

1963
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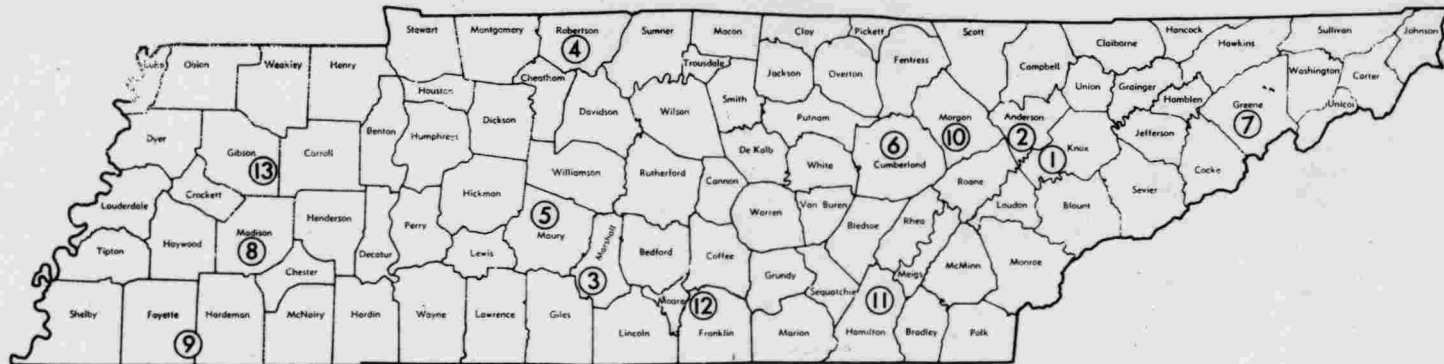
Seventy - Sixth Annual Report

**of the
Tennessee Agricultural
Experiment Station**

1963

**THE UNIVERSITY OF TENNESSEE
KNOXVILLE**

UNIVERSITY OF TENNESSEE AGRICULTURAL EXPERIMENT STATION



- 1 Main Station
- 2 U. T. - AEC Agricultural Research Laboratory

- 7 Tobacco Experiment Station
- 8 West Tennessee Experiment Station

BRANCH STATIONS

- 3 Dairy Experiment Station
- 4 Highland Rim Experiment Station
- 5 Middle Tennessee Experiment Station
- 6 Plateau Experiment Station

FIELD STATIONS

- 9 Ames Plantation
- 10 Cumberland Forestry Field Station
- 11 Friendship Forestry Field Station
- 12 Highland Rim Forestry Field Station
- 13 Milan Field Station

Seventy-Sixth Annual Report 1963

Tennessee Agricultural Experiment Station

Andrew D. Holt President of the University
Webster Pendergrass Dean of Agriculture
John A. Ewing Director
Eric Winters Associate Director

**THE UNIVERSITY OF TENNESSEE
KNOXVILLE**

LETTER OF TRANSMITTAL

Knoxville, Tennessee
January 2, 1964

To His Excellency, Frank G. Clement
Governor of Tennessee

SIR: I have the honor of transmitting herewith, on behalf of the Board of Trustees of the University of Tennessee, a report of the work and expenditures of the Agricultural Experiment Station for the year 1963.

This report is submitted in accordance with the law requiring that such a report be submitted annually by the administrators of the Experiment Station to the Governor of the State.

Respectfully submitted,
Andrew D. Holt, President

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FOREWORD

Included in this report are listings by departments of the following information:

- 1) Research projects active as of December 31, 1963;
- 2) Research projects terminated during the calendar year 1963;
- 3) Bulletins, articles, and reports prepared by Experiment Station staff members and published during the calendar year 1963.

In addition, this report contains the financial statement for the Agricultural Experiment Station covering the period July 1, 1962 to June 30, 1963. Also included is a list of the Experiment Station personnel for the calendar year.

FINANCIAL STATEMENT

July 1, 1962 — June 30, 1963

THE UNIVERSITY OF TENNESSEE AGRICULTURAL EXPERIMENT STATION

In Account With

The United States Appropriation under the Hatch Act
Amended and Non-Federal Funds

Receipts	Hatch	Non-Federal Funds
From United States Treasurer	\$1,029,583.58	
From Other Sources		\$1,708,447.81
Expenditures		
Personal Services	942,553.30	692,597.51
Travel	2,684.07	46,771.45
Equipment	21,873.05	168,081.51
Lands and Structures	22,798.72	53,680.17
Personnel Benefits		142,620.26
Supplies and Materials	18,569.55	352,849.23
All Other Expenses (contractual)	21,104.89	251,847.68
Total Expenditures	\$1,029,583.58	\$1,708,447.81

Active Projects

As of December 31, 1963, there were 132 active Hatch projects and 29 active State projects. Hatch projects are supported in part with Federal-Grant funds made available by Congress to the Agricultural Experiment Stations of the country under the Hatch Act Amended. State projects are supported entirely by University funds.

The headquarters of the Tennessee Agricultural Experiment Station is located on the agricultural campus of The University of Tennessee at Knoxville. The UT-AEC Agricultural Research Laboratory is located some 20 miles distant at Oak Ridge, Tennessee. In addition there are 11 other research centers which represent soil and climatic conditions in the major regions of Tennessee. These other research centers are listed at the end of this report, and the locations are shown on the inside front cover.

Many of the projects involving studies of soils, crops, and livestock may include experimental work at one or more of the outlying stations as well as at the main station in Knoxville.

Projects Terminated

During 1963, 13 projects were terminated. Reports on these projects have either been published or are being prepared for publication.

Publications

Published reports on research of the Tennessee Agricultural Experiment Station appear in Station Bulletins, in Tennessee Farm and Home Science, as well as in professional and technical periodicals and in various popular publications. There were 19 Station Bulletins published during the year. The number of technical, semi-technical, and popular articles prepared by staff members and published during 1963 was 112. In addition, staff members published 2 regional bulletins, 3 booklets, and 1 extension publication.

Copies of bulletins may be obtained by writing to the Editor, Agricultural Experiment Station, Knoxville. Copies of articles published in various journals and periodicals may sometimes be obtained by writing directly to the author.

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

Proj. No.	Research Project Titles
Hatch 6	Impact of Industrialization Upon Tennessee Agriculture
Hatch 16	Marketing and Utilizing Low-Quality Hardwoods.
Hatch 156	Fluid Milk Supplies, Prices, and Movement in the Lower Mississippi River Valley Marketing Area (contributing to Regional Proj. SM-10).
Hatch 159	Level-of-Living Adjustment of Rural Households in Tennessee (contributing to Regional Proj. S-44).
Hatch 175	Analysis of Movement of Livestock (Slaughter Hogs, Cattle and Calves) and Meat (Pork, Beef and Veal) in Tennessee (contributing to Regional Proj. SM-23).
Hatch 179	An Economic Appraisal of Farming Adjustment Opportunities in Selected Areas of Tennessee to Meet Changing Conditions; cooperative with TVA and the U.S. Department of Agriculture (contributing to Regional Proj. S-42).
Hatch 191	Alternative Cotton Marketing Practices and Systems for Increased Efficiency in Channels of Trade (contributing to Regional Proj. SM-24).
Hatch 192	Transportation of Grain and Grain Products in Tennessee (contributing to Regional Proj. SM-11).
Hatch 195	Changing Patterns of Milk and Milk Product Consumption in Tennessee.
Hatch 196	Capital Formation and Growth of Farm Supply Firms in Tennessee.
Hatch 197	Demand for Floricultural Products.
Hatch 205	An Economic Appraisal of Agricultural Credit used by Tennessee Farmers.
Hatch 206	Cost-Return Ratios in Farming in Tennessee.
Hatch 210	Organization and Structure of the Marketing System for Tennessee Broilers (contributing to Regional Proj. SM-26).
Hatch 212	Increasing Efficiency in the Tennessee Vegetable Industry.
ES-765 Title II	Impact of The Interstate Highway System on Movement of Farm Products Important to Tennessee Agriculture.
State 11	Changes in the Attitudes, Knowledge and Practices of Farmers Participating in a U.T.-TVA Trial-Acre Program; cooperative with TVA.

