

Alcorn State University
Report of Accomplishments
and Results

Evans-Allen Formula
Funded Research

FY 2000

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FOREWORD

Alcorn State University has a long history of being “the people’s university” through service in teaching, research, and extension. The unique land-grant mission has been and is continuing to be fulfilled by research scientists at Alcorn State University as they seek to reach out to the unserved and under-served populations of the State of Mississippi. A large segment of these groups consists of family farmers who seek to maintain their lifestyle and livelihood in the face of mounting challenges from global economic conditions, from large-scale factory farms and from ever-tightening environmental regulations. Others are nonfarming rural residents who want and deserve a better quality of life in their communities. Keeping these situations in mind, Alcorn State University developed three objectives for its research program over twenty years ago: (1) to increase the income of family farms; (2) to improve the quality of life of rural residents; and (3) to protect and improve the environment. These objectives, which mesh well with the five national goals, are as important today as they were when they were first established.

By gaining input from stakeholders in various ways, Alcorn scientists and administrators continually seek to design and conduct meaningful research related to these objectives.

It is our hope that this report enlightens you, the reader, of the scope and impact of the Evans-Allen Research Program at Alcorn State University. Rural Mississippi has changed greatly in the years since the United States Department of Agriculture first decided to invest in research at Alcorn State University. We like to think that it is a better place, and, to some degree, take a share of the credit for the improvements.

Franklin D. Jackson

Interim Research Director
Alcorn State University

GOAL ONE: An agricultural system that is highly competitive in the global economy

Overview

Executive Summary

Conventional crops generally grown in the South are produced on large scale, i.e. cotton, corn, soybeans, rice. Clientele of Alcorn State University rarely possess acreage to engage in economically viable production of such crops. Similarly, large-scale beef cattle operations which require substantial pasture acreage are seldom found among family farmers in Southwest Mississippi. Given the reluctance of most family farmers to invest in more high-priced land, our objective has been to enable them to farm the land which they do own more efficiently and effectively. This has involved studies of alternative crops such as blueberries, hot pepper, sweet potatoes, various Asian vegetables, and others. We feel that high-value crops such as these grown on small acreage under intensive cultural practices give promise of the best returns to labor and investment.

Research at this location has produced results in a number of instances which have been published and distributed. Also, presentations have been made at professional meetings, field days and other events. Extension personnel have been utilized to distribute useful results to clientele of the University.

Some of these programs have produced significant change. For example, blueberries were long considered a minor crop grown mostly for home use in this state. Research conducted at this location has added to the growth of blueberries as an alternative commercial crop. Our research centered on vegetative propagation of blueberry plants, thus enabling a producer to grow his own plants for replacement and expansion. Mississippi is now one of the leading blueberry producing states in the Southeast.

Another project has developed a large-pod, high pungency hot pepper. Usage of this hybrid by producers will significantly reduce labor costs associated with harvest of peppers. Value-added research has shown that piquant sauces made from this pepper are superior to that of other varieties. Use of this pepper will enable Southern farmers to recapture some, if not all, of the hot pepper market from Mexican farmers who take advantage of low labor costs.

Of the six projects which fall within this national goal, some are at an early stage of development while other, more mature projects have shown good benefits. It is our assessment that all projects have high potential for success.

Key Themes

1. Animal Production Efficiency. A research project entitled, “Effect of Nutrition and Suckling on the Release of the Reproductive Hormones in Cattle” is being conducted with Holstein dairy cattle. The research seeks to monitor levels of follicle stimulating hormone and luteinizing hormone released from the pituitary gland as influenced by high or low level of nutrition and/or by nursing stimulus from the calf. Dairy (and also beef cattle) are inefficient reproducers when compared to other species such as hogs and sheep. A better understanding of the hormonal mechanism which controls reproduction can lead to more profitable operations.

This project is in its mid-term. Due to the lengthy gestation period of cattle, not enough data have yet been collected to draw significant conclusions.

This project is primarily supported with Evans-Allen formula funds - \$68,258 for this reporting period. State Matching funds in the amount of \$26,749 are used as a portion of the principal investigator’s salary.

The expected scope of impact of this research will be multi-state and multi-national: wherever cattle are grown.

