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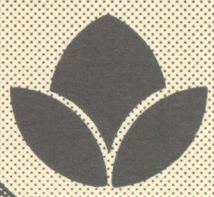

HANDBOOK

for research project leaders

ALABAMA AGRICULTURAL EXPERIMENT STATION
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AUBURN UNIVERSITY
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INTRODUCTION

THE ALABAMA AGRICULTURAL EXPERIMENT STATION (AAES) is one of the major divisions of Auburn University. Established by acts of the State Legislature and the National Congress, its mission is to conduct both applied and basic scientific research programs bearing, directly and indirectly, on the establishment and maintenance of permanent and effective agricultural and forest industries in Alabama; on development and improvement of the rural home and of rural life; on advances in agricultural and forestry technologies which contribute to the welfare of the people of Alabama and the nation and to improvements in the quality of our environment; and on promotion of global human welfare and world peace through such advances.

The AAES receives federal-grant formula funds appropriated under the Hatch and McIntire-Stennis Acts, and state appropriations as a line item in the State budget. Additional operating funds come from grants, donations, and sales. The total research program for fiscal 1983 is about $20 million. The operating staff exceeds 1,000 individuals, including 164 scientists (114 full-time equivalent scientist years). The research effort of this station is directed toward production and quality improvement; protection of man, plants, and animals from diseases and pests; conservation and use of natural resources; marketing; product development and processing; human nutrition; and improvement of the rural home and quality of life.

The AAES research program is carried out within 12 departments, specializing in various areas of biological, physical, and social sciences and in engineering as applied to agriculture. These include the departments of Agricultural Economics and Rural Sociology; Agricultural Engineering; Agronomy and Soils; Animal Health Research; Animal and Dairy Sciences; Botany, Plant Pathology, and Microbiology; Fisheries and Allied Aquacultures; Forestry; Home Economics Research; Horticulture; Poultry Science; and Zoology-Entomology. Most of the scientists and research laboratories are located at the main campus. There are 21 outlying units of the AAES system located over the State in various geographical and climatic environments. Supervisory personnel and a labor force are maintained on these units to carry out field research.

The AAES has the responsibility of advancing knowledge in the wide areas needed by today's scientifically and technically oriented men and women who are responsible for the production of food, feed, and fiber on America's farms. It has an equally important responsibility of providing the general public, the consumer of agricultural products, with the knowledge needed for most effective use of these products. This unit also has research responsibilities in the area of welfare of rural people, the most effective use of rural land for recreation, and the preservation and wise use of natural resources.

Information in this publication provides the project leader with a concise description of most of the research administrative procedures employed by the AAES. Although not a complete reference source, this publication does include summary statements outlining policies and procedures and copies of most standard forms that are used in conducting research in the AAES.

Details regarding many of the items mentioned in the Handbook are available in reference sources located in the department head's office. Information pertaining to research subjects not covered in this publication should be requested from the department head or Director.

A sincere effort is made to minimize the administrative details for which the project leader is responsible. However, each project leader needs to be familiar with basic policies and procedures of the AAES in order to maintain efficiency and achieve maximum productivity. Project leaders are encouraged to visit with their department heads or contact personnel in the Director's Office to discuss any problems that should arise relative to support of their research programs.

Gale A. Buchanan
Dean and Director, AAES
October 1983

REFERENCE MANUALS

Several manuals are available that offer additional details about administrative procedures and requirements for organizing, conducting, and reporting research by the AAES. Project leaders are encouraged to consult the following manuals when needed.

CRIS Forms. "Manual for Preparing CRIS Forms." ARM-#2. Revised September 1978. This booklet provides helpful, practical, step-by-step instructions on completing CRIS Forms 416 (Research Resume); 417 (Research Classification); 421 (Progress Reports); and 427 (Request for CRIS Information Retrieval).

Classification of Research. "Manual of Classification of Agricultural and Forestry Research." Revision IV, February 1982. This booklet includes code words and numbers required for the research classification form (AD-417). It is important that projects are correctly coded as to activity, field of science, research problem area, and commodity in order to obtain accurate data for program analyses.

Hatch Research. "Administrative Manual for the Hatch (Experiment Station) Act as Amended." Agricultural Handbook 381, Revised 1980. USDA-CSRS. This booklet briefly explains the background, purpose, and provisions of the

Hatch Act. Administrative uses and limitations on Hatch funds are also included in this publication.

McIntire-Stennis Research. "Administrative Manual for McIntire-Stennis Cooperative Forestry Research Program." Agricultural Handbook 324 (1966). This manual gives the purpose of the McIntire-Stennis Act, administrative procedures, and a copy of the Act.

Animal Health and Disease Research. "Administrative Manual for the Continuing Animal Health and Disease Research Program." USDA Cooperative Research Service, August 1982.

Protection of Human Subjects. "Federal Register." Part X, Department of Health and Human Services. "The Review Process for Research Involving Human Subjects—A Guide for Investigators." Auburn University, January 1981. These publications describe Federal policy to protect participants in research projects, including details about reviews and enforcement, and Auburn University protocol for research involving human subjects.

Regional Research. "Manual of Procedures for Cooperative Regional Research." CSRS-OD-1082. USDA-CSRS January 1970 and Revised 1980. This manual contains the procedures for cooperative regional research supported by Regional Research Funds (RRF).

Publication. "Preparation of Manuscripts to be published by the Alabama Agricultural Experiment Station." AAES Manual. Revised 1983. "Suggestions for Contributors to HIGHLIGHTS OF AGRICULTURAL RESEARCH." AAES Mimeograph. Revised 1982.

Research Data Analysis. "Research Data Analysis." AAES Mimeograph. 1982.

TYPE OF RESEARCH PROJECTS

The project is the basic administrative unit of research. While the Experiment Station Director, through consultation with other station directors, commodity groups, industry representatives, and his agricultural research staff, determines research areas for the Station, the department head is responsible for deciding what projects are needed in areas for which the department is responsible. All research conducted by the AAES is documented and supported by research projects that conform to overall priorities and objectives of the Station. The project leader is responsible for initiating new projects and providing day-to-day supervision of the projects.

The research is organized and administered on a departmental basis, but this should in no way discourage development of a team approach in attacking a particular problem. Joint projects involving more than one department are encouraged to ensure utilizing the greatest competence available.

It is important to keep in mind that quality of research and justification for future research funding are controlled by project leaders. Consequently, careful selection and development of each research project are essential.

All projects in the AAES are classified as being either Federal or State. The type of project is determined by the source of funding used to support the research. The Administrator of Cooperative State Research Service (CSRS) of USDA is responsible for final approval of all Federal projects while the Director is responsible for final approval of all State projects.

Federal Projects

Any project that is to be supported either solely or partially by Federal funds is classified as a Federal project. The Director's Office assigns three-digit numbers using numbers under 900 for Hatch projects and numbers above 900 for McIntire-Stennis projects. There are three types of Federal project designations at present.

Hatch Funds. These funds are appropriated by Congress for support of agricultural research in agricultural experiment stations of land-grant colleges and universities as authorized by the Hatch Act of 1887 and amended in 1955. State funds can be assigned to Hatch projects, but McIntire-Stennis funds cannot be used.

McIntire-Stennis. The McIntire-Stennis Cooperative Forestry Research Act of 1962 provides funds to support tree, forestry, and forestry-related research. To qualify for these funds, the research should directly involve tree production, management, harvesting, or use of forest resources. Hatch funds cannot be used on McIntire-Stennis projects.

Regional Research. Regional projects are collective efforts by two or more cooperating state researchers which pool individual strengths and expertise toward problems of common concern. They are administered jointly by CSRS and cooperating state stations to help ensure maximum coordination and cooperative efforts and to avoid duplication. Regional projects are approved as Hatch projects, but also have a designated regional project number, such as S-168 (S indicates Southern Region).

The director of each participating state designates a technical representative, and the technical representatives from all cooperating states meet annually after a working group has developed a project and it has been approved. By law, not more than 25 percent of Hatch funds are to be used for regional research. Project outlines are required for all regional projects. If a project is to be supported entirely with Regional Research funds (RRF) and it is anticipated that no other funds will be assigned, the regional project outline can be used as a substitute for the state's project outline.

State Projects

All projects that do not include Federal funds described above are classified as State projects. Most funds appropri-

ated by the State Legislature are used to supplement Federal projects and to meet matching requirements for Federal-grant funds. State funds are also used for maintenance of outlying units, and for research that is unique to Alabama. However, these funds are occasionally used for the exclusive support of a project and a project outline is required the same as for Federal projects. Most grants or contracts are covered by a State project number and outline.

Projects supported entirely with State funds, with grants, or with unrestricted funds from any source are designated by a code number identifying the department or outlying unit followed by a dash followed by a three-digit number. Departmental and outlying unit codes are:

Agricultural Economics and Rural Sociology 1
Agricultural Engineering 2
Agronomy and Soils 3
Animal and Dairy Sciences 4
Botany, Plant Pathology, and Microbiology 5
Forestry 7
Horticulture 9
Poultry Science 10
Animal Health Research 11
Home Economics Research 12
Zoology-Entomology 13
Black Belt 14
Chilton Area Horticulture 15
Gulf Coast 16
Lower Coastal Plain 17
North Alabama Horticulture 18
Piedmont 19
Sand Mountain 20
Tennessee Valley 21
Upper Coastal Plain 22
Wiregrass 23
Ornamental Horticulture Field Station 24
Fisheries 27
Interdepartmental 50

Projects Supported by Grants, Contracts, and Auxiliary Funds

Grant requests should be limited to projects that will supplement a project leader's program of research in the department. When the grant has been approved, the department head is responsible for notifying the Director as to which project it will support. If a separate annual report is required, the department head should assign a State project number.

Refer to the section on Extramural Support of Research (page 14) for instructions on preparing proposals for outside support.