State	15	Impact of Mechanization on Costs and Returns in Cotton Production; cooperative with the Agricultural, Engineering, Agronomy, and Entomology Departments.
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Projects Concluded in 1963

Proj. No.	Title
Hatch 23	Buying Policies and Other Practices in the Tennessee Vegetable Industry; cooperative with the Department of Horticulture (contributing to Regional Proj. SM-8).
Hatch 189	Market Potential for Frozen Broilers in Tennessee; cooperative with the U.S. Department of Agriculture (contributing to Regional Proj. SM-15, Rev.).

Bulletins, Articles and Reports—1963

Atkins, S. W.

Economic Appraisal of Conservation Farming in the Grenada-Loring-Memphis Soil Area of West Tennessee. Tenn. Agric. Expt. Sta. Bul. 369, Oct. 1963.

Cleland, C. L.

Selected Population and Agricultural Statistics for Tennessee Counties. Tenn. Agric. Expt. Sta. Bul. 359, Jan. 1963.

Dubov, Irving, et al.

Hog and Pork Movements in the Southeast. Southern Cooperative Series Bul. 83, Jan. 1963.

Dubov, Irving

Efficiency and Welfare, Implications for Marketing Research. Proc., Marketing Sec., Assn. of Southern Agric. Workers, Memphis, Tenn., Feb. 1963.

Dubov, Irving and Roy Burgess

Costs of Processing Whole-Hog Sausage. Tenn. Farm & Home Sci. Prog. Rep. 46, June 1963.

Garbarino, A. J.

Consumer Preference for Floral Products in the Memphis Market. Tenn. Agric. Expt. Sta. Bul. 355, Jan. 1963.

Garbarino, A. J.

Attitudes and Preferences for Flowers in Memphis. Tenn. Farm & Home Sci. Prog. Rept. 45, March 1963.

Henderson, H. A., et al.

Economics of Farming Systems for Conservation on a Low Production Farm in the Upper East Tennessee Valley. Tenn. Agric. Expt. Sta. Bul. 362, May 1963.

Henderson, H. A.

Adjustment of Rural Resource Use and Characteristics to Economic Growth. Tenn. Agric. Expt. Sta. Bul. 364, May 1963.

Henderson, H. A.

Income Differences of Rural People in the Upper East Tennessee Valley. Tenn. Agric. Expt. Sta. Bul. 365, Aug. 1963.

Jones, Ted L.

Changes in Volume of Agricultural Credit Outstanding in Tennessee and the United States, 1950-1962. Tenn. Farm & Home Sci. Prog. Rep. 46, June 1963.

Parry, S. P.

Tennessee Grade A Herd Expansion. Tenn. Farm & Home Sci. Prog. Rep. 47, Sept. 1963.



At Ames Plantation, Grand Junction, visitors either examine the machine or discuss its work on cotton stalks after the cotton was harvested with a machine stripper. The stripper is shown in the insert. Note the unpicked cotton at right.

Parry, S. P.

Cottage Cheese — A Product with a Future. Tenn. Farm & Home Sci. Prog. Rep. 48, Dec. 1963.

Ranney, W. P.

Expected Returns from Selected Specialized Farming Systems in the Northern Highland Rim Area of Tennessee. Tenn. Agric. Expt. Sta. Bul. 375, Jan. 1963.

Ranney, W. P.

A Study of Farm Costs — Return Ratios. Tenn. Farm & Home Sci. Prog. Rep. 45, March 1963.

Raskopf, B. D.

Factors Affecting Per Capita Consumption of Frozen Broilers in Tennessee. Tenn. Agric. Expt. Sta. Bul. 358, Jan. 1963.

Raskopf, B. D.

Factors Associated with Cotton Ginning Problems in Tennessee. Tenn. Agric. Expt. Sta. Bul. 366, Sept. 1963.

Raskopf, B. D.

Characteristics of the Broiler Processing Industry in Tennessee. Tenn. Farm & Home Sci. Prog. Rep. 48, Dec. 1963.

Whatley, T. J. and R. J. Goddard

An 18,400-Acre Laboratory to Test Research Findings. The Cotton Trade Jour., Feb. 1963.



Operator's house on one tenant unit of the Farm Management Research Project at Ames Plantation. Cotton and corn fields are in the background.

AGRICULTURAL ENGINEERING

Proj. No.	Research Project Titles
Hatch 32	Chemical Weed Control; cooperative with the Agronomy and Horticulture Departments.
Hatch 172	Housing for Chicks; cooperative with the Poultry Department.
Hatch 202	Electrical Properties of Cotton Fiber; cooperative with the Physics Department.
Hatch 204	Factors Affecting Water Yields from Small Watersheds in Tennessee; cooperative with the Agronomy, Geology, and UT-AEC Departments, TVA, and Soil Conservation Service (contributing to Regional Proj. S-53).
Hatch 209	Development of an Okra Trimmer.
Hatch 214	Behavioral Responses of Chickens to Environmental Factors; cooperative with the Poultry Department.
Hatch 219	Pond Sealing; cooperative with the Agronomy Department.
State 7	Electric Treatment of Plant Materials; cooperative with the Agronomy, Food Technology, Home Economics Research Nutrition and Textiles and Clothing Departments, and the U.S. Department of Agriculture.
State 15	Impact of Mechanization of Costs and Returns in Cotton Production; cooperative with the Agricultural Economics and Rural Sociology, Agronomy, and Entomology Departments.
State 22	Effect of Structural Characteristics of Vertical Silos and Silo Equipment on Maintenance Costs, Silage Quality, and Milk Production; cooperative with the Dairy Department and the National Silo Association.
State 25	Land Forming for Drainage and Furrow Irrigation; cooperative with the Soil Conservation Service.

Projects Concluded in 1963

Proj. No.	Research Project Titles
Hatch 26	Food Processing Machinery Development.
Hatch 172	Housing for Chicks; cooperative with the Poultry Department.

Bulletins, Articles, and Reports—1963

- Bond, James, C. F. Winchester, L. E. Campbell, and J. C. Webb
Effects of Loud Sounds on the Physiology and Behavior of Swine.
ARS Tech. Bul. 1280, March 1963.
- Boyce, E. K. and M. Lynn Wylie
Effects of Wettable Powder Herbicides on Sprayer Components.
Proc. of the 15th Ann. South Weed Control Conf., 1962, pp. 62-68.
- Nelson, S. O., W. W. Wolf, and R. B. Stone
Design and Performance of a Water-Circulating Seed Germinator.
Proc. of the Assn. of Official Seed Analysts 52:81-88, 1962.
- Nelson, S. O., W. W. Wolf, and R. B. Stone
Seed Germinating Chamber Control. Transactions of the Amer.
Soc. of Agric. Engineers 6(2):158-162, 166, 1962.
- Roseman, A. S., J. T. Hogan, R. B. Stone, and J. C. Webb
Gas Plasma Irradiation of Rice, III. Influence on Brown Rice and
Rice Bran. Cereal Chem. 40(5):568-575, 1963.
- Sewell, John I. and Jan van Schilfgaarde
Prediction of Water Yields from Agricultural Watersheds. Soil Sci.
Soc. of Amer. Proc. 26(1):82-85, Jan. 1962.
- Sewell, John I. and Jan van Schilfgaarde
Digital Computer Solutions of Partially Unsaturated Steady-State
Drainage and Subirrigation Problems. Transactions of the Amer.
Soc. of Agric. Engineers 6(4):292-296, 1963.
- Sewell, John I. and Ben P. Hazlewood
Land Forming — A New Practice for Tennessee. Tenn. Farm &
Home Sci. Prog. Rep. 48, Dec. 1963.

