Annual Report of the Tennessee Agricultural Experiment Station, 1989

University of Tennessee Agricultural Experiment Station

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1989
Annual Report
of the
Tennessee Agricultural
Experiment Station

The University of Tennessee
Knoxville
One Hundred and Second
Annual Report
1989

University of Tennessee
Agricultural Experiment Station

Lamar Alexander ....................................................... President of the University
D. M. Gossett .......................................................... Vice President for Agriculture
D. O. Richardson ..................................................... Dean
J. I. Sewell ............................................................. Associate Dean
T. H. Klindt ............................................................. Assistant Dean

The University of Tennessee
Knoxville
E11-0415-00-008-93
LETTER OF TRANSMITTAL

Knoxville, Tennessee
January 2, 1990

To His Excellency, Ned McWherter
Governor of Tennessee:

SIR: I have the honor 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 1989.

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,
Lamar Alexander, President

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One Hundred and Second Annual Report
of the
Tennessee Agricultural Experiment Station
1989

FOREWORD

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

1) Research projects active as of December 31, 1989;
2) Research projects terminated during the calendar year, 1989.
3) Bulletins, articles, and reports prepared by Experiment Station staff members and published during the calendar year, 1989.

In addition, the report contains the financial statement for the Agricultural Experiment Station covering the period July 1, 1988 to June 30, 1989. Also included is a list of the Experiment Station personnel for the calendar year 1989.

Active Projects

As of December 31, 1989, there were 158 Hatch (TN) projects and five state (S) 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. There were six McIntire-Stennis (forestry) projects. One project was funded by a USDA Grant.

The headquarters of the Tennessee Agricultural Experiment Station is located on the agricultural campus of The University of Tennessee at Knoxville. In addition, there are other research centers which represent soil and climate conditions in the major regions of Tennessee. These other research centers are listed in this report, and their locations are shown on the map on page 4.

Projects Terminated

During 1989, 26 projects were terminated. Reports on these projects have either been published or are being prepared for publications.

Publications

Published reports on research of The University of Tennessee Agricultural Experiment Station appear in the Station Bulletins, in Research Reports, in Tennessee Farm and Home Science, in professional, technical periodicals and various popular publications. Five Station Bulletins and 27 Research Reports were published during the year. These publications and other technical, semi-technical, and special reports prepared and published during 1989 are listed in this annual report.
FINANCIAL STATEMENT
July 1, 1988—June 30, 1989
The University of Tennessee Agricultural Experiment Station

<table>
<thead>
<tr>
<th>Hatch</th>
<th>Reg. Resource</th>
<th>McIntire Stennis</th>
<th>Animal Health and Disease</th>
<th>Grants and Contracts</th>
<th>State and Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Salaries</td>
<td>$2,649,118</td>
<td>639,958</td>
<td>270,583</td>
<td>5,843</td>
<td>466,964</td>
<td>5,093,781</td>
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<tr>
<td>Biweekly Wages</td>
<td>3,937</td>
<td>0</td>
<td>(2,000)</td>
<td>12,697</td>
<td>175,910</td>
<td>886,288</td>
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<tr>
<td>Operating &amp; Misc.</td>
<td>37,699</td>
<td>1,619</td>
<td>6,002</td>
<td>31,488</td>
<td>667,085</td>
<td>7,338,711</td>
</tr>
<tr>
<td>Equipment &amp; Capital Outlay</td>
<td>38,568</td>
<td>0</td>
<td>33,817</td>
<td>11,666</td>
<td>307,137</td>
<td>1,827,914</td>
</tr>
</tbody>
</table>

Total | $3,201,186 | 668,888 | 379,978 | 87,544 | 1,725,403 | 17,955,712 | 24,018,711 |