There are three basic types of non-appropriated funds available to support research projects.

Federal and State Grants and Contracts

Government agencies, such as NIH, NSF, USDA, Alabama Highway Department, and AEC, support projects by grants or contracts. Proposals are prepared by the project leader and approved by the department head, the Director, and the Vice-President for Agriculture, Home Economics, and Veterinary Medicine. The Cover Form for Extramural Programs is used to transmit the proposal for on campus approval (page 17).

Commercial Grants and Contracts

Grants made to departments by commercial companies to support research in the AAES must be approved by the department head, the Director, and the Vice-President for Agriculture, Home Economics, and Veterinary Medicine.

Auxiliary Research Funds

Funds received from the sale of salvageable products from research are deposited in the department's Auxiliary Research Account for use in support of research.

PROJECT PLANNING AND INITIATION

Project leaders have primary responsibility for developing and conducting a viable research program. One of the first steps in initiating a research program is gaining an understanding of the problem before selecting a project and preparing a project outline.

Selection of Project

Selection of a research project is one of the most important steps in the research process. A number of factors influence the decision as to whether a research project should be initiated. One of the first questions a researcher should ask is, *"Is the problem an important one?"* Importance is measured in terms of benefits that might accrue to producers or farmers, agribusinesses, and consumers, as well as contributions to the advancement of science and the body of scientific knowledge.

Some benefits may not occur immediately as a result of successful research but may be forthcoming as long-time benefits. In some cases, one group may be benefited at the expense of another. In this case, the overall net benefit to society as a whole should be considered. Possibly no problem is unimportant from a long-time point of view, but some problems are more important than others, and research funds are always limited. Therefore, priorities must be established.

Another consideration in selection of a research project is *timeliness.* Some studies are particularly valuable because they make information available at a time when certain problems and situations are most critical. Rapidly changing technology and economic conditions emphasize the importance of research timeliness.

Field of specialization and interest of research scientists are also considerations in research project selection. No

department is large enough to do a good job of research in all phases or aspects of departmental subject matter. It is generally better to select a limited number of important problems on which to work than to scatter efforts over too much territory. It is natural that a scientist will do the best job of research in an area in which he has an interest.

Scientists should also consider their *long-term plans* in selection of research projects even though such plans may need to be changed in the future. Other things equal, it is also desirable for the researcher to work on projects that fit in with the long-term goals and objectives of the department. Other research completed or underway should also be taken into account to avoid unnecessary duplication of effort and unwise expenditure of funds.

Because some research projects are more expensive than others, the *availability of research funds* is a major factor in selection of projects. Also, certain funds may be used for research only in specified fields. Some research may require equipment and facilities that are not available at some institutions. In some cases it may be almost impossible to obtain the necessary data for proper analysis and evaluation. Needs identified by outside groups or organizations may at times influence research selection.

Use of the regional research fund (RRF) is authorized specifically for research in which two or more state agricultural experiment stations are cooperating to solve problems that concern the agriculture of more than one state. Projects to receive regional research support are recommended by a committee of nine persons elected by and representing the directors of the state agricultural experiment stations, such committee being authorized by the Hatch Act. The Cooperative State Research Service acts in giving final approval to recommendations of the Committee of Nine for use of regional funds in support of regional projects.

It is sometimes appropriate to work with scientists from other states or regions on regional research projects. Regional research has both its advantages and limitations. It affords an opportunity to pool ideas and discuss regional problems. Results of the research may be more significant with several states involved than with only one or two. Disadvantages center on the problems of coordinating research efforts, amount of time and funds required in meetings, and because some states advance rapidly in the dissemination of research results while others do not.

Planning

In all cases, project leaders should obtain a broad base of understanding of the research problem before writing a project outline. They should confer with their department head concerning desired direction and emphasis relative to other AAES programs and objectives. Discussions, field observations, and consultations with colleagues, with researchers in other departments and at other institutions, with commodity and agribusiness leaders, and with administrators are highly desired in assessing needs and opportunities for research. The department head and the Dean and Director's Office can provide assistance in locating interested researchers in other disciplines.

Preliminary drafts of research proposals should be circulated to seek comments and suggestions prior to a formal review. Project leaders should make a sincere effort to include details on the conceptual approach and the expectations for the project, as well as adequate justification and background.

The final draft should be submitted to the department head for departmental review. Following the departmental review, the project outline should be prepared according to guidelines presented in this handbook. It is submitted to the Dean and Director's Office by the department head.

The importance of planning for research and incorporating these plans in a well-prepared project outline cannot be overemphasized.

Literature Search

Auburn University Literature Retrieval Systems

Facilities are available at the Ralph B. Draughon Library for computerized literature searches. Computerized searches are a quick and efficient method for project leaders to search the literature for published papers germane to their project proposal. The literature is scanned for journal titles which contain keywords provided by the project leader. Over 100 data bases related to basic and applied agricultural research can be examined rapidly, resulting in a bibliography of relevant published papers. The print-out containing literature citations is available in about 1 week.

There is a nominal cost for the computerized literature search which may be charged to departmental or grant accounts. Project leaders interested in a computerized literature search should contact the Science and Technology Division on the fourth floor of the library.

Current Research Information System (CRIS)

CRIS is USDA's computer-based documentation and reporting system for agriculture and forestry research. A CRIS search will provide research resumes for active USDA and state agricultural experiment station projects and those which have been completed within the last 2 years. Each resume provides the name of the principal investigator(s), location and name of the performing organization, and a brief description of the project (title, objectives, research approach, current progress, and publications).

A CRIS retrieval can be requested through the AAES Director's Office by using Form AD-427 (see page 18) and the Manual of Classification of Agriculture and Forestry Research. There is no charge for the search, and searches are completed within 2 to 3 weeks. CRIS retrievals are also possible through Auburn University's Library computer search service and through electronic mail (DIALCOM Cooperative Systems Mail Network).

Project Outline Format

The project outline is a formal statement of research intent, which follows a specific format and conforms to Federal requirements for project approval. The outline is an instrument used for determining the scientific merit of the

proposed research and a basis for making judgements by scientist reviewers and administrators concerning its appropriateness and acceptability. Since all Experiment Station expenditures must be assigned to a project, the project outline is also an administrative document that provides a basis and authorization for budgeting funds. The outline should be regarded as a guideline subject to change by the project leader, within the limits of the specific research proposal, as research progress is made and a more potentially productive direction may become apparent.

The specific format that should be followed in preparing a project outline is as follows: Cover Page (Project Form 1, page 19), LITERATURE REVIEW, JUSTIFICATION, PROCEDURES, and LITERATURE CITED. These titles in all caps should precede the appropriate section and should be centered on the page. This outline is to be used for the preliminary draft (for departmental review) and the final draft of either a new project or a revision. Nine copies of the final draft should be sent to the Dean and Director's Office via the project leader's department head. All draft copies should be typed double spaced.

Cover Page. Project Form 1 is the first page of all final project outlines (new projects and revisions). The remainder of the outline must be on additional pages attached to the cover page. Information to be provided on Project Form 1 includes the project number, fund, project title, departments involved, project leader(s), date of termination, and objectives.

Numbers for Federal projects will be assigned by the Director's Office, but department heads should assign the numbers for all State projects. Contract and grant projects are usually given a number by the granting or contracting agency, but this does not replace the need for a regular AAES project number.

The fund will be designated by the Director's Office upon receipt of a recommendation from the project leader's department head.

The title should be a short descriptive summary of the project. It should clearly reflect the nature of the project and should be less than 100 characters in length. Phrases such as "A study of . . .", or "Investigations on . . ." should be avoided. Descriptive keywords, common names, and simple terminology should be used to indicate the research scope and orientation of the project. If the title of the proposal is the same as a previous project, the project leader should be prepared to indicate how the new project differs from the previous one.

All departments of the AAES that allocate funds to the research should be listed. If there is to be cooperation between departments, a typed agreement signed by the cooperating departments should be attached to the outline unless such a document has been previously executed. If the work is to be in cooperation with any agency that is not a part of the AAES System, reference should be made to the Memorandum of Agreement under which the work will be done.

The project leader(s) is(are) the person(s) who will be responsible for directing the research.

The date of termination or reappraisal is the calendar date on which the project is expected to be completed. Insofar as practical, all projects should be initiated on October 1 and terminated on September 30. If it is expected that more than 5 years will be required, dates of reappraisal should be given followed by the expected date of termination. Long term projects should be reappraised at intervals of not more than 5 years. Funds will not be budgeted to a project beyond the date of reappraisal or termination without written approval of the Director.

The objectives should be concise, clear statements indicating the specific research topic and they should be listed in a logical, numerical order. The objectives should be adequately specific to define and indicate what can reasonably be expected from the project, yet they should be adequately broad to permit flexibility of research investigations without being open-ended. Objectives should reflect the depth and breadth of the research and not have narrow restrictions or limitations.

Literature Review. This section should contain a review of the relevant past and current literature relating specifically to the project objectives as listed on the cover page. This section should be sufficiently complete to give the present state of science in the research subject area and identify unanswered questions. Published and unpublished results obtained by the project leader should also be incorporated into the literature review as appropriate. Unpublished data should be indicated as such in parenthesis following the statement. The length of the Literature Review section will depend on the nature of the research topic, but 20 to 30 references would be expected to provide an adequate background to the research topic. Literature citations should be referred to in this section and throughout the project outline as appropriate for the journal in which the research results will be published (see Lit. Cited section).

Justification. This section should contain a specific statement of the original contribution to science that is expected to be made by the proposed research. Emphasis should be placed on the problem to be solved rather than the economic benefits to be gained. The use of intensifiers such as "It is imperative . . .", "There is a desperate need for . . .", or "It is of the utmost importance that . . .", should be avoided. Instead, statements should be objective, factual, and positively worded. In most cases literature citations should not be included in this section.