AGRONOMY

Proj. No.	Research Project Titles
Hatch 28	Moisture Sorption Characteristics of the Major Soils of Tennessee and the Relation of Moisture Tensions to Plant Growth and Fertilizer Utilization; cooperative with TVA and the U. S. Department of Agriculture.
Hatch 32	Chemical Weed Control; cooperative with the Agricultural Engineering and Horticulture Departments.
Hatch 33	Evaluation of the Performance of Varieties of Field Crops.
Hatch 34	Corn Improvement; cooperative with the Entomology Department and the U. S. Department of Agriculture.
Hatch 37	Production of Burley Tobacco; cooperative with the U. S. Department of Agriculture.

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| Hatch | 38 | The Comparative Value and Relative Efficiency of Various Phosphate Fertilizers under Different Soil and Cropping Conditions. |
| Hatch | 39 | Improvement of Cultivated Grasses. |
| Hatch | 42 | Potassium Fertilization of Farm Crops on Different Soil Series in Tennessee. |
| Hatch | 45 | Movement and Persistence of Herbicides in the Soil (contributing to Regional Proj. S-18.) |
| Hatch | 47 | Establishment and Maintenance of Turf. |
| Hatch | 48 | Soil Survey of Tennessee to Help Determine Crop Adaptations and Management Requirements; cooperative with the U. S. Department of Agriculture. |
| Hatch | 49 | Determination of Residues from Certain Pesticides when Applied for the Normal and Experimental Control of Insects and Diseases of Fruits and Forage Crops in Tennessee; cooperative with the Entomology Department (contributing to Regional Proj. S-22). |
| Hatch | 55 | The Influence of Chemical, Physical, and Mineralogical Properties of Soils on Nutrient Availability and Plant Growth; cooperative with the U. S. Department of Agriculture and TVA (contributing to Regional Proj. S-14). |
| Hatch | 56 | Trace Elements in Tennessee Agricultural Crops. |
| Hatch | 78 | Use of Ionizing Radiations in Crop Improvement; cooperative with the UT-AEC Agric. Res. Lab. |
| Hatch | 79 | Production and Improvement of Cotton Varieties Suitable to Tennessee Conditions; cooperative with the U. S. Department of Agriculture. |
| Hatch | 163 | Culture of Dark Tobacco. |
| Hatch | 164 | Nitrogen Fertilization of Farm Crops. |
| Hatch | 183 | Crop Response to Liming. |
| Hatch | 184 | Effects of Environmental Factors on Ladino Clover and Orchardgrass Persistence (contributing to Regional Proj. S-47). |
| Hatch | 186 | Forage Crops Management: Establishment, Persistence, and Productivity. |
| Hatch | 204 | Factors Affecting Water Yields from Small Watersheds in Tennessee; cooperative with the Agricultural Engineering, Geology, and UT-AEC Departments, TVA, and Soil Conservation Service (contributing to Regional Proj. S-53). |

Hatch	208	Breeding for Improvement in Small Grains (wheat, oats, barley, and rye); cooperative with the Entomology and Plant Pathology Departments and the U. S. Department of Agriculture.
Hatch	211	Breeding and Genetics of Forage Crops.
Hatch	215	Breeding Methodology and Irradiation Investigations in Cotton; cooperative with the U. S. Department of Agriculture.
Hatch	219	Pond Sealing; cooperative with the Agricultural Engineering Department.
State	7	Electric Treatment of Plant Materials; cooperative with the Agricultural Engineering, Food Technology, Home Economics Research Nutrition, and Textiles and Clothing Departments, and the U. S. Department of Agriculture.
State	9	Land Reclamation.
State	15	Impact of Mechanization on Costs and Returns in Cotton Production; cooperative with the Agricultural Economics and Rural Sociology, Agricultural Engineering, and Entomology Departments.
State	57	Evaluation of New Plants; cooperative with the Horticulture Department.

Projects Concluded in 1963

Hatch	75	Breeding and Genetics of Crimson Clover.
Hatch	77	Breeding and Genetics of Lespedezas.

Bulletins, Articles, and Reports—1963

Andrews, Henry and E. K. Boyce

A New Venture in Teaching. *Tenn. Farmer*, 58:5-6, 1963.

Andrews, Henry

Effects of Petroleum Mulch and Application of Diuron, CIPC, Prometryne, and Dacthal Preemergence on Cotton. *Proc. 16th So. Weed Conf.*, 16:75-77, 1963.

Andrews, Henry

Effects of Atrazine and Tillage Methods on Corn Yields. *Proc. 16th So. Weed Conf.*, 16:75-77, 1963.

Duncan, E. N., J. B. Pate, and J. H. Turner

Performance of AHA Derivative Synthetic Varieties of Cotton. *Crop Sci.*, 3:233-234, 1963.

Fribourg, Henry A., and Van K. McCombs

Programs for Computing Agronomic Forage Data Using Electronic Data Processing Techniques. *Agron. Jour.*, 55:405-407, 1963.

Fribourg, Henry A.

Performance of Some Forage Crops Varieties, 1945-1962. *Tenn. Agric. Expt. Sta. Bul.* 371, 1963.

Fribourg, Henry A.

Summer Annual Grasses for Tennessee. *Sudangrass, Millet, Sorghums, Corn. Tenn. Agric. Expt. Sta. Bul.* 373, 1963.

Graves, Charles R.

1963 Performance Trials of Field Crop Varieties. *Tenn. Agric. Expt. Sta. Bul.* 372, 1963.

Josephson, L. M.

Early Prolific Corn Under Study for the Cornbelt. *Crops & Soils*, 15:17, Jan. 1963.



Phosphate mining in Middle Tennessee. The soil over the phosphate is removed and deposited on mined land to the left. The phosphate is loaded into trucks for transport to the plant. Reclamation of the mined land for crop production is under study by U-T.

- Lewis, Russell J. and H. C. Thomas
Adsorption Studies on Clay Minerals VIII. A Consistency Test of Exchange Sorption in the Systems Sodium-Cesium-Barium Montmorillonite. Jour. of Physical Chem., 67:1781, 1963.
- Lewis, R. J. (by N. T. Coleman, R. J. Lewis, and D. Craig)
Sorption of Cesium by Soils and its Displacement by Salt Solutions. Soil Sci. Soc. of Amer. Proc., 27:290, 1963.
- Lewis, R. J. (by N. T. Coleman, D. Craig, and R. J. Lewis)
Ion Exchange Reactions of Cesium. Soil Sci. Soc. of Amer. Proc., 27:287, 1963.
- Long, O. H. and J. R. Overton
Buttonclover as a Green Manure Crop for Cotton. Tenn. Agric. Expt. Sta. Bul. 370, 1963.
- Long, O. H., E. J. Chapman and E. W. Counce
Fertilizer Experiments on Wheat. Tenn. Farm & Home Sci. Prog. Rep. 47, Sept. 1963.
- Longwell, T. J., W. L. Parks, and M. E. Springer
Moisture Characteristics of Representative Tennessee Soils. Tenn. Agric. Expt. Sta. Bul. 367, 1963.



Field scale evaluation of cotton varieties at Milan Field Station to determine any differences in variety behavior when they are picked mechanically.

Osborne, T. S.

(See UT-AEC Agricultural Research Laboratory.)

Parks, W. L. (by P. H. Parham and W. L. Parks)

The Effect of Irrigation and Nitrogen upon Tomato Yields. Tenn. Farm & Home Sci. Prog. Rep. 47, March 1963.

Parks, W. L. and J. A. Odom

Timothy Forage Yields as Affected by Nitrogen Fertilization. Tenn. Farm & Home Sci. Prog. Rep. 47, March 1963.

Parks, W. L.

Top-Yield Cotton Fertilization. The Tenn. Farmer, p. 10, March 1963.

Parks, W. L., and Wm. Walker

FERTILIZER: How You Put it on is Just as Important as How Much. The Tenn. Farmer, p. 7, March 1963.

