NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

ANNUAL REPORT

AGRICULTURAL PRODUCTION, MANAGEMENT, AND NATURAL RESOURCES USE
Title of Project

EXTENSION AGRICULTURAL ENGINEERING
Section

1963
Annual Year

Name and Title of Worker	Percentage of Time Devoted to Entire Project by Each worker
H. M. Ellis, In Charge Project Leader	100 %
J. C. Ferguson, Specialist	100 %
John W. Glover, Specialist	100 %
R. M. Ritchie, Jr., Specialist	100 %
Ronald E. Sneed, Specialist	85 %
Ernest M. Stallings, Specialist	100 %
W. C. Warrick, Specialist	100 %
Rupert W. Watkins, Specialist	100 %
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Signed H. M. Ellis
Project Leader

Date Submitted January 15, 1964

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FOREWORD

The Extension Agricultural Engineering Department is charged with the responsibility of conducting that segment of the over-all Agricultural Extension Service program which deals with educating and motivating people to make the best practical use of labor, power, and equipment. Agricultural engineering cuts entirely across the field of agriculture. For this reason it is impractical to try to present the program of the department as a single report. The educational program is necessarily broken down into different areas, and areas are divided into phases, with an extension agricultural engineering specialist responsible for each phase.

Work is being carried on with individual specialists in directing program phases toward applied research-type demonstrations.

This report does not undertake to set down the entire work program of the past year. It does set down those phases planned for major emphasis during the year.

III. Program Accomplishments - Farm Mechanization

A. 1. Objectives and Major Problems.

The objectives of agricultural engineering extension in mechanization are to promote more efficient and widespread use of mechanical power and associated equipment in all fields of adaptation. The high cost and continuing shrinkage of the farm labor supply and more competitive production make it imperative that farmers counteract these situations by all possible methods, further mechanization being a most effective means. Proper maintenance and storage of idle equipment continue to be an educational objective.

A. 2. Mechanization work has continued in three major crops; namely, cotton, tobacco, and peanuts.

a. Assistance was rendered the extension ~~peanut~~ tobacco pathologists in construction and operation of a second 44-nozzle shop-built 4-row tractor mounted demonstration sprayer, and a soil fumigator. The two sprayer equipped tractors were used for demonstrations of brown spot control in eleven counties. Soil fumigation demonstrations were conducted in eight counties, and demonstrations of soil spray treatment for black shank control were conducted in sixteen counties.

b. Cotton production meetings, including cotton harvester schools, field meetings, and tours involving agricultural engineering personnel totaled 27 in number. In addition, several farm visits were made in regard to mechanical harvesting problems; also several custom operators were advised regarding equipment selection and use. Mechanical harvesting was discussed with four organized ginner groups followed by several gin visits during the harvest season. Eight mechanical cotton harvester schools dealing with adjustment, daily service, and operation

were held. Over 500 people attended these schools. Most of these meetings included field demonstrations. From an incomplete survey, it appears that approximately 750 spindle harvesters were operated during the 1963 season, harvesting approximately 150,000 acres.

c. Work in peanuts included training meetings for agents from two states, North Carolina and Virginia, in harvesting and curing methods. This same information in abbreviated form was presented in a series of five meetings for peanut buyers in both North Carolina and Virginia. Special emphasis was given to quality as affected by bulk handling and artificial curing. In addition, several county meetings were held for the benefit of growers and custom operators of curing equipment. Sixty-eight per cent of peanuts are now mechanically harvested with 950 combines.

d. For agents concerned with all-practice corn demonstrations, a series of three district training meetings were arranged by the extension agronomist with agricultural engineering personnel cooperating.

e. Other activities dealing with crop production included work with blueberry growers in both fertilizer and spray application equipment. Assistance was also given the horticulture specialist in work with sweet potato growers in field meetings. Engineering help was rendered a large commercial greenhouse flower grower in installation and automated operation of light control curtains. Advice was also rendered regarding field application of steam as a soil sterilant for field grown flowers.

