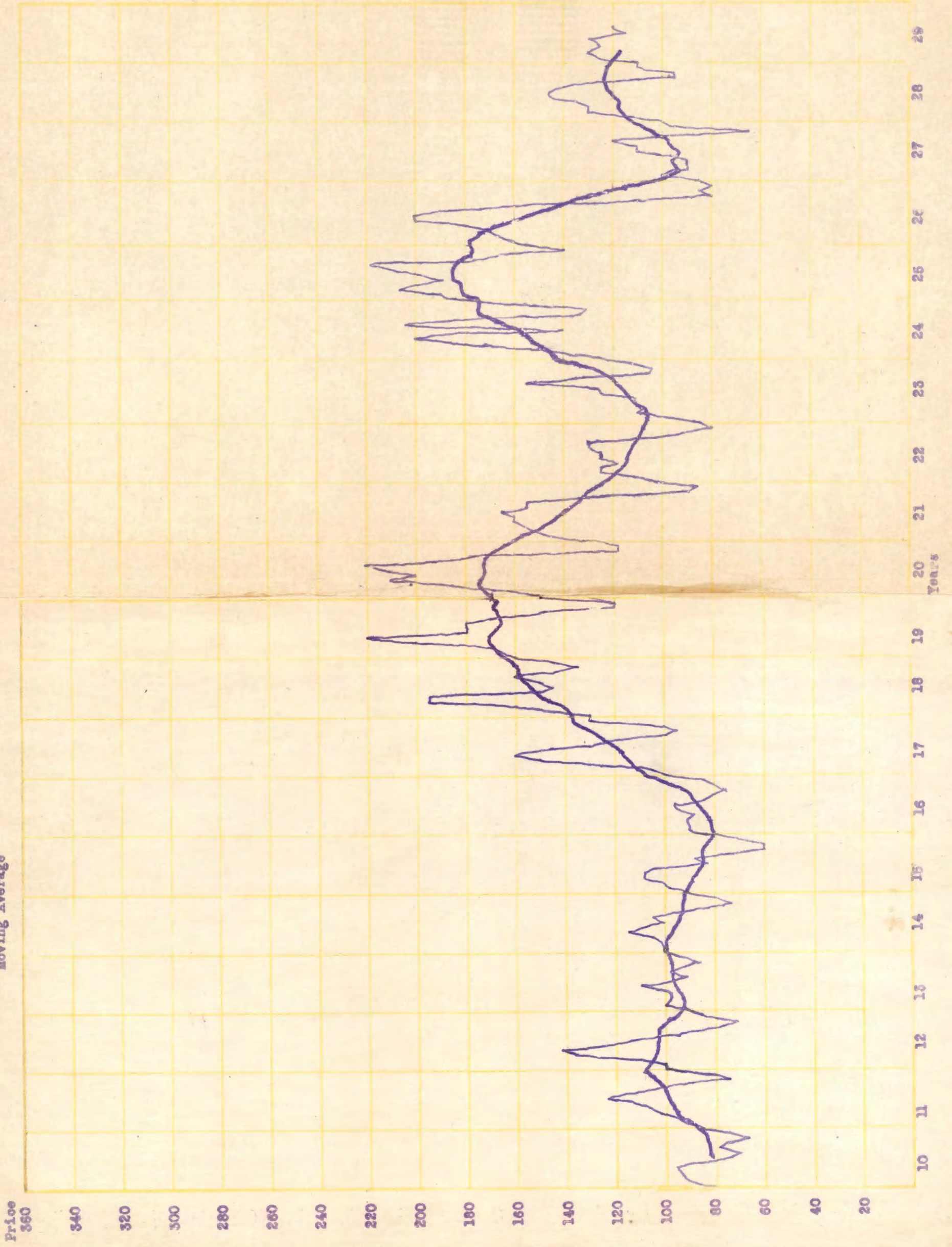
¹ Source: U. S. D. A. Yearbook, 1930, p. 778, 780.

in 1916 to 22.5% in 1927. The average variation of the weighted price and December 1st price is 16.7%. In only four years is the variation from the average over 5% and three of these are during the war, 1916 to 1918. Therefore we see that the December 1st price is a fairly accurate estimate of the average weighted price throughout the year, and as the December 1st price is available in more cases than the average weighted price it is used in practically all cases throughout this chapter.

3. Prices of Sweet Potatoes in Tennessee and Comparisons With Other States and Sections.

The monthly price of sweet potatoes in Tennessee is plotted in Chart 3

Chart 3.
Prices: Monthly Price of Sweet Potatoes in Tennessee with Twelve Month
Moving Average



from data presented in Table 5. A twelve months moving average is also shown on the chart. Generally the higher the average price for the season the greater

Table 5
Estimated Prices Producers Received for Sweet Potatoes in
Tennessee (a)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1931	100	105	110									
1930	115	115	115	120	120	135	125	140	135	110	90	95
1929	110	125	130	125	125	130	115	120	120	100	85	105
1928	100	110	130	130	135	145	145	140	120	95	95	110
1927	85	100	90	90	90	95	110	110	110	180	85	95
1926	162	167	170	180	200	200	190	160	120	100	65	80
1925	181	190	206	198	189	197	207	213	177	166	140	155
1924	123	135	150	180	200	190	140	204	175	133	131	135
1923	100	110	107	111	111	125	126	155	135	105	104	112
1922	110	125	125	118	125	125	130	130	105	92	80	85
1921	145	150	155	160	160	165	155	155	130	90	86	102
1920	150	170	185	210	200	210	220	190	175	118	118	127
1919	160	165	170	200	220	180	180	180	170	150	120	120
1918	130	145	160	195	195	150	145	150	160	145	135	145
1917	100	105	125	150	160	150	130	120	100	95	100	130
1916	80	90	90	91	88	95	96	86	81	75	80	90
1915	90	98	100	108	108	105	83	87	73	60	60	71
1914	100	100	100	105	115	110	105	95	85	80	73	80
1913	90	100	98	100	100	110	100	91	100	94	85	93
1912	100	100	110	135	142	124	112	96	88	77	71	85
1911	87	91	95	103	107	113	124	117	103	86	74	86
1910	80	90	93	94	96	90	74	70	79	76	65	75

^a Source: U. S. D. A. Statistical Bulletin 16 and "Crops and Markets" 1912

the monthly variations. During the low price years 1914, 1915, 1916, 1922, and 1927 the monthly variation was small in comparison with the variation in the years of highest prices, 1919, 1920, and 1925.

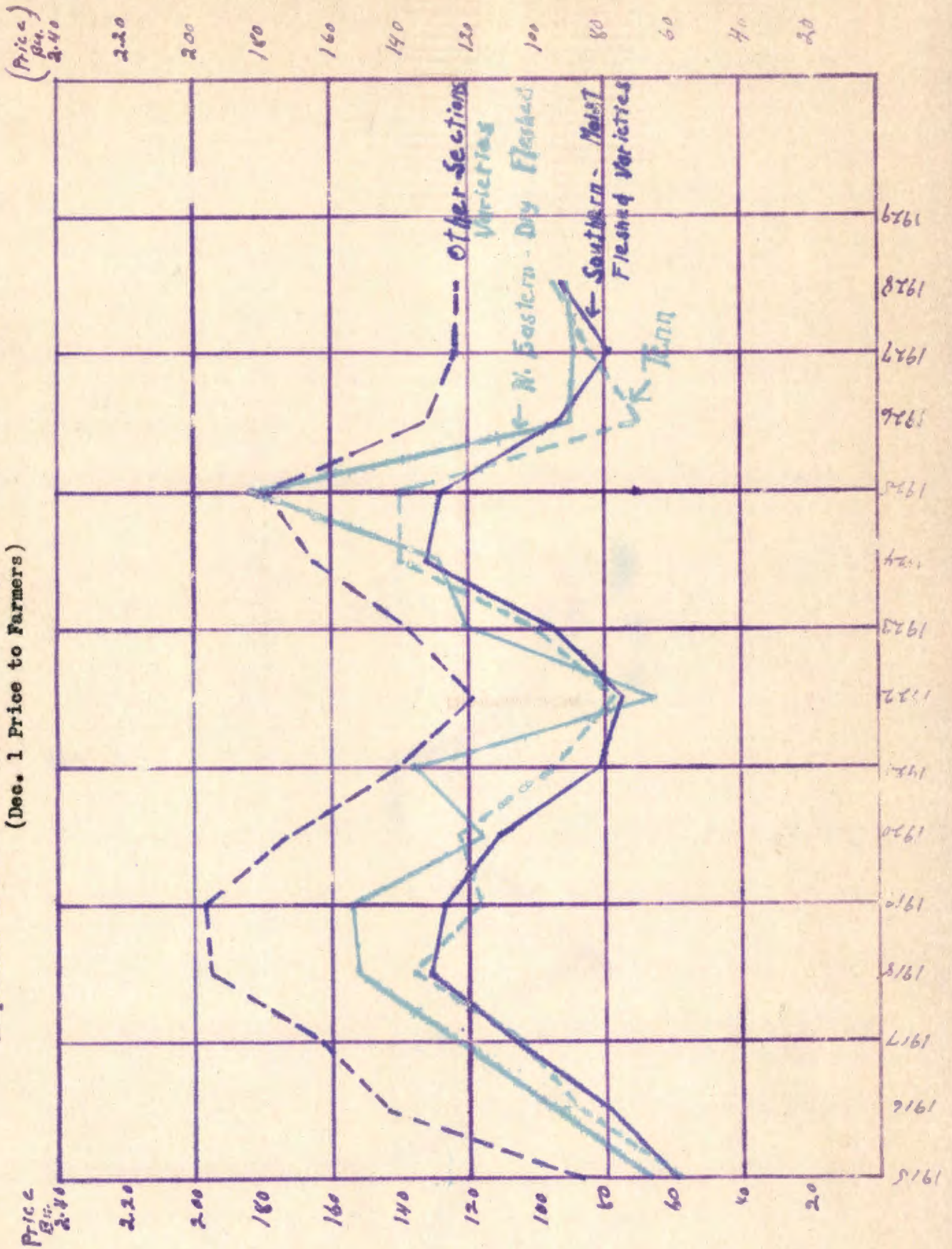
Prices by Sections - The sweet potato producing states are placed in three groups by Gatlin,¹ according to the type of potatoes grown, and the purpose for which the crop is produced; namely, the Northeastern Section, consisting of New Jersey, Delaware, Maryland and Virginia, which produce the dry-fleshed type

¹ Gatlin, G. O., Marketing the Southern Grown Sweet Potato, 1924, p. 1-2.

of potatoes; the southern section, which raises largely the moist-fleshed varieties, composed of Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas; and the third group including all other states which grow sweet potatoes. The production in the third group is small and largely for local consumption. The average price of sweet potatoes in these three sections is plotted on Chart 4. The data are found in Table 6. The trend of prices from one year to another is nearly always the same in each section. Exceptions to this are seen in 1921 and 1925. In 1921 the price in the Northeastern Section increased over the 1920 price very markedly while in other two sections there was a sharp decrease in prices. In 1925 the price declined slightly in the Southern Section but increased sharply in the other two sections. The prices in Tennessee are also plotted on Chart 4. They follow the moist-fleshed group more closely than any other. Since 1920 the Tennessee prices have been higher than the average of the Southern group every year except 1926. In the Northeastern Section and Other Section prices were higher than the Tennessee and Southern Section prices in the majority of cases. However, since 1922 the prices in the Southern Section have been about equal to the Northeastern Section except the year 1925. This is also shown in Table 7. Maryland and Delaware, ranked according to the average of the years from 1926 to 1929, fall 25th and 26th respectively. When these states are ranked according to average price from 1921 to 1925 they rank 15th and 16th, which was above any state in the Southern Section at that time. Several states from the Southern Section have higher prices than Maryland and Delaware in 1926-1929.

Sweet potato prices are considerably higher in the "Other Section" than in the "Northeastern" and "Southern" sections. The states in the "Other Section" are outside of the region best adapted to growing sweet potatoes and have a relatively small production. In most years their production has been less than

Chart 4
Comparison of Prices of Sweet Potatoes by Sections, 1915 - 1928.
(Dec. 1 Price to Farmers)



requirements for local consumption. This requires potatoes to be shipped there from the other two sections. Under these conditions the farm price in those states/ which ship potatoes to them, plus the transportation and handling costs.

Table 6
December 1 Farm Prices of Sweet Potatoes in Three Areas by States,
1915-1929

Northeastern Dry Fleshed															
	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929
N.J.	70	120	160	190	220	155	170	72	145	155	240	120	120	120	140
Va.	65	90	100	145	155	95	125	87	105	110	130	100	85	70	90
Md.	70	88	100	150	133	115	140	50	115	127	170	75	80	70	90
Del.	62	81	120	125	110	100	110	50	115	126	190	65	70	80	90
Ave.	67	95	120	152	154	116	136	65	120	129	183	90	89	91	102
Southern Moist Fleshed															
Tenn.	59	87	105	136	117	123	95	78	100	140	140	70	85	95	95
N.C.	56	75	105	132	138	114	97	80	98	104	120	100	80	85	90
S.C.	65	85	104	142	148	117	90	71	86	104	147	100	80	85	85
Ga.	61	81	105	125	110	97	63	61	76	100	125	80	75	85	80
Fla.	68	86	115	125	140	120	96	94	116	130	140	125	85	115	105
Ala.	57	74	92	115	113	100	73	75	83	125	125	85	85	90	90
Miss.	55	67	97	104	112	105	74	69	91	173	100	95	80	90	80
La.	50	66	104	128	115	93	65	61	95	158	115	90	70	85	85
Tex.	70	90	140	175	150	130	85	85	114	158	142	95	75	100	105
Ave.	60	79	107	131	127	111	82	75	95	132	128	93	79	92	90
Other States															
Ky.	70	100	125	175	160	150	115	110	120	125	153	108	120	115	120
Ill.	82	125	150	175	175	135	90	105	110	139	190	135	115	110	130
Ind.	90	150	165	195	215	160	150	120	125	142	190	145	135	130	135
Ia.	108	192	210	210	250	247	175	140	150	190	230	200	150	155	170
Kans.	100	150	160	222	185	160	115	105	125	138	170	135	110	110	135
Mo.	82	150	141	186	187	155	100	105	108	125	165	130	120	105	120
N.M.	75	180	205	250	225	220	260	200	200	255	165	100	130	145	175
Cal.	80	100	150	150	179	160	125	67	165	218	170	110	115	110	145
Ave.	87	143	163	195	197	173	141	119	138	166	179	133	124	123	141
U.S.	62	85	111	135	134	113	88	77	98	129	136	96	82	92	94

Source: U. S. D. A. Yearbooks. Average prices for section is arithmetic average calculated from data.

Table 7

Average Estimated Price of Sweet Potatoes Received
by Producers December 1 in Various States, 1914 to 1920; 1921 to
1925; and 1926 to 1929

Rank 1926- 1929	State	Ave. 1926- 1929 (cents)	Ave. 1921- 1925 (cents)	Ave. 1914- 1920 (cents)	Rank 1926- 1929	State	Ave. 1926- 1929 (cents)	Ave. 1921- 1925 (cents)	Ave. 1914- 1920 (cents)
1	Ariz.	194	203	204	14	Okla.	98	124	141
2	Iowa	169	177	192	15	Ark.	95	103	97
3	W. Va.	150	162	146	16	Tex.	94	117	120
4	Ohio	143	167	155	17	N. Car.	89	100	98
5	N. Mex.	138	216	188	18	S. Car.	88	100	104
6	Ind.	136	145	152	19	Ala.	88	96	88
7	N. Jer.	125	156	144	20	Tenn.*	86	111	99
8	Ill.	123	127	134	21	Va.	86	111	105
9	Kans.	123	130	135	22	Miss.	86	101	86
10	Cal.	120	149	129	23	La.	83	99	89
11	Mo.	119	121	142	24	Ga.	80	85	93
12	Ky.	116	125	122	25	Md.	79	120	104
13	Fla.	108	115	105	26	Del.	76	118	95
						U.S.	91	106	102

Source: U. S. D. A. Yearbooks of Agriculture, 1927 to 1930. The 1926 to 1929 average is an arithmetic average of the four years. Other averages are as given in the 1927 Yearbook of Agriculture.

The price of sweet potatoes in Tennessee follows very closely the price in the United States as a whole, as is shown in Tables 6 and 7 and Chart 5. Only in three years has the difference been over ten cents per bushel. The United States price exceeded the Tennessee price 25.5 cents in 1926 and 17.4 cents in 1919, while the Tennessee price was highest in 1924 by 11.2 cents. The price fluctuations and price trends are about the same in both cases. Prices in Arizona and Georgia are also plotted on Chart 5. In both these states, sweet potatoes are raised largely for local consumption, a very small part of their production being shipped. Georgia, however, is a very important producing state, while Arizona's production is small. The difference in price of the two states is probably caused by the former being much better adapted to sweet potato growing than the latter.

The prices of Tennessee sweet potatoes and four of the principal competing states are plotted on Chart 6. The price in New Jersey is far above any of the

Chart 5

ESTIMATED PRICE PER BUSHEL OF SWEET POTATOES FOR THE U.S., TENN.,
HIGHEST (ARIZ.), AND LOWEST (GA.) - DEC. 1 PRICE: 1899 TO 1929.

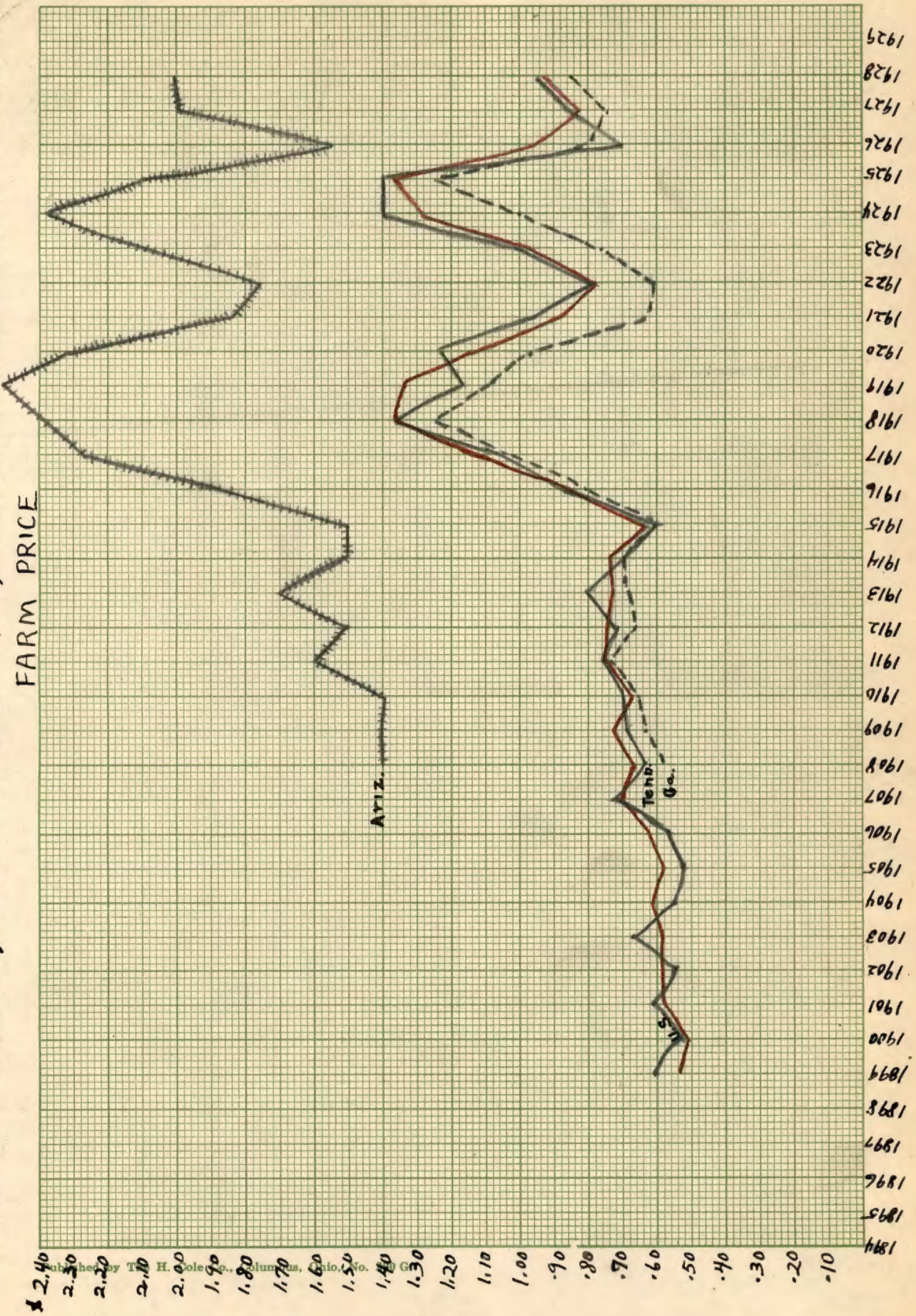
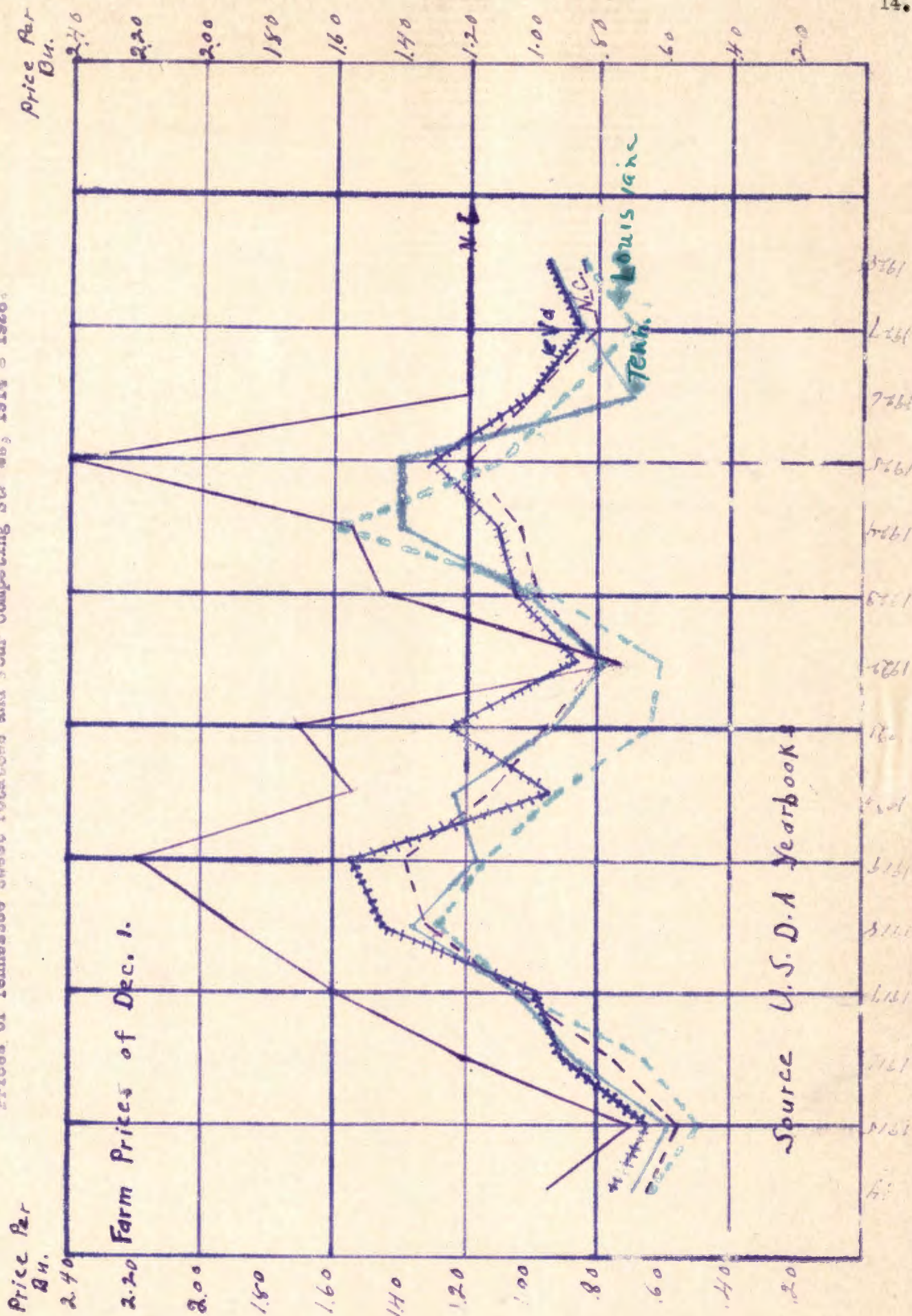


Chart 6
Prices of Tennessee Sweet Potatoes and Four Competing States, 1914 - 1928.



Source U.S. D.A Yearbooks

other states on this chart, holding first place in all but two years. The price fluctuations in New Jersey are also much greater than in any other section. The Tennessee prices compare very favorably with those of the other three states, Virginia, North Carolina, and Louisiana.

Table 8

Daily Range in Prices of Sweet Potatoes to Jobbers on the
Chicago Market, Aug. 19, 1929 to April 11, 1930

	Tennessee Nancy Halls		Va. - N.C. Yellows		Alabama Triumph		New Jersey Jerseys	
	(cents)		(cents)		(cents)		(cents)	
Aug.	Low	High	Low	High	Low	High	Low	High
19	210	215	214	214	185	185		
20	200	215	214	214	175	185		
21	200	215	214	214	175	185		
22	185	200	214	214	175	175		
23	175	185	206	206	165	175		
24	165	175	206	206	165	165		
26	140	150	198	198				
27	140	150	190	190				
28	125	150	183	183				
29	125	140	183	183				
30	125	140	150	160				
31	125	140	183	183				
Sept.								
3	125	140	160	168				
4	125	140	145	153				
5	125	135	137	145			300	300
6	125	125	122	122			275	300
7	125	125	122	122			275	300
9	125	125	107	122			275	300
10	125	125	107	122			275	300
11	125	125	99	114			275	300
12	125	125	99	114			275	300
13	125	135	99	114			275	300
14	125	135	99	114			275	300
16	135	140	107	114			275	300
17	135	140	107	114			275	300
18	135	140	108	114			275	300
19	125	140	107	114			275	275
20	125	135	107	114			250	275
21	125	135	107	114			235	285
23	115	125	114	114			215	235
24	100	100	107	107			175	235
25	90	100	99	107			150	200
26	90	100	99	107			150	200
27	100	100	99	105			150	200
28	100	100	99	105			150	200

(continued)

Table 8 (cont.)

Daily Range in Prices of Sweet Potatoes to Jobbers on the Chicago
Market, Aug. 19, 1929, to April 11, 1930

	Tennessee Nancy Halls		Va. - N.C. Yellows		New Jersey Jerseys		Indiana Yellows		Ill. Nancy Halls & Yellows	
	(cents)		(cents)		(cents)		(cents)		(cents)	
Oct.	Low	High	Low	High	Low	High	Low	High	Low	High
1	100	100	99	105	125	175				
2	100	100	99	105	125	175				
3	100	100	105	105	125	175				
4	110	115	99	105	125	200				
5	115	125	114	114	125	200				
7	115	135	114	114	175	250				
8			114	114	175	250				
9	140	150	114	114	200	225				
10	135	140	114	114	200	225				
11	125	135			200	200				
12	125	135			200	250				
14	115	125	122	122	200	250				
15	115	125	114	114	200	250				
16	110	125	114	114	175	250				
17	100	110	99	99	175	225				
18	100	110	99	99	175	200				
19	100	110	99	99	175	200				
21	110	115	99	99	175	200				
22	100	110	105	105	150	175				
23	100	110	105	105	150	175				
24	110	115	105	107	150	175				
25	100	110	105	107	150	175				
26	100	110	99	99	150	175				
28	100	110	99	99	150	175				
29	100	110	99	99	150	175				
30	100	110	92	99	150	150				
31	100	110	92	92	150	150				
Nov.										
1	100	110	92	92	150	150	175	200		
2	100	110	92	92	150	150	175	200		
4	100	110	92	92	150	150	175	200		
5	100	110	92	92	150	150	175	200		
6	115	125	92	92	150	175	175	200		
7	115	125	92	92	150	200	175	200		
8	115	125	92	92	150	200	200	225		
9	115	125	92	92	150	200	200	225		
11	115	125	84	92	150	225	215	225		
12	115	125	84	92	150	225	215	225		
13	115	125	84	92	150	225	215	225		
14	115	125	84	92	150	175	215	225		
15	115	150	99	107	150	250	215	225	125	175
16	115	150	99	107	150	250	215	235	125	175
18	125	150	107	107	225	250	225	235	125	125
19	125	150	107	107	225	250	225	235	125	125
20	125	150	107	107	225	275	225	235	125	175

(continued)

Table 8 (cont.)

Daily Range in Prices of Sweet Potatoes to Jobbers on the Chicago
Market, Aug. 19, 1929, to April 11, 1930.

	Tennessee Nancy Halls		Va. - N.C. Yellows		New Jersey Jerseys		Indiana Yellows		Ill. Nancy Halls & Yellows	
	(cents)		(cents)		(cents)		(cents)		(cents)	
Nov.	Low	High	Low	High	Low	High	Low	High	Low	High
21	125	150	107	107	215	235	225	235	125	175
22	125	150			225	250	225	235	125	175
23	125	150			225	250	225	235	125	175
26	125	140			200	225	200	225	115	150
29	125	125			200	275	200	225	100	150
Dec.										
3	125	140			200	250	200	225	115	150
6	125	140			200	250	200	225	115	150
10	135	140			200	225	200	210	125	150
13	135	140			200	225	200	210	135	150
17	125	140			200	225	200	215	125	150
20	125	140			200	225	200	225	125	150
27	150	175					225	250	150	150
31	160	165					225	250	175	175
Jan.										
3	150	160			225	250	225	250	125	175
7	125	140			200	225	200	225	125	150
10	135	150			200	225	200	235	125	135
14	135	150			200	225	200	235	125	165
17	135	140			200	225	215	235	125	150
21	150	150					225	250	150	150
24	150	150					250	260	150	175
28	150	150					250	265	150	175
31	140	150					250	265	175	200
Feb.										
4	135	150			250	275	265	265	175	200
7	135	150			250	275	265	265	175	175
11	135	150			250	275	265	275	175	175
14	135	140			250	275	275	275	175	175
21	135	140			250	250	275	275	175	175
25	140	140			250	250	275	275	175	175
28	135	135			250	275	275	275	175	175

(continued)

Table 8 (cont.)

Daily Range in Prices of Sweet Potatoes to Jobbers on the Chicago Market,
Aug. 19, 1929, to April 11, 1930.

	Tennessee Nancy Halls		New Jersey Jerseys		Indiana Yellows		Ill. Nancy Halls & Yellows	
	(cents)		(cents)		(cents)		(cents)	
Mar.	Low	High	Low	High	Low	High	Low	High
4	130	140			250	275	125	175
7	130	135			250	275	125	175
11	130	135	290	300	285	300	125	175
14	130	140	275	300	275	300	125	175
18	145	150			300	300		
21	145	150			325	350		
25	140	150			325	350		
28	140	150			300	350		
Apr.								
1	150	160	325	350				
4	160	160	325	350				
8	165	175	350	375				
11	190	200	350	350				

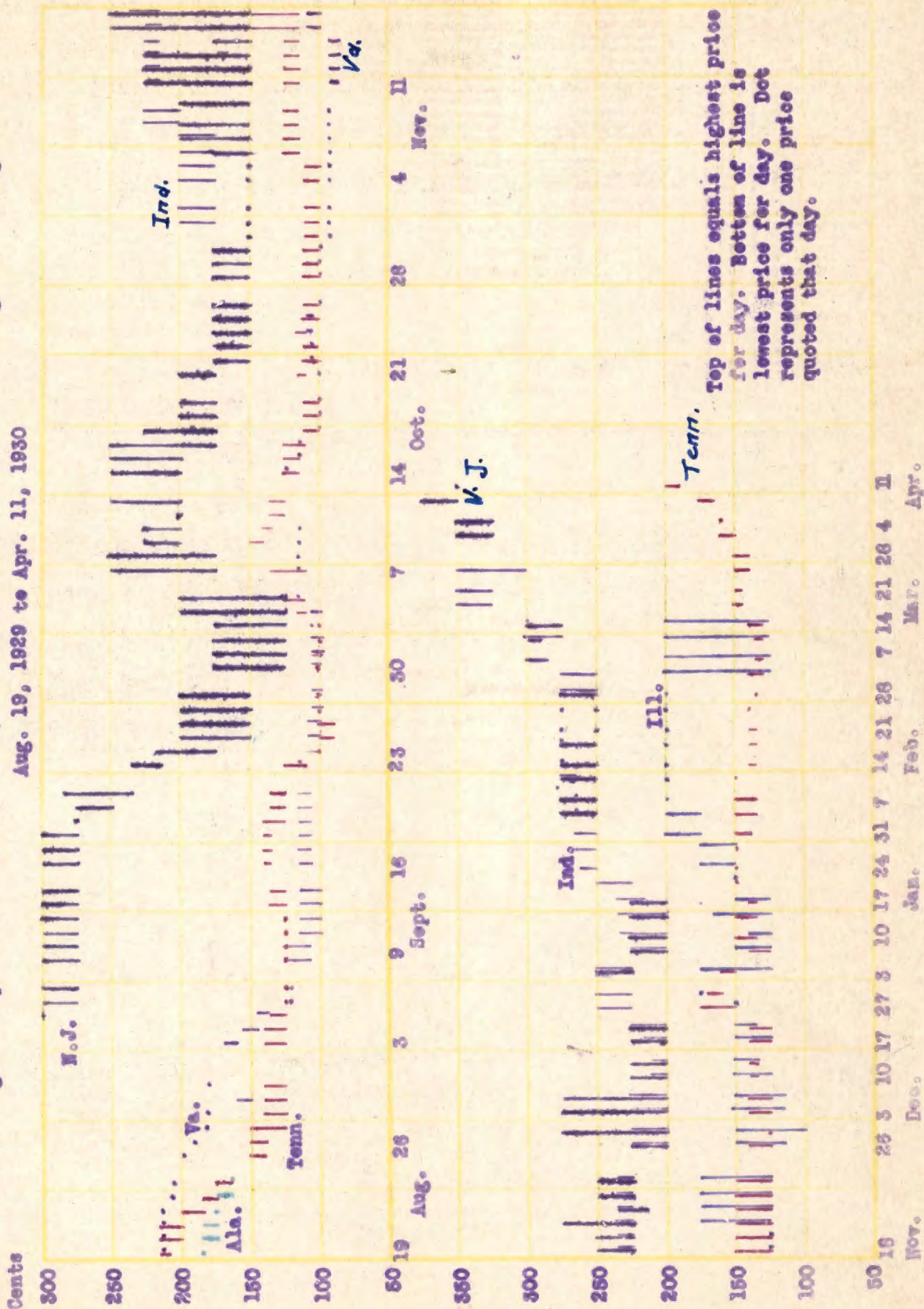
Data from U.S.D.A. sweet potato commodity reports. Reports were daily Aug. 19 to Nov. 26 and semi-weekly thereafter.

The daily price ranges of sweet potatoes from various states on the Chicago market for the 1929 crop year, as reported by United States Department of Agriculture sweet potato commodity reports, is shown on Table 8 and Chart 7. The prices given are those for stock of good merchantable quality and condition only. Two significant facts are shown in the chart, namely, that New Jersey and Indiana sweet potatoes command a premium on this market over those from the states of Tennessee, Virginia, and Illinois; and that the range of prices on New Jersey stock are much greater than the price ranges on stock from the other states. Virginia prices show less range than any other state.¹ The quotations on Tennessee stock show a relatively small range being 5 to 15¢ per

¹ Virginia potatoes were quoted on the basis of price per barrel. For comparison these were reduced to bushel basis by multiplying quoted price by .305.

Chart 7

Price Range: Comparison of Tenn., N. J., Va. Ind., Ill., and Ala. Price Ranges on Chicago Market -
Aug. 19, 1929 to Apr. 11, 1930



bushel in most cases. The greatest range was 35¢ for November 15th and 16th. On these same days the range in New Jersey quotations was \$1.00 per bushel, which was the biggest range for any day on any stock. The most usual ranges in quotations on New Jersey stock was \$0.25 to \$0.75 per bushel. Tennessee sweet potatoes were quoted on practically every report and were more consistently reported than on stock from any state.

Average monthly price ranges are shown in Table 9 for Detroit, Minneapolis, St. Louis, and Cincinnati markets. Quotations on the Detroit and Minneapolis markets show about the same relative ranges as on the Chicago market. New Jersey, Indiana, and Louisiana sweet potatoes brought highest prices on the Minneapolis market while New Jersey and Delaware stock topped the Detroit market. Only Tennessee and Missouri sweet potatoes were quoted with any regularity on the St. Louis market. Tennessee prices were considerably higher throughout and showed less range on the average than the Missouri prices. On the Cincinnati market, Tennessee sweet potatoes were quoted consistently throughout the season and Virginia stock was quoted for about four months, with Tennessee prices higher than Virginia prices each month. The range of prices of each was relatively small.

As is noted in the foregoing discussions and tables, New Jersey sweet potatoes command a premium on the market over the other leading commercial states. This is shown both in the prices from the commodity reports, Tables 8 and 9, and the farm prices received by producers, Tables 6 and 7. Gabriel¹ in comparing the prices of Delaware and New Jersey sweet potatoes says, "New Jersey sweet potatoes command a premium of 25 to 50 cents a basket because they are graded more carefully than Delaware sweet potatoes. New Jersey

¹ Gabriel, H. S., The Marketing of Delaware Sweet Potatoes, 1929, p. 43.

Table 9

Average Monthly Price Ranges of Sweet Potatoes in Various Markets,
1929 Crop.

1. Detroit Market					
Month	<u>Tennessee</u> cents	<u>Virginia</u> cents	<u>New Jersey</u> cents	<u>Maryland</u> cents	<u>Delaware</u> cents
Aug. 19-31	161 - 179	156 - 160			
Sept.	120 - 133	108 - 117	192 - 193	113 - 120	
Oct.	105 - 114	87 - 95	174 - 177	102 - 110	
Nov.	124 - 134	67 - 80	214 - 224	116 - 123	
Dec.	137 - 148		200 - 225	131 - 136	214 - 250
Jan.	146 - 153				218 - 243
Feb.	137 - 144				227 - 250
Mar.	140 - 150				208 - 236
Apr. 1 - 11	168 - 179				

2. Minneapolis Market					
Month	<u>Tennessee</u>	<u>Virginia</u>	<u>New Jersey</u>	<u>Indiana</u>	<u>Louisiana</u>
Oct.	113	119 - 123	202 - 206		
Nov.	132 - 146	107 - 112	218 - 236		
Dec.	150 - 159		252 - 262	265 -	235 -
Jan.	175 -		275 -	241 - 250	225 -
Feb.	167 - 174			292 -	220 -
Mar.	172 -			296 -	
Apr. 1 - 11	185 -				

3. St. Louis Market			<u>Missouri Nancy</u>
Month	<u>Tennessee Nancy Halls</u>		<u>Halls and Beds</u>
Oct.	105 - 106		75 - 90
Nov.	114 - 122		76 - 97
Dec.	134 - 139		74 - 118
Jan.	142 - 144		81 - 127
Feb.	130 - 135		68 - 114
Mar.	132 - 134		85 - 115
Apr. 1-11	161 - 166		124 - 137

4. Cincinnati Market			<u>Virginia Yellows</u>
Month	<u>Tennessee Nancy Halls</u>		
Aug. 19-31	145 - 158		
Sept.	120 - 128		107 - 111
Oct.	95 - 106		97 - 100
Nov.	112 - 119		84 - 89
Dec.	133 - 138		96 - 98
Jan.	132 - 142		
Feb.	129 - 135		
Mar.	129 - 136		
Apr. 1-11	163 - 170		

Data from U.S.D.A. sweet potato commodity reports. Monthly price ranges are average of low and high daily quotations.

sweet potatoes are divided into three grades while Delaware has only two grades. The best grade of New Jersey sweet potatoes is considerably better than the minimum requirements of United States No. 1." Might not this also apply to Tennessee? The fact that New Jersey uses three grades in selling her sweet potatoes, while Tennessee sweet potatoes are practically all sold in one grade probably accounts for the larger range of prices quoted on the former's stock. A more detailed study of grading will be made in a later chapter. Thomsen and Fankhanel¹ report that the difference in the price of moist and dry-fleshed sweet potatoes from year to year is dependent largely upon price of Irish potatoes and the ratio of the production of moist-fleshed to dry-fleshed sweet potatoes.

Prices by Crop Reporting Districts - The price of sweet potatoes received by producers by crop reporting districts in Tennessee in 1924 is shown in Map 1.² District 1 which in that year shipped nearly 90% of the shipments from Tennessee had the second highest price for the year. The average price of three districts in West Tennessee was highest among the three divisions of the state. Middle Tennessee ranked second and East Tennessee third.

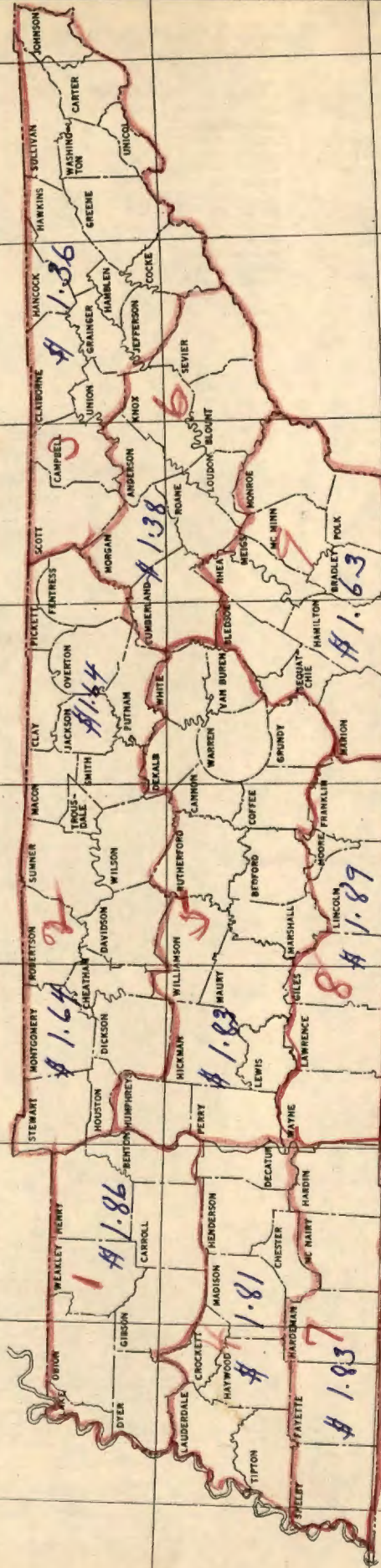
The prices of sweet potatoes by crop reporting districts in Tennessee is available for this one year only. The crops of 1923 and 1924 from which these prices would be taken were years of relatively low production.³ The prices in East Tennessee and Middle Tennessee are determined largely by the production in these two districts, and not being shipping districts the price will not be influenced to a very large extent by production outside the district. Therefore in years when the production outside was relatively large and prices low, prices in shipping districts would be depressed much more than in those districts which made no shipments. In such event the relative prices by crop reporting districts might be reversed.

¹ Thomsen, F. L., and Fankhanel, W. R., Factors Affecting Sweet Potato Prices in Missouri, pp. 14-16

² U. S. D. A. Statistical Bul. 16, p. 152.

³ From data in U. S. D. A. Yearbooks.

Map 1.



RAND McNALLY

SCALE

0 5 10 20 30 40 50 60 70 Miles

Copyright by Rand McNally & Company, Chicago

MADE IN U. S. A.

4. Comparison of Price Trends of Sweet Potatoes

With Price Trends of Other Farm Products.

The real value of any crop is not always fully told by its price. At times the price may appear high but its exchange value for other items may be less than when its price was lower. Also its relative value when compared with other farm crops is not always shown by its price. In order to make this comparison the index numbers of farm prices is plotted on Chart 8. Data for this chart is shown in Table 10.

From 1910 to 1914 the index prices of sweet potatoes generally showed little variation from the index numbers of other farm crops. A close analysis shows that from 1915 until 1920 the relative value of sweet potatoes seemed to have declined when compared with the index numbers for groups of 30 commodities. During the four years, 1917 to 1920, there was considerable difference in the relative value of sweet potatoes, and cotton and grains in favor of the latter. In 1921 the relative value of sweet potatoes was slightly greater than the value of all groups of thirty items but it fell below the

Table 10
Index Numbers of Farm Prices, 1910 - 1931

Year	All Groups 30 I- tems	Grains	Fruits and Vege- tables	Meat Ani- mals	Dairy Pro- ducts	Cotton and Cotton Seed	Sweet Pota- toes
1910	103	104	91	103	100	113	92.6
1911	95	96	106	87	97	101	108.4
1912	99	106	110	95	103	87	100.7
1912	99	192	92	108	100	97	98.8
1914	100	103	100	112	100	85	99.5
1915	102	120	83	104	98	78	88.7
1916	100	126	123	120	102	119	109.3
1917	117	217	202	173	125	187	143.8
1918	176	226	162	202	152	245	176.4
1919	200	231	189	206	173	247	190.2
1920	209	231	249	173	188	248	170.3
1921	205	112	148	108	148	101	130.4

(continued)

Table 10 (cont.)
Index Numbers of Farm Prices, 1910 - 1931

Year	All Groups 30 Items	Grains	Fruits and Vegetables	Meat Animals	Dairy Products	Cotton and Cotton Seed	Sweet Potatoes
1922	124	105	152	113	134	156	114.6
1923	135	114	136	108	148	216	143.1
1924	134	129	124	109	134	211	179.3
1925	147	156	160	139	137	177	195.1
1926	136	129	189	146	136	122	141.7
1927	131	128	155	139	138	128	125.3
1928	139	130	146	150	140	152	133.0
1929							
Jan.	133	115	109	146	145	148	144
Feb.	136	123	111	150	144	149	158
Mar.	140	124	112	160	144	155	162
Apr.	138	120	110	164	142	152	168
May	136	113	119	164	139	148	175
June	135	111	120	163	135	146	180
July	140	122	136	167	135	145	189
Aug.	143	129	160	165	137	146	189
Sept.	141	131	160	156	139	146	178
Oct.	140	128	168	151	141	141	155
Nov.	136	118	159	144	142	132	136
Dec.	135	119	163	143	140	130	137
1930							
Jan.	134	118	167	146	135	128	143
Feb.	131	115	168	150	129	121	151
Mar.	126	107	169	151	126	113	160
Apr.	127	110	187	146	126	120	164
May	124	105	193	142	123	119	175
June	123	106	193	141	118	115	178
July	111	92	173	127	115	99	173
Aug.	108	101	149	119	117	94	189
Sept.	111	100	148	128	123	83	179
Oct.	106	92	127	123	125	76	154
Nov.	103	80	114	118	124	80	130
Dec.	97	80	108	112	117	73	130
1931							
Jan.	94	77	108	112	107	72	136
Feb.	90	75	109	106	101	76	140
Mar.	91	74	109	106	101	80	147
Apr.							157

Base for sweet potatoes 1910-1914 = 100 (calendar years)

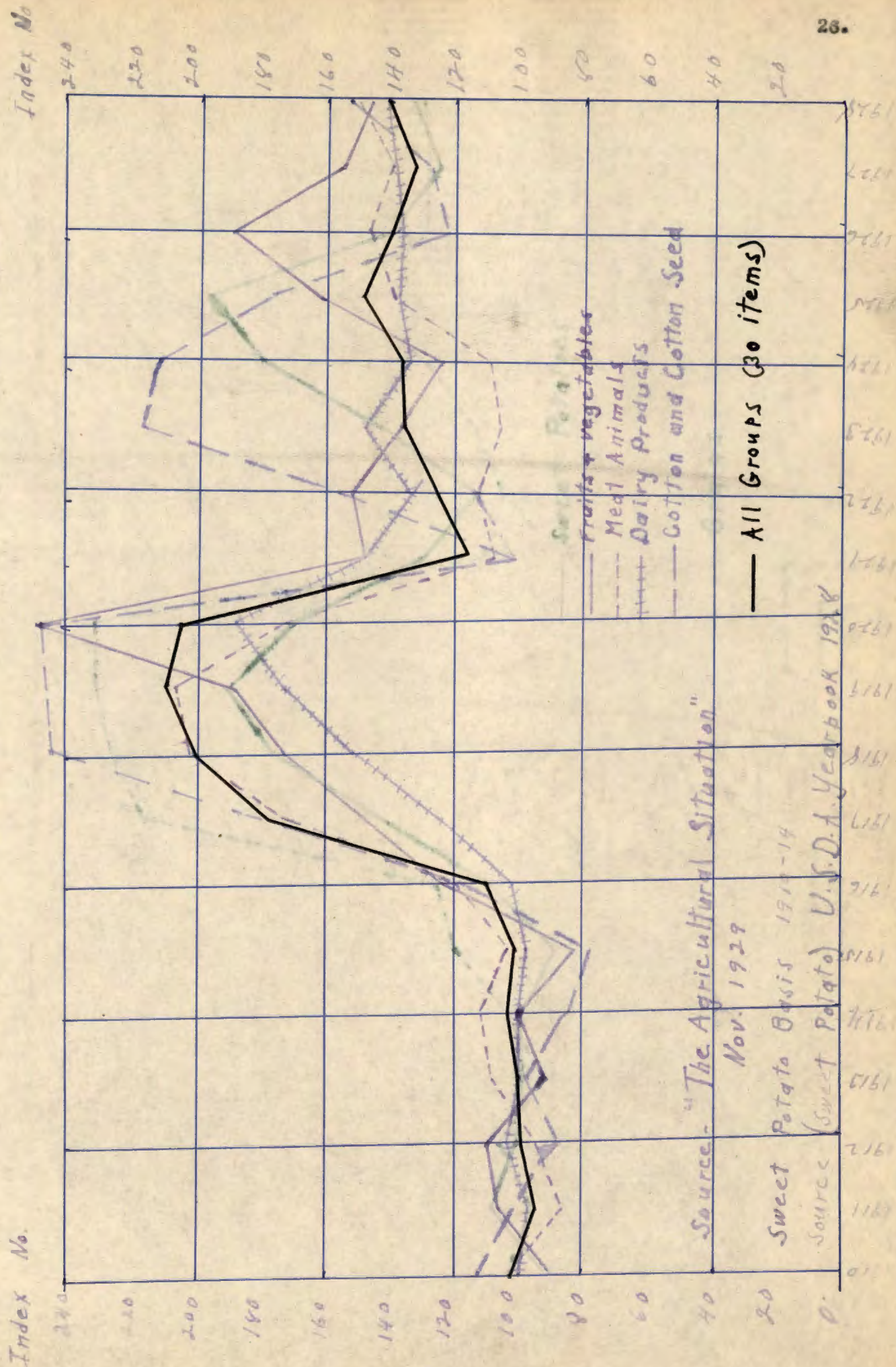
Base for all other, Aug 1909-July 1914 = 100

Sweet potato index numbers figured from estimated average price per bushel received by producers as found in U.S.D.A. Yearbook, 1930.

Other data from "The Agricultural Situation," November 1929.

Chart 8

INDEX NUMBERS OF FARM PRICES, U. S., 1910-1928. (Basis, A. B. 1909-July 1914)



groups again in 1922. From 1923 until 1925 the relative value of sweet potatoes showed a large gain; it reaching its peak in 1925 when its index number was higher than any item shown in this chart. However its value declined considerably in 1926 and in 1927 again fell below the average for all groups and remained below in 1928. Since 1928 sweet potato prices have been somewhat higher than all groups of 30 items (Chart 8a). During this time all groups of 30 items has declined somewhat while sweet potatoes have about maintained the same level.

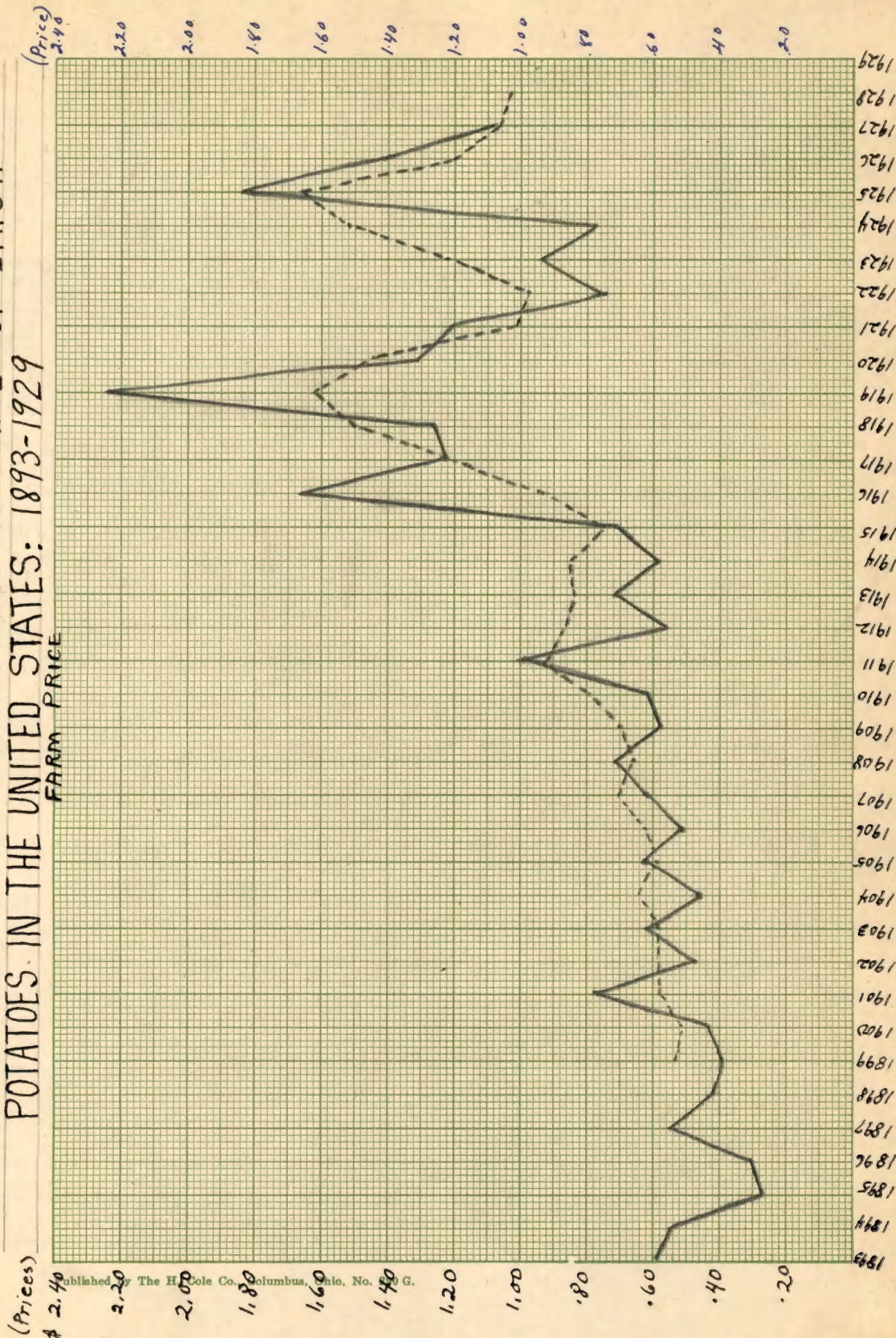
Relation of Sweet Potato Prices to Irish Potato Prices - The composition of the sweet potato and the Irish potato are somewhat similar and tend to replace each other in the diet.¹ Where such condition exists, one would expect that when the price of one was high and the other comparatively low, there would be a shift in consumption from the higher priced one to the lower priced one. This would tend to decrease the demand for the higher priced commodity and increase the demand for the lower priced one, so that the price of the costlier commodity would be lowered and at the same time the price of the other would tend to be raised until the prices of the two were again about equal. In other words one would expect a definite ratio between the price of the two commodities which would not vary to a very large extent except for short periods of time.

The prices of sweet potatoes and Irish potatoes are shown on Chart 9 and Table 11. In studying Chart 9 there does appear to be some similarity in the trends of prices of the two commodities. However there are some years when there is considerable difference in price of the two. During the three years, 1912 to 1914, the average difference of price of the two was 23.3¢ per year in favor of sweet potatoes. This difference appears larger when one

¹ Allred, C. E., Atkins, S. W., and Lucas, B. F., Preliminary Report on Marketing Tennessee Sweet Potatoes, Chapter IV.

Chart 9.

RELATION OF PRICE OF SWEET POTATOES TO PRICE OF IRISH POTATOES IN THE UNITED STATES: 1893-1929



considers the Irish potato price was only 72.4% of the sweet potato price for the three years. Also the difference was greater the third year than the second. In 1916, the Irish potato price was 73.4 cents higher per bushel

Table 11
Relation of Price of Sweet Potatoes to Price of Irish
Potatoes

Year	Sweet Potatoes	Irish Potatoes	Year	Sweet Potatoes	Irish Potatoes
1893		(2) 54.8	1911	92.2	99.6
1894		52.9	1912	85.6	55.6
1895		26.2	1913	84.0	70.6
1896		29.0	1914	84.6	58.0
1897		54.2	1915	75.4	70.8
1898		41.5	1916	92.9	166.3
1899	(1) 53.0	39.7	1917	122.3	122.5
1900	50.6	42.3	1918	150.0	125.6
1901	57.5	76.3	1919	161.7	223.8
1902	58.1	46.9	1920	144.8	121.3
1903	58.3	60.9	1921	110.9	73.9
1904	60.4	44.8	1922	97.4	73.9
1905	58.3	61.1	1923	121.7	94.2
1906	62.2	50.6	1924	152.4	76.5
1907	70.0	61.3	1925	165.9	183.5
1908	66.1	69.7	1926	120.3	140.8
1909	68.5	57.9	1927	106.5	108.4
1910	78.2	61.3	1928	113.1	61.3
			1929		

¹Sweet potato prices 1899-1909 are Dec. 1 prices. Remainder average weighted.

²Irish potato prices 1893-1908 are Dec. 1 prices. Remainder average weighted.

Data from U.S.D.A. Yearbooks.

than sweet potatoes. The next year, however, the prices of the two were about the same. A difference of 82.1 cents per bushel occurs in 1919 in favor of the Irish potato, but again only for one year as the next year sweet potato prices are a little higher. Then 1922 to 1924 there is again a considerable difference with the sweet potato highest each year and the difference between the two increasing each year. Again in 1928 sweet potatoes are considerably higher than the Irish potato. From this discussion it appears that the price of Irish potatoes bears very little relation to the price of sweet potatoes. However in discussing the relation of production of sweet potatoes to their price it will be shown that the price of Irish potatoes does very probably exert an influence

on the price of sweet potatoes.

5. Retail Purchasing Power of Farm Price of Sweet Potatoes, 1919 - 1930

Farm prices of sweet potatoes were generally less than the index of retail prices of all commodities that farmers buy, during three periods from 1910 to 1930 (Chart 10). From 1915 to 1919 the price of sweet potatoes rarely equalled retail prices. This period was one of wartime inflation in which both retail prices and price of sweet potatoes increased. But the latter lagged, which resulted in a decreased purchasing power of the farm price of sweet potatoes. This occurred again during the deflation period, 1920 to 1923; and again during the period 1926 to Jan. 1, 1931. Often during these latter two periods sweet potato prices were as low as pre-war, while retail prices were much higher than pre-war.

Chart 10

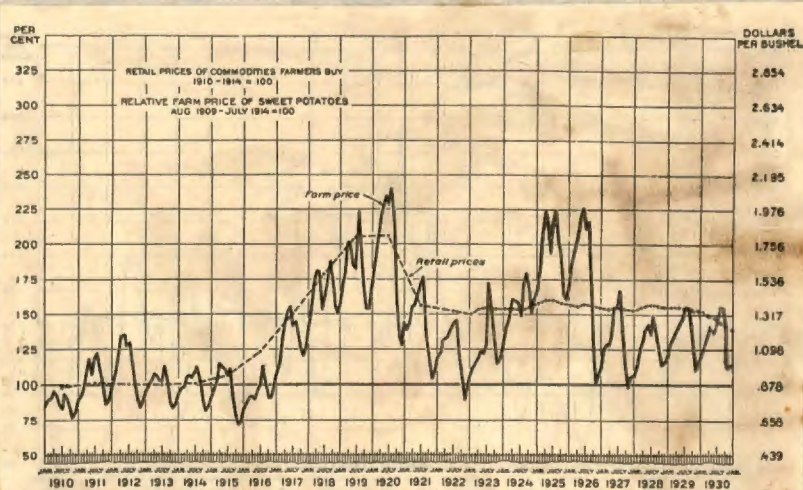


FIGURE 5.—FARM PRICES OF SWEETPOTATOES AND INDEX OF RETAIL PRICES OF COMMODITIES FARMERS BUY

Sweetpotato prices are influenced from year to year very largely by the size of the crop and also by the supply of white potatoes. Sweetpotato prices usually decline from the high point of the season about July to a low point in November or December and in advance thereafter. War inflation and postwar deflation affected sweetpotato prices. High prices of 1925 and 1926 were due to unusually short crops in 1924 and 1925.

Source: U.S.D.A. Yearbook of Agriculture 1930. An extension was made for the year 1930 through January 1, 1931. Index of prices of all commodities purchased by farmers for 1930 taken from The Agricultural Situation, May 1931. Price of sweet potatoes by months for 1920 taken from Farm Economics, Cornell University, February 1931.

During the period from 1915 to 1930 the price of sweet potatoes was considerably higher than retail prices only in 1920, 1925, and 1926. In 1920 the production of sweet potatoes was above normal, but the price of white potatoes was very high (U.S.D.A. Yearbook of Agriculture, 1930, p. 575). This high price of white potatoes probably tended to increase the demand and the price for sweet potatoes regardless of the relatively high sweet potato production. The high price in 1925 and 1926 was due largely to the very short crops of 1924 and 1925.