Parks, W. L. and J. A. Odom

9 Years at 90 Bushels Per Year, Tenn. Farm & Home Sci. Prog. Rep. 47, June 1963.

Parks, W. L. and H. B. Smith

How Much Water to Produce Your Crops? Crops & Soils, pp. 25-26, June-July 1963.



Experiments with cotton and soybeans on Grenada soil at Milan Field Station.

Parks, W. L. and T. J. Longwell

Soil Moisture — Tennessee's Greatest Water Reservoir. Tenn. Farm & Home Sci. Prog. Rep. 47, Sept. 1963.

Parks, W. L.

Make Your Irrigation Dollars Count. Ford Farming, p. 22, Summer 1963.

Parks, W. L. and J. A. Odom

90 Bushels Per Acre . . . Per Year . . . For 9 Consecutive Years. Better Crops with Plant Food, pp. 38-40, Sept.-Oct., 1963.

Parks, W. L., B. C. Nichols, E. J. Chapman, R. L. Davis and J. H. Felts
Response of Burley Tobacco to Irrigation and Nitrogen. Tenn. Agric. Expt. Sta. Bul. 368, Oct. 1963.

Pate, J. B. and M. J. Constantin

In Tennessee Researchers Concentrate on Hybrids, Irradiation. The Cotton Trade Jour. and Agric. Reporter, Mid-South Supplement, 43:34-35, 1963.

Pate, J. B. and E. N. Duncan

Mutations in Cotton Induced by Gamma-irradiation of Pollen. Crop Sci., 3:136-138, 1963.

Seatz, Lloyd F. and Chauncy P. Stanberry

Advances in Phosphate Fertilization in "Fertilizer Technology and Usage." Soil Sci. Soc. of Amer., pp. 155-188, 1963.

Seatz, Lloyd F. and Athan J. Sterges

Corn Response to Time and Rate of Phosphorus Applications. Soil Sci. Soc. of Amer. Proc., 27:669-670, 1963.

Underwood, J. K.

Tennessee Lawns, Tenn. Agric. Ext. Ser. Pub. 326 Revised, 1963.

ANIMAL HUSBANDRY-VETERINARY SCIENCE

Proj. No.	Research Project Titles
Hatch 12	Type and Breed as Factors Influencing Beef Carcass Characteristics and Consumer Acceptance.
Hatch 50	The Effects of Certain Atmospheric Effluents Upon the Growth and Composition of Plants, and Upon Animal Life, at Locales in East and Central Tennessee.
Hatch 52	The Evaluation of Different Pasture Species in Various Combinations and at Varying Rates of Nitrogen Fertilization as Reflected in Beef Cattle Gains and Forage Yields.
Hatch 58	Studies of Endocrine Relationships in Farm Animals — Swine.

- Hatch 61 The Improvement of the Producing Ability of Beef Cattle; cooperative with the U. S. Department of Agriculture (contributing to Regional Proj. S-10).
- Hatch 63 Mineral Metabolism in Animals: I. Absorption, Distribution, and Physiological Behavior of Calcium and Phosphorus in Farm Animals; cooperative with the UT-AEC Agric. Res. Lab.
- Hatch 65 The Detection of Animals Heterozygous for Recessive Bovine Dwarfism; cooperative with the U. S. Department of Agriculture and the UT-AEC Agric. Res. Lab.
- Hatch 66 The Effects of Radiation on Reproductive Physiology in Farm Animals; cooperative with the UT-AEC Agric. Res. Lab.



Two members of the University of Tennessee's Department of Animal Husbandry-Veterinary Science, Dr. G. M. Merriman (left) and Prof. E. R. Lidvall, prepare to examine the nose of a hog for signs of atrophic rhinitis. Professor Lidvall headed a team of U-T workers who conducted preliminary studies at Ames Plantation on the detection and control of this disease. The team formulated a plan which may allow farmers to control or eliminate atrophic rhinitis without completely replacing their foundation herd.

Hatch	67	Ripening of Beef from Cattle Produced Under Different Feeding Methods as Related to B-Vitamin Content; co-operative with Home Economics.
Hatch	68	Carcass Value Investigations with Beef.
Hatch	69	Expanded Study and Evaluation of Diagnostic Measures in Vibrio Fetus Infection of Cattle and Sheep (contributing to Regional Proj. S-30).
Hatch	70	Evaluation of the Adaptability of Existing Breeds and Commercial Types of Sheep for the Production of Early Milk Fat Lambs (contributing to Regional Proj. S-29).
Hatch	71	Factors Affecting Feed Utilization by Ruminants.
Hatch	72	Evaluation of Roughages for Beef Cattle.
Hatch	73	The Improvement of the Producing Ability of Swine Through Performance Testing and Breeding Methods.
Hatch	74	Evaluation of Control Measures Against Anaplasmosis; cooperative with the U. S. Department of Agriculture and Tennessee Department of Agriculture.
Hatch	176	Performance of Growing-Finishing Swine on Concrete and Pasture.
Hatch	218	Performance of Beef Cows as Affected by Initial Winter Condition and Level of Winter Feeding.
State	2	Swine Testing.
State	3	Effects of Fluorine Levels of Soil and Water on Grazing Cattle Under Different Systems of Management.
State	20	Evaluation of Methods of Producing Beef.

Projects Concluded in 1963

Hatch	60	Studies of Endocrine Relationships in Farm Animals — Beef Cattle.
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Bulletins, Articles, and Reports—1963

Bell, M. C.

(See UT-AEC Agricultural Research Laboratory.)

Cole, J. W., C. B. Ramsey, C. S. Hobbs and R. S. Temple

Effects of Type and Breed of British Zebu and Dairy Cattle on Production, Palatability, and Composition. I. Rate of Gain, Feed Efficiency, and Factors Affecting Market Value. Jour. An. Sci., 22(3):702-707, 1963.

Griffin, S. A. and G. M. Merriman

Thiofuradene as an Anthelmintic and Growth Stimulant for Swine. *Jour. An. Sci.*, 22(3):575-578, 1963.

Griffin, S. A. and C. C. Chamberlain

Sources of Phosphorus for Pigs. *Tenn. Farm & Home Sci. Prog. Rep.* 46, 1963.

Hall, O. Glen

Trends in Phosphorus in the Artificial Rumen. *Feedstuffs*, 35(31); 1963.

Hall, O. Glen and J. Hugh Felts

Comparative Feeding Value of Different Silages for the Production of Slaughter Beef Heifers. *Tenn. Agric. Expt. Sta. Bul.* 360, May 1963.

Lidvall, E. R.

Tested Duroc Sires. *Duroc News*, July, 1963.

Lidvall, E. R., and H. J. Smith

Gilts "Star" in Five-Step Program to Better Hogs. *Tenn. Farmer*, March, 1963.

Merriman, G. M.

Pregnancy Determinations in Beef Cows. *Tenn. Farm and Home Sci. Prog. Rep.* 46, 1963.

Murphree, R. L.

(See UT-AEC Agricultural Research Laboratory.)

Ramsey, C. B. and James D. Kemp

Inhibiting Action of Oxidized Pork Fat on the Germination of Spores of *Bacillus Subtilis*. *Jour. of Food Sci.*, 28(5):562-565, 1963.

Ramsey, C. B., J. W. Cole, Bernadine H. Meyer, and R. S. Temple

Effects of Type and Breed of British Zebu and Dairy Cattle on Production, Palatability and Composition. II. Palatability Differences and Cooking Losses as Determined by Laboratory and Family Panels. *Jour. An. Sci.*, 22(4):1001-1008, 1963.

Rosas, Hermel and O. Glen Hall

Rumen Microbial Activity as Affected by Thiabendazole. *Tenn. Farm & Home Sci. Prog. Rep.* 47, 1963.

Smith, H. J. and J. B. McLaren

Use of Performance Records and Selection to Produce Meat-Type Hogs. *Tenn. Farm & Home Sci. Prog. Rep.* 45, 1963.

