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Annual Report of the

*Tennessee
Agricultural
Experiment Station*

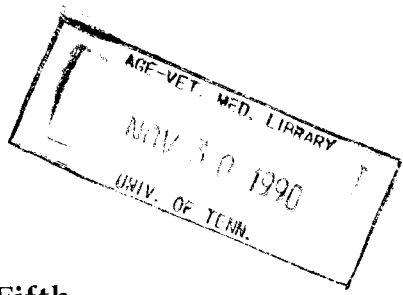
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The University of Tennessee
Knoxville



**Ninety-Fifth
Annual Report
1982**

**Tennessee
Agricultural Experiment Station**

Edward J. Boling President of the University
W. W. Armistead Vice President for Agriculture
B.H. Pentecost . . . Assistant Vice President for Agriculture
D. M. Gossett Dean
T. J. Whatley Associate Dean
John I. Sewell Assistant Dean

**The University of Tennessee
Knoxville**

LETTER OF TRANSMITTAL

Knoxville Tennessee

January 2, 1983

To His Excellency, Lamar Alexander
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 1982.

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,
Edward J. Boling, President

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Ninety-Fifth Annual Report of the Tennessee Agricultural Experiment Station 1982

FOREWORD

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

- 1) Research projects active as of December 31, 1982;
- 2) Research projects terminated during the calendar year, 1982;
- 3) Bulletins, articles, and reports prepared by Experiment Station staff members and published during the calendar year 1982.

In addition, this report contains the financial statement for the Agricultural Experiment Station covering the period July 1, 1981 to June 30, 1982. Also included is a list of the Experiment Station personnel for the calendar year 1982.

Active Projects

As of December 31, 1982, there were 162 Hatch (TN) projects and six 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 14 McIntire-Stennis (forestry) projects.

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 at the end of this report, and their locations are shown on the map on page 5.

Projects Terminated

During 1983, 30 projects were terminated. Reports on these projects have either been published or are being prepared for publication.

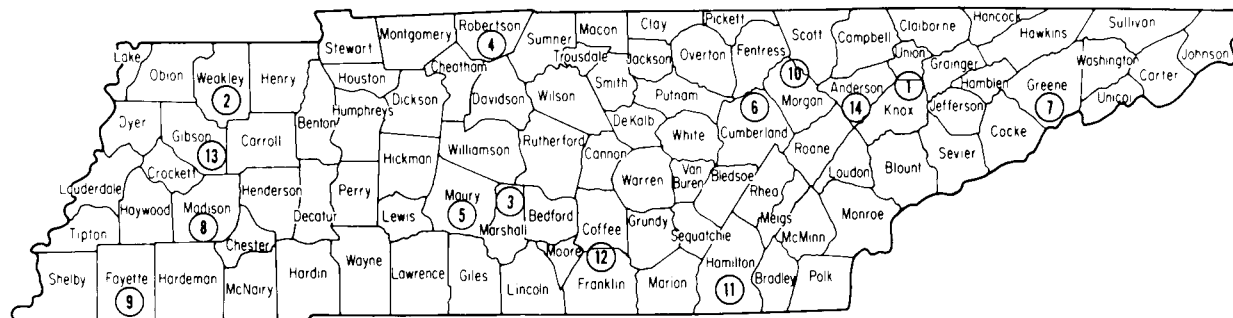
Publications

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 seven Station Bulletins, 14 Research Reports, one International Report, and two regional bulletins published during the year. These publications and other technical, semi-technical, and special reports prepared and published during 1982 are listed in this annual report.

FINANCIAL STATEMENT
July 1, 1981 - June 30, 1982
The University of Tennessee Agricultural Experiment Station

	HATCH	Reg. Resource	McIntire- Stennis	Animal Health and Disease	Federal Grants	Other Funds	Total
Balance June 30, 1981						\$ 526,924.37	\$ 526,924.27
Revenues	\$3,038,728.70	\$634,484.79	\$249,834.46	\$102,174.05	\$1,180,382.42	10,153,188.75	15,358,793.17
Funds Available	\$3,038,728.70	\$634,484.79	\$249,834.46	\$102,174.05	\$1,180,382.42	\$10,680,113.12	\$15,885,717.54
Expenditures:							
Personal Services	\$2,792,693.67	\$537,217.46	\$233,429.13	\$ 32,260.37	\$ 662,234.24	\$ 4,436,515.57	\$ 8,730,350.44
Staff Benefits					130,379.33	1,705,388.60	1,835,767.93
Travel	31,554.96	8,109.51	3,751.93	109.20	35,779.95	217,024.36	296,329.91
Equipment	78,318.68	29,854.93	1,468.00	12,262.48	37,299.12	473,330.38	632,533.59
Land & Structures	1,492.67				66,531.87	41,821.77	109,846.41
Other Operating	134,668.72	23,302.89	11,185.40	57,542.00	248,157.81	3,239,347.63	3,714,204.45
Total Expenditures	\$3,038,728.70	\$634,484.79	\$249,834.46	\$102,174.05	\$1,180,382.42	\$10,113,428.31	\$15,319,032.73
Balance June 30, 1982						\$ 566,684.81	\$ 566,684.81

The University of Tennessee Agricultural Experiment Station



Knoxville Experiment Station
Martin Experiment Station

Branch Stations

Dairy Experiment Station
Highland Rim Experiment Station
Middle Tennessee Experiment Station
Plateau Experiment Station
Tobacco Experiment Station
West Tennessee Experiment Station

9 Ames Plantation
10 Cumberland Forestry Field Station*
11 Friendship Forestry Field Station*
12 Highland Rim Forestry Field Station*
13 Milan Experiment Station
14 Oak Ridge Forest and Arboretum*