Agricultural Experiment Station
Research Centers

1 Ames Plantation
Fayette and Hardeman Counties, Grand Junction

2 Dairy Experiment Station
Marshall County, Lewisburg

3 Forestry Experiment Station
Anderson County, Oak Ridge

4 Highland Rim Experiment Station
Robertson County, Springfield

5 Knoxville Experiment Station
Knox County, Knoxville

6 Martin Experiment Station
Weakley County, Martin

7 Middle Tennessee Experiment Station
Maury County, Spring Hill

8 Milan Experiment Station
Gibson County, Milan

9 Plateau Experiment Station
Cumberland County, Crossville

10 Tobacco Experiment Station
Greene County, Greeneville

11 West Tennessee Experiment Station
Madison County, Jackson
AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN 769</td>
<td>Tennessee Agriculture's Response to Alternative Socioeconomic Environments</td>
</tr>
<tr>
<td>TN 783</td>
<td>Economics of the Production of Tobacco and Alternative Enterprises in Tennessee</td>
</tr>
<tr>
<td>TN 790</td>
<td>Demographic Trends of the Tennessee Rural and Farm Population</td>
</tr>
<tr>
<td>TN 796</td>
<td>Economic Problems of Beginning Farmers</td>
</tr>
<tr>
<td>TN 839 (S-209)</td>
<td>Analysis of Structural and Organizational Change in Rural Counties in the South</td>
</tr>
<tr>
<td>TN 841</td>
<td>The Economic and Environmental Consequences of Alternative Farming Systems</td>
</tr>
<tr>
<td>TN 850 (S-216)</td>
<td>Changing Patterns of Food Demand and Consumption Behavior</td>
</tr>
<tr>
<td>TN 866</td>
<td>Economics of Winegrape Production and the Wine Industry in Tennessee</td>
</tr>
<tr>
<td>TN 870 (S-217)</td>
<td>Economic and Technical Forces Shaping the Southern Dairy Industry</td>
</tr>
<tr>
<td>TN 871 (S-103)</td>
<td>Technical and Economic Efficiencies of Producing and Marketing Landscape Plants</td>
</tr>
<tr>
<td>TN 873 (S-222)</td>
<td>Competition and Change in the Fruit and Vegetable Production and Marketing Systems</td>
</tr>
<tr>
<td>TN 876</td>
<td>Economic Analysis of Livestock/Forage Systems</td>
</tr>
<tr>
<td>TN 882</td>
<td>Impact Assessment of Soil Erosion Control Policies</td>
</tr>
<tr>
<td>TN 885</td>
<td>Profitability and Process of Farm Decisions</td>
</tr>
<tr>
<td>TN 892</td>
<td>Consumer Demand for Locally Grown Fresh Produce in Tennessee</td>
</tr>
<tr>
<td>TN 893 (S-224)</td>
<td>International Trade Research Commodities Important to the Southern Region</td>
</tr>
<tr>
<td>TN 896</td>
<td>Analysis of International and Domestic Tobacco Markets</td>
</tr>
<tr>
<td>TN 904</td>
<td>Fiscal Stress and Changes in Taxes and Services of Tennessee Local Governments</td>
</tr>
<tr>
<td>TN 912 (S-227)</td>
<td>Economic Analysis of Southern Regional Adjustments to a Dynamic Livestock-Meat Sector</td>
</tr>
<tr>
<td>TN 913 (S-231)</td>
<td>Analysis of the Structure, Efficiency and Competitiveness of the Southern U.S. Grain Marketing System</td>
</tr>
<tr>
<td>TN 918 (S-232)</td>
<td>Quantifying Long-Run Agricultural Risks and Evaluating Farmer Responses to Risk</td>
</tr>
<tr>
<td>TN 919 (W-178)</td>
<td>Water Management and Conservation in Western Irrigated Agriculture</td>
</tr>
<tr>
<td>TN 925</td>
<td>Economics of Waste Management in Rural Areas</td>
</tr>
</tbody>
</table>