Smith, H. J., and E. R. Lidvall

Evaluating Test Station Swine Records. *Southern Hog Reporter*, Jan. 14, 1964.

DAIRY

Proj. No.	Research Project Titles
Hatch 89	The Effects of Processing and Handling Upon the Livability and Fertility of Bull Spermatozoa.
Hatch 92	Development of Strains of Purebred Jerseys Especially Adapted for High Milk Production Under Maximum Grazing and Forage Conditions; cooperative with U. S. Department of Agriculture (contributing to Regional Proj. S-49).
Hatch 93	Effect of Variations in Growth Rates and Feeding Practices During Growth of Dairy Heifers on Their Lactation Performance.
Hatch 150	Raising Dairy Calves.
Hatch 151	Importance of the Dry Period and Management of Dairy Cows During the Dry Period.
Hatch 161	Evaluation of Forages for Dairy Cattle.
Hatch 165	Quality and Shelf Life of Dairy Products in the Marketing Channels.



Some of the dairy herd facilities at the Middle Tennessee Experiment Station. The two 16- x 50-foot silos in the foreground are being used to determine the value of a silo roof. Different silo filling techniques and various sealing compounds for silo walls are also being studied.

Hatch	199	Absorption of Minerals in Relation to Gastrointestinal Tissue and Ingesta Characteristics in the Dairy Cow; cooperative with the UT-AEC Agric. Res. Lab.
Hatch	200	Effect of Processing Methods on Dairy Product Quality.
Hatch	220	Microbiological Aspects of Mastitis.
Hatch	221	Effect of Whole-Body Gamma Irradiation on Milk Cows and Milk Production; cooperative with the UT-AEC Agric. Res. Lab.
State	22	Effect of Structural Characteristics of Vertical Silos and Silo Equipment on Maintenance Costs, Silage Quality, and Milk Production; cooperative with the Agricultural Engineering Department and the National Silo Association.
State	24	Feeding Levels During Lactation.
State	29	Free Stall vs. Open Shed in a Loose Housing Arrangement

Projects Concluded in 1963

Proj. No.	Research Project Titles
Hatch 88	Feeding Thyroidally Active Materials to Dairy Cows.
Hatch 198	Lactic Culture Evaluation.

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ENTOMOLOGY

Proj. No.	Research Project Titles
Hatch 34	Corn Improvement; cooperative with the Agronomy Department and the U. S. Department of Agriculture.
Hatch 49	Determination of Residues from Certain Pesticides When Applied for Normal and Experimental Control of Insects and Diseases of Fruits and Forage Crops in Tennessee; cooperative with the Agronomy Department (contributing to Regional Proj. S-22).
Hatch 96	Insects Affecting Alfalfa (contributing to Regional Proj. S-55).
Hatch 98	Life History, Ecology, and Control of Major Cotton Insects.
Hatch 203	Control of Insects Attacking Nursery Plants.
Hatch 208	Breeding for Improvement in Small Grains (Wheat, Oats, Barley, and Rye); cooperative with the Agronomy and Plant Pathology Departments and the U. S. Department of Agriculture.
Hatch 213	Biology, Distribution, and Control of Corn Insects.
State 15	Impact of Mechanization on Costs and Returns in Cotton Production; cooperative with the Agricultural Economics and Rural Sociology, Agricultural Engineering, and Agronomy Departments.

State	21	Evaluation of New Insecticides
State	28	Life History of the White Fringed Beetle.

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The Correlation Between Lipid Content and Per Cent Mortality of the Alfalfa Weevil to Heptachlor and Malathion. *Jour. Econ. Ent.* 56(2): 1963.
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FOOD TECHNOLOGY

Proj. No.	Research Project Titles
Hatch 173	Group D. and Other Streptococci in Frozen Foods.
Hatch 177	Flavanoid Pigments and Their Degradation in Processed Fruit and Vegetable Products.
Hatch 193	Improving Firmness of Frozen Vegetables.
State 7	Electric Treatment of Plant Materials; cooperative with the Agricultural Engineering, Agronomy, and Home Economics Research Nutrition and Textiles and Clothing Departments and the U. S. Department of Agriculture.

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FORESTRY

Proj. No.	Research Project Titles
Hatch 102	Forest Management
Hatch 103	A Study of Tree Species Adapted to the Different Forest Regions of Tennessee.
Hatch 106	Forest Tree Breeding.

Hatch	107	Relationship of Soil and Other Site Factors to Forest Composition and Productivity.
Hatch	185	Forest Tree Genetics (contributing to Regional Proj. S-23).
Hatch	207	Forest Tree Fertilization.
State	8	Wood Preservation.
State	12	Fertilization of Shade Trees on Lawn; cooperative with the Horticulture Department.

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Beavers, J. T. and E. Thor

Effects of Grazing on Young Pine Plantations, Ames Plantation — 1959-62. Tenn. Farm & Home Sci. Prog. Rep. 45, 1963.

Kring, J. S.

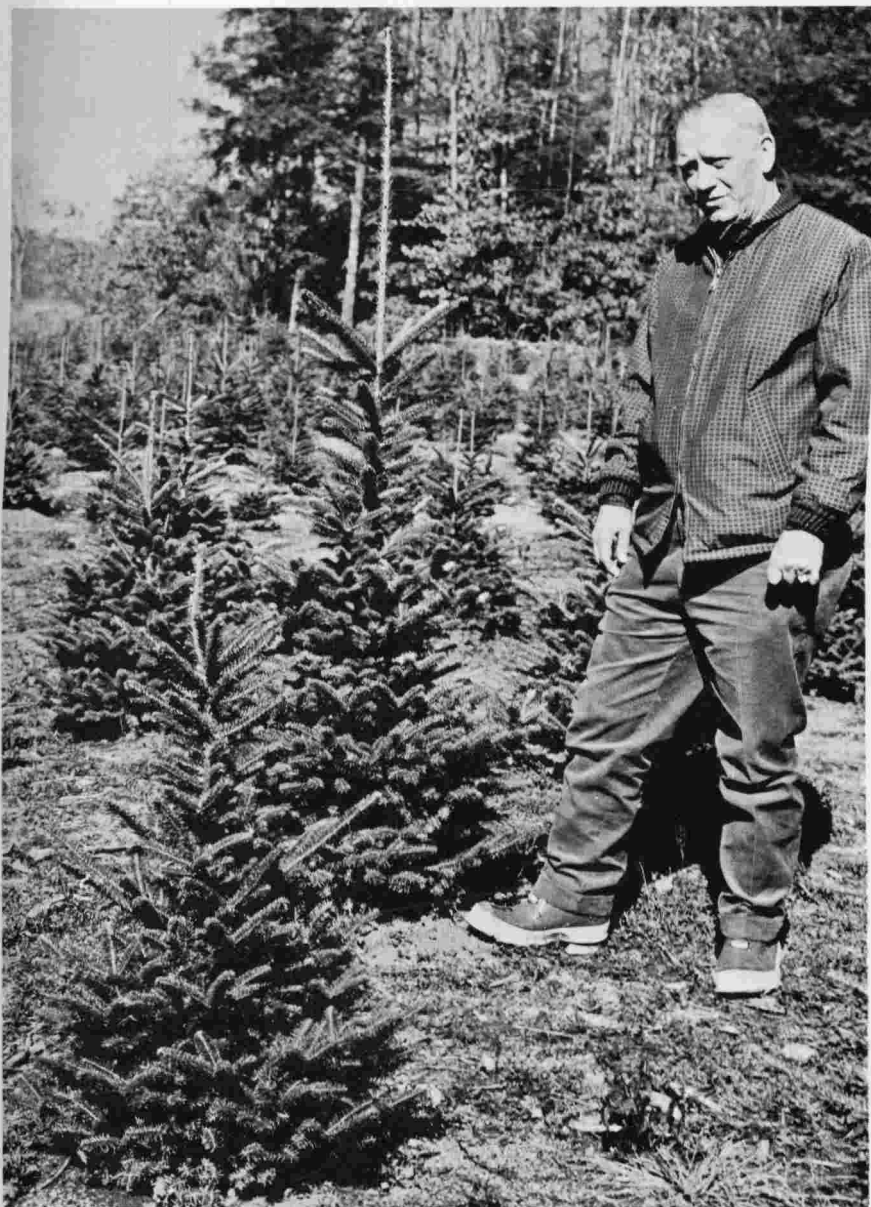
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Cash in on the 1969 Christmas Season. The Tenn. Farmer & Home-maker, Jan. 1963.