*Forestry Experiment Station

AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY

Proj. No.***Research Project Titles***

TN 488 (S-111)	Price Discovery and Informational Flows for Major Agricultural Commodities in the Southern Region
TN 509	Farm Adjustment Opportunities on Commercial Farms in Tennessee
TN 553 (S-141)	Housing For Low and Moderate Income Families
TN 554	Rural Economies and the Structure of the Agricultural Production Sector in Tennessee
TN 603 (S-148)	Changing Structure of Agriculture: Causes, Consequences and Policy Implications
TN 606	Analyses of Land Values and Related Critical Financial Ratios
TN 609	Migration and Other Demographic Changes of the Tennessee Rural Population
TN 619	Economics of Tobacco Production in Tennessee
TN 626	Alternative Systems of Swine Production
TN 628	The Cost of Beverage Bottle and Can Litter to the Agricultural Sector in Tennessee
TN 633 (S-153)	An Economic Analysis of Alternative Marketing Strategies for Cotton Producers
TN 635	Changing Population and Agriculture in Tennessee, 1970-1980
TN 636	Farmland Leasing Arrangements of Tennessee Farmers
TN 641	Utilization and Control of Land in and Around Rural Communities in Tennessee
TN 642	An Economic Analysis of Livestock Auction Markets in Tennessee

TN 648 (S-166)	The Impact of Changing Costs, Institutions and Technology on the Southern Dairy Industry
TN 651 (S-158)	Improving Community Services in Nonmetropolitan Counties in the South
TN 654	Alternative Pricing Methods for Tennessee Livestock Producers
TN 658	Health Care Services in Rural Tennessee
TN 671	Strategies for Improving the Effectiveness of Soil Erosion Control and Rural Water Quality
TN 677	Use of No-Tillage and Other Agricultural Practices by Tennessee Farm Operators
TN 681 (S-103)	Regional Advantages in Producing and Marketing Woody Ornamentals
TN 683 (S-172)	The Economics of Improving Productivity in the Livestock-Meat Systems in the South
TN 685 (S-176)	Marketing Systems for Grains and Soybeans
TN 691	Farm Business Performance
TN 694 (S-178)	Structural and Operational Efficiency of the Fruit and Vegetable Production-Marketing System
TN 699	Business Organization Strategies for Management Growth and Intergenerational Transfer - Farm/Business

Bulletins, Articles, and Reports—1982

Badenhop, Merton B. (with Peter U. Iniodu). Credit and Agricultural Development: The Case of Cross River State, Nigeria, International Report 2. Office of International Programs, Institute of Agriculture, The University of Tennessee.

Badenhop, Merton B. "Marketing Wood Ornamental Plants by Tennessee Nursery Wholesalers." Tennessee Farm and Home Science, 120:8-11.

- Badenhop, Merton B. Nursery Management and Production Costs: Burford Holly (*Ilex Cornuta Burfordii*). Alabama Agricultural Experiment Station Bulletin 274.
- Badenhop, Merton B. and Fred B. Perry Jr. Production and Marketing of Woody Ornamentals. Alabama Experiment Station Bulletin 546.
- Brooker, John R., Earl A. Stennis, C. J. Lamkin and T. H. Fondren. Analysis of Optimum Cotton Marketing Structure in Tennessee. Tennessee Agricultural Experiment Station Bulletin 609.
- Brooker, John R., V. A. Vitelli, Lanny Bateman and W. J. Free. An Assessment of the Production and Marketing Potential for Fruits and Vegetables in the South. TVA and Southern Experiment Stations Bulletin Y-122.
- Brooker, John R., Charles M. Farmer and Morgan D. Gray. Cash-Futures Price Relationships for Tennessee Cotton at Memphis. Tennessee Agricultural Experiment Station Research Report No. 82-11.
- Brooker, John R. and Danny E. Terry. Cotton Marketing Alternatives. Tennessee Agricultural Experiment Station, Research Report No. 82-06.
- Brooker, John R. Direct Marketing of Fruits and Vegetables Through Farmers' Markets. Tennessee Agricultural Experiment Station, Research Report No. 82-12.
- Brooker, John R. Direct Marketing of Fruits and Vegetables Through Pick-Your-Own Outlets. Tennessee Agricultural Experiment Station, Research Report No. 82-09.
- Brooker, John R., John Adrian and Joe Free. "Market Access Consideration of Small Quantity Producers of Fruits and Vegetables." Midsouth Journal of Economics, VI (2).
- Brooker, John R., C. J. Lamkin, E. A. Stennis and T. H. Fondren. Optimum Cotton Marketing Structure for the Southeastern United States. Southern Cooperative Series Bulletin 277.

- Brooker, John R., Timothy H. Fondren, Earl A. Stennis and Corbet J. Lamkin. Optimum Organization of Gins and Warehouses for Marketing Cotton in the Mississippi Delta Area of Mississippi. Mississippi Agricultural and Forestry Experiment Station Technical Publication No. 23.
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- Klindt, Thomas H., William M. Park and Lanny W. Hass. "Multiple Objectives of Soil Erosion Control and Implications for Policy," Tennessee Farm and Home Science, 123:11-14.
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- Speilman, Kimberly A., Dan L. McLemore and Glen D. Whipple. "A Comparison of OLS and Frontier Function Methods for Estimating Long Run Average Cost Curves" (Abstract). American Journal of Agricultural Economics, 64(5).

Todd, R. W., Toby Boring and B. R. McManus. Land Lease Agreements: Application and Legal Implications. Tennessee Farm and Home Science 123:8-10.