Projects Concluded in 1989

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN 713</td>
<td>Economic Evaluation of Technological and Institutional Changes on Farmers in Tennessee</td>
</tr>
<tr>
<td>TN 736 (S-194)</td>
<td>Barriers and Incentives to Affordable Housing</td>
</tr>
<tr>
<td>TN 751</td>
<td>Retail Demand for Tennessee Fresh Fruits and Vegetables</td>
</tr>
<tr>
<td>TN 825</td>
<td>Economic Analysis of Machinery Inputs on Tennessee Farms</td>
</tr>
<tr>
<td>TN 826</td>
<td>Potential for Limiting Liability Associated with the Use of Agricultural Chemicals</td>
</tr>
</tbody>
</table>
1989 Annual Report

**Bulletins and Reports**


Isaacs, Steve, Darrell Mundy, and Donald Fowlkes. 1988 Farm Revenues Lost Due To Burley Tobacco Quota Underutilization in Tennessee Counties, Staff Paper SP-89-03.


Pompelli, Gregory K., and Morgan D. Gray. Profile of Undergraduate Students in Agricultural Economics and Rural Sociology: Demographics and Attitudes, Special Report 89-01.


**Tennessee Farm and Home Science**

Downing, M.E., and Roland K. Roberts. “Visitor-Use Value of the University of Tennessee Arboretum,” Tennessee Farm and Home Science, No. 152, Fall.


**Journal Articles**


**M. S. Theses**


Coady, Sean A. “Derived Demand for Tobacco by Type and Origin,” under Gregory K. Pompelli, May.
Willhite, Mack A. "Application of Municipal Sewage Sludge to Agricultural Land in Tennessee," under William M. Park, May.


Ph.D. Dissertations


Bulletins/Publications


Papers Presented and/or Proposed


Brooker, J. R. "Future Direction of Marketing Research," Symposia Session on Ornamental Horticulture, AAEA Annual Conference, Baton Rouge, LA, August.


Huffaker, R. G. A Bioeconomic Livestock/Wild Horse Tradeoff Mechanism for Conserving Public Rangeland Vegetation selected paper for WAEA


Isaacs, S. G. "The Economic Importance of Tobacco Production to Greeneville and Greene County," Exchange Club of Greeneville.


Orr, Robert H. "Funding Sources for Internationalizing Curricula," Presented to Meeting of Southern International Agriculture Directors' Association, Atlanta, GA.


Pompelli, G. K. "Growing Concerns in the Tennessee Winegrape Industry," Annual Meeting of Tennessee Viticulture and Oenology Society, Gatlinburg, TN.

Reports/Proceedings


**AGRICULTURAL ENGINEERING**

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN 765 (S-202)</td>
<td>Utilization of Animal Waste as Energy and Nutrient Sources in Warm Humid Climates</td>
</tr>
<tr>
<td>TN 786</td>
<td>Drying Grain Sorghum and Minor Crops in Tennessee</td>
</tr>
<tr>
<td>TN 816</td>
<td>Application of Artificial Intelligence to Agricultural Research and Production</td>
</tr>
<tr>
<td>TN 827</td>
<td>Undertree (non-ice encapsulation) Frost Protection</td>
</tr>
<tr>
<td>TN 838 (S-210)</td>
<td>Automatic Control of Field Machinery Functions</td>
</tr>
<tr>
<td>TN 872 (S-218)</td>
<td>Control, Prediction, Economics, and Environmental Effects of Soil Erosion</td>
</tr>
<tr>
<td>TN 878</td>
<td>Maintenance of Soybean Quality After Field Maturity</td>
</tr>
<tr>
<td>TN 887</td>
<td>On-Site Sewage Treatment</td>
</tr>
<tr>
<td>TN 888</td>
<td>Evapotranspiration Measurement and Estimation in Tennessee</td>
</tr>
<tr>
<td>TN 900</td>
<td>Improvement in the Harvest-to-Market Systems for Air-cured Tobacco</td>
</tr>
<tr>
<td>TN 902</td>
<td>Methods for Improving Earth-tube Systems for Energy Exchange Processes</td>
</tr>
<tr>
<td>TN 937</td>
<td>Mechanized Production of Selected Vegetable Crops for Commercial and Small Farms of Tennessee</td>
</tr>
<tr>
<td>TN 948 (S-235)</td>
<td>Integrated Systems and Controls for Processing and Storing Agricultural Commodities</td>
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</table>