An experimental loblolly pine planting at the Ames Plantation, Grand Junction. Some cull hardwoods which were killed with silvicide several years ago are still standing.



A Carter County land owner stands in his Fraser fir Christmas tree plantation located 3,700 feet above sea level. The trees, planted 4 years before, will be ready for market in another 2 years. The University of Tennessee Agricultural Experiment Station is conducting research with species which customers indicate they prefer to buy — Fraser fir, Norway spruce, and white pine.

HOME ECONOMICS RESEARCH**CHILD DEVELOPMENT AND FAMILY RELATIONSHIPS**

Proj. No.	Research Project Titles
Hatch 158	Educational and Vocational Goals of Rural Youth in Tennessee (contributing to Regional Proj. S-48).

FOODS AND INSTITUTION MANAGEMENT

Proj. No.	Research Project Titles
Hatch 67	Ripening of Beef from Cattle Produced Under Different Feeding Methods as Related to B-Vitamin Content; co-operative with the Animal Husbandry-Veterinary Science Department.
Hatch 201	Effect of Preparation Procedures on Fatty Acids in Foods.

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**HOME MANAGEMENT, EQUIPMENT,
AND FAMILY ECONOMICS**

Proj. No.	Research Project Titles
Hatch 217	Economic Provisions for Old Age Made by Rural Families (contributing to Regional Proj. S-56).

Projects Concluded in 1963

Proj. No.	Research Project Titles
Hatch 170	Decision-Making Factors in Consumer Buying of Dairy Products (contributing to Regional Proj. SM-13).

NUTRITION

Proj. No.	Research Project Titles
Hatch 108	Measurement and Interpretation of Bone Density.
Hatch 110	Metabolism of Calcium, Phosphorous, and Magnesium in Preadolescent Children Fed Diets of Plant Origin (contributing to Regional Proj. S-28).
State 7	Electric Treatment of Plant Materials; cooperative with the Agricultural Engineering, Agronomy, Food Technology, Home Economics Research Textiles and Clothing Departments, and the U. S. Department of Agriculture.
State 18	Mucopolysaccharides and Cellular Lipoproteins in Vitamin E. Deficiency.

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- Brown, R. G., Grace M. Button, and J. T. Smith
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TEXTILES AND CLOTHING

Proj. No.	Research Project Titles
Hatch 113	The Effect of Selected Properties of Raw Cotton Upon Quality and Serviceability; cooperative with the U. S. Department of Agriculture (contributing to Regional Proj. SM-18).
State 7	Electric Treatment of Plant Materials; cooperative with the Agricultural Engineering, Agronomy, Food Technology, Home Economics Research Nutrition Departments, and the U. S. Department of Agriculture.

HORTICULTURE

Proj. No.	Research Project Titles
Hatch 32	Chemical Weed Control; cooperative with the Agricultural Engineering and Agronomy Departments.
Hatch 117	Screening Pear Seedlings for Fireblight Resistance.

Hatch	119	Breeding and Selection of Blackberries, Including Dew-berries.
Hatch	123	Mineral Nutrition of Vegetable Crops.
Hatch	125	Mineral Nutrition of Fruit Crops
Hatch	126	Vegetable Variety Investigations.
Hatch	127	Fruit Variety Investigations.
Hatch	128	Propagation of Fruit and Ornamental Plants.
Hatch	154	Kind and Variety Investigations of Ornamentals.
Hatch	157	Management and Evaluation of Plants for Hedges, Screens, and Windbreaks.
Hatch	167	Breeding Tomatoes for Tennessee Markets With Emphasis on Earliness and Disease Resistance; cooperative with the Plant Pathology Department.
Hatch	174	Breeding Strawberries for Tennessee Markets with Emphasis on Climatic Adaptability and Disease Resistance; cooperative with the Plant Pathology Department.



Office building (left), and greenhouse and headhouse (right), at the Tobacco Experiment Station, Greeneville. In the foreground are experimental plantings of flower borders and turfgrasses.

Hatch	187	Storage and Handling of Evergreen Nursery Stock.
State	12	Fertilization of Shade Trees on Lawns; cooperative with the Forestry Department.
State	16	Development of Lima Beans Having Specific Seed Coat Colors.
State	57	Evaluation of New Plants; cooperative with the Agronomy Department.

Projects Concluded in 1963

State	17	Effect of Pruning Cut on Development of Shoots and Spurs of Apples.
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The temperature at which sweet potatoes are stored and the type of storage container used have an important effect on their cooking qualities. Further, sweet potatoes may be stored over long periods without severe quality deterioration if proper conditions are provided. Here, Dr. George M. Campbell of the Department of Horticulture is checking the respiration rate of a lot of potatoes by machine at the end of 270 days of storage.

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Pruning and Maintenance of Form of Hedge Plants. Southeastern Nurserymen, April 1963.

PHYSICS

Proj. No.	Research Project Titles
Hatch 131	Evaluation of Cotton Fiber Properties for the Plant Breeder (contributing to Regional Proj. S-1).
Hatch 188	Measurement of Standard Cotton Fiber Properties.
Hatch 202	Electrical Properties of Cotton Fiber; cooperative with the Agricultural Engineering Department.

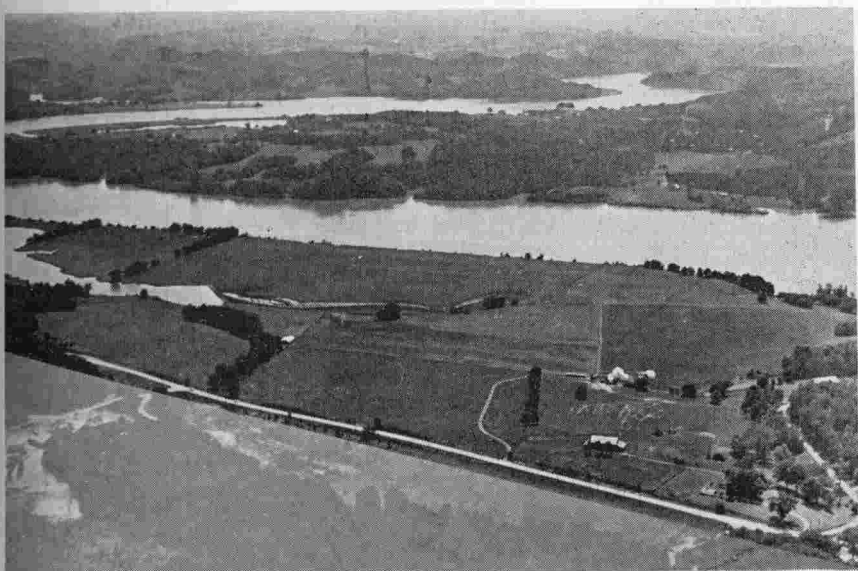
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PLANT PATHOLOGY

Proj. No.	Research Project Titles
Hatch 132	Breeding Disease-Resistant Tobacco; cooperative with the U. S. Department of Agriculture.
Hatch 135	Control of Cotton Verticillium Wilt; cooperative with the U.T.-AEC Res. Lab. and the U. S. Department of Agriculture.
Hatch 138	Biology and Control of Plant Parasitic Nematodes; cooperative with the U. S. Department of Agriculture (contributing to Regional Proj. S-19).
Hatch 139	Associations of Soil Microorganisms as Related to Plant Diseases (contributing to Regional Proj. S-26).