During the pre-war period, 1910 to 1915, the farm price of sweet potatoes was above that of the retail commodities purchased by farmers about as often as it was below. The sweet potato growers were generally in a relatively better financial condition, so far as retail purchasing power was concerned, during this period than any period up to January 1, 1931.

The price fluctuations in sweet potatoes shown in the chart are the seasonal variations. About the only times since 1915 that the farm price has about equalled the retail prices have been at the peak of the seasonal price.

6. Relation of Acreage, Production, and Car-Lot

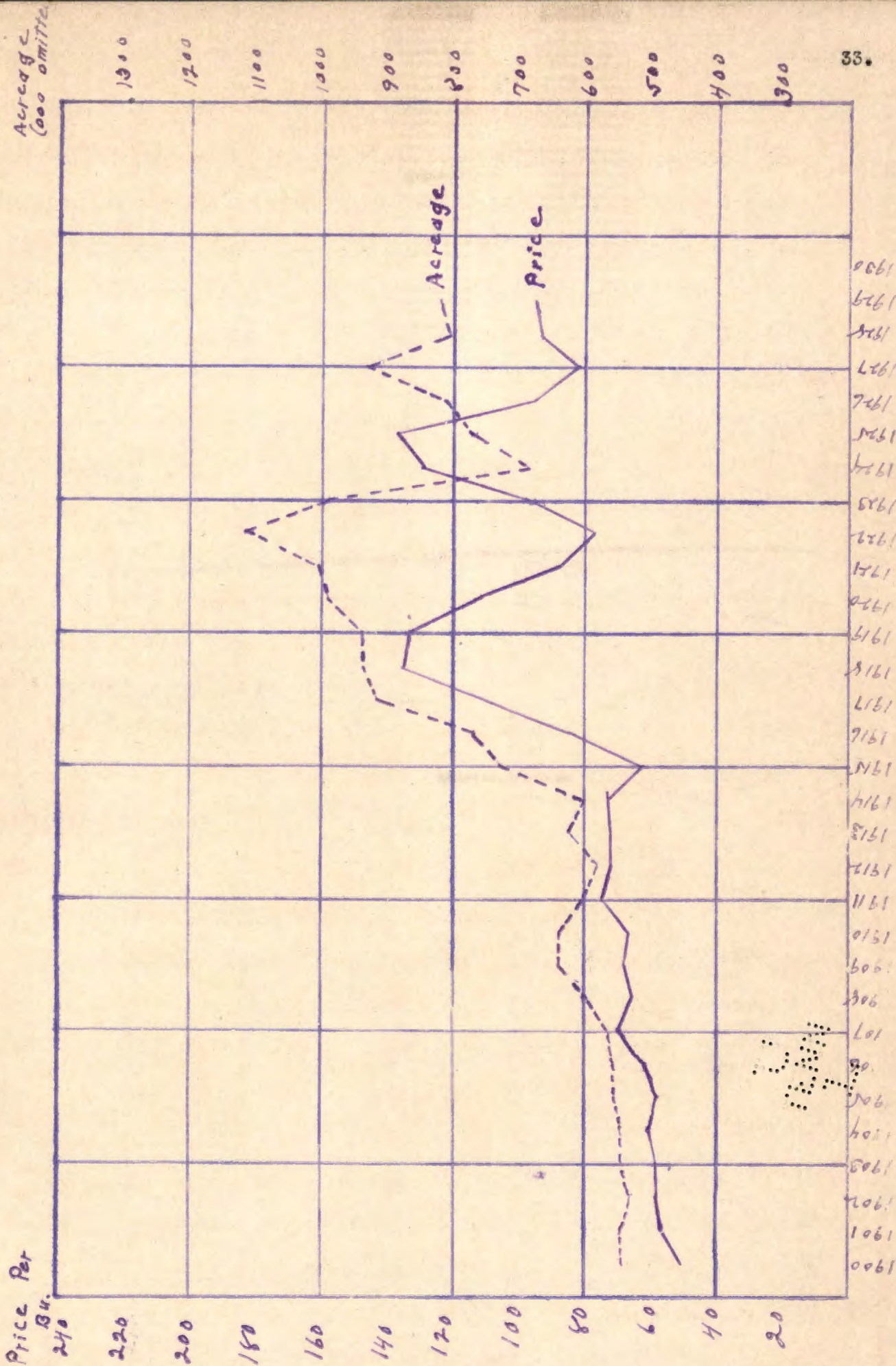
Shipments to Prices of Sweet Potatoes

Since the production of sweet potatoes is to a large extent dependent upon the acreage it would seem therefore that the acreage would have some influence upon their price. On the other hand acreage is very dependent upon the price of sweet potatoes, for when prices are high on a given crop farmers will tend to increase their acreage of that crop and when prices are low they tend to either shift to other crops or to decrease the acreage.

Effect of Acreage on Price - The acreage and price of sweet potatoes is shown on Chart 11 and Table 12. There was little fluctuation in either from 1900 to 1914 and each showed a gradual increase for that period. In 1915 there was a sharp increase in the acreage of sweet potatoes and as would be

Chart 11

Relation of Acreage of Sweet Potatoes to Farm Price of December 1 in U. S., 1900-1929.



expected a corresponding decrease in the price. However, 1916 to 1918 acreage and price both increased very rapidly. Prices here were undoubtedly influenced by the rising index of prices of all commodities brought about by wartime influences. The increase in acreage continued until 1922 while at the same time there was a large decrease in price. Then there was a period of decreasing acreage and increasing prices followed by another increase in acreage and decrease in price. Therefore it appears that when there is a large increase in acreage if other conditions are normal there will be a corresponding decrease in price, and vice versa. ✓

Table 12

Relation of Price of Sweet Potatoes to Acreage and
Production in the United States

Year	Price Dec. 1	Acreage (000)	Production (bushels)	Car-Lot Shipments
1900	50.6	544	48,346	
1901	57.5	547	44,697	
1902	58.1	532	45,344	
1903	58.3	548	48,870	
1904	60.4	548	48,705	
1905	58.3	551	51,034	
1906	62.2	554	49,948	
1907	70.0	565	49,813	
1908	66.1	599	55,352	
1909	68.5	641	57,764	
1910	67.1	641	59,938	
1911	75.5	605	54,538	
1912	72.6	583	55,475	
1913	72.6	625	59,057	
1914	73.0	603	56,574	
1915	62.1	731	75,639	
1916	84.8	774	70,955	
1917	110.8	919	83,822	10,657
1918	135.2	940	87,924	10,540
1919	134.4	941	97,126	15,485
1920	113.4	992	103,924	17,206
1921	88.1	1066	98,654	19,283
1922	77.1	1117	109,394	21,566
1923	97.9	993	97,177	14,530
1924	128.8	688	53,912	16,067
1925	136.4	779	62,319	20,859
1926	95.5	818	82,703	25,755
1927	82.5	933	94,112	23,402
1928	93.6	810	77,661	18,539
1929	94.5	822	84,661	21,905

Data from U.S.D.A. Yearbooks.

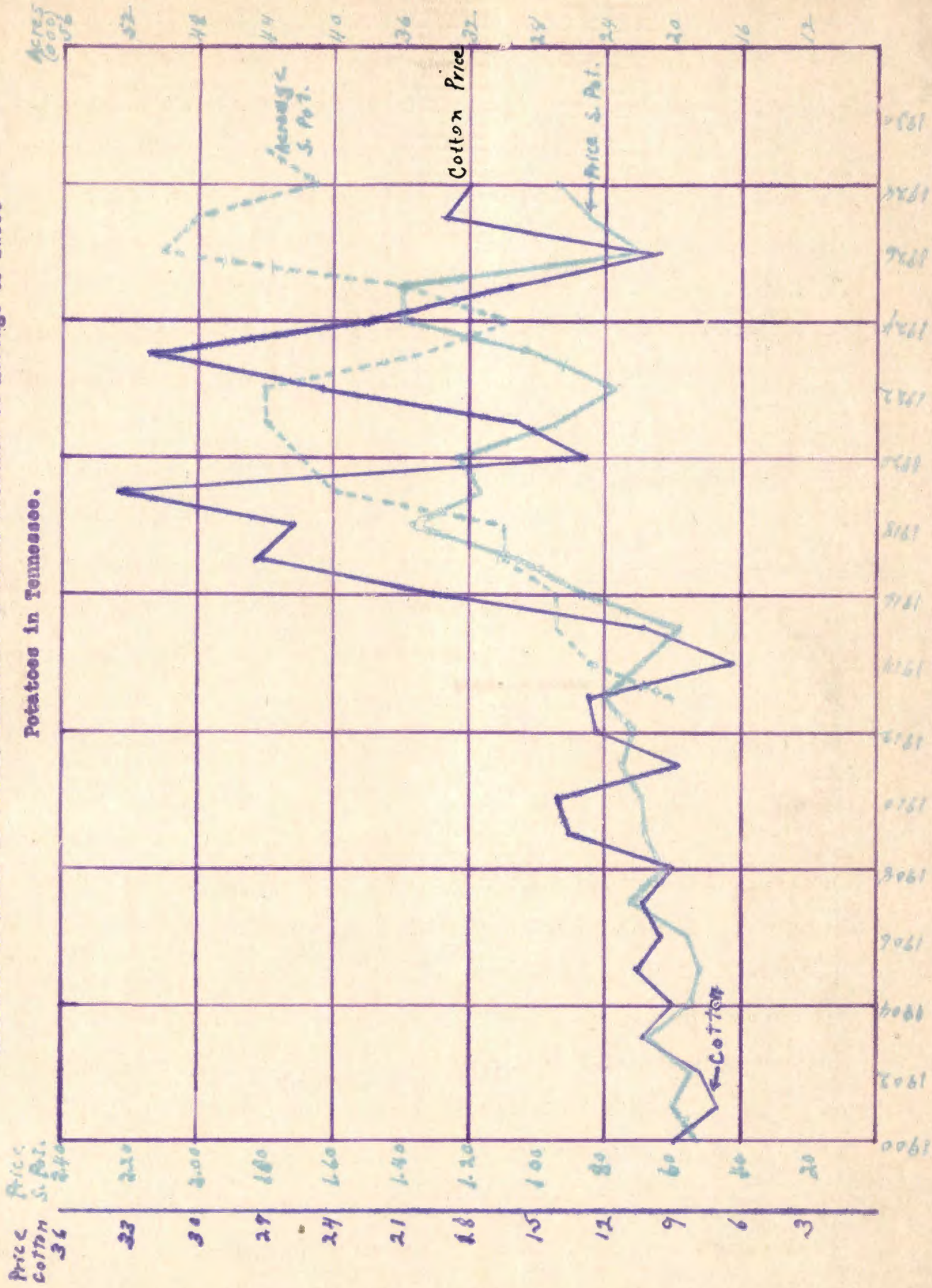
Effect of Price of Sweet Potatoes on Acreage the Following Year - It

can also be seen that the price has some influence on acreage the following year. In general from 1919 to 1929 an increase in acreage follows each peak of prices and a decrease in acreage follows each low year of prices. Some exceptions can be found to this statement. For instance in 1915 the price of sweet potatoes was lower than it had been for a number of years and yet there was a considerable increase in acreage the following year. Again in 1920 and 1921 the price of sweet potatoes had fallen sharply and yet the acreage continued to increase each year following the decline in price.

The area adapted to raising sweet potatoes corresponds very closely to the cotton belt. In studying the labor requirements of the two crops, we find that the peak loads of labor of each come at about the same time of the year.¹ Therefore one would expect that when the farmers of this area increased their cotton area to any great extent there would be a decrease in the acreage of sweet potatoes and vice versa. In other words, the price of cotton would be expected to have an influence on the acreage of sweet potatoes the following year. The price of cotton, price of sweet potatoes and acreage of sweet potatoes in Tennessee are shown on Chart 12 and Table 13. An increasing trend in the acreage of sweet potatoes in the state is very noticeable. Also it is evident that other things besides the price of sweet potatoes influences the acreage of that crop. For example in 1921 the price of sweet potatoes was relatively low but the acreage was maintained the following year. It will be noticed that the price of cotton was also low that year so that there was no tendency to shift from sweet potatoes to cotton. In 1922 the price of sweet potatoes had decreased slightly from the year previous and the acreage of sweet potatoes decreased very sharply in 1923. It will be noticed however that the price of cotton had risen very sharply. In 1923 the price of sweet potatoes had increased, but the acreage continued to fall in 1924. There was evidently a shifting from sweet potatoes to cotton in 1924 owing to the high price of that

¹ U.S.D.A. Yearbook 1931, p. 345.

Chart 12
Relation of Price of Cotton and Price of Sweet Potatoes to Acreage of Sweet
Potatoes in Tennessee.



crop in 1923.

Table 13

Relation of Price of Cotton and Price of Sweet Potatoes To
Acreage of Sweet Potatoes in Tennessee,
1900-1930

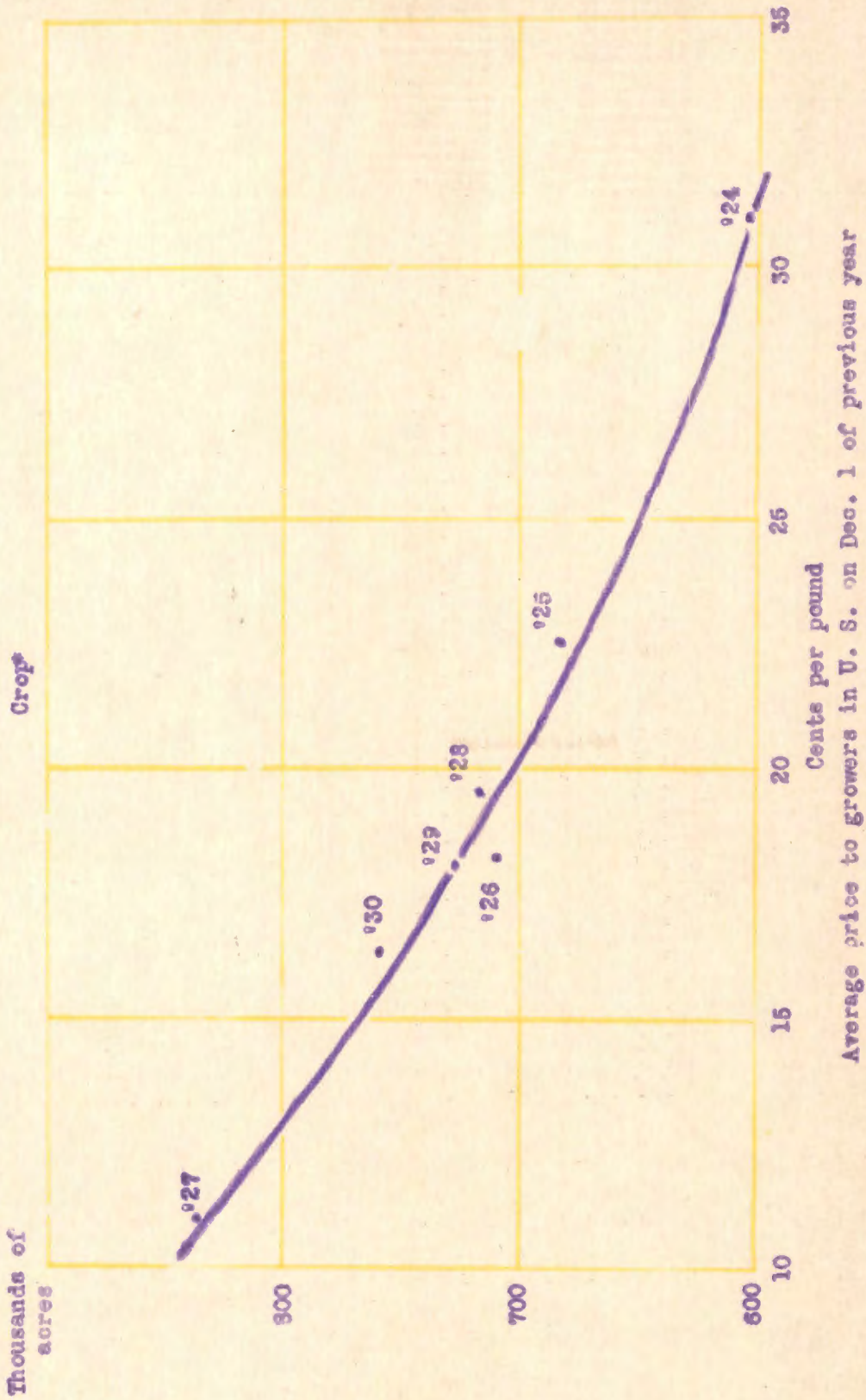
Year	Price Sweet Potatoes	Price Cotton, Lb. Lint	Acreage Sweet Potatoes
1900	53	9.0	no data
1901	60	7.1	" "
1902	55	7.8	" "
1903	67	10.3	" "
1904	55	9.0	" "
1905	52	10.6	" "
1906	56	9.5	" "
1907	72	10.3	" "
1908	63	9.0	" "
1909	68	13.6	" "
1910	69	14.1	" "
1911	75	8.8	" "
1912	72	12.4	" "
1913	80	12.7	20,000
1914	69	6.4	25,000
1915	59	11.3	27,000
1916	87	12.5	27,000
1917	105	27.3	30,000
1918	136	26.7	30,000
1919	117	33.5	40,000
1920	123	13.0	42,000
1921	95	16.0	44,000
1922	78	24.5	44,000
1923	100	32.0	35,000
1924	140	23.2	30,000
1925	140	16.2	36,000
1926	70	10.0	50,000
1927	85	19.0	48,000
1928	95	18.0	41,000
1929	95	16.4	44,000
1930			44,000

Source: U.S.D.A. Statistical Bul. 16 and U.S.D.A. Yearbooks.

The relation of the price of cotton to the acreage of Southern sweet potatoes the following year, from 1924-1930, is shown on Chart 13, which was reproduced from a copy furnished by the U. S. D. A., Bureau of Agricultural Economics. Chart 14 shows a similar relationship for the state of Tennessee from 1920 to 1929 (data in Table 13). It is evident from these charts that the price of cotton does influence the acreage of sweet potatoes the following

Chart 13

Acreage of Sweet Potatoes in Southern States as Related to Price of the Previous Cotton



* (Virginia, North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Louisiana, Oklahoma, and Texas)

Chart 14.

Relation of Price of Cotton in Tennessee to the Acreage of
Sweet Potatoes the Following Year

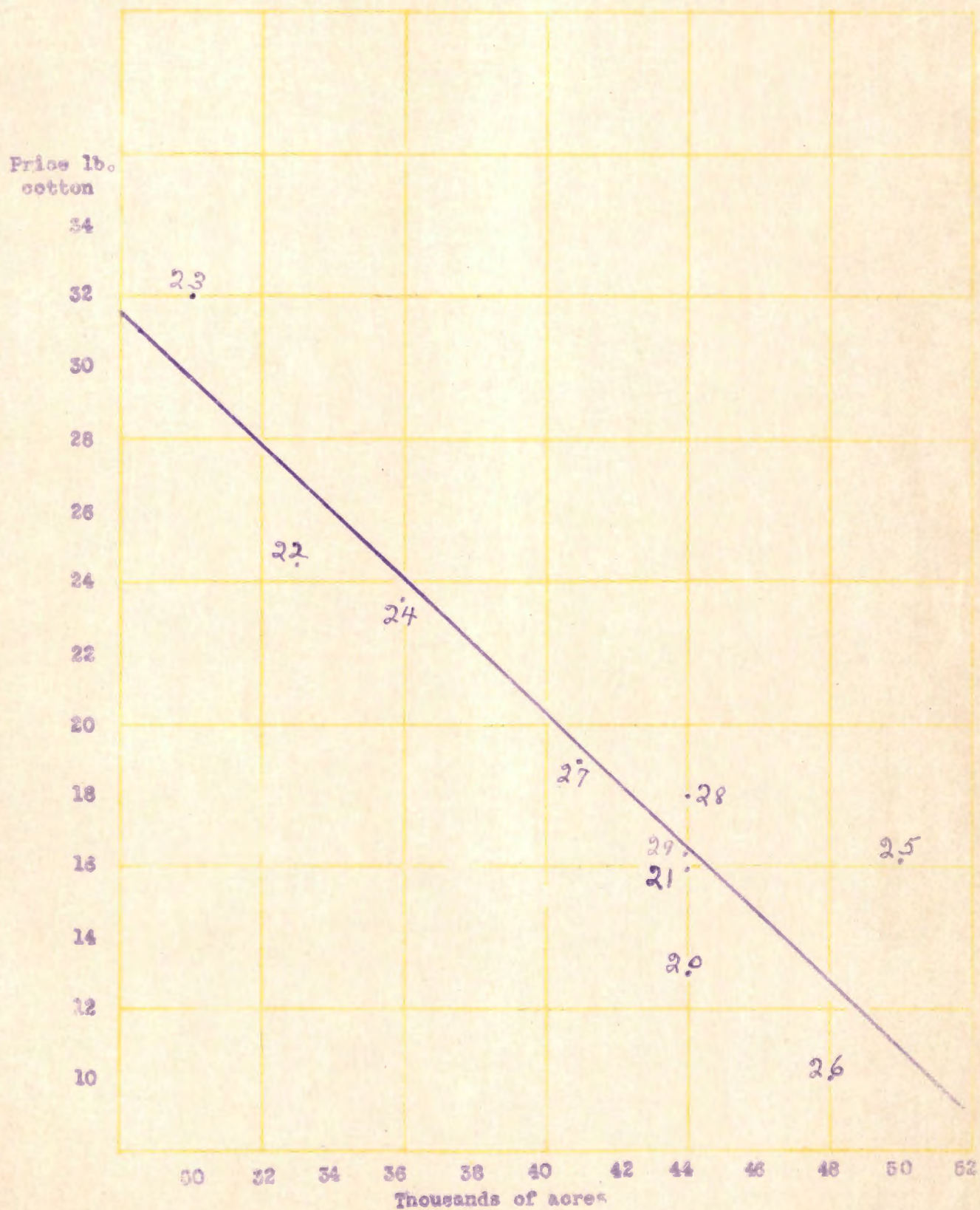
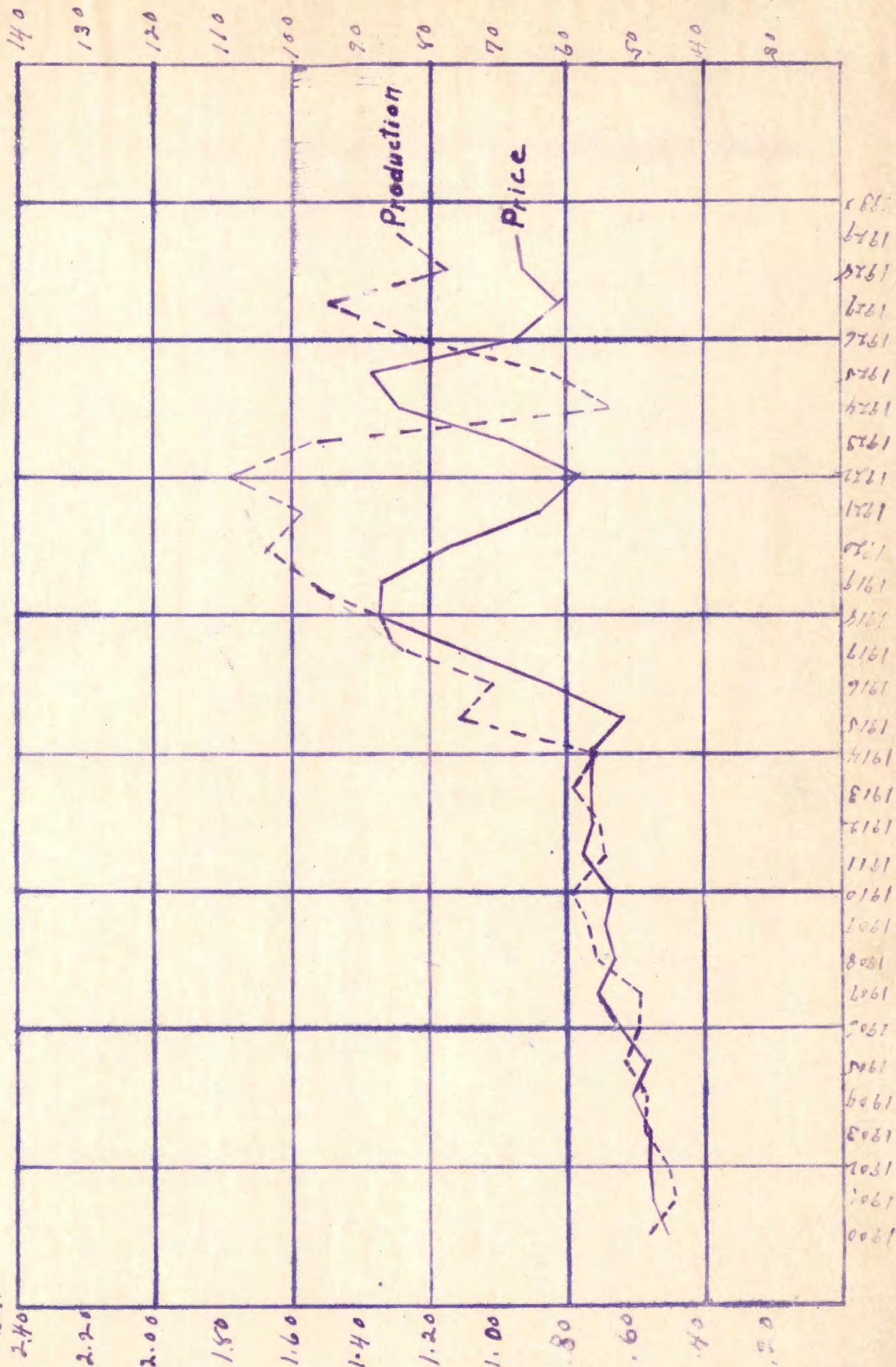


Chart 15.

Relation of Sweet Potato Farm Price December 1 to Production in U. S., 1900-1929.

Production in
(000,000 omitted)Price Per
Bu.

year in those sections where both are grown. In the Northeastern sweet potato section (New Jersey, Delaware, Maryland, and Virginia) very little cotton is raised and therefore this relation would not likely be found.

Effect of Production on Price - In considering the relation of production to the price of sweet potatoes we find a condition very similar to the relation of acreage of sweet potatoes to price. There was a graduate increase of both acreage and price from 1900 to 1914 (Chart 15 and Table 12). From 1915 to 1919 both increased rapidly. Since 1920 the price has been an inverse ratio of production, with a few exceptions such as 1925 and 1929 when there was a small increase in both production and price. Here is an example of where the price of Irish potatoes probably influenced the price of sweet potatoes. By consulting Chart 9 it will be seen that the price of Irish potatoes was very low in 1924 and 1928, both years the price of Irish potatoes being considerably below the price of sweet potatoes. This fact probably lessened the demand for sweet potatoes in 1924 and 1928 so that their prices did not go as high as they would have if Irish potatoes had been higher. In 1925 the price of Irish potatoes increased an average of \$1.09 per bushel over the 1924 price and became higher than the price of sweet potatoes. Then the influence of Irish potato prices was to increase demand for sweet potatoes rather than decrease it. This increase in demand was evidently greater than the increase in production and prices advanced regardless of the increased production. A similar advance in Irish potatoes with similar result occurred in 1929.

A correlation of the price of sweet potatoes and the production of sweet and Irish potatoes is shown in 16 A, B. and C. It is evident from these charts that there are three important factors that influence the price of sweet potatoes. The most important influence is the production of sweet potatoes. An increase in production any year tends to cause a decrease in price. The coefficient of correlation of the first differences of these two series gave a $-.547$ correlation. If the years 1917, 1918, 1921 and 1930 were omitted

Chart 16A

Factors Influencing Price of Sweet Potatoes

Curve I: Annual Changes in Price of Sweet Potatoes as Related to Production

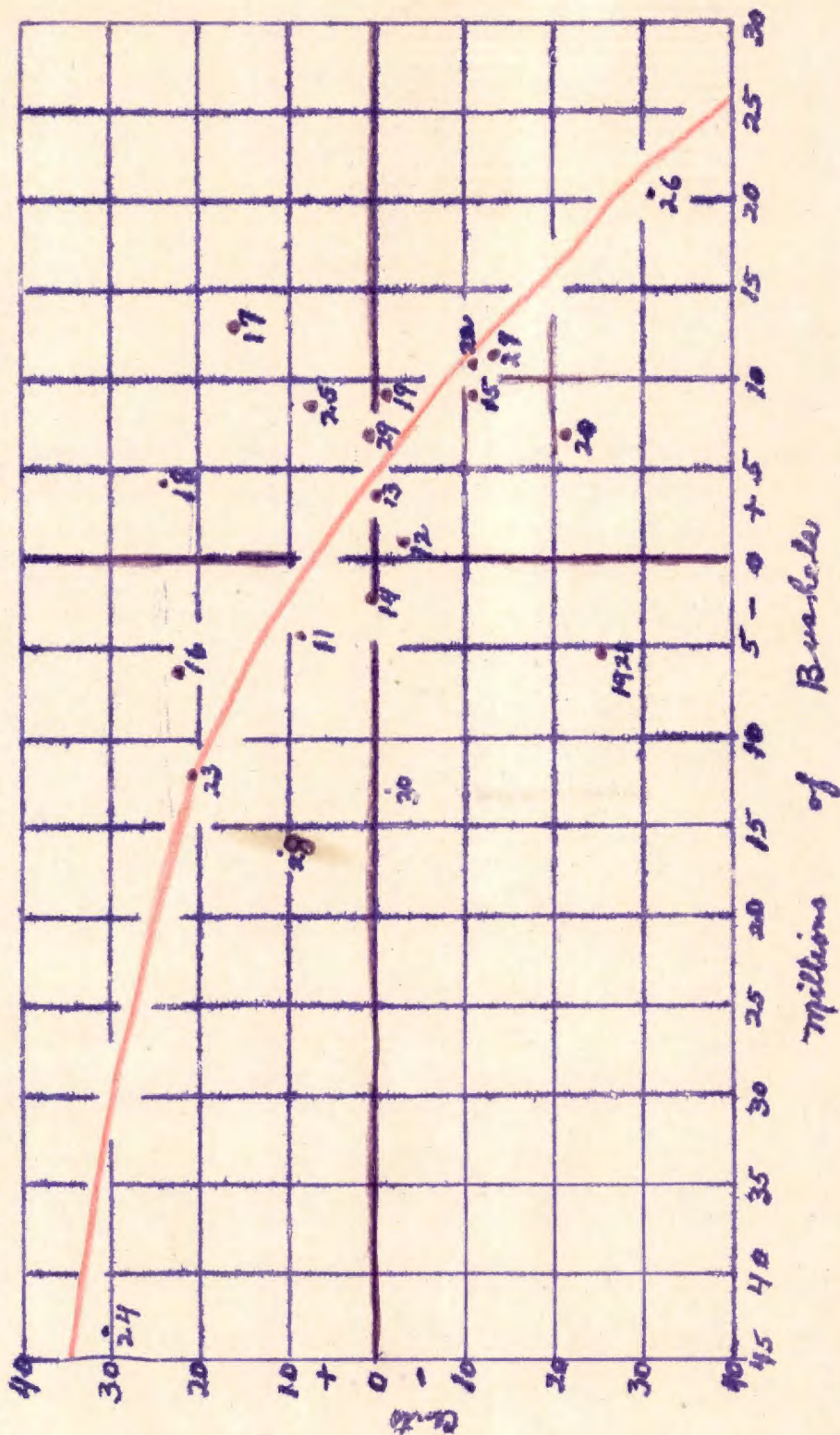


Chart 133

Factors Influencing Price of Sweet Potatoes in U. S.

Curve II: Variation from Curve I as Related to Change in Price Level of All Farm Commodities

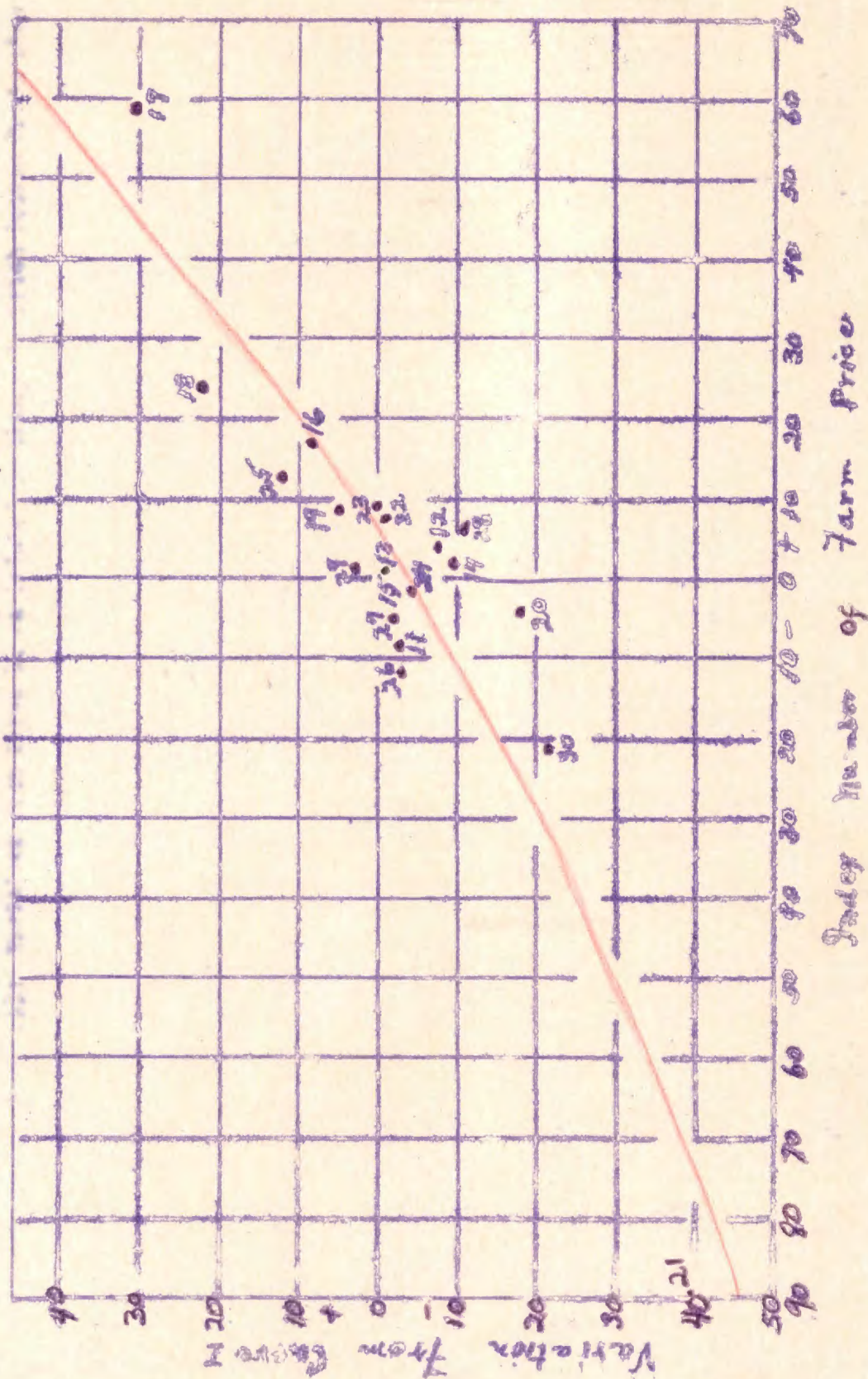
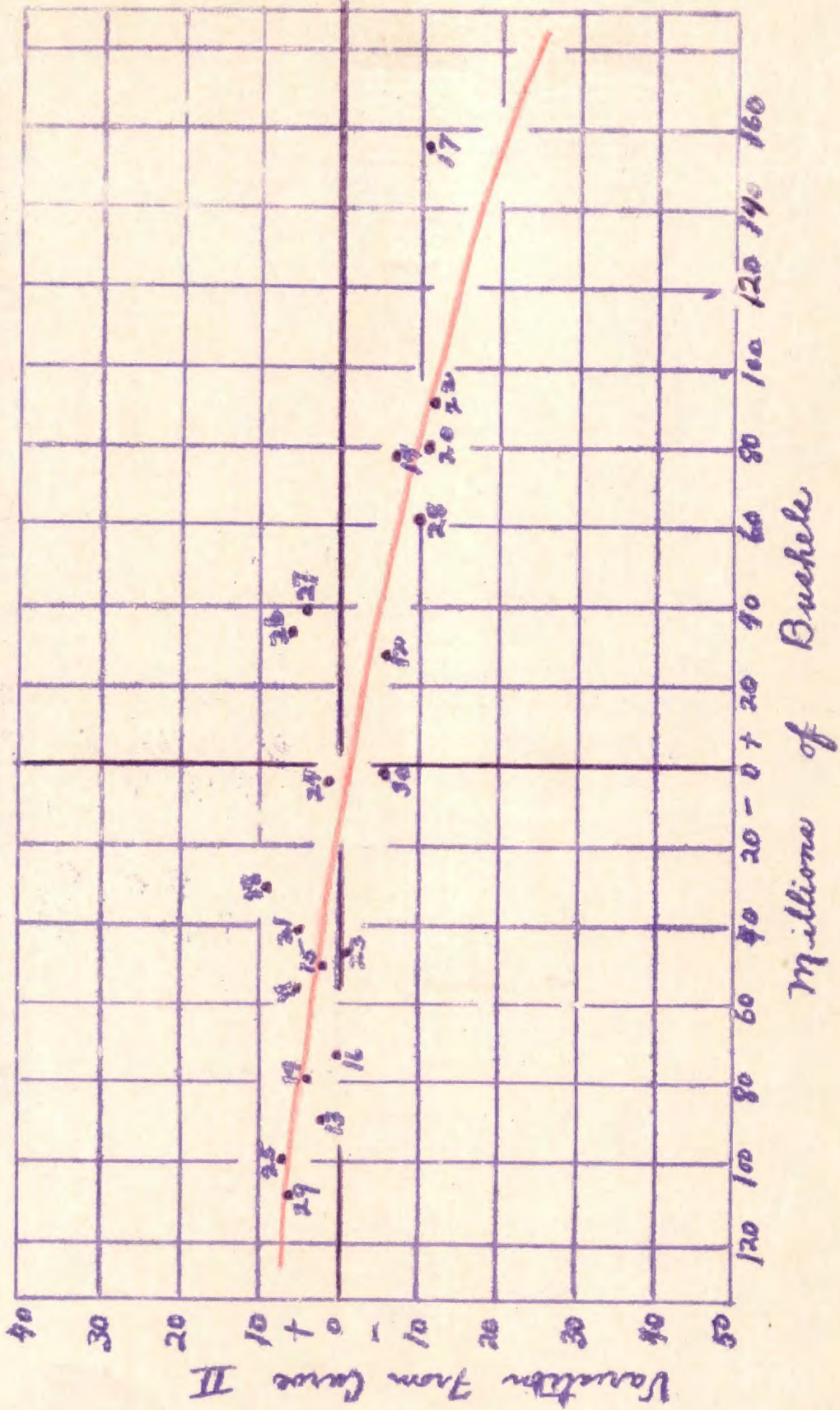


Chart 16C
Factors Influencing Price of Sweet Potatoes
Curve III: Variation from Curve II As Related to Change in Irish Potato Production



this coefficient would be considerably higher. Each of these were years when there was a large change in the price level of all farm commodities, which suggests that the price level of all farm products affects positively the price of sweet potatoes; and such a tendency is evident from Chart 16B. Chart 16C shows that there is also a tendency for the price of sweet potatoes to be influenced negatively by the production of Irish potatoes.

The relation of production of sweet potatoes in Tennessee to the price is shown on Chart 17 (data in Table 14). In Chart 17 the sweet potato prices are deflated by dividing the actual price by the price index of all commodities in order to remove variations due to general price fluctuations. There is considerable variation in price, in this chart from year to year from the normal curve. Some of the conditions which would influence this are the total

Table 14
Relation of Production of Sweet Potatoes to Price in
Tennessee

Year	Dec. 1 Price of Sweet Po- tatoes	Index Price of All Com- modities	Deflated Sweet Potato Price	Production of Sweet Potatoes
	cents	cents	cents	bushels
1919	117	157.6	74.2	4,480,000
1920	123	150.7	81.6	4,248,000
1921	95	88.7	107.1	4,400,000
1922	78	93.8	83.2	4,180,000
1923	100	98.6	101.4	3,850,000
1924	140	100.0	140.0	3,230,000
1925	140	109.8	127.5	2,240,000
1926	70	100.0	70.0	6,150,000
1927	85	99.4	85.5	4,704,000
1928	95	105.9	89.7	3,895,000
1929	95	105.1	90.4	4,400,000

production of sweet potatoes in the United States, production in the North-eastern section, and production of Irish potatoes.

Chart 17.

Price: Relation of Production of Sweet Potatoes in Tennessee to Price Received by Producers.

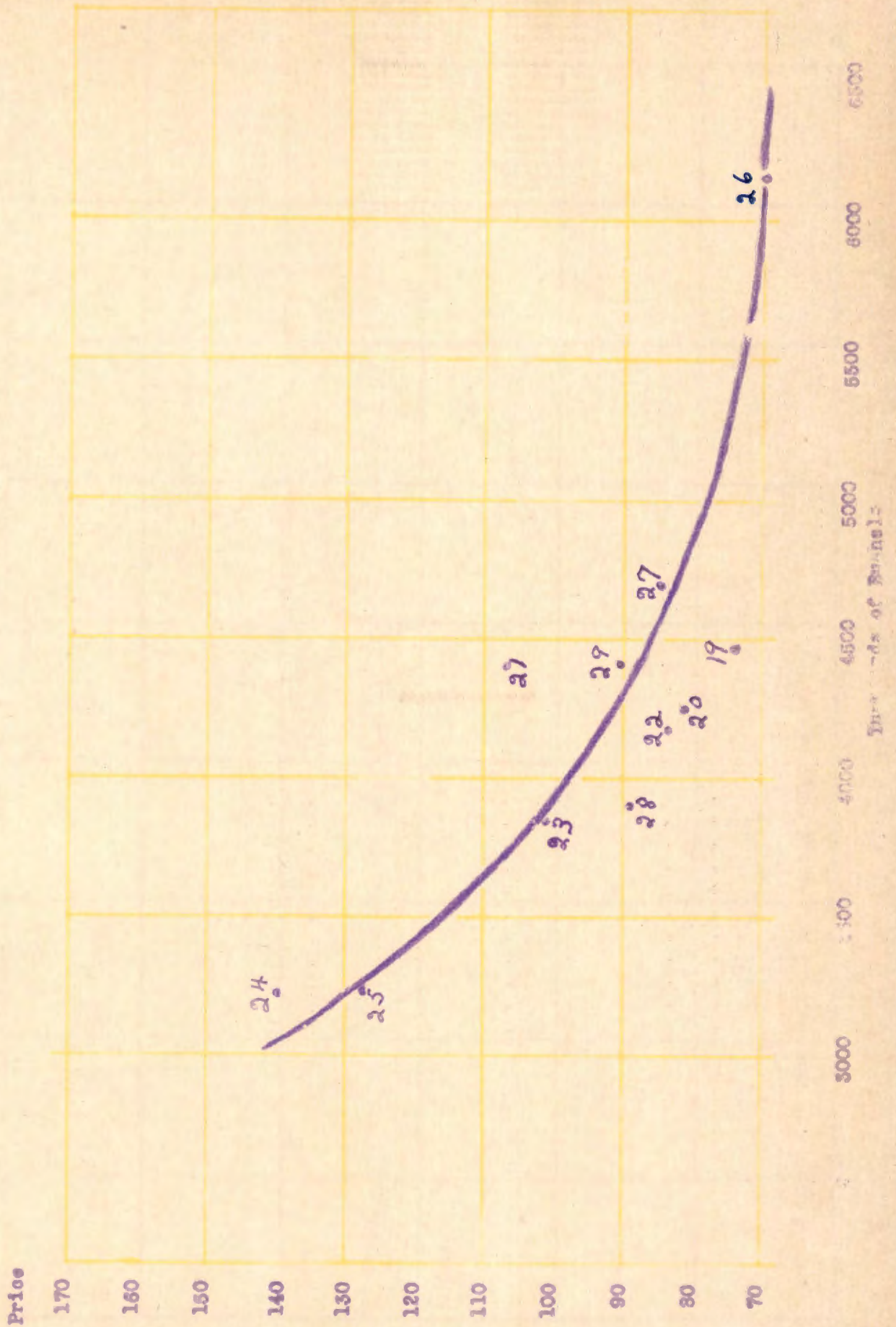
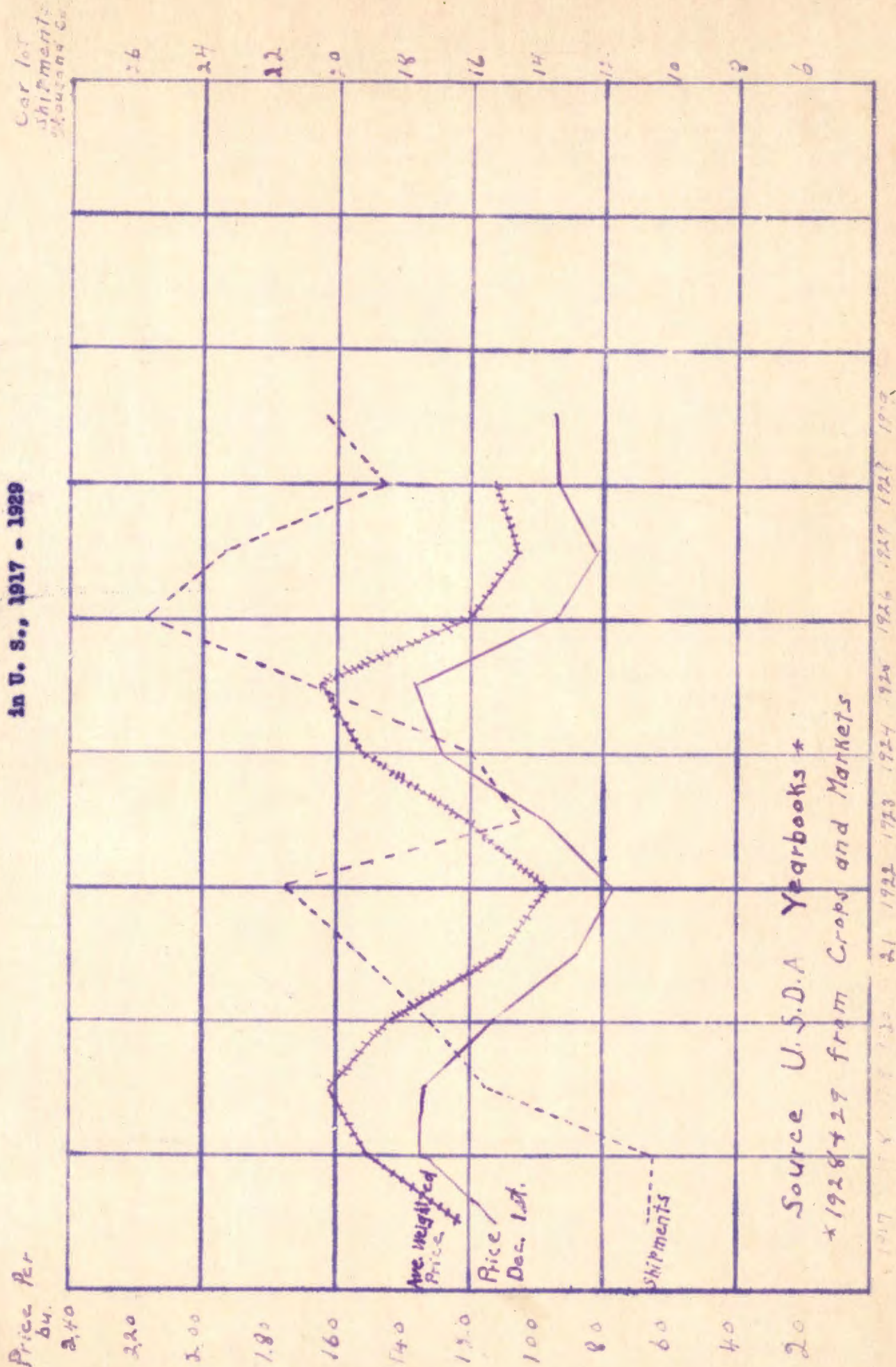


Chart 18

Relation of Car-Lot Shipments to Price of Sweet Potatoes
in U. S., 1917 - 1929



Relation of Carlot Shipments to Price - The carlot shipments of sweet potatoes and price received by producers in the United States is shown in Chart 18 (data in Table 12). There is very little relation between the two. A very small part of the production in the United States is shipped, in the Southern section being only 3.7% of the crop in 1920.¹ However, in the three highest years of shipments the price was relatively low. An increasing trend in the shipments is very noticeable. The average weighted price throughout the year is also included on this chart. There appears to be no relation between the difference in average weighted price and December 1st price, and the carlot shipments.

7. Seasonal Prices of Sweet Potatoes

The sweet potato is harvested in the fall, principally from Sept. 15 to Nov. 15. However, the crop is marketed throughout the year. Where such conditions exist a regular seasonal cycle of prices of that product is expected. As was noticed in Chart 3, such cycles do exist and there is considerable fluctuation in prices from month to month. The average monthly price received by producers in the United States for three periods is shown in Chart 19 and Table 15. Chart 19 is arranged on a crop year basis, with July coming first since the first new potatoes come on the market at that time. Prices open on the new crop relatively high and an upward trend is noticed to August 15. Few potatoes are on the market during this period. From this time there is a gradual decline to November 15. This is about the end of the digging season, when the crop is being marketed rapidly. Then prices advance as the season progresses. However, it is noted that the advance is not continuous throughout the year as would be expected, but after

¹ Gatlin, G. O., p. 5.

Chart 19

PRICE RECEIVED BY PRODUCERS FOR SWEET POTATOES, BY MONTHS, AVERAGE FOR 1910-1913, 1914-1920, AND 1921-1925.

(cents)

U.S.

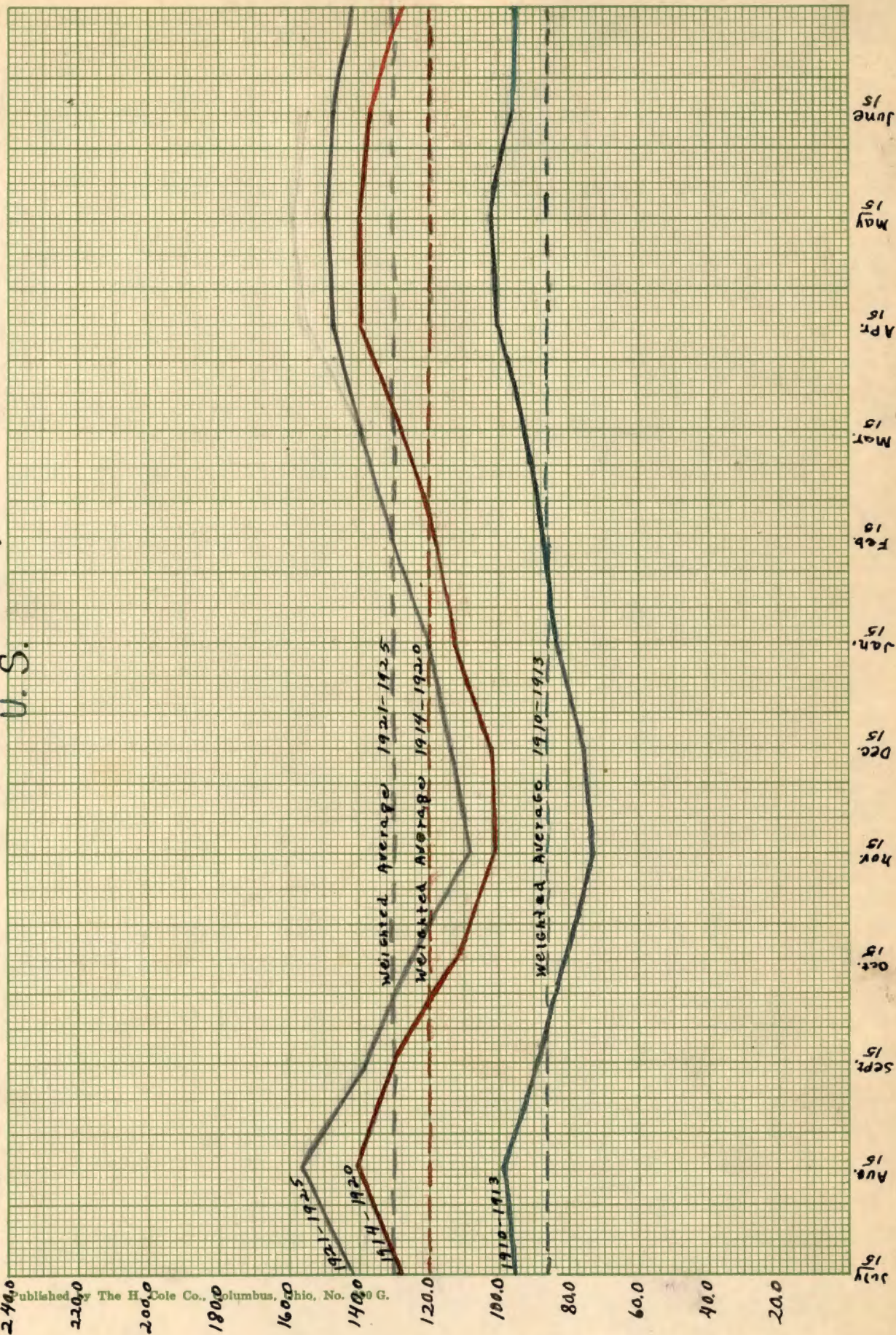


Table 15
Estimated Monthly Prices Received by Producers for Sweet Potatoes in U.S., 1910-1929

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Weighted Ave.
Average 1910-1913	95.0	97.9	89.0	79.8	72.8	75.7	83.0	87.0	92.0	99.6	102.0	97.1	85.1
1910-1913 % of Nov.	130.4	134.4	122.2	109.6	100.0	104.0	114.0	119.5	126.4	136.8	140.1	133.4	116.9
Average 1914-1920	128.9	139.8	129.6	111.7	101.4	102.4	112.1	118.0	128.2	138.8	139.8	137.3	118.8
1914-1920 % of Nov.	127.1	137.9	127.8	110.2	100.0	101.0	110.6	116.4	126.4	136.9	137.9	135.4	117.2
Average 1921-1925	141.6	156.1	138.4	124.7	109.2	113.1	120.4	130.0	139.1	147.4	149.1	147.2	129.7
1921-1925 % of Nov.	130.9	142.9	126.7	114.2	100.0	103.6	110.3	119.0	127.4	135.0	136.5	134.9	118.8
1910	73.5	82.9	79.5	75.7	67.8	70.9	79.1	81.6	87.3	95.0	103.6	93.8	78.7
1911	104.1	107.1	97.9	85.6	76.2	79.0	86.9	93.5	102.4	117.4	118.6	111.4	92.2
1912	113.0	102.5	88.9	79.9	73.7	77.2	83.7	87.0	90.8	94.3	93.2	90.8	85.6
1913	89.4	98.8	89.9	78.0	73.4	75.8	82.5	86.1	87.3	91.9	92.7	92.5	84.0
1914	94.5	98.4	90.1	79.3	72.3	74.9	81.0	85.0	90.8	100.8	98.1	97.6	84.6
1915	93.1	97.2	80.0	69.7	62.9	65.0	72.7	76.4	80.1	81.0	78.9	83.9	75.4
1916	87.5	99.0	88.1	80.3	80.3	86.4	92.9	100.0	115.5	126.0	132.6	135.8	92.9
1917	124.4	126.3	120.3	110.5	105.6	110.8	123.1	129.8	149.2	158.1	158.2	134.0	122.3
1918	142.1	151.6	164.3	152.4	137.4	131.8	137.8	149.2	157.2	176.2	174.4	162.7	150.0
1919	159.7	195.4	174.6	150.9	135.1	135.6	151.1	163.6	179.2	193.9	199.7	205.2	161.7
1920	200.7	210.8	190.0	138.7	116.5	112.3	126.3	122.1	125.5	135.7	136.8	141.9	144.8
1921	151.2	154.2	118.2	104.0	91.5	95.3	102.3	106.9	114.3	116.0	117.1	120.7	110.9
1922	125.3	127.5	106.0	90.4	79.0	84.8	92.5	96.9	100.1	103.8	107.9	107.4	97.4
1923	112.1	151.3	133.6	114.8	101.0	103.8	112.5	123.7	129.0	140.4	139.2	138.9	121.9
1924	130.7	151.4	157.0	145.1	130.3	140.1	145.5	160.2	180.8	196.2	189.1	170.2	152.4
1925	188.7	196.3	177.4	169.4	144.4	141.5	149.3	162.4	171.4	180.4	192.2	198.8	165.9
1926	185.6	189.0	153.9	110.6	88.5	94.0	97.8	109.0	112.3	112.8	118.9	136.0	120.3
1927	136.4	146.7	121.9	98.1	86.5	91.9	93.4	98.6	109.6	115.1	121.4	124.7	106.5
1928	119.5	131.0	120.9	111.2	100.2	101.8	104.2	113.7	117.0	120.8	125.9	129.8	113.1
1929	135.9	136.2	127.9	112.5	97.7	98.9							

Data from U.S.D.A. Yearbooks

April 15th there is little advance and an actual decline from May 15th to July 15th. The seasonal trends appear to be more pronounced in the latter years than in the former when considering only the price decline after August 15th and the price advance after November 15th. However, the price level for the latter periods are higher and when changes are expressed on a percentage basis there is little difference.

Data similar to the above for Tennessee is shown on Chart 20 and Table 16. The seasonal variations are somewhat similar to those for the United States as a whole. However, the fluctuations are more pronounced in Tennessee than for the United States. Taking the period 1914 to 1920 for comparison

Table 16

Monthly Farm Prices of Sweet Potatoes in Tennessee (a)

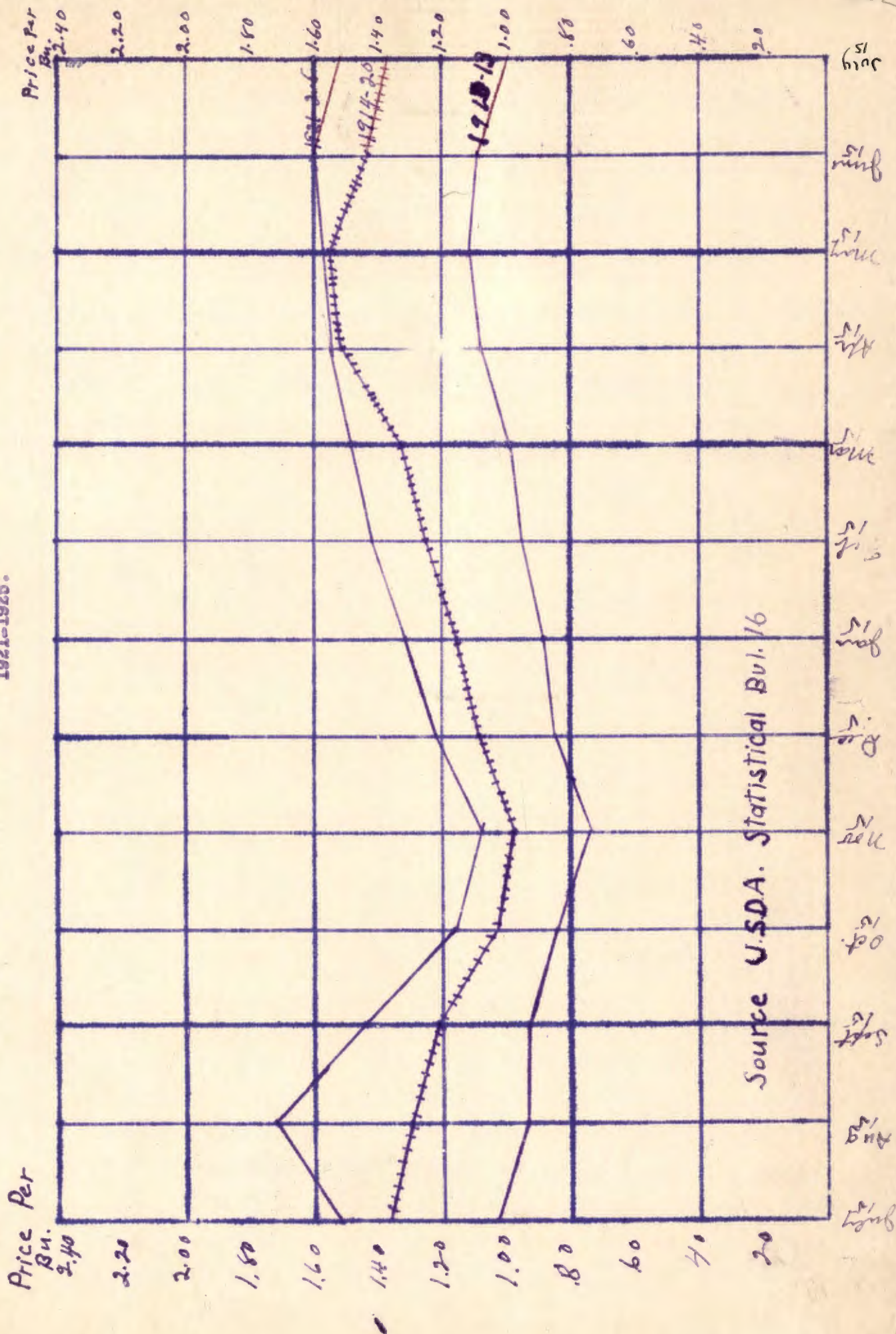
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	June
1910-13												
Actual	103	94	93	84	74	85	89	95	99	108	111	109
Percentage	139	127	126	114	100	115	120	128	134	146	150	147
1914-20												
Actual	137	130	121	103	98	109	116	125	133	151	155	143
Percentage	140	133	124	106	100	111	114	128	136	154	158	146
1921-25												
Actual	152	172	144	117	108	122	132	142	149	153	157	160
Percentage	141	159	133	108	100	113	122	132	138	142	145	148

^a Source: Computed arithmetic average from data in Table 5.

the decrease in price from the beginning of the season in Tennessee was 39 cents while for the United States as a whole it was only 27.5 cents. The increase from November to peak price the last of season in Tennessee was 57 cents while for the whole United States it was 36.9 cents. The seasonal fluctuations are also more pronounced in Tennessee in the latter periods than in the former. Another interesting feature of the Tennessee prices is that in the last period 1921 to 1925 the price continued to advance to the end of the season and did not slump the last month as was the case for the other two periods and for the United States as a whole.