1. Adding value to new and old agricultural products. The project, “Model Forest Products Processing to Enhance the Economic Development of Jefferson County, Mississippi” is envisioned to produce new and novel products from wood. Forestry is a major source of income for many small farm landowners in Southwest Mississippi. Additionally, the rate of unemployment in the area is high. New uses for wood and commercially viable manufacturing

processes would benefit all residents of the area. Accomplishments to date include setting up an experimental laboratory and hiring a staff member with a terminal degree in Forest Products.

Evans- Allen funds for this project totaled \$98,343 for the reporting period. State funds used to supplement salaries of staff equaled \$86,056.

Scope of impact of this research is (3) Multi-state Research, to include all states within the southeastern region of the United States.

2. Diversified/Alternative Agriculture. This project, "Alternative Vegetable Production," represents one of the earliest areas of interest for researchers at Alcorn State University. Over the years, several crops such as muscadines, peanuts, sweet potatoes, strawberries, okra, and hot pepper have been studied. A number of research publications have resulted from this work and these crops are now firmly established in the agricultural community of the state. Research thrusts have included breeding, soil fertility, management practices, harvesting, post-harvest handling, and value-added processing. Research has been instrumental in developing a cooperative of farmers to produce sweet potatoes. These producers planted 500 acres during this reporting period and have plans to expand to 2000 in the near future.

Funding for this project during the current period from Evans- Allen comes to \$46,506. Major state support of this work includes new research on medicinal crops and comes to \$1,569,526.

Scope of impact of this research is state specific.

3. Plant Production Efficiency. "Low Input Sustainable Production of Fruit and Nuts" is the title of the research being conducted which fits into this key theme. This project seeks to identify cultivars of fruits and nuts which are genetically superior in this environment and to develop cultural practices which enhance yields. Such practices include studies comparing (a) organic versus inorganic fertilizers; (b) different sources of mulch; (c) drip irrigation versus conventional irrigation; and (d) others. A number of publications focusing on various aspects of the research have been widely received by fruit producers of the state, many of whom are family farmers. Attendance at field days has always been good and producers have expressed high interest in seeing research in progress. Research results at this location have influenced decisions of producers to include sustainable practices in their orchards and groves.

\$87,814 of Evans-Allen funds are used to support this work. State funds in the amount of \$46,937 are used to supplement staff salaries.

Scope of this project is State specific as environmental conditions might differ in other areas.

4. Risk Management. A research project entitled, "Farm Management and Risk Reducing Strategies" is being conducted in this key theme area. This project is identifying farm

management and risk management practices currently being used by small farmers in the state. Researchers will then develop strategies to minimize production, marketing, price, and financial risks which they may face. As this reporting period represents only the first year of this five-year project, no impacts are yet available to discuss.

Evans-Allen funds allocated to this project total \$69,859. Supplemental state funds used to support staff salaries come to \$54,566.

The scope of impact of this research is anticipated to be multi-state since all small farmers face similar problems.

5. Small Farm Viability. This project, "Analysis of the Economic Performance of Small Farm Marketing Strategies," is designed to enhance marketing skills of producers. Often, marketing of a commodity is the weak link in the profitability chain. The researchers seek to uncover marketing information by surveying farmers as to their opinions and experiences relative to U-Pick operations, farmers markets, roadside stands, and whole-sale marketing. This project, which is in its third year, seeks to bridge the gap between what is and what ought to be. Data which has been collected is being analyzed and should result in conclusive evidence which can be used in policy-making decisions.

Funds from the Evans-Allen program for support of this project total \$107,242 for this period. State support is \$47,442 and is used to supplement salaries of staff.

The scope of impact of this research is anticipated to be multi-state since all small farmers face similar problems as to the marketing of their crops.

GOAL 2: A Safe and Secure Food and Fiber System

Overview

Executive Summary

Food safety is an issue which is at the forefront of public concern. Although our nation now enjoys the safest and most wholesome food in the world, we must remain vigilant to see that it continues to be safe and wholesome. Added to the old list of food concerns such as *E. coli*, *Salmonella*, and others, are newcomers such as bovine spongiform encephalopathy. New and emerging diseases and

problems will continue to evolve. A number of these situations can be addressed at the farm through preventive and remedial measures. Research can open new doors to provide the consuming public with a continued supply of nutritious, healthy, and whole-some food. Having a safe and wholesome diet is a major quality of life issue; therefore, scientists at Alcorn State University find it within the objectives of the research program and within the national goals of the United State Department of Agriculture to conduct research in this area.