Procedures. The procedures should be numbered to correspond with the numbered objectives. The techniques or procedures that are to be used to reach each objective should be set forth in sufficient detail to show how the study is to be conducted and so that a scientist with experience and training equivalent to that of the project leader can conduct the research. This section should indicate in chronological order how the research problems will be investigated. Appropriate references should be cited for routine procedures. Use of personal pronouns should be avoided as much as possible.

Literature Cited. The Literature Cited should be included on the last page(s) of the outline. Citations should be organized in alphabetical order of the senior author and

arranged in the format used by the scientific journal in which the research results will be published. Unpublished data are not to be cited in this section.

Project Outline Review and Approval Process

1. Departmental Review—The initial review and approval of a proposed project are conducted within the department. It is the department head's responsibility to acquaint each new project leader with the policies and procedures outlined in the Handbook and to ensure that the project outline is typed in accordance with the required format and that it meets the requirements of a good project before it is submitted to the Director for review.

2. Submission to Director—After the project proposal has been reviewed within the department and approved by the department head, nine copies of the proposed outline are submitted to the Director's Office. Project Form 3 (Project Proposal Submission Form, see page 20) gives the essential administrative information that must accompany each copy of the project proposal transmitted to the Director's Office.

3. Review by Projects Committee—After a preliminary review and approval in principle by the Director's Office, the outline is referred to the Project Review Committee. This Committee consists of a representative from the Director's Office, three department heads appointed by the Director for staggered 3-year terms, and three scientists appointed by the Director to serve as technical reviewers for each project. Names suggested by the department head on the Project Proposal Form are considered in the selection of the technical reviewers. These reviewers are selected for reasons of particular competence relative to the project being reviewed, and they may be faculty members or scientists who are not in the AAES.

Upon request of the project leader, the technical reviewers may be selected early enough to assist the project leader in developing the project and in preparing the outline. Otherwise, they are selected at the time the outline is submitted to the Project Review Committee.

Reviews are scheduled by the Director's Office as soon as convenient (usually within 2 weeks) following receipt of the outline. The project leader meets with the committee for the review and the department head may attend at his discretion unless specifically requested to attend by the Director or the Chairman of the Projects Committee.

a. Conduct of Review: Considerations—In evaluating the proposed research outline, the Projects Committee considers the following:

(1) Will this research make a significant contribution to the needs of the State and the research goals of the department and the AAES?

(2) Will the research make the best use of the project leader's talents and interests?

(3) Does the project outline describe research that can be accomplished within the time specified using the manpower, equipment, and funds expected to be available?

(4) Will execution of the project as outlined contribute to the professional growth of the project leader and to the prestige of the AAES and Auburn University?

(5) Does the project outline present a significant problem and an approach of sufficient quality that the results obtained will be worthy of publication?

(6) Is the project outline well written and editorially correct? Every effort should be made to handle editorial problems outside the scheduled review session so that priority may be given to evaluating the quality of the proposed research during the review.

The Projects Committee may recommend a major revision in the project proposal. In this event, the project leader should prepare another outline following the suggestions of the Projects Committee and resubmit it through the department head to the Director, who will schedule another project review. It is expected that the project leader will consult with the members of the Projects Committee while rewriting the outline prior to resubmission to the Director.

If the Projects Committee recommends approval with relatively minor revisions, the author is expected to incorporate the necessary changes into the final outline. After the department head approves the final outline, the project leader should arrange a conference with the chairman of the Projects Committee to discuss the changes and to make sure that they are in accordance with the committee's recommendations.

b. Instructions for Preparing Final Copy of the Project Outline and Completing CRIS Forms:

After the author and chairman of the Projects Committee reach agreement on the changes, the author should have the final copy typed. This copy should be single-spaced with double spaces between paragraphs. Five copies of the approved revision, plus CRIS forms SEA-84 and AD-416 and 417 (pages 22, 23, 24) should be returned to the chairman of the Projects Committee for final checking. If in order, the chairman will then forward these to the Director's Office for approval. The project leader will be responsible for making as many additional copies of the project outline as needed for himself and the department since no copies will be returned. If the project is to be supported with Hatch or McIntire-Stennis funds, it also must be approved by the Administrator of CSRS before funds can be expended on the project. Although the Administrator of CSRS is not responsible for approving State projects, the same review procedures will be followed and they will also be sent to CSRS and entered into the CRIS system for information purposes.

CRIS forms SEA-84 and AD-416 and 417 must accompany the final copy of the project outline. Instructions for preparing these forms are contained in the Manual for Preparing CRIS Forms (ARM-H-2) and copies of this document are available in the department head's offices and in the Director's Office. Project leaders needing assistance in assigning activity, commodity, field of science, and problem area codes are encouraged to consult with the chairman of the Projects Committee or the Director's Office. Each department has a copy of Revision IV of Manual of Classification of Agricultural and Forestry Research. Special in-

structions for completing these forms are given on the sample forms included in this Handbook.

The project leader should submit to the chairman of the Projects Committee a blank CRIS Form 416 containing only the signatures and dates of signing for the project leader and department head. All the information needed for completion of CRIS Forms SEA-84 and AD-416 and 417 should be provided on typed worksheets to the chairman. Keep in mind that the total number of characters in fields 24, 25, and 85 cannot exceed 2,400. Complete sentences are not necessary.

Typing of CRIS Forms SEA-84 and AD-416 and 417 will be done in the Director's Office from the typed worksheets prepared by the project leader and approved by the chairman of the Projects Committee. This will provide for greater uniformity and accuracy in preparation of forms sent to CSRS from the Station.

Project Termination Process

Near the completion of a project, usually 4 to 6 months prior to termination, a conference will be scheduled with the project leader, department head, and Director. At this time, the project leader should be prepared to present a brief report of the accomplishments of the project, including publications and plans for publications. Discussion of future research and plans for development of a new project will be determined at this conference.

For each approved project, a "Project Termination Report" is required at the time of closing the project. This report is prepared on CRIS Form AD-421 (see page 24).

For 2 years after a project is terminated, a preprinted CRIS Form AD-421 is provided for the purpose of adding publications completed after termination of the project. It is mutually beneficial to both the project leader and the AAES to complete all publications resulting from a project as soon after termination as possible.

If cooperative experiments at outlying units are terminated or become inactive, the records clerk in Research Data Analysis should be notified so that the accuracy of the permanent files may be ensured.

ASSISTANCE IN CONDUCTING RESEARCH

Research Data Analysis

This department assists project leaders in designing experiments and managing data from research projects. To ensure optimum experimental designs and efficient data management systems, it is strongly recommended that project leaders consult with personnel in Research Data Analysis during the project development phase. The primary objectives of Research Data Analysis are:

1. To provide consultation regarding experimental design and data analysis for the AAES staff and graduate students.
2. To process, tabulate, summarize, and statistically analyze data for all project leaders and graduate students associated with the AAES.
3. To serve as advisors for special computer and data management problems. Many project leaders are qualified to program and process their own data, but members of the Research Data Analysis staff are available to assist those who are less experienced and those who require rather complex computer processing. All researchers are encouraged to learn how, whenever possible, to use the routine programs that are available.
4. To advise project leaders on the use of and availability of computer hardware and software in the central computer facility and in the AAES.
5. To assist project leaders in processing, preparing, and preserving data from the outlying units of the AAES. It is the responsibility of the project leader to assure that current research results from experiments at outlying units are properly made a part of the permanent record. In many instances, this task may be accomplished by establishing a directory of data that is recorded on a magnetic medium that is readily accessible.
6. To maintain a file of all experiment outlines and research agreements for work on the outlying units of the AAES.

The data entry equipment and remote terminals in Research Data Analysis may be used by staff, graduate students, and clerks by appointments as available. Special arrangements can be made to use the equipment at night.

All services, except data entry and clerical work, are provided without cost to AAES projects.

Research Operations

Research Operations provides diverse physical services to other divisions of the AAES. Requests for assistance in acquisition of equipment; in construction, modification, repairs, and maintenance of facilities; in repairs and maintenance of electronic equipment; for transportation of heavy equipment; or for allocation of land for field research may be directed to this department. Other activities, such as the maintenance of utility systems and janitorial service, are provided by the Physical Plant. Research Operations also will assist in minor building alterations, painting, and other renovations.

Research Operations produces silage and hay and maintains pastures for the Department of Animal and Dairy Sciences. It is responsible for production of crops not involved in research at the Plant Breeding Unit and the Agronomy Field Crops Unit at the E.V. Smith Research Center.

Requests for assistance requiring significant allocation of resources should be made in writing through the respective department head and Dean and Director, AAES, in the form as shown (see page 25).

Outlying Units

All experiments at outlying units must be under the direction of a project leader from the Main Station—unless approval from the Director's Office is obtained for special or unusual circumstances when a project leader is not available.

The outlying units personnel have the responsibility of maintaining an environment and a research atmosphere at their units which are conducive to cooperative research. The project leaders and department heads have the responsibility of providing capable leadership and guidance in the development and execution of cooperative research. The experimental designs should be carefully planned to eliminate unnecessary manual labor and supervision and to utilize the most efficient experimental techniques. Main Station personnel should take the initiative in analyzing and publishing test results.

Project leaders may work directly with outlying unit superintendents to initiate an experiment. At times, it may be necessary and wise to refuse a project leader's request to initiate an experiment at an outlying unit because of personnel, time, labor, and other resources. However, the final decision to refuse must be made in the Director's Office.

Experiment Outlines

Experiment outlines are detailed descriptions of experiments conducted under a project. Suggested outline format is shown on page 26. This form should be used for cooperative experiments between two or more departments or between a department and an outlying unit. There should be a copy for each cooperator and two copies for the Director's Office.