Miscellaneous Educational Activities and Accomplishments

1. In cooperation with Duke Power Co., all agricultural agents in the power company service area were given two days' training in rural electrification. Topics covered included basic electricity, wire sizes, motor selection, and safety. Applications such as grain drying, bulk tobacco curing, and materials handling were presented by both power company and agricultural engineering personnel. A similar cooperative two-day school was conducted for vocational agriculture teachers.
2. Two half-day programs on pesticide application equipment were conducted for vocational agriculture teachers.
3. The annual Short Course in Modern Farming, attended by approximately 100 young farmers, included one and a half days' instruction in the Agricultural Engineering Department, a part of which involved mechanization and automation.
4. A two-day short course in tractor and truck maintenance for experiment station personnel was conducted in the agricultural engineering laboratories.
5. Fifteen tractor maintenance schools were held in the counties. Several of these involved full day workshops, agents and vocational agriculture teachers cooperating.
6. Ten community sprayer schools dealing with basic principles of good application and use of proper equipment were held during the year.
7. The following 4-H activities were conducted in the field of mechanization and power:
   a. Six district demonstrations in the 4-H Electric Project were conducted, followed by the state contest, and

cooperative effort was given the several power companies in planning and conducting the State 4-H Electric Congress.

b. Assistance was given several agents with county 4-H tractor operator contests, and six district contests were conducted, followed by the state contest held during 4-H Club Week. The state winner, along with his agent, was taken to the eastern regional contest in Richmond, Virginia, during September.

c. Five one-day agent and leader training meetings in the 4-H Automotive Project were held throughout the state.

8. Radio and television:

The two specialists concerned with mechanization presented ten television shows dealing with various aspects of farm equipment. Radio presentations dealing with similar subjects totaled nine in number.

J. C. Ferguson and John W. Glover are the leaders of the farm mechanization program in Extension Agricultural Engineering.

III. Program Accomplishments - Farm Service Buildings

A. 1. Areas selected for major emphasis during the year were poultry buildings, swine buildings, and plastic greenhouses: poultry and swine buildings because they are enterprises producing large amounts of farm income in which buildings play a major part and where new technology involving buildings is rapidly being adopted; and plastic greenhouses because they seemed to represent an almost untapped potential source of new income.

2 and 3. a. Poultry Buildings

Efforts to evaluate insulated broiler houses under field conditions have continued. One additional demonstration was set up in cooperation with one of the large integrated broiler operations in the state. Detailed records from these houses for the 1963-64 season will be available. One cooperator furnished detailed records for the 1962-63 season, but due to disease complications and difficulty in operating his fan ventilating system, results appear inconclusive. This grower is continuing his records for the 1963-64 season. Because of the many variables involved, it becomes difficult to get enough records to make a full economic evaluation of poultry house insulation and controlled ventilation under field conditions. However, this program is being continued, both through keeping records in demonstration houses and through contacts with growers and feed dealers to learn of their experience.

Egg producers are interested in improved houses which will improve performance or save labor. Assistance has been given in planning new houses and in attempting to evaluate them. While no specific evaluations have been made, the trend seems to be toward acceptance by poultrymen of a laying house in-

cluding insulation and controlled ventilation, with a partially slatted floor, mechanized feeding, and convenient arrangement for hand gathering of eggs. Observations and attempts to get more specific evaluation of the various types of houses are continuing.

A special effort has been made to meet with groups of growers and industry representatives to discuss poultry house improvements, especially in the area of environmental control. This subject is not well understood in this region, and many growers are using poor judgment in applying the principles, or have been led to expect too much in the way of performance in these houses. Building plans for an insulated broiler house were developed early in 1963. While few new buildings have followed these plans in detail, they serve as a guide in illustrating principles which can be incorporated in building new houses or remodeling existing ones. A working model of this building has been built for use at educational meetings.