Walker, O. Neal, Boontam Prommani and Kenneth J. Nicol. "Incorporating Farm Level Characteristics in Regional Models: The Thailand Case." Max R. Langham and Ralph H. Retzlaff, eds., Agricultural Sector Analysis in Asia. Singapore: Singapore University Press.

Whipple, Glen Don. The Potential Price Relationships Between Fresh Fluid and Reconstituted Fluid Milk in the Southeast and Southcentral United States Milk Markets. Tennessee Agricultural Experiment Station, Research Report No. 82-01.

Whipple, Glen Don. "Social Costs of the Dairy Price Support Program" (Abstract). American Journal of Agricultural Economics, 64(5):1080.

AGRICULTURAL ENGINEERING

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 543	Management Practices for Erosion and Sedimentation Control
TN 546	Engineering Systems and Energy Needs for Cotton Production (contributing to Regional Project S-134)
TN 560	Animal Waste Utilization and Treatment Systems (contributing to Regional Project S-144)
TN 577	Curing, Storing and Feeding High Value Hay in Large Packages
TN 587	Use of the Earth as an Energy Source or Sink for Heating and Cooling Buildings
TN 602	Energy Reduction for On-Farm Processing of Agricultural Products (contributing to Regional Project S-147)
TN 604	Optimize Efficiency of Energy Utilization in Agricultural Housing Systems (contributing to Regional Project S-149)

- TN 622 Energy Use Analysis and Application of Conservation Practices on Tennessee Farms
- TN 629 Energy Conservation in Harvesting and Curing Air Cured Tobacco
- TN 653 Energy Reduction for Crop Production Systems (contributing to Regional Project S-160)
- TN 661 The Application of Engineering Principles to Animal and Biological Systems
- TN 662 Physical Properties of Blended Yarns and Their Constituent Fibers

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Physical Effects of Harsh Stems on the Utilization of Soybean Hay by Jersey Cows. Tennessee Farm and Home Science No. 121, pp 16-19. 1982.
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- Wilhelm L. R. and F. D. Tompkins and M. W. Cantrell. Software for a Tractor-Mounted Data Acquisition System. Agricultural Engineering 62(12):16.

ANIMAL SCIENCE

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 511 (S-131)	Hormonal Relationships in Egg Shell Formation
TN 528	Factors Affecting Nutrient Consumption and Digestibility of Grazed and Harvested Forages
TN 520	Flexibility of Beef Production from Forage in Tennessee
TN 535	Absorption of Minerals in Large Animals
TN 538	Effect of Heterosis on Nutritional Efficiency of Beef Production

TN 541	Relationships of Morphological Development of Joints and Long Bones to Skeletal Soundness of Growing Swine
TN 551	The Etiopathology of Avian Glaucoma
TN 552	Vitamin Injections for Beef Cows
TN 559 (S-145)	Nutritional Systems for Swine to Increase Reproductive Efficiency
TN 563	Management of Purchased Feeder Pigs
TN 586	Mineral-Hormonal Interrelationships to Hypomagnesemia in Ruminants
TN 598	Adrenocorticotrophin Involvement in Stress Related Early Embryonic Mortality in Swine
TN 607	Development of Low-Protein Broiler Diets
TN 613	Studies in Cysteine Bioavailability in Heat-Treated Proteins
TN 614	The Effect of Ketone Bodies in Lipolysis During Fasting, Pregnancy and Lactation in Ruminants
TN 627	Genetic Variation in Nutrient Intake and Utilization of Grazing Beef Females as Related to Genotype X Environment Interaction
TN 630	Improved Sorting Techniques for Plain Feeder Calves
TN 631	Factors Influencing Market-Transit and Post-Transit Health and Performance of Southeastern Feeder Calves
TN 637	Alternative Systems of Swine Production
TN 639 (S-10)	Breeding Methods for Beef Cattle in the South
TN 640 (S-49)	Genetic Methods of Improving Dairy Cattle for the South

TN 643	Evaluation of Various Forage Systems in Reducing Cost of Milk Production
TN 644	Effects of Confinement and Nutrition of Lactating and Dry Cows on Cow Health and Performance
TN 657	Utilization of Conventional and By-Products Feeds in Total Mixed Rations for Dairy Cattle
TN 667 (S-121)	Etiology and Control of Hypomagnesemic Tetany in Ruminants Utilizing Cool Season Grasses
TN 673 (AHD)	Change in Platelets and Hormones in Hypomagnesemic Pregnant or Lactating Ewes
S 90	Use of Highly Prolific Breed X Mutton Breed Crosses to Improve Lamb Production in Tennessee

Projects Concluded in 1982

TN 475	Effect of Plane of Nutrition on Mammary Gland Development in Dairy Heifers
TN 512	Alternatives for Finishing Cattle in Tennessee
TN 515	Endocrine Factors Associated with Transport of Molecules into and out of the Uterus
TN 539	Evaluation of Overseeding Systems for Improvement of Pastures for Beef Production
TN 567	Biochemical and Histological Evaluation of Thiamin Effects on Lead Intoxication in Cattle
S 2	Swine Testing and Evaluation
S 59	Bull Evaluation
S 79	Exotic Breeds of Sheep to Increase Lamb Production in Tennessee
S 82	Nutritive Value of Agricultural and Industrial Waste Products

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- Beckman, III, G. E., M. C. Bell, J. A. Bacon and G. R. Bratton. Magnesium Depletion and Repletion Effects on Tissue Minerals in Sheep. *Tennessee Farm and Home Science* 123:15-20.
- Damron, W. S. and J. B. McLaren. Rumen Ciliated Protozoal Populations in Tennessee Feeder Steers. *Tennessee Farm and Home Science* 124:10-13.
- Eiler, Hugo, Cindy S. Armstrong, J. D. Smalling and W. A. Lyke. Passage of oxogenous cortisol and progesterone into the bovine ejaculate collected by artificial vagina and electro-ejaculation. *American Society of Animal Science and Canadian Society of Animal Science (Joint Annual Meetings)* August 8 - 11:82. 1982.
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Swanson, Eric W. and Richard E. Fish. Effects of excessive intakes of iodine upon growth and thyroid function of growing Holstein heifers. Journal of Dairy Science 65(4):605-610. 1982.