**Projects Concluded in 1989**

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN 753 (S-195)</td>
<td>Engineering and Management Systems for Cotton Production, Harvesting, and Processing</td>
</tr>
<tr>
<td>TN 755</td>
<td>Processing and Storage of Southern Agricultural Commodities</td>
</tr>
<tr>
<td>TN 759</td>
<td>Mechanized Production of Selected Vegetable Crops in Tennessee</td>
</tr>
<tr>
<td>TN 766 (S-197)</td>
<td>Optimize Production Efficiency of Animal Housing Systems in the Southern Region</td>
</tr>
</tbody>
</table>


ANIMAL SCIENCE

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Titles</th>
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<tbody>
<tr>
<td>8502444</td>
<td>Bovine Fetal-Maternal Interactions</td>
</tr>
<tr>
<td>TN 529</td>
<td>Flexibility in Beef Production from Forage in Tennessee</td>
</tr>
<tr>
<td>TN 627</td>
<td>Genetic Variation in Nutrient Intake and Utilization of Grazing Beef Females as Related to Genotype x Environment Interaction</td>
</tr>
<tr>
<td>TN 774</td>
<td>Genetic and Economic Aspects of Foot Care and Soundness in Dairy Cattle</td>
</tr>
<tr>
<td>TN 809</td>
<td>Social and Environmental Influence on Reproductive Performance in Swine</td>
</tr>
<tr>
<td>TN 811</td>
<td>Postweaning Nutritional Management of Pigs During the Nursery Phase</td>
</tr>
<tr>
<td>TN 818</td>
<td>Preshipment Management and Transportation Effects on Subsequent Feeder Pig Performance</td>
</tr>
<tr>
<td>TN 819</td>
<td>Alternate Systems of Female Rearing and Reproductive Management in Swine</td>
</tr>
<tr>
<td>TN 820 (S-49)</td>
<td>Genetic Methods of Improving Dairy Cattle for the South</td>
</tr>
<tr>
<td>TN 844</td>
<td>Effect of Manipulation of Fermentation Dynamics on Silage Production and Animal Performance</td>
</tr>
<tr>
<td>TN 845 (NE-112)</td>
<td>Resistance to Mastitis in Dairy Cattle</td>
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<tr>
<td>TN 848</td>
<td>Comparison of Feed Delivery Systems for Lactating Dairy Cows</td>
</tr>
<tr>
<td>TN 859</td>
<td>Prepartum Nutrition and Postpartum Health and Performance of Dairy Cows</td>
</tr>
<tr>
<td>TN 874</td>
<td>Production Response of Byproducts and Whole Oilseeds in Dairy Rations</td>
</tr>
</tbody>
</table>
Changes in Alternate Energy Fuel Metabolism in Progressive Pregnancy and Subsequent Lactation in Ruminants and Their Regulatory Mechanisms

Indicators of Reproductive Capacity in the Beef Heifer

Alleviation of Fescue Toxicosis Using Prophylactic Drugs or Chemical Treatment

Effect of Dietary Energy on Energy Status of Dairy Cattle in Early Lactation

Nutrition and Management of Swine for Increased Reproductive Efficiency

Fetal-maternal Interactions in the Pig

Genetic Relationships to Growth and Reproduction in Diverse Poultry Populations

Cellular Defense Mechanisms of the Bovine Mammary Gland

Productivity of Livestock and Forage on Endophyte Infected and Non-infected Fescue Pastures

Physiological and Nutritional Manipulations to Enhance Growth and Survival in Heat Distressed Broilers