2 and 3. b. Swine Buildings

The trend in swine toward larger units and confinement production continues. Several new or revised building plans were developed during the year to meet the changing needs. These include a crate type farrowing house, nursing pens, breeding barn, and feeding stalls for sows. A leaflet summarizing information and giving typical designs on slotted floors for swine buildings was prepared. Mimeographed lesson sheets for agent training were prepared on the subjects of swine building construction, cost estimates, ventilating, feeding equipment, and farrowing house heating. All of this material was developed in cooperation with the swine specialists and has

been distributed widely over the state.

Assistance was given in conducting two week long schools designed to give in-depth training for agents. The approximately 60 agents attending these schools were those having major responsibilities in swine production in their counties. The farm building specialist also assisted in conducting a large number of county swine schools where one to two hours were allotted to a discussion of buildings and equipment.

2 and 3. c. Plastic Greenhouses

Work in this area was curtailed due to work in other areas and to the cooperating horticulture specialist being away on study leave. Grower contacts in this area have continued, and cooperation has been given to research horticulturists in operating the two plastic houses on the college farm. One day was spent in developing a new method of installing the double plastic cover on plastic houses. This is a practice which is recommended but little used by growers because of the labor involved. The method used was to pull one cover over the greenhouse frame, then lay on top of this cover 2x2 strips and stretch a second cover over the strips, giving a 2" air space between covers. This method was much easier, in the opinion of the workers who helped, than the previous method of attaching a second layer from the interior; and after further observation it may be adopted by commercial growers.

2 and 3. d.

Approximately 50% of the farm buildings specialist's time was spent in a general program including agent training schools and county or state meetings not mentioned above, individual farm visits, preparation and distribution of information on

farm buildings, radio, and television. This would also include limited assistance in preliminary planning of public agricultural buildings, such as agricultural office buildings, fair buildings, livestock arenas, community buildings, etc.

B. One major effort which was not anticipated at the beginning of the year was the development of plans and information on free stall housing for dairy cattle. This practice came in almost overnight, and is spreading very rapidly. Because of the demand for information, cooperation was given to the dairy specialists in compiling information based on experience in this and other states, and printing a folder including information and plans.

R. M. Ritchie, Jr., is the specialist responsible for farm service buildings work.

PLAN SERVICE

The following plans were distributed from this department in 1963:

Residences	6,931
General purpose barns	303
Dairy buildings	2,430
Beef cattle buildings	614
Swine buildings	3,932
Horse and mule barns	168
Poultry buildings	1,146
Tobacco buildings	288
Greenhouses	721
Fallout shelters	161
Other buildings	839
Equipment	2,974
Special blueprints (not standard plans)	214
Total	20,721

In addition to this, hundreds of kitchen guide plans and study sheets for house plans were distributed, including a number of folders containing one each of all the house plan study sheets, and a number of books made up of one each of 26 kitchen guide plans.

New plans added to the plan service in 1963 were as follows:

House plans (North Carolina)	1
House plans (U.S.D.A.)	14
Swine buildings and equipment (North Carolina)	4
Poultry buildings (North Carolina)	1
Dairy buildings (North Carolina)	1
Sweet potato house (North Carolina)	1
Burley tobacco barn (North Carolina)	1
Plastic greenhouse (U.S.D.A.)	1
Farm garages (U.S.D.A.)	1

A great deal of work was done by drafting room personnel (one full time worker plus student help) in preparing charts, posters, lecture materials, etc., for this and other departments. This work is summarized as follows:

Graphs	38
Charts (Boards 28" x 44", approximately)	91
Flip charts (24" x 34")	87
Banners (36" x 7' to 15')	13
Lettering strips	341
Fair booth design (display layout)	4
Material for slides	85
T.V. cards	52
Certificates	68
Cover designs	3
Maps	7

III. Program Accomplishments - Rural Housing

A. 1. Major Problem

Rural housing in North Carolina lags behind urban housing in quality and convenience. The non-white population in rural North Carolina has poor housing. According to the 1960 census, only 9.4% lived in sound housing with all plumbing fixtures. Of the non-white occupied houses, 113,204 out of a total 133,163 had no flush toilet. Actually 41,219 were considered to be in a dilapidated condition.