CHILD AND FAMILY STUDIES

Proj. No.

Research Project Titles

TN 623

The Familial Antecedents of Adolescent Independence

TN 682 (S-171)

Dynamics of Life Plans and Attainment of Low-Income Youth: A Longitudinal Analysis

Projects Concluded in 1982

TN 520 (S-126)

Career Projections and Attainment of Low-Income Youth: Changes Over Time

Bulletins, Articles, and Reports - 1982

- Albrecht, K., G. W. Peterson and M. E. Strivers. Maternal Child-rearing and the Self-Esteem of Low-Income Rural Children: Implications for Parenting Programs. *Tennessee Farm and Home Science*, 123:26-28.
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**ENTOMOLOGY
AND PLANT PATHOLOGY**

Proj. No.***Research Project Titles***

- | | |
|---------------|---|
| TN 525 (S-90) | Rhizosphere Ecology as Related to Plant Health and Vigor |
| TN 533 | Identification & Pathogenicity of Selected Plant-Parasitic Nematodes in Tennessee |

TN 536	Role of Face Flies in Epidemiology of Infectious Bovine Keratoconjunctivities (IBK)
TN 537	Control of Lepidopterous Pests on Field Corn
TN 544	Management of Vegetable Insect Pests
TN 557	Susceptibility of Cotton Cultivars to Seedling Pathogens
TN 571	Evaluation of Insecticides for Use on Minor Crops in Tennessee
TN 573	Control of Tobacco Insects
TN 578	Etiology and Control of Small Grain Diseases
TN 580	Diseases of Ornamentals and Nursery Crops
TN 590	Detection and Control of Soybean Diseases
TN 594	Etiology, Ecology, and Control of Cotton Diseases
TN 595	Biology, Ecosystem Dynamics, and Control of Soybean Diseases
TN 624 (S-157)	Tactics for Management of Soybean Pest Complexes
TN 625 (S-154)	Variability of Root-Knot and Cyst Nematodes and Factors Influencing their Population Dynamics
TN 663	Investigation of the Leaf Rust Disease of Snapbean
TN 665	Biology and Ecology of Biting Flies in Tennessee
TN 666	Biological Control of Scale Insects
TN 672	Ecology and Management of Cotton Insects
TN 693	Pasture & Forage Insect Pest Ecology and Control
S 87 (S-85)	Pesticide Impact Assessment Research and Data Analysis

Projects Concluded in 1982

TN 527 (S-70)	Virus Corn Diseases and Sorghum
TN 545	Ecology and Control of Forage and Pasture Insect Pests
TN 591	Breeding for Disease Resistance in Dark Tobacco
TN 617 (S-127)	Forage Legume Viruses

Bulletins, Articles and Reports - 1982

- Arroyo, Teresa. 1982. Factors affecting *Pythium ultimum* oospores: production, germination and virulence to cotton seedlings in soil. M. S. Thesis, Univ. of Tennessee, Knoxville, 38pp.
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FOOD TECHNOLOGY AND SCIENCE

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 547	Quality and Shelf Life of Food Products in the Marketing Channels
TN 592	Control of Aflatoxin and Related Mycotoxins in Agri Commodities Currently Processed in Finished Foods
TN 593	Antimicrobial Properties of Naturally Occurring Compounds and Currently Approved Food Additives
TN 596	Lipids and Their Relationship to Food Quality
TN 600	Physically Chemical and Histological Traits of Muscle Associated With Composition and Palatability
TN 634	Utilization of Proteins and Fats from Unconventional Sources in Manufactured Meat Products
TN 647	Maximizing the Use, Nutritive Quality and Consumer Acceptance of Sweet Potatoes and Their Products
TN 659	Improvement of Honey Produced in Tennessee
TN 670	Marketability and Acceptability of Beef Produced Under Forage and Forage—Grain Management System
TN 676	Evaluation of The Quality of Fresh and Processed Fruit
TN 698	Nutritive and Quality Evaluation of the Southern Peel (<i>Vigna Unguiculata</i>) and Some of Its Products
S 88	Pesticides in/on Raw and Processed Foods
S 89	Processing Methods for Dairy Products: Efficiency and Relationship to Product Quality

Projects Concluded in 1982

- TN 508 Quality Evaluation of Vegetable Cultivars and Development of Food Products
- TN 558 The Use of Nonfat Dry Milk for the Manufacture of Mozzarella Cheese
- TN 616 Cottage Cheese Whey Use in Foods and For Alcohol Production

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FORESTRY, WILDLIFE, AND FISHERIES

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TN-1-2-U58-0	Digestibility of High Energy and High Protein Feedstuffs for Channel Catfish
TN 599	Applied Physiology of Economically Important Fishes
TN 601	Reclamation of Drastically Disturbed Soils
TN 632	Breeding Strategies for Genetic Improvement of Commercial Forest Trees in the South
TN 660	Game Fish Management in Tennessee Waters
TN 668	Warmwater Aquaculture
M-S 23	Breeding of Upland Hardwoods