Experiment outlines are prepared by the project leader and reviewed within the department. If the research outlined involves cooperation between two or more departments or between a department and one or more of the outlying units of the AAES system, there should be a section outlining responsibilities of each cooperator. Such an outline is necessary so that all persons connected with the experiment shall have a clear understanding of such things as test procedure, time schedules, plot layout, treatments, publications, and responsibilities of providing labor, machinery, materials, and supervision. These experiment outlines are sent to the Director's Office for final approval. Where no cooperation outside the department is involved, an outline should be prepared and approved by the department head and retained within the department without being approved by the Director. However, an experiment outline is not needed if the project outline is sufficiently detailed that it can serve as an experiment outline.

Numbering System for Field Experiments

To improve accountability of field experiments and facilitate data handling, it is important that each experiment at all of the outlying units, including the Plant Breeding Unit and E.V. Smith Research Center, be identified with a permanent identifier. This identifier will accompany all data generated from the experiment and be used in all communication regarding these data with the AAES.

1st line - BBS 0001 1982

A. **First 3 spaces for substation or department (Main Station) identification.**

B. **Next 4 spaces for experiment number assigned by substation or department.**

C. **Last 4 spaces are for year.**

2nd line - 428-90-7581

A. Social Security Number of project leader.

3rd line - BBS82S-01

A. Nine spaces that each project leader can use to identify each experiment as desired, as long as it fits space allocation.

Numbering System for Beef Cattle[1]

The approved system requires an identification tattoo in one ear, with the other ear used for the brucellosis tattoo. A four-digit tattoo is recommended with the station location indicated by one letter below the tattoo number.

The suggested code for the station is listed below:

Station Location

Main Station

AB = Auburn University Breeding
AN = Auburn University Nutrition
AD = Auburn University Dairy
AT = Auburn University Teaching
AR = Auburn University Reproduction
AH = Auburn University Animal Health

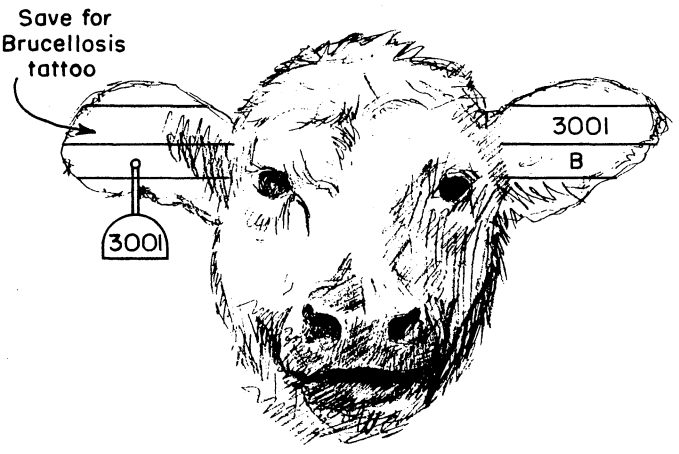
Substation Location

B = Black Belt
G = Gulf Coast
L = Lower Coastal Plain
P = Piedmont
S = Sand Mountain
T = Tennessee Valley
U = Upper Coastal Plain
W = Wiregrass

The right ear will identify the year the animal was born and the animal number. The first digit will indicate the year the animal was born and the second, third, and fourth digits will identify the animal number. An example is listed below.

3001 1st calf born in 1983
3002 2nd calf born in 1983
4001 1st calf born in 1984
4101 101st calf born in 1984
9006 6th calf born in 1989
0001 1st calf born in 1990

[1]Any *dairy breed* animals used for beef production purposes should be numbered in accordance with this system.



Numbering system for beef cattle.

The swine units have an established system and they will continue to use the current ear notch system. Each swine research unit will obtain a tattoo machine and will tattoo each pig before it is sent to the meats laboratory. The following tattoos are suggested:

B-001 Pig 1 from swine breeding

N-008 Pig 8 from swine nutrition

L-004 Pig 4 from Lower Coastal Plain

S-111 Pig 111 from Sand Mountain

U-960 Pig 960 from Upper Coastal Plain

Each animal experiment should have an experimental number. The number will be used for data collection and analysis.

REPORTS

Annual Progress Report (CRIS AD-421)

A progress report is required each year for each approved project that is active during all or part of a calendar year. It is to be prepared on CRIS Form AD-421 (see page 24). These forms are sent to the project leader through the department head near the end of the reporting year with the project number and title typed in. Instructions for completing this form are given in the Manual for Preparation of CRIS Forms (SCRS-OD-1258).

The report should cover the period from the date of the previous year's report to the date when the current report is prepared or the project is terminated. The CRIS system permits a maximum of 2,400 characters, including letters, symbols, and spaces, for the combined field 24, 25, and 85. Additional characters will not appear in printouts. The work of cooperating departments on one project should be combined in a single report and submitted by the lead department.

Annual Summary Report

Each project leader is required to provide a yearly summary of research accomplishments for *each* experiment station project.

This summary is not to exceed two typewritten, single-spaced pages. It is composed of a header, a list of objectives for the past year, a description of the important research accomplishments, and future research plans. The header should contain the name of the department, the project leader, the reporting period, the project number, and the project title. This report is to be appended to the Staff Activities Summary submitted by faculty each year.

Termination Reports

For each approved project, a "Project Termination Report" is required at the conclusion of the project. This report is prepared on CRIS Form AD-421. A preprinted CRIS Form AD-421 will be sent each year for 2 years for the purpose of adding publications published after termination. To assure accuracy in the permanent files of the records clerk in Research Data Analysis, the clerk should be informed of all terminated cooperative experiments at outlying units as well as those temporarily inactive.

Reports of Research on Substations and Other Outlying Units

Project leaders who have cooperative experiments at the outlying units are responsible for reporting the data they have collected at these units to the records clerk in Research Data Analysis. This should be done as soon as possible after the data are collected. The records clerk will process them, return to the project leader for checking, and be responsible for getting them typed in final form and filed in the appropriate records book. Data that are already in the Auburn University Computer (i.e., on tape or in a partitioned or sequential data set) may be filed with the records clerk by filling out a Computer File Management Form (see page 27). All files should be preserved by the project leader for at least 1 year *after* submitting a Computer File Management Form.

PUBLICATIONS

Policy Statement

While publication is only one phase of a successful research effort, it is the most visible phase and is essential if research results are to contribute to science. The true *value* of research is not publication *per se,* but the extent to which the findings contribute to the improvement of crop, animal, and forest production, better utilization of agricultural and forest products, an enhanced environment, improved protection of natural resources, and to scientific knowledge.

Quality is the most important criterion of research and of publications reporting that research. The peer review process is important in both, but it is not the sole arbiter of quality. What might be acceptable to one journal review system might be rejected by another. Of equal importance, quality of research must be evaluated in light of the AAES' overall mission of identifying and solving problems related to Alabama's agricultural and forestry economy.

It is important that scientists publish regularly in major journals of their scientific discipline, in appropriate Experiment Station publications (Highlights, Bulletins, Research Report Series, Circulars, Leaflets, and Departmental Series), as well as in miscellaneous other media. Journals should have a national and, preferably, an international reputation. However, it is also important that articles be distributed among different types of publications, e.g., refereed journals, nonrefereed and trade journals, symposium proceedings, book chapters, manuals, AAES publications, and abstracts.

Usefulness and value of scientific publications to user clientele as well as to other scientists are important measures of the relevance and importance of research. Criteria that indicate usefulness and value of publications include citation by other scientists, demand for copies of publications, and comments by user clientele.

The distribution of articles among different types of publications is expected to vary among research projects, depending on whether the research is basic or applied. However, each scientist in the AAES is expected to publish in refereed scientific literature pertinent to his field of research. Each scientist is also expected to present results of research at national scientific meetings. As a scientist becomes more widely recognized, publications such as book chapters and contributions to symposium proceedings should become more frequent.

While the number of publications cannot be the sole criterion of research productivity, it does reflect the overall productivity of the research program. Of course, the opportunity for numbers of articles varies with research areas, and this sometimes accounts for the wide variation in total published articles among scientists.

Assessing the separate contributions of multiple authors is indeed difficult. Cooperative research and, therefore, joint authorship are strongly encouraged. The nature of the research usually attests to the specific contribution of each author, and credit for each author will be in accordance with his contribution.

A successful research program will show a high degree of publication continuity over time and publishing regularly reflects continually productive research programs. It also indicates that the scientist's long-range objectives are being met.

Research data should be published as soon as practicable. This does not mean that premature publication is acceptable, but there should be urgency associated with conduct of research and subsequent publication of findings.

In summary, publication of research findings in appropriate media is expected of each scientist in the AAES. Therefore, all research by AAES scientists should be designed and conducted to provide information that answers important and relevant questions in basic science or practical agriculture and is suitable for publication. Failure to publish is a clear indication that the research was either worthless or it remains unfinished, and unpublished works are of little value to the research mission of the AAES.

Types of Publications

Station publications are designed to disseminate results to professional workers and Alabama farmers as well as to national and international researchers. Results may be published sooner in Station publications and more details may be included than in refereed journals. Even though some may report massive amounts of data, the data can and should be organized and presented in a publication that fellow scientists, professional agricultural workers, and others with a special interest may find useful. Generally, most detailed data should be reported as graphs or condensed tables. Where it is necessary to include a large amount of data, it should appear as an appendix. Journal articles may receive greater national and international distribution and are important to the project leader and to the AAES for establishing national recognition in a research area. However, journals cannot replace Station publications as a means of serving Alabama's agricultural and forestry industries.

A summary of publication outlets and their nature follows:
JOURNAL ARTICLES: Researchers are encouraged to publish in professional journals recognized by the Experiment Station. It is the responsibility of each department head to review annually this list of recognized journals maintained by the Editor, AAES. Changes in the list must be coordinated with Director, AAES. Manuscripts for submission to journals are subject to the same review and approval procedures as those proposed for publication in the Station series. The author is responsible for ordering and distributing reprints. Reprints may be requisitioned against project funds.