Chart 20

Monthly Farm Price of Sweet Potatoes in Tennessee, Average for 1910-1913, 1914-1920, 1921-1925.



In considering the seasonal price cycles by individual years we find a great deal of variation from year to year. The monthly prices received by producers for 1914, 1922, 1924, 1926, and 1927 are plotted on Chart 21 for the United States, and on Chart 22 for Tennessee (data in Tables 15 and 5). These years were taken because they represent different conditions as to production and periods of prices. The year 1914 is taken to represent the two first periods discussed above. 1924 is a year of low production and high prices while 1922 is a year of high production and low prices. The year of 1926 was the year of highest production in Tennessee with very low prices. In 1927 the production declined in Tennessee, while in the United States as a whole the production in 1927 was greater than in 1926. However the production was large both years for both Tennessee and the United States with very low prices.

The crop year 1914 showed relatively small fluctuation in prices as was typical of the first period. For the years of a large production 1922, 1926, and 1927 the increase in prices after November 15th was much smaller than the year of small production 1924 in both the United States as a whole and in Tennessee. Does this indicate that the years of high production the prices will be relatively stable and advance little as season progresses? The production of sweet potatoes and the advance in prices after November 15th is shown in Table 17 for both the United States and Tennessee from 1920 to 1929. For the United States as a whole there has been a very close negative correlation between the size of the crop and the advance in price after November 15th, the coefficient being $-.888$. If we were to exclude the years 1928 and 1929 the coefficient would be $-.97$. For Tennessee the relation is not so close, the coefficient being $-.503$. However if we excluded the years 1927 and 1928 the coefficient would be $-.616$. Therefore it appears that the tendency is for the greatest price increases in years of smallest production.

Chart 21

Price Received by Producers for Sweet Potatoes by Months, United States, 1914, 1922, 1924,
1926 and 1927.

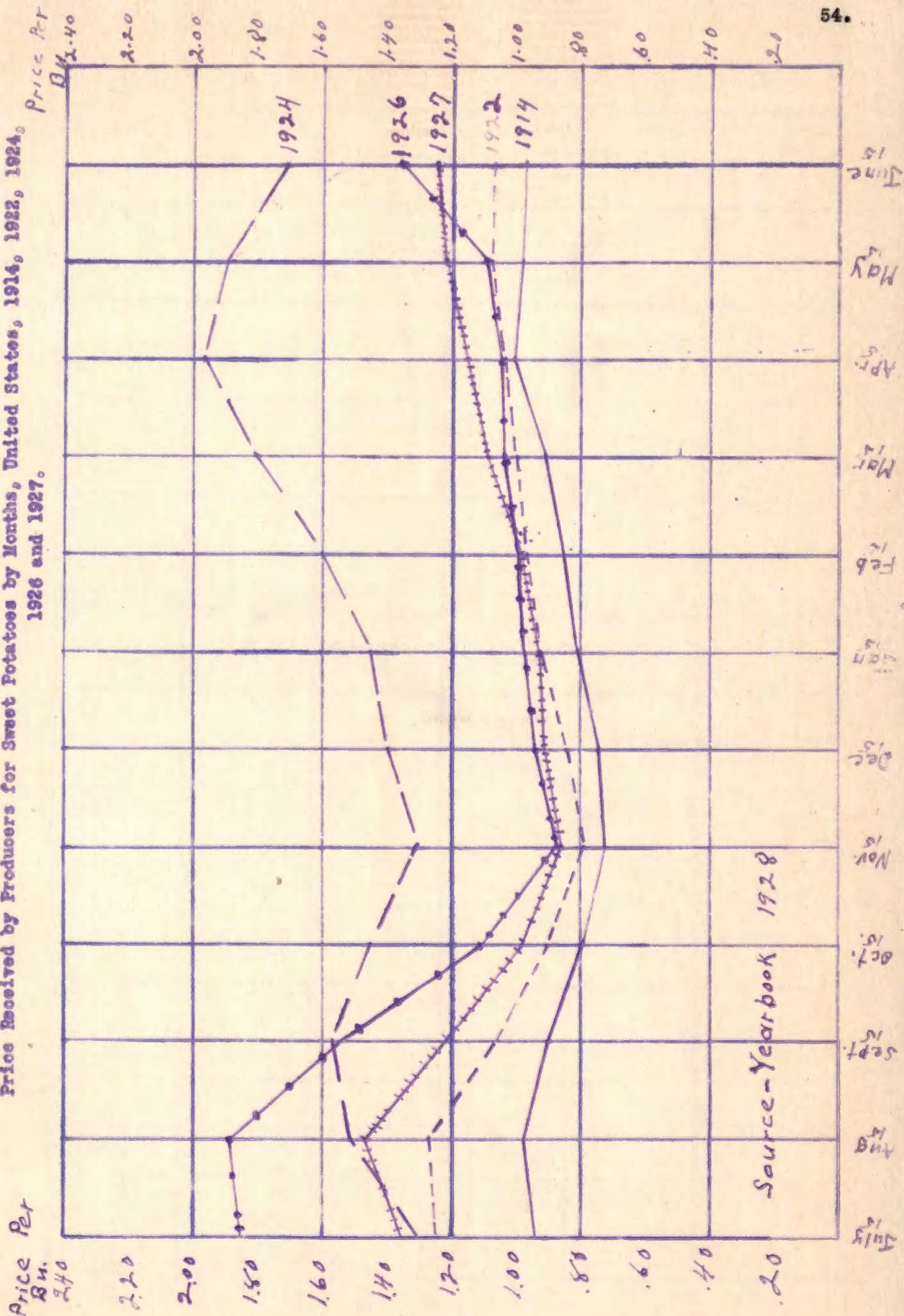


Chart 22

Farm Prices of Sweet Potatoes in Tennessee by Months, 1914, 1922, 1924, 1926 and 1927.

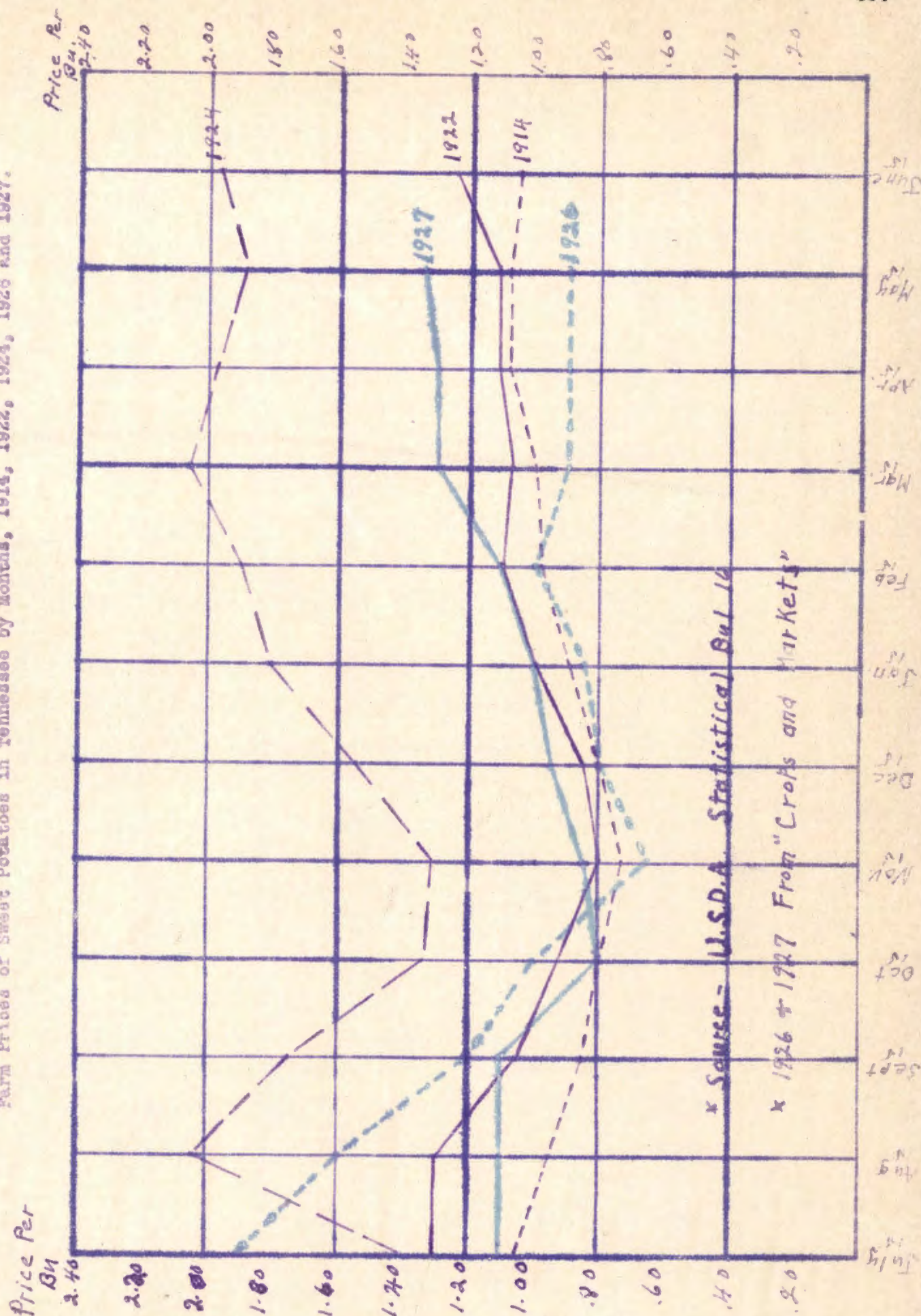


Table 17

Relation of Production of Sweet Potatoes to Increase in Price of
Crop After November 15 for U. S. and Tennessee
Production

Year	Tennessee		United States	
	Production (thous- ands of bushels)	Increase in Price from Nov. 15 to Peak Price	Production (mil- lions of bushels)	Increase in Price from Nov. 15 to Peak Price
1920	4248	47	103.9	28.3
1921	4400	39	98.6	29.2
1922	4180	45	109.4	28.9
1923	3850	96	97.2	38.2
1924	3230	73	53.9	65.9
1925	3240	60	62.3	54.4
1926	6150	35	82.7	47.5
1927	4704	60	94.1	38.2
1928	3895	35	77.7	29.6
1929	4400	50	84.7	30.9

Source: Production Data from U. S. D. A. Yearbook

Effect of Monthly Shipments on Seasonal Price - The monthly farm price of sweet potatoes and monthly shipments of sweet potatoes in 1922 and 1924 for the United States and for Tennessee is shown on Charts 23 and 24. (For data see Tables 15, 5, and 18) For the United States there is evidently some relation between shipments and price received by producers. The peak of shipments is from September to November and during this time prices declined rapidly in both years. Shipments then declined rapidly and prices increased. Evidently the demand declines after April for there is little or no advance in prices from then until the end of the season, and at the same time shipments decrease until they are very low.

The United States shipments evidently have considerable influence on the price of Tennessee potatoes. Tennessee's peak of shipments is from December to March but prices arose steadily both years during that period. Also the large shipments from other states from September to November evidently depressed the price of Tennessee potatoes during these months. It is evident

Chart 23

Relation of Monthly Car-Lot Shipments and Price Received by Producers in U. S.,

1922 and 1924.

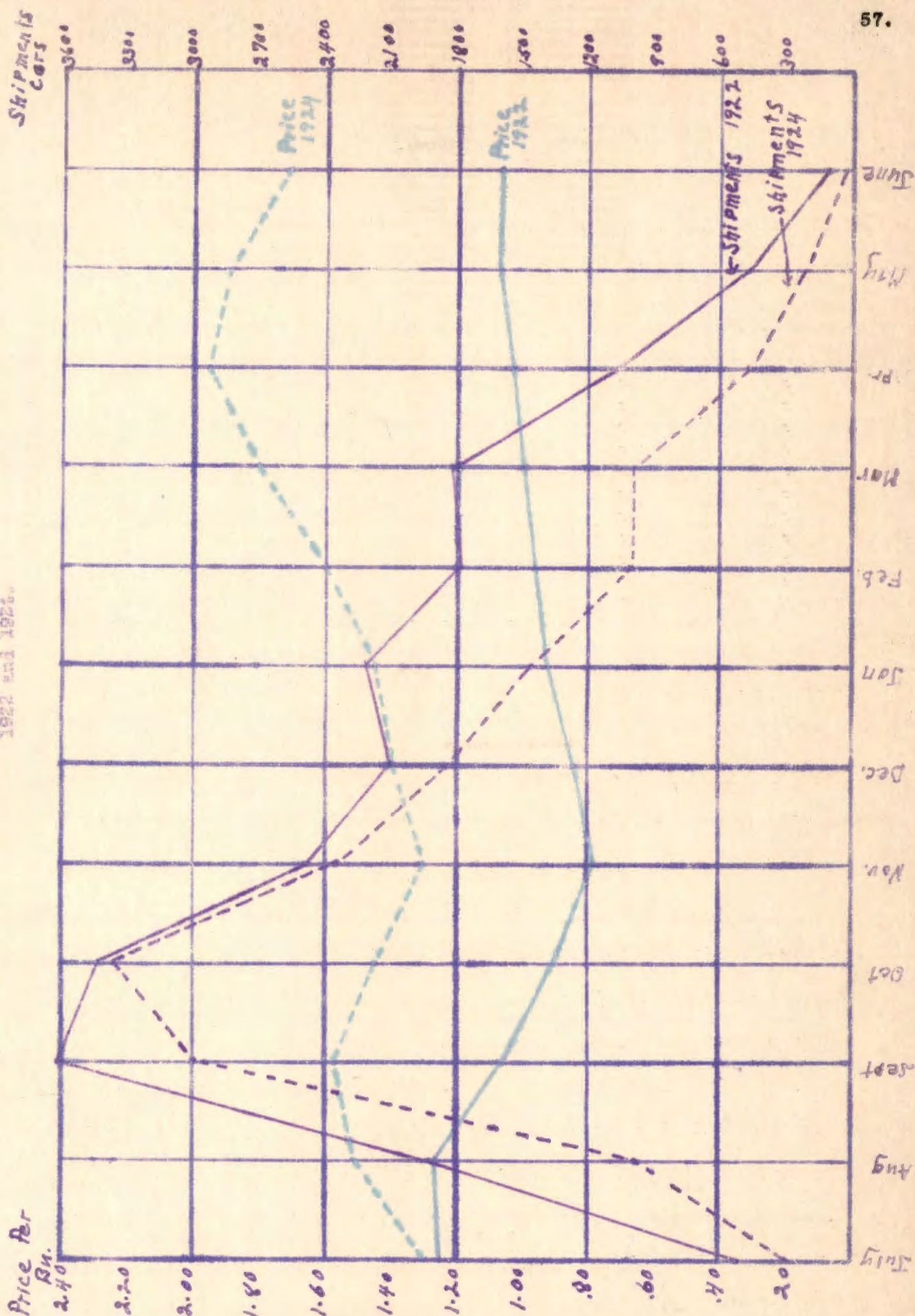
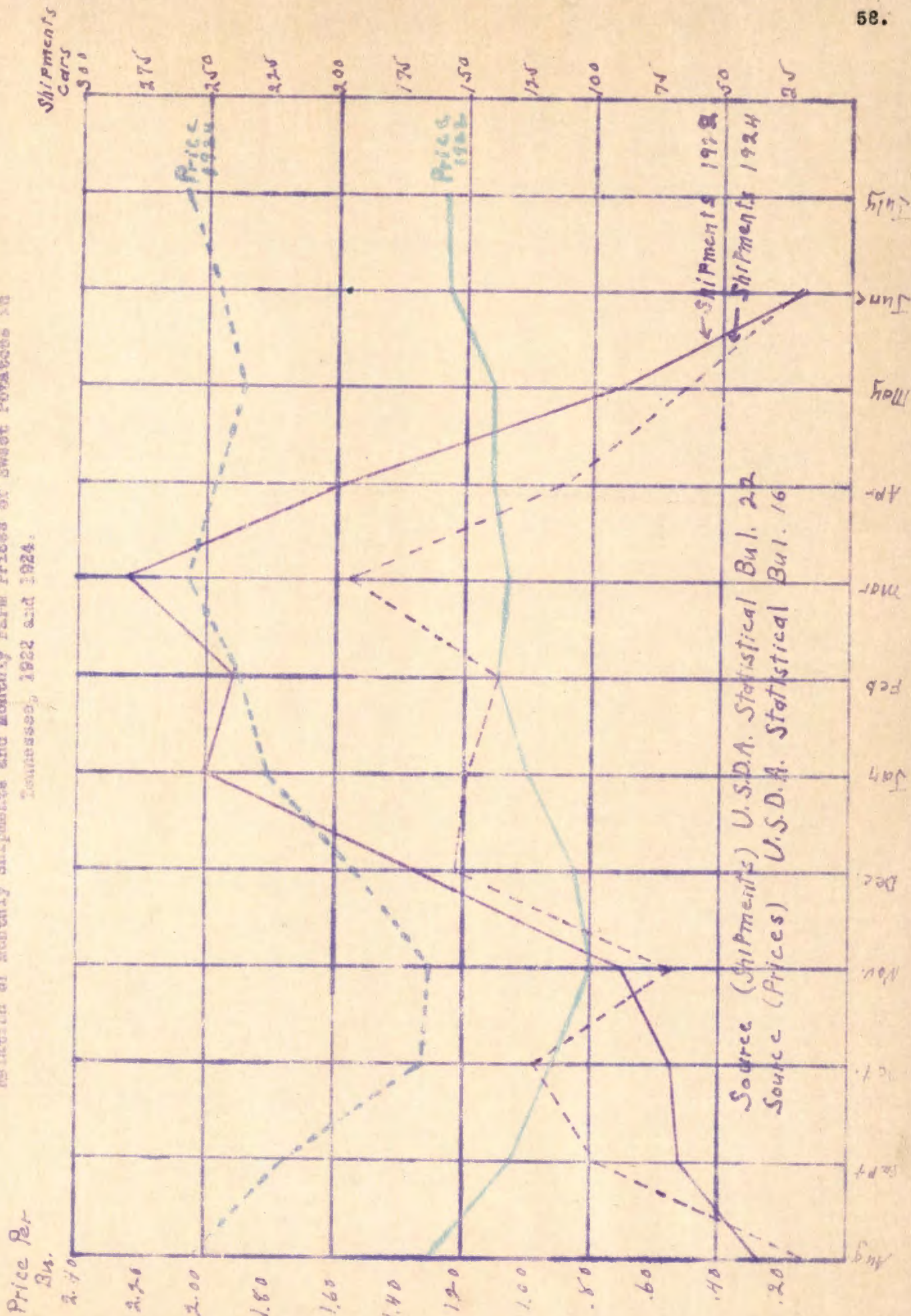


Chart 24

Relation of Monthly Shipments and Monthly Farm Prices of Sweet Potatoes in Tennessee, 1922 and 1924.



that the proportion of shipments made through December was greater in 1924 than in 1922. There was also a greater range in prices in 1924 than 1922.

Table 18 shows the percentage of total shipments for crop years by months, 1922 to 1929. The percentage of shipments made during any one month

Table 18

Car-Lot Shipments and Price of Tennessee Sweet Potatoes by Months,
1922 to 1929

	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
1929	135	76	261	322	388	424	393	389	563	483	261	99	3794
%	3.6	2.0	6.9	8.5	10.2	11.2	10.3	10.2	14.8	12.7	8.9	2.6	100.0
Price	115	120	120	100	185	105	110	115	115	120	120	135	
1928	6	16	139	178	165	256	293	332	369	396	335	301	2786
%	0.2	0.6	5.0	6.4	5.9	9.2	10.5	11.9	13.2	14.2	12.0	10.8	100.0
Price	145	140	120	95	95	110	110	125	130	125	125	130	
1927	309	141	255	310	194	423	487	476	409	428	336	141	3909
%	7.9	3.6	6.5	7.9	5.0	10.8	12.5	12.2	10.5	10.9	8.6	3.6	100.0
Price	110	110	110	80	85	95	100	110	130	130	135	145	
1926	11	116	283	330	222	384	314	382	619	746	592	656	4655
%	0.2	2.5	6.1	7.1	4.8	8.2	6.7	8.2	13.3	16.0	12.7	14.1	100.0
Price	190	160	120	100	65	80	85	100	90	90	90	110	
1925	3	73	168	270	256	253	270	291	358	344	213	85	2584
%	0.1	2.8	6.5	10.4	9.9	9.8	10.4	11.2	13.9	13.3	8.2	3.3	100.0
Price	207	218	177	166	140	155	162	167	170	180	200	200	
1924	0	17	98	122	70	153	149	137	194	112	65	17	1134
%	0	1.5	8.6	10.8	6.2	13.5	13.1	12.1	17.1	9.9	5.7	1.5	100.0
Price	140	204	175	133	131	135	181	190	206	198	189	197	
1923	0	7	25	88	127	150	116	115	82	16	0	0	726
%	0	1.0	3.4	12.1	17.5	20.7	16.0	15.8	11.3	2.2	0	0	100.0
Price	126	155	135	105	104	112	123	135	150	180	200	190	
1922	0	29	65	69	88	169	250	239	281	196	91	18	1495
%	0	1.9	4.3	4.6	5.9	11.3	16.7	16.0	18.8	13.1	6.1	1.2	100.0
Price	130	130	105	92	80	85	100	110	107	111	111	125	

Source: (1) Car-lot data from U.S.D.A. Statistical Buls. 23 and 30, and "Crops and Markets"

(2) Price data from U.S.D.A. Statistical Bul. 16, and "Crops and Markets".

varies considerably from year to year. Also the percentage of shipments of green stock and of cured stock varies from year to year. In 1928 and 1926

the percentage of green stock shipped (that is, through November, assuming that potatoes shipped after November are cured stock) was 18.1% and 20.7% of total shipments respectively. The percentage of green stock shipped in 1929 and 1927 was 31.2% and 30.9% of the total shipments. The rise in price per bushel after November was 35 cents in 1928 and 1926, while it was 50 and 60 cents in 1929 and 1927 respectively. In 1926 both the number and percentage of shipments was very heavy from March through June and prices consequently were held rather low for these months. A study of Table 18 shows that this tendency is applicable to other years also, so that we may conclude that when only a small part of the crop is shipped green and a large part put in storages prices are not likely to advance very rapidly after November.

Monthly L.C.L. Prices on Two Markets - The monthly L.C.L. price of sweet potatoes on the Chicago market for 1922, 1924, 1926 and 1927 is shown on Chart 25 and Table 19. Since Tennessee ships more sweet potatoes to Chicago than any other state ¹ we would expect the yearly price cycles on the Chicago market to show quite a bit of similarity to the Tennessee price cycles. By comparing Charts 22 and 25 we see that such similarity does exist. However, the lowest month on the Chicago market in each of the four years is October whereas the low month of these years for Tennessee farm prices is November, with the exception of 1927. Also there is a much greater rise in prices after low prices in the fall for the L.C.L. price on the Chicago market than for Tennessee farm prices. In 1924 the Chicago L.C.L. prices arose from \$1.88 to \$3.26 or a rise of \$1.38 while the Tennessee farm prices arose from \$1.31 to \$2.06 or a rise of \$.75. This same condition exists in each of the other years though the difference is not as great as for 1924.

¹ Allred, Atkins, Lucas, op. cit., p. 206.

Chart 25

Monthly L. O. L. Price of Sweet Potatoes on Chicago Market, 1922, 1924, 1926 and 1927.

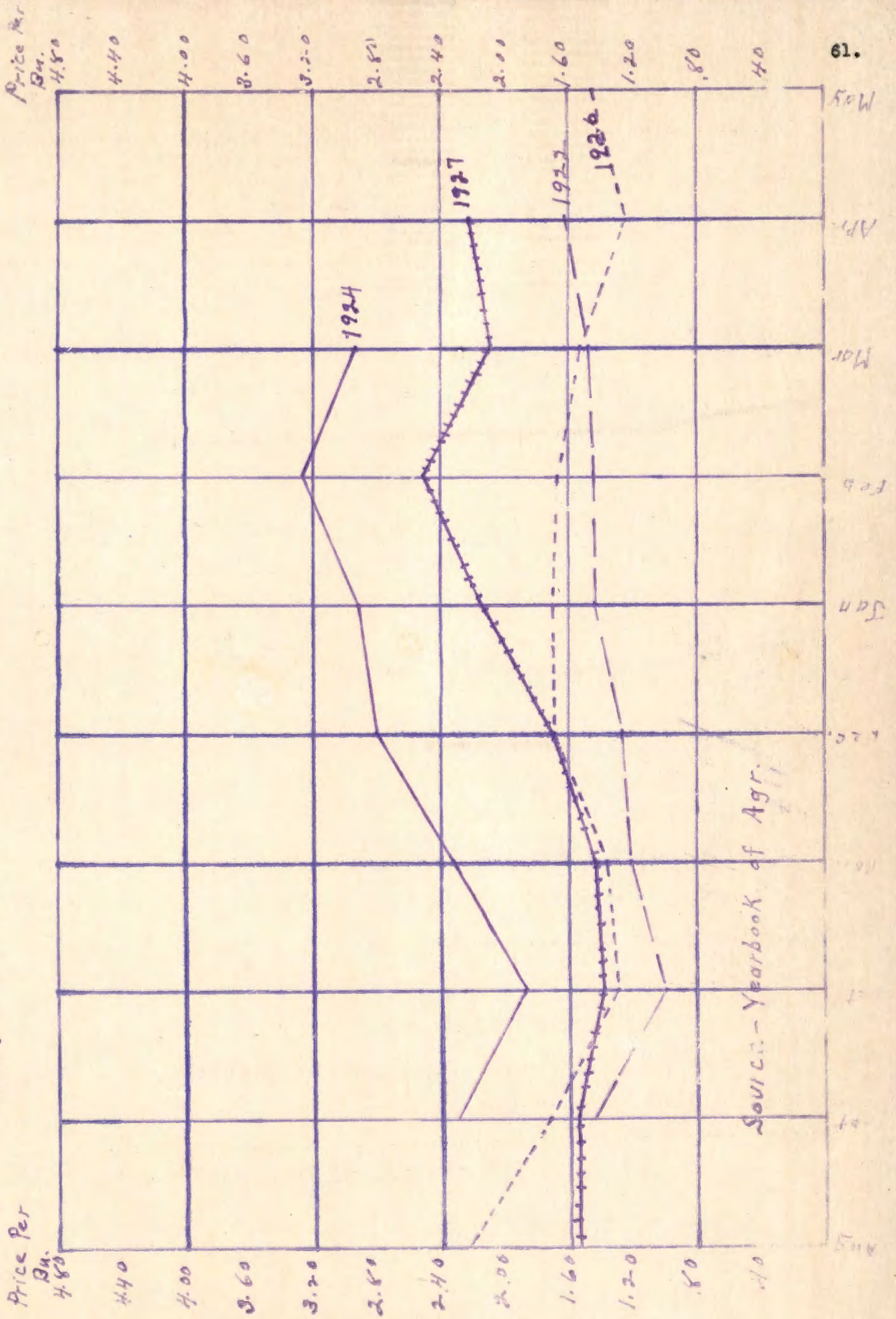


Table 19

Monthly Average L. C. L. Price of Sweet Potatoes on Chicago Market,
1919 to 1929

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1919	\$	\$	\$1.55	\$1.78	\$2.00	\$2.29	\$2.27	\$1.94	\$2.45	\$3.35
1920	2.61	2.05	1.85	1.96	2.21	2.20	2.29	2.35	2.40	2.13
1921	2.01	1.70	1.57	1.48	1.65	1.81	1.89	1.93	1.69	1.29
1922		1.44	1.00	1.22	1.26	1.43	1.44	1.47	1.62	
1923		1.67	1.52	2.03	2.73	3.09	3.31	3.76	4.04	
1924		2.29	1.88	2.33	2.80	2.92	3.26	2.94		
1925	2.04	2.04	2.02	2.25	2.42	2.37	2.29	2.40	2.98	
1926	2.23	1.72	1.30	1.37	1.69	1.70	1.66	1.52	1.23	1.44
1927	1.54	1.55	1.39	1.44	1.68	2.16	2.51	2.09	2.22	
1928	2.01	1.69	1.46	1.92	2.30	2.40	2.49	2.37		
1929	1.76	1.83	1.57	1.64	1.78					

Source: U. S. D. A. Yearbooks.

The L. C. L. price on the New York market, 1919-1929, is shown in Table 20 and four of these years are shown graphically on Chart 26. The yearly trends here more nearly follow the prices for the United States as a whole than for Tennessee farm prices. However, again the low month is October

Table 20

Monthly Average L. C. L. Price of Sweet Potatoes on New York Market,
1929 to 1929

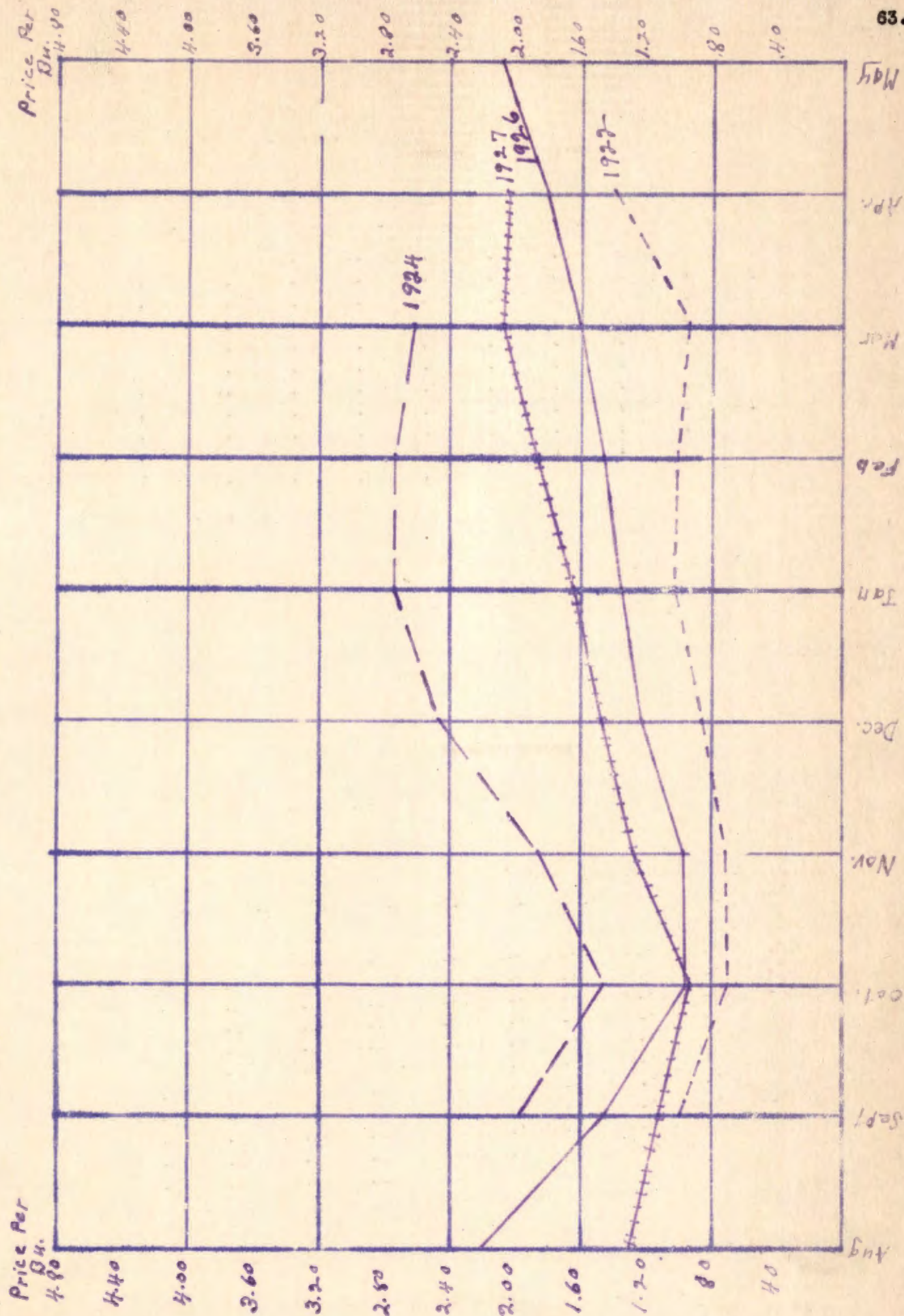
Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
1919	\$	\$	\$1.34	\$1.48	\$2.12	\$2.41	\$2.65	\$2.48	\$3.16	\$4.15
1920	2.70	1.76	1.36	1.23	1.56	1.76	1.82	2.40	2.32	2.73
1921	1.51	1.48	1.26	1.36	1.67	2.02	1.93	1.92	2.27	2.23
1922		1.00	.70	.73	.96	1.03	1.01	.94	1.39	
1923		1.16	1.20	1.95	2.51	2.94	3.58	3.62	3.98	
1924		1.98	1.47	1.88	2.47	2.75	2.74	2.63		
1925	1.53	1.70	1.68	1.70	2.23	2.61	2.59	2.96	3.42	
1926	2.21	1.47	.97	.98	1.24	1.37	1.46	1.61	1.81	2.09
1927	1.31	1.13	.93	1.29	1.48	1.66	1.88	2.08	2.04	
1928	1.57	1.29	1.05	1.31	1.62	1.88	2.14	2.32		
1929	1.60	1.34	1.09	1.28	1.60					

Source: U. S. D. A. Yearbooks.

instead of November as in the case of farm prices. Also the L. C. L. prices on the New York market are relatively lower than the L. C. L. Chicago market

Chart 26

Monthly L. C. L. Price of Sweet Potatoes on New York Market, 1922, 1924, 1926 and 1927.



price for practically the entire period.

8. The Retail Prices of Sweet Potatoes

The characteristics of any commodity necessary for making a low merchandising cost have been listed as follows: slight sales resistance, large unit of sale, rapid turnover, nonperishability, ease of handling, small bulk, and limited range of sizes, brands, and types.¹ The unit of sale has been found to be a very important item in the cost of merchandising. In order to determine the retail price of sweet potatoes in Knoxville as well as other characteristics of it which have to do with its merchandizing costs a survey was made of 58 grocery stores in Knoxville. The stores were divided into two groups which were designated as staple and fancy groceries. While there could be no exact line of division between the two types, the fancy grocery group were those stores that carried a little higher quality goods and catered to a clientele that were able to pay more for quality. The staple groceries catered to that clientele where cheapness of price was the primary consideration in selecting their food.

Factors Affecting Cost of Retailing Sweet Potatoes - As was shown above the unit of sale is a very important item in the cost of merchandizing. Therefore each groceryman was asked his opinion as to the average quantity of sweet potatoes the average customer bought at a purchase. In order to make comparisons the same question was asked concerning Irish potatoes. The opinions are shown in Table 21. There was not a great deal of difference of opinion as to the amount of each commodity purchased by the different grocermen, it is noticed that the amount of Irish potatoes bought at a purchase was about a third of a gallon greater than for sweet potatoes.

¹ Address before the Save the Surface Salesman's Club in Philadelphia, October 3, 1930, by a representative of Merchandising Research Division of the U. S. Department of Commerce.

Table 21

Amount of Sweet and Irish Potatoes Average Retail Customer Bought per Purchase in Knoxville

	Number of Replies			
	Staple Groceries		Fancy Groceries	
	Sweet	Irish	Sweet	Irish
Over 1 gallon	0	4	0	3
Approximately 1 gallon	13	20	14	21
1/2 to 1 gallon	12	6	7	2
Approximately 1/2 gallon	5	1	5	0
Less than 1/2 gallon	1	0	0	0
Average	0.8	1.1	0.8	1.2

From the replies of grocerymen as to how often they buy new stock, the sweet potato has a rapid turnover. The length of time between stock purchases by grocerymen for the Irish and sweet potato is shown in Table 22. It is seen

Table 22

Frequency of Purchasing Stock of Irish and Sweet Potatoes by Some Knoxville Grocerymen

Period	Number of Staple Groceries		Number of Fancy Groceries	
	Sweet	Irish	Sweet	Irish
Every two weeks	0	0	0	2
Once a week	5	17	4	14
Twice a week	12	8	7	4
More than twice a week	14	5	14	5
Average number days	13.3	4.7	3.1	5.4

that the grocerymen bought sweet potatoes much oftener than Irish potatoes, often buying them more than twice a week. However as the average grocerymen handles only a very small quantity of sweet potatoes, it is impossible to economize by buying in quantities.

The reason generally given for not buying in larger quantities was that the potatoes would spoil so quickly in the store. There was considerable difference as to the average time sweet potatoes would keep in the store the estimates ranging from 3 to 30 days. Many of the grocerymen also said that the length of time the potatoes would keep in the store depended a great deal

upon the particular lot of potatoes. Some potatoes would keep indefinitely while others would rot very badly in just a day or two. There was not a great deal of difference in the average consensus of opinion of the two groups (see Table 23). It was pretty well agreed that the potatoes would keep longer in the winter months than at any other time.

Table 23

Estimated Length of Time Sweet Potatoes Will Keep in Retail Stores

Period	Number of Staple Groceries				Number of Fancy Groceries			
	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer
Two weeks or over	5	9	5	2	1	7	5	4
One to two weeks	18	14	15	13	13	9	11	9
Less than 1 week	0	0	1	2	3	0	0	1
Average number days	9.5	10.4	9.8	9.2	7.2	11.4	9.8	8.9

Another item studied was the length of time sweet potatoes were handled and the demand for sweet potatoes in different seasons of the year. As seen in Table 24 there was considerable difference in the length of time sweet potatoes were handled by the two groups of grocerymen. Only nine of the 32 groceries classed in the "staple" group reported that they handled sweet potatoes throughout the year while 17 of the 26 "fancy" grocers handled sweet potatoes

Table 24

Length of Time Sweet Potatoes Are Handled by Knoxville Groceries

Period	Number of Staple Groceries	Number of Fancy Groceries
All year	9	17
All year when available	2	0
Nearly all	4	2
Nine months or more	6	5
Six to nine months	10	1
Less than six months	1	1

all the year. In most cases the reasons given for not handling sweet potatoes continuously were that they were either not available or hard to get. Only 7 of 32 groceries not handling sweet potatoes the year around gave the reason

as "little or no demand".

The consensus of opinion as to the percentage of demand for sweet potatoes for various seasons showed little variation in the two groups. However, there was considerable difference in the demand by various seasons, there being about three times as much demand in the fall as in the summer. The average demand by seasons is shown in Table 25.

Table 25

Average Percentage of Total Sales of Sweet Potatoes by Seasons
as Expressed by 57 Knoxville Grocers

	Percentage of Sales			
	Fall	Winter	Spring	Summer
Staple groceries	35.7	30.9	22.3	11.1
Fancy groceries	35.8	31.1	21.0	12.1

Nearly all of the grocers studied sold only one grade of potatoes. Only two quoted prices on two different grades. Several of the grocers had more than one variety in stock. Many of them reported the sale of more than one variety.

From the survey of grocers in Knoxville it is evident that the sweet potato has two characteristics that tend to cause a high merchandizing cost, namely, that the unit of sale is small, and that it deteriorates rather quickly. It has a rapid turnover, however, and it is not necessary to carry a large range of types in stock, which are favorable factors. In connection with the rapid turnover might be mentioned the fact that the retail grocer buys his stock in such small quantities that the unit of sale by the wholesaler is very small as compared with the Irish potato. Therefore, it lends itself to a high cost of merchandising on the part of the wholesaler.

Retail Prices - The retail price that each of the grocers were receiving at the time of the survey (Nov. 18-20, 1930) was obtained, as well as the estimate of the price the manager believed sweet potatoes would retail for on January 1, March 1, and June 1. Similar data were obtained for the Irish potato. Not all of the managers would estimate the future prices but sufficient estimates were received to give a fairly good idea as to what the retailers thought that sweet potatoes would sell for on those dates. The results are given in Table 26. Although the Irish potato was selling higher, when the survey was made, than the sweet potato, the consensus of opinion of the grocermen was that the sweet potato would be selling for more

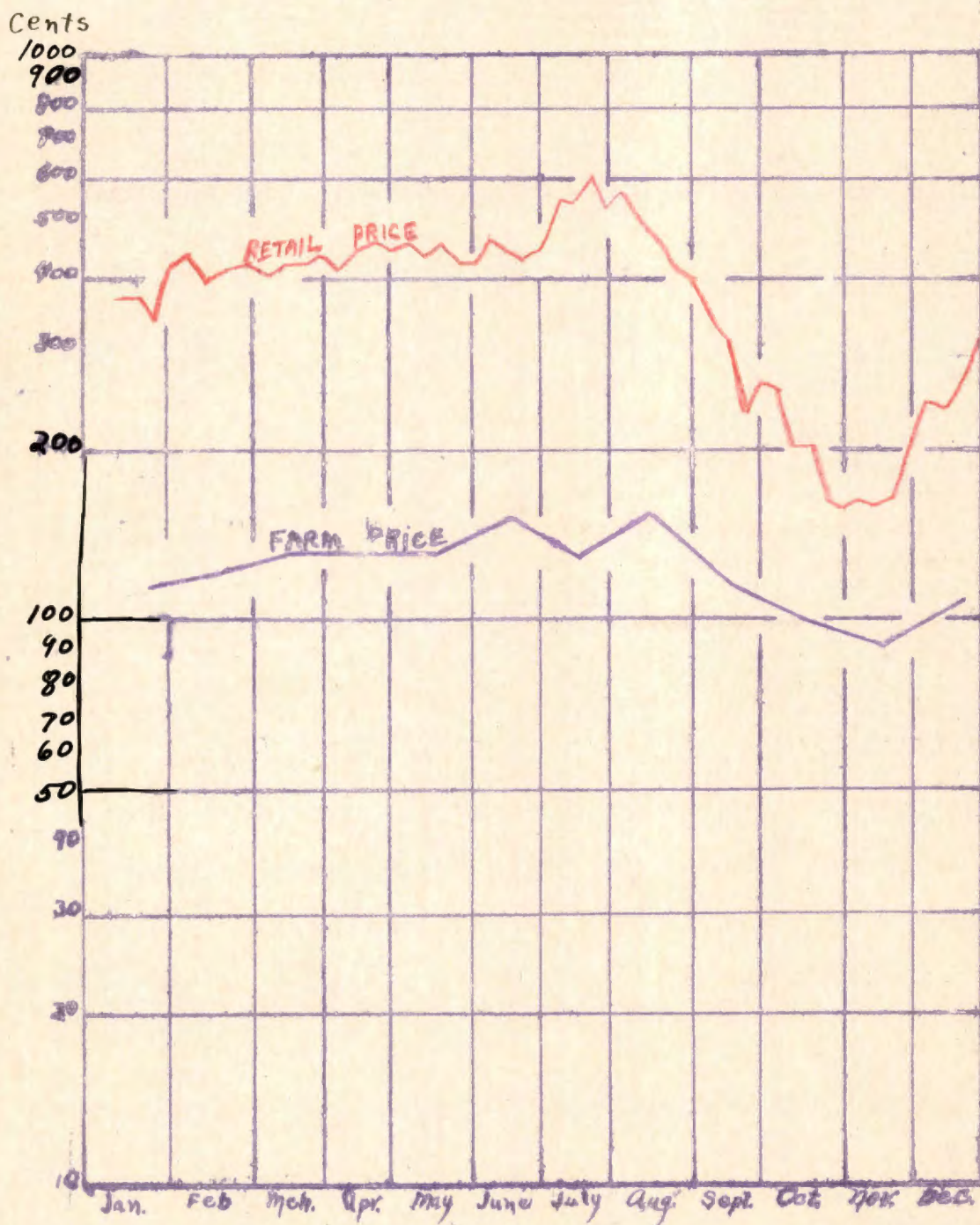
Table 26
Actual and Forecast Retail Prices of Sweet and Irish Potatoes
in Knoxville

	Actual Price		Forecast Price					
	November 28		Jan. 1		Mar. 1		June 1	
	Staple Grocers	Fancy Grocers	Staple	Fancy	Staple	Fancy	Staple	Fancy
Sweet potato, gal.	\$0.178	\$0.219	\$0.224	\$0.281	\$0.250	\$0.328	\$0.283	\$0.346
" " bu.	1.42	1.75	1.79	2.25	2.00	2.62	2.26	2.79
Irish potato, gal.	0.239	0.245	0.262	0.272	0.278	0.287	0.287	0.303
" " bu.	1.91	1.96	2.10	2.18	2.22	2.30	2.30	2.42

than the Irish potato later in the season. This price difference between the two undoubtedly has some influence on the seasonal variation in the demand for sweet potatoes. It was shown previously in this chapter that there is some positive relation between the price of Irish and sweet potatoes.

Retail Prices on Boston Market - The average weekly retail prices of sweet potatoes in Boston from 1926 to 1931 inclusive is shown in Table 27 and Chart 27. The monthly weighted average farmers' price of sweet potatoes in Virginia and Delaware are also included (Table 28). These two states were included here because they furnish the greater portion of sweet potato shipments to Boston. The farm prices are weighted according to the number of

Chart 27
Comparison of Average Weekly Retail Price at Boston
and Average Monthly Farm Price in Virginia and
Delaware, 1926-1930



of car-lot shipments each of these two states made to that market. From January until July the trend of both retail and farmers' prices is upward.

Table 27
Average Weekly Retail Price of Sweet Potatoes at Boston,
1926 - 1930

Week	Price per Bushel (cents)	Week	Price per Bushel (cents)
1	369	27	545
2	371	28	545
3	342	29	590
4	416	30	530
5	425	31	562
6	398	32	500
7	412	33	455
8	420	34	410
9	425	35	395
10	402	36	342
11	423	37	317
12	423	38	232
13	436	39	265
14	421	40	253
15	449	41	205
16	461	42	207
17	456	43	159
18	465	44	157
19	447	45	163
20	465	46	162
21	433	47	164
22	426	48	208
23	462	49	248
24	446	50	241
25	431	51	269
26	475	52	311

For source and methods of calculations see Appendix.

The percentage variation of trend during these months is about the same for both retail and farmers' prices, but the actual variation of prices is greater with retail than with farmers' prices. This means that the margin between farmers' and retail prices is greater during the summer months than the first of the crop year. After July the trend of each is downward until November. Retail prices during this period drop faster than farmers' prices. The margin between farmers' and retail prices is less during October and November than any time during the year.

Table 28

Average Monthly Farm Price of Sweet Potatoes in Virginia and Delaware,
1924 to 1930

Year	Cents per bushel											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1924	138	135	170	159	150	160	150	130	147	115	115	149
1925	128	174	170	202	209	175	160	200	135	155	148	158
1926	166	172	187	189	183	224	160	230	130	86	73	117
1927	90	100	100	101	106	140	120	155	111	102	85	98
1928	96	103	122	130	125	132	110	100	107	95	95	105
1929	106	114	121	120	117	124	130	146	129	118	101	111
1930	123	124	127	126	136	142	132	139	112	108	108	118
Ave.												
1926-1930	116	123	131	133	133	152	131	153	118	102	92	110

For source and method of calculation see Appendix.

The weekly retail price at Boston and monthly farm price in Virginia and Delaware are plotted on Chart 28 for the years 1924 and 1927 (for retail price data see Appendix). The year 1924 was one of relatively high sweet potato prices while 1927 was one of relatively low sweet potato prices. The margin between the retail prices and farm prices is less for 1927 than 1924. The relatively large retail margin also occurred in 1925, another year of relatively high farm prices. Chart 29 shows the margins taken in both 1924 and 1925, both years of high farm prices.

Also the smallest retail margin during each of the years shown here occurred in the fall when the prices were relatively low. Thus it appears that the margin between farm and retail prices of sweet potatoes is greater in both the years and the seasons of relatively high farm prices.

The weekly retail price ranges of sweet potatoes, Irish potatoes and the jobbers price of sweet potatoes for 1930 is shown on Chart 30 (data in Appendix). It is shown that the retail prices for sweet potatoes is much higher than the retail price of Irish potatoes, except for a few weeks in the fall. The spread between the jobbers' price of sweet potatoes and the whole-sale price of sweet potatoes is also less in the fall than at any other time

Chart 28
Comparison of Weekly Retail Price at Besten and Monthly Farm Price in Virginia and Delaware,
1924 and 1927

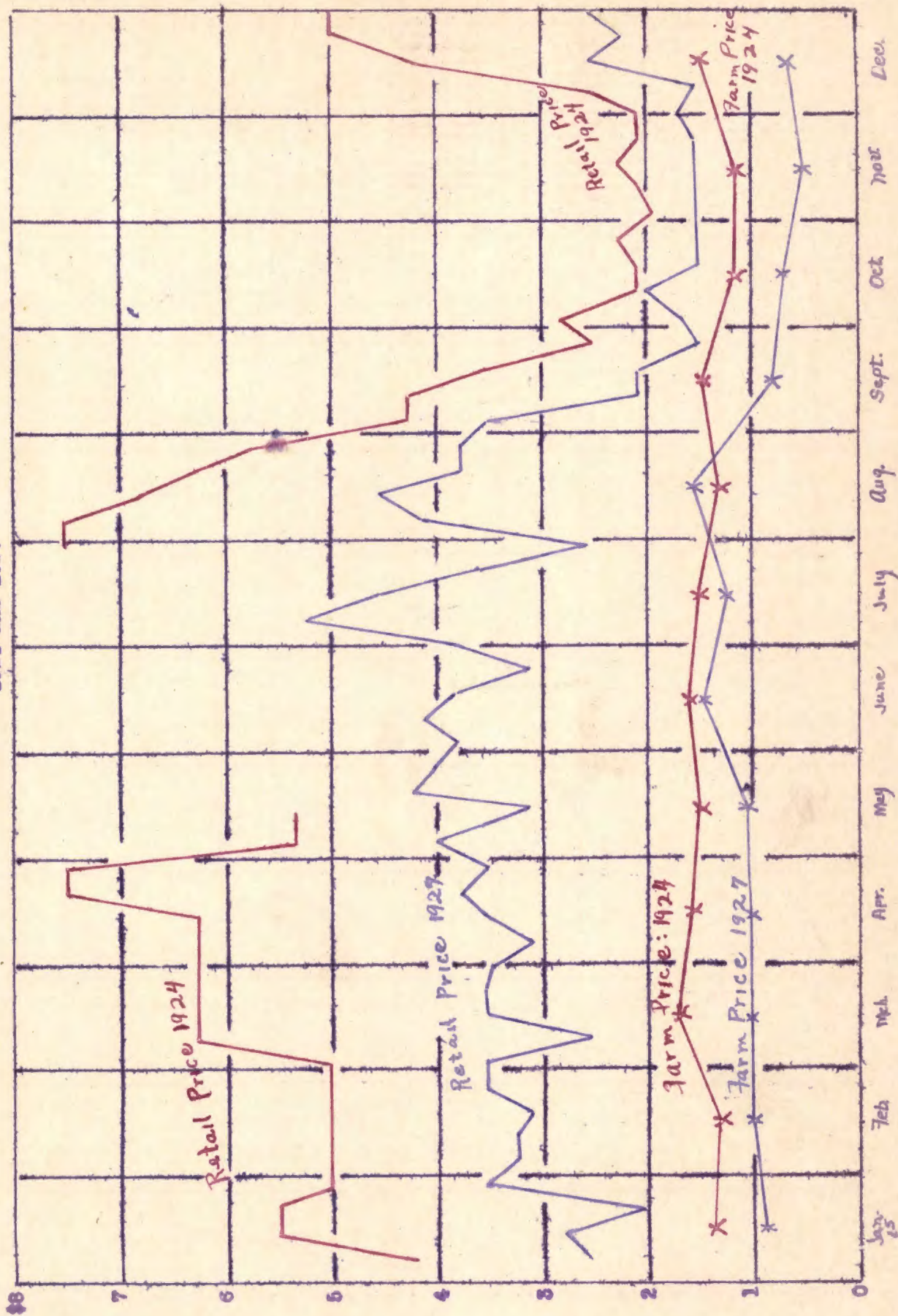


Chart 29
A Comparison of Retail Prices of Sweet Potatoes at Boston and Farm Prices in Delaware and Virginia,
1924 and 1925

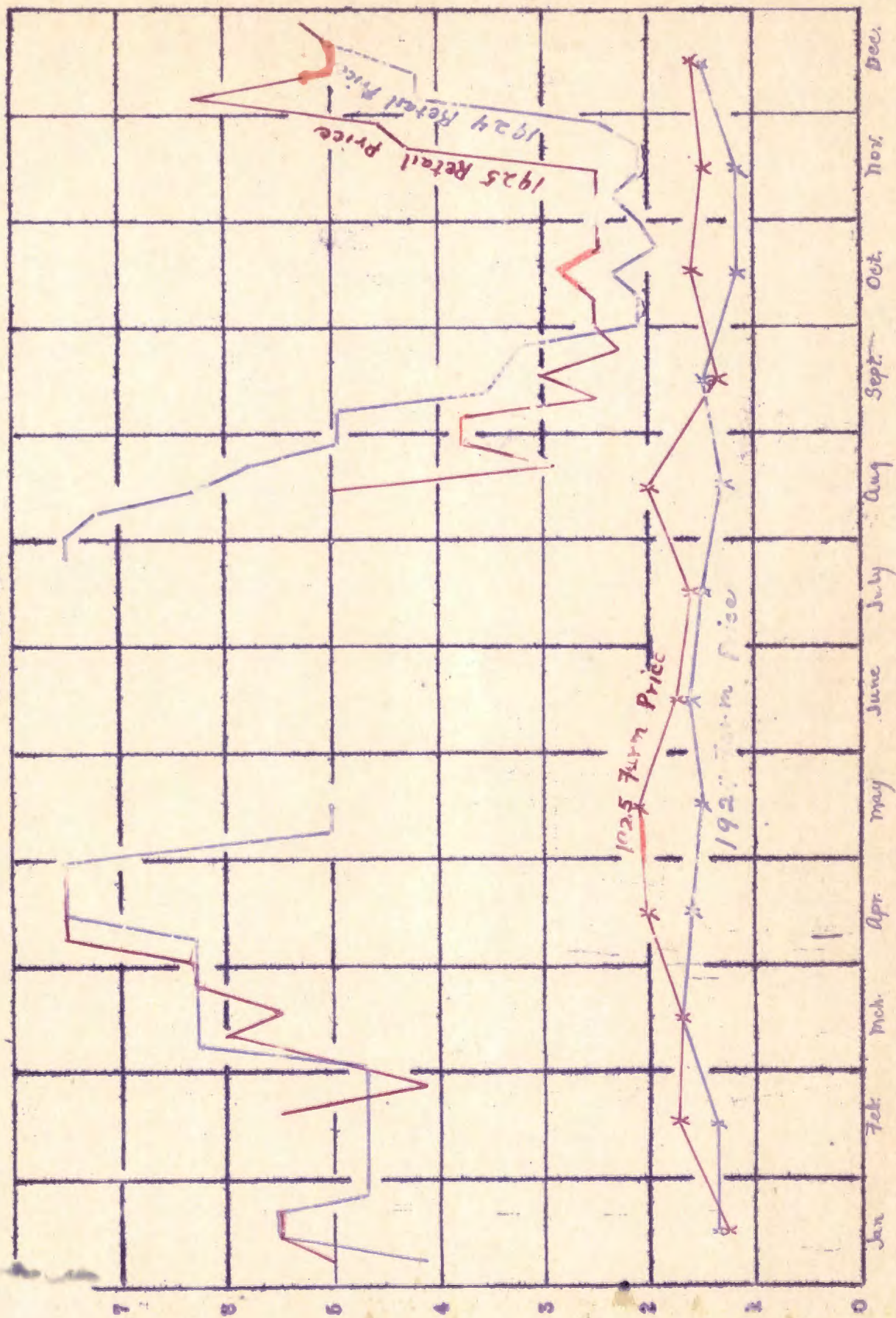
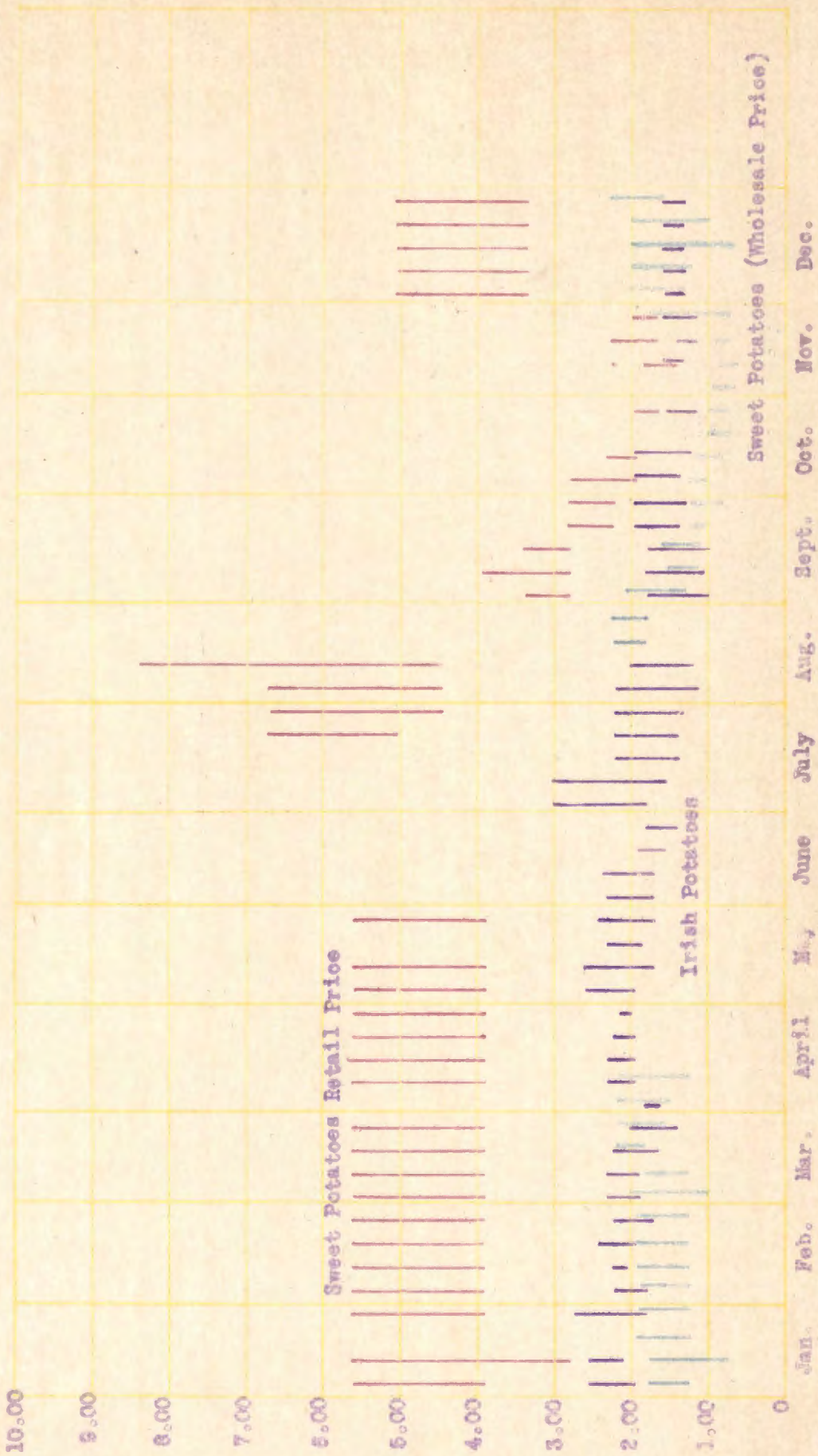


Chart 30
 Price Ranges: Comparison of Retail and Wholesale Price of Sweet Potatoes and Retail
 Price of Irish Potatoes, Boston Market, 1930
 (Price per bu.)



during the year. This is a period of heavy shipments to market and consequent low prices.

There is less range in sweet potato prices during this period than at any other period during the year. The reasons are not evident from the available data. It could possibly be due to differences in quality and to differences in average price. Less range would occur in potatoes of more uniform quality. To what extent this uniformity is adversely affected by storage no data are available to the writer. However, it is entirely possible that a greater range in quality may occur in storage potatoes than in "green" potatoes. And hence the greater price range that occurs after the harvest season. It is reasonable to expect some greater range in price when the average price is relatively high, as it is following the harvest season.

The range in the retail price of Irish potatoes is generally less than that of sweet potatoes, except in September, October, and November. Here again there is some association between relatively low price range and low average price.

9. Selling Sweet Potatoes Green Vs. Storing

Of the 91 Tennessee growers who returned questionnaires on sweet potatoes; 60 preferred to sell their potatoes cured, 18 preferred to sell green, and 13 either did not answer this question or sometimes sold one way and sometimes preferred to sell the other. This should indicate that the majority of growers in Tennessee believe that it is more profitable to store their potatoes than to sell green stock.

Advisability of Storing - It has been shown that the cost of storing sweet potatoes aside from loss due to decay should be around 15 to 20 cents per bushel. On the other hand we see by Table 16 that for the period 1921 to 1925 the price of sweet potatoes advanced on the average 52 cents per bushel from November to June. The most abrupt rise during this period was from

November to February during which time the rise was 34 cents. The rise in price each month after February became less each month. This should indicate that storing sweet potatoes would be a profitable venture provided the losses from decay were kept low. Where the loss from decay runs from 15 to 25 per cent and in some cases much higher storing is a very doubtful undertaking.