An effort was made to train agents to be better prepared to assist with housing problems and to increase agent interest in housing. Major emphasis was placed on non-white housing improvement.

A. 2. One specialist spent full time on housing, with 113 days in the field. Of this time, 44 days were spent with Negro agents. In initiating the emphasis program on Negro housing, the specialist held a conference with Negro supervisors early in 1963. This gave administrative support to the program.

Following this conference, 2-day training schools in cooperation with housing and house furnishing extension department were conducted for Negro home agents.

a. Four Negro demonstration houses were built in 1963. Two were completed in Cumberland County and opened to the public for inspection. One in Bladen County and one in Pender County were completed but not shown.

b. One demonstration house was completed with the Pamlico County staff but was not shown. Another was completed and shown in Randolph County, and a third was done as a remodel demonstration in Union County and publicly shown.

c. A scale model house was built by Plan No. 76 for educational purposes. It was used at one county fair, at the Agricultural

and Technical College Farmers' Conference, and at the State Fair.

d. A plan was developed for a house to cost under $6,000. This house contains three bedrooms and is 960 sq. ft. in area.

e. Agents were sent copies of 14 U.S.D.A. plans in addition to the North Carolina plans developed. The free plan service is used extensively by North Carolina families.

f. In cooperation with the Portland Cement Association, an illustrated book in color of 14 house plans was distributed to the agricultural and home agents. Another booklet entitled "Building Better Farm Homes with Concrete" was also distributed. Other teaching aids made available by Portland Cement Association were: (1) A film on farm house planning. (2) A set of slides with script on outdoor living. (3) Newspaper cuts of articles with pictures on outdoor living tips.

g. Miscellaneous Publication 214 entitled "Clothing Storage" was prepared by agricultural engineering extension and sent to agents for their use. Another booklet entitled "How to Insulate Your Home for Electric Heating" by the National Mineral Wool Insulation Association was distributed to all agricultural agents and home economics agents in the state.

h. Two home builders shows were promoted in early 1963. The Extension Service in Pasquotank County sponsored one show, and the Wayne County Home Advisory Council sponsored another. This organization was promoted by the agricultural engineering extension specialist with the county staff.

i. For the promotion of the Wayne Home Advisory Council as an extension teaching method, the specialist received the blue ribbon award from the American Society of Agricultural Engineers at their national meeting in Miami in June 1963. The specialist

also prepared a paper on this teaching method, which was presented at the 1963 ASAE winter meeting in Chicago.

j. A newspaper report was made of the successful extension housing program for Negroes in Person County. In about 18 months 38 new houses were built, 24 of which were financed by Farmers Home Administration.

k. Five television shows and a series of five radio programs on housing were conducted. Newspaper articles and information leaflets were prepared for four result demonstration houses. Cuts of three U.S.D.A. house plans with script were furnished to all county extension agents for use in local newspapers. These were widely used by agents, with the result that requests for 574 plans for these houses were received and answered.

4. Woodley C. Warrick is in charge of the housing phase of the program.

B. The housing specialist was chairman of and presided at a regional plan exchange committee meeting in Hot Springs, Arkansas, in November 1963. In this meeting, approximately 20 plans were presented, criticized, and corrected to be redrawn as regional plans. Practically all of these plans were for low-cost houses.

Assistance was given in planning two State Fair booths, one Negro and one white. Participating counties were Richmond and Pasquotank.