The new Plant Science Farm of 212 acres was purchased in April, 1963. It is 3 miles south of the U-T Agricultural Campus. The farm is in the area between the road (Hwy. 129) and the river. This farm will be used by the Departments of Agronomy, Horticulture, Forestry, Entomology, and Plant Pathology in their field research programs. The farm contains both bottom and upland soils and is suitable for a wide variety of plant and soil science experiments. This facility will provide for the centralization of much of the field research that formerly was conducted at several locations.

Hatch	140	Evaluating New Fungicides.
Hatch	167	Breeding Tomatoes for Tennessee Markets with Emphasis on Earliness and Disease Resistance; cooperative with the Horticulture Department.
Hatch	174	Breeding Strawberries for Tennessee Markets with Emphasis on Climatic Adaptability and Disease Resistance; cooperative with the Horticulture Department.
Hatch	208	Breeding for Improvement in Small Grains (wheat, oats, barley, and rye); cooperative with the Agronomy and Entomology Departments and the U. S. Department of Agriculture.
State	4	The Identification and Control of Strawberry Virus Diseases; cooperative with the Tennessee Department of Agriculture.
State	23	Tobacco Diseases

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POULTRY

Proj. No.	Research Project Titles
Hatch 144	Influence of Environment on Performance of Hens.
Hatch 147	Relationship of Protein to Energy for Laying Hens.
Hatch 152	Radiation Effects on the Growth of Broilers; cooperative with the UT-AEC Agric. Res. Lab. (contributing to Regional Proj. S-41).
Hatch 155	The Influence of Light Upon Performance of Domestic Chickens.
Hatch 160	Improving Diets for Broilers and Roasters.
Hatch 172	Housing for Chicks; cooperative with the Agricultural Engineering Department.
Hatch 182	Evaluation of Poultry Disease Medicants.
Hatch 194	Secondary Infections from Intestinal Bacterial Microflora.
Hatch 214	Behavioral Responses of Chickens to Environmental Factors; cooperative with the Agricultural Engineering Department.
Hatch 216	Xanthophyll in Poultry Pigmentation.
State 1	Random Sample Testing of Chickens Available to Tennessee Poultrymen.

Projects Concluded in 1963

Hatch 146	Amino Acid Supplementation of Hydrolyzed Poultry Feathers for Use in Poultry Feed.
Hatch 168	Effects of Restricting Feed Intake to Growing Pullets.
Hatch 178	Value of Various Grades of Grains for Poultry.

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UT-AEC AGRICULTURAL RESEARCH LABORATORY

Proj. No.

Research Project Titles

UT-AEC 101a Clinical Medicine in Radiation Studies.

UT-AEC 101b Physiology of Reproduction.

UT-AEC 101c Radiation Pathology.

UT-AEC 101d Physiological Effects of Radiation.

UT-AEC 102a Fission Product Metabolism in Beef Cattle, Sheep, and Swine.

UT-AEC 102b Fission Product Metabolism in Dairy Cattle.

UT-AEC 102c Fission Product Metabolism in Poultry.

UT-AEC 102d Fission Product Chemistry of Soils.

UT-AEC 102e Biochemistry of Fission Product Elements.

UT-AEC 201 Plant Genetics.

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Influence of Phosphorus and Some Alkaline Earth Metals on Strontium⁹⁰ and Calcium⁴⁵ Excretion in the Rat. *UT-ARL Report No. 3.*

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¹In cooperation with the U. S. Department of Agriculture.

R. L. Murphree, Professor
R. A. Reynolds, Assistant Professor
C. B. Ramsey, Assistant Professor
J. D. Smalling, Assistant Professor
H. J. Smith, Professor
R. S. Temple, Professor¹

J. N. Williams, II, Assistant in
Animal Husbandry
B. B. Wilson, Jr., Assistant in
Animal Husbandry
G. R. Wilson, Assistant in Animal
Husbandry

DAIRY

J. T. Miles, Head of Department
H. D. Baxter, Assistant Professor,
Lewisburg¹
B. J. Bearden, Assistant Professor,
Spring Hill
J. A. Collins, Assistant in Dairy
R. G. Cragle, Associate Professor
E. W. Culvahouse, Jr., Assistant
Professor
B. J. Demott, Associate Professor
A. W. Gibbs, Assistant in Dairy
S. A. Hinton, Associate Professor

Clyde Holmes, Farm Manager
R. H. Lush, Professor
G. G. Martin, Assistant in Dairy
W. W. Overcast, Professor
F. E. Pardue, Assistant in Dairy
Lantis Ratcliff, Associate Professor,
Lewisburg¹
D. O. Richardson, Assistant
Professor
J. D. Skean, Assistant in Dairy
E. W. Swanson, Professor

ENTOMOLOGY

S. E. Bennett, Assistant Professor
W. W. Stanley, Professor

C. A. Thomas, Jr., Assistant
Professor, Jackson

FOOD TECHNOLOGY

M. R. Johnston, Professor and Head
Sandra L. Arnold, Assistant in Food
Technology
G. D. Gernon, Jr., Associate
Professor

J. Y. Lu, Assistant in Food
Technology
I. E. McCarty, Assistant Professor
J. O. Mundt, Professor
J. M. Pearson, Assistant in Food
Technology

FORESTRY

J. T. Beavers, Assistant Professor,
Grand Junction
E. R. Buckner, Assistant Professor
P. J. Huffman, Jr., Assistant
Professor, Tullahoma

J. S. Kring, Associate Professor,
Harriman
R. D. MacDonald, Assistant in
Forestry
Eyvind Thor, Assistant Professor

HOME ECONOMICS RESEARCH

Child Development and Family Relationships

Ruth L. Highberger, Head of
Department

Betty I. Jeffrey, Assistant Professor

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Foods and Institution Management

Bernadine Meyer, Head of
Department
Ada M. Campbell, Associate
Professor

Joan Erwin, Assistant in Foods
Mary A. Mysinger, Assistant
Professor

Home Management, Equipment, and Family Economics

Myra L. Bishop, Head of
Department

Phyllis Ilett, Associate Professor
Helen M. Reed, Assistant Professor

Nutrition

J. T. Smith, Acting Head of
Department
Rossie L. Mason, Assistant
Professor

Elise Morrell, Assistant Professor
Frances A. Schofield, Professor

Textiles and Clothing

Anna J. Treece, Head of
Department

HORTICULTURE

B. S. Pickett, Head of Department
J. S. Alexander, Assistant Professor
J. F. Brown, Assistant in
Horticulture, Jackson
G. M. Campbell, Assistant Professor
T. R. Gilmore, Associate Professor
J. E. Love, Assistant Professor

W. E. Roevers, Associate Professor
A. D. Rutledge, Assistant in
Horticulture
J. G. Staley, Assistant in
Horticulture
H. D. Swingle, Associate Professor
Hendrik van de Werken, Assistant
Professor

INFORMATION

R. L. Hamilton, Head of
Department (on leave)
S. F. Sweet, Associate Editor and
Acting Head
Mrs. Betty K. Adams, Agricultural
Librarian

F. E. Berggren, Assistant Editor
L. L. Krug, Assistant Editor (on
leave)
R. C. McDade, Associate Editor
(Visuals)

PHYSICS

K. L. Hertel, Head of Department
K. E. Duckett, Assistant in Physics
P. R. Ewald, Associate Professor¹
Z. A. Henry, Assistant Professor

R. S. Krowicki, Assistant in Physics
C. B. Landstreet, Assistant
Professor¹
Reba Lawson, Assistant in Physics¹

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PLANT PATHOLOGY

J. O. Andes, Head of Department	E. L. Felix, Assistant Professor
A. Y. Chambers, Assistant Professor, Jackson	L. F. Johnson, Associate Professor
J. M. Epps, Associate Professor, Jackson ¹	D. H. Latham, Associate Professor, Springfield
	H. E. Reed, Associate Professor