STATION PUBLICATIONS. Seven regular series of Station publications are available to the project leader:

Bulletins. Bulletins are for reports of completed research. The content of bulletins may range from technical to popular

depending upon the nature of the study and the character of the results; however, bulletins should be organized and presented so that they will be useful to fellow scientists and professional agricultural workers as well as to those who have a special interest in the results.

Circulars. Results of an experiment or project that is still active and has yielded pertinent and reliable data should be published in the circular series. Circulars should follow the same style as bulletins.

Research Report Series. This series is for publication of results from multi-departmental research dealing with a single crop or commodity. It may report single or multi-year results.

Leaflets. The leaflet is used to report results from an active project that pertains to a single practice or problem. As a rule, leaflets are limited to 4 to 8 pages in length and are written in popular style.

Progress Reports. Preliminary results that are needed or have immediate value in connection with certain practices may best be reported in the progress report series.

Highlights of Agricultural Research. *Highlights* is a quarterly publication directed to farmers, agri-business leaders, and professional agricultural workers. Suggestions for articles from each department for each issue are submitted to the Editor, AAES. The articles are one page in length. A staff member may suggest a topic and submit an article, through his department head, at anytime during the year. *Highlights of Agricultural Research* is designed to inform readers by:

1. Reporting important and significant results from segments or phases of long-term research.
2. Reporting important and significant results from current research.
3. Reporting progress and developments of recently begun research.
4. Reporting pertinent results from work done in the early years of the Station.
5. Presenting editorial comments by the Director.

The quarterly is not considered as an outlet for technical information nor a substitute for technical papers. It is not a dumping ground for miscellaneous writings. The author is responsible for ordering and distributing reprints.

Departmental Series. The departmental series provides an outlet for publication of research results and other information not appropriate for inclusion in currently established publications of the Experiment Station. This series is for limited or special distribution recommended by the department. They are mimeographed, multilithed, or printed on 8½ x 11-inch stock.

Miscellaneous Articles. Sometimes articles are prepared for publication in farm magazines or popular publications. The author receives any payment that is made by the magazine. These articles are also subject to the same review and approval procedures as those proposed for publication in the Station series. Abstracts of papers to be presented at scientific meetings should be approved by the department head, the Station Editor, and the Director.

Preparation of Manuscripts

Since each scientific journal has its own particular style, it is the author's responsibility to follow the correct style. In the case of Station publications, the Experiment Station Editor is responsible for maintenance of style of publications.

Manuscripts submitted for publication by the AAES, such as bulletins, circulars, research reports, leaflets, and as articles for *Highlights of Agricultural Research,* must be typed, double-spaced, with elite type on the special manuscript paper.

The manuscript paper is a preprinted form (AES MS FORM 1, see page 28) that provides left- and right-hand margin guidelines (62 characters wide for bulletins and circulars and 74 characters wide for leaflets and Highlights articles). The manuscript paper may be obtained by the departments from the Editor's Office, AAES. Manuscripts submitted for publication as Station research report series and progress reports should be typed on plain bond with line width of 55 characters, elite type.

Manuscripts should be submitted in triplicate. Upon approval by the Director, one copy will be forwarded by the Station Editor to the Alabama Cooperative Extension Service and the others will be returned to the author with the comments of the Editor and the Director.

Manuscripts to be submitted for publication in refereed journals should be prepared in journal style and submitted to the Director's Office after departmental review. Abstracts for publication in proceedings of professional meetings must also be prepared in appropriate style and submitted for the review process. Manuscripts and abstracts should be prepared far enough in advance of deadlines for the review process to function.

Manuscript Review Process

The author should submit manuscripts for proposed publications to his department head along with the Manuscript Approval Sheet (see page 29) which has the required handling procedures printed on the back.

Manuscript Review Policy

The purpose of manuscript reviews is to assist authors in producing quality publications. The success of reviews depends on the sincerity, diligence, and spirit of cooperation with which the authors and reviewers work to produce quality publications.

All manuscripts authored by AAES faculty, whether for Station or professional journal publication, shall pass through the following sequence of reviews:

(1) a departmental committee of scientists
(2) the author's department head
(3) the Station editor
(4) the Station Director.

The primary role of departmental review committees is to aid the author in presenting research results in a highly readable and scientifically sound manner. The departmental

committee is appointed by the department head and may include persons outside the department who have a special competence or interest in the subject. Because most research is highly specialized, the departmental committee must judge the scientific reliability of experiments and interpretations of results. A secondary role is to check for correct writing style and grammar. The following points, adapted from a *Science* article of several years ago, should be considered by the review committees:

1. Clarity. Is the manuscript written in a style that is readable, easy to follow and understand? (This does not mean written in the literary style that is preferred by the reviewer.) If the reviewer must re-read more than a few passages or the meaning is not clear, this should be pointed out in comments to the author.
2. Validity of the Logic. If a defect in the reasoning used for deriving conclusions from the data or observations is noted, the reviewer should specify why it is faulty and suggest steps to correct the defect.
3. Alternate Interpretations. Are there other valid interpretations of the data or observations, in addition to the interpretation offered by the author? The existence of such alternatives does not in itself invalidate the author's interpretation, but the author should be aware of them and should consider the extent to which they should be recognized in the manuscript.
4. Illustrations and Tables. Do the data and/or illustrations actually show what the text or legends claim? Are tables clear and informative, or are they unnecessarily confusing? Are there too many illustrations or tables? Is there material in the text that could be presented better in a table? Is there needless duplication between text and illustrations or tables? Is statistical information presented in a clear and concise manner?

Although concerned with content, the department head relies on the departmental committee for subject-matter correctness, reviewing primarily for information, logic, and consistency of reporting.

For AAES publications, the Station Editor has primary responsibility for style, grammar, overall readability, design, and general conformation to Experiment Station standards. The Editor's review of journal articles will be concerned with grammar, readability, and Experiment Station standards.

Since the Station Director is responsible for the entire research program, all manuscripts must meet his approval before they can be published.

The review process of the AAES should be as rigorous as that of scientific societies to ensure that publications of the Station reflect the highest professional standards.

Services Available from Editor's Office

Services provided by the AAES Editor's Office are available to expedite the publishing of results through the appropriate series of Station publications. These services include not only the editing and production of finished reports, but help in planning, organizing, and illustrating reports.

By consulting with the Editor before the manuscript is begun, project leaders can save time in the actual writing. Such questions as series to be used, organization of report, and audience orientation can be determined in advance, to reduce the chances of major revisions being necessary in later stages.

Assistance with art work and photography for illustrating publications also is available. An artist illustrator is available to prepare finished charts, graphs, and other drawings from rough pencil drawings and plotting data. Photographs for publications covers and to illustrate results also can be made by personnel from the Editor's Office on a time-available basis. Help is available to photograph results as the project develops, but advance planning is needed for the Editor to schedule time for such photography.

EXTRAMURAL SUPPORT OF RESEARCH

Introduction

Grants and contracts provide an important and integral part of the financial support of our research programs. Approximately 20 percent of the total budget of the AAES is derived from these sources. Since these monies comprise a rather substantial portion of our budget, it is important that each scientist explores the opportunities available for the development of these sources of funds.

In pursuing extramural contracts and grants, it is important that each scientist carefully develops each proposal with assurance that the research objectives are compatible with those of current research assignments as well as with those of the department and the AAES.

Extramural-supported research offers each scientist the opportunity for capitalizing on his initative and, at the same time, enhancing his research program. Extramural funds can be highly effective in improving the equipment base and providing additional student help, graduate research assistants, and technical support.

Procedures

Adherence to the following procedures will ensure that everyone concerned with research programs and fiscal accountability will be aware of all aspects of each extramural funding source.

Keep Administration Informed. Any staff member who is contacted or plans to contact any person or organization outside the AAES relative to the development of a major research proposal should inform his department head or the Director's Office.

This procedure will ensure full administrative support in the development of the proposal and should reduce the

number of errors and changes made in proposals; save time in the final development of proposals; and help to clarify the degree to which the project leader can commit himself, his department, the Station, and the University in support of the proposed research. This is particularly important from the standpoint of necessary commitments of personnel, facilities equipment, and funds and from the standpoint of problems of cost sharing, matching requirements, salary calculations, determination of indirect costs, and other factors affecting budgetary requirements and restrictions.

Preparation and Submission of Proposal

Each proposal should be prepared according to the specific requirements of the granting agency and Auburn University. Four copies of each proposal must be submitted along with a cover form for extramural programs (see page 17). A cover form must be submitted whether or not funds are involved. Proposals involving commercial grants and contracts must have a Memorandum of Agreement (see page 30) along with a cover form.

Administrative Approval of Research Proposals

Four copies of each research proposal must be approved by the department head, Director of the AAES, and Vice-President for Agriculture, Home Economics, and Veterinary Medicine. In addition, each proposal is reviewed by the Office of Contracts and Grants and the University Comptroller to ensure that the budget is acceptable and that all aspects of the proposals are in compliance with University regulations.

Sufficient time should be allowed for review of each proposal in each administrative office during normal working hours. At least 10 working days should be allowed for processing in the Director's Office, Vice-President for Agriculture, Home Economics, and Veterinary Medicine Office, and Contracts and Grants Office. When circumstances prevent observing this schedule, requests for exceptional handling should be made through the department head and the AAES Director.

Typed proposals and related documents should provide a place for the following signatures in the order listed: project leader, department head, Director of the AAES, and Vice-President for Agriculture, Home Economics, and Veterinary Medicine. On prepared documents that do not have places for these signatures and have no space for them to be added, initials of the administrator will suffice.

Coordination with AAES and Other University Units

All proposals that include as an integral component assistance by AAES and other University units must be coordinated with those respective units.