C. Easy credit for rural housing has contributed as much as any one thing to rural home improvement. The Farmers Home Administration housing loans have been a cardinal example. More FHA loans are needed. These FHA loans have done much to replace shell home buying in North Carolina. Shell housing has been a "last resort" for credit for most buyers. It is usually very expensive credit charged to those least able to pay.

III. Program Accomplishments - Water Systems and Rural Sanitation

A. 1. The objectives of the program in water systems were:

a. To continue work with Negroes in promotion of water systems and bathrooms.

b. To educate agents in the need for treatment of water against mineral and sewage contamination.

c. To work with North Carolina Tarheel Electric Membership cooperatives in their water systems promotion in July, August, and September.

d. To complete water conditioning bulletin.

2 and 3. The water systems specialist assisted in an in-service training school for Negro home agents on housing and water systems. Several counties were assisted with demonstration water system installations. Slides, educational materials, and demonstrational material were made available to Negro agents for county meetings. One county was assisted with a booth on water systems for the State Fair.

Demonstrational material on water treatment was made available to counties. Several counties were assisted with meetings, and training sessions were held for several county extension staffs. The water systems specialist spoke to the North Carolina Home Economics Association on water treatment.

Material was made available to the North Carolina Tarheel Electric Membership cooperatives to be used in promoting their water systems promotion.

The bulletin on water conditioning has not been published, but it has been made available to counties and to the southeastern states in mimeographed form.

Again, as in 1962, a half-day program on simple water systems was presented to a group of home economics agents from Kenya.

4. Ronald E. Sneed is responsible for leadership in the area of water systems.

III. Program Accomplishments - Irrigation

A. 1. The objectives of the program in irrigation were:

a. To work on an applied research project in Halifax County on corn, cotton, and peanuts.

b. To work very closely with irrigation dealers and distributors.

c. To assist with in-service training schools for county extension agents, to assist agents in meetings, and to work with other state agencies in irrigation.

d. To promote use of irrigation through all-practice demonstrations, radio and television programs, and newspaper and magazine articles.

2 and 3. The applied research project had its beginning when the extension agricultural engineering department received a request from a young farmer for help in planning and designing an irrigation system for 1000 acres of corn, cotton, peanuts, and soybeans. All of these crops are marginal from an irrigation standpoint. Equipment to be recommended to be used on such an operation is rather an unknown; labor that would be sufficient for the normal farm operation would not be sufficient to handle the irrigation needs.

The approach to the problem was to call together the extension subject matter specialists to discuss how this farmer might be helped. The outcome was that an applied research project involving corn, cotton, and peanuts might be feasible. Research personnel were contacted, and their cooperation was assured. Subject matter department heads were called together, and the need for manpower and money discussed. The project was legitimized with the Directors of Research and

Agricultural Extension. The cooperation of allied industry was asked for and received. The results of all this were a three-year on-the-farm research project under the leadership of the extension agricultural engineer.

The first year's results were most gratifying. The study was designed to investigate three levels of irrigation: high moisture, immediate moisture, and a check plot. There was no significant difference between the high and low irrigation levels on either of the three crops. However, the irrigated corn showed an increase of 114% over the non-irrigated corn for an increase of $70 per acre. The irrigated peanuts showed an increase of 80% over the non-irrigated peanuts. Quality was also increased. On a per acre basis, the irrigated peanuts showed a $195 increase over the non-irrigated peanuts. The irrigated cotton showed a 36% increase over the non-irrigated cotton, with an increase of approximately $90 per acre.

Plans are underway to expand this project for 1964.

Extension's relationships with the irrigation industry continued to be good in 1963. The irrigation specialist worked with every distributor of irrigation equipment in the state, and was on the program of each of the major coupler distributors' annual dealer meetings. Most of the distributors visited the irrigation project at least once during the year.

Each year a questionnaire is sent to each of the irrigation distributors to get total irrigation sales in the state. The 1963 sales totaled approximately $2,500,000, adding 8300 acres to the irrigated acreage in the state. This brings the total irrigated acreage in North Carolina to approximately 82,000 acres.