Key Theme

1. Food Quality. The research project in this key theme area is entitled, “Litter Type, Influence on Broilers.” Whereas pine shavings or sawdust has characteristically been the material of choice for litter on the floors of broiler houses, it has not been without its drawbacks. Due to the pH of the pine shavings, sore feet and breast blisters often erupt on the young birds. This leads to poor growth rates and feed efficiency and, ultimately, to scarred, infected carcasses which must be condemned by inspectors. Our research focuses on alternatives to pine products such as shredded newsprint, hard-wood material and other cellulosic products. While data is still being collected, preliminary results show a lessened incidence of sore feet and breast blisters among the birds.

Federal funds allocated to this project total \$45,529. State support used to augment staff salaries is \$46,142.

The scope of the research is multi-state in that all broiler producers in the southeastern United States face this problem.

GOAL 3: A Healthy, Well-nourished Population

Overview

Executive Summary

Good health is a basic human need, one which, in part, defines quality of life. Basic human needs (food, clothing, shelter) have been a topic of research at Alcorn State University for many years.

Volumes of research at this and other locations have shown that good health and good nutrition are undeniably intertwined. The adverse effects of high-fat, high-cholesterol diets on cardiac well-being are now widely accepted. It is known that certain food items have a correcting effect on this condition, for example omega-3 fatty acids and soy proteins. People in the South have historically consumed high levels of fat in the diet. Southerners in general and minority populations specifically are at greater risk statistically for threatening health problems such as hypertension and high blood cholesterol and tri-glycerides. These problems could be alleviated to some extent by minor and pleasant changes in the diet.

Key Theme

1. Human Nutrition. A project entitled “Development of Low-fat, Low-cholesterol Soy Bean Recipes” is in its second year at Alcorn State University. Twenty recipes have been developed and tested on students, faculty and staff at the University. Based on results of these organoleptic tests, nine recipes have been eliminated. The remaining eleven are being refined for testing outside the university. There has already been wide demand for some of these recipes, however, they will not be released until all testing is completed.

This project is funded by the Evans -Allen program at the level of \$84,363. State funds which support staff salaries are \$41,396.

Scope of impact for this project should be multi-state and multi national. Wherever people experience cardiac-related health problems, they will benefit from the recipes being developed by this research.

GOAL 4: Greater Harmony Between Agriculture and the Environment – NONE

GOAL 5: Enhanced Economic Opportunity and Quality of Life for Americans

Overview

Executive Summary

As the economy of the United States has accelerated to new heights during the 1990's, many Americans in rural areas have been left behind. Pockets still exist in Mississippi and in other states where unemployment is in double digit figures. These situations can be explained by poor educational levels of the general public, poor transportation infrastructure, or other factors; however, little research has been conducted in Southwest Mississippi to learn the truth of the matter. Data should be compiled to verify causes of the current conditions before we can take steps to move to a higher level. Corrective measures might not be too difficult if it is known specifically what needs to be corrected. Quality of life for small-town and rural residents of the area can be enhanced by greater economic opportunity. Such opportunity can come from agriculture, manufacturing, service industries, small business, or a number of sources. Our research is a small part of an overall effort being conducted by numerous local, state, and federal agencies to enhance economic opportunity for residents of this area. Such effort is laudable and greatly needed for these counties have been an economic backwater for many years. As the overall unemployment rate for the state dips below five percent, the rate for most Southwest counties is still in double figures.

Key Theme

1. A project entitled, "Local Labor Markets in a Global Economy" is in its final year. This research seeks to identify sources of labor and sources of employment and match the two. A key facet is to study potential types of employment which might succeed in the area based on resources already at hand - timber, water, agricultural commodities, as well as the available labor supply. A publication of results is being prepared and will be distributed to local development districts, the state economic development authority and others who might benefit from it.

Evans- Allen funds allocated to this project for the FY 2000 were \$56,242. State funds which support staff salaries are \$31,308.

Impact of this study will be state-specific in that the target area was the southwestern part of the state. Conditions in this area might not be duplicated in other areas.