Proposals for grants or contracts would include a reasonable cost for data analysis. If this involves the use of services of Research Data Analysis or Computer Center, the project leader should consult with the Head of Research Data Analysis for estimates. This item should be identified in the budget as a "cost of data processing" and not identified as cost of computer services unless so advised by the Head of Research Data Analysis.

Special support requested from Research Operations, such as construction or modification of structures or fencing, unusual land requirements, or field equipment not normally available, must be coordinated with Head of Research Operations.

In budget preparation, consult the Director's Office for indirect and employee benefits costs.

Announcement of Contracts and Grants

Since the Vice-President for Agriculture, Home Economics, and Veterinary Medicine signs for the University, organizations will normally notify that office of the action taken and the Vice-President for Agriculture, Home Economics, and Veterinary Medicine will subsequently notify the Director of the AAES. The department head and the project leader(s) will be notified by the Director. In the event a project leader is contacted direct, the information should be relayed to the Vice-President for Agriculture, Home Economics, and Veterinary Medicine through the department head and the AAES Director.

Most grants by Federal agencies will be announced by the Senator and the local Congressman. All other "announcements" concerning awards of extramural grants or contracts will be made by the AAES through the Editor's Office. The offices of Vice-President for Agriculture, Home Economics, and Veterinary Medicine, Vice-President for Research, and Director of University Relations will be apprised of such releases. All such releases will credit *all* components of Auburn University having an input in the announced contract or grant.

STANDARD FORMS

AUBURN UNIVERSITY

Today's Date: _____ **COVER FORM FOR EXTRAMURAL PROGRAMS** AU No. _____

To: OFFICE OF CONTRACTS & GRANTS DEVELOPMENT

PLEASE ALLOW SEVEN DAYS FOR PROCESSING

PROPOSAL SUMMARY:

Project Leader(s): _____ Dept(s): _____ Phone(s): _____

Agency Name: _____ Proposal Title: _____

Agency Address: _____ _____

_____ _____

BUDGET SUMMARY:	**Agency Funds**	**AU (Cost Sharing) Funds****	**Total Project**
Direct Costs:	$ _____	$ _____	$ _____
Indirect Costs*:	$ _____	$ _____	$ _____
Totals:	$ _____	$ _____	$ _____

NATURE OF PROPOSAL: Type of Agreement: Contract ___ Grant ___ Other (specify) _____
Type of Project: Research ___ Instruction ___ Extension ___ Other (specify) _____
Type of Proposal: New ___ Renewal ___ Continuation ___ Modification ___

COMMITMENT OF UNIVERSITY RESOURCES:
Space for Site of Work: On campus ___ Off campus ___ Both ___ Building(s): _____ Room No(s): _____
Construction/alteration of facilities will be required & funded by: Agency ___ AU** ___
Matching funds**: The agency requires matching funds in the amount of $ _____
Cost Sharing**: $ _____

EQUIPMENT: (If itemized equipment needs are not included in the budget, please attach explanation.)
Furnished by: Agency ___ AU ___ Other (specify) _____
Purchased with: Agency funds: $ _____ AU Cost sharing funds**: $ _____
Other (specify amount & source of funds): _____
Source of funds for maintenance beyond period of support: _____

SAFETY REQUIREMENTS: Does this research involve potential biological hazards? Yes ___ No___
Will there be radioactive or hazardous materials involved in this research? Yes ___ No ___

SUBJECTS INVOLVED: Human Subjects? Yes ___ No ___ Animal Subjects? Yes ___ No ___

SECURITY: Are security clearances required for this research? Yes ___ No ___ If yes, security clearance applications should be initiated for persons without an active clearance.

RESEARCH ASSISTANTS SUPPORTED: Yes ___ No ___ If yes, how many? _____

REMARKS: _____
_____
_____

*NOTE: It is the policy of the university to recover full indirect costs. Explain in detail requests for reduced or forfeited indirect costs and attach justification in duplicate.

**NOTE: A detailed explanation and justification, approved by the Dean or Director, must be attached for all cost sharing. Please indicate source of funds.

APPROVALS:

	Initials	Date
Department Head	_____	_____
Dean or Director	_____	_____
Appropriate Vice President	_____	_____
C & G Development	_____	_____
Business Office	_____	_____
Vice President for Research	_____	_____

U.S. DEPARTMENT OF AGRICULTURE
CURRENT RESEARCH INFORMATION SYSTEM (CRIS)

REQUEST FOR INFORMATION RETRIEVAL

FOR CRIS USE ONLY
REQUEST ID NO.

NOTE: See reverse side for detailed instructions. Items 1 through 7 **MUST** be completed.

1. REQUESTED BY *(Name, organization, address, and telephone no.)*

Project leader's campus address

2. DATE SUBMITTED *(Day, mo., yr.)*
Date request prepared

3. DATE NEEDED *(Day, mo., yr.)*
Allow at least 2 weeks

4. REQUESTED FOR *(Name and telephone no. — if different from Item 1)*

5. SUBJECT OR AREA OF INTEREST TO BE SEARCHED *(Include statements describing specific topic of your request—continue on reverse if necessary.)*

Provide a narrative statement or brief outline describing your requirements in terms of general area of interest and specific concept involved. Include particular resources, commodities, or ideas which form the core of the request.

6. OUTPUT *(See description on reverse.)*

☐ STANDARD TECHNICAL | OR | ☐ PRINCIPAL INVESTIGATOR ☐ TITLE ☐ OBJECTIVES ☐ APPROACH ☐ PROGRESS ☐ PUBLICATIONS | OR | ☐ OTHER *(Specify)*: CRIS ID No.:

7. KEYWORDS *(Select from Keyword Bank or enter words of your own choosing.)*

Include keywords which will accurately define your request.

(Consult Manual of Classification for appropriate codes in items 8-12)

CLASSIFICATION CODES

(Completion of the following items is **OPTIONAL.** *Use only if needed to clarify your request. See instructions on reverse.)*

8. ACTIVITIES

9. COMMODITIES, RESOURCES OR TECHNOLOGIES *(Prime and/or sub-classification.)*

10. FIELDS OF SCIENCE

11. RESEARCH PROBLEM AREAS *(RPA's)*

12. SPECIAL CLASSIFICATION *(Pollution, health and medical, pesticide targets, energy, etc.)*

13. SUBMITTED BY *(Authorized signature)*

14. TITLE

FORM AD-427 (4/79) Previous edition, AD Form 427 (4/77), may be used.

Project Form 1

Project No. ----------

Fund ----------

PROJECT OUTLINE

ALABAMA AGRICULTURAL EXPERIMENT STATION

AUBURN UNIVERSITY

TITLE:

DEPARTMENT(S):

PROJECT LEADER(S):

DATE OF TERMINATION OR REAPPRAISAL:

OBJECTIVES:

PROJECT PROPOSAL SUBMISSION FORM

ALABAMA AGRICULTURAL EXPERIMENT STATION
AUBURN UNIVERSITY

TITLE OF PROPOSED PROJECT:

PRINCIPAL INVESTIGATOR(S):

TYPE OF PROJECT: ( ) New; ( ) Revised; ( ) Other:_____

PROJECT THIS REPLACES (if any): Project No._____

Title:

PROPOSED PROJECT REVIEWED & APPROVED BY FOLLOWING SCIENTISTS:
(Should be reviewed by at least three competent scientists)

_____ _____

_____ _____

OTHER TECHNICAL REVIEWERS SUGGESTED TO SERVE ON PROJECT REVIEW COMMITTEE:
(Indicate at least three qualified scientists on campus)

_____ _____

_____ _____

DESIRED STARTING DATE:_____

BUDGET INFORMATION: Expected Annual Budget to be Allocated to Project: $(Annual amount)
(Check appropriate funds)
FUND SOURCE(S): ( ) Hatch; ( ) State; ( ) McIntire-Stennis; ( ) Grant; ( ) Other:_____

A CRIS RETRIEVAL WAS UTILIZED? ( ) Yes; ( ) No.

REMARKS: (Give additional comments that may be helpful to the Director or the Review committee)

_____

_____

DATE SUBMITTED:_____ APPROVED BY:_____
(Dept. Head's Signature)

Project Form 3

U.S. DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATION
COOPERATIVE RESEARCH

PROTECTION OF HUMAN SUBJECTS

STATEMENT OF POLICY—Safeguarding the rights and welfare of human subjects at risk in activities supported by Cooperative Research, Science and Education Administration is the responsibility of the institution to which support is provided. In order to provide for the adequate discharge of this responsibility, USDA policy requires a formal assurance that appropriate committees in each institution will carry out both initial review of proposals, and continuing review of supported projects. The Department also requires certification of such reviews. Procedures which meet Department of Health and Human Services (DHHS) requirements will meet USDA requirements (Secretary's Memorandum No. 1755 and Pl. 93-348, as implemented by Part 46 of Title 45 of the code of Federal Regulations, as amended (45CFR46)).

1. INSTITUTION

Alabama Agricultural Experiment Station

2. TYPE ☐ ORIGINAL ☐ FOLLOW UP ☐ REVISION

3. PROJECT NUMBER *(If known)*

(To be completed by Director's Office)

4. TITLE

(Give complete title)

5. PRINCIPAL INVESTIGATOR

(List project leader only)

6. *Check the following applicable statement:*

(Check Appropriate Box)

☐ A – This project does not include activities involving human subjects.

☐ B – This project includes activities involving human subjects but can in no way be considered at risk. _____ *(Initials)*
(If this statement is checked, the person signing this form must **also** *initial in the space provided.)*

☐ C – This project, which includes activities involving human subjects, is pending review by an institutional committee as provided by our assurance. Certification of completion of the review will be provided as soon as possible. *(Certification will be re-submitted on Form SEA-84, identified as "Follow up" in item 2, and checked in box "D")*

☐ D – This project includes activities involving human subjects. Our institutional committee reviewed and approved it on _____, in accordance with our assurance approved by SEA/CR and/or DHHS. The project will be subject to continuing review as provided for in that assurance.