The irrigation specialist assisted with two agent in-service training schools on tobacco and forage crops. Farmers' meetings, radio programs, television programs, newspaper articles, and mimeographed leaflets on "Irrigation of Forage Crops," "Solid-Set Irrigation," and "Frost Protection with Irrigation" were used to promote the use of irrigation. The irrigation specialist served on most of the all-practice demonstrations, and irrigation was promoted as one of the practices.

4. Ronald E. Sneed is responsible for leadership in irrigation.

B. In addition to planned work, the irrigation specialist assisted the Forestry Department, the Agronomy Department, the Agricultural Experiment Station, and the correctional institutions in the design of irrigation equipment for their use.

III. Program Accomplishments - Crop Processing

A. a. Tobacco bulk curing.

a. 1. The objective was to educate farmers who owned bulk curers as to the fundamentals of the bulk process and to the relationship between process variables at his control, and resultant tobacco quality.

a. 2. Farmers did a much better job of bulk curing in 1963 than in previous years. The advantages inherent to the bulk process were maximized to render quality cures which sold at premium prices in many instances.

a. 3. In addition to educational meetings with county agricultural agents, equipment dealers, and farmers, a poster showing the proper steps of bulk curing was prepared and distributed to farmers through agents and dealers. This poster was suitable for attachment to the curing structure so as to be readily available for reference.

A. b. Mechanical Hay Drying.

b. 1. The objective was to establish one or two farmer demonstrators to establish the feasibility of drying hay mechanically. This was a part of the high quality alfalfa production program aimed at supplying a deficit North Carolina with high quality hay.

b. 2. Two farms were selected as demonstration units. Buildings and equipment were properly established, and the hay drying operation was supervised. The advantage of decreased weather-risk was demonstrated in that alfalfa hay was cut, raked, baled, and dried mechanically - all in one day, with a drying cost of less than $4 per ton (dry weight). Laboratory analysis of samples showed the mechanically dried hay to be far superior to its field dried counterpart. Crude protein percentages exceeding

20%, and TDN percentages exceeding 60% were achieved in the mechanically dried hay.

A. c. Mechanical peanut curing.

c. 1. The objective was to promote sufficient curing units to properly handle the peanuts now combine harvested without using excessive heat, and to promote their proper use to maintain peanut quality.

c. 3. Two additional plans for curing units were designed and distributed. A training meeting for agents from North Carolina and Virginia was conducted, and a series of five meetings for commercial buyers was conducted to promote quality curing. Meetings were conducted in eight counties for farm operators, along with several farm visits to instruct both agents and farm operators. There are now approximately 800 farmers with mechanical curing units, and 70 large custom curing installations.

A. d. Tobacco mechanization.

d. 1. A new idea for producing a more uniform tobacco crop was investigated in 1963. Since tobacco mechanization depends in part on crop uniformity, and since farmers are continually plagued by poor stands of tobacco after transplanting, a method of transplanting tobacco with virtually undisturbed root systems was demonstrated. The specialist spearheaded efforts to acquire and operate a machine which presses plant bed soil into individual small cubes and places one tobacco seed into each cube. At transplanting time the plant and cube of soil are placed in the field, thereby keeping the plant and root system intact.

d. 2. Approximately four acres of tobacco were planted in this investigational type demonstration on a Robeson County farm, with gratifying results. Better than 95% stands were achieved.

4. John W. Glover and Rupert W. Watkins are in charge of the program in crop processing.

III. Program Accomplishments - Rural Civil Defense

A. 1. The overall objective is to educate and motivate people to take sufficient action to insure survival of themselves, their livestock, and their capacity to produce safe food.