M-S 24	Breeding of Coniferous Trees
M-S 25	Defect Estimation of East Tennessee Hardwoods
M-S 27	Natural History of Large Mammals in the Southern Appalachian Forest
M-S 28	Wood Quality Evaluation by Gamma-Ray Densitometry
M-S 29	Economic Impact of Death Taxes on Tennessee's Timber Resources
M-S 30	Effects of Manipulating Forest Habitats Upon the Physical Condition of Bobwhite Quail
M-S 31	Cultural Techniques for Improving the Survival and Growth of Trees
M-S 32	Cooperative Hunting Programs on Small, Private Forests in Tennessee
M-S 33	Visual Preferences of Recreationists During On-Site Engagements in Forest Environments
M-S 34	Identifying and Analyzing Forest Resource Futures
M-S 35	Containerized and Nursery Culture of Forest Tree Seedlings
M-S 36	Effects of Air Pollution on Radial Growth and Wood Density of Trees
M-S 37	Wildlife Population Responses to Forest Management Practices in the Southern Appalachian Forests
S 30	The University of Tennessee Arboretum
S 91	Responses of Wildlife to Habitat Modifications on Forests and Associated Lands in Tennessee

Projects Concluded in 1982

- M-S 21 Development of Systems Analytic and Simulation
Techniques for Renewable Resource Management
- M-S 22 Prescribed Fire for Site Preparation and Improved
Pine Productivity in Tennessee Forests
- M-S 26 Controlling Strip Mine Runoff

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NUTRITION AND FOOD SCIENCES

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TN 519	The Effects of Changing Food Prices and Other Intervening Variables on Food Acceptance
TN 572	Factors Affecting Food Habits of Adolescents and Young Adults
TN 605	Nutritional Health of Adolescent Females
TN 611	Interrelationship Between Food Restriction and Metabolism of Drugs and Chemicals
TN 655	Effect of Dietary Sulfur on Drug Efficacy
TN 656	Effect of Dietary Sulfur on the Formation and Accumulation of Polyanimes
TN 689	Effect of Feed Restriction, Exercise and Age on Fat Synthesis, Body Composition and Survival of Rats
TN 690	Microwave Heating: Effects on Physical, Chemical and Sensory Properties of Selected Foods
<i>Projects Concluded in 1982</i>	
TN 502	Metabolic Alterations in the Genetically Obese Mouse
TN 507	Influence of Dietary Protein on Renal Function, Protein Status and Longevity of Male Rats

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ORNAMENTAL HORTICULTURE AND LANDSCAPE DESIGN

<i>Proj. No.</i>	<i>Research Project Titles</i>
TN 370	Shade Tree Cultivars
TN 534	Production Systems for Nursery Stock
TN 581	Chemical Control of Plant Growth in Florist Pot and Bedding Plants
TN 584	Histochemical Characterization of Cytoplasmic Globules In Plants

- TN 620 Evaluation of New Cultivars, Culture and Mechanical Practices in Turfgrass
- TN 621 Pesticide Evaluations and Their Effects on Turfgrass

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PATHOBIOLOGY***Proj. No.******Research Project Titles***

- TN 669 (S-169) Influences of Immunological Factors on Neonatal Diseases in Food Producing Animals and Horses
- TN 675 (AHD) Chronological Development of the Immune Response of the Bovine Lower Respiratory Tract to *Pasteurella Hemolytica*
- TN 686 Role of Bovine Virus Diarrhea Virus Vaccine Strains in Bovine Respiratory Tract Disease

Projects Concluded in 1982

- Tn 550 Effect of Bovine Virus Diarrhea Virus on Bovine Respiratory Tract Disease
- TN 568 Effect of BVD Virus on Bovine Respiratory Tract Disease (BRTD) and on Pulmonary Immunity

Bulletins, Articles, and Reports - 1982

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PLANT AND SOIL SCIENCE***Proj. No.******Research Project Titles***

- TN 406 Small Grain Improvement Through Breeding (Wheat, Oats, Barley, and Rye)
- TN 408 Corn Improvement
- TN 414 Field Crop Variety Evaluation
- TN 428 Soil Survey and Its Relation to Behavior of Different Soils Under Various Uses
- TN 444 Forage Crops Ecology and Management

TN 476	Soybean Breeding
TN 506	Burley Tobacco Genetics and Breeding
TN 540	Soil and Crop Management Systems for Soil Conservation and Erosion Control
TN 561	Crop Yield as Affected by Plant Environment
TN 562	Effect of Soil, Soil Fertility Level, Added Nutrients and Season on Crop Yield
TN 564	Effects of Applied Wastes on Soil and Crops
TN 565	Availability of Secondary Nutrients in Tennessee Soils
TN 566	Evaluation and Breeding of Forage Legumes
TN 570	Cotton Production Practices
TN 574	Cotton Seed and Fiber Development
TN 575	Plant Response to Herbicides and Antidotes
TN 576	Plant Growth Regulator Effects on Fruit, Vegetable and Agronomic Crops
TN 579	Forage Crop Quality Under Different Management and Environments
TN 582	Vegetable Crop Production
TN 583	Fertilization and Cultural Practices to Improve Tobacco Safety
TN 589	Effects of Soil pH Levels on Crop Growth
TN 591	Breeding for Disease Resistance in Dark Tobacco
TN 597	Development and Evaluation of Rootstocks for Peaches (contributing to Regional Project S-97)