7. SIGNATURE AND TITLE OF OFFICIAL SIGNING PROJECT

Director, Alabama Agricultural Experiment Station

8. DATE

Day, Month, Year

FOR CR USE ONLY

U.S. DEPARTMENT OF AGRICULTURE

RESEARCH WORK UNIT/PROJECT DESCRIPTION - RESEARCH RESUME

U.S. DEPT. OF AGRICULTURE, STATE AGRICULTURAL EXPERIMENT STATIONS AND OTHER INSTITUTIONS

DATE (Day, Month, Year): Date of preparation of form

AMENDMENT: ☐

1. ACCESSION NO.	AGENCY IDENTIFICATION NO. (2, 3, 4.)	5. WORK UNIT/PROJECT NO.	6. STATUS (X appropriate box)
Leave blank, filled in by CSRS		Alabama (add assigned proj. number, if known)	New A ☐ Extended B ☐ Revised C ☐ Terminated E ☐ Pending F ☐

7. TITLE

Maximum 100 characters, including letters, symbols, and spaces; don't use "research on", "investigation of", etc.

8. PERFORMING ORGANIZATION	CITY	STATE/COUNTRY	ZIP CODE	CONG. DISTRICT
Department designation	Auburn University	Alabama	36849	

13. RESPONSIBLE ORGANIZATION	CITY	14. STATE	ZIP CODE
Alabama Agricultural Experiment Station Auburn University	Auburn University	Alabama	36849

12. INVESTIGATOR NAME(S) (Last name & initials)

1 Project leaders (not more than 3 names)
2
3
5
6

15. RESPONSIBLE INDIVIDUAL (Last name & initials): Buchanan, Gale A.

16. RESEARCH LOCATION ON CAMPUS? A ☐ Yes B ☐ No check appropriate box

PROJECT TYPE

17-1. FOR USDA USE: A ☐ Contract B ☐ Grant C ☐ Coop. Agmt. D ☐ In-house

17-2. FOR USDA USE: Contr./Gr./Agmt. with SAES A ☐ Other B ☐

18-1. FOR STATE USE (X appropriate box): 1890/T ☐ SP GR ☐ RD V ☐ CRGO ☐ Alcohol Ind I ☐; T ☐ G ☐ R ☐ C ☐; Hatch H ☐ M-S M ☐ State S ☐ Animal Health A ☐

CONTRACTS, GRANTS AND COOPERATIVE AGREEMENTS

18-4. CONTR./GR./AGMT./NO.

19-1. FACE AMOUNT

18-5. FOR STATE USE: AR A ☐ ESCS B ☐ FS C ☐

19-2. TOTAL SYS.

20. FY

21. FACILITIES Check appropriate box, as to work location, usually D. A ☐ Federally-owned B ☐ Federally-leased C ☐ Combined D ☐ State E ☐ Other

22.-23. REGIONAL PROJECT NO. Leave blank unless contributing to regional proejct.

24. OBJECTIVES 25. APPROACH (Use space needed for "24. OBJECTIVES", then indicate "25. APPROACH".)

24. For Objectives, a numerical listing is preferred. Keep short, and readily comprehendible. Place emphasis on the concepts to be investigated.

24. APPROACH. Develop a descriptive statement of the general methods and procedures that will be followed. Avoid extreme details, particularly on routine or commonly accepted research practices. Peers should comprehend what is intended or anticipated in the research program.

27. KEYWORDS

Select primary words from title plus others that will help in cross-referencing, searching, and locating your research. Ten words or less preferred. Consult CRIS keyword blank.

RECOMMENDED			APPROVED — Check applicable one — CONCURRED		
SIGNATURE	TITLE	DATE	SIGNATURE	TITLE	DATE
Principal investigator				Director	
Department Head					
Chairman Project Review Committee					

28. AWARD DATE (Day, Mo., Yr.)	29. START DATE (Day, Mo., Yr.)	30. TERMINATION (Day, Mo., Yr.)	DURATION (Months)
Leave blank	When research to begin	Expected completion date	Number of months

FOR USDA USE ☐ Project referred and cleared by all interested agencies for entry into CRIS.

SIGNATURE DATE

FORM AD-416 (6/79)

U.S. DEPARTMENT OF AGRICULTURE

RESEARCH WORK UNIT/PROJECT DESCRIPTION-CLASSIFICATION OF RESEARCH

U.S. DEPT. OF AGRICULTURE, STATE AGRICULTURAL EXPERIMENT STATION AND OTHER INSTITUTIONS

DATE (Day, Month, Year): Date of preparation

1. ACCESSION NO.	AGENCY IDENTIFICATION NO. 2. 3. 4.	5. WORK UNIT/PROJECT NO.	31. HATCH MARKETING
Leave blank	Leave blank	Same as Field 5 on AD-416	Check appropriate box ☐ Yes ☐ No %

32. BASIC RESEARCH	33. APPLIED RESEARCH	34. DEVELOPMENT EFFORT	35. FORESTRY
Enter estimated percentage for each. (Sum of 32, 33, 34, and 35 = 100%) %	%	%	%

CLASSIFICATION BY ACTIVITY, COMMODITY, SCIENCE, AND RESEARCH PROBLEM AREA

	ACTIVITY		COMMODITY		SCIENCE		RESEARCH PROBLEM AREA	PRODUCT OF (2) X (4) X (6)
	CODE (1)	% (2)	CODE (3)	% (4)	CODE (5)	% (6)	CODE (7)	% (8)
36.		1. Consult Manual for preparing CRIS Forms for directions in completing this form.						
37.								No entry
38.		2. Use Manual of Classification of Agricultural and Forestry Research Revision II (January 1973) for proper coding. For each project classify, Activity (1), Commodity (3), and Field of Science (5).						in this
39.								column
40.		3. Commodity coding is important. The listing of direct, closely related commodities is important.						should be
41.								less than
42.								10%
43.								
44.		For assistance, contact Chairman of Project Review Committee						
45.								
46.								
47.								

SPECIAL CLASSIFICATION

Fields 48-77 are used to identify special areas of research such as Pollution, Health and Medical, Tobacco-Health, Weather, Nuclear Radiation, Poverty, Natural Beauty, Sub-Commodities, Pesticide Targets, Water Resources, Energy, Home Economics, Sub-Activities (SEA/AR) and Special Research Programs (SEA/AR). Refer to your agency manual for specific codes and instructions.

CODE	%	CODE	%	CODE	%	CODE	%	CODE	%
	Apply a percentage figure to one or more of the following as seems appropriate								
48.		54.		60.		66.		72.	
49.		55.		61.		67.		73.	
50.		56.		62.		68.		74.	
51.		57.		63.		69.		75.	
52.		58.		64.		70.		76.	
53.		59.		65.		71.		77.	

79. COOPERATORS

A ☐ USDA B ☐ Other Federal Agencies C ☐ Industry and other D ☐ State

COOPERATING DEPARTMENTS WITHIN STATE PERFORMING INSTITUTION

80.

81.

82.

83. REPORTING DEPARTMENT WITHIN STATE PERFORMING INSTITUTION

AD FORM 417
JUN 1979

Form AD-421 (9/81) U.S. DEPARTMENT OF AGRICULTURE

RESEARCH WORK UNIT/PROJECT DESCRIPTION • PROGRESS REPORT

U.S. DEPT. OF AGRICULTURE, STATE AGRICULTURAL EXPERIMENT STATIONS AND OTHER INSTITUTIONS

DATE (Day, Mo., Yr.): Preparation date

1. ACCESSION NO.	AGENCY IDENTIFICATION NO.	5. WORK UNIT / PROJECT NO.	22-23. REGIONAL PROJECT NO.	TYPE / GRANT NO.
Fields 1 through 12 (except 6) will usually be preprinted by computer. However, if not, see instructions for same fields on guide for AID 416.				

7. TITLE

See above

8. PERFORMING ORGANIZATION	12. INVESTIGATOR NAME(S)		
See above	1. See above	4.	
	2.	5.	
	3.	6.	

6. STATUS TERMINATED	30. ESTIMATED TERMINATION DATE	85. PERIOD COVERED (Mo., Yr.) FROM: THRU:
E ☐		Covers period since last report.

85. PROGRESS REPORT

Total of 1600 characters available.

Report significant accomplishments with brief expressions as to why the results are significant scientifically or practically. Statements should be good enough to appear without change in a published abstract.

If too soon to report accomplishments, indicate status or stage of development of work.

McIntire-Stennis projects - indicate number of graduate students associated with project.

If termination report, cross out the word "Progress" in the heading of this form and type "Termination" above and then enter the following in this location of Field 85:

Actual Termination Date: _____
Month Day Year

87. PUBLICATIONS

List publications since last report. Include only those actually published. Do not include manuscripts. Listings should be in accordance with the style instructions on back of form.

APPROVED (Signature)	TITLE	DATE
	Director	

(See reverse side for Instructions)

Job Control No.: Priority Control No.:

Job and Equipment Request
Research Operations
Alabama Agricultural Experiment Station

TO: Research Operations
103 Comer Hall

DATE: _____

FROM: _____ _____
Person to Contact Regarding Work

_____
Person and Department or Unit
Initiating Request

_____
Phone

. . . . . .

DESCRIPTION OF WORK TO BE DONE: _____

_____

_____

_____

_____

SPECIAL EQUIPMENT NEEDS: _____

_____

_____

LOCATION OF JOB: _____

_____

WORK NEEDS TO BE COMPLETED BY: _____
(DATE)

WORK TO BE DONE FOR: (Circle One) Research Teaching

PROCEDURE FOR PAYMENT: _____

. . . . . APPROVAL . . . . . .