POULTRY

O. E. Goff, Head of Department	H. V. Shirley, Jr., Associate Professor
J. K. Bletner, Associate Professor	
Emily A. Davis, Assistant in Poultry	R. D. Simpson, Assistant in Poultry
C. R. Douglas, Assistant in Poultry	R. L. Tugwell, Professor

UT-AEC AGRICULTURAL RESEARCH LABORATORY

N. S. Hall, Laboratory Director	J. E. Love, Assistant Professor
C. G. Anderson, Assistant Professor	R. L. Lovvorn, Consultant
D. L. Anderson, Visiting Professor	R. S. Lowrey, Jr., Assistant Professor
J. Barua, Visiting Professor	A. O. Lunden, Associate Professor
M. C. Bell, Associate Professor	W. C. Magrane, Consultant
W. B. Bell, Consultant	J. K. Miller, Assistant Professor
J. M. Bird, Superintendent	F. R. Mraz, Associate Professor
D. G. Brown, Professor	R. J. Monroe, Consultant
J. Chiriboga, Associate Professor	R. H. Mullenax, Assistant in Agronomy
M. J. Constantin, Associate Professor	R. L. Murphree, Professor
R. G. Cragle, Associate Professor	T. S. Osborne, Associate Professor
T. J. Cunha, Consultant	W. C. Patrick, Assistant to the Director
B. H. Erickson, Assistant Professor	J. C. Pekas, Assistant Professor
R. G. Gast, Associate Professor	S. C. Perry, Assistant in Dairy
S. M. Hansen, Assistant in Dairy	R. A. Reynolds, Assistant Professor
R. L. Harris, Assistant in Animal Husbandry	C. E. Short, Assistant Professor
F. H. Hembry, Assistant in Animal Husbandry	J. Souto, Professor
D. F. Johnson, Jr., Professor	P. R. Welch, Assistant in Animal Husbandry
J. J. Knapka, Assistant in Animal Husbandry	M. H. Wykoff, Associate Professor
B. T. Ladd, Assistant in Animal Husbandry	

MAIN STATION, KNOXVILLE

J. N. Odom, General Superintendent of Farms

¹In cooperation with the U. S. Department of Agriculture.

BRANCH STATIONS

Dairy Experiment Station, Lewisburg, J. R. Owen, Superintendent	Plateau Experiment Station, Crossville, J. A. Odom, Superintendent, E. L. Bohanon, Assistant Superintendent
Highland Rim Experiment Station, Springfield, L. M. Safley, Superintendent	Tobacco Experiment Station, ¹ Greeneville, J. H. Felts, Superintendent
Middle Tennessee Experiment Station, Spring Hill E. J. Chapman, Superintendent	West Tennessee Experiment Station, Jackson, B. P. Hazlewood, Superintendent

FIELD STATIONS

Ames Plantation, Grand Junction, R. H. Scott, Manager	Highland Rim Forestry Field Station, Tullahoma, P. J. Huffman, Jr., Manager
Cumberland Plateau Forestry Field Station, Clinton, J. S. Kring, Manager	Milan Field Station, Milan, Tom C. McCutchen, Manager

¹In cooperation with the U. S. Department of Agriculture.

PERSONNEL CHANGES**January 1 — December 31, 1963****APPOINTMENTS**

- Sandra L. Arnold, Assistant in Food Technology, July 1, 1963
- G. W. Murphree Bullion, Assistant in Agricultural Economics, August 1, 1963
- Jerry A. Burnette, Assistant in Agronomy, September 1, 1963
- Will T. Butts, Jr., Assistant in Animal Husbandry, April 1, 1963
- Paul T. Cantrell, Assistant in Agricultural Economics, August 1, 1963
- Lauren L. Christian, Assistant Professor of Animal Husbandry, July 1, 1963
- Pin Kwen Chung, Assistant in Animal Husbandry, January 3, 1963
- Joan C. Erwin, Assistant in Foods, September 16, 1963
- Foster Glenn Hembry, Assistant in Animal Husbandry, September 1, 1963
- Alonzo J. Hester, Assistant in Agronomy, July 1, 1963
- Betty I. Jeffrey, Assistant Professor of Home Economics, July 15, 1963
- Joseph J. Knapka, Assistant in Animal Husbandry, UT-AEC, July 15, 1963
- Curtis F. Lard, Assistant Professor of Agricultural Economics, July 1, 1963
- J. Y. Lu, Assistant in Food Technology, July 1, 1963
- John Edward Love, Assistant Professor, Horticulture and UT-AEC, August 1, 1963
- G. G. Martin, Assistant in Dairy, September 1, 1963
- Edward W. McCoy, Assistant in Agricultural Economics, August 1, 1963
- Tom C. McCutchen, Manager, Milan Field Station, February 1, 1963
- Alfred F. McFee, Assistant Professor, UT-AEC, May 1, 1963
- Joe W. McLeary, Assistant in Agricultural Economics, January 1, 1963
- Gerald D. Martin, Assistant in Dairy, September 1, 1963
- Thomas H. Morgan, Jr., Assistant in Agronomy, January 1, 1963
- Samuel C. Perry, Senior Laboratory Technician, UT-AEC, September 1, 1963
- Don O. Richardson, Assistant Professor of Dairy, March 1, 1963
- Nancy J. Squires, Assistant in Home Economics, July 1, 1963
- J. G. Staley, Assistant in Horticulture, September 1, 1963
- Jo Ann Williams, Senior Laboratory Technician, UT-AEC, July 1, 1963

TERMINATIONS

- Joyce L. Armstrong, Assistant in Textiles and Clothing, June 30, 1963
- Douglas D. Baird, Assistant in Horticulture, June 30, 1963
- Vernon M. Bounds, Assistant in Agricultural Economics, January 15, 1963

Sigrid H. Childers, Assistant Professor of Home Economics, July 31, 1963	Foods, July 31, 1963
Thomas G. Clark, Research Technician, UT-AEC, April 5, 1963	Price H. Parham, Assistant Professor of Horticulture, June 30, 1963
Rodney J. Cooper, Assistant Professor of Animal Husbandry, March 15, 1963	Charles D. Pless, Assistant in Entomology, August 31, 1963
Donald M. Elkins, Assistant in Agronomy, December 31, 1962	John H. G. Rankin, Assistant in Dairy, September 1, 1963
Joe D. Fox, Assistant in Food Technology, June 30, 1963	Joe K. Robertson, Assistant in Agricultural Economics, December 15, 1963
Jerry L. Graham, Assistant in Food Technology, July 31, 1963	Fred W. Sigler, Assistant Scientist, UT-AEC, July 5, 1963
Charles F. Gregory, Assistant in Agronomy, August 31, 1963	Edward L. Smith, Assistant Professor of Agronomy, July 31, 1963
Burgess F. Guinn, Assistant in Agronomy, March 31, 1963	Howard A. Stone, Assistant in Poultry, June 30, 1963
Ted L. Jones, Assistant Professor of Agricultural Economics, September 30, 1963	Julius Thigpen, Assistant in Dairy, June 30, 1963
Kathleen McCook, Assistant in	Donna G. Walters, Assistant in Agricultural Economics, June 30, 1963

ON LEAVE

A. J. Garbarino, Assistant Professor of Agricultural Economics, March 1, 1963	Ralph L. Hamilton, Editor, Information Department, October 1, 1963
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RETURNED FROM LEAVE

Edward R. Buckner, Assistant Professor of Forestry, September 16, 1963	John H. Reynolds, Assistant Professor of Agronomy, May 6, 1963
A. J. Garbarino, Assistant Professor of Agricultural Economics, July 1, 1963	Homer D. Swingle, Associate Professor of Horticulture, August 16, 1963
D. Houston Luttrell, Assistant Professor of Agricultural Engineering, December 1, 1963	

RETIREMENTS

Athan J. Sterges, Assistant Professor of Agronomy, September 1, 1963	Dorothy E. Williams, Professor of Home Economics, September 1, 1963
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DECEASED

Samuel W. Atkins, Professor of Agricultural Economics, ¹ May 25, 1963
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