1963 Planned Program:

a. Organize a State Extension Rural Civil Defense Committee.

b. Work closely with a number of pilot communities across the state, each to serve as a demonstration in an education and action program in rural civil defense.

c. Organize and conduct a Rural Civil Defense 4-H Demonstration Contest for 1963-1964 on a county, district, and state basis.

d. Draw up and conduct a 4-H Rural Civil Defense Project.

e. Prepare and distribute a 4-H Manual and Record book to all counties.

f. Design a letterhead for, write, and distribute a monthly rural civil defense newsletter.

g. Tape and mail radio programs to 100 North Carolina radio stations.

h. Prepare appropriate visuals, including a set of slides on supplies and equipment for a fallout shelter.

i. Work closely with the State U.S.D.A. Defense Board, and with state, county, and city civil defense directors.

j. Give rural civil defense programs at a southeastern North Carolina meeting, and at the annual State Y.M.W. Conference.

k. Give a 2½-hour program at annual State 4-H Club Week.

l. Write appropriate news articles.

A. 2 and 3. A 12-member Agricultural Extension Service State Rural Civil Defense Committee was organized in August for the purpose of furthering the inclusion of rural civil defense in the ongoing extension programs of the different specialist groups, and to serve as an advisory board.

Concentrated work has been started with eight counties which will serve as pilot demonstration counties in a community education and action program in rural civil defense. A series of four or 5 meetings is being held by the extension rural civil defense specialist with each community involved. The specialist prepared a three-page paper entitled "A Community Education and Action Program in Rural Civil Defense," which was distributed and discussed at initial meetings with these communities.

Twelve counties have been selected as pilot counties for 4-H rural civil defense activities. Work has been started with each of them toward conducting an effective 4-H program in rural civil defense by introducing and gaining significant participation in the new 4-H project, demonstration contest, and workshop. The specialist arranged and gave programs at staff conferences in 19 counties during the past four months for the purpose of explaining 4-H, community, and home demonstration programs in rural civil defense. He prepared, explained, and distributed to pilot counties the following mimeographed items:

(1) Things That Can Be Done in 4-H Rural Civil Defense Projects

(2) Suggested Topics and Ideas for 4-H Rural Civil Defense Demonstrations

(3) How to Organize and Operate a 4-H Rural Civil Defense Workshop

Rules and regulations for all 4-H rural civil defense activities have been drawn up and explained. Three official manual and record books have been partly prepared, and plans are to complete this work and distribute them for preteen, early teen, and late teen members in January, February, and March respectively.

A rural civil defense letterhead has been designed and used. Nine newsletters have been written, the new letterhead being used with the last three.

Seven radio programs were done. Three of these were taped and distributed to 100 stations each.

A new set of slides on shelter supplies and equipment was prepared, and three copies were made available to county extension personnel.

An illustrated set of 35 charts on rural civil defense was prepared, and a set of 15 on 4-H rural civil defense activities. A set of slides on 4-H activities was also prepared.

A one-hour talk on the North Carolina agricultural extension program in rural civil defense and on U.S.D.A. responsibilities was given at the annual meeting of the North Carolina Civil Defense Association of county and city directors in October. These directors are kept continually informed of the work we are doing, and they are invited to attend all meetings held in the counties.

In working closely with the State U.S.D.A. Defense Board, the rural civil defense specialist gave a program at their October meeting on the North Carolina agricultural extension programs in rural civil defense and also explained Bulletin PA-574, "What People Can Do about Rural Civil Defense." County extension chairmen were requested to do the same program at County U.S.D.A. Board meetings.

Several conferences have been held with General Griffin and members of his state civil defense staff to exchange information and coordinate our work. Four district meetings for county and city government officials were planned for early 1964. The rural civil defense specialist is scheduled to speak at each to explain and emphasize the work being done with rural people. Several conferences have been held with Mr. George Maddrey and the civil defense adult education staff to coordinate our work.

A program on rural civil defense was presented to 4-H members and leaders from all southeastern North Carolina counties in August for the purpose of giving background information and training in rural civil defense to be used in work with 4-H Club members.