As has been pointed out the rise in prices after November varies considerably from year to year depending upon the size of the crop, and the percentage of crop sold green and stored. The least advance any one year was 35 cents per bushel, which should indicate that the grower who controls black rot successfully should make a profit from storing every year, since storage charge and normal shrinkage is less than this amount. The grower who is doubtful about the keeping qualities of his stock will do well to consider the size of the crop harvested, and the amount going on the market as revealed by the car-lot shipments in considering whether to store his stock or sell it green.

The length of time to hold the stock in storage is also an important item to consider. As shown above, the rise in price tends to become less as the season progresses. From the consensus of opinion of the dealers and other men who stored sweet potatoes interviewed on the survey, the loss due to decay is greater when warm weather comes in the spring. Again the grower who is doubtful of the keeping qualities of his potatoes will do well to consider this fact in determining the time to sell. As will be pointed out in a later chapter the costs of storage, aside from decay, was not very great after the curing period. Therefore the grower who has sound stock may find it profitable to hold his crop to near the end of the season.

Selling on Early Market - We see by Table 16 that the price of sweet potatoes at the beginning of the season, from August to September, especially, is considerably higher than in November. This suggests the possibility of

some growers digging their crops early and putting it on the early market. ✓
 Some early sections of Alabama have taken advantage of this early market and ship a good many cars of Triumphs each year in July and August. Table 18 shows that some Tennessee growers have been taking advantage of this early market especially in the later years. On the survey (Sept. 1930) we found ✓
 three growers near Humboldt who dug their potatoes in August for the early market. They were very well pleased with their returns. We found several others who were digging and selling part of their crop at least while we were making the survey (September), nearly a month before the usual digging season for storage begins.

Table 29

Comparison of Yield of Sweet Potatoes Harvested Early and Late (a)

Variety	Harvested Aug. 28			Harvested Nov. 28		
	Marketable Potatoes	Unmarketable Potatoes	Total Yield	Marketable Potatoes	Unmarketable Potatoes	Total Yield
	bushels	bushels	bus.	bushels	bushels	bus.
Porto Rico	13	11	24	92	33	125
Nancy Hall	33	21	54	63	34	97
Triumph	31	23	54	117	140	157

^a Data from Miss. Agr. Exp. Station Bulletin 206, p. 9, 1921.

The sweet potato keeps growing until the time it is dug in the fall. ✓
 Therefore digging early will naturally reduce the yield. The question then in digging for the early market is whether the increase in price received more than makes up for the reduction in yield. A comparison of the yield of digging potatoes early and later is given in Table 29. This experiment was carried out in 1919 at the Mississippi Agricultural Experiment Station. The time of planting is not given. In a later publication¹ by the same station we see the following comment regarding the Porto Rico variety. "Here at the main

¹ Price, J. C. C., The Production and Storage of Sweet Potatoes, p. 2, 1930.

station the past season 130 bushels per acre were harvested from a plot planted on July 17th." This should indicate that better yields could be secured in a shorter growing season than the data in Table 29 indicates.

By bedding potatoes early and heating the bed, a grower should be able to set the potato plants early and thereby increase the yield when dug for the early market, above the yield of later settings. The Nancy Hall is regarded as an early maturing variety and should prove acceptable for growing for the early market. The Triumph is regarded by some as a little earlier variety than the Nancy Hall, but as the early markets are generally pretty well supplied with this potato from Alabama, the Tennessee grower will more than likely find it more profitable to use the Nancy Hall. Undoubtedly there is a limited demand for early Nancy Halls on some markets that prefer this variety. The Virginia movement begins in August which usually depresses the price of sweet potatoes on all eastern as well as mid-western markets. However the early market offers a good opportunity for a limited number of Tennessee growers.

10. Forecasting Prices of Sweet Potatoes

"A forecast", as defined by Taylor, "is a statement of what may be expected to happen, based upon present conditions and observations interpreted in the light of previous experience."¹ Green estimates that price forecasts are 65 to 75% perfect at present, and points out that when a large number of farmers believe a forecast and plan their operations accordingly, this may cause the forecast to be inaccurate.²

Frederick V. Waugh, Marketing Research Specialist for the New Jersey State Department of Agriculture, worked out and published, in 1924, a formula for forecasting the price of sweet potatoes in New Jersey.³ His formula is

¹ Taylor, H. C., Agricultural Forecasting in J. Farm Economics, v. 6: 156-65. 1924.

² Green, R. M., Batting Averages in Agricultural Forecasting. J. Farm Economics, v. 8: 175-93. 1926.

³ Waugh, F. V., Forecasting Prices of New Jersey White Potatoes and Sweet Potatoes. 1924.

based on eight factors. For the ten-year period 1914 to 1924 his forecast price was within 16 cents per bushel or 8.5% of the actual price. The average price for the season is calculated before digging and the monthly price for the remainder of the season is calculated after the beginning of the season. This formula for forecasting the price of sweet potatoes would undoubtedly be of considerable value to dealers and to farmers in selling their potatoes. However, the farmer needs to know several months in advance the outlook for potatoes the following season so he can plan his operations accordingly. This discussion will be chiefly concerned with that end of forecasting.

Factors Affecting Annual Production - It has already been pointed out that when the price of cotton is low, the acreage of sweet potatoes in those states where cotton is the principle crop will likely be increased considerably; and that when cotton is high the acreage of sweet potatoes the following year be reduced. The increased acreage, other things being normal, will mean a large production and consequently low prices. Similar relations undoubtedly exist between the acreage of sweet potatoes and the price of some other crops. For example, two sweet potato cooperative associations were organized in the tobacco territory north of Nashville during the low priced years of tobacco to promote the production of sweet potatoes as a substitute for tobacco as a cash crop. In the case of both associations the price of tobacco increased in a few years so the farmers shifted production back to tobacco as the result, leaving the sweet potato associations with hardly enough volume to operate. The effect of such a shift would probably not have as much effect on the price of sweet potatoes the following year as in the case of cotton, since the two are not competing crops over as wide a territory.

Factors Affecting Demand - The demand for sweet potatoes is another factor which influences the price. The general prosperity of the country or index numbers of prices of all commodities has a great deal of influence on

the price consumers will pay for any commodity. When the index prices of all commodities are high or low we may expect the price of sweet potatoes to react accordingly. It has also been pointed out that the price of Irish potatoes exerts considerable influence on the price of sweet potatoes. Therefore when there are prospects for a large crop of Irish potatoes we might expect a lower price for sweet potatoes, other things being equal, since they can be substituted, to some extent, in the diet.

BIBLIOGRAPHY

1. Allred, C. E.; Atkins, S. W.; and Lucas, B. F., Preliminary Report on Marketing Tennessee Sweet Potatoes, 1930.
2. Anderson, W. S. and Richardson, F. B., Sweet Potato Experiments. Miss. Agr. Exp. Sta. Circ. 57. 1924.
3. Boyle, J. E., Marketing Agricultural Products. McGraw-Hill Book Company, Inc. 1925.
4. Gabriel, H. S., The Marketing of Delaware Sweet Potatoes, Del. Agr. Exp. Sta. Bul. 161. 1929.
5. Gatlin, G. O., Marketing the Southern Grown Sweet Potato, U.S.D.A. Bulletin 1206. 1924.
6. Green, R. M., Batting Averages in Agricultural Forecasting, Journal of Farm Economics 8: 175-93. 1926.
7. Price, J. C. C., The Production and Storage of Sweet Potatoes, Miss. Agr. Exp. Sta. Bul. 206. 1921.
8. Taylor, H. C., Agricultural Forecasting, Journal of Farm Economics 6: 156-65. 1924.
9. Thompson, H. C. and Beattie, J. H., Sweet Potato Storage Studies, U.S.D.A. Bul. 1063. 1922.
10. Thomsen, F. L. and Fankhanel, W. R., Factors Affecting Sweet Potato Prices in Missouri, Mo. Agr. Exp. Sta. Bul. 302. 1931.
11. Waugh, F. V., Forecasting Prices of New Jersey White Potatoes and Sweet Potatoes, N. J. Dept. of Agr. Circ. 78. 1924.

CHAPTER II

PROCESSING SWEET POTATOES

1. Canning
2. Starch Manufacture.
3. Syrup Manufacture.
4. Other Products.
5. Conclusions.

The stability of any agricultural industry depends upon the wide use that may be made of its products, or the ability to store it from one crop season to another. As the sweet potato is of a semi-perishable nature, it is impossible to store it from one crop season to another. In fact there is usually considerable deterioration when kept from one crop season to the beginning of the next. The sweet potato heretofore has had a very limited number of uses made of it. Years when there was a large yield and big production the surplus was either fed to livestock or allowed to rot. Besides this, every year there is a large amount of unmarketable potatoes that are too large, have cut places or other defects that do not necessarily render them unfit for human consumption. These are left largely to rot, or used as feed for livestock. There are a number of ways such sweet potatoes may be processed so that a large part of this annual waste might be better utilized.

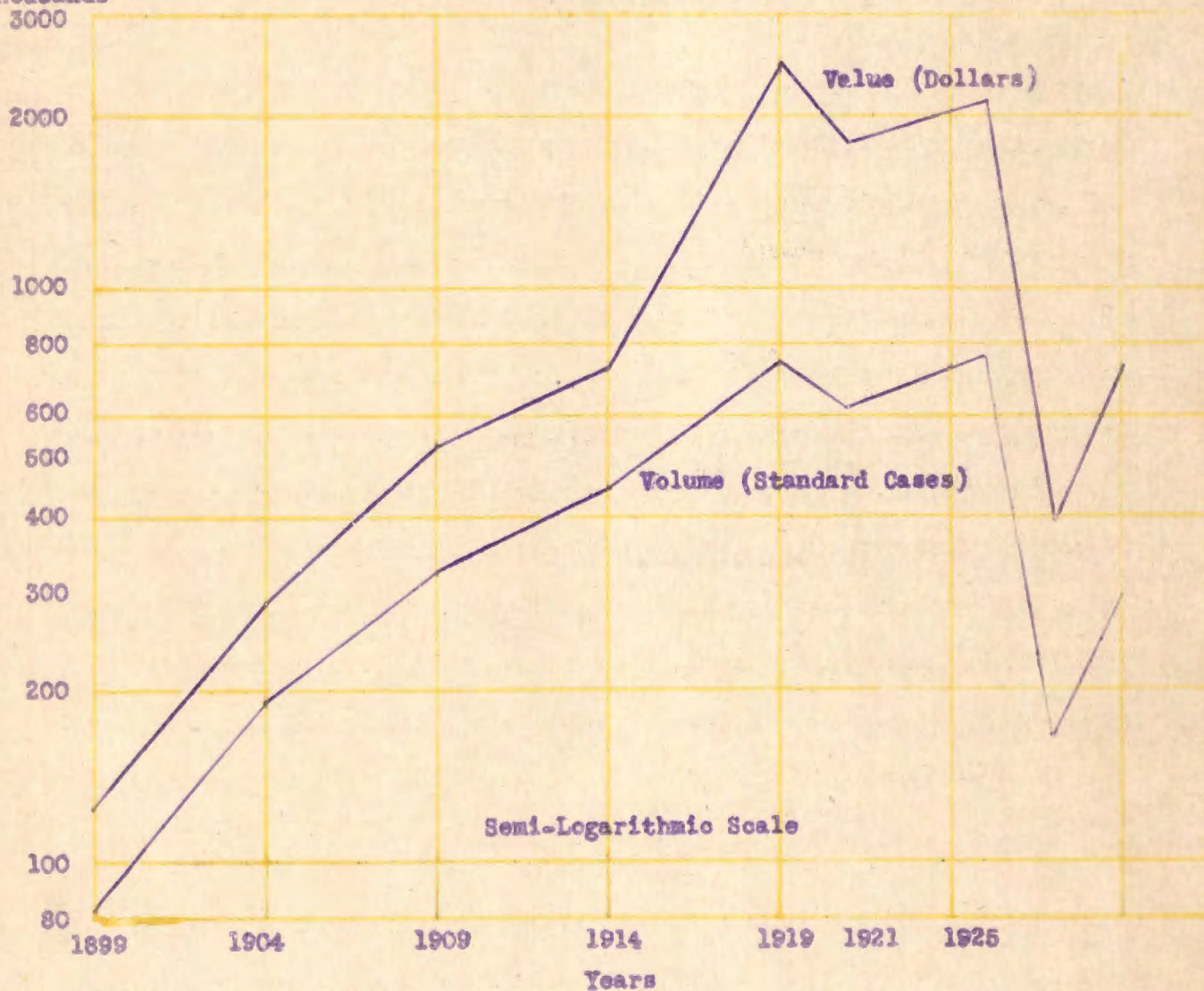
1. Canning

Canning is the only method of processing sweet potatoes that has been developed commercially to date. This industry is of relatively recent origin but has had a very rapid growth. The value and volume of canned sweet potatoes for the United States is shown in Table 30 and Chart 31. The canning of sweet potatoes, like other canning industries, showed a big increase during the War. Since the War it has, according to figures available, decreased somewhat and has fluctuated considerably from year to year.

Chart 31

Canning: Value and Volume of Canned Sweet Potatoes in the United States

Thousands



Census of Manufacture

Table 30

Value and Volume of Canned Sweet Potatoes in the United States(a)

Year	Value	Volume Standard Cases (b)
1899	\$124,245	83,526
1904	284,385	192,997
1909	531,651	347,286
1914	736,750	454,415
1919	2,477,719	746,861
1921	1,807,735	622,827
1925	2,121,633	762,195
1927	399,423(c)	167,368
1929	715,423(c)	295,243

^a From Census of Manufacturers.

^b Cases are 24 No. 3 cans except 1925 when standard can is No. 2½.

^c Unpublished data furnished by Bureau of Census.

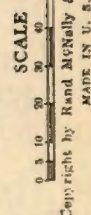
Sweet potatoes are canned almost throughout the whole producing area. The location of factories that canned sweet potatoes in the United States is shown in Map 2. Maryland, Delaware, and Virginia are the principal canning centers for the dry-fleshed type, and are three of the leading states engaged in canning this crop. The number of cases canned in various states is shown in Table 31. There has been considerable shifting of the industry from year to year. In 1909 Mississippi was the leading state in canning sweets but its volume has decreased considerably. California has, on the other hand, gained very rapidly in volume of canned sweet potatoes.

The volume canned in Tennessee is relatively small and appears to be about stationary. There was a considerable increase in volume in 1919 but it declined in 1921 below the 1914 figure. The location of all canning factories and those that canned sweet potatoes in Tennessee for 1929 is shown in Map 3. While there are more canning factories of all kinds in East Tennessee there are more that can sweet potatoes in West Tennessee. This is as would be expected since West Tennessee is the principal commercial sweet potato section. However, there are no factories canning sweet potatoes in

LOCATION OF SWEET POTATO CANNERIES IN THE UNITED STATES IN 1929.



Source: Camera' Directory, 1929



Copyright by Rand McNally & Company, Chicago
MADE IN U. S. A.

the two principal sweet potato shipping counties, Weakley and Henry.

Table 31
Sweet Potatoes Canned by States, 1909-1925
Standard Cases (a)

State	1909	1914	1919	1921	1925 (b)
Ala.	5,702	1,794	(c)	(c)	(c)
Ark.	(c)	(c)	15,649	(c)	(c)
Cal.	(c)	(c)	52,077	94,957	80,882
Del.	20,633	39,039	74,954	24,014	34,151
Ga.	21,167	1,466	25,503	48,948	(c)
La.	11,667	18,008	26,915	(c)	1 (g)
Md.	136,768	131,451	167,274	106,648	165,179
Miss.	158,642	65,872	45,747	(c)	72,874
N. J.	22,833	24,936	6,115	(c)	(c)
Tex.	(c)	(c)	14,371	16,942	25,567
Tenn.	8,147	9,943	14,487	9,504	(c)
Va.	95,067	133,463	155,038	189,732	(c)
Other states	25,302	28,389	34,836	86,785	334,335
Total U. S.	374,286	454,415	745,861	622,827	768,951

^a Data from Census of Manufacturers.

^b Cases are 24 No. 3 cans except in 1925 when they are No. 2½ cans.

^c Included in other states.

There are enough advantages of canning sweet potatoes that it seems as if the industry should continue to grow. In the first place, canned sweet potatoes will keep indefinitely while the fresh product is difficult to keep throughout the year. When sweet potatoes are stored there is a 10% shrinkage or more, besides the chance of a portion decaying. Therefore there is less waste in canning the potatoes than in storing. The canned potato is much more convenient for the housewife. It takes less time to prepare and cook than the fresh product besides there being no possibility of the potatoes spoiling and no waste. There is not very much difference in the cost of the canned product and the fresh stock a few months after the digging season. The canned stock retails in the Knoxville stores for 15 to 20 cents per No. 2½ can.¹ A bushel of sweet potatoes will fill about 18 No 2½ cans.²

¹ From interviews with retail grocerymen of Knoxville.

² From interview with canner of sweet potatoes on survey.

On this basis the canned stock equal to a bushel of the fresh product would retail for around \$3.00. The retail price of the fresh stock after March 1 until digging time ranges from \$2.00 to \$3.00 per bushel. On the northern markets the canned stock would probably be cheaper than the fresh stock owing to the high cost of marketing the fresh stock.

The sweet potato contains a considerable quantity of vitamins A, B, and C. It was formerly thought that canning destroyed these vitamins. The National Cannery Association in collaboration with the Department of Physiological Chemistry of the Teachers College, Columbia University, made a very comprehensive study of the vitamin content of canned foods in 1922 and made the following statement; "The investigations warrant the general statement that vitamin A and B are not destroyed to any appreciable extent by the canning operation, and that vitamin C is retained in much larger quantity in canned foods than in the same food prepared from the raw state and cooked by the usual kitchen methods."¹ Therefore it appears that the food value of the sweet potato would not be lessened by canning.

The canned sweet potato is adapted to any culinary use to which the fresh stock is adapted, except baking. When canned soon after digging, by modern methods, the canned stock will stand up and can be used for candying, etc. Pie stock is also available in the canned form, and requires very little time in preparation.

There is, however, one objection to canned sweet potatoes that has limited its use in the past and unless overcome will continue to do so in the future, namely its flavor. In a survey of public eating places of Knoxville a great deal of complaint was found against canned sweet potatoes for this reason.² It was also found that their use at present is largely limited

¹ Cannery Directory, 1929, p. 179.

² Allred, C. E., Atkins, S. W., and Lucas, B. F. Unpublished data from Preliminary Report on Marketing Tennessee Sweet Potatoes, p. 132. 1930.

to that season of the year when the fresh stock is not readily available, or is bringing a very high price. This fact was also pointed out in an interview with a canner of sweet potatoes on the survey. According to this canner, those years when there is considerable fresh stock held in storage late in the season there is little demand for the canned stock. When there is a shortage of fresh stock late in the season and it is selling for relatively high prices, there is a considerably greater demand for the canned goods.

It seems that Tennessee would be able to successfully compete with other states in the canning of sweet potatoes. In the first place the Nancy Hall variety is raised almost exclusively in the main commercial area and this variety is one of the best suited varieties for canning purposes.¹ Therefore, jumbo potatoes, cuts, etc., could be used for canning in the commercial districts, thereby eliminating a large annual waste and providing the growers a market for their cull products. A canner, interviewed in West Tennessee, bought the potatoes "field run" from the farmer, graded them, and canned the cut, bruised and jumbo potatoes, but stored the No. 1 stock and sold them as cured potatoes. He was not in the principal commercial district, however, and had never bought only the lower grade of potatoes for canning. He said that he believed such a practice would be possible in the principal commercial districts. Tennessee is also well situated as to freight rates to the North Central markets, as compared with the other states producing the moist-fleshed varieties. The markets of the North Central states prefer the moist-fleshed potatoes as a rule and should therefore take well to the moist-fleshed potatoes when canned. The Nancy Hall is also a very popular variety in these markets and since it is well suited to canning it should find favor in these markets.

¹ Culpepper, C. W., and Magoon, C. A., The Relation of Storage to the Quality of Sweet Potatoes for Canning Purposes, Journal of Agricultural Research 33: 627-43. 1926.

Sweet potatoes can be canned in the home, but this takes more work than is required in storing them. It is a waste of time where they can be stored successfully. However, enough may be canned to extend their use to seasons when the fresh stock cannot be kept and to utilize cut potatoes at digging time.¹ The process for canning sweet potatoes in the home is described in Farmers' Bulletin 1471.

2. Starch Manufacture

The sweet potato contains a high percentage of carbohydrates, especially starch, being higher than almost any other common vegetable. The starch content varies some with different varieties. Some varieties often contain as high as 22% starch. In Germany where commercial starch is manufactured from Irish potatoes, the starch content of the potatoes is around 20%.² Starch is recovered from Irish potatoes in Maine as a means of utilizing cull potatoes.³ In view of the high content of starch in sweet potatoes and the large percentage of potatoes that are unmarketable some years it seems that such an industry could be developed for the sweet potato.

McDonnell⁴ reports that the starch made from the sweet potato was of very high quality, and superior to corn starch for a number of purposes. The Secretary of Agriculture in the Yearbook of 1930 says, "Sweet potato starch may prove an acceptable substitute for tapioca and sago starch, from which adhesives for postage stamps and envelopes are made, which are imported products. If this substitute can be made it will consume 18,000,000 bushels of sweet potatoes annually."⁵

¹ Stanley, Louise, Canning Fruits and Vegetables at Home, U.S.D.A. Farmers Bulletin 1471. 1926.

² McDonnell, C. C., The Manufacture of Starch From Sweet Potatoes, S. C. Agr. Exp. Sta. Bulletin 136. 1908.

³ Paine, H. S., Sweet Potatoes As a Possible Source of Starch, U.S.D.A. Yearbook. 1928. p. 569-70.

⁴ McDonnell, C. C., op. cit.

⁵ New Uses for Sweet Potatoes, discussion by the Secretary of Agriculture in U. S. D. A. Yearbook, 1930. p. 63-4.

The Bureau of Chemistry and Soils of the United States Department of Agriculture is at present investigating the recovery of starch from sweet potatoes. A commercial sweet potato starch plant has been erected in Louisiana and commercial methods of manufacture are being developed by this department.

McDonnel of the South Carolina Experiment Station in 1906 and 1907 carried out several experiments in the manufacture of starch from the sweet potato. By his methods he was able to recover around 50 to 60% of the starch of the potatoes which amounted to from 6.2 to 9.34 pounds of starch from a bushel of potatoes.¹ This amount of starch proved too small to be able to financially compete with corn starch unless some valuable by-products could be developed. There are several by-products of starch manufacture from sweet potatoes that might return a good revenue; as, the pulp which could be dried and used for stockfeed, and alcohol which could probably be made from part of the wash water. The wash water also contained some fertilizing materials which could be largely recovered, as is done in the manufacture of starch from the Irish potato in Germany.

This field offers fertile ground for further investigations. It is quite possible that the ^{cost of the} commercial manufacture of starch can be reduced or the starch can be substituted for the higher priced tapioca and sago starches.

3. Syrup Manufacture

It has been known for some time that syrup could be manufactured from the sweet potato. In 1870 a patent was granted to Charles Delamare of New Orleans for a process of manufacturing sweet potato syrup. In 1919 the Bureau of Chemistry was granted a patent for a simplified process of making

¹ McDonnel, C. C., op. cit.

1

syrup from sweet potatoes. The process consisted of cooking the sweet potato in steam, mashing it, and adding malt. This mixture was allowed to stand for a time after which the liquid was pressed out and evaporated to the desired thickness.

From experimental work carried on by the Bureau of Chemistry at a plant near Fitzgerald, Georgia, the cost of manufacturing the syrup on a commercial scale was estimated at 64.3 cents per gallon. In arriving at this cost it was assumed that only cull potatoes would be used, which could be secured at 25 cents per bushel. The yield of syrup from a 50 pound bushel of potatoes for these costs was assumed to be 1.37 gallons. This was the yield obtained in 1922. In 1921, 1.55 gallons of syrup was secured from a bushel of potatoes. They also point out that this yield might be increased, since they were primarily trying to get a high quality product and not to secure a high yield of syrup. The drying of the pomace proved uneconomical although it had a high feeding value.

The Bureau of Chemistry sent 5 to 6 gallons of the syrup produced to each of many manufacturers of syrup and products made with syrup to obtain their opinion as to its quality and the commercial application. There was a very wide variation of opinion as to the quality of the product. Some thought it not sweet enough, while others thought it too sweet. Some objected to the color being too dark; others thought it about right. Some reported an objectionable sweet potato taste; others thought the sweet potato taste was hardly noticeable and not objectionable, if present. Their replies, however, showed that the qualities of the syrup limit its use. Because of its color it could not be used in making candies except those that are colored. Because of its characteristic taste it is doubtful if it could

¹ Gore, H. C., Reese, H. C., and Reed, J. O., Production of Syrup from Sweet Potatoes. U. S. D. A. Bulletin 1158. 1923.

be used for household and cooking purposes.

Sweet potato syrup has qualities which make it valuable for blending with other syrups. It will prevent the crystallization of cane syrup when mixed with it similar to glucose. G. A. Shuey, Chemist of the Tennessee Agricultural Experiment Station, says it is valuable for preserving fruits as it penetrates readily.

However, with the low cost of glucose it is doubtful if sweet potato syrup could be manufactured at low enough cost to be used as a substitute.

4. Other Products

A great many different products have been made from the sweet potato. However, none of them are made on a commercial scale at the present time. Attempts have been made to manufacture several by-products commercially but have not proven successful to a very large extent. In 1900, Henry S. Morris of Philadelphia established a sweet potato flour plant in New Jersey. For several seasons sweet potato flour was made which sold at satisfactory prices, but production ceased in 1906 owing to lack of demand for the flour. The Williams Company of Greenville, South Carolina, in 1916, produced three sweet potato products, namely, a crumb-like product known as yam nuts, sweet potato flake flour and a sweet potato flake. Their production proved unprofitable and eventually ceased. In 1919, Mangels and Prescott of the Bureau of Chemistry manufactured sweet potato flour by the flake process. Their process was found to be of no value as applied to sweet potatoes, since the product had an unattractive color and flavor and would harden upon storage, forming gummy cakes. Dr. G. W. Carver, of Tuskegee Institute, has prepared potato flour, dehydrated potatoes, starch, syrup, alcohol, vinegar, breakfast foods and various kinds of feeds from the sweet potato.¹

¹ Gore, H. C., Reese, H. C., and Reed, J. O. Production of Syrup from Sweet Potatoes. U. S. D. A. Bulletin 1158. 1923.

According to Mr. Shuey, Chemist of the Tennessee Agricultural Experiment Station, many other products can be made from the sweet potato; as sweet potato chips (Mr. Shuey says they are easier to make than Irish potato chips and are delicious), breakfast flakes, chocolate substitute, dyes ranging from light yellow through brown to black, vinegar, cider, sour wine, beer and near beer, tar, and citric acid by the use of molds. It is quite possible that a commercial industry might be developed for manufacturing some of these products from the sweet potato.

5. Conclusions

Canning is the only method of processing sweet potatoes that has been developed commercially at the present time.

The sweet potato can be canned easily and the product is adapted to almost any culinary use for which the fresh stock can be used.

Canned sweet potatoes are used now largely to extend their use throughout the year, when the fresh stock is not available or when it is relatively high in price.

The canned stock has a number of advantages over the fresh stock as, less waste, longer keeping qualities, and easier preparation for table use.

The chief objection to canned sweet potatoes seems to be due to their flavor. Unless this can be improved the growth of the industry will likely be limited.

A high grade starch can be made from the sweet potato but it is hardly probable that it can be manufactured cheap enough to compete with corn starch. It has, however, properties similar to tapioca and sago starch which are used to make adhesives for postage stamps and envelopes. It may be possible to substitute it for these two starches, which are imported products.

The manufacture of syrup from the sweet potato appears to be limited because of the relatively high cost of manufacture, its dark color, and

characteristic taste.

Many other products can be made from the sweet potato. A few of these have been attempted on a commercial scale but proved unprofitable for various reasons.

BIBLIOGRAPHY

1. Allred, C. E., Atkins, S. W., and Lucas, B. F. Preliminary Report on Marketing Tennessee Sweet Potatoes. 1930
2. Culpepper, C. W. and Magoon, C. A. The Relation of Storage to Quality of Sweet Potatoes for Canning Purposes. J. Agr. Res. 33: 627-43. 1926.
3. Gore, H. C., Reese, H. C., and Reed, J. O. Production of Syrup from Sweet Potatoes. U.S.D.A. Bul. 1158. 1928.
4. McDonnell, C. C. The Manufacture of Starch from Sweet Potatoes. S. C. Agr. Exp. Sta. Bul. 136. 1908.
5. Paine, H. S. Sweet Potatoes as a Possible Source of Starch. 1928. p. 569-70.
6. Stanley, Louise. Canning Fruits and Vegetables at Home. U.S.D.A. Farmers' Bul. 1471. 1926.
7. U.S.D.A. Yearbook of Agriculture, 1930. New Uses for Sweet Potatoes, p. 63-64.

CHAPTER III

STORING, GRADING, AND PACKING

- | | |
|--|-------------------------------|
| 1. Principles of Sweet Potato Storage. | 5. Grade Defects. |
| 2. Construction of Storage House. | 6. Shipping Point Inspection. |
| 3. Management of Storage. | 7. Containers. |
| 4. Grades for Sweet Potatoes. | 8. Packing. |

1. Principles of Sweet Potato Storage

The first type of storage used for sweet potatoes was bank storage. This type of storage is formed by placing a pile of potatoes on a bed of straw or leaves, and then covering them with another layer of straw and earth. Later, potatoes were stored in insulated houses without artificial heat, except as was necessary to prevent the potatoes from chilling. Heavy losses from rot usually occur in both these types of storage.

The sweet potato is a perennial plant and will continue to grow for several seasons when conditions remain favorable. When the tuber is severed from its vine and is removed from the ground it undergoes certain changes. These changes are evidently nature's way of protecting it from rot producing fungi, and consists of a giving off of moisture¹ and a transformation of starch in the tuber into sugars.² Later in the season, March to June, there is a re-formation of starch and the disappearance of sugar. In addition to this there is a gradual internal breakdown of the cells of the potato,³ which is more noticeable when the potatoes have been stored several weeks.

The successful storage of sweet potatoes depends upon the prevention of the development of rot producing fungi which require moisture and heat for their growth. This is accomplished by the application of artificial heat to

¹ Kelley, M. A. R., Design and Operation of Commercial Sweet Potato Storage Houses, p. 737.

² Hasselbring, H., and Hawkins, L. A., Carbohydrate Transformation in Sweet Potatoes.

³ Harter, L. L., Lauritzen, J. I., and Weimer, J. L., Internal Breakdown of Sweet Potatoes.

aid in the drying out of the potatoes during the first part of storage and a reduction in temperature later so as to prevent the development of the fungi. This application of heat during curing causes a shrinkage in the potato, the skin contracts, and is toughened, forming a corklike texture which retards further loss of moisture later.¹

The proper temperature for curing and storing sweet potatoes depends upon two factors. First, the temperature must be such that the growth of rot producing fungi will be retarded or inhibited; and second, it must be such that it will not cause injury to the potato itself. The first factor necessitates a knowledge of the temperature for growth of rot-producing organism.

The two storage rots causing the most damage in Tennessee are black rot and soft rot; the former caused by the fungus Spoeronea fimbriatum and the latter by Rizopium nigricans.² The optimum temperature for growth of the former is 23° to 27° C. (73°-80° F.), the maximum 34.5° to 36° C. (94°-97° F.), and the minimum 9° to 10° C. (48°-50° F.).³ The soft rot fungus has a range of temperature fairly close to those of the black rot fungus.⁴ Therefore, it would seem advisable to regulate the curing and storing temperatures so as to avoid the optimum temperature ranges of these fungi.

The curing temperature customarily recommended is 80 to 85 degrees F.⁵ This temperature is above the optimum temperature range for the principal rot producing fungi. Higher temperatures than this are hard to maintain if the house is given plenty of ventilation. The storing temperature generally recommended is around 55° F. This temperature is down near the minimum temperature for the rot fungi. Gardner⁶ found that potatoes kept better at this

¹ Kelley, M. A. R., Op. cit., p. 738.

² Harter, L. L., Weimer, J. L., and Adams, J. M. R., Sweet Potato Storage Rots.

³ Lauritzen, J. J., Infection and Temperature Relation of Black Rot of Sweet Potatoes in Storage.

⁴ Lauritzen, J. I., and Harter, L. L., The Influence of Temperature on the Infection and Decay of Sweet Potatoes by Different Species of Rizopus.

⁵ Thompson, H. C. Storage of Sweet Potatoes, p. 17.

⁶ Gardner, W. A., Physiology of Sweet Potatoes.

temperature than at either 46 or 64 degrees F., and that the composition of the potatoes changed less at 55 degrees than at either of the other temperatures.

No way of determining the exact amount of curing necessary has yet been devised. In fact the amount varies from one year to another since the amount of moisture in the potatoes also varies from one year to another. From 10 days to 2 weeks is generally required; or until the potato has a velvety feel or bud sprouts appear. Plenty of ventilation is necessary during the curing period to carry away the moisture given off by the potatoes. All ventilators should be wide open as well as windows and doors except in case of inclement or cold weather. Kelley¹ recommends that the humidity of the air during curing be kept below 70% and between 75 and 85% after curing. The low humidity during curing facilitates the drying of the potatoes. After curing too high humidity is favorable to growth of rot organisms while too low causes excessive shrinkage and internal breakdown of the potatoes.

2. Construction of Storage Houses

A sweet potato storage house should be constructed so that it will protect its contents from temperature changes and yet have adequate heating and ventilating facilities provided. The first requirement, protection against temperature changes, necessitates that some kind of insulation be provided. There are a number of ways of providing this requirement, such as constructing with hollow tile, concrete blocks, double wall brick, etc. Also, proper insulation is possible with all wood construction. Wooden houses have two features to recommend them; first, they are cheaper to build, and second, they are easier to keep dry. Their construction is adequately described in U. S. D. A. Farmers' Bulletin 1442, so that it is unnecessary to go into the details here. Often a small farm storage house can be provided by properly insulating some building that is not being used. In constructing

¹ Kelley, M. A. R., op. cit.

the house it should be constantly borne in mind that the better the insulation provided the less difficulty will be encountered in controlling temperature and moisture in the storage operations.

The matter of ventilation is of considerable importance. Inlet ventilators must be provided at various places. The location of these intakes will depend upon the type of heating system used. When the stove is placed above the floor several such vents must be provided at different places in the floor. Outlet ventilators in the roof must also be provided, the number depending upon the size and type of the house.

The type of heating system advocated in Farmers' Bulletin 1442 provided for a stove above the floor. This type of house had to be set upon pillars a few feet above the ground to provide adequate floor ventilation. Then it was necessary to provide proper insulation on the floor to guard against temperature changes. This type of house has been successfully used for several years and has proven satisfactory. Certain changes, however, have been recommended in the construction of storage houses in the last few years, which are supposed to increase the efficiency of the house, and yet be more cheaply built.

This new type of house is not set on pillars but on solid brick or concrete walls with only vents as necessary to provide for ventilation. The heating plant is located in a basement under the house instead of above the floor. The new type house does not have the tight, insulated floor as the old but rather a floor made of slats with a space between. Only the alleys, which are necessary to allow storing and removing potatoes with ease, have a tight floor. The spaces between the slats allow the heated air to rise into the storage house proper, ^{and} to circulate through the potatoes. This results in a more effective and uniform curing. This slatted floor is more economical to construct. Also the capacity of the house is increased about 20% as

potatoes can occupy the space formerly occupied by the stove.¹ A more uniform temperature can be maintained in the new type of house than in the old.

During the past few years tests of the systems of heating and ventilating sweet potato storage houses have been conducted by the Georgia Agricultural College.¹ Their results confirm the contention of the Mississippi Agricultural Experiment Station that the heat is more uniform in the new type house than in the old. Their tests also showed that the temperature was more uniform when the heat was distributed by means of flues. They found the temperature variation during curing at two feet above the floor and eight feet above the floor in the old type house to often be as much as 19 degrees. With the new type house and distributed heat in 1930 they were able to decrease this variation to 2 degrees.

3. Management of Storage

Before sweet potatoes are stored the storage house should have all old potatoes removed from it and the house disinfected. There are several ways of disinfecting the house. Spraying with a solution of copper sulphate with a little lime added or with Bordeaux mixture gets fairly good results. Winter strength lime sulphur solution may also be used, or even an application of a coat of whitewash gives fairly good results. The most efficient method of disinfecting is to fumigate with formaldehyde gas. This gas is produced by the addition of formaldehyde to potassium permanganate in the proportion of 3 pints of formaldehyde to 23 ounces of potassium permanganate. This portion will fumigate 1,000 cu. ft. of space. The procedure is as follows: Place the permanganate in a deep receptacle and pour in formaldehyde. The house should then be closed for 24 hours. Before storing a fire should be started in the house to dry it out.²

Successful storage depends to a considerable extent upon the time of digging and the care exercised in digging and handling. The sweet potato

¹ Lacy, H. E., Heating and Ventilating Sweet Potato Storage Houses, Mimeographed report, 1931.

² Harter, L. L., and Weimer, J. L., A Monographic Study of Sweet Potato Diseases and Their Control.

should be dug before frost kills the vines. Frost damage to foliage is carried down to the tuber which causes it to break down in storage.¹ Careful handling greatly aids in preventing losses in storage. Infection by rot producing organisms in storage seldom takes place except through wounds.² Hence, the greater care exercised in handling the lesser the loss will be encountered in storing. This fact is borne out by an experiment carried out by the U.S.D.A. They found that the loss from shrinkage and decay of cut and bruised potatoes was 41.92% compared with a loss of 14.58% of a lot of uningured potatoes.³ As black rot is both a field and storage disease any measures taken to control it in the field will greatly aid in reducing its amount in storage. This is shown in an experience which resulted in a curing test at the Georgia Agricultural College. In this test the potatoes were all stored in one house but grown on different fields. One lot grown on land from which several houses had been removed developed soft rot a few days after storing. Another lot was attacked by black rot while the third was affected by neither.⁴

The control of air temperature and moisture are the most important considerations in the operation of a sweet potato storage house. In order to properly control these conditions suitable and dependable instruments for reading the temperature and moisture content of the air are necessary. No operator can accurately judge these conditions and unless instruments are provided, the control of air conditions will be mere guesswork. In addition to this the operator should study weather reports so as to anticipate weather changes and therefore be ready for any that would occur.

The amount of heating necessary during curing depends largely upon outside temperature. At times the outside temperature may go up to 85 degrees

¹ Price, J. C. C., Harvesting and Storing Sweet Potatoes.

² Harter, L. L., and Weimer, J. L., op. cit.

³ Thompson, H. C., Sweet Potato Storage Studies, p. 7-9.

⁴ Lacy, H. E., op. cit.

when no heat is necessary. However, outside temperatures fluctuate considerably and the operator must adjust his heating and ventilating system accordingly.

Control of air conditions during storage is probably more difficult than during curing. By studying outside conditions and opening and closing ventilators at right time often little heat is necessary during this period. When the average outside temperature is below 50 degrees the ventilators can be opened only during the warmer part of the day when the temperature goes above 50 degrees. They should be closed again when it falls below 50 degrees. If the temperature in the house falls below 50 degrees heat should be applied. In the fall and spring outside temperatures may be higher than the desired storage temperature. When this occurs the ventilators should be opened at night or early in the morning so as to lower the inside temperature. By closing them during the day the temperature inside storage may be kept lower than the outside temperature. The moisture content of the air is dependent considerably on the temperature. Controlling temperature will generally control moisture content. However, if the moisture content goes above 85% heat should be applied to drive off the excess moisture.

4. Grades for Sweet Potatoes

Tentative grades for sweet potatoes were first proposed by the Bureau of Markets of the U. S. Department of Agriculture in April, 1918. Some of the grades were revised in 1920. These grades are not mandatory, their use being left to the discretion of the individuals. However, these grades are used more and more in buying sweet potatoes and their importance has increased.

There are four grades recommended by the U. S. Department of Agriculture in 1920 as follows: U. S. Grade No. 1; U. S. Grade No. 2; U. S. Jumbo Grade; and U. S. Grade No. 3. The U. S. Grade No. 1 has two sub-grades under it, U. S. Grade No. 1 Medium and U. S. Grade No. 1 Long.¹

¹ Traux, H. E., United States Grades for Sweet Potatoes.

The United States standard grades for sweet potatoes as recommended by the Bureau of Agricultural Economics in 1926 are as follows:

U. S. No. 1 shall consist of sweet potatoes of similar varietal characteristics which are firm, not badly misshapen; which are free from black rot, decay, and freezing injury; and free from damage caused by dirt, secondary rootlets, bruises, cuts, scars, growth cracks, scald, scurf or other diseases, weevils or other insects, and by mechanical or other means.

UNLESS OTHERWISE SPECIFIED, the diameter of each sweet potato shall not be less than $1\frac{3}{4}$ inches nor more than $3\frac{1}{2}$ inches, and the length shall not be less than 3 inches nor more than 10 inches, but the length may be less than 3 inches if the diameter is 2 inches or more.

TOLERANCES. In order to allow for variations other than size, incident to proper grading and handling, not more than 10 per cent, by weight, of the sweet potatoes in any lot may be below the requirements of this grade, but not to exceed a total of 5 per cent, shall be allowed for defects causing serious damage, and not more than $\frac{1}{5}$ of this amount, or 1 per cent, shall be allowed for sweet potatoes affected with soft rot.

In addition, not more than 10 per cent, by weight, of the sweet potatoes in any lot may not meet the size requirements, but not more than one-half of this tolerance, or 5 per cent, shall be allowed for sweet potatoes which are below the minimum size requirements.

U. S. No. 2 shall consist of sweet potatoes of similar varietal characteristics which are firm and which are free from black rot, decay, and freezing injury; and free from serious damage caused by dirt, bruises, cuts, scars, growth cracks, scald, disease, weevils or other insects and mechanical or other means.

UNLESS OTHERWISE SPECIFIED, the diameter of each sweet potato shall not be less than $1\frac{1}{2}$ inches nor more than 4 inches.

TOLERANCES. In order to allow for variations other than size, incident to proper grading and handling, not more than 10 per cent, by weight, of the sweet potatoes in any lot may be below the requirements of this grade, but not to exceed $\frac{1}{10}$ of this amount, or 1 per cent, shall be allowed for sweet potatoes affected with soft rot.

In addition, not more than 10 per cent, by weight, of the sweet potatoes in any lot may not meet the size requirements, but not more than one-half of this tolerance, or 5 per cent, shall be allowed for sweet potatoes which are below the minimum size requirements.

U. S. Fancy shall consist of sweet potatoes of similar varietal characteristics which are firm, smooth and well shaped; which are free from black rot, decay, and freezing injury; and free from damage caused by dirt, secondary rootlets, bruises, cuts, scars, growth cracks, scald, scurf or other disease, weevils or other insects and mechanical or other means.

The diameter of each sweet potato shall not be less than 2 inches nor more than $3\frac{1}{2}$ inches and the length shall be not less than 3 inches nor more than 6 inches, but the length may be less than 3 inches if the diameter is $2\frac{1}{4}$ inches or more.

TOLERANCES. In order to allow for variations other than size incident to proper grading and handling, not more than 10 per cent, by weight, of the sweet potatoes in any lot may be below the requirements of this grade, but not to exceed a total of 3 per cent, shall be allowed for defects causing serious damage, and not more than $\frac{1}{3}$ of this amount or 1 per cent, shall be allowed for sweet potatoes affected with soft rot.

In addition, not more than 10 per cent, by weight, of the sweet potatoes in any lot may not meet the size requirements, but not more than one-half of this tolerance, or 5 per cent, shall be allowed for sweet potatoes which are below the minimum size requirements.

UNCLASSIFIED shall consist of sweet potatoes which are not graded in conformity with any of the foregoing grades.

DEFINITIONS OF TERMS

As used in these grades:

"Similar varietal characteristics" means that the sweet potatoes in the same container shall have skins of similar color, such as white, yellow or red. Moist and dry types shall not be mixed.

"Firm" means that the sweet potato shall not be flabby or shriveled.

"Badly misshapen" means that the sweet potato is so misshapen as to cause a waste for ordinary use of more than 20 per cent, by weight, of the potato.

"Damage" means any injury which materially affects the appearance of the lot or causes appreciable waste in the ordinary preparation for use.

"Serious damage" means any injury not including badly misshapen potatoes, which seriously affects the appearance of the lot, or causes a waste of more than 20 per cent, by weight, in the ordinary preparation for use. Black rot shall be considered as serious damage.

"Diameter" means the greatest dimension at right angles to the longitudinal axis.

"Smooth" means that in addition to other defects which cause roughness, sweet potatoes shall be free from prominent veining.

5. Grade Defects

Grading is more important today in the selling of fruits and vegetables than ever before. The produce trade is now using standard U. S. Grades in buying and selling of produce. This puts an additional emphasis on proper grading.

Shipping point inspection reports for 275 cars of sweet potatoes, furnished by the Tennessee State Department of Agriculture, revealed that 93 cars contained some potatoes that were not of U. S. No. 1 grade. The average number of hampers below U. S. No. 1 for these 93 cars was 84 or a total of

7825 hampers. This was 5.8% of the total shipments covered by these certificates.

Very little of the exact nature of the defects of the potatoes, not U. S. No. 1, could be determined by the certificates because as a general rule such potatoes were not covered by the certificate and no grade placed on them. Only 10 cars were placed in lower grade than U. S. No. 1. Of these 10 cars 5 cars failed to grade No. 1 because they failed to meet the size requirements only, and 5 failed because percentage of defects exceeded tolerances in addition to failure to meet the size requirements. Table 32 gives the percentage of potatoes over and under size in all cars for which such percentages were reported, most of the cars were well under the size requirements,

Table 32

Percentage of Potatoes Not Meeting Size Requirements

Percentage under and over size	Number of cars
2% and under	15
3%	19
4%	37
5%	41
6%	32
7%	29
8%	7
9%	3
10% and over	10

Source: Shipping point inspection reports, 1929-1930.

over half of them having 5% or less of potatoes that did not meet these requirements.

Soft rot does not appear to be serious from the inspection reports. Of the 275 cars 166 were reported as containing no soft rot. Only 73 were reported as being affected by soft rot and the percentage of soft rot in all of these cars was less than the maximum tolerance of 1%.

The percentage of defects causing serious damage was not given on the inspection reports. According to Mr. Rue, State Marketing Agent, these de-

fects were one of the chief causes of potatoes not meeting the requirements of U. S. Grade No. 1. A tolerance of 5% is allowed for defects causing serious damage. These defects are mainly due to injury to potatoes in handling and further emphasizes the need for care in handling the product.

6. Shipping Point Inspection

Federal inspection of fruits and vegetables was originally started, as a war emergency act, in the terminal markets. In the spring of 1922 provision was made for shipping point inspection. Congress in passing the law which created the authority for this service, failed to make any appropriation to carry out the work. The work is thus carried on under the direction of the United States Bureau of Agricultural Economics in cooperation with a state agency. The service is therefore financed by the persons who request and benefit from the service. The service is not mandatory but is left to the discretion of the shipper. Since 1922 the work has grown very fast. At first it was used mostly by those states farthest from the market, 90% of all inspections in the first year the service was available, being made in four western states.¹ Since then other states have made use of the service until 35 states were working under the cooperative agreement in the fiscal year 1926-27, and nearly 20% of all fruit and vegetable shipments were covered by the service in this year.²

Inspectors for this service must be licensed by the Secretary of Agriculture. Certificates issued by such agents are received in all courts of the United States as prima facie evidence of the truth of statements contained therein.³ Thus, if a shipper sells a car of product f.o.b. shipping point, he has evidence that the car of produce met grade requirements as stated in the sale agreement. However, the receiver has the right to have the car re-

¹ Mercker, A. E., Shipping Point Inspection of Fruits and Vegetables and What It Means to New Jersey, p. 2.

² James, D. M., What Shipping Point Inspection Is and What It Accomplishes, p. 3.

³ Service and Regulatory Announcements No. 93 Revised, U. S. D. A., 1931, p. 2.

inspected on arrival at destination, but inspection by two persons are necessary to reverse the inspection at shipping point. If these two inspectors agree that the original certificate was in error, a new certificate is issued reversing the original certificate. No certificate can be reversed on any condition that may change in transit as decay, ripeness, etc.¹

In addition to the advantage of evidence in the case of rejection or dispute there are many other advantages of shipping point inspection. It promotes better grading and standardization of farm products, the grades from different sections being the same. It is a strong advertising point in making sales. The shipping point certificate with a certificate issued at receiving point are very valuable in securing adjustments from carriers. It is an impartial way of grading or classifying the produce of different farmers.

7. Containers

The purpose of containers for sweet potatoes is to afford the commodity protection in transporting, and to facilitate in handling and storing. The principle factor to consider in selecting a suitable container is one that will deliver the commodity satisfactorily at the minimum of total cost. The relatively low price of sweet potatoes prohibits the use of very expensive packages.

Many different kinds of containers have been used for shipping sweet potatoes including hampers, baskets, crates, barrels, sacks. Some have been shipped in bulk. One of reasons for so many different kinds of containers is the desire to develop a package suitable for both storing and shipping. None of the packages yet developed have proven ideal for all purposes.

Hampers - The hamper is one of the most widely used and popular containers for sweet potatoes. Practically all of Tennessee's shipments are

¹ Mercker, A. E., op. cit. p. 8.

made in this type of container. It is also used in the northeastern section, especially by New Jersey, Maryland, and Delaware, as well as occasionally in practically all other states. The hamper is well liked in a number of the large markets. Approximately one-half of the dealers that reported container preference from some of the principal southern, eastern, and north-central markets in 1930 preferred this type of container.¹ The bushel hamper is generally used for sweet potatoes. This hamper when constructed for this commodity should have not less than eight staves which should be not less than one-eighth of an inch thick. It should have four hoops. The bushel hamper according to the United States standards must contain 2,150.42 cubic inches.²

Hampers are used in Tennessee for both storing and shipping. Some of the objections against them are (1) that they often break in shipping, (2) there is no sale for used hampers, and (3) the sides at times give away in storing. Two of these objections can be overcome, largely, by more rigid construction.

Other Containers - The barrel is used very largely in Virginia and to a lesser extent in New Jersey, Delaware and North Carolina.³ It is regarded as too large except in markets accustomed to the barrel. The round stave bushel basket is used in Arkansas, Texas, Indiana, and Illinois. The crate is used principally in Texas, Louisiana, Arkansas, and Georgia. Crates are of two sizes, the bushel and the five peck crate. Shipments in sacks and in bulk are often made to markets in the south. Such shipments are not recommended as the sweet potato is very easily injured and considerable damage is likely to result from sack and bulk shipments.

Consumer Packages - Consumer packages have been used for selling Irish potatoes for several seasons in the larger northern markets. These packages

¹ Allred, G. E., Atkins, S. W., and Lucas, B. F., op. cit., p. 169.

² U. S. D. A., Service and Regulatory Announcements No. 116, 1928, p. 4.

³ Containers used are as reported in Sweet Potato Commodity Reports of U. S. D. A.

contain from 15 to 50 pounds of potatoes. Owing to the similarity of Irish and sweet potatoes it appears that their use might be extended to the latter. There is a difference of opinion as to the advisability of selling Irish potatoes in consumer packages and a decrease of their use in Chicago and Milwaukee is reported for the 1929-30 season, as compared with the previous season.¹ On the other hand their use increased in six other markets for the same season.

The reasons given by the wholesale and retail trade in favor of consumer packages are as follows: that it is a more convenient way to handle potatoes; that the small bag is an attractive consumer package having advertising value; that potatoes are better graded than when packed in large sacks; that there is no loss to retailer due to customers' picking over stock and leaving undesirable potatoes; and that their use is in line with modern merchandising trends to standardized consumer packages.² Objections to their use are that consumers wish to see the potatoes before they buy; that it is more costly; that potatoes at times spoil; that bags sometimes become soiled and unattractive in appearance; and that there is a tendency for shippers to lower the quality after they have been in use for some time. The first objection listed may now be overcome by the use of a "duplex" bag brought out by the United States Department of Agriculture. This new bag intended for a consumer package is woven in one piece of cloth but one side is of very open mesh so that the consumer may readily see the contents. The other side is closely woven to permit printing the brand.³

There are two characteristics of sweet potatoes which will possibly limit their sale in consumer packages. In the first place, the sweet potato is more perishable than the Irish potato and because of this fact closed

¹ U. S. D. A., The Use of Consumer Packages in Marketing Potatoes. Mimeographed report, 1930.

² Ibid., p. 2.

³ News item, Feb. 1, 1931. New Grocery Bags Have Show-Window Feature.

packages could hardly be used. Second, the average consumer usually buys sweet potatoes in such small quantities that the cost of the container would probably be rather high. It has been shown in Table 21 that consumers in Knoxville, as reported by 57 retail grocers, generally buy sweet potatoes in smaller quantities than they do Irish potatoes.

8. Packing

Packing in Hampers - The irregular shape of the sweet potato makes it a rather difficult product to pack, but makes careful packing more essential. Unless the potatoes are carefully packed, the constant jolting of a long freight will cause the potatoes to settle so that the package will not be full when it reaches the market. The slack pack also results in considerable skinning and bruising of the potatoes in transporting and handling of packages.

To carry properly and arrive full each potato should be carefully placed in the package. An orderly arrangement of potatoes on top of the package adds to its attractiveness and is not objectionable if the top layer is representative of the quality throughout the package. A bulged package is popular with the public and helps to develop a demand for the product. However, very little bulge is possible in packing potatoes in hampers but a slight bulge is advisable.

BIBLIOGRAPHY

1. Gardner, W. A., Physiology of Sweet Potatoes, Ala. Exp. Sta. Rep. 1926.
2. Harter, L. L., Lauritzen, J. I., and Weimer, J. L., Internal Breakdown of Sweet Potatoes. Phytopathology 13: 146-7. 1923.
3. Harter, L. L., Weimer, J. L., and Adams, J. M. R., Sweet Potato Storage Rots. Jour. Agr. Res. 15: 337-68. 1918.
4. Harter, L. L., and Weimer, J. L., A Monographic Study of Sweet Potato Diseases and Their Control, U. S. D. A. Tech. Bul. 99. 1929.
5. Hasselbring, H., and Hawkins, L. A., Carbohydrate Transformation in Sweet Potatoes. Jour. Agr. Res. 5: 543-560. 1915.

6. James, D. M., What Shipping Point Inspection Is and What it Accomplishes. Pa. Dept. Agr. Bul. 10. 1928.
7. Kelley, M. A. R., Design and Operation of Commercial Sweet Potato Storage Houses. Va. Truck Exp. Bul. 67. 1929.
8. Lacy, H. E., Heating and Ventilating Sweet Potato Storage Houses. Mimeographed Report. Ga. Agr. College. 1931.
9. Lauritzen, L. L., Inspection and Temperature Relation of Black Rot of Sweet Potatoes in Storage. Jour. Agr. Res. 33: 663-67. 1926.
10. Lauritzen, J. I., and Harter, L. L., The Influence of Temperature on Infection and Decay of Sweet Potatoes by Different Species of *Rhizopus*. Jour. Agr. Res. 30: 793-810. 1925.
11. Merckel, A. E., Shipping Point Inspection of Fruits and Vegetables and What It Means to New Jersey. Mimeographed Report, N. Jer. Dept. Agr. 1927.
12. Price, J. C. C., Harvesting and Storing Sweet Potatoes, Ala. Agr. Exp-Sta. Bul. 220. 1923.
13. Price, J. C. C., The Production and Storage of Sweet Potatoes. Miss. Agr. Exp. Sta. Bul. 279. 1930.
14. Thompson, H. C., Storage of Sweet Potatoes. U. S. D.A. Farmers' Bul. 1442. 1925.
15. Thompson, H. C., Sweet Potato Storage Studies, U. S. D. A. Bulletin 1063. 1922.
16. Traux, H. E., United States Grades for Sweet Potatoes. U. S. D. A. Circ. 99, 1920.

CHAPTER IV

PRESENT SYSTEM OF MARKETING TENNESSEE SWEET POTATOES, AND THEIR
DISTRIBUTION

- | | |
|---|---|
| 1. Marketing Agencies and Methods of Selling. | 4. Transporting. |
| 2. Storage Agencies. | 5. Advertising and Branding. |
| 3. Method of Grading and Packing. | 6. Production as Related to Marketing. |
| | 7. Seasonal Carlot Movement and Distribution. |

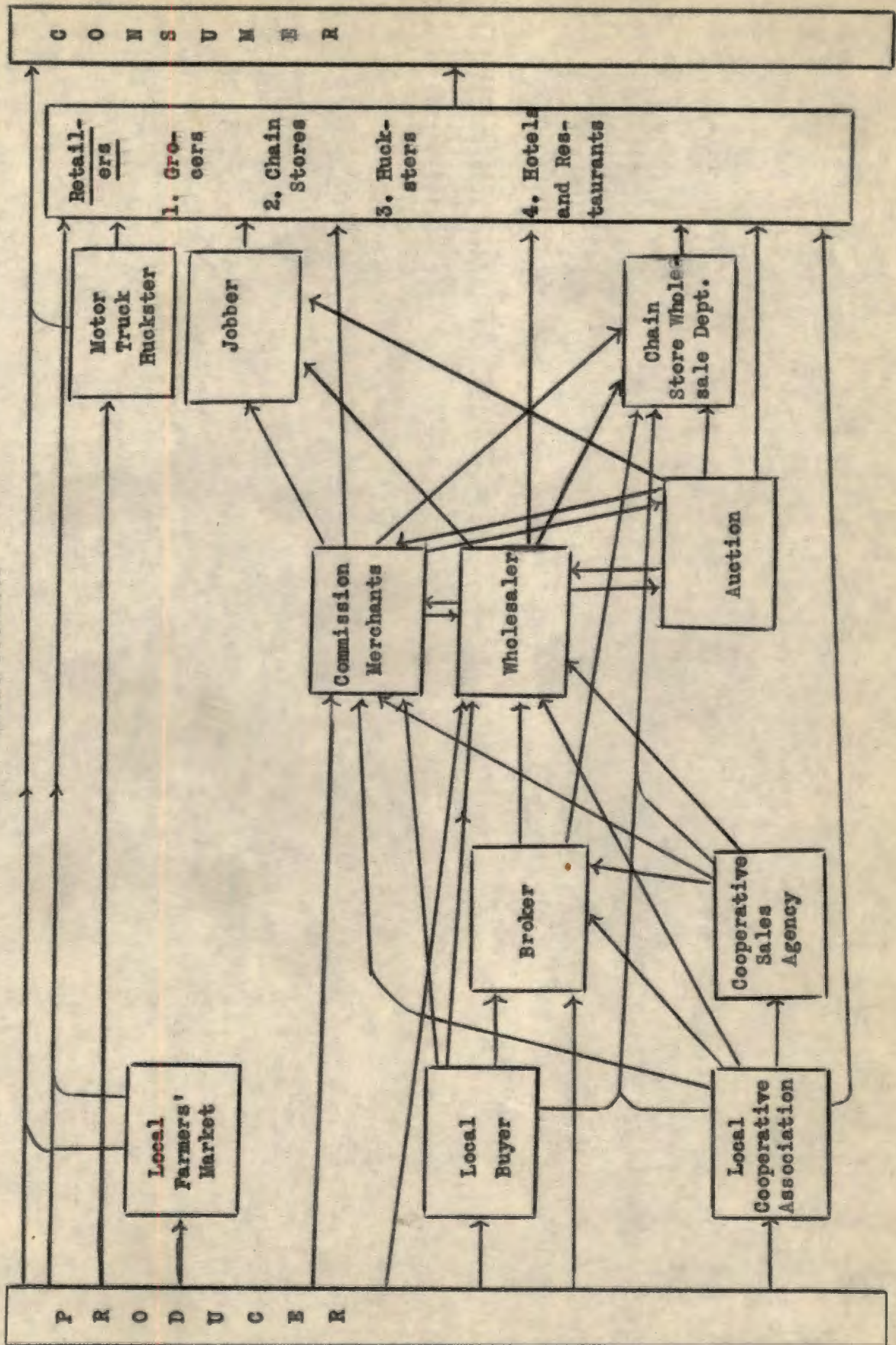
1. Marketing Agencies and Methods of Selling

The marketing of the sweet potato crop is of vital interest to every producer. It represents the period of cash income which must be balanced against the longer period when production costs rule. Unfortunately good producers are either not always good salesmen, or not in a position to sell their product to the final consumer or even to the retailer. Therefore, a system of middlemen is necessary to aid in marketing the crop.

The agencies and channels of distribution of Tennessee sweet potatoes is shown graphically on Chart 32. All these agencies and channels of distribution are in use at present or have been used in the past. As can be seen on the chart, some sweet potatoes are sold direct from producer to consumer. This direct marketing is done only when the potatoes are marketed locally through the local farmers' market or peddled from house to house. Sweet potatoes are also marketed locally by producers direct to the retailer, either through the farmers' market or peddled direct to the retailers. The farmers' markets are located only in the larger cities some of which have both retail and wholesale markets. No figures are available as to the amount of sweet potatoes marketed locally through these channels, but it is undoubtedly a considerable portion of Tennessee's crop. The local cooperative

Chart 32

Agencies and Channels of Distribution of Tennessee Sweet Potatoes



association also markets some potatoes locally, both direct to the retailer and through a wholesaler. (These associations will be discussed in Chapters VI to VIII.) Some are also marketed through the local buyer, commission merchant and wholesaler.

Agents to Whom Growers Sell - The agent to which the grower sells his sweet potatoes varies in different parts of the state. In the principle producing area of West Tennessee most growers sell to the local independent buyer.

Table 33

Agent to Whom Producers Sell Sweet Potatoes in
Tennessee (a)

Agent	Total	West Tennessee	East and Middle Tennessee
Independent buyer	54	21	33
Cooperative association	29	4	25
Retail stores	33	8	25
Hotels, restaurants and other consumers	19	4	15
Ship to terminal market in carlots	12	6	6
Ship to terminal market L. C. L.	13	4	9

^a Source: Replies to questionnaires sent to growers of sweet potatoes in Tennessee, 1930.

In the other portions of the state the cooperative association handles a larger part of the crop and a greater percentage of growers sell direct to retail stores, hotels, restaurants, and other consumers (see above table).