TN 610	Grape Germplasm Evaluation for Enological Utilization (contributing to Regional Project S-142)
TN 612	Significance and Distribution of Mineral Components in Southern Soils (contributing to Regional Project S-152)
TN 618	Fruit Crop Investigations
TN 638	Weed Control in Forage Crops
TN 645	Germplasm Development in Cool Season Forage Grasses
TN 649	Field Crop Responses to Plant Nutrient Application on Soils
TN 652	Influence of Crop Herbicide Management on Weed Population Dynamics and Subsequent Crop Physiology (contributing to Regional Project S-159)
TN 678	Mycotoxins of Corn and Other Feed Grains (contributing to Regional Project S-175)
TN 679	Rootstock and Interstem Effects on Pome and Stone Fruit Tree Growth and Fruiting (contributing to Regional Project NC-140)
TN 684	Agricultural Meteorology and Climatology for Production in the Southern Region (contributing to Regional Project S-173)
TN 692	Weed Control in Field and Horticultural Crops
TN 695	Cellular and Molecular Genetics for Crop Improvement (contributing to Regional Project S-179)
TN 696	Biology, Epidemiology, and Control of Viruses and Mycoplasma-Like Organisms Causing Diseases of Corn and Sorghum (contributing to Regional Project S-70)

- TN 697 Plant Germplasm —Its Introduction, Maintenance and Evaluation (contributing to Regional Project S-9)

Projects Concluded in 1982

- TN 510 Weed Control in Economic Crops
- TN 518 Plant Germplasm - Its Introduction, Maintenance and Evaluation (contributing to Regional Project S-9)
- TN 526 Viruses and Mycoplasma-like Organisms Causing Diseases of Corn and Sorghum (contributing to Regional Project S-70)
- TN 555 Mycotoxins of Corn and Other Feed Grains (contributing to Regional Project S-132)

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- Howard, Donald D., Joseph R. Overton, Horace C. Smith and Tom McCutchen. Soybean Response to Phosphate and Potash Fertilization on Vicksburg and Henry Silt Loam Soils. Tennessee Farm and Home Science. 122:4-6.
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- Lessman, G. M. and T. C. McCutchen. Foliar Fertilization of Cotton. Tennessee Farm and Home Science 122:7-8.
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RURAL PRACTICE

Proj. No.

Research Project Titles

TN 650

(NC-107)

Bovine Respiratory Disease

TN 674 (AHD)

Mechanisms of Immunological Protection and Vector Transmissions of *Moraxella Bovis* in Cattle

Projects Concluded in 1982

TN 548

The Immunologic, Biologic, and Chemo-Therapeutic Control of Infectious Keratoconjunctivitis in Tennessee Beef Cattle

- TN 549 The Pathogenesis and Control of Bovine
Respiratory Disease in Tennessee Beef Calves

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- Glass, H. W., Jr. 1982. The Role of Face Flies in the Spread of Bovine Pinkeye. M.S. Thesis, Univ. of Tennessee, Knoxville.

**TEXTILES, MERCHANDISING,
AND DESIGN**

Proj. No.

Research Project Titles

- | | |
|--------|---|
| TN 646 | Effects of Functional Textile Finishes on Comfort and Protection of Consumers |
| TN 664 | Integrated Design Research for Household Energy Conservation |

Bulletins, Articles and Reports — 1982

- Case, F. D. "Integrated Design Research for Household Energy Conservation: Clothing, Interiors and Housing," Final Report, Univ. of Tenn., September, 1982, 440 pp.

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- Easter, E. P. "Decontamination of Pesticide Contaminated Fabrics by Laundering." Unpublished Ph.D. Dissertation, Univ. of Tenn., Knoxville, 1982.

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Appointments

Armes, Larry, Graduate Research Assistant in Entomology and Plant Pathology, January 1, 1982	Lisa G. Bettison, Graduate Research Assistant in Animal Science, September 1, 1982
R. B. Arnold, Graduate Research Assistant in Nutrition and Food Sciences, March 29, 1982	E. L. Bradley, Graduate Research Assistant in Plant and Soil Science, September 20, 1982
James R. Bacon, Graduate Research Assistant in Agricultural Economics, October 1, 1982	Allan J. Brody, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, May 21, 1982
Anita Baker, Graduate Research Assistant in Entomology and Plant Pathology, June 14, 1982	Thomas Dale Bryson, Graduate Research Assistant in Animal Science, September 13, 1982
Rebecca A. Benda, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, July 1, 1982	Thomas J. Bundy, Graduate Research Assistant in Agricultural Economics, January 1, 1982

- J. N. Burch, Graduate Research Assistant in Plant and Soil Science, September 23, 1982
- Anthony P. Clevenger, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, July 15, 1982
- Karen L. Daniel, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, January 1, 1982
- Susan C. Gettys, Graduate Research Assistant, Food Technology and Science, July 1, 1982
- Billy Bruce Greene, Graduate Research Assistant in Animal Science, September 1, 1982
- George H. Gregg, Graduate Research Assistant, Food Technology and Science, September 21, 1982
- Joey M. Gross, Graduate Research Assistant in Agricultural Economics, September 20, 1982
- Elizabeth S. Groton, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, March 25, 1982
- James P. Groton, Jr., Graduate Research Assistant in Forestry, Wildlife, and Fisheries, May 1, 1982
- C. B. Guy, Graduate Research Assistant in Plant and Soil Science, March 29, 1982
- Bruce C. Hastings, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, November 1, 1982
- Holladay, Mary Joyce, Graduate Research Assistant in Entomology and Plant Pathology, September 1, 1982
- Hribar, Lawrence, Graduate Research Assistant in Entomology and Plant Pathology, September 20, 1982
- D. W. Jones, Graduate Research Assistant in Agricultural Engineering, September 20, 1982
- Christian J. Keller, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, June 15, 1982
- Carol Kounanis, Graduate Research Assistant in Plant and Soil Science, March 29, 1982
- M. A. Krstich, Graduate Research Assistant in Plant and Soil Science, September 20, 1982
- Lori D. Lester, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, September 8, 1982