Treatment of Retained Placenta with Proteolytic enzymes

Dairy Herd Management Strategies for Improved Decision Making and Profitability

Use of Real-Time Ultrasound as a Predictor of Body Composition in Swine

Winter Annual Forages for Use in Dairy Rations

Fetal-Maternal Interactions in the Cow and Sheep

Projects Concluded in 1989

The Maintenance of Pregnancy in the Cow: Fetal Maternal Interactions

Selection of Beef Cattle for Optimum Use of Resources

Nutritional, Health & Behavioral Management of Purchased Feeder Pigs

Ontogeny of Corticosteroid Binding Globulin in Swine

Effects of Dietary Protein, Dietary Mineral Acid-Base Balance, and Photoperiod on Broiler Chickens

Bulletins, Articles, and Reports


COMMUNICATIONS

Articles

ENTOMOLOGY AND PLANT PATHOLOGY

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN 726 (S-186)</td>
<td>Management of Soil Microorganisms Affecting the Health and Vigor of Plants</td>
</tr>
<tr>
<td>TN 730 (S-192)</td>
<td>Biological Control of Selected Arthropod Pests and Weeds Through Introduction of Natural Enemies</td>
</tr>
<tr>
<td>TN 742</td>
<td>Detection, Identification and Occurrence of Plant Viruses in Tennessee</td>
</tr>
<tr>
<td>TN 812</td>
<td>Etiology, Ecology and Control of Soybean Diseases</td>
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<tr>
<td>TN 815</td>
<td>Etiology and Control of Fungus Pathogens of Beans</td>
</tr>
<tr>
<td>TN 829</td>
<td>Management and Bionomics of Cotton Insects</td>
</tr>
<tr>
<td>TN 830</td>
<td>Management Strategies for Control of Vegetable Diseases in Tennessee</td>
</tr>
<tr>
<td>TN 836</td>
<td>Population Dynamics of Heliothis Species on Wild and Cultivated Plants in Tennessee</td>
</tr>
<tr>
<td>TN 842 (S-212)</td>
<td>Biology of Genetically Changing Root-Knot and Cyst Nematodes of Soybeans</td>
</tr>
<tr>
<td>TN 856</td>
<td>Effects of Endophyte Infection on Resistance of Tall Fescue</td>
</tr>
<tr>
<td>TN 857</td>
<td>Aspects of the Population Ecology of Face Flies that Influence the Spread of Moraxella Bovis</td>
</tr>
<tr>
<td>TN 867</td>
<td>Biological Control Strategies for Management of Plant Diseases in Woody Ornamental Nurseries</td>
</tr>
<tr>
<td>TN 869 (S-219)</td>
<td>Arthropod Induced Stress on Soybean: Evaluation and Management</td>
</tr>
<tr>
<td>TN 877</td>
<td>Bionomics and Management of Insect Pests of Wheat</td>
</tr>
<tr>
<td>TN 889</td>
<td>Ecology of Insect Pests of Alfalfa and Season-Long Assessment of Insecticide Use</td>
</tr>
<tr>
<td>TN 899</td>
<td>Effects of Endophyte Infection of Tall Fescue on its Resistance of Soil-Borne Insects</td>
</tr>
<tr>
<td>TN 903</td>
<td>Biology and Ecology of Diptera on Cattle and Horses</td>
</tr>
</tbody>
</table>
TN 907 IR-4 A National Agricultural Program to Clear Pest Control Agents and Animal Drugs for Minor Uses
TN 916 Systematics, Ecology and Pathogenic Potential of Selected Plant-Parasitic Nematodes in Tennessee
TN 938 Management of Virus Diseases in Solanaceous Crops
TN 939 Host Plant Resistance to Burley Tobacco Insects
TN 940 Incidence, Severity, and Control of Cotton and Wheat Diseases Under Conventional and Reduced Tillage
S-96 Pesticide Data Collection and Reporting in Tennessee

Projects Concluded in 1989

TN 749 Biology and Control of Fungus Diseases Causing Economic Losses in Cotton, Wheat and Grain Sorghum
TN 752 Etiology and Epidemiology of Diaporthe SP. Phomopsis SP. Causing Soybean Stem Canker
TN 795 Etiology and Epidemiology of Dogwood Canker
TN 799 Host Plant Resistance and Chemical Control for Burley Tobacco Insects
TN 801 Biosystematics of Pitscales in Tennessee

Bulletins, Articles and Reports


1989 Annual Report


Young, L. D. 1989. Control of Soybean Cyst Nematode. West Tennessee Experiment Station Field Day.