The local buyer is the principal local agent handling the commercial crop which is shipped out of the state. The local cooperative handled a good number of cars during the crop years 1926 and 1927 but since then their shipments have dwindled until at present they are practically out of the shipping game. The larger growers who can ship in carlots at times sells direct to the wholesaler or through a broker or commission man.

Agents to Whom Shippers Sell - According to replies received from

questionnaires sent to shippers (local buyers and large growers) of sweet potatoes, the favorite channel of sale is through the wholesale buyer. Of 18 shippers who returned questionnaires 15 sold through these agencies. Eleven reported this as being the most satisfactory, while only one reported it the least satisfactory (see Table 34). About an equal number, 10 and 11, reported as selling at times through brokers and commission men respectively. However, 4 reported sales through a broker as the most satisfactory while only one made a similar report as to consignment sales. On the other hand 8 reported consignment sales as least satisfactory against 1 so reporting for broker sales. It is evident that consignment is not a popular method of selling with these Tennessee shippers, and is mostly used when a cash buyer cannot be found.

Table 34

Channel of Sale of Tennessee Sweet Potatoes, 1930 (a)

Channel of Sale	Number Selling Through	Most Satisfactory Channel	Least Satisfactory Channel
Wholesaler buyer	15	11	1
Broker	10	4	1
Consignment	11	1	8
Large retailer	7	0	0

^a Source: Replies received on questionnaires sent to shippers of sweet potatoes in Tennessee.

Method of Selling - Dealers who buy from growers sell largely in four ways, consignment, cash track, delivered and F.O.B. According to replies received from shippers cash track is the favorite method of selling with F.O.B. sales second. Only about half of shippers replying reported making delivered sales. Consignment sales are usually only made as a last resort when no cash sale can be made. Over half of the dealers reported the consignment sale the least desirable method of selling.

The auction is included as an agent in the distribution of Tennessee

sweet potatoes in Chart 32. We have no evidence that Tennessee sweet potatoes have been sold by this method but as sweet potatoes are listed as one of the products handled by auction¹ it was thought best to include it here.

Selling Green vs. Selling Cured - According to replies received on the questionnaires sent to growers a big majority of the growers prefer to sell their potatoes cured rather than "green". Only 16 preferred to sell green potatoes. However, these farmers were as a rule, probably, better than the average and would not necessarily be representative of the entire producing areas. Table 35 shows the preferences by areas.

Table 35

Preference of 76 Tennessee Growers as to Selling Sweet
Potatoes Cured or "Green", by Areas

666

Area	Number who preferred to sell:		
	Cured	Green	Total
West Tennessee	19	3	22
Middle Tennessee	41	13	54
Total	60	16	76

The reasons for preferring to sell green or cured potatoes are given in Table 36. The belief is prevalent among these growers that it is more

Table 36

Reasons Given by Growers for Preference as to Selling Cured
or "Green" Potatoes (a)

Reason	Number
Total number preferring to sell cured potatoes:	60
More money	58
Better quality of potatoes	5
Can pick time of selling	2
Other	2
Total number preferring to sell "green" potatoes:	16
Less trouble	8
No loss, (black rot, shrinkage, etc.)	7
Greater net profit	1
Other	2

^a Source: Replies to questionnaires sent to growers of sweet potatoes in Tennessee.

¹ Miller, A. D., and Hauch, C. W., American Fruit and Produce Auction, U.S.D.A. Bul. 1362. 1925.

profitable to sell from storage, as 58 of the 60 who preferred to sell that way gave this as the reason. However, one storing should be fully aware of the risks involved; risks of price fluctuations and of losses from diseases, particularly black rot. Also consideration should be given to the actual costs incident to storage, including the storage charges and interest on the value of the potatoes. It will also be helpful in judging the probable profits from storing to study the size of the current crop, as well as the probable trend of the general price level. These things were probably in the minds of the four growers whose reply to the question on their preference of selling cured or uncured was, "it depends".

Nine growers gave other reasons for selling cured, of which 5 thought the quality of the potato was improved. This probably would have a bearing on the price.

The principal reasons given for selling uncured (or "green") were, no loss from black rot, shrinkage, etc., and less trouble.

The sweet potato acreage of those replying to the question of preference ranged from less than 1 acre to 100 acres. Slightly more than 90% of the acreages were 10 or less. Of the 8 growers who had more than 10 acres, 5 preferred to sell cured and 3 replied that "it depends". The data available are not adequate for determining the relationship between the preference of growers for selling cured or uncured and the size of the acreage of sweet potatoes.

2. Storage Agencies

There are three general methods of storing sweet potatoes in Tennessee. First, a certain amount of potatoes are stored by the producer on the farm. No recent data are available as to the amount of farm storage in Tennessee. In a survey conducted by the United States Department of Agriculture in 1922¹

¹ Gatlin, G. O., Marketing Southern Grown Sweet Potatoes, U. S. D. A. Bul. 1206. 1924.

Tennessee led all other states in the amount of farm storage space. Farm storage was classified as houses of less than 2000 bushels capacity. According to the survey there were 278 farm storage houses in Tennessee in 1922 having a combined capacity of 262,525 bushels.¹ (See Map 4 and Table 37.)

Table 37

Sweet Potato Storage in Tennessee by Counties

County	Farm Storage, 1922 (a)		Commercial Storage, 1922 (a)		Cooperative Storage, 1930 (b)	
	Number Houses	Capacity Bu.	Number Houses (c)	Capacity Bu. (c)	Number Houses	Capacity Bu.
Bedford	1	200	0	0	1	12,000
Benton	6	7,950	2	8,500	0	0
Bledsoe	0	0	0	0	2	30,000
Bradley	1	700	1	15,000	0	0
Cannon	1	1,700	0	0	0	0
Carroll	50	55,000	13	54,500	0	0
Chester	1	1,000	2	10,000	0	0
Cheatham	0	0	0	0	2	20,000
Coffee	0	0	0	0	2	19,500
Crockett	0	0	14	63,750	0	0
Davidson	5	7,300	1	2,000	0	0
Decatur	1	200	0	0	0	0
Dickson	0	0	0	0	1	10,000
Dyer	2	1,600	1	10,000	0	0
Fayette	2	2,800	4	12,000	0	0
Franklin	0	0	2	20,000	6	72,000
Gibson	4	2,000	15	86,500	1	12,000
Giles	1	1,000	0	0	0	0
Hamblen	10	7,900	0	0	0	0
Hamilton	7	4,900	2	9,000	0	0
Hardeman	2	1,000	3	12,500	0	0
Henry	15	12,000	4	9,200	0	0
Humphreys	3	1,500	1	10,000	1	20,000
Jefferson	0	0	1	2,000	0	0
Knox	5	4,600	7	14,500	0	0
Lauderdale	0	0	5	45,000	0	0
Lawrence	2	1,500	4	23,000	0	0
Lewis	0	0	0	0	1	6,000
Lincoln	0	0	0	0	1	8,000
Madison	10	9,500	6	17,000	0	0
Marshall	0	0	0	0	1	8,000
McMinn	3	850	0	0	0	0
McNairy	3	1,100	0	0	0	0
Marion	0	0	0	0	1	12,000
Monroe	3	2,000	2	8,000	0	0

(continued)

¹From mimeographed list of sweet potato storage houses in Tennessee, 1922.

Table 37 (cont.)

Sweet Potato Storage in Tennessee by Counties

	Farm Storage, 1922(a)		Commercial Storage, 1922 (a)		Cooperative Storage, 1930 (b)	
	Number Houses	Capacity Bu.	Number Houses(c)	Capacity Bu.(c)	Number Houses	Capacity Bu.
Montgomery	2	1,500	0	0	1	8,000
Polk	1	100	0	0	0	0
Putnam	0	0	0	0	1	12,000
Roane	2	2,000	1	5,000	0	0
Robertson	0	0	0	0	1	7,000
Rutherford	1	500	10	0	0	0
Shelby	8	10,500	15	69,000	0	0
Sumner	0	0	0	0	1	5,000
Tipton	7	8,500	1	6,000	0	0
Warren	20	13,750	50	0	0	0
Weakley	95	96,975	54	218,000	0	0
White	1	400	0	0	1	11,000
Wilson	0	0	0	0	1	15,000
Total	275	262,525	161	730,450	26	287,500

^a Source: Mimeographed report U. S. D. A.

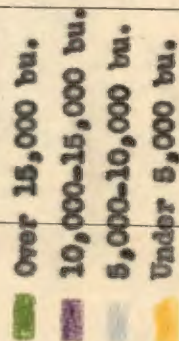
^b Source: Survey of cooperative associations, 1930.

^c Includes cooperative storage.

The second method of storing is in the privately owned commercial storage house. According to the survey conducted in 1922 there were 161 commercial storage houses in Tennessee, practically all of which were privately owned.¹ The capacity of these commercial houses was 730,450 bushels. The private storage house is often owned by the local buyer. He may buy the potatoes green and assume the risk of storing them, or rent storage space to the grower in case the grower wants to hold his potatoes in the hope that the price will advance. Even when the grower chooses to rent storage space the buyer thus has more or less control of the potatoes and usually gets to make the first bid on them when the grower is ready to sell. At times a commercial storage house is operated by an individual or company who is not a buyer, but who is attempting to make a profit from renting storage space to the public. (See Map 5.)

¹ From mimeographed list of sweet potato storage houses in Tennessee, 1922.

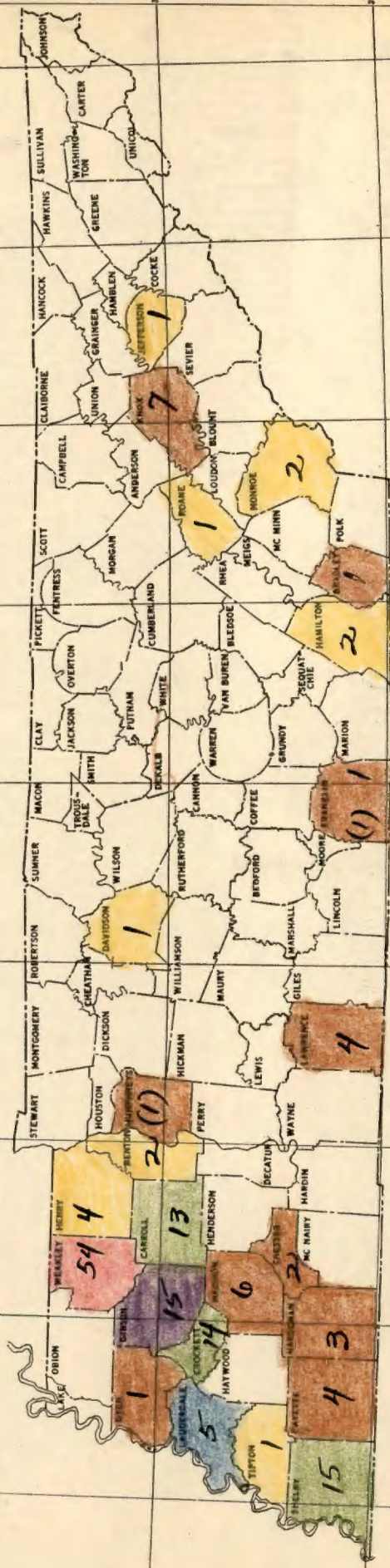
卷之四



Figures on map refer to number of houses.

RAND McNALLY
LETTER SIZE OUTLINE MAP
TENNESSEE

Map 5
Commercial Sweet Potato Storage in Tennessee - Private and Cooperative in 1922



- over 90,000 bu.
- 70,000 - 90,000 bu.
- 50,000 - 70,000 bu.
- 30,000 - 50,000 bu.
- 10,000 - 30,000 bu.
- Under 10,000 bu.

Figures refer to number of storage houses.
Figures in parenthesis indicate cooperative storage.

RAND McNALLY
LETTER SIZE OUTLINE MAP
TENNESSEE

SCALE
0 5 10 20 30 Miles
Copyright by Rand McNally & Company, Chicago
MADE IN U. S. A.

The third method of storing is in the cooperatively owned storage house. The capacity of cooperative storage in 1930 was 287,500 bushels.¹ (See Map 6.) Nearly all the cooperative storage houses have been erected since the survey in 1922. No data are available as to the trend of the other two methods of storing since 1922 but most of the men interviewed on the survey were of the opinion that there was a trend from farm storage to commercial storage. Undoubtedly there has been a large increase in commercial storage in certain West Tennessee counties since the survey in 1922. In fact an increase in storage space is evident because the storage space as given in the 1922 survey would not be sufficient to store the amount which has been shipped out of certain West Tennessee counties several years since then. For example the storage capacity as given for Weakley County in 1922 was approximately 300,000 bushels which would be 600 cars of 500 bushels each. This county, however, shipped almost 1300 cars in 1928. However a part of this would be accounted for by shipments of "green" stock, which for the state as a whole usually runs from 20 to 30% of the total shipments. (Table 18, Chapter I.)

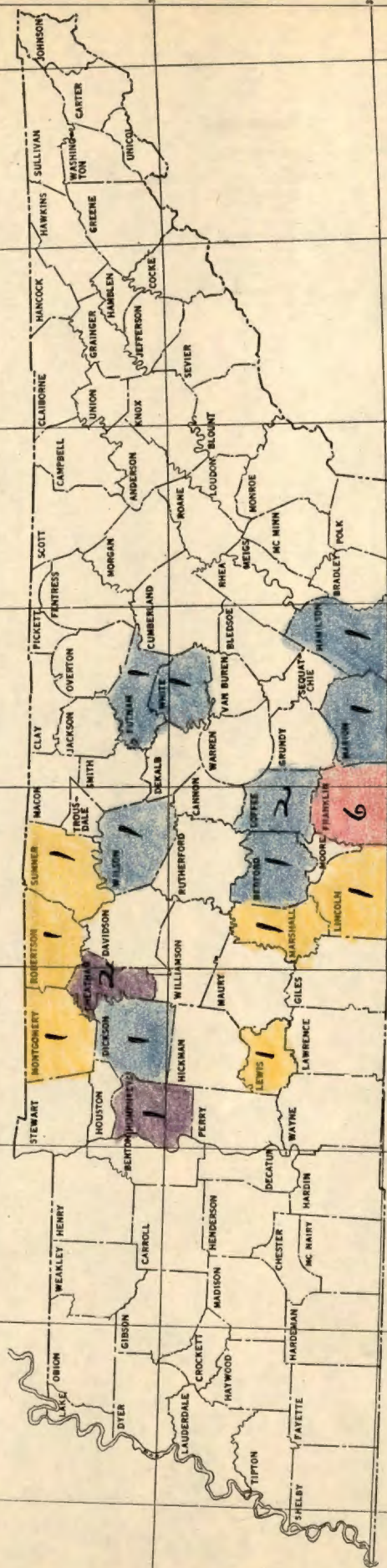
The greatest concentration of farm storage and privately owned commercial storage is in the Northwestern part of the state. Cooperative storage is, however, all in Middle and East Tennessee. Cooperative storage was developed here because of the lack of storage space and not enough production to attract private commercial storage. The large volume in West Tennessee makes that a very attractive region for the privately owned storage house.

Several sweet potato buyers were asked their opinion concerning the quality of potatoes stored on the farms as compared with those stored in commercial houses. While there was some difference of opinion as to the

¹ Data obtained on survey of sweet potato cooperative associations in 1930.

Map 6

Cooperative Sweet Potato Storage, 1930



Under 10,000 bu.
10,000 - 20,000 bu.
20,000 - 30,000 bu.
30,000 - 40,000 bu.
Over 40,000 bu.

Figures on map refer to number of storage houses.

RAND McNALLY
LETTER SIZE OUTLINE MAP

TENNESSEE

SCALE
0 5 10 20 30 40 50 Miles
Copyright by Rand McNally & Company, Chicago
MADE IN U. S. A.

merits of the two kinds of storage, it was pretty well agreed that when the farm storage was well cared for and the temperature during storage kept fairly well within the proper temperature ranges the quality of potatoes from the farm storage was equal to those kept in the large commercial houses. However, it was generally pointed out that the average farmer did not give enough care to proper temperature of the storage house which resulted in a lower grade of potatoes.

Very little data are available as to the cost of storing sweet potatoes on the farm. Data of this kind is necessary in determining the advantages of the different kinds of storage. Aside from actual cost of storing farm storage has the following advantages: (1) there is less labor required during rush period at digging time; (2) little cash outlay is necessary after the house is built, the owner usually looking after the curing and storing himself while farm furnished fuel; (3) labor is better distributed throughout the year as hauling to market is done in season when little other work is possible; (4) the owner is not under obligations to sell to any certain party or at any definite time. On the other hand the disadvantages of farm storage are: (1) it is harder to maintain proper temperature in smaller houses and hence potatoes may not be of as good quality; (2) if marketed during cold weather potatoes may be chilled in hauling to shipping point while commercial houses are generally built on side of track; (3) the farm house requires most attention during curing period when the farmer is likely to be busy with other tasks.

3. Grading and Packing

Grading is done both in the field and in storage. When potatoes are sold "green" the field grading is usually the only grading that is practiced. This grading is usually done by day laborers as they are picking up the potatoes in the field (Table 38). Nearly all the growers who replied to a

questionnaire sent to sweet potato growers of Tennessee, graded in this manner. About half of the growers reported that they did additional grading as they were putting potatoes in storage. Sixty-eight reported grading when taking the potatoes out of storage.

Table 38

Method of Grading Tennessee Sweet Potatoes by Growers(a)

Place of grading	Number grading	Number not grading
When picking up in field	75	13
When putting in storage	26	31
When taking out of storage	68	8

^a Source: Replies to questionnaires sent to growers of sweet potatoes in Tennessee.

There is generally a great deal of difference in the quality of grade and pack put up by different producers. Where the grading is done by the grower, it is necessary to maintain a very close inspection of all potatoes, if a dealer wants to get a uniform lot of potatoes. Sweet potato dealers, as a rule, have in the past been rather lax in this respect. The usual method of buying, up to the 1930 season, was on a flat price basis regardless of quality. When this was done, there was no incentive for the producer to put up a better grade or pack, and the quality usually suffered as the result. Sometimes a dealer who understood the necessity of quality potatoes, would inspect the potatoes as they were assembled, and require that they meet certain standards of quality. However, he was usually in a position where he could do very little, because, if he rejected a lot of potatoes his competitor would usually take them in order to get a new customer at the expense of the dealer who rejected the potatoes.

In recent years, there has been some cooperation on the part of dealers in West Tennessee to improve the grade and pack of sweet potatoes. This movement has been sponsored by the "West Tennessee Shippers Association" which is composed of the private produce dealers in the western part of the

state. At first there was only an understanding between the dealers that each would cooperate in requiring a better grade and pack of the potatoes they bought. In the fall of 1930, however, they went a step farther and agreed to use Federal-State shipping point inspection on the potatoes they shipped. It was agreed that a 25% differential would be made between U. S. No. 1 and lower grade potatoes. If this work is continued it should in a few years do much toward improving the grade and pack of Tennessee potatoes.

4. Transporting

Carlot shipments from Tennessee are as the rule made in uniced refrigerator cars. This car is well adapted to shipping sweet potatoes in that it can be well ventilated when the temperature is relatively high and closed up when the temperature falls, thus protecting the potatoes against freezing. The transportation company attends to the opening and closing of ventilators as the temperature rises or falls. The tariff regulation as revised Aug. 1, 1928, requires ventilating devices on a car of sweet potatoes closed when the temperature falls below 40°F.¹ The sweet potato generates enough heat in transit that further heating is seldom necessary and if the outside temperature remains just below 40° for considerable time the heat generated by the potatoes may cause the contents of the car to become so warm as to cause soft rot to develop seriously.²

From shipping point inspection reports of 273 cars of sweet potatoes shipped from Tennessee during Nov. 1930 to Feb. 1931, it appears that the estimates made of the size of the usual car-load shipped from Tennessee has been too large. A mimeographed report from the U. S. D. A. dated Sept. 6, 1929, gave the average car of Tennessee as having 550 bushels. The usual range was reported from 500 to 550. The 273 reports referred to above showed that only 61 cars or 22.3% contained as many as 550 bushels. In fact 121 or

¹ The Ventilation of Sweet Potatoes in Transit, Market Growers Journal, 46: 414-5. June 1, 1930.

² Ibid.

44.3% of the cars contained only 450 bushels or less. The average number of bushels per car was 487. There is no evidence, however, that these cars are representative of all the shipments, but it is some indication that the estimate of 550 bushels is too high.

Loading in Cars - The hamper is admirably suited to loading in cars. Hampers should be loaded on their ends with the alternate hampers inverted. The second layer is likewise placed with alternate hampers inverted and so that the large and small ends of the first and second layers coincide. Seven rows running lengthwise can be loaded in the ordinary car. The usual refrigerator car will hold 32 hampers to the row. This will make 224 hampers to the layer. The car should never be loaded more than three layers high. Shipments from Tennessee often have only two layers, 448 hampers. If more than two layers is loaded in the car but not three full layers, the top layer may be loaded on their sides or at least enough loaded that way to brace those that are standing on ends.

Center bracing is not necessary when the car is properly loaded. If there is some extra space left this can be taken care of by placing two or three hampers on one end of each row with the big ends of each down. The next row then will have the same number of hampers with the big ends up. This practice will take up whatever end slack is left.

Trucking - Little use has been made of the truck for transporting the sweet potato crop to cities out of Tennessee. Cincinnati is the only city in a comparatively short distance from Tennessee for which truck receipts are available for any year. Though this city receives a large volume of Tennessee potatoes each year no truck receipts from Tennessee were reported in 1929.¹

¹ Data furnished by U. S. Department of Agriculture.

The truck is used very extensively in transporting to the local markets. Recently a considerable part of the potatoes stored in cooperative storage houses have been trucked to these markets.

The sweet potato being a staple commodity does not benefit from truck shipments to the same extent as do some of the more highly perishable commodities. There are, though, several important advantages in using the truck for transporting sweet potatoes to the local markets. Some of the more important are as follows: (1) a better distribution to the smaller markets is possible since they usually cannot use a full carload at one time; (2) the cost of transporting is less than l. c. l. or express shipments; (3) it is more convenient to the farmer who has farm storage in that he may not have to haul to the shipping point; (4) the grower can often get his hampers back and thereby effect a saving in container cost.

5. Advertising and Branding

Several schemes of advertising Tennessee sweet potatoes have been proposed. During the past few years there has been considerable agitation for a campaign of advertising the Tennessee Nancy Hall sweet potato to the consuming public. It has been pointed out that the majority of consumers in the northern cities are not acquainted with the merits of the moist fleshed potatoes, many of them having never tasted one properly prepared. It is argued by those advocating such a campaign, that were the consuming public made more familiar with the eating qualities of the Nancy Hall, consumption of it could be greatly increased. On the survey made in the fall of 1930 one dealer told us the best way to improve the Tennessee sweet potato industry was by a fifty thousand dollar advertising campaign.

The most pretentious consumer advertising campaign yet attempted with Tennessee sweet potatoes was carried out at the International Livestock Exposition at Chicago in December 1930. During this exposition a carload

of Tennessee sweet potatoes were baked and served, seasoned with butter and a dash of salt, free to the public. This scheme was fostered by the members of the West Tennessee Shippers' Association who advanced money to cover the expenses of the project. The car of potatoes were donated by growers of West Tennessee. A news item from Nashville dated Dec. 26, 1930, contains the following comment regarding the effect of the project: "It was interesting to note the various comments by visitors who asked as to why the potatoes were so pleasingly moist and sweet whereas the kind to which they had been accustomed were dry and required the addition of sugar to make them palatable." The same news item reports that recipe cards showing 12 selected recipes for preparing Nancy Hall sweets were also distributed to visitors.

Another advertising scheme proposed is the inclusion in each hamper of sweet potatoes shipped, an attractive receipt booklet showing desirable ways of preparing the potatoes. Also a news item from Milan, Tennessee, dated Dec. 19, 1930, taken from the Cincinnati Packer tells of the West Tennessee Shippers Association discussing the proposition of having that organization sponsor a radio program in the northern markets on Tennessee Nancy Hall sweet potatoes.

Possibilities of Consumer Advertising - Undoubtedly the consuming public in the principal northern cities are not familiar with the merits of the moist fleshed sweet potato. In spite of this fact, it appears doubtful if many of the educational campaigns outlined will cause enough increase in consumption to justify the expense of promoting them. Sherman says that successful consumer advertising of a fruit or vegetable is possible only when some element of monopoly is possible, such as (1) the area of production concentrated so that the cost of advertising can be distributed to all producers and distributors, or (2) if the product is of such nature that nothing else can be

substituted for it with complete satisfaction.¹ Tennessee Nancy Hall sweet potatoes does not fully meet either of these conditions. In the first place, the production of Nancy Halls is not limited to Tennessee alone, but at present is grown in lesser quantities in several other states, and if it were possible to create a preference for this variety producers in the other states could readily increase their production and thereby receive as much benefit from the advertising as the Tennessee producers who bore the expense of the advertising campaign. On the second condition, it is not a fact that the Nancy Hall is so superior to other varieties, that others cannot be substituted for it, nor are Tennessee grown potatoes very much, if any, superior to Nancy Halls grown in other states.

An extensive consumer advertising campaign may increase the consumption of sweet potatoes, but other states would benefit about as much from such an increase as Tennessee. Adopting one brand for Tennessee potatoes, and advertising this brand to the consumer, as the California orange growers have done with their "Sunkist" oranges, would help very little, because the consumer does not as a rule buy sweet potatoes in the original package and hence does not look for any particular brand when he buys. Nor is the consumer as a rule able to distinguish between varieties, nor, in fact, is the groceryman himself always able to distinguish one variety from another. This fact was illustrated in a survey made of the retail grocery stores in Knoxville. When the groceryman was asked what variety of sweet potatoes his trade preferred, the reply was often yellows, reds, or whites, depending upon whether he sold more yellow skinned, red skinned, or white skinned potatoes. There were several varieties of each color being sold on the Knoxville market which the average groceryman could not distinguish between. The consumer would be expected to know even less.

The best type of consumer advertising the Tennessee growers could do is

¹ Sherman, W. A., Merchandising Fruits and Vegetables, p. 362.

to put out a better and more uniform grade of potatoes. When the prospective purchaser of sweet potatoes comes to the market to buy he or she selects either the best looking and most uniform lot, or the lot whose price best suits his or her purse. Gabriel attributes the premium paid for New Jersey sweet potatoes to their more careful grading, rather than to any natural superior qualities.¹ Several wholesale receivers when answering questionnaire said Tennessee's grade and pack was not as good as Jerseys and one even advised that we visit New Jersey to see how they grade and pack.

Trade Advertising - Another type of advertising that may be profitable is to advertise to the produce dealers in the larger market to get them to push more strongly Tennessee grown potatoes. This is also aided through branding. Unfortunately there are many different brands under which Tennessee sweet potatoes are shipped. Inspection reports loaned this office by the state Department of Agriculture covering 275 cars of sweet potatoes shipped November 1930 to February 1931 revealed that 17 different brands appeared in these shipments. This is not nearly all the brands under which shipments are made as when making the survey in 1930 we saw several other brands not listed in these reports. Very little brand preference is possible under these conditions. To create a preference for any brand again brings up the question of more uniform grading. Also there is possibly less attention being paid to brands today than was the case several years ago, since produce is now being bought more and more by standard grades than by brands.

6. Production As Related to Marketing

Marketing really begins with production. Much of the marketing problem is solved by growing a high quality product for which there is a ready demand. For sweet potatoes this would mean the growing of a variety that is preferred by the consumer, as well as potatoes of the proper size and of high quality. The Nancy Hall variety has already been accepted by the large majority of

¹ Gabriel, H. S., Marketing the Delaware Sweet Potatoes.

Tennessee growers, and has a decided preference in many markets. Hence, that part of production could hardly be improved.

Disease Control - Production can, however, be much improved along other lines, especially in disease control (and in producing a more uniform potato of higher quality). Many sections are very badly troubled with diseases which annually cause a large loss both in quality and in total loss of the potatoes. Black rot probably causes a greater loss in Tennessee than any other disease. Some very large losses from this disease have been reported. It appears to be worse in the principle commercial districts than elsewhere. An idea of the losses which occur in storage may be gotten from data in Table 39 which are taken from questionnaires answered by growers. Several dealers who operated commercial storage houses in the main producing

Table 39
Loss in Storage from Black Rot(a)

Amount of loss	Number of replies		
	Total	West Tenn.	Other sections
No loss	10	1	9
0 - 5%	48	11	37
6 - 10%	12	10	2
11 - 15%	7	5	2
16 - 20%	6	5	1
Over 20%	6	4	2

^a Source: Replies to questionnaire sent to growers of sweet potatoes in Tennessee.

section reported their average loss as being from 15 - 25% from this source. Individual crops sometimes ran as high as 75% loss. Other diseases are also present and cause their loss but as they are not as noticeable to the grower are not so frequently mentioned.

From observations there appeared to be less effort taken to control disease losses in the large producing sections than in the other sections. A large percentage of growers in the main producing section seem to have the idea that there is nothing that can be done to control these diseases and

hence are making little effort to control them. However, in the other sections we often saw more of a coordinated effort on the part of growers and dealers to combat them. One large commercial storage house, which made a practice of renting space to growers, had a rule that they would rent space only to growers who had taken such definite steps to control diseases as planting certified seed and disinfecting seed before planting.

One dealer interviewed in the main producing area of West Tennessee had also promoted control work and reported excellent results, from his efforts. This dealer was also a commercial grower of certified slips. He buys potatoes green and stores them, but requires that the grower use certified slips in planting and practice other control work. He will furnish such slips to anyone free of charge who agrees to sell their potatoes to him. Other dealers near there commended this work and were contemplating attempting such measures themselves. The West Tennessee Shippers' Association has recently taken an active interest in this problem. A part-time field man has been engaged in holding meetings with groups of farmers on control measures.

Seed Selection - Experiments in a number of different places indicate that the grower could possibly do much to increase the quality of potatoes grown especially as to size. Anderson and Richardson¹ of the Mississippi Station increased the yield of No. 1 sweet potatoes for three years by selecting seed from desirable hills in the fall. The increase for the three years was 8%, 15%, and 23% respectively. Similar results were obtained by Douglas² of New South Wales. Both of these experiments were carried out with the Nancy Hall. As a general rule the smaller potatoes are used as seed. There has been found to be no appreciable difference in the yield of small and large potatoes when taken from the same hill. However, there are always

¹ Anderson, W. S., and Richardson, F. B., Sweet Potato Experiments, Miss. Agr. Exp. Sta. Circ. 57. 1924.

² Douglas, J., Improving the Sweet Potato Crop. Agr. Gaz. of New South Wales, 38: 858-60. Nov. 1927.

individual plants which produce only fibrous or small roots. Such potatoes when used for seed have a very depressing effect on the yield. The using of only small potatoes for seed increases the probability getting potatoes from plants which only produced fibrous roots and increases the importance of plant selection of the seed before digging. Such plant selection is also useful in combating diseases.

Fertilizer - It has also been shown that the size of sweet potatoes is affected by the kind of fertilizer used, an increase in nitrogen tending to produce longer potatoes while an increase in potash tends to produce a shorter and more chunky potato.¹ Zimmerley reports that an increase in the percentage of potash up to 15% increased both the total amount and percentage of crop which were No. 1 potatoes.² As only 7 of 90 sweet potato growers replying to questionnaires used a fertilizer containing as much as 8% potash it appears that an increased amount of this ingredient would be beneficial.

The size of sweet potatoes is also influenced by the distance left between plants in setting. Closer spacing has been found to result in a larger amount of No. 1 potatoes.³ The spacing distance also depends upon the cost of plants and cost of setting them. At the Mississippi station 15 inch spacing in rows is recommended tho 7 inch spacing gave a greater yield of No. 1 potatoes, the extra cost incurred was greater than the value of the increase in production.⁴

7. Seasonal Carlot Movement and Distribution

Tennessee's shipping season lasts practically throughout the year. Shipments of the new crop start in August but are usually light until September. From September through June of the following year shipments are fairly uniform.

¹Schermerhorn, L. G., Sweet Potato Studies in New Jersey.

²Zimmerley, H. H., Sweet Potato Fertilizers.

³Watson, L. P., The Sweet Potato Contest, 1930.

⁴Price, J. C. C., The Production and Storage of Sweet Potatoes.

The peak of shipments is usually reached in March or April, though there is some difference each year. The monthly carlot distribution for Tennessee, the U. S. as a whole, and seven competing states is shown in Charts 33 to 35 for the crop years 1928, 1929, and 1930 (see Table 40). Tennessee's shipments are much more evenly distributed than are those for the U. S. as a whole or

Table 40

Monthly Distribution of Carlot Shipments of Sweet Potatoes
by Crop Years, 1928, 1929, and 1930(a)

1928												
	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
U. S.	242	1630	3594	3270	2589	2037	1615	1243	1204	923	660	414
Tenn.	6	16	139	178	165	256	293	332	369	396	335	310
Virginia	7	865	2250	2000	1069	168	55	48	26	14	(c)	(c)
N. J.	0	11	338	296	153	161	106	83	42	20	(c)	(c)
N. Car.	10	283	58	25	50	51	68	31	85	54	43	(c)
Dela.	(c)	(c)	4	9	103	410	332	261	234	98	(c)	(c)
La.	(c)	39	129	97	111	107	73	51	75	111	136	(c)
Ala.	165	130	12	7	4	3	8	(c)	(c)	(c)	(c)	(c)
Md.	(c)	91	452	303	387	358	191	134	102	65	18	(c)
1929												
U. S.	748	1914	4024	3850	2898	2194	1843	1489	1453	904	419	116
Tenn.	135	76	261	322	393	424	393	389	563	483	261	99
Va.	(a)	1094	2657	2084	984	121	43	43	54	19	(c)	(c)
N. J.	(a)	(c)	238	352	153	136	79	60	42	13	(c)	(c)
N. Car.	(a)	124	55	37	27	47	61	98	110	94	34	(c)
Del.	(c)	(c)	(c)	9	140	451	346	303	152	49	(c)	(c)
La.	(a)	164	351	223	100	80	142	115	97	93	55	(c)
Ala.	349	178	3	(c)	(c)	(c)	8	(c)	(c)	(c)	(c)	(c)
Md.	(c)	66	212	371	382	323	192	143	111	43	15	(c)
1930												
U. S.	392	1525	2546	3372	2188	1821	1365	1087	1025	653	307	129
Tenn.	10	51	127	324	376	436	379	342	310	264	140	92
Va.	(c)	827	1668	1949	718	68	16	15	14	(a)	(c)	(c)
N. J.	(c)	(c)	218	323	128	154	83	32	46	15	(c)	(c)
N. Car.	(c)	174	20	44	65	76	80	93	120	103	47	(c)
Dela.	(c)	(c)	(c)	13	105	283	157	90	74	35	(c)	(c)
La.	(c)	190	163	116	69	79	74	109	130	119	61	(c)
Ala.	164	124	19	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Md.	(c)	29	107	179	110	121	69	27	30	22	(c)	(c)

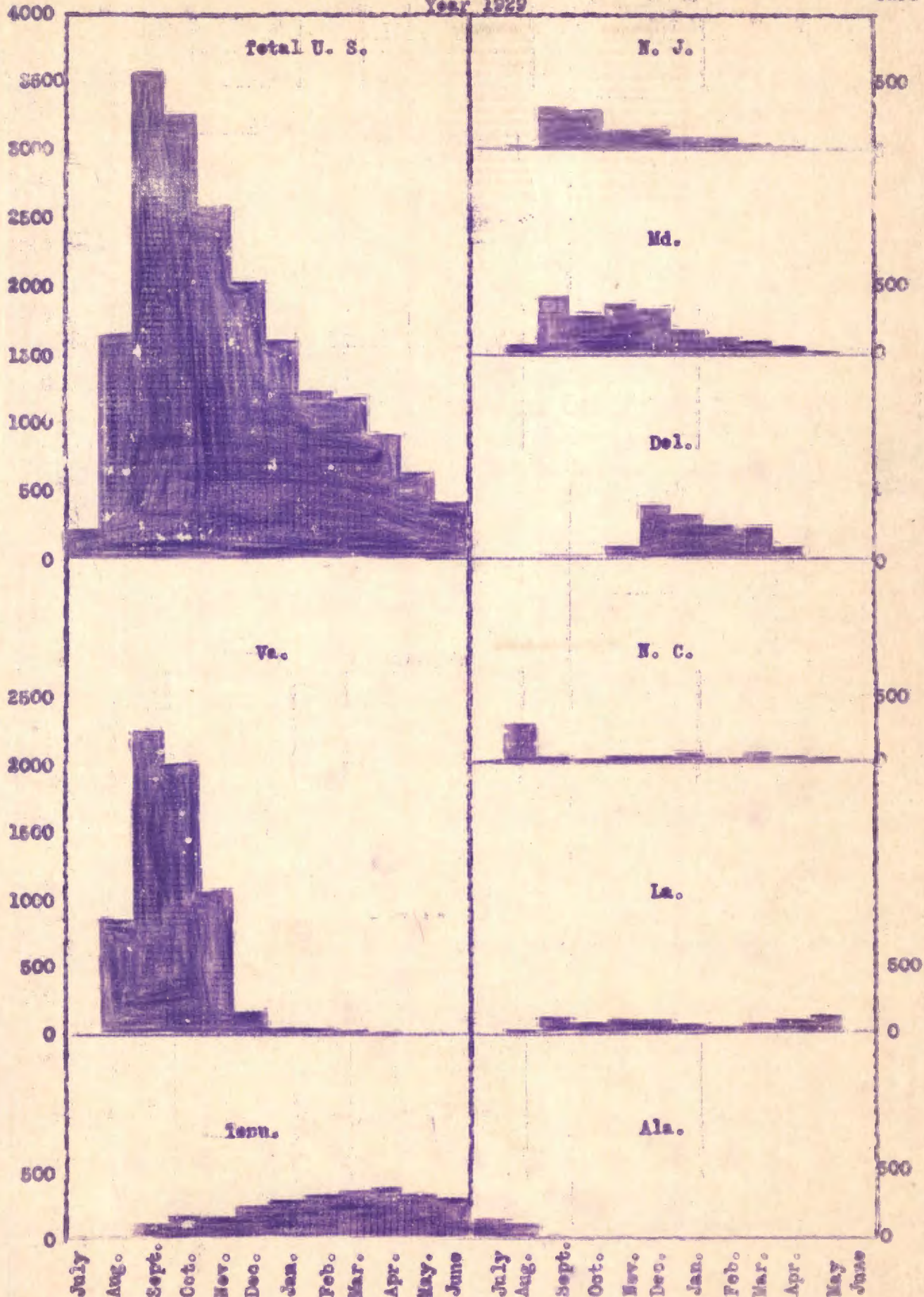
a Source: Crops and Markets

b Estimated from report of weekly shipments.

c No data reported.

Chart 33

Cars Monthly Distribution of Carlot Shipments of Sweet Potatoes, Crop Year 1929



Car.

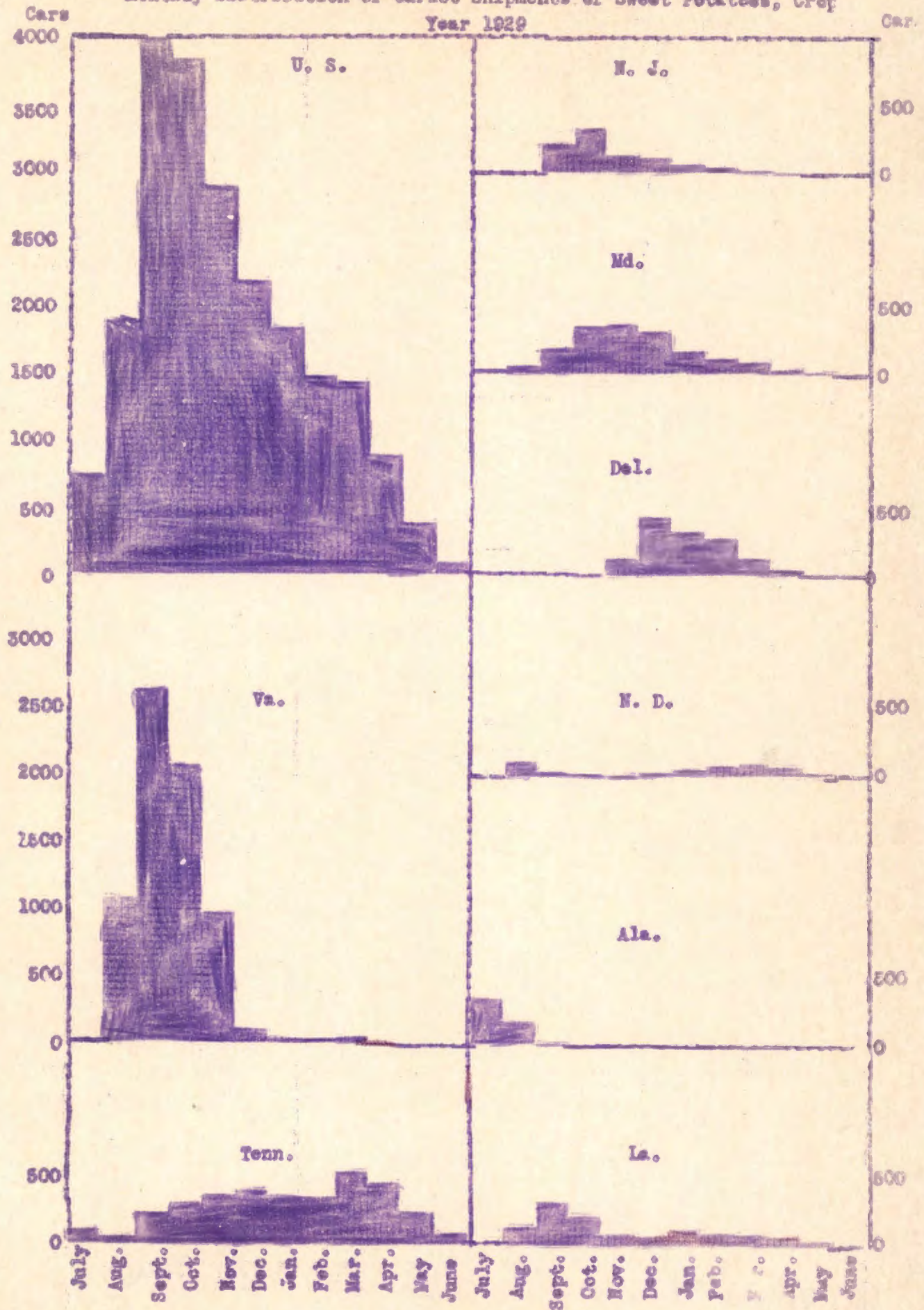
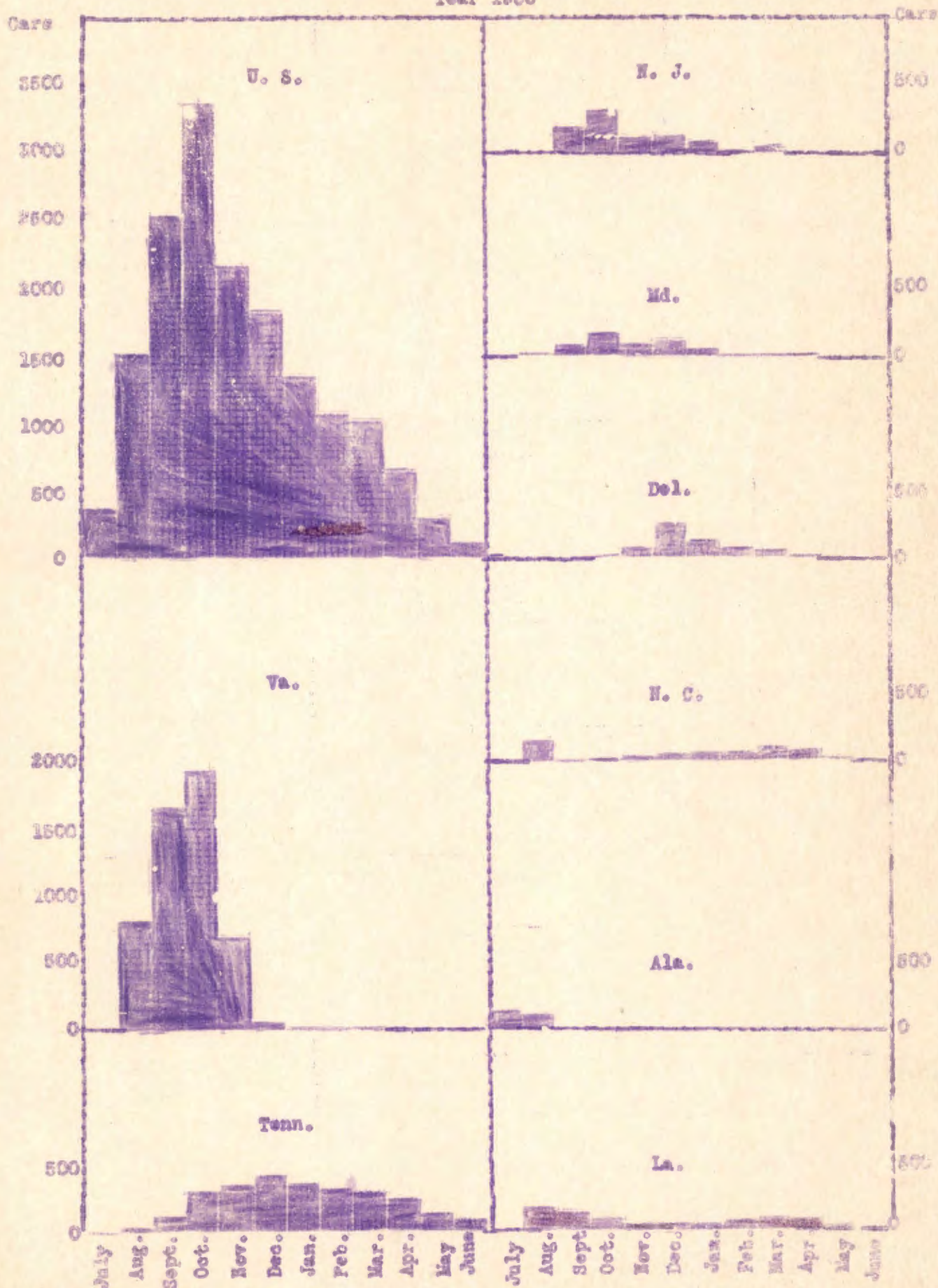


Chart 35
Monthly Distribution of Carlot Shipments of Sweet Potatoes, Crop
Year 1930

137.



any of the states of the northeastern section. Virginia stock dominates the market from August to November. From December through February our chief competitors are New Jersey, Maryland, and Delaware. From March to the end of the season North Carolina and Louisiana furnish our chief competition. For the greater part of the year the demand for Tennessee potatoes is evidently well cared for. There is the possibility of marketing a few more at the beginning of the season and also at the end. Whether this is feasible, however, appears rather doubtful, for reasons explained in Chapter I.

Tennessee's shipments are given a very wide distribution. The geographic distribution of Tennessee shipments for which data are available is shown on Maps 7 to 9 for the years 1928 and 1930, and the average annual unloads for the period 1927 to 1930. While Tennessee shipments are made to cities all the way from ^{Washington,} Seattle, to Tampa, Florida, and from Portland, Maine, to Los Angeles, California, the bulk of unloads are in the north central states. A circle with a three hundred mile radius centering in Western Ohio would include all of Tennessee's principal markets except St. Louis. The markets listed on the map within this circle receive approximately 65% of Tennessee's annual shipments. Of the 66 markets for which unload data is available since 1927 Tennessee made shipments to 48 in 1927; 43 in 1928; 42 in 1929; and 50 in 1930. Only Virginia ships to as many of these markets as Tennessee. A larger percentage of Tennessee's shipments are unloaded in these 66 markets than Virginia. The percentage of shipments from Tennessee, Virginia, and the U. S. as a whole unloaded in these markets is shown in Table 41. Thus it appears as though Tennessee has failed to develop the smaller markets to the extent that her competitors have. Possibly one reason for this situation is the higher freight rate on L.C.L. shipments from Tennessee.¹ Since the small markets generally desire smaller carlot shipments than the larger markets the states with

¹ Allred, C.E., Atkins, S.W., and Lucas, B.F., p. 188.

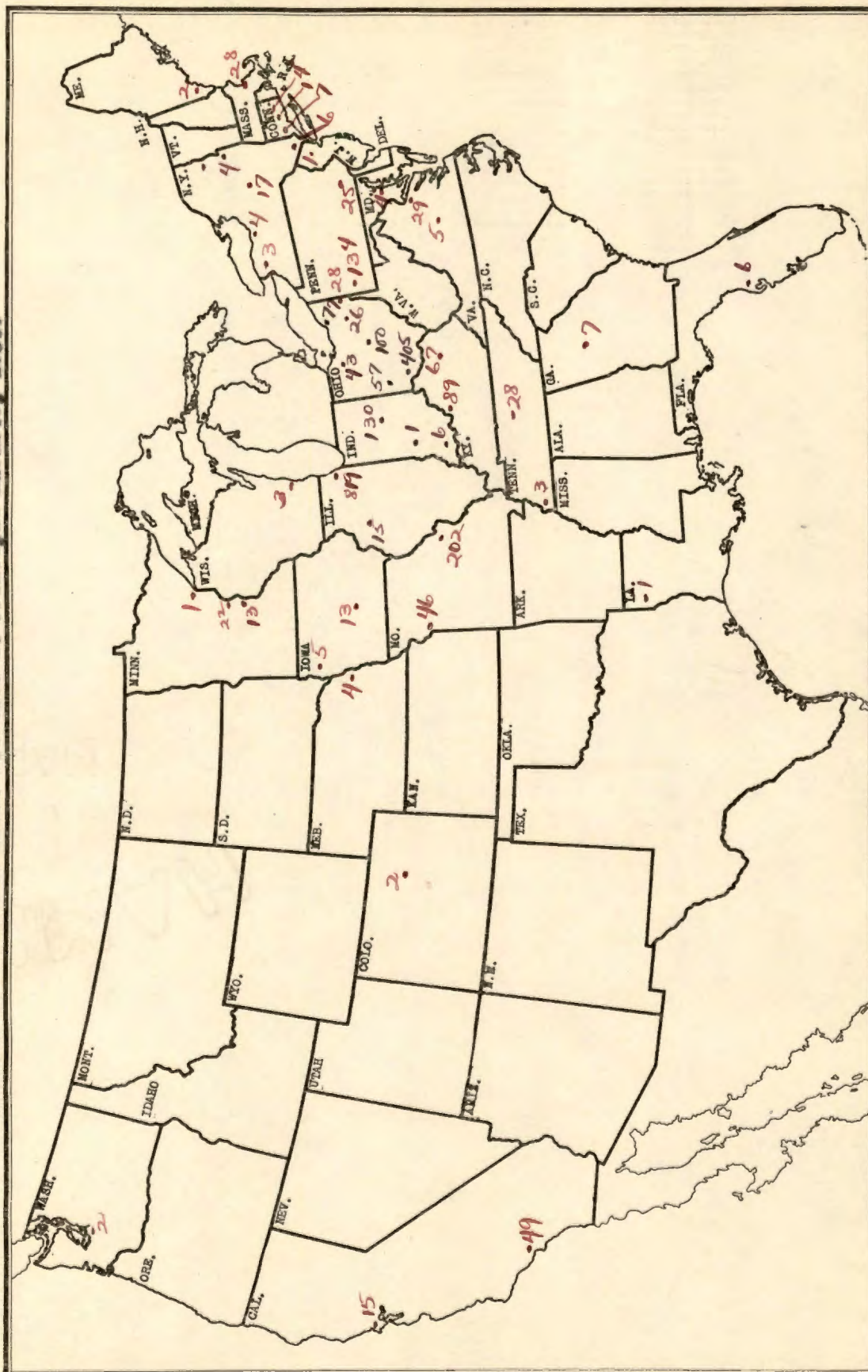
Map 7

Unloads of Tennessee Sweet Potatoes at Principal Markets, 1928



81

Thousands of Tennessee Sweet Potatoes at Principal Markets, 1930.



lower freight rates to these small markets have a distinct advantage over Tennessee shippers. It has been suggested in the preliminary report that securing a carload minimum of 20,000 pounds to 24,000 pounds instead of the 30,000 pound minimum now in force would aid in the distribution to these smaller markets (p. 213). A strong cooperative marketing organization with an efficient sales department, or agency, can be beneficial in performing this function. It is probable that the better distribution of Virginia sweet potatoes is due partly to the marketing association there which is continuously on the watch for markets for their products.

According to Table 41 a larger percentage of Tennessee's carlot shipments are unloaded at the principal markets ^{for} than either Virginia or the United States. From 1927 to 1930 the part of the Tennessee shipments to these larger markets varied from about $\frac{3}{4}$ to over $\frac{4}{5}$. Less than $\frac{2}{3}$ of Virginia's shipments, and from $\frac{2}{3}$ to $\frac{3}{4}$ of the United States shipments were unloaded there. This is a further indication of a narrower distribution of Tennessee shipments.

Table 41
Carlot Unloads of Sweet Potatoes at Sixty-Six Principal Markets,
1927-1930

	Number from			Percentage of total shipments		
	U. S.	Tennessee	Virginia	U. S.	Tennessee	Virginia
1927	16,752	3,814	4,136	65.3	77.2	63.1
1928	14,604	2,612	4,049	69.4	86.0	62.3
1929	14,952	3,017	4,353	68.6	82.7	61.4
1930	13,803	3,029	3,405	76.4	86.2	63.0

Source: U. S. D. A. Statistical Bul. 30; U. S. Bureau of Railway Economics Bulletin 39; and Mimeographed Reports of Unload Data for 1930.

In the United States about 65% of all shipments in 1927 were made to the 66 principal markets (Table 41). White potatoes are more widely distributed to the smaller markets. In 1927 only 54% of the shipments were

made to these principal markets.¹ This is due probably to the fact that this is a more staple food than the sweet potatoes, especially in the northern markets. Thus it would lend itself to distribution to the smaller markets better than the less staple commodity.

Table 42

Summary of Unloads of Sweet Potatoes at Various Markets,
1921-1930 (a)

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930
<u>Seven large markets (b)</u>										
Unloads from Tenn.	676	713	840	483	943	1233	1763	1490	1716	1641
Total unloads	3015	3218	3283	2555	3011	3297	4244	3782	4092	3786
Unloads other than Tenn.	2339	2505	2443	2072	2068	2064	2481	2292	2376	2145
Percentage unloads from Tenn.	22.4	22.1	25.6	18.9	31.3	37.4	41.5	39.4	41.9	43.3
<u>Total Tennessee shipments</u>	1133	1448	1472	789	1697	2907	4941	3037	3645	3512
Percentage Tenn. shipments unloaded at 7 markets	59.7	49.2	57.1	61.2	55.6	42.4	35.7	49.1	47.1	46.7
Tenn. shipments to other than 7 markets	4457	7735	632	306	754	1674	3178	1547	1929	1871
Percentage Tenn. shipments to other than 7 markets	40.3	50.8	42.9	38.8	44.4	57.6	64.3	50.9	52.9	53.3

^aSource: U.S.D.A. Statistical Bulletin 10; 23; 30; Bureau of Railway Economics Bul. 39; and U. S. D. A. Mimeographed Reports of Unloads for 1930.

^bIncludes Chicago, Pittsburg, St. Louis, Cincinnati, Saint Paul, Minneapolis, and Kansas City.

Unload data are available only for seven large markets within Tennessee's main shipping area back to 1921. These markets are Chicago, Pittsburg, St. Louis, Cincinnati, St. Paul, Minneapolis, and Kansas City. Tennessee's

¹ Gabriel, H. S., Marketing Delaware Sweet Potatoes. Delaware Agri. Exp. Station Bulletin No. 161.

Chart 36

Unloads of Sweet Potatoes at Seven Markets Originating in Tennessee,
1921-1930

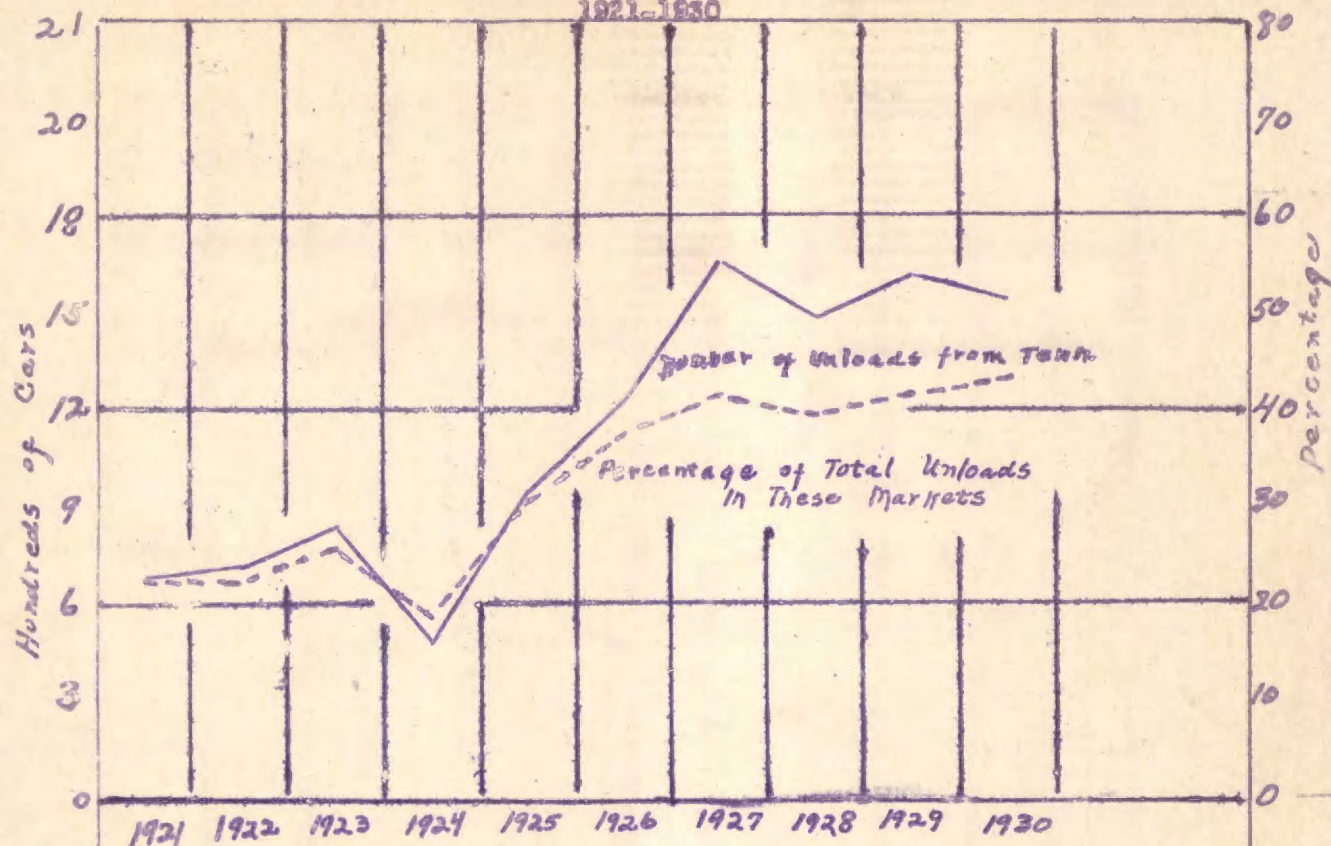
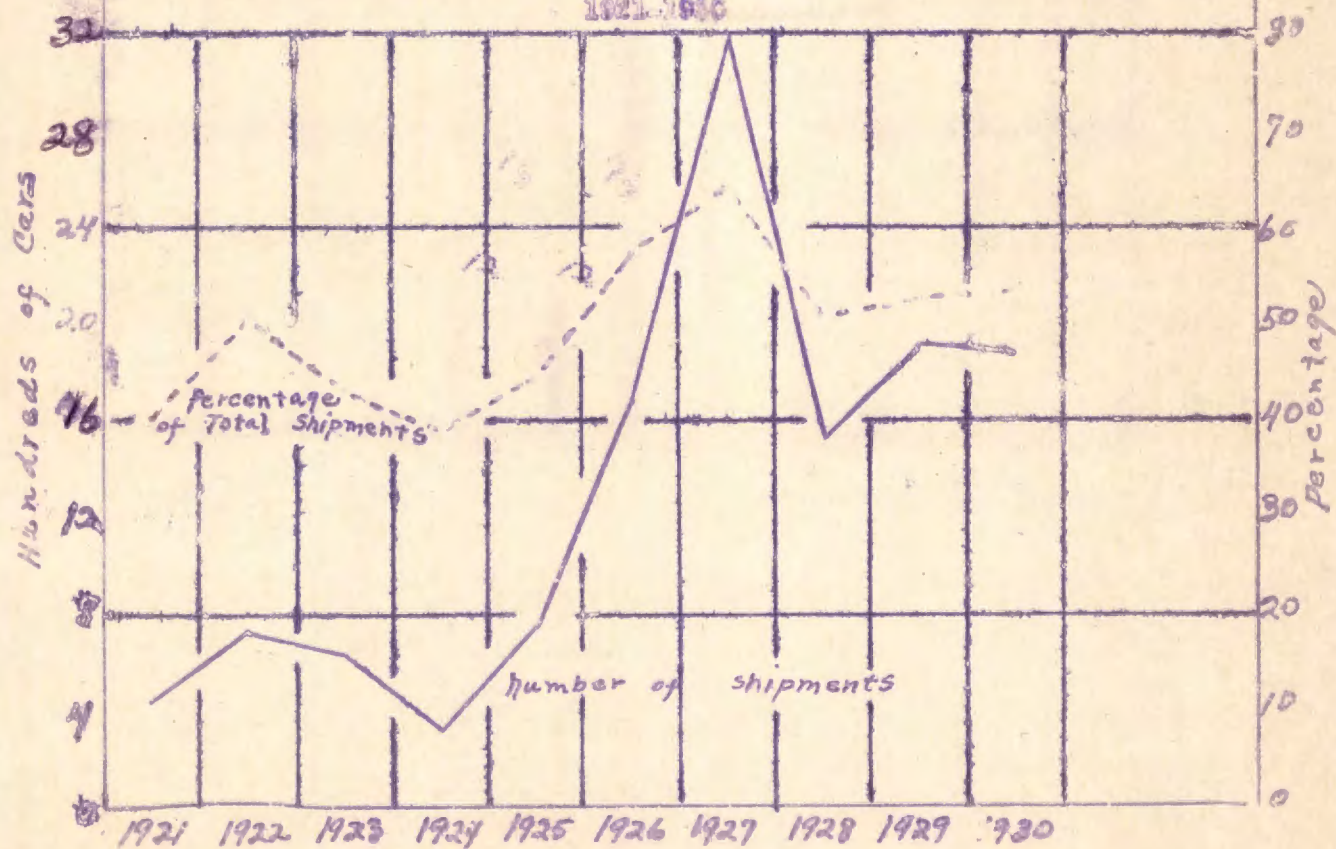


Chart 37

Tennessee Shipments Unloaded at Markets Other Than Above Seven,
1921-1930



shipments to these markets has more than doubled from 1921 to 1930. Shipments from other states to these markets are about the same for 1930 as for 1921. The percentage of the total unloads in these markets originating in Tennessee has about doubled during this period (Chart 36, Table 42). But the percentage of her total shipments to these markets has decreased.