- Thomas A. Levis, Graduate Research Assistant in Agricultural Economics, September 20, 1982
- G. Lob, Graduate Research Assistant in Nutrition and Food Sciences, September 1, 1982
- Robert J. Longwitz, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, September 20, 1982
- N. L. Marable, Associate Professor in Nutrition and Food Sciences, August 1, 1982
- Lynne B. Marrale, Graduate Research Assistant in Agricultural Economics, June 21, 1982
- Candace Martino, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, December 1, 1982
- Clarence Maslowski, Graduate Research Assistant in Entomology and Plant Pathology, September 20, 1982
- Emily A. McClain, Graduate Research Assistant in Agricultural Economics, March 29, 1982
- Donald K. Moore, Graduate Research Assistant in Food Technology and Science, September 15, 1982
- B. J. Morgan, Graduate Research Assistant in Plant and Soil Science, January 1, 1982
- Stephen C. Morse, Graduate Research Assistant in Agricultural Economics, September 10, 1982
- E. S. Myles, Graduate Research Assistant in Nutrition and Food Sciences, March 29, 1982
- Harold M. Nisbett, Graduate Research Assistant in Food Technology and Science, September 15, 1982
- P. W. Ramsey, Graduate Research Assistant in Plant and Soil Science, January 1, 1982
- T. H. Rhew, Graduate Research Assistant in Nutrition and Food Sciences, September 1, 1982
- Bonnie P. Riechert, Assistant Communications Specialist in Communications, June 2, 1982
- Emilia Ric-Munoz, Graduate Research Assistant in Food Technology and Science, September 21, 1982
- R. A. Ruark, Graduate Research Assistant in Nutrition and Food Sciences, September 1, 1982

- Jennifer L. Sanders, Graduate Research Assistant in Ornamental Horticulture and Landscape Design, September 15, 1982
- P. P. Shelby, Graduate Research Assistant in Plant and Soil Science, September 9, 1982
- Tina Shipley, Graduate Research Assistant in Animal Science, January 1, 1982
- Clark Smothers, Graduate Research Assistant in Animal Science, February 1, 1982
- Mary E. Stivers, Graduate Research Assistant in Child and Family Studies, September 1, 1982
- Henry W. Stockley, Graduate Research Assistant in Food Technology and Science, July 1, 1982
- P. J. Tacci, Graduate Research Assistant in Nutrition and Food Sciences, September 1, 1982
- Bridget Taylor, Graduate Research Assistant in Textiles, Merchandising and Design, April 1, 1982
- J. L. Vest, Graduate Research Assistant in Plant and Soil Science, September 20, 1982
- R. D. von Bernuth, Associate Professor in Agricultural Engineering, October 1, 1982
- G. C. Viglietti, Graduate Research Assistant in Nutrition and Food Sciences, March 22, 1982
- Robert M. Wheat, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, June 15, 1982

Terminations

- Sarah L. Abdal, Graduate Research Assistant in Agricultural Economics, June 8, 1982
- R. V. Acuff, Graduate Research Assistant in Nutrition and Food Sciences, August 31, 1982
- Larry Armes, Graduate Research Assistant in Entomology and Plant Pathology, December 10, 1982
- Jeffrey E. Ballew, Graduate Research Assistant in Animal Science, August 31, 1982
- Sara Betts, Graduate Research Assistant in Textiles, Merchandising and Design, December 31, 1982
- T. M. Boring, Graduate Research Assistant in Agricultural Economics, August 31, 1982

Tina V. Boring, Graduate
Research Assistant in
Entomology and Plant
Pathology, March 19, 1982

Patrick W. Bosheers, Graduate
Research Assistant in Animal
Science, December 31, 1982

Timothy D. Broadbent, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries, June
30, 1982

D. W. Brown, Professor in
Agricultural Economics,
November 5, 1982

Patrick C. Carr, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries, May
31, 1982

D. T. Corley, Graduate Research
Assistant in Nutrition and
Food Sciences, January 31,
1982

R. F. Cullum, Graduate Research
Assistant in Agricultural
Engineering, July 21, 1982

Hermon L. Dickerson II,
Graduate Research Assistant in
Ornamental Horticulture and
Landscape Design, August 20,
1982

C. B. Dodson, Graduate Research
Assistant in Agricultural
Economics, December 31,
1982

Mark S. Franzreb, Graduate
Research Assistant in Food
Technology and Science,
August 31, 1982

W. P. Fussell, Graduate Research
Assistant in Plant and Soil
Science, December 30, 1981

R. Steven Garris, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries, May
31, 1982

Mack Harney, Graduate Research
Assistant in Entomology and
Plant Pathology, March 15,
1982

Cynthia A. Harper, Graduate
Research Assistant in
Ornamental Horticulture and
Landscape Design, August 31,
1982

Judy A. Harrison, Graduate
Research Assistant in Food
Technology and Science,
February 28, 1982

Mark A. Harrison, Graduate
Research Assistant in Food
Technology and Science, June
30, 1982