FOOD TECHNOLOGY AND SCIENCE

Project No.  Research Project Titles
TN 807  Effect of Processing Technologies on Acceptance and Shelf Life of Manufactured Meat Products
TN 831  Sensory Evaluation of Foods: Methodological Studies
TN 832  Enzymes in Dairy Products: Characteristics, Effects and Control
TN 834  Determination of Calcium in Dairy Products and the Concentration as Influenced by Processing
TN 835  Evaluation of the Quality and Nutritional Value of Fresh and Processed Fruit
TN 843  Engineering Studies on Dehydrocooling of Vegetables
TN 847(S-214)  Product Development for Increased Utilization of the Sweet Potato
TN 854  Cereal Food Products: Effects of Variations in Formulation and Processing on Quality
TN 861  Microbiological Quality and Safety of Processed Foods
TN 864  Production and Processing Systems to Produce Lean Beef for the Modern Consumer
TN 865  Development of Baked, Breaded Vegetable Products with Defined Nutrient Levels and Fried Character
TN 894  Evaluation of Food Crops Grown in Tennessee
TN 895  Iodine Concentration in Milk
TN 926  Spectrum and Mechanisms of Antimicrobials in Foods
TN 945  Control of Toxigenic Fungi and Degradation of Mycotoxins
TN 950  Stability of Oil/Fats During Frying and Their Contribution to Flavor and Sensory Characteristics of the Fried Food
TN 951  Effect of Elevated Dietary Levels of Mono and Polyunsaturated Lipids on the Composition, Shelf-Life and Sensory Characteristics of Pork
S-89  Methods for Dairy Products: Efficiency and Relationship to Product Quality
S-95  Pesticide Residues and Their Degradation Products in Raw and Processed Foods

Projects Concluded in 1989
TN 758  Food Lipids: Analysis and Effects on Quality
TN 760  Effect of Animal Composition and Processing Methods on Meat Quality
TN 768  Analysis, Assay and Control of Mycotoxins in Agricultural Products

Journal Articles


Research Reports


Books Published


FORESTRY, WILDLIFE AND FISHERIES

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Titles</th>
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</thead>
<tbody>
<tr>
<td>TN 776</td>
<td>The Relationship Between Stress and Reduced Fitness in Food Fish</td>
</tr>
<tr>
<td>TN 862</td>
<td>Biological Improvement of Chestnut (Castanea sp.)</td>
</tr>
<tr>
<td>TN 868</td>
<td>Culture and Management of Economically Important Fish Species in Tennessee Waters</td>
</tr>
<tr>
<td>MS-41</td>
<td>Genetic Improvement of Selected Hardwood and Coniferous Trees</td>
</tr>
<tr>
<td>MS-44</td>
<td>Cytogenetic Studies of Hardwood and Coniferous Forest Trees</td>
</tr>
<tr>
<td>MS-45</td>
<td>Genetic and Cultural Manipulations of Christmas Tree Species in Tennessee</td>
</tr>
<tr>
<td>MS-46</td>
<td>Stand Regeneration Using Containerized Seedlings</td>
</tr>
<tr>
<td>MS-47</td>
<td>Growth and Yield Predictors for Oak-contaminated Forests in Tennessee</td>
</tr>
<tr>
<td>MS-48</td>
<td>Gamma Radiation and X-ray Techniques for Improved Manufacture and Performance of Wood-based Composit</td>
</tr>
<tr>
<td>S-30</td>
<td>The University of Tennessee Arboretum</td>
</tr>
</tbody>
</table>
Bullets