The shipments from Tennessee to markets other than these seven have increased at a faster rate than have shipments to these seven. This is shown in Chart 37. Shipments to markets other than above seven have approximately quadrupled during these ten years. Thus it appears that Tennessee not only has gained in the larger markets in number of shipments but has made some progress in developing the smaller markets also, both in numbers and relatively.

BIBLIOGRAPHY

1. Anderson, W. S., and Richardson, F. B., Sweet Potato Experiments. Miss. Agr. Exp. Sta. Circ. 57. 1924.
2. Douglas, J., Improving the Sweet Potato Crop. Agr. Gaz. of New South Wales, 38: 858-60. Nov. 1927.
3. Gabriel, H. S., The Marketing of Delaware Sweet Potatoes. Dela. Agr. Exp. Sta. Bul. 161. 1929.
4. Gatlin, G. O., Marketing Southern Grown Sweet Potatoes. U.S.D.A. Bul. 1206. 1924.
5. Miller, A. D., and Hauch, C. W., American Fruit and Produce Auctions. U. S. D.A. Bul. 1362. 1925.
6. Price, J. C. C., The Production and Storage of Sweet Potatoes. Miss. Agr. Exp. Sta. Bul. 279. 1930.
7. Sherman, W. A., Merchandizing Fruits and Vegetables. A. W. Shaw Company. 1928.
8. Schermerhorn, L. G., Sweet Potato Studies in New Jersey. N. Jer. Agr. Exp. Sta. Bul. 398. 1924.

9. The Ventilation of Sweet Potatoes in Transit. Market Growers Journal 46: 414-5. June 1, 1930.
10. Watson, L. H., The Sweet Potato Contest, 1930. Clemson Agr. College Circ. 111. 1931.
11. Zimmerley, H. H., Sweet Potato Fertilizers. Va. Truck Exp. Sta. Bulletin 66. 1929.

CHAPTER V

DISTRIBUTION, HISTORY, AND ORGANIZATIONAL SET UP OF SWEET POTATO
COOPERATIVE MARKETING IN TENNESSEE

- | | |
|---|---|
| 1. Introduction. | 4. Reasons for Organizing Associations. |
| 2. Geographic Distribution of Associations. | 5. Adherence to Fundamental Principles. |
| 3. Date of Organizing Associations. | 6. Classifications of Organizations. |
| | 7. Systems of Government. |
| 8. Resume of Individual Associations. | |

1. Introduction

The sweet potato has for a long period of years been a very important item of food for the people of Tennessee. The acreage of sweet potatoes has been among the largest of any vegetable for many years. Production, however, was almost wholly for local consumption until about 1913.¹ It was about this time that we have evidence of shipments of sweet potatoes from Tennessee.² However, the shipments were evidently small until 1918, the year the U. S. Department of Agriculture began reporting car-lot shipments of sweet potatoes. For the 1917 crop year Tennessee only shipped 114 cars of sweet potatoes. The increase in shipments was very rapid after 1917, the shipments totaling 545 cars for 1918, and 1212 for 1919, until it reached the peak for the calendar year 1927, of 4972 cars.

There was also a very large shift in the production of sweet potatoes between the census years of 1909 and 1919. In 1909, and for all previous census years, the counties of Tennessee having the largest acreage of sweet

¹If there were any shipments of sweet potatoes out of Tennessee prior to that date the author has not been able to find any record of them.

²U. S. D. A. files of cooperative associations.

potatoes were those containing large cities. Production was therefore greatest where there was a good local market. Between 1909 and 1919 there was a very large expansion in the acreage of a few counties in the northwestern part of the state, especially in the counties of Weakley, Henry, Gibson, and Carroll. The increase was largest in Weakley and Henry counties. The former increased its production from 279 acres in 1909 to 5957 in 1919 and the latter from 284 to 2295 acres.

No data are available on shipments of sweet potatoes from Tennessee prior to 1916. From the data published for 1916 it appears that the first commercial production for shipment started at Gleason, Tennessee. The stations from which shipments were made in 1916 and the number of car-loads from each station is shown on Map 10. Over one-half of the shipments from the state were from Gleason that year, and over 80% of them from this point and from McKenzie,¹ about 8 miles southeast.

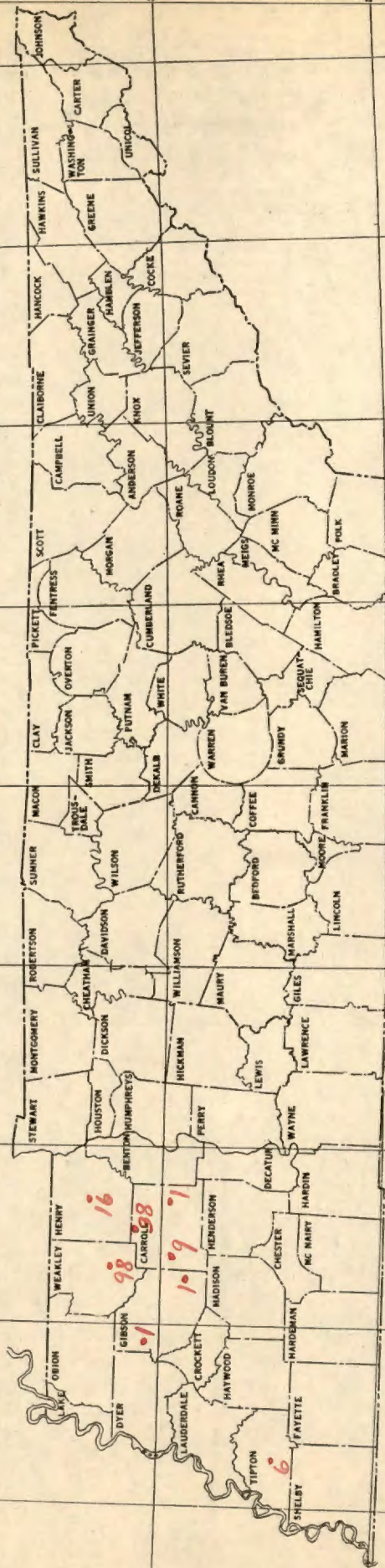
The production of sweet potatoes for shipment remained largely in the four counties previously named until about 1920. About this time there was agitation for diversifying the production of farm crops due largely to the low price of cotton at that time. This led to considerable expansion of the commercial sweet potato area, which continued until 1927 when there were shipments of sweet potatoes from 38 of the 95 counties of the state. The industry had by this time spread to all three of the grand divisions of the state; there being 7 East Tennessee counties, 14 Middle Tennessee counties, and 17 West Tennessee counties making shipments of sweet potatoes for the year 1927. The stations from which shipments were made at this time are shown on Map 11. The total number of shipments from each county are also shown.

2. Geographic Distribution of Associations - Active and Inactive

Cooperative sweet potato marketing associations have been organized in

¹ U. S. D. A. Bulletin 667

Map 10
Stations from Which Sweet Potato Carlot Shipments Were Made
in 1916

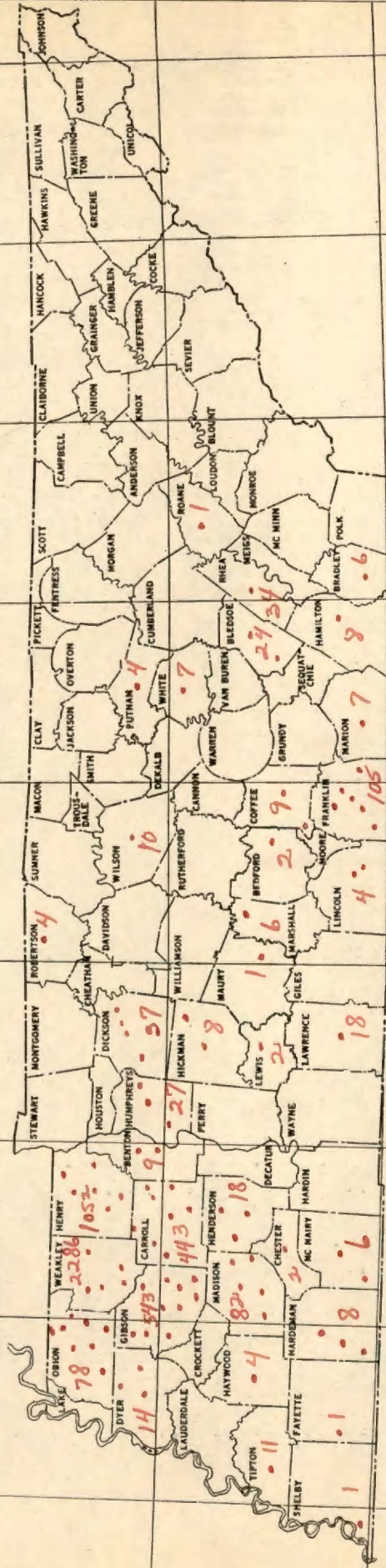


Figures denote number cars shipped from
each station.

RAND McNALLY
LETTER SIZE OUTLINE MAP
TENNESSEE

SCALE
0 10 20 30 40 50 Miles
Copyright by Rand McNally & Company, Chicago
MADE IN U. S. A.

Map 11
Stations from Which Shipments of Sweet Potatoes Were Made in
1927.



Dot represents station making shipment.
Figures denote cars shipped from county.

RAND McNALLY
LETTER SIZE OUTLINE MAP
TENNESSEE

SCALE
0 5 10 20 30 40 50 Miles
Copyright by Rand McNally & Company, Chicago
MADE IN U. S. A.

nearly all of the counties which have made car-lot shipments of sweet potatoes. Map 12 shows the location of all sweet potato associations that have been organized on which data have been collected by the Department of Agricultural Economics. This list may not include all the sweet potato associations in the state. In some cases there have been two associations listed as being located at one place which are not included here, because this would largely be a duplication as it usually can be classed as a reorganization of the previous association.¹

In the second place not all the so-called cooperative associations are in any sense cooperative. In fact there are a few shown on the map that could almost be put in this class. In some cases a dealer would make arrangements with a number of farmers to sell their potatoes on a commission basis. Such an arrangement was at times called a "cooperative association". There is another type, the independent corporation, that at times gets classed as a cooperative association. The Lebanon Storage Company furnishes an example. (Not listed on map.) A number of business men of Lebanon and a few farmers subscribed stock to build a sweet potato storage house. It was nothing more than a domestic corporation, but it was listed in the records as a cooperative sweet potato association; and yet they were in the business for only one purpose, namely, to make a profit on their investment from storing sweet potatoes.

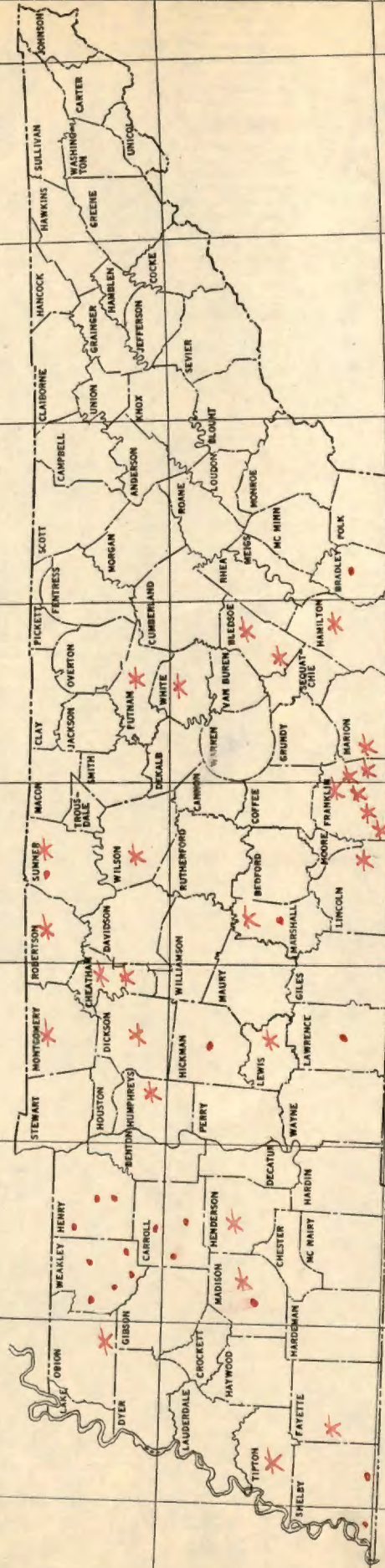
This brings up the question as to what is a cooperative association. Hibbard defines cooperation as the "Organized working together of farmers, on a non-profit basis, for the transaction of business."² Even this definition is rather hard to apply in distinguishing between cooperative associations and ordinary stock companies in that often other than farmers hold stock in the organization. Therefore, the dividing line between an ordinary corporation

¹ See Appendix for list of associations.

² Hibbard, B. H., Marketing Agricultural Products. D. Appleton and Co. 1921. p. 291.

Map 12

Location of Sweet Potato Association in Tennessee -
Both Active and Inactive, 1930



- * Active associations
- Inactive associations

RAND McNALLY
LETTER SIZE OUTLINE MAP

TENNESSEE

SCALE



Copyright by Rand McNally & Company, Chicago

MADE IN U. S. A.

and a cooperative association was generally taken as to the purpose for which it was organized; that is, whether organized only to make a profit. This must not be taken to mean that no dividends could be paid on capital stock but that there should be a limit to the amount of dividend which can be paid.¹

The sweet potato associations may be divided into three groups as to their geographical location. As is shown later, this grouping also divides them into three groups as to the reasons for organization. The group located in southeastern Middle Tennessee and in the southern part of East Tennessee, designated as the Decherd group, has already been discussed in the preliminary report.² The second group, located in northwestern Middle Tennessee, might be designated as the McEwen group for reasons which will be explained later. The third group consists of the West Tennessee associations. There are a few associations in Middle Tennessee that hardly fall in any of the geographical groups, as listed above, namely the Maple Hill association in Wilson County, the Kimmins association in Lewis County, and the Lawrenceburg association in Lawrence County. These will be grouped later when the reasons for organizing the association are considered.

A further examination of Map 12 shows that only 20 of the 50 associations were organized in the principal commercial producing areas of West Tennessee. Of the others, 25 were located in Middle Tennessee and 5 in southern East Tennessee. The latter two areas have developed commercial sweet potato production in a small way largely since 1925, and then mostly for markets within trucking distance.

Only 12 of the West Tennessee associations were organized in the four counties, Weakley, Gibson, Henry, and Carroll, that shipped 2648 of the 2993

¹ To meet the requirements of the Capper-Volstead Act the dividend on capital stock must be limited to 8% or less.

² Allred, C. E., Atkins, S. W., and Lucas, B. F. Preliminary Report of Marketing Sweet Potatoes in Tennessee.

carloads of sweet potatoes shipped from Tennessee in 1928. All of these were inactive in 1930, so that now the areas from which a large majority of the car-lot shipments are made are not served by a cooperative marketing association.

3. Date of Organizing Associations

The first cooperative sweet potato association in Tennessee was organized at Gleason in 1913. Three other associations were organized in this same vicinity shortly after, which is further evidence that the commercial sweet potato industry originated in this territory. They were known as the Hico Sweet Potato Association at McKenzie, organized about 1914 or 1915; the Paris Sweet Potato Association organized in 1915; and the Trezevant Sweet Potato Association organized in 1916. These four associations were evidently very successful, for in a short time several other association were organized in adjacent counties in West Tennessee.¹

In 1921 an association was organized at McEwen in northwest Middle Tennessee which had considerable influence on the organization of other associations in this group. During this year associations were organized at Mitchellville and at Lawrenceburg. No more associations were organized in this territory until 1926, when four more were started. The organization of this group has continued until the present year, one association being organized in 1929 and two in 1930.

Most of the associations in the Decherd group, in the south central part of the state, have been discussed.² The three associations that we shall class in that group, which have not been included in this preliminary report, were organized in 1926. This was about the last year any associations of that group were organized.

¹ A resume of the date and purpose of organization, and the main features of the structural organization of each association, is given at the end of the chapter.

² Allred, C. E., Atkins, S. W., and Lucas, B. F., op. cit.

The number of associations organized by years is shown in Table 43 and Chart 38. A very marked concentration in the number of association occurs in 1926. The year 1921 ranks second in the number of associations organized. Both of these years followed several years of favorable sweet potato prices. Apparently a few years of high prices is favorable to the organization of new associations, especially those in new producing areas. On the other hand 2 associations were organized in each of the years 1927 and 1928 which were years of low prices. As we will see later these low prices largely caused the organization of these two associations, since the growers were dissatisfied with their returns and believed they could be bettered by a marketing organization.

Table 43
Sweet Potato Cooperative Associations Organized by Years,
1913 to 1930

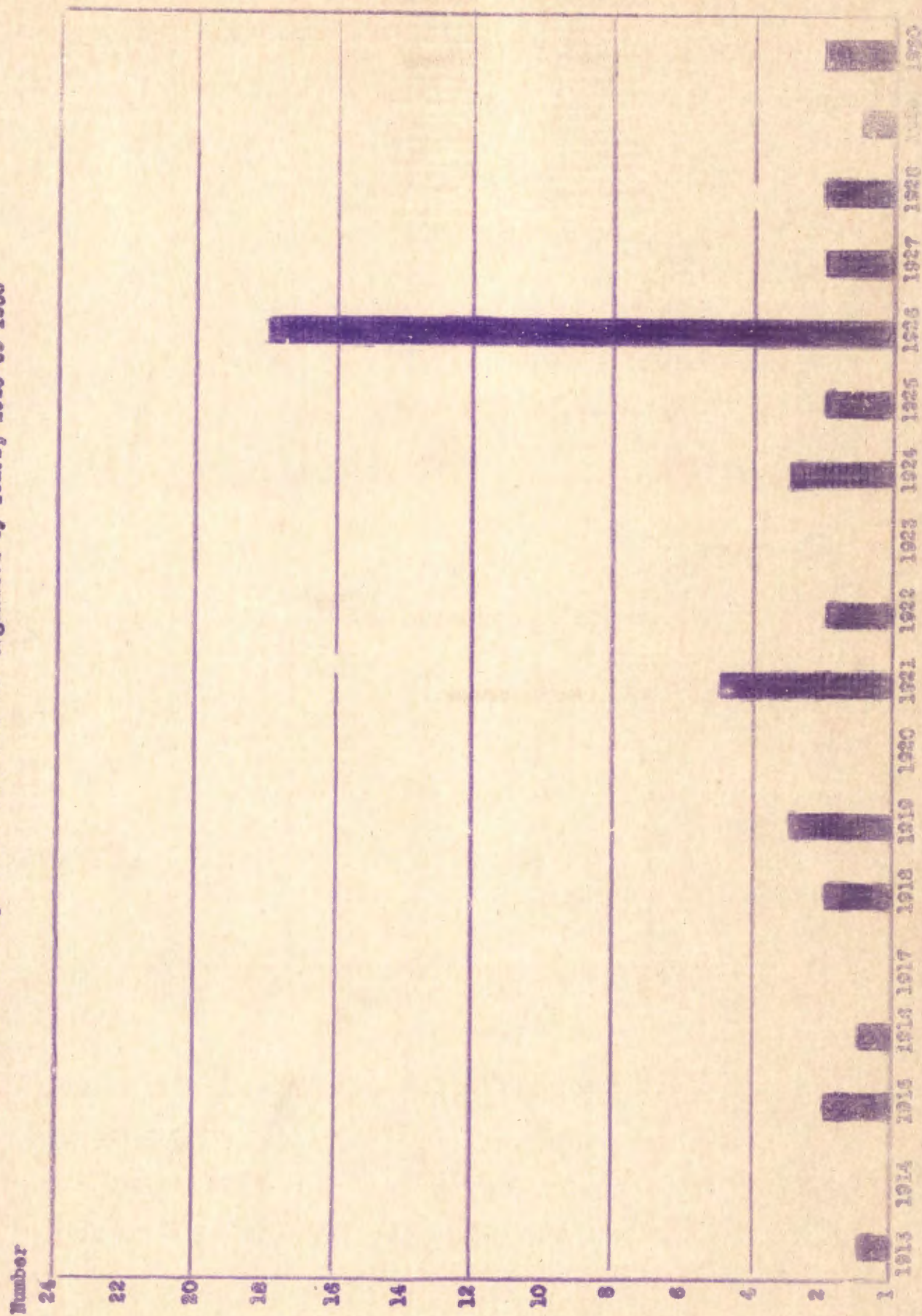
Year	Number organized			Year	Number organized		
	West Tennessee	Other sections	Total		West Tennessee	Other sections	Total
1913	1	0	1	1923	0	0	0
1914	0	0	0	1924	2	1	3
1915	2	0	2	1925	0	2	2
1916	1	0	1	1926	0	18	18
1917	0	0	0	1927	1	1	2
1918	2	0	2	1928	2	0	2
1919	3	0	3	1929	0	1	1
1920	0	0	0	1930	0	2	2
1921	2	3	5	Total	17	29	46
1922	1	1	2				

Source: Data gathered on survey, and U. S. D. A. files of cooperative associations.

4. Reasons for Organizing Associations

Promotion of Production - It is a very significant fact that the growth of the commercial sweet potato industry and the organization of sweet potato cooperative associations have an almost parallel history in Tennessee. It has been pointed out that the organization of the first four associations and the early development of the industry were contemporaneous. Similarly,

Chart 38
Sweet Potato Cooperative Associations Organised by Years, 1913 to 1930



the spread of the industry and the organization of new associations have advanced together. Of the 50 associations interviewed on the surveys in 1930, it was found that over 40 of these were organized at places where there was very little or no commercial production prior to their organization.

It has already been shown in the preliminary report how the success of an association organized at Decherd, in southern Middle Tennessee, in 1922 led to the desire to get into the sweet potato industry in many other places of that territory. This association was organized at a very favorable period and enjoyed good prices for its product for a few years. Leaders in other communities were quick to see the success of this organization and began to advocate the organization of a similar association in their community, until there were about twenty associations organized in that general territory from 1922 to 1927 inclusive. Almost without exception the big reason for organizing each of these associations also was to promote the production of the crop commercially.

In 1921 the first three cooperative sweet potato associations in northern Middle Tennessee were organized. The principal motive in organizing each of these was to promote production of sweet potatoes. Two of these associations had considerable difficulties in functioning, but the third, the McEwen Association, was very successful from the start. Its success has influenced, to a great extent, the organization of several other associations in that territory, which for convenience has been called the McEwen group. This territory is also in comparatively close proximity to the commercial sweet potato area of West Tennessee and, hence, they were also influenced to some extent by observation of the success of the industry in that area. In some parts of northern Middle Tennessee there was some commercial production already present, but mostly for the local markets. Here, the associations were organized largely to expand production.

In very much the same manner the success of the first association in

Tennessee at Gleason, in western part of the state, quickly led to the organization of three other associations in that same general area, Paris, McKenzie, and Trezevant, to promote the production of the crop in their respective communities.

In Shelby County there was a different condition not present elsewhere which led to the organization of several small local sweet potato associations. When the public auditorium was built, there was considerable space in the basement that was thought to be suitable for storing sweet potatoes. Therefore local associations were organized throughout the county to promote production of sweet potatoes, partly in order to utilize the large available storage facilities.

In order to market the crop successfully it was necessary to provide for storing and selling the crop. The associations organized with the idea of promoting each provided for either storing or selling and in some cases both. The idea of providing for these services was so that the idea of promoting production could be successfully carried out as there were no agencies performing these services at the time of organizing.

An example of this promotion idea is the newspaper propaganda that appeared in many local papers. The following clipping is taken from "The Sparta News" dated February 11, 1926. "Franklin County sold 30,000 bushels of sweet potatoes last year at \$2.10 per bushel F.O.B. shipping point. The entire crop was sold to a Chicago firm through the association in Franklin County. How many bushels of potatoes have been shipped from White County?" In the same paper, dated February 22, 1926, appeared the following editorial:

"Get the Vision"

----- Under present conditions one farmer can flood the local market and he cannot afford to ship in small quantities. But with some system of cooperation and a warehouse for storing farm products where they can be held till market conditions are more favorable and when shipments could be made in carload lots, every farmer could ship what he produces no matter how small the acreage. He could produce as much or as little as he desired, and as great a variety, knowing that he could dispose of his entire crop at a profit.

Evidently there was also a great deal of agitation for the organizing of associations to promote production at places where the organization was never perfected. Thus we see in the "Livingston Enterprise" of February 9, 1927, an account of a meeting at that place on January 29 to take steps

toward organizing such an association. Much of the same propaganda was evidently used here for the account tells of a talk by one of the local citizens in which he stated that "---- a number of persons who failed to take stock in the Algood Association on the start, after they saw the success of the enterprise, were hunting for stock to buy."

The reasons for organizing associations to promote production may be summed up as follows: First, there was the desire of business men and farm leaders to increase the farmers' incomes. Often they observed the success of associations at other places during years of relatively high sweet potato prices. They thus came to the conclusion that the farmers of their community could make money growing sweet potatoes. At other times, the main cash crop of the community was low in price and the farmers could make little or no money raising it. This usually led to a program of diversification, and the introduction of other cash crops of which sweet potatoes was often one of the principal crops introduced.

Improve Market Conditions - However, it appears that the industry spread to some places in West Tennessee without the aid of an association. At some places there was already more or less of an industry already established. Their principal motive in organizing the association was to improve the market conditions. Examples of associations organized with this as their prime motive are those at Dresden, Martin, Sharon, Greenfield, and Jackson.

The associations at Greenfield, Martin, and Sharon were organized during and following the 1927 crop season when sweet potatoes brought very low returns to the growers. Naturally the growers were very much disappointed over their returns and felt that something must be done to improve the conditions. It was thought by many that the dealers were taking too wide a margin, while others stressed the necessity of better grading. These associations were organized to

correct these faults.

At other places there were no local buyers and an association was organized so that the small grower could ship his potatoes in car-lots. Rutherford and Jackson are examples of places where associations were organized for this purpose.

Provide Storage and Curing Houses - The sweet potato requires a special kind of storage and curing house. To grow the crop profitably on a commercial scale this must be provided. In West Tennessee each man was left to provide or rent his own storage. The cooperative associations did not attempt to operate a storage house, except in a very few cases. However, in Middle and East Tennessee usually the sweet potato associations attempted to provide storage for its members. Of the associations surveyed it was found that 33 associations provided storage for their members while 17 left the problem of storage to the individual members. The attempt to solve the problem of storage and curing was another big reason for organizing some of the associations.

Table 44 shows the reasons for organizing, as they were given to the interviewers. This table does not represent the actual situation but only the opinions of those interviewed. Promotion of production ranks first. The reason "wanted another cash crop" and possibly "saw others doing well" could be interpreted as meaning production promotion. The reasons "to market

Table 44

Reasons as Given by Persons Interviewed for Organizing Sweet Potato Associations in Tennessee (a)

Reason	Times given	Reason	Times given
To promote production	32	To sell cooperatively	6
To store cooperatively	11	Wanted another cash crop	4
To market cooperatively	8	Saw other associations	
To ship cooperatively	7	doing well	2
		Other	3

^a Source: Information gathered on surveys, 1930

cooperatively, sell cooperatively, and ship cooperatively" are general terms it was found that have the same meaning here. On questioning those interviewed/that the

reasons back of their desire to engage in cooperative selling was due largely to unsatisfactory prices and desire for improvement of grades, and to provide a market that was not in existence locally. Cooperative storage was mentioned as a reason for organizing 11 associations. But 26 cooperative storage houses were built. It seems reasonable that to provide storage could be justified as a reason for organizing these associations. Likewise more associations had for their purpose the selling of sweet potatoes than the interviewers mentioned, as practically all sold cooperatively, at least in the first years of their operation.

Thus we see that many reasons were given by different persons but they can all be summed up under three heads. First, business men, civic and farm leaders, newspaper editors, etc., seeing the success of an association in another town and wishing to increase the cash income of the community, organized an association in their towns to promote the production of the crop. The second main reason given was to provide for storage and curing, so that the production could be more easily accomplished. Then third, at some places where the industry was already established to a certain degree, associations were organized to aid in marketing, e.g., so that the small grower could ship, or because it was thought the buyers were either taking too large a margin on their product, or were not paying enough attention to grading.

5. Adherence to Fundamental Principles

In discussing the essentials of a cooperative association Benton lists the following principles of organization generally regarded as fundamental to ¹ permanent success and stability.

1. One man, one vote principle.
2. A voting membership restricted to actual producers.
3. Limitation of size of dividends payable on capital stock.
4. Distribution of savings on the basis of volume of business.
5. Open business methods and democratic management.
6. A proper legal entity.

¹Benton, A. H., Marketing Farm Products. A. W. Shaw and Co., 1926.

One Man, One Vote - This principle seems to have been followed by all of the sweet potato associations. In every case each member was entitled to only one vote. However, there was a great deal of difference in the requirements for membership. In some cases where the association did not own a storage house any producer was considered a member of the association when he sold potatoes through it. Generally there were no restrictions as to who could become a member. With such loose requirements for membership, one would expect the members to take very little interest in the association. In such cases, all the business of operating the associations were usually left up to the manager, and the association became really, in effect, a private business. A few associations had a small initiation fee while others had a small annual membership fee. The foregoing membership requirements apply principally to those associations which engaged only in shipping and did not attempt to operate a storage house.

When the association attempted to furnish storage for its members a good deal of capital was required to finance the building of the storage house. So where this was the case stock ownership was generally required for membership. This type of membership would be inclined to take more interest in the association than the other, but on the other hand, in some cases the required amount of stock to be purchased was so high as to restrict the membership to only the wealthier growers. The amount of stock required membership was usually one share. The value of shares varied in different associations from \$10 to \$200. The \$100 share was most common (see Table 45). In most of these cases non-members

Table 45

Value of Shares of Stock in Sweet Potato Cooperative Associations

Value	Number Associations	Value	Number Associations
\$10	1	\$50	4
25	1	100	15
		200	1

Source: Data gathered on survey 1930.

could store their potatoes in the association house for the same price as members, but they had no vote in the governing of the association.

Voting Membership Restricted to Producers - The second principle, a voting membership restricted to actual producers was not followed in all associations, especially in those associations which provided storage. Very often in financing the construction of the storage house it was found that the producers could not furnish enough capital, so that some business men often bought a few shares of stock. They were given a voting membership. Such conditions seemed to have led to very little trouble in any of the associations, but there is always the danger that some of the non-grower members will attempt to operate the association for profit for themselves, and not for the mutual benefit of all.

Limitation of Dividends on Capital Stock - In order to thoroughly understand the working of the third principle, limitation of dividend, it is necessary to have a knowledge of the methods used in financing the associations. Quite a few of the associations were non-stock organizations (especially those who did not operate storage houses). Whatever financing was necessary for marketing the potatoes in such associations were usually borne by the growers themselves. That is, payment to members was deferred until the association received payment from the buyer. Each pool, whether a car or one day pool, was a complete transaction, the growers receiving their pay as soon as the association received settlement for that particular pool. Here, very little fixed capital was required.

A few of the associations that built storage houses financed themselves by the actual sale of stock. However, in most places the stock was not sold outright but the growers and, in some cases, a few business men merely signed a note for their share of stock. These notes were then endorsed by the association and used by them as collateral for a loan from the local bank to finance the building of their house. The notes were to be retired out of the proceeds from storing, usually in five equal annual installments. Usually all the notes were retired alike regardless of whether the stock subscribers

grew any potatoes or not. In some cases the farmers either ceased growing sweet potatoes or decreased their acreage considerably. This decreased volume usually left the associations in a rather bad position financially. Very few of them financed in this manner have as yet been able to retire these notes, put up as collateral, as they became due; and the stockholders have never been paid a cash dividend on the stock certificate they hold.

It has been held by some that since the holder of the stock certificate in the instances above have never been paid a cash dividend, he has realized no interest from his investment. In making this statement they overlooked a number of facts. In the first place he really made no cash investment, giving only his note. Then, the association paid the interest on his note at the bank, which he would have had to pay himself if he had borrowed the money from the bank to buy the stock outright. Then again the association often paid off at least a part of the principal which he would have had to pay himself otherwise. This can be well illustrated by the experience of a certain farmer personally known by the writer, who is a member of one of the associations in Middle Tennessee. When the organizers were getting other members to sign notes for their stock this farmer, being in good financial condition, suggested that he pay for his stock outright and that the association pay him the interest on his stock, which otherwise was paid the bank, as well as the proportional amount which was paid on the principal of the notes of all the other members. In other words he was to finance his own stock purchase instead of borrowing from the bank on a collateral note. The association agreed to accept this proposition. The remuneration on his investment the first year amounted to exactly 26%. This consisted of the six per cent interest paid by the association on the par value of the stock, plus one fifth of the principal. A proportional amount was paid the bank on its loan to the association. As this farmer still held his stock this payment can only be regarded as a dividend on the stock. However, only 6% is to be paid on par value of the stock after the original in-

vestment has been retired.¹ However, since the first year the acreage has been greatly reduced but this association has always paid at least the interest on their indebtedness, although they have not been able to reduce the original indebtedness very much since this year. Had the acreage been maintained to what it was the first year it is easy to see that not only this farmer but all the others would have received a very handsome return on their investment since they became the owners of the storage house without having paid anything.

The associations would have probably been better off in the long run had they had a limit to the amount of dividend payable on their capital stock. To meet the requirements of the Capper-Volstead Act the returns on the investment must be limited to not more than 8%.

Distribution of Savings on Patronage Basis - The principle of distributing the savings on the basis of the volume of business was not strictly adhered to by all the associations as is shown above in the case on the retirement of the notes. For those associations which had no capital stock this was the natural way of distributing the savings. Where each car or day's business was considered a separate pool, the growers were usually paid the full amount due them according to amount of potatoes delivered at the close of each pool. A few associations of this type had an emergency sinking fund the balance of which, if any, at the close of the season, was returned to the growers on the volume of business done through the association that season.

With the capital stock associations very few were found to be following this principle which is generally regarded as essential to cooperation. As explained above, the proceeds from storage after expenses were paid was used to retire the notes held by bank, which were used for financing the building of the storage house. However, we found two associations that were at least

¹ While the principal is being retired interest is paid on only the unpaid balance. For instance, this farmer received in interest 6% on \$80 the second year, instead of on the original \$100.

attempting to carry out this provision, though in different manners. In one case the financing of the storage house was done by one of the wealthier growers. He was given a mortgage on the house which was to be retired from the proceeds of storage. When the mortgage was paid the members were to be issued stock certificates in proportion to the amount of potatoes stored in the house by them. In the other case notes were signed by several growers as described above. However, here the members' notes were not retired by a flat rate, but according to the amount of potatoes he stored. Therefore if one member grew no potatoes his note would not be retired except that proceeds from the storing of non-members' potatoes were applied to all alike. On the other hand, when a member stored a large quantity of potatoes his note would be retired at a rate in proportion to the amount he stored. After a member's note was paid off he received a 6% dividend on it and only had to pay his proportional share of the cost of storage. That is, if the actual cost of storing was eight cents per hamper for the entire amount stored he only paid that amount for his storage instead of the flat rate charged when he was retiring his note, and as charged non-members.

Open Business Methods and Democratic Management - There is considerable difference in the management of the individual associations. With several of the associations practically all the affairs of the association were left to the manager with very little interest taken by the members. There seemed to be little knowledge about the operation of the associations among the average members. When the survey of the cooperative sweet potato associations of the state was made it was often very hard to get information about the association except from the manager. This was especially true of the associations which had become inactive. If the manager had, since the organization ceased functioning, moved away or was temporarily out of town, it was usually difficult to get any information about that association. It was the exception when a member was found who knew anything about the constitution and by-laws of the association,

and often the manager could not even find a copy. At times the manager would state that he could get no cooperation from the board of directors and that they left everything up to him. On the other hand, it appears that the management as a rule made very little or no effort to keep the membership informed about the workings of the association.

Legal Entity - An association to meet the every-day demands of the business world, to enjoy the rights accorded by various state and federal laws, and to limit the liability for debts incurred must have a proper legal entity. As a general rule, whether an association was incorporated or not depended upon the functions they wished to perform. Those associations which did not attempt to store potatoes were seldom incorporated. In their case since each car shipped or day's business was a complete transaction and full settlement was made only after they had received payment for the commodity sold, there was not very much chance of incurring any large debts. Therefore, it was not felt that the members needed the protection of incorporation, and as a general rule the association was able to function fairly well unincorporated. The members of associations that constructed storage houses, on the other hand, were under considerable financial obligation; and, as the result, the associations were often incorporated. The number of the different types of associations which were incorporated is shown in Table 46.

Table 46

Number of Incorporated and Unincorporated Sweet Potato Associations in Tennessee (a)

	Incorporated	Not incorporated
Associations storing	19	8
Associations not storing	0	17
Total	19	25

^a Source: Survey of cooperative associations. 1930. No data on 6 associations.

Very few of the associations have kept up their charter and paid their annual fees to the State Treasurer. When this matter was investigated at the

office of Secretary of State in Nashville in the fall of 1930 it was found that only four of the sweet potato associations of the state had paid their annual fee.¹ The clerk who gave us the information advocated that cooperative associations be exempted from this fee and that they make their report to the Commissioner of Agriculture or Chief of Division of Markets. The clerk also stated that they had not as yet taken any action against any of the delinquent associations to recover their charter.

The Cooperative Marketing Act of Tennessee passed in 1923 provides for the incorporation of both stock and non-stock organizations. All the associations incorporated in Tennessee are of the stock type. No data are available as to whether all the associations are organized under the cooperative law or not. The Tennessee law restricts the membership to actual producers of farm products or landlords who receive farm produce for their share of the rent. Some associations have a few businessmen who are not farmers as members, as noted above. Such associations probably could not meet all the requirements of this act.

6. Classification of Associations

The sweet potato associations in Tennessee may be classified into three groups according to: (1) the marketing services performed; (2) the commodities handled; and (3) the type of organization.

Grouped As to Marketing Functions: - The associations may be classified according to marketing functions as follows: (1) those providing storage only; (2) those selling only; and (3) those performing both of these functions. The number of associations in each class is shown in Table 47. Those providing

Table 47	
Classification of Sweet Potato Associations According to Marketing Functions ^(a)	
Function	Number of Associations
Storage only	11
Storing and selling	20
Selling only	19
Total	50

^a Source: Survey of cooperative associations, 1930.

storage are found in all three of the groups of associations. Those engaged in both storing and selling are found only in the Decherd and McEwen groups in Middle and East Tennessee. At least half of this group have now either abandoned cooperative selling of sweet potatoes, or sell this way only occasionally. The

¹ These were each in the Decherd group which has been written up in the preliminary report.

first year or two that they were organized all the potatoes in the house were pooled. The manager could sell them when he thought best. However, now pooling has been abandoned in many of them. Each member looks after the sale of his own potatoes. Only when there are more potatoes than the local market will absorb will the association pool sales, and even here each member can decide whether he wants to put any potatoes into that particular pool.

The associations which engaged only in selling are located principally in West Tennessee. These associations are practically all inactive now.

Grouped As to Products Handled - There are three types of associations that handle sweet potatoes when grouped on the basis of products handled, namely, (1) those handling sweet potatoes only; (2) those organized to handle several kinds of fruits and vegetables; and (3) those handling a wide variety of products. As can be seen from Table 48 by far the greatest number of associations were organized to handle sweet potatoes only. A few started out to

Table 48

Sweet Potato Associations Classified According to Products
Handled (a)

Products handled	Number of associations
Sweet potatoes only	44
Fruits and vegetables	3
Wide variety of products	3
Total	50

^a Source: Survey of cooperative associations, 1930.

market other kinds of fruits and vegetables. Those of the third class could hardly be called sweet potato cooperative associations, for they are really a part of the Farm Bureau organizations. The Farm Bureau in a few counties markets a few cars of potatoes for its members. In order to keep their funds separate and to make bookkeeping easier they are sold under the name of a sweet potato cooperative association of that county.

Grouped As to Type of Organization - Each of the sweet potato associations of Tennessee are only local organizations, confined to one trade area and managed independently. In the report of the Division of Extension of the University of Tennessee for 1918 there is a short account of a meeting held in Memphis, September 24, 1918, to formulate plans for a Sweet Potato Growers Exchange, which would have consisted of several of these small local associations. In the report the next year there was also mention of such a plan but it evidently did not materialize as there was no later mention of it.

In the spring of 1931 the West Tennessee Fruit and Vegetable Growers Association was organized through the efforts of the marketing specialists of the Division of Extension of this institution, cooperating with the Federal Farm Board. At present this federated organization is composed of 4 locals located at Humboldt, Milan, Trenton, and Alamo. According to A. L. Jordan, Extension Marketing Specialist, sweet potatoes will probably be marketed through this organization.

If this is done it will be the first time that this crop has been marketed cooperatively in this state other than through local associations.

7. System of Government, or Organization Structure of

These Local Associations

There is much difference as to the government of individual sweet potato associations in Tennessee. As a rule the earlier formed associations were rather loose in their organization. Generally all the business was left to the manager. Some did not even have a board of directors. When they did have a board of directors they were usually only "figureheads". Often they had no constitution or by-laws. This type of government is characteristic of many of the West Tennessee associations.

The later organized associations, especially those of the McEwen and Dechard groups, had a more systematized form of government. They usually

had, originally at least, adopted a constitution and by-laws, and had a board of directors whose duties were generally to determine the policies and to see that they were executed by the manager. Yet many of these associations were rather lax in carrying out the provisions of their constitution and by-laws and often the board of directors did not function very much. However a few held regular meetings and assisted the manager in various ways.

The Tennessee Cooperative Law of 1923 provides that the officers shall be elected by the board of directors from their own members except Secretary-Treasurer. Also that no director shall be party to a contract with the association for which he receives a profit differing in any way from the business relations accorded regular members. As a rule it seems that officers were elected by the directors. The provision that directors could receive no financial benefit from the association not accorded each member was violated in some cases. It was found that in nine cases the manager was a member of the board, and some of the managers received monetary remuneration for their work.

The advisability of a board member acting as manager may be questioned, as a general policy, since it is one of the functions of the board to check up on the work of the manager. When the manager is a member of the board he is in a position to check up on his own work. Since it is human nature for individuals to defend their own work, a situation may arise where such a manager, who has considerable influence among the other members of the board, might get his work approved that would not be for the best interest of the association. As far as could be determined, no ill results have occurred from this policy among the associations. No special investigation, however, was made of this phase. The danger, on the other hand, is always present.

It is entirely possible that a member elected as a director is the best man available for the managerial position. This was true at times during the period of organization and development in the new producing areas. Men who

had any special knowledge of marketing were scarce. If there was an experienced man available, he was usually one of the leaders in organizing and was therefore placed on the board; and then elected by them as manager of the association. A situation similar to this existed at Decherd. A dealer in white potatoes became interested in the organization of a cooperative sweet potato storage and selling association. Largely because of his familiarity with marketing he was elected a member of the board, and manager. It is reported that the board always accepts his advice as to policies to follow. Whether this is always for the best of the association we do not know. This association, however, has met with considerable success. In individual cases the success of such a policy would depend largely upon the type of manager. It cannot be recommended generally.

No method is provided for election of board members in the Tennessee Cooperative Law of 1923. The by-laws recommended by the Marketing Extension Specialist and apparently adopted by a number of associations provided for their election for a period of one year at the annual meeting. This set of by-laws also provides that no regular employee of the association may be a director and that no director may buy or sell any products also handled by the association.

8. Resume of Individual Associations

A short resume of each individual association is presented below, giving its location, date organized, reasons for organizing, length of operation and other significant data.

West Tennessee Group -

1. Gleason, Weakley County.

This association was organized in 1913 as a means of promoting the production of sweet potatoes of that area, by providing a means of marketing the crop. It was originally very successful and functioned smoothly till their manager died and then it failed. It was reorganized about 1926

but with very little success.

2. Paris, Henry County.

Organized in 1915 to provide a means of marketing the crop and therefore to promote its production. Was successful for a number of years and had a very rapid growth at the start after which membership began to gradually diminish, due largely to competition of local buyers. Went out of business in 1927.

3. McKenzie, Carroll County.

Organized in 1915. Evidently influenced by the success of the association at Gleason. Organized to sell crop and thereby promote its production. Operated fairly well for about ten years. It ceased operation about 1925, due largely to competition of independent buyers and lack of adequate financing.

4. Trezevant, Carroll County.

Organized in 1916. Influenced by association at Gleason. Purpose of organization was to sell crop cooperatively and thereby make its production possible. There was little organization within the association - just a few farmers shipping together. It was gradually taken over on a dealer basis by the manager who is now an independent buyer but still ships for a few farmers on a commission basis. This association with the other three named had a tremendous influence in promoting the commercial production of sweet potatoes in West Tennessee.

5. Mercer, Madison County.

Organized in 1918 according to U. S. D. A. files, but the manager of association, when interviewed on survey, thought it was organized about 1924. Cotton was cheap at time of organization. The association was expected to promote the production of vegetable crops to replace it. Started with strawberries and sweet potatoes but lost money on the strawberry crop

the first year due to adverse weather conditions. The price of the sweet potatoes declined in a year or two, while cotton prices rose so that farmers quit growing sweet potatoes, until now, only two growers are left. Members took little interest in the association. All business was left to the manager.

6. Rutherford, Gibson County.

Not listed in U. S. D. A. files of cooperative associations. Manager said it was organized 10 to 12 years ago, which would be about 1918 to 1920. Was a rather loosely organized association. A few farmers agreed to sell their potatoes together so that they could ship car-loads. Manager looked after all interests of association. Failed 4 to 5 years ago, due to lack of interest of members and appearance of cash buyers.

7. Brighton, Tipton County.

Organized in 1918, according to party interviewed on survey, to sell sweet potatoes in car-lots and thereby promote production of the crop. Is a rather loose organization but evidently members are pretty good cooperators. Is still functioning to some extent.¹

8. Lexington, Henderson County.

According to the county agent of Henderson County he organized this association in 1916. It is listed in U. S. D. A. files as having been organized in 1919, which seems more likely. Its purpose was to ship and sell in car-lots and thereby make the production of sweet potatoes possible. The work of the association has been taken over by the Farm Bureau of that county. As a part of this organization it is still active.

9. Memphis, Shelby County.

Organized about 1919. Shelby County and the City of Memphis has built an auditorium in which there was considerable space available in the basement which was thought to be suited for storing sweet potatoes. Therefore a sweet potato association was organized near Memphis to grow potatoes in order to utilize this space. The City of Memphis hired a man to look after

¹ The U. S. D. A. files records an association at Covington in the same county but no information could be obtained about it by members of the survey party.

the storage and marketing the potatoes. Also several other associations were organized in other communities of the county for the same purpose. Cotton was also cheap about the time of organizing. However the basement proved unsuited for storing and the scheme was abandoned. The City of Memphis still has a marketing agent who occasionally sells a car or two of sweet potatoes on a cost commission basis; but such an arrangement could not be classed as a co-operative association.

10. Cordova, Shelby County.

Organized in 1921. Promoted by business men and leading farmers around Cordova. Wanted to promote the production of more vegetable crops and less cotton. The storage house was financed by surplus funds of the community fair association. The members expected to grow and ship several kinds of vegetables. They were not successful on the first shipments so they soon disbanded. They still have the storage where a few growers store their potatoes. The good local market at Memphis attracts many growers.

11. Henry, Henry County.

According to U. S. D. A. files of cooperative associations this association was organized in 1921, but persons interviewed thought it was organized around 1919. This seems a little more likely as they said very few sweet potatoes were grown there before the association was organized. The purpose of the organization was to provide a market and thereby make the production of the crop possible. It functioned only a short time. It was taken over on a dealer basis.

12. Cottage Grove, Henry County.

This association never functioned. The growers had their plans for organization all drawn up but before they had chance to market any potatoes the county agent, who it is understood was in bad standing in the county at that time, threw "cold water" on their plans. As the result the organization was never finally completed.

13. Dresden, Weakley County.

Organized in 1922. Purpose was to sell sweet potatoes cooperatively as they thought dealers were taking too wide a margin. The first car shipped was rejected by the receiver so that the association had to make an adjustment. Growers therefore received only about half what independent buyers had offered them in cash. This ended the association and manager became an independent buyer.

14. Jackson, Madison County.

This is really a part of the Madison County Farm Bureau. They market a few cars of potatoes for their members each year, which are usually sold under the name of the Madison County Sweet Potato Association.

15. Clarksburg, Carroll County.

Organized in 1924 to provide storage space for sweet potatoes. Stock was sold for \$50.00 per share to finance the building of a storage house. Smith-Hughes teacher was instrumental in organizing the association. Does not attempt to sell or ship potatoes. Sweet potato industry has about died out in that vicinity leaving the association without enough volume to operate.

16. Oakland, Fayette County.

Organized 1924 so that the small growers could have a market for their potatoes. It is just an agreement between a few growers to ship together. They have no formal organization. It is still active, but does a very small volume of business.

17. Martin, Weakley County.

Organized during 1927-1928 crop season to market sweet potatoes cooperatively. The industry was already well established. The members expected to improve the methods of marketing as well as to reduce the costs of marketing. Functioned only a very short time. Little interest on part of growers.

18. Greenfield, Weakley County.

Organized in 1928 by the state marketing agent to market sweet

potatoes cooperatively. His idea was that the association should use federal grades in marketing the potatoes. The purpose was to improve the quality of potatoes sold, because it was thought the dealers were not paying enough attention to grade differentials. First car shipped was rejected by receiver and growers lost money on the deal. The association ceased to function as the result.

19. Sharon, Weakley County.

Organized 1928. Composed principally of influential citizens and business men. Their idea was to form a stock company to buy the farmers' potatoes in the fall at \$1.00 per bushel and thereby give them the advantage of the expected raise in price. Only functioned one year and can hardly be called a cooperative association.

20. Kenton, Obion County.

Organized to promote the production of sweet potatoes. Date of organization not known. A merchant of Kenton wishing to aid the farmers was instrumental in its organization. He built the storage house and charges members for storage. They ship and sell their potatoes cooperatively but have no formal organization.

McEwen Group -

21. McEwen, Humphreys County.

Organized 1921 to promote the production of sweet potatoes in that county. Attempted to provide storage as well as sell and ship the potatoes. Association built their own storage house. It was financed with loans from the local bank which was secured by separate notes of those who subscribed for stock. These notes were to be retired from the proceeds of storage, each member's note to be retired in proportion to the amount of potatoes stored by him. However as far as we were able to find out,¹ it seemed as though the notes

¹ The manager was out of town when McEwen was visited on the survey and were not able to see him. Members interviewed were not very clear on this phase.

were all retired at the same rate and not as they had planned at first. The house was enlarged in 1926 to its present capacity of 20,000 bushels. This association influenced a great deal the organization of other cooperative sweet potato associations in that area, which are called the McEwen group in this report. It is still active though interest in sweet potato growing is decreasing.

22. Mitchellville, Sumner County.

Organized 1921 by a local farmer to promote the production of the crop in that area. They wanted another cash crop to supplement tobacco and strawberries. Association leased a storage house. Practically their entire first crop was destroyed by fire. As a result the association ceased to function.

23. Dickson, Dickson County.

Organized in 1926 by the county agent and farmers to promote production of, and provide a means of storing, sweet potatoes. They built a storage house, which was financed by very much the same plan as described for the McEwen association. This plan has been carried out, according to information given by the county agent. Selling of the crop is left principally to each individual grower, though they at times sell cooperatively through the association. The association is still active.

24. Kimmins, Lewis County.

Organized 1926 to provide storage for sweet potatoes and thereby promote the production of the crop. Financed the storage house by the sale of stock. Purchase of stock was required for membership. Anyone desiring to could purchase stock. It was not limited to growers. Association sells for grower at times if grower so chooses. It is still active, though it resembles an ordinary corporation more than a cooperative association.

25. Kingston Springs, Cheatham County.

Organized 1929 by business men of Kingston Springs to create a local enterprise for benefit of farmers, to provide storage for sweet potatoes

and thereby promote production of the crop. Financed building of house by sale of stock. Stockholders include business men of Kingston Springs as well as farmers. Membership requires purchase of stock but storage is available for members and non-members at uniform rate. Association still active but is also doubtful if it should be called a cooperative association.

26. Ashland City, Cheatham County.

Organized 1926 to promote the production of sweet potatoes to take the place or supplement their leading cash crop, tobacco, which was low in price that year. Reorganized 1927, which was necessitated because fire destroyed their storage house. Building of storage house financed by members who signed notes which were used as collateral for bank loan. Notes were to be retired from proceeds of storage. Under the present plan all notes are retired at the same rate regardless of the amount of potatoes stored. Their plan, at first, was to use the revolving fund method. That is, when notes were paid off the house was to be owned by growers in proportion to the amount of potatoes stored. This change in policy was necessary because of difficulty in getting enough to sign notes after their losses from fire the first time. Each member is responsible for selling own crop, though at times they ship cooperatively through the association. Still active.

27. Sadlersville, Robertson County.

Organized 1926 to promote the production of sweet potatoes and thereby provide another cash crop to supplement tobacco which was low in price that year. Association owns a storage house which was formerly a tobacco warehouse but has been remodeled. Financing was all done by one grower who is manager of the association. This grower owned the tobacco warehouse which he sold to the association taking a mortgage on it as security. He then gave his personal note to the bank for collateral to borrow money for remodeling the house. This note, as well as his mortgage on the house, were to be paid out of proceeds from the storage of potatoes. When all obligations were paid off the

members would own the house in proportion to the amount of potatoes they had stored in the house. Association does no selling. Still active.

28. Clarksville, Montgomery County.

Organized 1930 to store and ship potatoes cooperatively, and thereby promote the production of the crop. They want another cash crop to supplement tobacco. Association has leased a large brick dwelling which they expect to convert into a storage house.

29. Portland, Sumner County.

Organized 1930 to sell sweet potatoes and promote the production of the crop. They want another cash crop to supplement strawberries and tobacco. Expected to lease a building which was thought to be suitable for storage the first year; but later they expect the storage to be cared for by private parties.

Decherd Group -

30. Maple Hill, Wilson County.

Organized 1926 to promote and expand the production of sweet potatoes. Providing suitable storage was one of the principal aims of the association. Influenced considerably by cooperative storage houses in Franklin County, which a committee visited before organizing. Building of house financed on plan similar to those in Franklin County.¹ Members sell own potatoes at present though at first they practiced pooling. Still active.

31. Chapel Hill, Marshall County.

Organized in 1926 by business men and leading farmers to promote the production of the crop. Financed on similar plan to Maple Hill association above. Association bought a cannery which they converted into a storage house. Still active.

¹ This plan consisted of each member signing a note which was used as collateral for borrowing money from local bank to build the house. These obligations were to be paid out of the receipts of storage, each members note retired alike regardless of amount of potatoes stored by him.

32. Lewisburg, Marshall County.

Organized 1926 by Chamber of Commerce of Lewisburg as a means of promoting the production of sweet potatoes and thereby increase the cash income of the farmers. Financed similar to Maple Hill association. Many of members are not growers but merchants and professional men of Lewisburg. Built own storage house. Association is still heavily in debt and will probably be liquidated in the near future. Sweet potato production decreased greatly. Low prices in 1926, the first year of organization, discouraged growers.

33. Lawrenceburg, Lawrence County.

This association was not visited on the survey but according to information available in the files of the Department of Agricultural Economics it was organized in 1921. It sold only sweet potatoes. According to latest information it is now inactive.

The following associations are also listed in the card index of this department but nothing more is known of them: Warren County Sweet Potato Association, Sweet Potato Association of Morgan County, and Sweet Potato Association of Hickman County. Two other associations are also listed in the card index; but when their reported location was visited in the fall of 1930 the persons interviewed knew nothing of them. These were the Sweet Potato Association at Waverly, Humphreys County, and the Sumner County Sweet Potato Club at Gallatin.

In addition, the following corporations have been reported to this office as cooperatives but on visiting them on the survey it was found they were ordinary corporations: Lebanon Storage Company, Lebanon; Troy Sweet Potato Association, Troy; and Woodland Mills Sweet Potato Association. These three companies each built a sweet potato storehouse and lease storage space to growers. The Lebanon Storage Company as a means of combating black rot has a rule that only growers can lease storage space who have practiced such control measures as using certified seed, disinfecting seed, etc.

BIBLIOGRAPHY

1. Allred, C. E., Atkins, S. W., and Lucas, B. F., Preliminary Report of the Cooperative Marketing of Sweet Potatoes in Tennessee. 1930.
2. Benton, A. H., Marketing Agricultural Products. A. W. Shaw and Company. 1926
3. Hibbard, B. H., Marketing Agricultural Products. D. Appleton and Company. 1921
4. Thomsen, F. L., and Thorne, G. B., Cooperative Marketing for Missouri. Mo. Agr. Exp. Sta. Bulletin 253. 1927

CHAPTER VI

SIZE, FUNCTIONS, AND METHODS OF OPERATION OF TENNESSEE SWEET
POTATO MARKETING ASSOCIATIONS

- | | |
|--------------------------|--------------------------------|
| 1. Size of Associations. | 4. Pooling. |
| 2. Services Performed. | 5. Duties of Officers. |
| 3. Sales Policies. | 6. Information for Membership. |

1. Size of Associations

The sweet potato marketing associations of Tennessee are all independent local associations. Their membership is therefore limited to the growers of one county and in some places to one trade area. As the commercial production of sweet potatoes is rather small except in a few counties of the state the local associations are limited to a very small volume as the result.

Number of Members - According to data obtained on the survey and information in the U. S. D. A. files the total number of members of cooperative sweet potato associations in Tennessee is about 1200 at present. As there are about 31 active associations, their average membership would be about 40. However, there is considerable difference in the size of individual associations, some having only seven to ten members and a few having near a hundred. At least 50 per cent of the associations have a membership of 35 to 50 members.

The membership of many associations has decreased during the last few years. Data from the survey showed that over a third of the associations had fewer members at the time of the survey than when they were organized. However, as there have been several new associations organized during the last few years the total membership of all associations of the state has probably not changed very much during the past 4 or 5 years. In 1925 and 1926 there were many new associations organized and the total membership probably increased during this time. The number of farmers who have at some time been

members of a sweet potato association or are members at the present time is somewhere around 2500. The number of members at any one time is probably not over one-half this number.¹

Volume of Business - The volume of business of cooperative associations is more difficult to secure than the membership. Some associations only operate a storage, others sell only, and some attempt to do both. The amount of selling done by cooperative associations has declined considerably during the last few years. This is due to two reasons: first, several associations have changed their policy and discontinued selling, leaving each member to dispose of his own crop; and second, the decline in the production of sweet potatoes in the area where most of the active cooperative associations are found at present. The volume of cooperative storage has also declined the last few years, due principally to this decline in production.

There are two short periods when the volume of cooperative selling of sweet potatoes reached relatively high levels. The first was from 1919 to 1922, with the peak probably occurring during the crop year of 1922. The volume was handled largely by three associations, namely Paris, Gleason, and McKenzie. Some data on the volume of business transacted by two of these associations are shown in the U. S. D. A. files of cooperative marketing but it is very incomplete. The Paris association which was functioning during this time, the largest ever organized in Tennessee, had about 450 members and transacted over a \$100,000 business for several years. The number of car-loads marketed through this association in 1919 was 130 but the volume for 1921 and 1922 was evidently considerably larger than this. The second period embraces the crop years 1925 to 1927, with the peak in 1926. The increased activity here is due to the organization of a large number of associations in the Decherd and McEwen groups, largely in Middle Tennessee, and to the sweet potato boom that was going on in that territory, at that time.

The volume stored is a good measure of size of business for the associa-

¹ From data obtained on the survey and the U. S. D. A. card index of cooperative associations.

tions with storage houses. The storage capacity of the 26 active cooperative associations of Tennessee is about 285,000 bushels. The average storage capacity therefore is a little over 10,000 bushels. However, only a little over a third of this space was utilized for the 1929 crop, the total amount of potatoes stored being around 100,000 bushels. The amount stored in 1928 was about the same (see Table 49). The volume of sweet potatoes stored cooperatively reached its peak for the 1926 crop. Several cooperative storage houses in Middle and East Tennessee were filled to capacity that year, which have never been filled since.