_____ _____
Department Head Director, AES

FOR RESEARCH OPERATIONS ONLY

COMMENTS: _____

_____

_____ _____
Date Work Completed Signature of Person Completing Work

EXPERIMENT OUTLINE
Alabama Agricultural Experiment Station Auburn University

Date Prepared

PROJECT NO. *Insert the number of the project of which the experiment is a part.*

TITLE: *Give title of the proposed cooperative experiment.*

DEPARTMENT(s) AND UNIT(s) INVOLVED:

LOCATION OF EXPERIMENTS:

OBJECTIVES: *List the specific objectives of the experiment.*

PROCEDURES: *Describe in detail the procedure and time schedule for each objective is to be accomplished. Field plans should be a part of the outline. It is recognized that at times plans cannot be prepared until the experiment is actually laid out in the field. In such cases a copy should always be provided the cooperator for attaching to the experiment outline. A copy should also be sent to the Records Clerk.*

RESPONSIBILITIES: *Describe in detail responsibilities of each cooperator under the following headings:*

1. *Project leaders*
2. *Cooperators*
3. *Outlying unit personnel*

PUBLICATION: *Include any agreements pertaining to authorship of publications, use of data by superintendents in meetings on outlying units, or use of experiments in meetings.*

APPROVALS: *Provide space for signatures with dates of all Project leaders, cooperators, department heads, and the Director. All signatures should be affixed before the outline is sent to the Director's Office. Upon approval, the Director will keep one copy and will send a copy to the Records Clerk and will return the other copies to the department head for distribution.*

COMPUTER MANAGEMENT FORM

NAME_____ DEPARTMENT_____

File Name_____ Created_____

Cards_____ Expires_____

Experiment Title_____

File Contents_____

_____

I. VARIABLE NAMES, DESCRIPTIONS, AND COLUMN LOCATIONS

	NAME	DESCRIPTION	COLUMN
1.			
2.			
3.			
4.			
5.			
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12.			
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14.			
15.			

AES MS FORM 1
(FOR ELITE TYPE ONLY)

PAGE NO._____

62 CHARACTERS (BULLETINS, CIRCULARS)

74 CHARACTERS (LEAFLETS, HIGHLIGHTS ARTICLES)

1
2
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Publications Form 1

MANUSCRIPT APPROVAL SHEET

ALABAMA AGRICULTURAL EXPERIMENT STATION
Auburn University

1. Title:

2. Author:

3. Submitted for Approval as: ( ) Progress Report, ( ) Leaflet, ( ) Circular, ( ) Bulletin,

   ( ) Departmental Series ( ) Research Report Series

   ( ) Technical Article to be published in _____
   (Name of Journal)

   ( ) other, _____
   (Specify)

4. Manuscript based on results from Project No. _____

5. Purpose of manuscript and readership to which it is addressed.

6. Submitted to Department Head on: _____

7. Referred to Reading Committee on: _____

8. Approved by Reading Committee:

   a. _____ (Signature) _____ (Date)

   b. _____ (Signature) _____ (Date)

   c. _____ (Signature) _____ (Date)

9. Approved by Department Head: _____ (Signature) _____ (Date)

10. Approved for publication:

    _____ (Station Editor) _____ (Date) _____ (Dean and Director) _____ (Date)

11. AAES Journal No. _____

(The Station Editor will fill in the blanks below)

Published in: _____

Vol. _____ Pages _____ Date _____

MEMORANDUM OF AGREEMENT
between the
AGRICULTURAL EXPERIMENT STATION SYSTEM
of
AUBURN UNIVERSITY
and

_____

THIS AGREEMENT, made as of _____, by and between the _____ (hereinafter referred to as _____) and the Agricultural Experiment Station of Auburn University (hereinafter referred to as the STATION):

WITNESSETH:

WHEREAS, the _____ desires to establish at the STATION a grant for the purpose of _____

_____

_____ and

WHEREAS, the Station is willing to accept such a grant and conduct such studies;
NOW, THEREFORE, it is mutually agreed as follows:

The _____ agrees:

1. To place at the disposal of the STATION the sum of _____ according to the following schedule:

_____

_____

The STATION agrees:

1. To do the research described on the attached work plan or project outline which is a part of this agreement.
2. To prepare and furnish the _____ with periodic reports and plans according to the following schedule:

_____

_____

with the understanding that the results will not be used by _____ for advertising or promotional purposes without the approval of the Director of the STATION.

It is further agreed that:

1. The STATION reserves full right of publication, but that upon request the STATION will give the _____ privilege of reviewing any manuscripts before they are published.
2. This agreement is for the period _____ to _____ and may be renewed, revised, or extended by mutual consent of the parties involved.

The STATION in accepting this grant has for its purpose the promotion of improved agriculture.

IN WITNESS WHEREOF, the parties hereto have executed this agreement.

SIGNEES

_____

by _____
Date

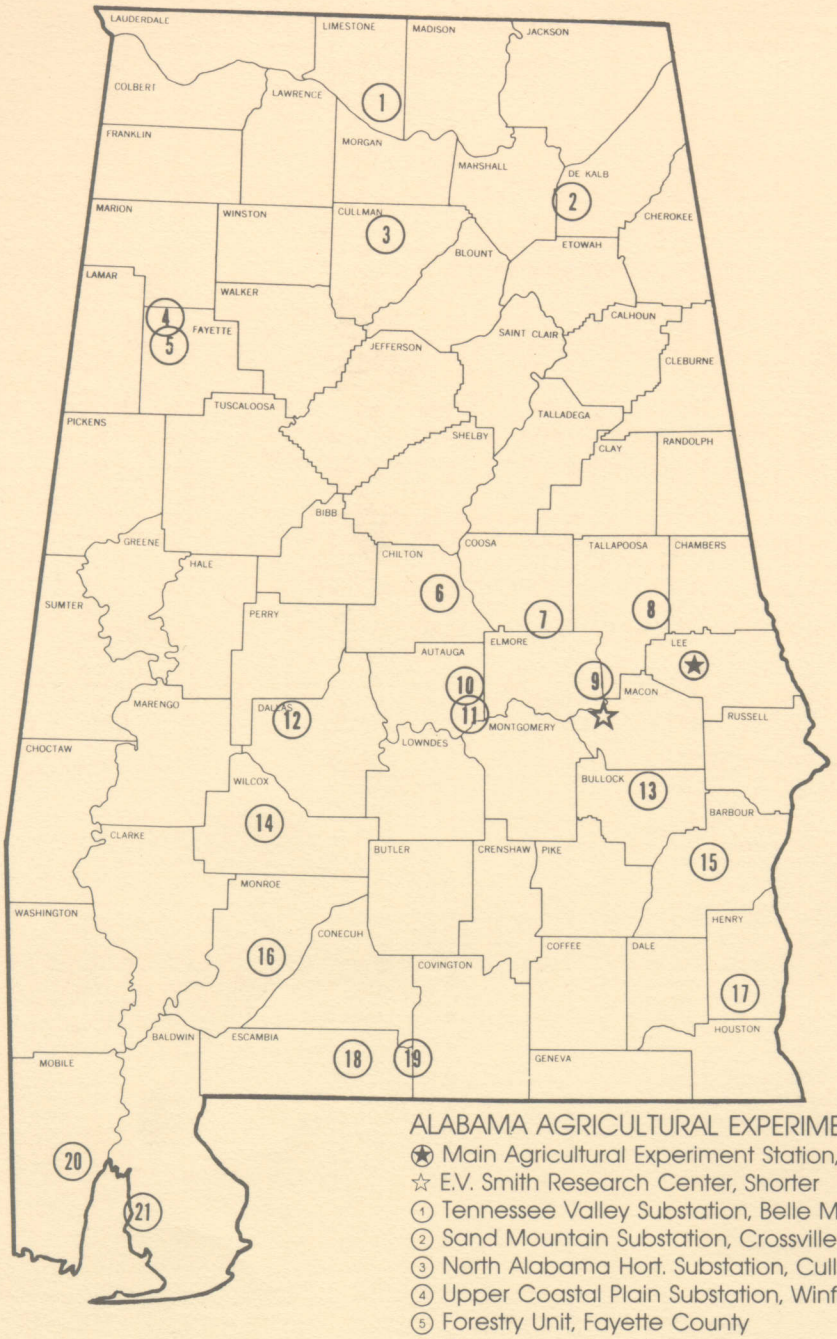
AGRICULTURAL EXPERIMENT STATION OF
AUBURN UNIVERSITY

by _____ _____
Department Head Date

by _____ _____
Director Date

by _____ _____
Vice President for Research Date

NOTES



ALABAMA AGRICULTURAL EXPERIMENT STATION SYSTEM

- ★ Main Agricultural Experiment Station, Auburn
- ☆ E.V. Smith Research Center, Shorter
- (1) Tennessee Valley Substation, Belle Mina
- (2) Sand Mountain Substation, Crossville
- (3) North Alabama Hort. Substation, Cullman
- (4) Upper Coastal Plain Substation, Winfield
- (5) Forestry Unit, Fayette County
- (6) Chilton Area Hort. Substation, Clanton
- (7) Forestry Unit, Coosa County
- (8) Piedmont Substation, Camp Hill
- (9) Plant Breeding Unit, Tallassee
- (10) Forestry Unit, Autauga County
- (11) Prattville Experiment Field, Prattville
- (12) Black Belt Substation, Marion Junction
- (13) The Turnipseed-Ikenberry Place, Union Springs
- (14) Lower Coastal Plain Substation, Camden
- (15) Forestry Unit, Barbour County
- (16) Monroeville Experiment Field, Monroeville
- (17) Wiregrass Substation, Headland
- (18) Brewton Experiment Field, Brewton
- (19) Solon Dixon Forestry Education Center, Covington and Escambia Counties
- (20) Ornamental Hort. Field Station, Mobile
- (21) Gulf Coast Substation, Fairhope