M. J. Hendrix, Graduate
Research Assistant in Nutrition
and Food Sciences, December
31, 1982

- Keith Henegar, Graduate
Research Assistant in
Entomology and Plant
Pathology, September 10, 1982
- K. G. Hensley, Graduate
Research Assistant in
Agricultural Engineering, July
23, 1982
- Paula J. Herald, Graduate
Research Assistant in Food
Technology and Science,
August 31, 1982
- Donald G. Hodges, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries,
December 31, 1982
- Randal D. Holtzclaw, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries,
September 30, 1982
- J. H. Hope, Graduate Research
Assistant in Plant and Soil
Science, May 31, 1982
- Charles M. Irwin, Graduate
Research Assistant in Animal
Science, December 31, 1982
- N. S. Kearney, Graduate
Research Assistant in Plant
and Soil Science, May 31, 1982
- Robert E. Kelly, Graduate
Research Assistant in
Entomology and Plant
Pathology, March 19, 1982
- J. M. Kennedy, Graduate
Research Assistant in Plant
and Soil Science, September
17, 1982
- William B. Kittrell, Jr., Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries, June
30, 1982
- M. R. McLaughlin, Assistant
Professor in Entomology and
Plant Pathology, January 31,
1982
- W. J. McLaurin, Assistant
Professor in Plant and Soil
Science, November 30, 1982
- M. A. McNeil, Graduate
Research Assistant in Nutrition
and Food Sciences, August 31,
1982
- David C. Miller, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries, April
30, 1982
- Gary Miller, Graduate Research
Assistant in Entomology and
Plant Pathology, August 28,
1982
- Deborah Millsap, Graduate
Research Assistant in
Entomology and Plant
Pathology, March 19, 1982
- D. W. Monks, Graduate Research
Assistant in Plant and Soil
Science, May 31, 1982

B. J. Morgan, Graduate Research Assistant in Plant and Soil Science, November 30, 1982

E. S. Myles, Graduate Research Assistant in Nutrition and Food Sciences, December 31, 1982

Constance L. Neely, Graduate Research Assistant in Plant and Soil Science, December 31, 1982

Terry Niblack, Graduate Research Assistant in Entomology and Plant Pathology, March 28, 1982

Harold M. Nisbett, Graduate Research Assistant in Food Technology and Science, December 31, 1982

Chris Payne, Graduate Research Assistant in Entomology and Plant Pathology, June 11, 1982

D. F. Peters, Graduate Research Assistant in Child and Family Studies, August 31, 1982

W. T. Pettigrew, Graduate Research Assistant in Plant and Soil Science, June 30, 1982

K. L. Pierce Jr., Research Associate in Agricultural Engineering, December 31, 1982

Basil S. Pinker, Graduate Research Assistant in Forestry, Wildlife, and Fisheries, September 16, 1982

Alan R. Post, Graduate Research Assistant in Food Technology and Science, August 31, 1982

Laurie S. Post, Graduate Research Assistant in Food Technology and Science, August 31, 1982

Jan D. Roberts, Senior Research Assistant in Ornamental Horticulture and Landscape Design, September 30, 1982

K. M. Ross, Graduate Research Assistant in Plant and Soil Science, May 31, 1982

N. N. Salvetti, Graduate Research Assistant in Nutrition and Food Sciences, March 19, 1982

F. J. Sikora, Graduate Research Assistant in Plant and Soil Science, September 20, 1982

J. J. Slade, Graduate Research Assistant in Plant and Soil Science, October 8, 1982

D. B. Smith, Graduate Research Assistant in Plant and Soil Science, January 31, 1982

Kimberly H. Spielman, Graduate Research Assistant in Agricultural Economics, August 31, 1982

Henry W. Stockley, Graduate
Research Assistant in Food
Technology and Science,
August 31, 1982

Curtis Sullivan, Graduate
Research Assistant in Animal
Science, August 31, 1982

Bridget Taylor, Graduate
Research Assistant in Textiles,
Merchandising and Design,
December 31, 1982

P. J. Tacci, Graduate Research
Assistant in Nutrition and
Food Sciences, November 30,
1982

G. L. Thomas, Graduate
Research Assistant in Plant
and Soil Science, December
31, 1982

Billy J. Trevena, Associate
Professor in Agricultural
Economics, July 30, 1982

David A. Turner, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries, July
31, 1982

Nadine A. Turner, Graduate
Research Assistant in
Ornamental Horticulture and
Landscape Design, July 31, 1982

William G. Wathen, Graduate
Research Assistant in Forestry,
Wildlife, and Fisheries, June
30, 1982

Glenn R. Wehner, Graduate
Research Assistant in Animal
Science, August 31, 1982

J. W. West, Graduate Research
Assistant in Plant and Soil
Science, August 31, 1982

Donald Wimmer, Graduate
Research Assistant in
Entomology and Plant
Pathology, August 28, 1982

Change of Titles

Donald A. Cunningham, to
Research Associate in
Agricultural Economics,
September 1, 1982

C. R. Graves to Professor of
Plant and Soil Science, July 1,
1982

William E. Hammitt, to Associate
Professor in Forestry, Wildlife,
and Fisheries, July 1, 1982

W. E. Hart, from Graduate
Research Assistant to
Instructor in Agricultural
Engineering, September 2,
1982

Z. A. Henry, from Associate
Professor to Professor in
Agricultural Engineering, July
1, 1982

L. S. Jeffery to Professor of Plant
and Soil Science, July 1, 1982

Dan L. McLemore, to Professor
in Agricultural Economics,
July 1, 1981

Kelly R. Robbins to Associate
Professor in Animal Science,
July 1, 1982

D. O. Richardson to Professor
and Head in Animal Science,
May 1, 1982

Richard J. Strange, to Associate
Professor in Forestry, Wildlife,
and Fisheries, July 1, 1982

Retirements

Charles C. Chamberlain,
Professor in Animal Science,
April 30, 1982

Lois E. Southworth, Assistant
Professor in Child and Family
Studies, September 30, 1982

Frank R. Mraz, Professor in
Animal Science, July 31, 1982

Eyvind Thor, Professor in
Forestry, Wildlife, and
Fisheries, February 28, 1982

R. L. Murphree, Professor in
Animal Science, June 29, 1982

James G. Warmbrod, Associate
Professor in Forestry, Wildlife,
and Fisheries, February 28,
1982

L. N. Skold, Professor of Plant
and Soil Science, June 29,
1982

Deaths

Daniel Hubbard, Associate
Professor in Nutrition and
Food Sciences, October 18,
1982