Table 49

Size of Active Cooperative Sweet Potato Associations as Indicated by Membership, Capitalization, Storage Capacity and Actual Volume Stored

Association	Number of Members		Capitalization (fixed assets)	Storage capacity in bus.	Bushels stored	
	1930	When organized			1928	1929
Algood	96	47	\$4,000	12,000	(d)	5,000
Jasper	74	74	6,000	12,000	10,600	10,600
Pikeville	70	70	5,000	15,000	3,000	4,500
Sparta	55	55	5,500	11,000	0	1,700
Mt. Airy	50	60	4,300	15,000	6,000	6,000
Winchester	50	50	4,800	12,000	3,600	4,600
Cowan	50	45	5,000	13,000	4,500	3,200
Clarksville	49	49	(c)	8,000	(e)	(e)
Tullahoma	45	50	5,400	10,000	2,500	1,400
Huntland	42	42	5,200	15,000	2,500	1,100
Wartrace	41	50	5,000	12,000	3,800	2,300
Estill Spgs.	41	42	5,000	12,000	2,250	2,250
McEwen	40	40	6,000	20,000	(d)	(d)
Dickson	40	40	4,000	10,000	8,000	8,000
Lebanon	39	42	5,400	15,000	7,000	9,000
Belvidere	39	39	3,800	10,000	4,100	2,100
Manchester	36	41	4,100	9,500	(d)	(d)
Flintville	34	43	4,200	8,000	2,800	2,400
Decherd	33	34	5,200	10,000	3,500	8,500
Chapel Hill	33	33	3,500	8,000	(d)	(d)
Kingston Spgs.	25	25	2,500	10,000	(e)	2,000
Portland	25	25	(c)	5,000	(e)	(e)
Anhland City	17	17	2,600	10,000	2,000	2,200
Kenton	12	12	(f)	(f)	(f)	(f)
Kimmins	11	12	1,200	6,000	(d)	(d)
Soddy	11	11	5,500	12,000	(d)	8,000
Brighton	10	10	(f)	(f)	(f)	(f)
Sadlersville	8	10	2,950	7,000	(d)	6,000
Oakland	7	7	(f)	(f)	(f)	(f)
Jackson	(b)	(b)	(f)	(f)	(f)	(f)
Lexington	(b)	(b)	(f)	(f)	(f)	(f)

^a Source: Survey of Cooperative Associations, 1930. ^b Membership same as Farm Bureau. ^c Lease storehouse. ^d Data not available. ^e Not organized. ^f No storage house.

This situation is shown in Table 50 in which the trend in the number of bushels stored is presented for 13 associations. They are listed approximately in the order of their success in maintaining their storage volume. The Jasper, Decherd, and Mt. Airy associations have been the most successful in this respect. With a capacity of 12,000 bushels Jasper has averaged about 10,000 bushels stored per year; Decherd and Mt. Airy have averaged 8,000 bushels and 6,000 bushels respectively with a 10,000 bushel capacity each. An examination of the table shows that 7 of the other associations had less than 2,500 bushels stored in 1929 - a range from 1,100 to 2,400. This was only about one-tenth

Table 50

Trend in Sweet Potato Storage of 13 Sweet Potato Cooperative Marketing Associations of the Decherd Group in Middle Tennessee (c)

Location of Association	Date org.	Bushels			
		1926	1927	1928	1929
Jasper	1926	13,000	6,000	10,824	10,600
Decherd	1922	12,000(a)	8,500(a)	3,500	8,500
Mt. Airy	1926	9,450	3,150	6,000	6,000
Winchester	1925	17,000	?	3,600	4,600
Manchester	1926	9,000	7,500	4,700	4,000
Cowan	1926	?	5,000(a)	4,500	3,200
Wartrace	1926	11,000	4,000	3,500	2,300
Estill Spgs.	1926	14,000	4,000	2,250	2,250
Belvidere	1926	13,000	3,900	4,100	2,100
Flintville	1926	8,200	2,600	2,800	2,400
Tullahoma	1926	12,000	4,000	2,500	1,400
Sparta	1926	14,840	4,000	0	1,700
Huntland	1926	5,680(a)	?	2,500	1,100

^a Estimated from the number of bushels shipped, using the ratio of shipments to storage that prevailed in 1929.

^b Number of bushels shipped. Is likely less than number bushels stored.

^c Storage house capacity ranges from 10,000-15,000 bushels each.

of the storage capacity of the respective associations.

Because of this great decrease these associations, with the exception of Flintville, have had difficulties in meeting their financial obligations incurred in constructing the storage houses. (This is discussed in more detail elsewhere.)

Capitalization - The capitalization of the various associations is shown

in Table 49. The capitalization reported in this table represents the amount of capital raised to build the storage house. As a general rule this represents approximately the cost of building their storage.¹ The total capitalization of associations in this table is \$106,100. The amount of potatoes stored cooperatively in 1929 was approximately 100,000 bushels. Thus it is seen that the cooperative associations had approximately one dollar invested in storage houses for each bushel of potatoes stored for this year.

The cost of building storage on the average was a little over one dollar for each three bushels storage capacity. There was very little difference in the economy of the larger and smaller houses. The houses with a capacity of 11,000 bushels and over cost one dollar for each 2.64 bushels storage space. The houses with capacity under 11,000 bushels cost one dollar for each 2.56 bushels storage space. There was considerable difference in the economy of building storage houses among different associations. Thus, we see that houses of 12,000 bushels capacity cost from \$4,000 to \$6,000 and 10,000 bushel houses from \$2,500 to \$5,400.

2. Some Services Performed

The kind of marketing services performed by the different cooperatives varied a great deal. As explained in Chapter V, some associations were organized only to sell potatoes, others only to store, while others both operated storage houses and sold potatoes. The services rendered by the association depended to a large extent upon the purposes for which the association was organizing.

This sign up of acreage was for only one year. Aside from this one year usually no attempt was made to increase the acreage. The experience of a number of associations in Middle and East Tennessee of having to operate after the

¹ Also includes cost of purchasing lot on which to build.

first year on a very decreased volume brings up the question of the advisability of getting growers to sign up for a definite acreage for more than one year. Had this been done a number of associations would undoubtedly now be in a much better financial condition. The difficulty of such a program is in getting farmers to sign a contract to grow a definite acreage over a longer period than one year, as well as the advisability of continuing production of the crop if it proves unprofitable. Under the plan of paying for the storage house out of proceeds from storage operations such a plan may be advisable. Or, the farmer may have been given the option of either growing a certain acreage, or paying the pro-rata part on his stock each year, instead of having it paid out of the storage profits.

Some associations have made attempts to increase the acreage after the first year. An example of this work is the following circular letter sent out by one association in Middle Tennessee.

Belvidere Sweet Potato Growers Assn.
Belvidere, Tennessee

March 8th, 1928

Dear Sir:

THIS IS THE YEAR!

This is the year to put out sweet potatoes.

Everybody is "going wild" over other crops; let's try sweet potatoes on a reasonable scale; one acre is enough.

Read these **ADVANTAGES**:

1. No CASH first cost per acre to speak of.
2. Easy to plant; can be done when other work cannot.
3. Only one good cultivation necessary.
4. Harvesting a task, but the paying part.
5. Culls fed to cattle and hogs pay for harvesting, and save corn, hay, fodder, ensilage, etc.
6. Money comes in at time of year, when no other revenue coming.

COME IN and let us book your seed requirements, or for the plants.

Let us advise you **HOW** to prepare the ground, how the most and best potatoes can be made - from our two years' experience.

Then, when the crop is made, USE the storage house to insure yourself eating potatoes and seed for yourself and the market.

Sincerely,

John Fandrich,
Secretary

Chester Limbaugh,
Manager.

The Wartrace Association has attempted to encourage production by offering three cash prizes for the largest number of bushels stored per acre in the association's storage house.

It appears that very few associations did any work toward improving production. As a rule, however, only one variety was planted which was due mainly to work of the associations. Some associations took step toward eliminating diseases by purchasing and selling growers certified seed or plants. Also, in 1928 the associations in Franklin County eradicated black rot on 90% of farms.¹

Assembling - Assembling is another service rendered by the cooperative associations. The biggest reason for assembling sweet potatoes is to get sufficient volume for efficient operation. As was pointed out in the preceding chapter some associations were organized so as to enable the small growers to ship. At other times assembling is done so as to be able to operate storage more efficiently.

With the coming of truck shipments to local markets the process of assembling at the local shipping point is not as important as formerly. In fact this step can often be eliminated when the grower has his own storehouse and markets his product locally.

Storing - Thirty-one of the fifty cooperative sweet potato associa-

¹ U. S. D. A. files of cooperative associations

tions in Tennessee performed the storage function. Usually the association built their own storehouse, although a few rented the house. The usual method of operation was to rent storage space to the grower at a flat price per bushel. The charge for storing was usually fixed so as to cover the cost of operating storage and to retire annually a certain percentage of the indebtedness incurred in building the house. One association pooled storage costs and charged only enough to cover actual expenses, while another charged 10% of the sales price of potatoes. The most common charge was 20¢ per bushel (Table 51). The charge was usually the

Table 51

Charge per Bushel for Storage Space by Cooperative Sweet Potato Associations, 1930

Charge	Number of associations making a given charge to:	
	Members	Non-members (a)
\$.20	14	16
.15	7	7
.10	2	1
10% sales price	1	0
Pool costs	1	0

Source: Survey of cooperative associations, 1930

^a Storage for non-members is permitted by provision of the 1923 cooperative marketing act [Section 6(a)].

same to both members and non-members.

One association charged the members 10¢ per bushel and the non-members 20¢ per bushel. The association which pooled costs to members charged a flat price of 20¢ to non-members. Associations which were paying the costs of building the storage house out of proceeds from storing usually planned to reduce their storage costs when the indebtedness on the house was paid.

Costs of Storing Sweet Potatoes - Unless the sweet potato is marketed in a very short time after it is harvested considerable expense must be involved in storing it. The sweet potato requires a special type of storage, in that it must be cured first, necessitating keeping it at a rather high temperature with plenty of ventilation. After the curing

process the temperature is lowered but here again the temperature must be kept fairly uniform and at a point to prevent chilling or freezing throughout the time it is stored. The sweet potato generally occupies the storage house only a small part of the year and yet it is rather difficult to utilize this space for any other crop. This necessitates a rather high overhead cost for buildings that must be borne by a crop utilizing the building only a short time. In addition to these costs of storage sweet potatoes shrink, due to evaporation of moisture from the potatoes, as well as deteriorate more or less in storage.

In Tennessee there are a large number of privately owned and cooperative sweet potato storage houses that rent storage space to the general public. The charge for such storage varies considerably in different sections, generally ranging from 10 to 20 cents per bushel, irrespective of the length of time the potatoes are kept in storage.¹

Some of the expenses of operating a storage house are given in Table 52.

Table 52

Costs of Operating Sweet Potato Storage
Houses

	House I	House II	House III
Cost of house	\$600.00	\$2500.00	\$5400.00
Capacity, bushels	1,200	10,000	15,000
Labor	16.50(a)	270.00	208.00
Fuel	2.50	30.60	30.00
Taxes	5.00	20.00	42.00
Insurance on crop	(b)	40.00	115.00
Insurance on building		25.00	35.00
Interest on investment(c)	36.00	150.00	324.00
Depreciation and repairs(d)	35.00	100.00	200.00
Total cost	\$95.00	\$635.60	\$854.00
Cost per bushel	0.079	0.064	0.057

^a Labor requirements were 2 hours per day while curing and one-half hour per day thereafter. Labor figured for 2 weeks curing and 5½ months storing.

^b Carried no insurance.

^c Six per cent on investment above.

^d Estimated

¹ Information gathered on survey.

These costs are for a storage period of approximately six months. The items of expense except interest and depreciation are as given by the operators of the storage houses. House No. I was a farm storage house. Houses II and III were cooperative houses and the expenses as given were amounts actually paid out for the season of 1929 except as noted above. For House I all expenses are estimated as no separate amount was paid out for any of the items, the owner looking after the house himself and fuel being furnished by the farm. The cost per bushel given below is figured on the basis of the house being full. As a matter of fact none of the houses were filled to capacity in 1929 so that the cost per bushel was actually more than the amount given here.

The cost per bushel for storing wouldn't be reduced very much if the potatoes were stored for a shorter period than given above. Interest and depreciation are two of the largest items and they would remain constant regardless of the length of the storage period. The same is true of taxes and insurance on the building. Labor and insurance on the crop would be lessened according to the time potatoes were stored. Most of the fuel is used in curing the crop so this item would be lessened very little, if any, by shortening the storage period. Therefore it appears that the expenses of storing would be from 5 to 8 cents per bushel, and more if the house were not filled to capacity.

However, there is another item that enters into the cost of storing sweet potatoes, namely that due to shrinkage and decay. The amount of decay is so variable from place to place, and from one crop to another that we will not attempt to figure that cost here. The amount of decay was estimated by different parties interviewed on the survey from a negligible amount to 15 and 25 per cent. Some crops ran much higher than the highest amount given here but 15 to 25 per cent was the average loss for some communities as a whole.¹

¹ Information gathered on the survey.

The shrinkage due to drying out of moisture is a much more constant factor. Most of the parties interviewed on the survey estimated it at about 10% which appears to be a pretty good estimate in view of the data shown in Table 53. These data were determined by experiments carried out at the Arlington Experimental Farm, Rosslyn, Virginia.¹ If the value of

Table 53

Shrinkage of Nancy Hall Sweet Potatoes in
Storage

	Curing	Storing				
Days in storage	20	50	83	113	142 $\frac{1}{2}$	160
Percentage shrinkage	6.77	8.31	9.73	11.45	12.53	15.60

Source: U. S. D. A. Bul. 1063, p. 11

sweet potatoes before storing was 30 cents per bushel, the cost of storing due to shrinkage would be as shown in Table 54. Were the price of potatoes

Table 54

Cost of Storing Sweet Potatoes Due to Shrinkage

	Curing period	Storage period				
Days in storage	20	50	83	113	142 $\frac{1}{2}$	160
Cost, cents	0.070	0.073	0.086	0.103	0.115	0.126

Source: Based on Table 53.

greater or less than 30 cents per bushel the cost of storing would be affected similarly. It will be noted here also that the greatest loss due to shrinkage occurs during the curing process and is much less thereafter.

The total cost of storing aside from loss due to decay appears to be about 15 to 20 cents per bushel. The cost is not increased very much after curing is completed. The amount of loss due to decay will generally determine the profit to be derived from storing sweet potatoes.

¹ Thompson, H. C., and Beattie, J. H., Sweet Potato Storage Studies, p. 11, 1922.

Losses in Storing - The storage operations at times caused considerable loss to the growers. One of the chief causes of loss was inexperience on the part of some operators of storage houses in temperature control which resulted in overheated potatoes. This condition was further aggravated the first year by the fact that because of the large production some houses were filled beyond their recommended capacity. This cut off free circulation of the air so that some of the potatoes were actually burned till unfit for consumption.

Black rot has caused some loss. While this disease is more prevalent in the West Tennessee producing area, it has occurred in the newer producing areas in Middle and East Tennessee. In 1929, the manager of the Sparta Sweet Potato Association had difficulty in collecting storage charges from parties because of losses from black rot. Unless rigorous control measures are practiced a spread of this disease might be expected.

Another loss has resulted from the failure of growers to completely fill the containers when storing. This loss occurred not through damage to the potatoes but through higher storage cost per bushel. This is due to the fact that the storage charge is made on the per hamper rather than on a per bushel or weight basis. This occurred commonly during the first year of operation. Although much improvement has been made in field grading and packing for storing, slack packs were still more common than unusual in the cooperative houses in 1930.

Closely associated with the above is the loss from storing cull potatoes and dirt. This resulted in not only a higher storage cost of marketable potatoes but also in a higher grading cost per bushel when taking out of storage. During the first year of operation managers reported that it was not uncommon for hampers to grade out only 50% of their capacity in marketable potatoes. This exactly doubled their storage costs per hamper of potatoes they sold.

Some losses occurred because of ill-adapted storage houses. At Cleveland the second floor of a large building was rented. This proved unsatisfactory because it could not be heated properly. At Memphis the basement of the city auditorium was used, which proved unsatisfactory because of poor ventilation and excessive temperature during part of the storage period.

Another problem resulted in some associations, which had only one room in their storage house, from the fact that all farmers would not dig their potatoes at the same time. Where there is much difference in digging time it is difficult to secure uniform curing. The potato should not be placed in storage very long before curing begins. If curing is delayed too long waiting for the growers who dig last soft rot may develop. This difficulty is overcome, however, by having the house divided into two or more separate rooms.

Grading, Packing, and Standardization - As explained above, a great deal of loss occurred in several associations due to poor field grading and packing. This loss was usually greatest the first year when growers were not well informed as to proper methods of grading and packing. They were as

Table 55
Activities of Cooperative Sweet Potato Associations
to Improve Field Grading and Packing

Activity	Number of Associations reporting
Grading demonstrations	6
Manager instructs individuals	5
Send out instructions	4
Visit growers	3
Give instructions at meetings	1
None	20

Source: Survey of cooperative associations, 1930.

a rule more careful in this respect after the first year. Managers were asked to estimate the percentage of farmers bringing in well graded and packed potatoes. As would be expected there was a very wide variation in the replies of different parties, ranging from 1% to 100%. A great deal of this is due to difference in what various parties consider well graded

potatoes. Almost without exception, however, managers said the grade and pack had improved in the later years.

It seems that much of this loss from poor grading and packing was unnecessary and could have been reduced greatly had the association taken proper steps to educate their members. Very often the association did nothing to improve field grading and packing. Table 56 gives the activities of various associations to improve grading and packing. How much of this work was done the first year is not known. The activities reported were carried out some time throughout the life of the association. Very often the improvement in grading and packing, after the first year, was attributed to the growers' learning by experience, which proved to be a dear teacher.

The grading referred to above is field grading preparatory to storing. When taking out of storage before selling, the association as a rule exercised more care over grading. This was true especially of those associations which did the selling. The party doing the grading preparatory to selling is reported in Table 56. When grading was done by the association a separate

Table 56

Party Grading Potatoes Preparatory to Selling

Party grading	Number associations reporting
All by grower	16
All by associations	11
By associations when they sell	8

Source: Survey of cooperative associations, 1930.

charge was usually made for the work. There was two different ways of determining this charge. Some associations charged a flat price to all, based on the average cost. Others charged each individual according to the actual cost of grading his potatoes. This second method has much to commend it since it cost less to grade potatoes that had been carefully graded in the field. The growers were thus given a greater incentive to better field grading. Some dissatisfaction was expressed about the average cost method of charge.

As shown by Table 56, the grading preparatory to selling was often done by the grower. Where such is done there is always the tendency for each grower to be rather lax in grading his potatoes so that the grade usually suffers. It is therefore necessary for the association to check up on the grading in some manner. The authority the association exercised over grading is shown in Table 57. When the grower sold his own potatoes the association

Table 57
Authority Exercised by Associations Over Grading and
Packing Sweet Potatoes

Authority exercised	Number associations reporting
Absolute	12
Absolute when association sells	4
Supervises	3
Inspects potatoes	5
Advises	1
Very little	2
None	6

Source: Survey of cooperative associations, 1930

usually exercised very little or no authority over grading. On the other hand, when the associations did the selling, they either graded themselves or checked up on the grading in some manner. At times the grower was allowed to grade his own under supervision of the manager. In West Tennessee, where the associations did not operate a storage, the grower usually graded his own potatoes before bringing them to the shipping point. Here the manager or his assistant usually inspected the potatoes, and if they were not up to their standard of quality would require that they be regraded and repacked.

Grade standards varied with different associations. Table 58 shows the associations using U. S. grades. U. S. grades were often used for shipments to markets out of the states and were not used for potatoes marketed locally. There was a pretty general opinion that local markets did not require potatoes to be up to U. S. standards. Some thought them too strict even when shipping to distant markets in that there was too much loss in grading, and that the standards were not suited to the Nancy Hall variety. However, parties making

the above statements were usually new at the sweet potato business and based their opinion solely from the growers standpoint. It is human nature for the producer to wish to sell all that he produces. He does not consider whether there is a demand for all the product.

Table 58

Extent to Which Standard Grades Were Used by the
Associations

	Number of associations reporting
Use U. S. Grades	10
Do not use U. S. Grades	14

Source: Survey of cooperative associations, 1930

Some observations made and suggestions received by the author in making a survey of retailing sweet potatoes in Knoxville might be applicable at this point. It was noted that in those stores which allowed customers to select their own goods the more uniform medium size potatoes were selected, leaving the large and small ones. Some managers reported that they often had to throw away or sell for lower price these large and small potatoes. When asked for criticisms or suggestions, seven managers made criticisms of the grade of potatoes. Yet in spite of this fact it may not be profitable for the association to grade too closely for the local market. Unless the buyer is willing to pay an adequate differential for the better quality product it is better not to grade too closely. This may be what several parties had reference to when they said the trade did not require potatoes to meet U. S. Grades. On the other hand, an association by close grading might be able to build up a preference for their potatoes and benefit from it in the future.

No accurate data were obtained on the cost of grading. Estimates were made by the managers of 8 associations of the Decherd group in Middle Tennessee (Table 59).

There are not enough estimates on which to base definite conclusions. Also these estimates are usually based on the first year or two of operation and are probably higher than the costs of firms which had been established

for longer periods.¹

Table 59

Estimated Cost of Grading Sweet Potatoes in 8 Cooperative Associations

Location of association	Range in cost (cents)	Average (cents)
Flintville	-	5
Estill Springs	-	6
Cowan	5 - 8	-
Decherd	-	7
Mt. Airy	7 - 8	-
Winchester	5 - 12	8
Hantland	8 - 10	-
Belvidere	11¢ first year	lower

Advertising - Very little advertising was attempted by any of the associations. The fact that they were local associations prevented advertising on a very large scale. However, only about 8 associations did as much as put a label on their hampers. A few had the name of grower stamped on the hamper but this was mainly to check up on the grading if there was a kick on the quality of any of the lot.

Purchasing Supplies - Practically all the cooperative sweet potato associations purchased hampers for their members. Often they also purchased seed or plants, especially the first year. A few are reported to have purchased fertilizer. Supplies were usually handled on a cost basis. Some had a provision that when hampers were sold to non-members they were to store the potatoes in the association's house.

There may be some possibilities of expanding this service to include more associations, at least for handling seeds, fertilizers, and hampers. This could be done in the early spring at little if any additional cost, since some storage houses are often kept open until April. That is not too early for farmers to purchase their supplies for spring and early summer planting.

To handle these supplies for fall seeding the house would need to be

¹ After this report was written the secretary of the Marion County association reported the following actual costs: 8¢ first year; 9¢ second year; and 10¢ each of the three succeeding years.

opened from 1 to 2 months earlier than would be necessary only for storing potatoes. This could be done profitably only if the volume of business was large enough to justify the extra labor cost. The house may be kept open a longer period in the spring if the volume justified it.

These possibilities exist. The nature and extent of this supplementary or side line business will depend upon the local conditions - the margins taken by local dealers, the volume of business, and the possibility of getting the quality, etc. not supplied by these local agencies.

However, in most cases seeds and fertilizers are now handled cooperatively by the Farm Bureau. Then it may not be possible to secure enough volume to justify opening the storehouse for warehousing fertilizers. It is usually cheaper for the farmer to come to the car door for his fertilizer and save the cost of unloading in the warehouse. Such a policy is usually acceptable to the farmer who needs very much fertilizer and can pay cash for it.

Handling on a cash basis would be the most satisfactory from the standpoint of the safety of the association. The Soddy Sweet Potato Association quit handling hampers partly because of some losses from bad debts. If credit is extended it should be paid for in a higher cost of the supplies than when cash is paid, and only extended to persons of financial responsibility. Some associations charged 2¢ more for hampers on credit than for cash.

3. Sales Policies

It was shown in Chapter V that some association attempted selling while others left this function entirely to the grower. The extent to which associations have been selling sweet potatoes is shown in Table 60.¹ It is

¹ This table and those following in this chapter include only those that had operated for one full season or more.

shown by this table that some associations did all the selling while others sold only at times. The members of the associations that sold only part of

Table 60
Cooperative Sweet Potato Associations Assuming Selling
Function

	Number associations reporting
Does all selling	14
Sells at times	14
Sold all at start	2
Total	30

Source: Survey of cooperative associations, 1930

the time had the privilege of deciding whether they would sell their own crop or entrust the sales responsibility to the association. This was usually necessitated by the desire of some growers to dispose of their crop on the local market. As a usual rule local sales were made by the growers themselves but when shipments were made to places out of local area, the association did the selling. Most of the associations in the Decherd and McEwen groups allowed the grower the privilege of either selling his own or allowing the association to sell for him. In the West Tennessee area, as a rule, members were supposed to sell through the association. However, usually very little attention was paid to this provision and as the result growers generally sold outside of the association when they wished.

Time of Selling - Very few associations had any definite policy regarding the time of selling. Very often the time of selling was left to the judgment of the individual member. Most of the associations in Middle and East Tennessee usually sold their potatoes during the months of February, March, and April.

The policy of most associations as to the time of selling was rather weak, and did not enable the association to function very effectively in this respect. The policy of many associations was to have the manager receive bids for a car-load of potatoes. Then he had to get in touch with

each individual grower to see if the bid was acceptable to him. If a full car could be gotten up he then made the sale.

Associations operating under the above plan were placed under a very big handicap in competing with the private dealer. In the first place, other things being equal, the private dealer who could make a sale outright would naturally have an advantage in selling over the association manager who had to consult all of their members before selling. In the second place, it is generally a fact that farmers are reluctant to sell on a rising market but when prices break all want to sell. Because of this fact, as a rule farmers seldom dispose of their crop on the highest market. The manager, if he were efficient and kept posted as to conditions, should often be able to select the best time of selling much better than each individual grower.

One association manager in West Tennessee was placed in a very bad position financially because of their policy of letting each grower decide the time of selling. It seems that this manager made future contracts to sell potatoes to certain firms at a fixed price. This particular year the price rose until the growers could sell their potatoes at a higher price elsewhere. Therefore, no potatoes were delivered to fill the contract and the firm holding the contract brought suit against the manager for losses suffered for the failure to fulfill the contract. On the other hand to have forced a contract under this condition might have been disastrous for the association. This instance illustrates two points: first, that the association had no control over the time of selling; second, that the policy of such speculating on the part of the manager may prove dangerous.

Method of Sale - The agencies to or through whom the associations sell vary considerably as to year and locality (see Table 61). The sales agency reported in Table 61 refers to the Federated Fruit and Vegetable Growers. This agency handled the shipments for most of the associations in the Dechard group for the year 1926. The wholesale buyer refers to the car-lot buyer on

the terminal markets. Transient buyers are largely made up of truckers who buy from several associations and truck to nearby markets.

Table 61
Agents To or Through Whom Cooperative Associations Sold
Sweet Potatoes

Agent	Number associations reporting
Wholesale buyer	15
Sales agency	13
Transient buyer	9
Local dealer	9
Commission man	8
Broker	3
Chain store	1
Local retailers	1

Source: Survey of cooperative associations, 1930

There was considerable difference as to which was the most desirable agent. The trucker who goes to the association and buys outright is doing an increasing amount of business. The local dealer was reported as being very favorable by some associations. There was considerable difference as to the merits of the cooperative sales agency. With some associations this agency caused considerable friction because of their insistence that potatoes meet U. S. grades. Other associations commended the agency highly and were sorry that the Federated cancelled the contract the second year because of the small volume of potatoes shipped in that territory.

It is reported that the manager of one association in Middle Tennessee purchased potatoes on his own account. It is very doubtful if the Board of Directors should permit a manager this privilege for two reasons. First, some members are likely to think that large profits are being made by the manager, even though he may be taking less than the customary margin. This is likely to arouse suspicion and discontent, especially if the returns are not up to the expectations of the growers, and the loyalty of members thereby undermined. In the second place, the members feel that they are entitled to all the profits that the manager is able to get as the result

of his sales efforts. Presumably, he was employed to act as an agent of the growers, to get for them the highest return possible. Another problem comes up when the manager is paid on a commission basis for selling the product. Should he receive a commission on what he sells to himself?

There may be individual cases where purchase by the manager may be justified. For instance, some associations wish to make sales for cash at shipping point in order to eliminate the risk of shipping and to be able to make returns to growers more promptly. In such cases, the manager may be able to pay the association more than any other buyer. It would therefore be advantageous to the association for him to buy them. Where this is the case, it would seem advisable to keep the membership thoroughly informed of all transactions, otherwise suspicions, some of which may be unjustified, may result in weakening the association. A manager operating on such a basis even then would need to be a man of an almost irreproachable character. The policy is dangerous and should not be followed generally.

Sales were made F.O.B. shipping point, cash track, and by consignment. F.O.B. sales were reported by 15 associations which was more than reported either of the other methods. However, several managers reported that they sold cash track as much as possible. Cash track sales were favored because settlement to the grower could be made more quickly and because the buyer assumed all further risk.

Selling on Local Market - Only one association, Algood, has made any considerable attempt to sell potatoes on the local market. This association has sold its entire crop locally the last few years. According to the information obtained on the survey this association has offered the trade in that area a well graded and high quality product, and has built up considerable demand for their product. Their method of sale was through wholesale houses in towns where such were established. At other towns jobbing was done by the association. Other associations assisted growers in selling

on local markets by gathering price information, advising growers and listing prospective buyers.

There is less to be gained through cooperative selling on the local market than on the more distant ones. However, there appears to be enough advantages that it may be advisable for other associations to attempt such a program. The association should be able to study demand better and develop markets which the individual could not. Then there would be no duplication of deliveries or sales efforts. A more uniform distribution throughout the year could be effected.

The disadvantage of such a policy is that it may not be satisfactory to all members. Some members who are good salesmen may be able to sell their crop for a higher price than the manager could average for the entire production of the association. Also some growers by not counting their time as worth anything may figure that they can sell for less cost than the association. The advisability of the adoption of such a policy would therefore depend largely upon the character and attitudes of the members.

4. Pooling

As a general rule sales made by the association were pooled. A few associations also pooled storage and grading costs. When pooling sales, the length of the pool varied considerably among different associations. According to information collected 14 used a season pool, 13 a car pool, and 3 a day pool. The principal reasons given for the car and day pool were that settlement could be made to the grower more quickly and that it was less complicated to handle. The matter of quick settlement was very important in some instances as will be explained later. The reasons given for the season pool were that it was a fairer way of making settlement to all growers and that less bookkeeping was necessary.

There are some merits as well as defects to each kind of pooling that was practiced. The short pools, either by the day or car, are objectionable

because the manager does not have enough authority over the time of shipments to be able to sell the potatoes to the best advantage. Where such a method is used each grower must necessarily be able to decide which pool or pools he wishes his product to go in, because he would be sure to be dissatisfied if the manager decided this and his potatoes were not all in the pool that netted the greatest return per bushel. Also the volume of business on these short pools is too small to adequately spread the risk of marketing. This was, I think, one of the main reasons why some associations wished to sell as many of their potatoes as possible cash track.

Two associations, Paris and McKenzie, while using the short pool had provisions for spreading the risk of marketing to a much larger volume than is contained in one pool. Their plan was to deduct a certain amount from each bushel marketed to cover any losses that might occur. If losses during the year were less than the amount collected through these deductions, a refund was made at the end of the season on the basis of the amount of potatoes marketed by each member.

The season pool while overcoming the above criticisms to the shorter pool would not be a fair method of settlement were the association to distribute their shipments throughout the year. To pay the grower whose potatoes were marketed green in September the same price as one whose potatoes were marketed in March would not be fair to the latter because of the shrinkage that occurs during curing and storing. Likewise there is still greater shrinkage as the season progresses and the grower whose potatoes were marketed in June would be under a still greater handicap. The associations that used the season pool usually marketed all of their potatoes from February to April so that the difference in shrinkage of the potatoes marketed at different times was very small (see Table 53). If the production controlled by these associations were larger they could hardly market all their potatoes with the greatest profit during so short a period.

The season pool was objectionable to many growers in that it delayed settlement for the potatoes too long. A few associations to overcome this objection made advances to growers as soon as part of the potatoes were sold. Others delayed settlement till all potatoes were sold. This objection to the season pool may be overcome by a proper system of financing.

Making Returns to Growers - The associations that pooled their potatoes returned the sales price less expenses to the members. The following is a copy of the form that was used by an association in Middle Tennessee the first year of its operation.

Belvidere, Tenn. May 21, 1927

Grower _____

Stored, Cured, Graded and Sold through

BELVIDERE SWEET POTATO GROWERS ASSOCIATION
Belvidere, Tennessee

Receipts from your sweet potatoes:

_____ Hampers No. 1 sold co-operatively	
_____ @ 74 $\frac{1}{2}$ ¢ per hamper -----	_____
_____ Hampers burned and due you on above	
_____ basis of grading -----	_____
_____ Hampers No. 2 sold @	_____
_____ Hampers seed sold @	_____
_____ Other receipts -----	_____
_____ TOTAL RECEIPTS -----	_____

Expenses of your sweet potatoes:

_____ Hampers stored @ 20¢ ea.	_____
_____ Hampers burned and set-	
_____ tled in agreement made	_____
_____ Hampers No. 1 graded @	
_____ 11¢ -----	_____
_____ Other expenses -----	_____
_____ TOTAL EXPENSE -----	_____

AMOUNT DUE YOU -----

Amount due Association - Please settle at once.

Secretary.

This particular pool was on a seasonal basis. Payment was made on basis of three grades, Number 1, Number 2, and seed.

5. Duties of Officers

There was considerable variation in the kinds of officers of the different associations as well as the duties of each. As was explained in Chapter V, a few associations were informal organizations, having no officers except a manager. The services rendered by such associations were few and their method of operation such that little responsibility was involved.

Manager - The most important single officer of a cooperative association is generally conceded to be the manager. The duties performed by the managers of Sweet Potato Associations may be grouped into two classes. First, one group performs only the duties incident to storing and curing. Of 25 managers reporting 11 performed only these functions. The second group acted as sales manager and in some cases supervised the curing and storing operations. Where the manager only looked after the storage house the selling was usually all done by the growers themselves though in a few cases sales were made either by the board of directors, a sales committee of three, a sales agent, or the secretary-treasurer.

Board of Directors - The duties performed by the board of directors is generally agreed to be the election of officers and determining the policies of the association and to check up on the officers. According to information available the officers were all elected by the board of directors.¹ As to the second duty the board at times was reported rather negligent while on other occasions they seemed to have gone beyond just determining the policies and to have assumed some of the duties of putting their policies into effect. An example of this is the board who did the selling referred to above.

¹ This excludes of course those informal associations which had no board.

It was a very common complaint of managers that the board would not function and were consequently merely figureheads. Where such was the case, it was generally also reported that very little interest was taken by the members. An active board probably would have been a great aid in holding the loyalty of members in such instances.

Other Officers - Other officers of associations usually consisted of a president, vice-president, and a secretary-treasurer. Duties discharged by these officers were not collected on the survey. As explained above, the secretary at times did the selling and he or the treasurer¹ made settlement to the grower. Some associations had a "sales agent", in addition to the manager, who made sales.

6. Information for Membership

A properly informed membership is generally regarded as essential to successful cooperation. Benton² says, "Satisfactory support will not be steadily forthcoming from members of even a successful cooperative undertaking unless they understand its problems and appreciate the services which it is rendering." The main idea of education is well expressed in the words of an official of the Eastern Shore of Virginia Produce Exchange, which are as follows, "To achieve such ends (desired cooperation) ---- the main thing is to bring to each individual within the organization information that will make them all think and act alike."³

Cooperative sweet potato associations were rather lax in keeping their members informed as to the activities and financial standing of the association. Ten of the active associations reported that they sent no reports to members whatever. Seven reported that members "could inquire" if they wished

¹ These officers were usually combined.

² Benton, A. H., Marketing Farm Products, p. 54.

³ Ralston, G. S., unpublished data.

any such information. Four associations reported sending out annual reports and three as giving out such a report at the annual meeting. The number of associations holding annual meetings is not known. Several reported that it was impossible to get very many members to attend such meetings.

The kinds of market reports received by the associations is shown in Table 62. It is shown by this table that some associations evidently did not follow the market very closely. Three associations received no market reports and a few others only occasional reports from dealers. Even when the

Table 62

Market Information Received by Cooperative Sweet Potato Associations

Information received	Times reported
Government daily	12
Crops and Markets	5
Trade journals	4
Statement from dealers	3
Write or call dealers for prices	3
Radio report	1
None	3

Source: Survey of cooperative associations, 1930.

association did no selling it seems that a valuable service could have been rendered the members in disposing of their crop had they collected and disseminated such information.

The dissemination of information and education of the members is regarded as a very worthy undertaking for agricultural extension workers.¹ While county agents were often reported very active in promoting the organization of associations it appears that they did very little toward the education of members. This should be a fertile field for extension workers to give more of their time.

¹ Derrick, B. B., Extension Work in Cooperative Marketing, 1931.

BIBLIOGRAPHY

1. Benton, A. H., Marketing Farm Products. A. W. Shaw and Company, 1926.
2. Derrick, B. B., Extension Work in Cooperative Marketing. U.S.D.A. Circ. 159. 1931.
3. Thompson, H. C., and Beattie, J. H., Sweet Potato Storage Studies. U.S.D.A. Bul. 1063. 1922.

CHAPTER VII

FACTORS AFFECTING THE SUCCESS AND FAILURE OF COOPERATIVE SWEET
POTATO MARKETING ASSOCIATIONS

- | | |
|---------------------------------------|---------------------------------|
| 1. Introduction. | 7. Competition. |
| 2. Need for a Cooperative Enterprise. | 8. Volume of Business. |
| 3. Structural Organization. | 9. Miscellaneous Factors. |
| 4. Personnel of Officers. | 10. Some Factors in the Failure |
| 5. Personnel of Members. | of the Martin Cooperative |
| 6. Methods of Operation. | Sweet Potato Association. |
| 11. History of One of the Most | |
| Successful Cooperative Sweet | |
| Potato Associations. | |

1. Introduction

Success is defined as the "favorable termination of anything attempted", or the "attainment of a proposed object." Neither of these definitions alone can be applied in the determination of the success of the cooperative sweet potato associations in Tennessee. As was seen in Chapter V, the principal object sought in organizing many associations was to promote production. In some counties in West Tennessee this objective was attained, although the associations there became inactive. Their termination could not have been altogether favorable since some of their other objectives were not attained. For the purpose of this report the success of an association will be measured by the following factors: (1) attitude of members, as to the satisfaction of services rendered or prices received; (2) the financial standing of the association; and (3) the relative volume of business transacted by the association. The attitude of members as to the satisfaction of services rendered will depend to a very large extent upon the profitability of the crop, and upon a comparison with prices returned or costs of similar services when furnished by private agencies. The actual costs of services rendered and prices returned by cooperative associations and competing private agencies would be a much better measure of the success

of the association but very little such data are available. The financial standing of the association is a valuable measure because it is an indication of the association's chances of continuing operation. The volume of business is used as a measure because it reflects the attitude of growers, and a good sized volume is necessary to efficiency of operation. The volume of business is also one of the most usual measures applied in determining success of an association. In using the volume as a measure of success, some distinction should be made in applying it to those associations that conducted storage and those which were engaged only in selling. For the former, a volume of business which is near the capacity of their storage house would be necessary, while for associations engaged only in selling, this volume was generally too small to operate efficiently in the associations studied.

2. Need for a Cooperative Enterprise.

Conditions Which Justify Organization - Cooperation is not a thing to be desired in itself, but rather the means to an end. To have a chance to succeed a cooperative must have a goal or an objective to attain. This objective, moreover, should be tangible, and not merely an unfounded sentiment.

The organization of a cooperative association can usually be justified under either or both of two conditions; first, when private agencies are taking too large a share of the consumer price of the product, either because of excessive profits or too high distribution costs; and, second, when there is the need for improving or adding new marketing services. These services may be grading and packing, assembling, transporting, in some cases selling, storing, etc.

Dealers Getting Too Large a Share - No data are available as to the margins and costs of marketing sweet potatoes by private agencies in Tennessee. Any conclusions that have been formed as to the fairness of

their margins or their efficiency of operation, which affects their distribution costs, have not been based on facts. The conclusions that a cooperative association was needed because of these conditions have been based partly on casual observations made in years of overproduction and relatively low prices, and, to some extent, on prejudice against private agencies that has been encouraged by the opinion of some that dealers are dishonest.

On the basis of efficiency, dealers may be divided into three groups, the most efficient, the fairly efficient, and the least efficient. It is generally conceded that competition tends to limit margins taken by dealers to the operating costs of the fairly efficient group. The most efficient taking this margin make a profit, while the least efficient lose money and are finally forced out of business.

A cooperative association organized solely for this purpose usually has very little chances of succeeding. Its efficiency in the first place must be comparable with the most efficient private agencies. In the second place, if it were true that the private agencies were getting too wide a margin before the cooperative associations were organized, they can reduce their margin to meet the competition of the cooperative. Thus, the cooperative may be filling a real need but its benefits will not be readily seen, because outsiders will get the same benefit as members. In fact, some private agencies can, for a time at least, operate at a loss and pay the grower a higher price than the cooperative can obtain. This will be very discouraging to the members of the cooperative. Consequently the cooperative will likely often find it very hard to hold their loyalty.

A newly formed cooperative association usually finds it hard to operate as efficiently as the private agencies which are already established. The cooperative manager in the first place is usually inexperienced. In

the second place, the association has a lot of produce to sell and no well established customers, whereas, the private agency already has a list of connections. Each terminal receiver usually has his clientele to whom he looks for his supply of produce. He will not seek other connections unless this supply proves inadequate. These terminal receivers, while not attached to their sources of supply, will not change, as a rule, unless some concession is made. For these reasons, the private agency may receive a higher price when selling its produce than the newly formed cooperative can obtain. This will enable them to pay the grower a higher price than the cooperative can and, thereby, weaken the morale of the association.

The associations that were organized in Tennessee because it was thought the dealer's margins were too large and could be reduced were very short lived. No data are available as to the comparative prices returned to growers by these cooperatives and their competing private agencies. However the fact that they failed is not conclusive evidence that their returns to growers were not equal to their competitor's, because there were other factors that contributed to their failure; nor is it conclusive evidence that the present dealer's margin could not be reduced.

Improving or Adding New Services - There is usually more room for improving marketing services or for adding other services than there is in decreasing distribution costs or margins. Most associations in Tennessee were organized to perform new services. It was shown in Chapter V that many associations were organized in territories where there was no commercial production. Another object in such cases usually was to sell sweet potatoes and thereby provide a market. The need for an association for this purpose depended upon the advisability of that particular section entering the commercial production of sweet potatoes. There were no private dealers at the time of organization and in case that area were suited

to the growing of sweet potatoes there was a field to render a very useful service in providing a market so the crop could be grown commercially. Several associations organized in West Tennessee for this purpose were very successful for a few years. Even though their business was later taken over by private agencies, they had in a way accomplished their purpose.

At other places, notably in Middle and East Tennessee, associations were also organized for purpose of providing a market so the crop could be produced commercially. At some places there was no need for providing such services because there was either no need of developing the sweet potato industry, or a good local market was available. In such instances the association either failed or changed its program so as to perform other functions.

Some associations had as a purpose for organizing the solving of the storage problem. This occurred in the new producing areas of Middle and East Tennessee where the volume of production was not large enough to attract commercial storage enterprises. The advisability of constructing a cooperative storage under these conditions may well be questioned. But their action can usually be justified because the growers were provided with needed storage for sweet potatoes both for home use and for part of their crop used to supply local markets. It is true that the volume of some associations has decreased to the extent of weakening the association considerably but this is in part due to causes other than the lack of the need for storage. Some of these associations are continuing with a fair degree of success in providing needed storage that otherwise would not likely have been available.

Associations at some places were organized to perform the assembling function. This function was similar to the object of providing a market discussed above. There was in some cases a market for car-lots, but the small grower who could not ship a full car was at a disadvantage in selling

because of the high l.c.l. rates. Therefore an association was organized to assemble these small lots into carloads so the small grower could ship on equal terms with the large growers. The volume of business of such associations are usually small, but they usually operate on a small margin because the services rendered are few. They have, however, rendered a very valuable service to the small growers.

Other associations were organized because it was thought the dealers were not paying enough attention to grades. These associations were very short lived. This fact, however, does not mean that there was no need for grade improvement. Other factors contributed to their failure. There is also some doubt as to whether these associations really improved grading. One association, at least, organized on this basis had the first car they shipped rejected because the potatoes failed to meet the grade requirements. This fact, rather than the lack of a need for grade improvement, contributed to its failure.

Overpromotion Vs. a Real Need - Overpromotion was a cause of many difficulties among the sweet potato associations. In plain words, the leaders in organizing associations used "propaganda" rather than "cold facts" to get farmers to organize associations. Their "propaganda" had a very bad effect on the attitude of many growers after a year of low prices. This year of low prices occurred for many associations for the first crop handled. Farmers who had been led to believe that they would make big money growing sweet potatoes were naturally very much disappointed. As the result many quit growing the crop entirely and the association's volume was reduced very low.

Had the promoters studied the price situation and organized the association at a year when prospects for good prices were more favorable, and presented the grower with the facts, the association would have had a much better chance of success. The association at Decherd, which enjoyed a few

years of favorable prices when first organized did not have as large a drop in production after the low price year of 1926 as the associations which had operated only that season.

3. Structural Organization and Financial Condition

Membership Requirements - As was explained in Chapter V there was considerable difference among different associations as to the membership requirements. Those associations which constructed a storage house usually required the purchase of stock as membership requirements. Members were not limited to growers as a rule but anyone was admitted who was willing to subscribe for stock. Other associations which sold only, at times only required the delivering of potatoes to shipping point as a requirement for membership. Some of these associations originally had more definite requirements for membership, such as membership fees and a marketing agreement to sell their crop through the association. After operating a few years these requirements were disregarded.

It is rather difficult to say just what effect the membership requirements had on the success or failure of any association. It is commonly said that members who have a financial interest in the association will take a more active interest in its affairs. The experience of a number of associations in Middle and East Tennessee, who required the subscription of stock for membership, shows that it is not always true. However, undoubtedly the financial investment in storage houses has been a very important factor in keeping a number of these associations from becoming inactive. An example of this is the Marshall County Sweet Potato Association. The manager stated that this association would be liquidated in the near future, but at present they were holding together in the hope that real estate values would rise and they could make a better sale of their storage house. The indebtedness on the storage house of the Estill Springs Association acted as an incentive for

the responsible stockholders, not only to continue the production themselves but also to encourage others to grow more. A larger volume was necessary if the debt was to be paid. Through the efforts of a few leaders, including the local bankers who had made the loan, production has been increased. In a letter dated July 20, 1931, D. B. Gaines, President of this association, states that if weather conditions are favorable there will be sufficient volume stored this year to pay practically the entire indebtedness. It was in the spring of 1930 that increased interest began to take form. After the loan has been repayed from the profits, this financial incentive will have been partly removed. The continuance of production will depend largely upon the relative profitableness of the sweet potato crop. There are probably other associations who would be glad to sell for their original investment or perhaps even less.

On the other hand the associations of West Tennessee had no financial obligations and hence this incentive for continuing operation was lacking. Therefore, when difficulties arose the association usually became inactive.

Contracts were not an important factor in any of the associations. ✓ Several associations reported that members were supposed to sell their crop through the association. This was usually only a gentlemen's agreement with no provisions for enforcing. As the result, members usually sold outside of the association when they wished. This was especially true of associations which conducted no storage. When the potatoes were stored in the association's house, it was much easier to hold members to this agreement. In many places, however, the sentiment was so strong against this policy the agreement was cancelled the second year.

Financing - Fixed Assets - The amount of fixed assets needed for an association depended upon the services it wished to perform. Those associations engaged only in selling required little or no permanent investment. ✓ The associations which built their own storage house required considerable

capital for construction purposes.

The usual plan of providing fixed capital as described in Chapter V caused considerable difficulty among several associations. One feature of the plan was to pay the cost of building the storage house out of storage receipts, the payments to be distributed equally over a period of five years. This necessitated charging too high a rate for storage. For example, the average cost of a 12,000 bushel capacity house was about \$5,000. To retire this amount in five annual installments and pay the interest would require a payment of \$1,300 the first year. It would be decreased \$60 for each succeeding year. The average annual payment for each of these five years would be \$1,180. To pay this amount would require an assessment of 10 cents per bushel if the house were full to capacity each year. If the house were only half full the assessment would be 20 cents per bushel to meet the payments.

There were many difficulties encountered because of this phase of the plan. In the first place, a decline in the volume of production resulted in a decrease in receipts of a number of associations till it was impossible to meet their notes as they became due. This placed a strain upon their credit. The banks as a general rule have been lenient with the associations, and though there has been talk of foreclosure unless payments were met more promptly, none have as yet been forced into bankruptcy. However, such lenient policies may not always be characteristic of the lending agencies. Besides, the association is destroying its good-will, and will probably find it more difficult to secure loans should there be necessity for such in the future.

Another danger lies in the possibility of competition of private storage agencies. The usual charge for storage by private agencies in the main producing areas is 10 cents per bushel. This amount is required by the association to pay interest and retire indebtedness when financed under this plan. One association, Pikeville, is now faced with a very serious problem because of

the competition of a local private storage company that has reduced storage to 10¢ per bushel.

Another danger from the high charge necessary under this plan is in decreasing returns to the grower to such a point that the crop will prove unprofitable. This extra cost of storing may be the margin between profit and loss with some growers. These growers will likely discontinue growing the crop under these conditions and the volume of the association thereby lessened. Undoubtedly this high storage cost had some effect on the discouraging returns made to growers by many of the associations for the 1926 crop.

There is also an element of injustice involved in the usual financing plan. The usual plan was for the house to be owned in proportion to the stock subscribed for by each member when the indebtedness was repaid. As some members grew no potatoes, they really have no investment in the association. The members who grew potatoes paid for their own stock as well as the members' stock who grew no potatoes. It is not surprising that there was some discontent among members when they saw how the plan really worked.

In fairness to the members who grew no potatoes it may be said that there was an element of risk involved, in that they may have to pay off their indebtedness themselves. Members of some associations were faced with such prospects in the spring of 1930. But the members who were growers assumed this same risk besides paying a part of the indebtedness through high storage charges.

The plan of financing submitted to many of the associations that built storage houses provided for a revolving fund. Under this plan regardless of who signed notes in the beginning the storage house would belong only to the growers when the notes were retired, and each grower's interest in the association at any time would be in proportion to the amount of potatoes that he had stored during the past five years. None of the associations accepted

this plan or at least were not operating under it. According to the Tennessee Extension marketing agent the revolving fund plan was objectionable because of two reasons; first, the majority of growers could not understand it, and second, the managers objected because of the extra bookkeeping it would involve.

¹
Two associations, while having no provisions for the revolving fund, had adopted the idea to the extent of having their storage house owned by growers in proportion to their contribution to the payment of the indebtedness, through the surplus of proceeds of storing over costs of storing. The county agent at Dickson reported that their plan of financing gave an added incentive to members to grow and store potatoes in that they wished to retire their indebtedness as quickly as possible. This incentive would be lacking where the proceeds of storing would be used to retire the indebtedness of the member who grew no potatoes, as well as their own.

Financial Condition - The present indebtedness on the storage houses of 16 associations is shown in Table 63. Only 3 are clear of debt. Nine others would have been if payments had been made as per original plan - one every 5 years. Among these the per cent unpaid ranges from 4 to 66. Three associations, at the end of the 1930 season, that had operated 4 years, had paid off from about 1/4 to 1/2 of their debts. At this time, 1931, they should have had all payments made according to their original plan.

Since the retirement of the indebtedness was dependent upon profits from storage the decline in production due to low prices and other factors caused a considerable decrease in income from storage.

The probability of full payment without an assessment of the stockholders, through collection on the unpaid balance of their collateral notes, is very doubtful in some cases. Mr. G. P. Cooper, President of the Bledsoe County Sweet Potato Association, in a letter dated July 22, 1931, says that full

¹ Dickson and Sadlersville associations whose plan of financing is described in Chapter V.

payment "will not be made this side of judgment".

Table 63

Approximate Indebtedness on Sweet Potato Cooperative
Storage Houses, 1931
(Decherd Group)

Location of association	Indebtedness	Original Capitalization	% Unpaid	Years Operated
Soddy	\$4,000(b)	\$5,500	74.4	4
Pikeville	3,300	5,000	66.0	5
Manchester (a)	3,000(b)	4,000	75.0	4
Sparta (a)	2,500(b)	5,500	44.0	4
Belvidere	2,400	3,800	63.2	5
Estill Springs	2,250	5,000	45.0	5
Winchester	2,200(b)	4,800	46.0	5
Wartrace	2,000	5,300	38.0	5
Cowan	1,800	5,000	36.0	5
Tullahoma (a)	1,600	5,400	30.0	5
Huntland	208	5,200	4.0	5
Algood	?	4,000(c)	?	4
Mount Airy	?	4,300	?	5
Flintville	0	4,200	0	5
Jasper	0	6,000	0	5
Decherd	0	5,200	0	9

(a) Approximate.

(b) 1930

(c) House only.

In the spring of 1931 some expressed a doubt of the Sparta Association's being able to meet all payments from storage. In 1927 only the interest was paid. In 1928 some of the stockholders paid \$30 each, amounting to \$1000. In 1929 nothing was paid since no potatoes were stored. In 1930 the local bank was getting anxious to collect the remaining \$2,500 to \$3,000 due. The manager of the association stated that the bank would not push the collection if the growers would grow more potatoes. This they do not appear to be inclined to do unless the price is considerably more favorable. There is a possibility that the storage house will be sold and operated on a strictly private basis.

Some have a more optimistic future. Mr. H. M. Jones writes that the Huntland Sweet Potato Association "paid \$102 on notes last season (1930) and hope to pay more or less on them this season according to the amount of potatoes stored in the house this year." They owe only \$208. The Tullahoma

association would have paid out in 1930-1931 had not the drouth so seriously affected the production. At Estill Springs in 1930 there was some talk of the local bank¹⁴ calling the loan. As mentioned in another connection, in July 1931 D. B. Gaines, president of the local association, writes that the stockholders will make an effort to pay practically all of the indebtedness from the storage profits from this year's crop but that the poor condition of the crop was not so encouraging.

Most of the associations, it seems, planned to reduce their storage costs when the association was free from debt to as small amount as would be necessary to pay costs of storing, a small dividend on their stock, and possibly create a reserve fund. The farmer who began growing after the indebtedness was paid, would thus be benefited by the low storage costs and not have to bear any of the costs of financing.

Some associations required the members to buy their stock outright. These associations are undoubtedly now in a better position financially, otherwise there appears to be little difference in the success of them and those financed on the other plan. It is reported that one association, Flintville, has paid dividends annually of from 6% to 20%.

Operating Capital - One weakness that had a very bad effect on the morale of the members of some associations was the failure to provide operating capital. The usual method of providing such capital was through deferred payment to growers. This method probably caused inconvenience to some members and was reported unsatisfactory in a number of cases.

The length of time growers had to wait for payment of potatoes depended considerably upon length of pool used. When the day or car pool was used settlement was usually made in a few days. Associations that used the seasonal pool deferred final settlement till the end of the season when all

potatoes were sold.

One of the biggest reasons for the short pool, day or car, was because settlement to the grower could be made quicker. Three associations which used the season pool to overcome this objection made advances to growers who requested it when part of their potatoes were sold. However, even the short pool with quicker payments was not entirely satisfactory to the growers, especially in West Tennessee. Two associations, McKenzie and Paris, attributed their decline to a large extent to the desire of the grower to get cash when he delivered his potatoes, which the association was unable to pay. These associations were both organized when there was very little or no production in their areas, and hence had no competitive buyers at the start. As the production increased very rapidly, in a few years, they had a considerable volume of business. This volume attracted private buyers. At Paris, one of these buyers who was among the first to begin operations, personally reported to the survey committee that when he first began buying, as a rule, he would pay a few cents less per bushel than the association was paying, but because of cash payments he was able to take customers from the associations.

At McKenzie there was evidently very much of the same sort of situation. The manager here, in an attempt to hold the loyalty of the members, devised a plan of making returns earlier. He reported that when a car of potatoes were loaded and sold he would draw a draft against the buyer. This was usually done the same day the car was loaded. This draft was then taken to the bank, discounted, and proceeds deposited to the credit of the association. That same night he and his wife would figure the amount due each member who had potatoes in that car, and write out a check for them. These checks were then placed in his mail box, and the mail carrier, who lived just beyond him, would pick them up the next morning on his way to town and take them to the post office. They thus went out on their respective routes to growers the

same day so that they received their returns within approximately 24 hours after delivering the potatoes. The manager reported that even this arrangement was not satisfactory and that growers would prefer to sell to private buyers and receive cash when delivering.

4. Personnel of Officers

Manager - It is a well recognized fact that the ability of the manager has a very important relation to the success of a cooperative association. Inefficient management was the cause most frequently given to the United States Department of Agriculture for associations becoming inactive.¹ The term "inefficient management" is a rather broad one. It may refer to lack of experience, lack of education, poor judgment or a number of other deficiencies. The management of a cooperative association is a harder position to fill than a private agency engaged in the same line of business. Not only must the cooperative's manager have the technical knowledge necessary to operate the business in an efficient manner but he must be a good organizer so as to obtain and hold the loyalty of his membership.

Eighteen out of the 24 associations reporting, had managers that had never had experience in cooperative marketing before taking their present position (Table 64). Four of managers had been members of a cooperative strawberry association, one of which was secretary, and one was president of a cooperative creamery. No definite relationship existed between the success of the associations and the previous experience the managers had gained from contact with other cooperative marketing associations. Two of the managers had previous experience as shippers of produce. The others were inexperienced in marketing.

About three-fourths or 21 out of 28 of the present managers were farmers (Table 64).² Two others were part time farmers of which one was a dealer

¹ Ellsworth, R. H., Development and Present Status of Farmers' Cooperative Business Associations. U.S.D.A. Bulletin 1302. 1924.

² This includes the last manager of the inactive associations.

in potatoes and sweet potatoes.¹ One association each had as manager a painter, merchant, banker-manufacturer, and lumber dealer. The lumber dealer was the president of the cooperative creamery mentioned above.

The small size of these local independent associations makes it economically impracticable to obtain the services of men who know the marketing

Table 64

Previous Experience in Similar Work and Other Occupations of
Managers of Sweet Potato
Associations, 1930

	Number of managers
<u>Previous experience in cooperation</u>	
None	18
Member strawberry association	3
President cooperative creamery	1
Secretary strawberry association	1
Other similar work	1
Total	24
<u>Other occupations</u>	
Farmers	21
Farmer-teacher	1
Farmer - shipper of produce	1
Painter	1
Merchant(a)	1
Banker - spoke factory official	1
Lumber dealer	1
Total	27

^a Has been dealer in strawberries.

game except in rare instances. To be a successful sales manager a knowledge of marketing is essential. Because of the lack of a manager who was an efficient marketing agent is probably a contributory cause for many of associations not requiring members to sell through the association (see sales policy, Chapter VI). When sales are made to local markets or to cash buyers less experience is necessary. Where the manager only looked after the operation of the storage house very little experience was necessary.

¹ The manager of the Decherd association.

The length of time the present or last manager served is shown in Table 65. Of the 23 associations reporting 9 had been served by the present manager only one year or less. Seven had served for 4 years. The other 7 had served from 2 to 12 years.

It is also shown that 17 of the 23 managers had served during the whole life of the association. All of the eleven managers who had served four years or more had served during the entire life of the association. Of the

Table 65
Length of Period Served by Managers of 22 Sweet
Potato Associations, 1930

Period in years	Number of managers	Number of managers who served since organization of the association.
1	9	5
2	2(a)	1(b)
3	1	0
4	7	7
5	0	0
6	1	1
7	1	1
8	0	0
9	0	0
10	1(b)	1
11	0	0
12	1(b)	1
Total	23	17

^aOne of these was the last manager of an inactive association.

^bAssociation now inactive.

12 managers who had served less than 4 years, 6 had served for the entire life of the association. No special significance can be attached to those who had served for only one year.

It is impossible to point out any definite relationship between the success of the sweet potato associations and the type of managers serving the associations except in very few cases. This is in part due to small responsibility of some managers. Where the manager only looks after curing and storing a very high type of manager is unnecessary. It is also shown in Table 65 that the two associations whose managers had served the longest

periods are now inactive. These associations¹ were apparently fairly successful at one time during their life but declined and became inactive while still served by the same management. Several managers of cooperative associations in West Tennessee that have become inactive are now operating private marketing agencies apparently with fairly good success.

Directors and Other Officers - A rather common complaint of managers of cooperative associations was that they could not get any cooperation from the boards of directors. This was especially true of the West Tennessee associations.

The effect of such a board upon the success of an association would depend upon the type and ability of the manager. Even with the best of managers the cooperation of the board is necessary to get the best results. Some of the duties of the board are to back the manager and spread information regarding the association. It seems that an active board in this respect may have helped some of the associations, especially in West Tennessee, overcome some of their difficulties.

The occupation of a large majority of directors was farming. This was true for 69 of the 88 directors whose occupation was reported. Five bankers were reported as directors and two each of merchants and postmaster. One director was represented from 10 other occupations. Of the associations reporting, 7 had boards composed entirely of farmers while 9 boards had members with other occupations.

5. Characteristics of Membership

Previous Experience in Cooperation - About half of the associations reported that their members had no previous experience in cooperative marketing and were unfamiliar with the principles of cooperation at the time organizing (see Table 65).. Cooperative strawberry associations and

¹ Paris and McKenzie associations.

creameries were often organized in the territory occupied by the sweet potato association prior to its organization. Four associations reported that some members belonged to the Farm Bureau, three reported some as being in a tobacco association, and one reported some members as having experience in the cooperative marketing of poultry.

Table 66
Previous Experience of Members in Cooperative Marketing
at Time of Organizing Associations

Experience	Times reported
Strawberry association	10
Creamery	9
Farm Bureau	4
Tobacco association	3
Poultry association	1
None	19

Source: Survey of cooperative associations, 1930.

In the majority of cases the members were not familiar with the production of sweet potatoes. This was true for 31 of the 37 associations reporting. In some cases, especially in Middle Tennessee, the members had no previous experience in raising truck crops of any kind. However, several associations reported members were familiar with the growing of strawberries or some other truck crop.

Attitude toward Cooperation - The farmer's attitude toward cooperative marketing has been found to be dependent to a very large extent upon his previous experience in cooperative association.¹ Farmers with little or no experience in cooperation are not likely to have a favorable attitude toward cooperative marketing. This is due in part to the fact that their early experience is likely to be with newly formed cooperatives, many of which are always failures.