A 2½-hour program on rural civil defense and on the new 4-H Rural Civil Defense Project, demonstration contest, and workshop was given to 1200 junior leader delegates to State 4-H Club Week in July.

A one-hour talk on rural civil defense was given at the annual State Young Men and Women's Conference in August.

A one-hour talk was given at the state agricultural extension staff meeting in October by the rural civil defense specialist. Why we need rural civil defense and the importance of our assigned responsibility for rural civil defense education were discussed. New rural civil defense activities being started in the state, including 4-H, community, and home demonstration programs, were explained; and the responsibility of and the need for each specialist and administrative staff member to include rural civil defense in their ongoing program was brought out.

During September a personal conference was held with each district agent to explain the 4-H and community programs, to discuss

the situation and possibilities for these activities in each district, and to gain understanding and support for this work.

A conference was held with the five specialists working in community development to acquaint them with the rural civil defense education and action program being started with pilot communities. The present state of general organization and functioning of community groups in each county was discussed. This was helpful in selecting counties to be contacted about being pilot demonstration counties, and also in gaining the support of specialists working in community development.

H. M. Ellis and Ernest M. Stallings are program leaders in rural civil defense.

III. Program Accomplishments - Safety

A. 1. Objectives:

To conduct an extension safety program and to assist in coordinating all rural slanted safety programs as a member of the North Carolina Rural Safety Council.

2. The project leader of Extension Agricultural Engineering chaired the Executive Committee of the North Carolina Rural Safety Council. This coordinating council, among other accomplishments, co-sponsored with the North Carolina Agricultural Extension Service a broad rural safety program. The major accomplishments of Extension Agricultural Engineering Department were:

a. Made a thirty-minute water safety movie with the American National Red Cross. This movie was used by seven North Carolina television stations, by the National Director of Safety Services of the American National Red Cross, and at the Southeastern U. S. Aquatic School.

b. Made a thirty-minute movie on fire safety. This movie was used twice by all seven major television stations in the state and for a number of general educational meetings.

c. One water safety news article was featured in all papers of North Carolina, and a general release and three fillers also went to the newspapers.

d. One general feature on farm safety was published in the July issue of Farm Bureau News, and a column on overall farm safety went to the weekly newspapers.

e. A radio tape was prepared and sent to 63 radio stations. It was on the subject of safety and farm machinery.

f. Four television programs on farm safety were presented as part of the regular Farm Bureau program.

g. Thirteen physicians and agricultural agents did special radio programs on farm safety.

h. All county agricultural chairmen and home economics extension agents were sent farm safety packets, including religious emphasis suggestions for distribution to ministers.

H. M. Ellis is in charge of the safety phase of the Extension Agricultural Engineering program.

III. Program Accomplishments - Betsy-Jeff Penn 4-H Center

B. In late May 1962 the project leader of Extension Agricultural Engineering was appointed by the Agricultural Extension Service Director to chair the construction committee for the proposed Chinqua-Penn 4-H Club Camp. As this project developed, a proposed 4-H Club camp grew into a 4-H Center as a facility available for University seminars and group meetings throughout the calendar year. This all-weather facility consisting of eight cottages, a completely up-to-date kitchen and dining hall, a large recreation building, two modern class rooms, a craft shelter, and a swimming pool was practically completed during 1963. This center is located on a beautifully wooded site on the shore of a twenty-five acre lake. The lake has been prepared for use in teaching water safety and wild life management.

Responsibility for planning, design, and construction of roads, water and sewage system, play grounds, swimming pool, caretaker's house, retention dams, etc., were shared by the Extension Agricultural Engineering project leader and R. W. Shoffner, who during the year retired as Director of Agricultural Extension and became an assistant to the dean of the School of Agriculture.

H. M. Ellis is chairman of the construction committee for this 4-H Club Center.