Book Chapters Published

Research Reports

Fact sheets/Extension publications

Industry groups with/out handouts

M. S. Theses
Dissertations


Papers presented with abstracts


Popular Press Article


Refereed Articles in Proceedings


Refereed Journal Articles


**Regional or Interregional Bulletins**


**Tennessee Farm and Home Science**


**Written Reports to Granting Agency**


### HUMAN ECOLOGY

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Research Project Title</th>
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<tbody>
<tr>
<td>TN 745</td>
<td>Carnitine Nutriture in Chronic Alcoholism</td>
</tr>
<tr>
<td>TN 750</td>
<td>Changing Dietary Behavior Via Nutrition Education</td>
</tr>
<tr>
<td>TN 840 (S-208)</td>
<td>Textile Fiber Systems for Performance, Protection and Comfort</td>
</tr>
<tr>
<td>TN 855</td>
<td>Effect of Dietary Sulfur Upon Fatty Acid Metabolism</td>
</tr>
<tr>
<td>TN 858</td>
<td>Soluble/Insoluble Dietary Fiber Levels as Effected by Processing Methods and Wheat Cultivars</td>
</tr>
<tr>
<td>TN 860</td>
<td>Factors Influencing the Nutritional Health of Adolescents During and Post Pregnancy</td>
</tr>
<tr>
<td>TN 914</td>
<td>Heating High-Fat Foods in Nonwoven, Melt Blown, Microwavable Material</td>
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<td>TN 917</td>
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**ORNAMENTAL HORTICULTURE AND LANDSCAPE DESIGN**

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<td>TN 863</td>
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<td>TN 897</td>
<td>Chemical and Nutritional Control and Vertical Evaluations of Florists' Bedding Plants</td>
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<tr>
<td>TN 898</td>
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<tr>
<td>TN 911</td>
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<tr>
<td>TN 927</td>
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Project No. Research Project Titles
TN 920 Patterns of Transmission and Economic Impact of Internal Parasites in Beef Cow-calf Herds in Tennessee.
S 98 In vitro Investigation of Bovine Respiratory Syncytial virus Pathogenesis.

Bulletins, Articles and Reports

Breider, M.A., S. Kumar, and R.E. Corstvet. Interaction of bovine neutrophils in Pasteurella hemolytica mediated damage to pulmonary endothelial cells. Veterinary Immunology and Pathology (in press).


PLANT AND SOIL SCIENCE

Project No. Research Project Titles
TN 757(S-201) Role of Legume Cover Crops in Conservation Tillage Production Systems
TN 775 Corn Improvement
TN 777(S-97) Environmental and Biological Stresses of Rootstocks in Peach Tree Longevity
TN 778 Cotton Production Methodology
TN 779 Variation in Soil Solution Composition in Field Environments
TN 780 Fruit Crop Investigations
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TN 787 Low Temperature Photosynthesis, Stem Development & Forage Quality of Tall Fescue
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TN 566 Evaluation and Breeding of Forage Legumes
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Bulletins, Articles, and Reports


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E.R. Vail, Graduate Research Assistant
L.D. Young, Adjunct Associate Professor

1(In cooperation with U.S. Dept. of Agriculture)
## FOOD TECHNOLOGY AND SCIENCE

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<thead>
<tr>
<th>Position</th>
<th>Name</th>
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<tbody>
<tr>
<td>Professor and Head</td>
<td>H. O. Jaynes</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>R. N. Biswal</td>
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<tr>
<td>Graduate Research Assistant</td>
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## FORESTRY, WILDLIFE AND FISHERIES

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<td>Professor and Head of Department</td>
<td>G. T. Weaver</td>
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<tr>
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<thead>
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<td>Graduate Research Assistant</td>
<td>Yiqun Lin</td>
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<td>Professor</td>
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<tr>
<td>Associate Professor</td>
<td>Jean Skinner</td>
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<tr>
<td>Professor</td>
<td>John Smith</td>
</tr>
<tr>
<td>Professor and Acting Head, Textiles, Merchandising and Design</td>
<td>Larry Wadsworth</td>
</tr>
</tbody>
</table>

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R. J. Lewis, Associate Professor
J. Logan, Assistant Professor
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M. W. Morris, Graduate Research Assistant
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