The farmers' attitude no doubt played a considerable part in the success or failure of a number of sweet potato associations in Tennessee. No data

¹ Zimmerman, C. C., and Black, J. D., The Marketing Attitudes of Minnesota Farmers. Univ. of Minn. Tech. Bul. 45. 1926.

are available to show the attitude of members of any association so conclusions presented are merely opinions given by persons interviewed on the survey. An adverse attitude toward cooperation is evidently more noticeable than a favorable attitude since it was reported to the survey party more frequently. The downfall of a number of associations in West Tennessee was reported as being aided by the fact that some farmers had unfavorable experience in the cooperative marketing of other crops. Such was reported to be the case with the Paris association. It seems that a livestock shipping association was organized in this county, which is reported to have not been operated on a strictly honest basis. Unfavorable experience with tobacco associations is reported to have been an obstacle in some places and similar experience with cotton associations is reported to have had a similar effect at other places.

At other places, persons interviewed reported that members were good cooperators. This was given as one of the reasons for the success of those associations. As stated above, however, these were merely opinions.

6. Methods of Operation

Services Rendered - The conditions under which the organization of a cooperative association may be justified are presented earlier in this chapter. It was pointed out that generally a cooperative association can accomplish most by adding new services or improving others.

This fact evidently was not understood by the organizers of many Tennessee cooperative sweet potato associations. While it is true that some were organized to provide new services, as a rule their services were limited to one or two phases. The functions undertaken by most associations were too few. This was largely due to the unfamiliarity of the leaders with the proper functioning of a cooperative organization. Such leaders often have the idea that the organization is for selling or storing only, and overlook many other possibilities for rendering services.

An example of this fact is the loss which occurred to many members of the associations in Middle and East Tennessee the first year or two of operation because of poor grading and packing preparatory to storing.. The members can hardly be blamed for this loss, since they were inexperienced in sweet potato growing. If the leaders had studied the problems encountered at other places much of this loss could have been prevented by taking proper educational steps.

The controlling of diseases offers a very fertile field for cooperative association, yet very few have taken steps toward control work. Educational work regarding the best methods of growing the crop should be a profitable undertaking. There was considerable disfavor in using U. S. Standards in grading with many associations. Had information been furnished regarding the most up to date methods of growing so as to grow a uniform potato of the correct size so far as possible undoubtedly this objection would not have been so great (see Improving Production, Chapter IV). In other words, some associations were weakened by the lack of needed education work among the membership as to production, grading and packing.

Efficiency - No data are available as to prices returned to growers by cooperative associations and competing private agencies. At present, private and cooperative agencies compete in only a few instances. The price charged for storage by cooperatives is generally higher than that charged by private agencies. However, the prices of the two are hardly comparable as the private agencies are located in the heavy producing areas of West Tennessee while the cooperative storing is practiced only in the areas of small production. Where the two are located in the same area, as at Pikeville and Lebanon, both now charge the same price for storage.

Inefficient and careless operation of cooperative storehouses the first year of operation caused a considerable loss to the growers. The first year a few associations lost potatoes from overheating. This loss had a very

discouraging effect on growers and resulted in a diminishing of acreage the following year.

7. Competition

Independent Agencies - Competition between cooperative and independent marketing agencies has had considerable effect on the success of a number of associations. Without exception the private agency seems to have gained the advantage of the competition and has therefore supplanted the cooperative in a number of places. This has not been brought about solely because the private agency was more efficient in its operations and could, therefore, return the grower a higher price for his products, but rather because they offered some services which the cooperative did not.

An example of services rendered by the private agency and not by the cooperative is financing. The effect of the private agency paying cash when delivered against the deferred payment plan of the cooperative has already been discussed. In addition to this, private agencies buy potatoes green for storage and thereby provide the grower a cash market much earlier in the season. Some dealers also contract for potatoes much earlier in the season and thereby furnish the grower production credit. These services the cooperative were unable to perform and therefore were at a big disadvantage.

Another service rendered by private agencies and not by the cooperative in some sections was storage. This storage gave the private dealer more or less control over the crop, and thereby an advantage when the grower wishes to sell.

Associations in the new producing areas of Middle and East Tennessee have encountered competition from private dealers only in very few instances. The small volume of production in those areas is not attractive to the private dealer.

One instance of storage competition occurred at Pikeville in East Tennessee. The Pikeville association constructed the first sweet potato

storage house there. A charge of 20¢ per bushel was made for storage, to cover the operating costs and to retire one-fifth of the original cost of the house each year. One of the large sweet potato growers, who was also a dealer in this crop, constructed a storage house. His charge of 10¢ per bushel made necessary a similar reduction by the cooperative. This charge will only provide funds for operating costs unless there is full capacity and considerable efficiency in operation. This situation together with a decreased production in the area has brought about a financial problem^{for} which there apparently will be no satisfactory solution.

Competition for storage in these areas of small production will not generally prove profitable. At present (1930) the storage capacity in most of these areas is greater than the volume to be stored. Fortunately the instances of such competition are rare.¹

Local Markets - The local markets furnished strong competition to the selling policy of many associations, located largely in Middle and East Tennessee. Each grower can sell his own when a good local market is available and cooperative selling is not so essential. The competition of local markets has caused several associations to abandon selling or to sell only when there were more potatoes than the local market could consume. This competition, however, has not been a detriment to the success of any association, but, in several cases aided the association greatly in that because of the favorable local market the production of sweet potatoes proved a profitable undertaking and an adequate volume was therefore maintained.

Only one association, Algood, has made any extensive effort at selling on the local markets. This association has been reported very successful in covering these markets. Some other associations have aided their members in selling to these markets, but largely by bringing the buyer and seller together.

¹ Since writing this report another instance of dealer competition has been reported. In 1927-1928 some of the dealers at Martin raised the price of sweet potatoes 1¢ to 2¢ above the market price to break the newly formed cooperative association.

8. Volume of Business

This has been a factor in the success of cooperative storage. For those that have had a decrease in volume - much below the capacity of the storage houses - considerable difficulty has been experienced in meeting the payments on the original investment out of the profits. With certain overhead expenses, as interest, payment on capital stock, and managers' salaries, storage costs per bushel have been increased as the volume stored decreased. With the decreased volume the profits from the 20¢ per bushel charge have been absorbed by the expenses. As has been mentioned in another connection this decreased volume has been due, largely, to unsatisfactory prices for potatoes, relatively high storage charges, and to the competition of other crops with sweet potatoes, particularly early Irish potatoes.

Unless the volume of some associations increase, particularly Sparta, Pikeville, and Soddy, the chances of paying for the storage property out of the profits of storing are small. However, successful storage operations does not require a large volume; but the ratio of the volume stored to the storage capacity must be large. This ratio has been entirely too small in most associations.

For success in selling cooperatively, except to supply local markets, a relatively large volume is necessary. Reference to Table 50, page 186, shows the small volume stored by the associations of the Decherd Group - ranging from 1100 bushels to 10,000 bushels in 1929. Since only part of these were ever sold - sometimes only one-half - it is fairly obvious that the volume was too small to continue shipments to other than local markets. With such small volume it was economically impossible to hire a competent sales manager. Similar conditions existed among the associations of the McEwen Group in central and northwest Middle Tennessee and among those in the southern part of West Tennessee.

Only at Gleason in Weakley County, Paris in Henry County, and McKensie in Carroll County was there anything approaching an adequate volume; and this occurred for only a short time (see table below).

Table 67

Volume of Sales of Two West Tennessee Sweet Potato Associations

Location of association	Year	Value	Number of cars
Gleason	1917	\$70,000	no data
	1918	113,000	no data
	1920	no data	131
	1921	no data	66
	1923	25,000	no data
	1924	30,000	no data
Paris	1915	3,600	7
	1916	7,185	17
	1917	30,000	32
	1918	95,000	83
	1919	no data	130
	1921	128,000	no data
	1922	109,000	no data
McKensie ^a	no data reported	no data reported	no data reported

Source: U.S.D.A. Division of Cooperative Marketing.

^aReports indicate its volume about equal to either Gleason or Paris.

The volume handled up to their failure, about 1927 or 1928, is not available but it is reported to have declined. Had they been able to maintain their peak volume they could undoubtedly have continued to operate; but dealer competition in paying cash on delivery, and general dissatisfaction among the members were fatal to their existence. During the time of their peak shipments they were reported to have operated with a reasonable degree of success.

9. Miscellaneous Factors

Loss by Fire - Fire loss is reported the cause of one association becoming inactive and necessitating reorganization on the part of another. It seems that in each case very little or no insurance was carried. The loss incurred by the members was considerable in each case and occurred the first year of operation. This was very discouraging to the grower who was not familiar with the production of sweet potatoes and possibly had some doubts as to the profitability of sweet potato growing.

Loss by Failure to Collect Sale Price - A few associations were caused considerable difficulty because of the failure to collect for potatoes sold. Two associations reported this as the cause for their becoming inactive. In the case of these two associations, cars were sold F.O.B. on the usual terms. This provides for inspection by the buyer on arrival at the terminal market. Each of these associations while still struggling to obtain a firm footing had a car of potatoes rejected by the purchaser because of failure to meet the grade for which they were sold. In each case, a considerable adjustment was necessary and the price returned to growers was somewhat below what independent growers were paying at the time the potatoes were shipped. In both cases, this loss caused the growers to lose faith in the organization with the result that it became inactive.

The Paris and McKenzie associations also reported experience in similar losses. These associations were at the time on a much firmer basis and had provisions for distributing such losses so that very little ill resulted from them (see Pooling, Chapter VI).

Loss from Improperly Constructed Storage - Two associations¹ incurred a considerable loss to growers because of improper storage conditions. Each of these associations attempted to utilize storage that was not suited for

¹ Memphis and Cleveland associations.

sweet potatoes (see Marketing Services Performed, Chapter VI). Considerable loss resulted in each case which discouraged the members to such an extent that they ceased growing sweet potatoes.

Interference by Outsiders - Interference by an outsider is reported to have been the cause of failure of one association¹, or rather the cause of its organization never being completed (see Resume of Individual Associations, Chapter V). At another place some outside interference on the part of independent buyers was thought to be a cause of failure of the association. This association, Gleason, lost their manager through his death. It is reported that independent buyers used their influence to get elected as his successor a man who was utterly incapable of discharging the duties of the office. Because of his gross inefficiency the association began to decline and soon became inactive.

10. Some Factors in the Failure of the Martin Cooperative Sweet Potato Association

This association was located at Martin, in Weakley County, one of the biggest shipping points for sweet potatoes in the state. Its organization in the late fall of 1927 grew out of the dissatisfaction of a few of the producers caused by the low price of 40¢ per bushel for sweet potatoes. Production this year was considerably above normal. At the time there was very little interest in the movement due largely to (a) the failure of other cooperative organizations in the county, particularly the Dark Tobacco Association, which brought about a distrust of all cooperative marketing;² and (b) the belief that grading would be too strict.³ In other words, very few were convinced of the benefits that was expected to be gained through co-operation at that time.

¹ Cottage Grove Sweet Potato Association.

² Payment for part of the 1924 and 1925 tobacco crop had not been made by this cooperative.

³ The dealers were buying "field run" potatoes largely.

An agreement was made with the Federated Fruit and Vegetable Growers to handle the sales. No definite information is available on the volume handled but all reports indicate that it was very small. It is reported that the deal was unsatisfactory to the sales agency because of the small volume, and to the members because of unsatisfactory returns.

The association has not functioned since the 1927 crop season.

The causes for failure have been reported as follows:

- (1) Competition of local buyers was a direct cause. It is reported that they found out what the members of the association were receiving, and then paid 1¢ to 2¢ above what the market would justify.
- (2) It was organized during a year of large supplies and consequent low prices.
- (3) Some of the members insisted on shipping potatoes that should have been kept on the farm and fed to livestock. This had an adverse effect on the price.
- (4) The growers were hostile to a quality product and a full pack since the private dealers were paying more money - 1¢ to 2¢ per bushel - on ungraded and loosely packed potatoes.
- (5) The officers were skeptically and perhaps not wisely selected. They "knocked" instead of working together. Their leadership was poor.
- (6) The association could not make advances to its members. On the other hand the dealers paid cash when the potatoes were delivered.
- (7) The volume handled was small, probably not more than 1/2% of the volume handled at that place. It was often difficult to get a sufficient volume to fill a car-lot order on a specified date. This was due largely to the conditions mentioned above.
- (8) The members and growers generally looked upon the association only from the price point of view - and even that was not considered from the long time standpoint. The dealer competition and the low market price

alone were enough to weaken any enthusiasm for cooperation that they might have had.

(9) The members were not kept thoroughly informed. No meetings were held after the organization was completed. Some of the members did not know what it was all about.

It is doubtful if this association should have been organized at that time. In the formative period there was not enough interest manifested to keep the organization going regardless of dealer competition and other difficulties that were almost sure to be encountered. The long time viewpoint of cooperation and the services that a cooperative might render other than getting a higher price than the dealers were paying for the same quality of potatoes, were overlooked. In other words, there might have been a need for the organization because the dealers were taking too wide a margin, or for other reasons, but the interest among the growers was too low to justify an association. Its organization should have awaited the revival of more interest. Each failure is likely to decrease the confidence of the farmer in cooperation.

11. History of One of the Most Successful Cooperative Sweet Potato Associations

The Maple Hill Cooperative Sweet Potato Association is located three miles west of Lebanon on the Nashville-Lebanon highway and on the Tennessee Central railway. Its membership is confined to growers living in a small area, about five miles square. Prior to the organization of the association very few sweet potatoes were grown in that area. About half a dozen farmers had small storage houses and grew an acre or two which was sold largely on the Nashville market, about 25 miles distant.

The association is a local organization and is not affiliated with any other association. There are only about 75 growers of sweet potatoes in this area.

History of Organization - The association was organized in 1926. The farmers of that vicinity were instrumental in its organization. The idea of such an organization was first expressed one winter day when a group of

farmers were gathered around the stove of the local store. Several other farmers were impressed with the idea and considerable discussion ensued. After a few more sessions around this stove a party was appointed to interview other farmers of that area. Also another party visited the cooperative sweet potato associations which were in operation at that time in Franklin County. These associations had enjoyed two years of very favorable sweet potato prices. The committee which visited them brought back a very favorable report.

A committee was then appointed to get growers to subscribe for stock. A general meeting was then called at which the organization was completed. The association was incorporated as a non-profit organization under the Tennessee Cooperative Law of 1923.

Membership - The personnel of the Maple Hill association differs from that of many of the other cooperative sweet potato associations of Tennessee in that it is strictly a farmers' organization. As mentioned above, it was promoted and organized by and is composed wholly of farmers who grow sweet potatoes. Likewise all officers are actual growers of this crop.

The membership requirements of the association are that he be a grower of sweet potatoes and purchase at least one share of stock in the association. No membership or initiation fee is charged. Growers who are not members may store potatoes in their storage house at the same rate as is charged members.

Very few of the members had any previous experience in cooperative marketing prior to joining sweet potato association. A few were members of the cooperative creamery at Lebanon. Most of them were also inexperienced in growing sweet potatoes. It is reported, however, that they were as a rule good cooperators and would take an active part in community clubs, campaigns for betterment of schools, churches, etc.

At the start members were required to sell their potatoes through the association. This rule was in effect only one year, however, and now each

member sells his own crop. This change was made because of the good local market available at Nashville which some members wished to utilize. There was little to gain from selling cooperatively on this market.

Financing - The method of financing was similar to the associations visited in Franklin County. Under this plan when the grower subscribed for stock, instead of paying for it outright, he signed a note for the value of the stock. These notes were used as collateral for a note signed by the directors in the name of the association which was in turn used to borrow money from a bank in Lebanon to finance the building of the storage house. This indebtedness was then to be paid off out of proceeds of storage operations over a period of five years. The value of each share of stock was \$100. There were 42 original subscribers. The total capitalization was \$5,400. When the indebtedness was paid off the storage house would be owned by growers who subscribed for stock.

Personnel of Officials - The president of the association is John E. Perry. The office of secretary, treasurer and manager are all combined and is held by C. W. Smith. The manager is also one of the seven members of the board of directors. All officers, as explained above, are farmers. Only one had any previous experience in cooperative marketing. This member, Mr. Walter Hancock, has taken a very active part in the association from the start. His wisdom and judgment have been very helpful to the association several times.

Grading and Packing - This association experienced much the same difficulties of other associations the first year in grading and packing (see Services Rendered, Chapter VI). The farmers, having no previous experience growing and marketing sweet potatoes, brought in a very poor grade and pack. This condition has improved much since that time.

The first year, when the association did the selling, it had absolute authority over grading, after the potatoes reached the storage house. Men

were hired to do this work who were trained by an experienced potato grader hired by the association. All potatoes were graded according to U. S. Standards. Since the first year the association has left all grading to the individual grower as he disposes of his own crop. As a rule their land grows a fairly uniform potato of about the correct size to meet U. S. Standards. A few growers have rather heavy land which tends to grow them too big.

Storage - The association built a storage house at a cost of \$5,400. Its capacity is 15,000 bushels and was built according to government specifications. The house is divided into three separate rooms. It is heated by stoves which are above the floor.

The charge for storage is 20 cents per bushel hamper. They expected to pay expenses of storing from the income from storage and be able to retire the indebtedness against the association in 5 years. Expenses of storing have been kept to the minimum each year. The manager looks after curing and storing for which he is paid \$2.00 per day when growers are bringing potatoes in or when grading, and \$1.00 per day to see after the house during storing period. Other expenses paid out for the 1929 season including tax, fuel, and insurance amounted to \$222.00.

Storage conditions have been very satisfactory. The percentage of loss in storage is very small and none of this has ever been due to improper management of the storage house. At first due to slack packs several growers had considerable shrinkage in storing. Also a few have been troubled some with black rot, though most growers have been able to avoid losses from this source.

The volume of potatoes stored for the 1929 crop was approximately 9,000 bushels. The year before 7,000 bushels were stored. The 1930 crop while not harvested at the time of the survey was expected to be shorter than the 1929 crop. This was due to the extreme drought conditions which cut the yield below that of 1929. There was thought to be a slight increase

Does not mean anything

in acreage over the previous.

While their storage volume was not up to the capacity of the house, it was considerably better in this respect than the average of the other associations in the Middle and East Tennessee areas.

Selling - At present all selling is done by the individual grower. The association did the selling the first year. Sales were made through the Federated Fruit and Vegetable Growers. The association signed a three year contract with this agency, which the agency cancelled at the end of the first year because of the unprofitableness of handling the small volume of shipments.

There was some difference of opinion as to the merits of sales through the agency. Most of the growers were well satisfied with the results they received. Others favored selling on the good local market at Nashville. When the Federated cancelled their contract this policy was adopted. At present practically their entire production is shipped by truck principally to Nashville. Some growers truck their own to Nashville or other towns and peddle, while others sell to hucksters who come to the storage house.

No pooling is practiced at present. When the association sold the yearly pool was used. Settlement to growers was not made till the end of season when all potatoes were sold. This pool was reported as satisfactory to most members.

Miscellaneous - Hampers are purchased and sold to members at cost. They are also sold to non-members on the same basis, but with the understanding that their potatoes are to be stored in the association's house.

The greatest production in the area occurred in 1926, the first year of operation. This year was one of very low prices and as the result the acreage was reduced considerably the next year. Since then the acreage has been increasing a little each year. The soil is reported adapted to growing sweet potatoes, generally producing large yields of good quality potatoes.

The Nancy Hall variety is grown almost exclusively. Most growers have only a small acreage, usually from one to three acres.

Success Factors - The principal factors in the success of the association appear to be that the association is filling a need and that the members are good cooperators. Storage space was not available before the organization of the association. The crop has proven profitable so it can truly be said that there was a need for storage space. The fact that the crop has proven profitable is the reason their volume has been maintained. The association has been successful only as a storage enterprise. There was little need for selling hence that plan was abandoned.

The fact that the members are fairly good cooperators has helped the association over obstacles which other associations were unable to surmount. For example, take their method of financing. The building of the storage was financed on the same plan that caused considerable friction among many other associations. This same plan has proven satisfactory as far as this association is concerned. However, the membership of this association differs from that of many of the others in that the members here are all growers of sweet potatoes, and they continued growing them after the first year when the crop proved rather unprofitable.

Their officers, while having no more experience than the officers of many other associations, have been efficient in the discharge of their duties and have kept expenses to the minimum. This has been another factor in their success.

BIBLIOGRAPHY

1. Ellsworth, R. H., Development and Present Status of Farmers' Cooperative Business Associations. U. S. D. A. Bul. 1302. 1924.
2. Zimmerman, C. C., and Black, J. D., The Marketing Attitudes of Minnesota Farmers. Univ. of Minn. Tech. Bul. 45. 1926

CHAPTER VIII

THE FUTURE OF COOPERATIVE MARKETING OF SWEET POTATOES IN
TENNESSEE

1. Some Problems.
2. Prospect of Getting Higher Returns for Growers.

1. Some Problems

Prejudices Against Cooperatives - Future prospects for cooperation in the sweet potato industry look none too bright at present. Cooperative marketing has been tried in the principal commercial area of West Tennessee, but the efforts have ended in failure in a majority of cases. The adverse advertising given to cooperative sweet potato marketing in that area thru these failures will be hard to overcome. Unfavorable experiences in other cooperatives as well as in those marketing sweet potatoes have made many of the growers rather skeptical of any sort of cooperation. Also due to habit many prefer to sell their products alone rather than cooperatively. These prejudices and habits need to be overcome. This can be accomplished usually if the growers feel the need for a better system of marketing.

Volume - In the Middle and East Tennessee areas a number of associations are now just barely able to keep going, because of the small volume on which they have to operate. As a rule, they have no competition from private marketing agencies. Their small volume of business is due to the small production in that area. As cooperative storage propositions several of the associations are fairly successful. Others are facing failure unless a larger volume is obtained. As to cooperative selling, their outlook is

not very promising. Their volume of production is too small to operate efficiently in selling to distant markets, and there is so little advantage to be gained in cooperative selling on the local markets, that it appears doubtful if it will be undertaken by many associations.

A federation of these Middle and East Tennessee locals has been suggested; such an organization to act as a sales agency for making shipments to markets out of the state. However, with their present volume this appears inadvisable. There were only about 60 cars shipped from the several scattered counties served by these associations in 1928 and possible even less for 1929 and 1930. This would be too small a volume to operate a sales agency.

Any considerable increase in production in these small producing areas appears inadvisable at the present. In the first place, few if any places there are as well adapted to sweet potato culture as the heavy producing areas of West Tennessee. Then there is possibly a greater competition of sweet potatoes with other crops, and the type of farming is less suited to the inclusion of sweet potato culture.

In West Tennessee there is a sufficient volume available for the efficient operation of a cooperative association, even if only one-half or less of the potatoes were sold cooperatively.¹ A federation of locals into a central sales agency would be advisable.

Competition of Dealers - Another obstacle is the fact that private dealers are now well established in the West Tennessee commercial area and will offer keen competition to any cooperative that is organized. Formerly, the cooperatives in this area had the advantage of the earlier start, while such advantage is now all on the side of the private agencies. Cooperatives

¹ In 1926 (calendar year) 2608 carloads were shipped from Carroll, Henry, Gibson, and Weakley Counties. This was a normal year.

to succeed there must realize this problem and then meet the competition by following good business principles. Fair competition will prove beneficial if it calls forth the best effort for efficiency and economy. The final success, however, depends largely upon the loyalty of the members, which in turn depends largely upon the extent to which the association is serving them, and partly to dealer competition and other outside influences.

Storing - Cooperative storage provides a useful service which would not otherwise be available in the majority of places in the Middle and East Tennessee producing areas. There is some doubt as to the advantages to be gained by introducing cooperative storage in the heavy producing sections of West Tennessee. Private agencies and farmers have fairly well provided the necessary storage space in this area. These commercial agencies appear to charge a very reasonable rate for storage, and the service is apparently satisfactory.

It is doubtful, however, if a cooperative marketing association will gain much foothold in the main producing area that does not provide storage. Private agencies that provide storage have more or less control over the potatoes stored in their houses. A cooperative not providing storage would have to rely to a considerable extent upon farm storage for their volume or upon rented storage space from dealers, for which the private dealer would also compete. For central cooperative storage the cooperative association should either buy or rent storage houses, if possible, rather than build additional storage that is not needed.

Financing Fixed Assets - Previous experience of cooperatives in financing storage facilities emphasize the importance of sound financing. Certain modifications of the methods used by the majority of cooperatives

appear advisable (see pp. 163-165 and 219-221 for method used and difficulties incurred). It would seem advisable from these experiences that cooperative associations should give some consideration to the following suggestions before determining their financial policy. First, from the standpoint of safety to the organization a 5-year period is too short in which to raise the original capital from profits of storing. Discouragement is likely to result from the heavy storage charge necessary. Preference should be given to the method whereby each member is held responsible for the payment of his stock (if a stock organization). The storage costs would need to cover only the actual expenses including interest and a reserve. In the second place the storage property should be owned in proportion to the contribution of the members - the amount of stock actually paid for if a stock association, or the patronage if finances by the revolving fund method. Non-growers should not have their stock paid for by the profits from storing as was done in many associations in the state. In the third place dividends on stock should not exceed 8%.

Financing the Grower - It was shown in the previous chapter that one of the main causes of failure of cooperative associations was the inability to make advances to members on their potatoes pooled. Dealers at present finance the marketing and to some extent the production of sweet potatoes. No data are available as to the adequacy or fairness of this source of financing. When dealers purchase the potatoes uncured in the fall for storing, they generally do so on a very wide margin. Whether this margin is too wide, we have no evidence to prove or disprove. It should be borne in mind that losses of potatoes in storing, the actual storage cost, and the risk of price fluctuations are borne by them.

Most of the losses in storage can be prevented by proper control measures. An association which was efficient in promoting better production would assume less risk in financing and should be able in the end to in-

crease the gross return to the growers. The source of the funds presents a problem to the directors of the associations. There are at least three possibilities; (1) local banks, (2) reserve of the cooperative, (3) and The Fruit and Vegetable Division of the Federal Farm Board.

Education of Members - As brought out previously, this problem has not been met with satisfactorily. In the first place, the members should be thoroughly familiar with what the association can reasonably be expected to accomplish as well as the things that it can not do. They should recognize in the beginning that there is nothing magic about cooperation; that it cannot succeed without their support; and then, only if it is based and operated upon good sound business practices. Second, they should be kept informed of the best production, grading, and packing practices. Third, they should be fully cognizant of all transactions of the association, which may be considered as part of their education in cooperation. The problem is, how? Some possibilities are: (1) regular meetings that are made interesting enough to attract the members. There need not be more than 1, 2 or 3 a year depending upon the local situation; (2) mimeograph letters, and the like; and (3) annual report of the year's business.

Above all the acquisition of this information should not be left to the initiative of the members, as was done by a majority of the associations. They will not get it. If they did the time necessary to furnish it to individuals would be considerably greater than by the methods suggested above.

Contracts - Long time, ironclad contracts are to be avoided. It is believed desirable to have members sign contracts which contains the annual withdrawal privilege.

2. Prospects of Getting Higher Returns for Growers

The objective of a cooperative often is to increase the amount returned to the grower for his product. As a general rule, such an objective is rather hard to obtain under most conditions. The attainment of such an objective will probably have to come about through one or more of the following ways: (1) increase in the gross sale price of the product, (2) reduction of the margin taken by dealers at the local shipping point, or (3) reduction of the loss in marketing due to poor grading, damages, and the like.

Increase the Gross Sales Price - The following suggest themselves as possibilities for increasing the gross sales price of sweet potatoes through cooperation: (1) increased bargaining power, (2) better distribution of the product, (3) improved quality, and (4) advertising.

The possibility of increasing the gross sales price through the increased bargaining power of a large cooperative has been widely heralded. The experience of cooperatives who have attempted such a course on a very vigorous scale make the possibilities of such appear rather doubtful. That the price of sweet potatoes could not be arbitrarily fixed by an association needs to be well understood by the grower. In the first place, Tennessee controls so small a part of the production of sweet potatoes that such a scheme, even if undertaken by a statewide organization, could not hope to succeed. Then, the area adapted to sweet potato growing is so large that were such possible by even a larger association, the increased production that would occur in a season or two would defeat the plan. Because of this wide area adapted to sweet potato production, the crop is destined to be grown on a rather narrow margin of profit when taken

over a period of several years.

There appears to be some possibility of increasing the gross sales price through a better distribution. As was seen in Chapter IV, Tennessee at present has not developed the smaller markets to the extent she has the larger markets. Little data are available as to the equitability of the present shipments among the various markets, e.g., that is the avoidance of market "gluts" or "famines".

To accomplish any results from a better distribution, a large scale organization is necessary. The local association is too small to effect any considerable improvement in this respect. One possible improvement that could be made is a more adequate supplying of the smaller markets.

The possibility of increasing the sale price through the shipment of a better quality product offers less opportunity at present than such a program would have several years ago. This is due to the fact that the private dealers, through a coordinated effort, have done much to improve the quality of Tennessee sweet potatoes the past few years (see Grading and Packing, Chapter III).

There is still probably room for improvement in the grade and pack of Tennessee potatoes. Such a policy should not be pursued blindly, however, because, if grades are too strict, the loss in grading may be more than the increase in returns will justify.

The possibility of increasing the price of sweet potatoes through advertising has been discussed in Chapter IV (see Advertising). For a single cooperative association, or even a state-wide organization, to attempt an extensive consumer advertising campaign of sweet potatoes would probably be an unwise policy. A coordinated effort on the part of all areas producing Nancy Halls would be more desirable. The cooperative may benefit some by trade advertising and standardization of brands.

Reduce the Dealer's Margin - In many instances the costs of distribution have been reduced by cooperative marketing. This occurred in handling grain in the grain belt, in creameries, and livestock associations. The California Fruit Growers Exchange reduced the handling costs about one-half.¹ But in general, cooperatives can cut costs very little. In our competitive system, the costs of operation are cut by the concerns who are making a profit.

To cut costs, the cooperative must be as efficiently operated as the most efficient private agencies. This, however, is often a rather hard objective to attain. When first organized, the cooperative management is often more or less untrained. There is also less incentive for the cooperative manager to keep expenses at a minimum than for the manager of a private agency; since in the latter case the manager, usually being the owner or part-owner, any savings resulting go to himself and associates, while in the case of the cooperative manager any saving goes to the members of the association which hired him.

Cooperative associations are often organized in such a manner as to hinder their efficiency of operation. Such often occurred among the sweet potato associations of Tennessee, examples of which are the financial policy of some associations and the policy of many associations of requiring the manager to secure the consent of each grower before he could make a sale (see Selling and Pooling, Chapter VI). This is a very grave error which organizers should be careful to avoid.

A cooperative association may be able to reduce dealers' margins slightly through the handling of a larger volume of business. In practically every town there are several sweet potato buyers some of whom do a rather

¹ Erdman, H. E., Possibilities and Limitations of Cooperative Marketing, 1925.

small volume of business. Could the cooperative secure an adequate volume of business overhead costs may be reduced thereby.

Reducing Losses from Claims for Allowances and Deductions - Each year shippers are asked to make deductions from the sales price of shipments of potatoes. Various reasons have been assigned for this practice. Sometimes the shipments were not as specified in the sales agreement, due largely to poor grading and presence of diseases, particularly black rot. This practice occurs most commonly during periods of falling prices, when the receivers will grasp any chance to either reject, or ask for allowances.

One remedy lies in improving the product by better production, grading, and standardization; another in federal shipping point inspection; and still another in the standardization of trade terms and their use to prevent misunderstandings in sales transactions. In improvement of the product the West Tennessee Dealers Association has made some progress. However, there is room for further improvement, particularly in the control of black rot, and in grading and packing. Grower owned and operated marketing organizations would be the logical agencies to perform these functions, since it is the growers product that is being marketed. This is believed to be one of the most important services that such an organization could perform.

This would not only reduce losses from claims for allowances but should result also in better prices, as indicated elsewhere.

The loss from damage in transit presents another possibility of reducing losses in marketing. The railroad pays an average of \$3.78 on damage claims for each car of sweet potatoes they haul.¹ To reduce these

¹ Damage to Fresh Fruits, Melons, and Vegetables. American Railway Association, Appendix to Report of Committee on Freight Claim Prevention. 1930.

damages will necessitate a special study of the nature of the damage and means of preventing such losses. A cooperative association may work with other agencies in making such a study.

In conclusion it should be emphasized that disappointment is likely to result if the members hang their hopes for success largely upon increasing their returns by getting the dealer's profits.

In this connection Thomsen¹ says that the growers "confuse profits on the investment with profit per dollar of sales". He points out that a profit of \$6,000 per year on a \$15,000 investment would produce a 40% return, but if the volume of business was \$30,000 the profit would be only 2% if calculated on a volume basis. That is, the profits on that year's business would have equalled 2 cents on every 1 dollar of sales, which is a relatively small profit.

BIBLIOGRAPHY

1. American Railway Association, Damage to Fresh Fruits, Melons, and Vegetables. Appendix to Report of Committee on Freight Claim Prevention. 1930.
2. Erdman, H. E., Possibilities and Limitations of Cooperative Marketing, 1925.
3. Thomsen, F. L., The Cooperative Marketing of Fruits and Vegetables on St. Louis Market. Mo. Exp. Sta. Bul. 277, 1929

¹ Thomsen, F. L., The Cooperative Marketing of Fruits and Vegetables on St. Louis Market. Missouri Experiment Station Bulletin 277. 1929.

CHAPTER IX

SUMMARY

1. Phases Other Than Cooperation.
2. Cooperation.
3. The Need for Cooperation.
4. Success Factors.

1. Phases Other Than Cooperation

Price of Sweet Potatoes - The price of sweet potatoes has fluctuated rather widely since 1915. Prices have a tendency toward cycles of about six years as well as a regular seasonal cycle. The principal factors affecting the price of sweet potatoes are the production of sweet potatoes, the general level or index of all prices, and the production of Irish potatoes. The price of cotton has a considerable influence upon the acreage of sweet potatoes the following year, which effects the production and therefore the price.

Sweet potatoes from some of the northeastern states, especially New Jersey, sell for a premium over Tennessee sweet potatoes in many of the northern markets. The probable factors causing this are, a consumer preference for the dry-fleshed potatoes and a superiority of the grade of potatoes from these states. A more detailed study of these factors is necessary to make definite recommendations for increasing the price of Tennessee potatoes.

The seasonal variation in the price of Tennessee sweet potatoes tends to vary inversely with the size of the crop produced and the percentage of crop placed in storage. A more detailed study of these factors may be advisable with the view of finding a formula for forecasting the price of sweet potatoes. ✓

The retail purchasing of sweet potatoes has generally be low since 1910. Only in 1911, 1912, 1920, 1925, and 1926 has the index of sweet potato prices been much higher than the index of retail prices. In most cases only the July price approaches the retail price. In 1930 the relative purchasing power was slightly greater.

A study of retail prices on the Boston market and the farm price in Delaware and Virginia (sources of largest part of Boston's supply) shows that the gross margin is considerably greater during years of high sweet potato prices. It is also greater when the seasonal price is highest. It is conveniently low during the low price period in the fall.

Processing Sweet Potatoes - A number of methods of processing sweet potatoes has been developed but only one, canning, has been applied commercially. More research is being carried on at present for other ways of processing sweet potatoes in order to utilize the proportion of the crop of potatoes that is oversize, cut, misshapen and otherwise not readily marketable. The following products can be made from this crop: starch, syrup, vinegar, flour, breakfast foods, and various kinds of feed. The commercial utilization of part of the crop for any of these purposes depends largely upon the competition from these products that are now being manufactured from other products.

Present Marketing System - The independent dealers have always handled most of the sweet potatoes in this state. Sales through cooperative associations have declined until at present almost a negligible percentage of the total shipments are handled. At present (1930) the local independent buyer is the most important factor at the country shipping point.

These dealers generally prefer to sell cash track to wholesale buyers. Many sell on consignment only as a last resort.

There are three storage agencies, the individual growers, private

dealers, and cooperative associations. Most of the potatoes are stored in private commercial houses. Cooperative associations store fewer than either of the other two agencies.

Distributions of Shipments - Tennessee's shipments of sweet potatoes are given as wide distribution geographically as those of any other state with the possible exception of Virginia. The seasonal distribution is more uniform as a rule than any other state and extends throughout the greater part of the season. There appears, however, to be the possibility of increasing Tennessee's shipments to the smaller markets and possibly extending the season throughout all of the year.

2. Cooperation

Data have been secured on 50 cooperative associations in Tennessee that handled sweet potatoes. Twenty are located in West Tennessee, 25 in Middle Tennessee and 5 in southern East Tennessee. Twenty of these associations are now inactive, 15 of which are located in the western area.

The associations are all small, unfederated, local organizations. Only 19 of the associations are incorporated. A few are informal organizations, composed of a few farmers who agreed to ship their product together.

A majority have set up a formal organization with a board of directors, president, secretary, and treasurer, and a manager who is hired by the directors.

All have been organized since 1910. The movement first began in West Tennessee, the principal producing area of the state. It has spread to the smaller and newer producing areas of Middle and East since 1920, reaching a peak in 1926 with the organization of 18 associations.

Reasons for Organizing - Most of the associations were organized in a territory where there was not much, if any, commercial production prior to their organization. The main reason for organizing was to promote the pro-

duction of the crop. As there was no means of marketing the crop available, in such instances, the providing of such was a secondary reason for organizing. To provide such a means some cooperatives were organized only to sell the crop while others were organized to provide storage for the crop as well. The need for such an organization was dependent upon the advisability of that particular community entering the production of sweet potatoes. However, in some sections of Middle and East Tennessee no storage was available and the providing of such by the cooperative filled the need of farmers for storage for home use and for a small surplus to sell on the local market.

At other places cooperatives were organized because the dealers were thought to be taking too wide a margin or were not paying enough attention to grade differentials. No data are available as to the fairness of the present dealers' margins, though there is thought to be some room for reducing them, as well as improving grades. However, practically all the associations organized for these purposes are inactive now.

Selling - Cooperative selling has almost ceased. Most of the West Tennessee associations have failed. The members of a large majority of the others are selling individually on the local markets. In some cases the manager acts as a broker for the member and the buyer. In others, except the Algood Association, the members sell where, when, and how they please.

Pooling has been practically discontinued. Two types of pools were used, the seasonal and the short pool (day and car). There are objections to each type but the seasonal pool, when proper financing is provided and a differential is made for the length of time potatoes are stored, appears to be best adapted when efficiency of operation and reduction of risk in marketing are considered. An intermediate pool of about a month in length may be advisable in some cases.

Operation and Management - The associations can be classified into three groups according to their original functions: (1) those that store only, (2) those that sell only, and (3) those that both store and sell. Very few of the West Tennessee associations stored for their members. Practically all of those in Middle and West Tennessee performed this function.

The storage houses were financed largely by loans from local banks, secured by collateral notes of the members and the storage property. Payment, in most cases, was to be made in 5 equal annual installments from the profits from storage. In a few cases each member was held responsible for paying for his stock. In both cases the house was to be owned by the members, but not often in the proportion to patronage. This caused some dissatisfaction, since in most cases the storage house either had been or was to be paid for from profits from storing.

Dividends on fixed capital were sometimes limited to 6%. In a few cases they were limited to the profits. In one association this had varied from 7% to 20%.

Present Activity - Only 31 of the 50 associations studied are now active. Twenty-six are located in Middle and East Tennessee; and are principally cooperative storage propositions. Those that claim to be selling cooperatively sell the assembled product to a local dealer, in nearly all instances, and even that is entirely voluntary on the part of the individual members. Of the active associations a majority are in a declining condition. Possibly a half dozen are on the verge of failure.

Only 3 of the 19 inactive associations had a volume that permitted very much shipment to the terminal markets.

The Causes of Failure - (1) The associations were unable to make cash advances to pool members. The private dealers paid cash on delivery at the local shipping point.

(2) In some cases the associations were unable to perform any real

services. Local markets furnished outlets for the few sweet potatoes grown. Often the potatoes were sold to a local dealer after they were assembled from the members at no better price than individual members could get selling alone, which they could do if they so desired.

(3) The board of directors were often negligent of their duties, and the managers were sometimes incompetent. The members lacked confidence in the management, which made it easier for the dealer competition to succeed.

(4) Members lacked the "stickability" necessary to hold their organization together in the face of low returns on a few shipments and dealer competition. They placed their hopes too strongly on getting higher prices than the dealers were paying.

(5) Inferior grading and packing was partly the cause of these low returns, as well as the relatively high per bushel cost of marketable potatoes, both of which were contributing causes of failure.

(6) Some associations were organized - mainly for storage - in new producing areas, where the promotion of production was not justified. This crop did not apparently fit well into the cropping system. The growers and business men were attempting to find a cash crop that would increase the farm income.

(7) Some other associations should probably not have been organized at that time due to a general lack of interest among the growers. Such a small number were interested as to render the association ineffective.

(8) The factors mentioned above, together with increased cotton prices, resulted in such a small volume as to make successful operation for either storage or distribution impossible.

(9) Other factors contributing to the failure of some associations were: dealers paying prices slightly above the market price, loss of storage house and potatoes from fire, failure to collect for shipments, interference

from outsiders, manager become independent buyer (but only after the volume has decreased greatly), loss of potatoes from lack of proper storage facilities.

3. The Need for Further Cooperation

There is little, if any, need for cooperatives to promote further production. Cooperation is not needed to provide storage in West Tennessee. Storage at fair charge is available.

There are possibilities of getting higher returns for growers through improvement of grading, packing, and control of black rot, and otherwise making it possible for the growers to put out a better quality product.

The attempts at reduction of dealers' margins may prove disappointing. Costs may be reduced slightly by the elimination of some of the many local agencies. A cooperative should prove beneficial if, through competition with private agencies, economies could be gained by increased efficiency. There is need for further research on dealer costs and margins in selling and storing Tennessee sweet potatoes if sound conclusions are to be reached.

An association could be of service in some areas by purchasing hampers, seeds, fertilizers, and possibly some other farm supplies.

4. Success Factors

Volume sufficient for efficient operation and distribution is necessary. This may be small for associations that perform only the storage function relative to the volume necessary for those that also distribute their product.

The association must be able to perform some needed service. This suggests the necessity of there being a real need for cooperative effort.

In addition to the need, the interest of the growers before organization should be genuine rather than artificial - the kind that has been created by over-enthusiastic promoters of "other cash crops".

An informed membership is believed necessary. Members should be thoroughly familiar with the possibilities, limitations, and problems of their respective associations. They should understand that their association will not be able to perform tricks of magic, but that they are grower-owned businesses that must be based upon sound business practices, the same as any other successful business.

In financing fixed assets it would be preferable for members to pay for their own stock rather than depend upon the profits from storage. Care should be used in selecting financially responsible members, otherwise the association may be embarrassed by their failure to pay for stock subscribed.

Cash advances to members will be necessary for potatoes sold through the association even on short pools. Failure to do this was one of the principal reasons for the failure of cooperative selling associations.

It is essential that the board of directors be capable and willing to direct. The members of the board should be selected with care.

For selling associations it is essential that the manager be familiar with markets and market conditions, and awake to the other problems of cooperative associations, particularly membership problems. He needs to be honest, conscientious, diplomatic, and thoroughly informed on the best business practices. A large volume would be necessary before an association could get the services of a capable manager.

The members must possess the stickability necessary to carry them through difficulties that are almost sure to arise - particularly dealer competition and low prices.

It is necessary that quality of product be maintained, and that payment to members be based upon quality.

Some of the storage practices that appear advisable are:

(1) Storage insurance should be carried on both the storage property and the product.

(2) Potatoes should not be stored in houses that are not adapted because of poor ventilation, inadequate protection from low temperatures, or otherwise.

(3) Care should be used in curing potatoes to prevent overheating, which is more likely to occur in the top of the house because of poor ventilation or excessive temperature of the house.

APPENDIX

APPENDIX A

Retail Quotations on Sweet Potatoes - Boston Market - 1922-1930

1922			1923			1924		
Week ending	Number pounds	Price, cents	Week ending	Number pounds	Price, cents	Week ending	Number pounds	Price, cents
Jan. 3	4	.25	Jan. 1	5	.25	Jan. 3	3	.25
10	4	.25	9	1	.05	9	1	.10-.12
17	3-4	.25	16	5	.25	15	1	.10-.12
24	3-4	.25	23	5	.25	22	1	.10
31	3-4	.25	30	5	.25	29	1	.10
Feb. 2	3	.25	Feb. 6	1	.05-.07	Feb. 5	1	.10
7	3-4	.25	13	1	.05	12	1	.10
14	3-4	.25	20	1	.05	19	1	.10
28	3	.25	27	1	.05	26	1	.10
Mar. 7	3	.25	Mar. 6	1	.05	Mar. 4	2	.25
14	3	.25	13	1	.05	11	-	-
21	3-4	.25	20	1	.05	18	2	.25
28	3-4	.25	27	5-7	.25	25	2	.25
Apr. 4	3-4	.25	Apr. 3	6	.25	Apr. 1	2	.25
11	3-4	.25	10	1	.05-.07	8	2	.25
18	3-4	.25	17	1	.05-.08	15	1	.15
25	3	.25	24	1	.05-.08	22	1	.15
May 2	3	.25	May 1	1	.08-.10	29	1	.10
9	3	.25	8	3 mostly	.25	May 6	1	.10
16	3-4	.25	15	1	.08-.10	13	-	-
23	4	.25	22	1	.08-.10	20	-	-
31	4-5	.25	29	3	.25	27	-	-
June 6	4	.25	June 5	2	.15	June 3	-	-
13	4	.25	12	3	.25	10	-	-
20	4	.25	19	3	.25	16	-	-
27	4	.25	26	-	-	24	-	-
July 6	-	-	July 3	-	-	July 1	-	-
11	-	-	10	-	-	8	-	-
18	2	.25	17	-	-	15	-	-
25	1	.10	24	1	.15	22	1	.15
Aug. 1	1	.10	31	2	.25	29	1	.15
8	-	-	Aug. 7	2	.25	Aug. 5	1(a)	.12½-.15
15	1	.06-.08-.10	14	1	.08-.10	12	1	.10-.15
21	1	.04-.05-.06	21	3	.25	19	1(a)	.10-.12½
29	1	.05-.06	28	3-4	.25	26	1	.07-.10
Sept. 5	1	.04-.05	Sept. 5	5-6	.25	Sept. 2	1	.07-.10
12	-	-	11	5-7	.25	9	3-4	.25
19	10 mostly	.25	18	6-7	.25	16	4-6	.25
26	8-10	.25	25	7-8	.25	23	4-5	.25
Oct. 3	8-12	.25	Oct. 2	7-8	.25	30	6	.25
10	10	.25	9	8-9	.25	Oct. 7	6	.25
17	10 mostly	.25	16	7-8	.25	14	5-6	.25
24	" "	.25	23	8	.25	21	6-7	.25
31	10-12	.25	30	7-8	.25	28	6	.25
Nov. 7	-	-	Nov. 6	7-8	.25	Nov. 4	4-7	.25
14	10-15	.25	13	7	.25	11	6	.25
21	10-15	.25	20	5-6	.25	18	6	.25
28	10-14	.25	27	4-5	.25	25	5	.25
Dec. 5	10	.25	Dec. 4	3	.25	Dec. 2	3	.25
12	10 mostly	.25	11	3	.25	9	3	.25
19	4-5	.25	18	3	.25	16	1	.10
27	5	.25	27	3	.25	23	1	.10
						30	1	.10

- No data

- continued -

(a) New potatoes

Retail Quotations on Sweet Potatoes - Boston Market - (continued)

1925			1926			1927		
Week ending	Number pounds	Price, cents	Week ending	Number pounds	Price, cents	Week ending	Number pounds	Price, cents
Jan. 6	1(a)	.15-.18	Jan. 5	1	.10	Jan. 4	4-6	.25
	1	.10	12	1	.08-.12	12	3-6	.25
13	1(a)	.15-.18	19	1	.08-.10	18	4-8	.25
	1	.10-.12	26	1	.08-.12	25	3-4	.25
20	1(a)	.15-.18	Feb. 2	1	.09-.12	Feb. 1	1	.05-.08
	1	.10-.12	9	1	.09-.12	8	1	.05-.08
27	-	-	16	1	.09-.12 ¹ / ₂	15	3-5	.25
Feb. 3	-	-	23	1	.09-.12 ¹ / ₂	23	3-4	.25
10	-	-	Mar. 3	1	.10	Mar. 1	3-4	.25
17	1	.10	9	1	.09-.12	8	3-6	.25
24	3	.25	16	1	.09-.12	15	3-4	.25
Mar. 3	1	.10	23	1	.09-.12	22	3-4	.25
10	1	.12	30	1	.09-.12 ¹ / ₂	29	1	.06-.08
17	1	.10-.12	Apr. 6	1	.10-.12 ¹ / ₂	Apr. 5	3-5	.25
24	1	.10-.15	13	1	.10-.12 ¹ / ₂	12	3-4	.25
31	1	.10-.15	20	1	.10-.15	20	1	.05-.10
Apr. 7	1	.10-.15	27	1	.09-.15	26	3-4	.25
14	1	.15	May 4	1	.09-.15	May 3	1	.06-.10
21	1	.15	11	1	.10-.15	10	3-5	.25
28	1	.15	18	1	.10-.12	17	1	.07-.10
May 5	-	-	25	1(a)	.07-.12 ¹ / ₂	24	1	.06-.10
12	-	-	June 1	1(a)	.07-.10	31	3-4	.25
19	-	-	8	1	.10-.15	June 7	1	.06 ¹ / ₂ -.10
26	-	-	15	1	.12-.12 ¹ / ₂	14	1	.05-.10
June 2	1	.15	22	1	.12	21	3-5	.25
9	-	-	29	-	-	28	1	.05-.10
16	-	-	July 6	scarce	.15	July 5	15	.45-1.25
23	-	-	13	-	-	12	1	.08-.10
30	-	-	20	-	-	19	1	.05-.10
July 7	-	-	27	1	.10-.12	26	1	.04-.07
14	-	-	Aug. 3	1	.10-.15	Aug. 2	1(a)	.10
21	-	-	10	1	.10-.15	1	1	.05-.10
28	-	-	17	1	.09-.15	9	1	.08-.10
Aug. 4	1	.10	24	1	.06-.10	16	1	.05-.10
11	?	.03-1.87	31	2-3	.25	23	1	.05-.10
18	2-3	.25	Sept. 7	2-3	.25	30	1	.04-.10
25	1	.03 ¹ / ₂ -.05-.08	14	1	.07-.10	Sept. 6	3-4	.25
Sept. 1	1	.05-.10	21	1	.04-.07	13	7-10	.25
8	1	.05-.10	28	3	.25	20	4-12	.25
15	1	.05	Oct. 5	3-4	.25	27	3-12	.25
22	1	.04-.08	13	3-10	.25	Oct. 4	1	.03-.05
29	1	.04-.05	19	4-9	.25	11	5-12	.25
Oct. 7	1	.05	26	4-9	.25	18	5-12	.25
13	1	.05	Nov. 2	4-10	.25	25	5-12	.25
20	1	.05-.06	9	4-10	.25	Nov. 1	5-12	.25
27	1	.05	16	4-10	.25	8	5-12	.25
Nov. 3	1	.05	23	4-9	.25	15	5-12	.25
10	1	.05	30	4-8	.25	22	5-10	.25
17	1	.05	Dec. 7	4-5	.25	29	5-10	.25
24	1	.05-.12	14	4-10	.25	Dec. 6	5-12	.25
Dec. 1	1	.06-.12	21	1	.04-.07	13	1	.05
8	1	.10-.15	28	3-6	.25	20	3-8	.25
15	1	.05-.15				27	4-6	.25
22	1	.08-.12						
29	1	.09-.12						

- No data

(continued)

(a) New potatoes

Retail Quotations on Sweet Potatoes - Boston Market - (continued)

1928			1929			1930		
Week ending	Number pounds	Price, cents	Week ending	Number pounds	Price, cents	Week ending	Number bushels	Price, dollars
Jan. 3	3-5	.25	Jan. 2	3-4	.25	Jan. 7	1	3.92-5.60
10	3-6	.25	8	1	.07-.10	14	1	2.80-5.60
17	3-8	.25	15	1	.07-.10	21	-	(b)
24	1	.07-.10	22	1	.07-.10	28	1	3.92-5.60
31	1	.07-.10	29	1	.08-.10	Feb. 4	1	3.92-5.60
Feb. 7	3-4	.25	Feb. 5	3-4	.25	11	1	3.92-5.60
14	1	.07-.10	12	3-4	.25	18	1	3.92-5.60
21	1	.07-.10	19	3-4	.25	25	1	3.92-5.60
28	1	.07-.10	26	3	.25	Mar. 4	1	3.92-5.60
Mar. 6	1	.07-.10	Mar. 5	3-4	.25	11	1	3.92-5.60
13	1	.08-.10	12	3-4	.25	18	1	3.92-5.60
20	1	.08-.10	19	3-4	.25	25	1	3.92-5.60
27	1	.08-.10	26	2-4	.25	Apr. 1	-	Not quoted
Apr. 3	1	.08-.10	Apr. 2	3-4	.25	8	1	3.92-5.60
10	1	.08-.10	9	1	.08-.10	15	1	3.92-5.60
17	1	.08-.10	16	1	.08-.10	22	1	3.92-5.60
24	1	.08-.10	23	1	.08-.10	29	1	3.92-5.60
May 1	1	.08-.10	30	1	.08-.10	May 6	1	3.92-5.60
8	1	.08-.09	May 7	1	.08-.10	13	1	3.92-5.60
15	1	.08-.10	14	1	.10	20	1	Not quoted
22	1	.08	21	few	.10	27	1	3.92-5.60
29	1	.08	28	few	.10	June 3	-	-
June 5	1	.08	June 4	few	.07-.10	10	-	-
12	few	.07-.08	11	-	-	17	-	-
19	few	.07-.08	18	3	.25	24	-	-
26	few	.07-.08	25	1	.10	July 1	-	-
July 3	-	-	July 2	-	-	8	-	-
10	scarce	.15	9	1	.06-.10	15	-	-
18	-	-	16	1(a)	.10-.18	22	1	5.04-6.72
24	-	-	23	1(a)	.09-.18	29	1	4.48-6.72
Aug. 1	-	-	30	1(a)	.09-.18	Aug. 5	1	4.48-6.72
7	-	-	1	1	.05-.08	12	1	4.48-8.40
14	1	.05-.12	Aug. 6	1(a)	.09-.15	19	-	(b)
21	1	.05-.12	13	1(a)	.07-.10	26	-	(b)
28	1	.05-.10	20	1	.06-.08	Sept. 2	1	2.80-3.36
Sept. 4	1	.04-.09	27	1	.03-.10	9	1	2.80-3.92
11	1	.04-.10	Sept. 3	1	.05-.10	16	1	2.80-3.36
18	1	.04-.05	10	3-6	.25	23	1	2.24-2.80
25	1	.03-.05	17	1	.03-.05	30	1	2.22-2.80
Oct. 2	5-10	.25	24	1	.03-.05	Oct. 7	1	1.96-2.80
9	5-10	.25	Oct. 1	1	.03-.05	14	1	1.96-2.24
16	5-12 $\frac{1}{2}$	.25	8	1	.03-.04	21	-	(b)
23	5-12 $\frac{1}{2}$	.25	15	8-10	.25	28	1	1.68-1.96
30	5-10	.25	22	10	.25	Nov. 5	-	(b)
Nov. 6	5-10	.25	29	6-10	.25	12	1	1.40-2.24
13	5-10	.25	Nov. 5	8-10	.25	18	1	1.68-2.24
20	5-10	.25	12	10	.25	25	1	1.68-2.24
27	5-10	.25	19	10	.25	Dec. 2	1	3.36-5.04
Dec. 4	3-8	.25	26	1	.03-.08	9	1	3.36-5.04
11	3-10	.25	Dec. 3	1	.03-.05	16	1	3.36-5.04
18	1	.05-.10	10	1	.03-.08	23	1	3.36-5.04
			17	1	.05-.08	30	1	3.36-5.04
			24	1	.05-.10			
			31	1	.06-.10			

- No data.

(a) New potatoes.

(b) Report missing

APPENDIX B

Weekly Retail Prices of Irish Potatoes and Wholesale Prices
of Sweet Potatoes on Boston Market, 1930

Week ending Tuesday	Irish potatoes per bu.(a)	Wholesale price(c) of sweet potatoes per bu- shel (l.c.l. to jobbers)
January 7	\$1.96-2.52	\$1.25-1.75
14	2.12-2.52	.75-1.75
21	Report missing	1.25-1.90
28	1.80-2.72	1.25-1.90
February 4	1.80-2.20	1.25-1.85
11	2.04-2.20	1.25-1.90
18	1.96-2.40	1.25-1.90
25	1.72-2.20	1.25-1.90
March 4	1.88-2.28	1.00-2.00
11	1.80-2.28	1.25-1.85
18	1.64-2.20	1.85-2.15
25	1.40-2.00	1.65-2.15
April 1	1.64-1.80	1.50-2.25
8	1.96-2.28	1.25-2.25
15	1.96-2.28	(b)
22	1.96-2.20	(b)
29	2.00-2.12	(b)
May 6	1.96-2.60	(b)
13	1.72-2.60	(b)
20	1.88-2.28	(b)
27	1.72-2.40	(b)
June 3	1.72-2.28	(b)
10	1.72-2.36	(b)
17	1.56-1.88	(b)
24	1.40-1.80	(b)
July 1	1.80-3.00	(b)
8	1.56-3.00	(b)
15	1.40-2.20	(b)
22	1.40-2.20	(b)
29	1.32-2.20	(b)
August 5	1.16-2.20	(b)
12	1.20-2.00	(b)
19	Report missing	1.83-2.21
26	"	1.83-2.13
September 2	1.00-1.80	1.31-2.06
9	1.08-1.80	1.14-1.52
16	1.00-1.80	1.14-1.60
23	1.40-1.96	1.04-1.22
30	1.32-1.96	.84-1.22
October 7	1.40-1.96	1.07-1.26
14	1.24-1.96	.84-1.14
21	Report missing	.75-1.00
28	1.16-1.56	.75-1.00
November 5	Report missing	.69-.92
12	1.32-1.60	.85-.84
19	1.16-1.40	.75-.92
26	1.16-1.56	.75-1.75
December 2	1.32-1.56	1.37-2.00
9	1.32-1.56	1.25-2.00
16	1.32-1.56	.69-2.00
23	1.32-1.56	1.00-2.00
30	1.32-1.56	1.60-2.25

^a Calculated from quotations of Boston Retail Price Report furnished by Miss Eleanor W. Bateman, Div. of Markets, Mass. Dept. of Agr., Boston. ^b Reports ended April 8 and started August 13. ^c From U.S.D.A. Sweet Potato Commodity Reports. Range shows high and low quotations for week for sound stock.

APPENDIX C

Active Sweet Potato Associations in Tennessee, 1930

<u>Name</u>	<u>Address</u>	<u>County</u>
1. Algood Sweet Potato Association	Algood	Putnam
2. Belvidere Sweet Potato Growers Assn.	Belvidere	Franklin
3. Bledsoe County Sweet Potato Association	Pikeville	Bledsoe
4. Chapel Hill Sweet Potato Association	Chapel Hill	Marshall
5. Cheatham County Sweet Potato Association	Ashland City	Cheatham
6. Clarksville Sweet Potato Association	Clarksville	Montgomery
7. Clopton Sweet Potato Association	Brighton	Tipton
8. Cowan Sweet Potato Association	Cowan	Franklin
9. Decherd Sweet Potato Association	Decherd	Franklin
10. Dickson Sweet Potato Association	Dickson	Dickson
11. Estill Springs Sweet Potato Association	Estill Springs	Franklin
12. Franklin County Sweet Potato Association	Winchester	Franklin
13. Flintville Sweet Potato Association	Flintville	Lincoln
14. Henderson County Farm Bureau	Lexington	Henderson
15. Huntland Potato Association	Huntland	Franklin
16. Kenton Sweet Potato Association	Kenton	Obion
17. Kimmins Sweet Potato Association	Kimmins	Lewis
18. Madison County Farm Bureau	Jackson	Madison
19. Manchester Sweet Potato Association	Manchester	Coffee
20. Maple Hill Sweet Potato Association	Lebanon	Wilson
21. Marion County Sweet Potato Association	Jasper	Marion
22. McEwen Sweet Potato Association	McEwen	Humphreys
23. Mountairy Sweet Potato Association	Mountairy	Bledsoe
24. Oakland Sweet Potato Association	Oakland	Fayette
25. Portland Sweet Potato Association	Portland	Sumner
26. Sadlersville Sweet Potato Growers Assn.	Sadlersville	Robertson
27. Soddy Sweet Potato Association	Soddy	Hamilton
28. Sparta Sweet Potato Association	Sparta	White
29. Sweet Potato Housing Company	Kingston Springs	Cheatham
30. Tullahoma Potato Association	Tullahoma	Coffee
31. Wartrace Potato Association	Wartrace	Bedford

APPENDIX D

Inactive Sweet Potato Associations in Tennessee, 1930

<u>Name</u>	<u>Address</u>	<u>County</u>
1. Bradley County Sweet Potato Growers Assn.	Cleveland	Bradley
2. Clarksburg Sweet Potato Association	Clarksburg	Carroll
3. Cordova Vegetable Growers Association	Cordova	Shelby
4. Cottage Grove Sweet Potato Association	Cottage Grove	Henry
5. Dresden Sweet Potato Growers Association	Dresden	Weakley
6. Farmers' Sweet Potato Association	Henry	Henry
7. Greenfield Sweet Potato Association	Greenfield	Weakley
8. Gleason Sweet Potato Association	Gleason	Weakley
9. Henry County Sweet Potato Association	Paris	Henry
10. Hico Sweet Potato Association	McKenzie	Carroll
11. Lawrence County Sweet Potato Association	Lawrenceburg	Lawrence
12. Marshall County Sweet Potato Association	Lewisburg	Marshall

(continued)

<u>Name</u>	<u>Address</u>	<u>County</u>
13. Martin Sweet Potato Association	Martin	Weakley
14. Memphis and Shelby County Marketing Assn.	Memphis	Shelby
15. Mercer Truck Growers	Mercer	Madison
16. Mitchellville Sweet Potato Growers Assn.	Mitchellville	Sumner
17. Rutherford Sweet Potato Association	Rutherford	Dyer
18. Sharon Sweet Potato Association	Sharon	Weakley
19. Trezevant Sweet Potato Association	Trezevant	Carroll