STAKEHOLDER INPUT PROCESS:

In order for research to have value, someone must benefit from its findings. This requires that those parties (stakeholders) be identified and contacted and that their needs and opinions are factored into the development of research programs in general and research projects in particular. Alcorn State University research scientists are keenly aware of the needs of our clientele and consult with them on a regular basis and in many ways. Some of these are listed.

- A. Consultation with extension personnel who meet with producers and rural residents on a regular basis. Extension personnel hold “town meetings” to get stakeholder input and consequently give feedback to research counterparts.
- B. Stakeholders are brought to research sites for direct interaction with scientists. This may be an event such as a field day or a less formal occasion.
- C. Input from public officials. Many elected and appointed public officials serve as inter - mediaries between their constituents and the university. On a number of occasions, they have called attention to existing problems which were then addressed by research scientists.
- D. Input from employees of other USDA agencies. A somewhat collegial relationship exists between university scientists and employees of many USDA agencies who are also scientists or who possess a science background. Interchanges between these persons give helpful insights into research opportunities and have led to establishment of joint efforts in a number of cases, although few of these have received formula funding.

Information gleaned from the above sources is taken into serious consideration before any research proposal is submitted. The research scientist will sit with the Research Director and Associate Research Director to discuss the importance of the project with relation to the clientele. The proposal must then undergo an on-campus peer review before it is submitted to the administration for consideration. At that point, the Vice President for Institutional Advancement, Planning and Research will certify it as to content. Next, the Executive Vice President will certify it as to fiscal accuracy . It is

then signed by the President as the chief executive officer of the university.

All of this procedure originates with the stakeholder input, which is very useful in setting the focus of the program, developing priorities, and identifying emerging issues.

PROGRAM REVIEW PROCESS:

There have been no significant changes in the program review process since the Five - Year Plan was submitted.

EVALUATION OF THE SUCCESS OF MULTI AND JOINT ACTIVITIES:

Multi and joint activities have allowed scientists at Alcorn State University to participate with colleagues on a national scale. Such activities have given them access to facilities, data banks, etc., that would have not been available otherwise. The scope of their research has been immeasurably broadened by these contacts. The ultimate benefactor of these activities is, of course, the stakeholder. The reader is referred to Sections 3 and 4 of the Five- Year Plan of Work for a partial listing of these multi and joint activities. With one exception (development of a capacity building grant proposal with Colorado State University), these activities have been of great benefit to the Alcorn State University research program. New collaborations developed since submission of the Five- Year Plan of Work include:

- D. Funding of and IFAFS project in collaboration with several other 1890 institutions in the subject area of agricultural biotechnology transfer;
- B. Collaboration with ARS/USDA and Texas A&M University in the area of Biotechnology and development of a Biotechnology Center at the University.

Several questions need to be addressed to further assess the effectiveness of multi and joint activities.

Those are:

1. Did the planned programs address the critical issues of strategic importance including those identified by the stakeholders?

For the most part, the answer is “yes.” Further explanation reveals that as collaborations evolved, new and unexpected issues would sometimes arise.

1. Did the planned programs address the needs of under-served and under-represented populations of the state(s)?

The answer to this question is an emphatic “yes.” The target population of small family farmers and rural residents in Southwest Mississippi is strongly a minority population who have been under-served and under-represented for many years. Our work has enabled a significant segment of this group to advance to a higher rung on the economic ladder and to enjoy a better quality of life.

2. Did the planned programs describe the expected outcomes and impacts?

The programs did a fairly good job at describing the outcomes. Impacts are harder to predict. Overall, the programs were fairly successful in this area. In the future, more thought and effort should be devoted to this phase of study.

3. Did the planned programs result in improved program effectiveness and/or efficiency?

Very much. Scientists are now more aware of the need to consider stakeholder input and to distribute results to the stakeholder through various outlets (publications, field days, exchanges with extension personnel, etc.). A larger target audience is being reached now than ever before. Also, mandated salary increases over the past several years have made budget shifts inevitable and less money is now available for purchase of equipment and supplies. While state funds have compensated for this shift to some extent, the scientists have learned to continue to produce with less operating capital. Thus, it becomes absolutely necessary to give much thought to setting goals and priorities.