

ANNUAL REPORT

COUNTY AGENT SUPERVISION

ARIZONA AGRICULTURAL EXTENSION SERVICE

by

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December 1, 1947 to November 30, 1948

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I. THE SITUATION

The Director of the Agricultural Extension Service has complete responsibility for the program activities of the Agricultural Extension Service. The Assistant Director of Extension has been assigned certain administrative and supervisory responsibilities pertaining to specialists' and county agents' programs of work. A staff of specialists assists the county agricultural agents in conducting a program of extension work in the counties.

An organized extension program is being carried in twelve of the fourteen counties of the state, with some assistance being given to the farmers in the two unorganized counties from the state office and nearby county offices. The program of Agricultural Extension Service in the various counties has continued to expand, and its size is evidence of the growing need for additional personnel. The specialist staff is probably sufficient when all vacancies have been filled, except for possibly two additions. These are a soils specialist and a plant pathology specialist.

County personnel in 1948 included the following county workers:

EXTENSION PERSONNEL

County	Agric. Agents	Assistant Agric. Agents	Home Dem. Agts.	Asst. Home Dem. Agts.
Apache	1	0	Part-Time *	0
Cochise	1	0	1	0
Coconino	1	0	Part-Time **	0
Gila	1	0	Part-Time **	0
Graham	1	0	Part-Time ***	0
Greenlee	1	0	Part-Time ***	0
Maricopa	1	4	1	2
Navajo	1	0	Part-Time *	0
Pima	1	1	1	0
Pinal	1	1	1	0
Yavapai	1	0	Part-Time **	0
Yuma	1	1	1	0

* One agent serves both Apache and Navajo Counties.

** One agent serves, Coconino, Gila, and Yavapai Counties.

*** One agent serves Graham and Greenlee Counties.

State specialist personnel in 1948 was as follows:

Specialist in Agronomy - Norris W. Gilbert
Specialist in Animal Husbandry - Walter D. Armer
Specialist in Entomology - J. N. Roney
Extension Horticulturist - Harvey F. Tate
Extension Information Specialist - Joe McClelland
Specialist in Poultry & Dairying - W. R. Van Sant
Specialist in Rural Sociology - A. B. Ballantyne
State Leader, 4-H Club Work - Kenneth L. McKee

Unfilled positions in 1948 included an Irrigation Specialist, an Extension Economist, and a Specialist in Agricultural Engineering.

II. RESPONSIBILITIES

Certain administrative responsibilities have been assigned to the Assistant Director. Certain financial relationships with the county Boards of Supervisors have been assigned to the Assistant Director. He is responsible for the preparation of county budgets and their presentation to county officials. He has a certain amount of responsibility in securing county personnel for the county offices, with final selection and employment subject to the Director of Extension. The Assistant Director has supervision of certain county expenditures made by the county agricultural agents. Additional responsibilities assigned to the Assistant Director of Extension include county office location and arrangement, county office management, the purchase of county equipment and the annual inventory of that equipment, the educational leave program, the life and accident insurance program, and the retirement program for all personnel.

Supervisory responsibilities assigned to the Assistant Director of Extension include the responsibility for the arrangement of programs for county agent meetings, assistance with county extension programs, the coordination of specialist staff programs in the counties, and the over-all supervisory responsibility for 4-H club work. Other responsibilities include meeting with Federal agencies in the absence of and at the request of the Director of Extension, meeting with the State Farm Bureau at many of their monthly directors meetings, and in the absence of an extension economist assisting with an agricultural economics program. A large number of meetings of commodity groups are attended during the year with a view to assisting those organizations in any way possible.

III. OBJECTIVES, METHODS, AND RESULTS

A. Personnel problems

1. Selection and employment of county extension agents

The problem of securing and retaining qualified personnel in the Extension Service during the past few years has been an important one. It had been hoped that the situation might improve in 1948, but the improvement was only moderate. Few individuals with adequate training

and experience were available, and it was necessary to employ principally recent college graduates for the vacancies which occurred.

Few changes were made during the year. The county agent in Yavapai County resigned to work with a local bank and it was necessary to replace him with an inexperienced man who has since proved his capabilities. An assistant county agent in horticulture in Maricopa County resigned in November, 1948, and this position was vacant at the year end. The policy has been to advance our own agents when an opportunity presents itself. When the Yuma county agent resigned to go with a local implement company, he was replaced by the county agent from Cochise County. In turn, the county agent from Greenlee County was advanced to agent in Cochise County. The Greenlee County position was filled with a recent graduate from Michigan State College. A University of Wisconsin graduate was employed as county agent at large and subsequently was placed in charge of 4-H club work upon the resignation of the Yuma County agent and the advancement of the assistant agent to the county agent position. Briefly, the policy has been to name an itinerant county agricultural agent who, after spending six months in training in both the state and county offices, can be named as assistant agent when a vacancy occurs in a county.

The qualifications desired in new employees are that they be adequately and broadly trained in an accredited agricultural college; that they have initiative and aggressiveness and have had the practical experience of having been raised on a farm or spent some working time on a farm; and finally that they like people and have the ability to work with people.

No important changes have been made in the organization of the county offices. Thought is being given to the best method of organizing the 4-H club program in Maricopa County as it increases in size. This county is the largest agricultural county in the state and the potentialities of 4-H club work are unsurpassed in any county in the state.

2. Induction training and apprenticeship

A definite training program for inexperienced agents has been established. When first employed, they are assigned to the state office for at least a month. They work with the various specialists and understand thoroughly the plan of operation at the state office. By working with the specialists they learn the methods in use by specialists and also secure important information concerning that specific field of agriculture. After a period in the state office, they are sent to a county for at least one month. They may be sent to two or three counties for training purposes. Finally, if time permits they may be given a special assignment that will give them experience in analyzing a problem and determining its solution. This last training is exceptionally important in that it will aid the agent in analyzing his problems when he is given the responsibility of a county.

3. Professional improvement

Professional improvement is a necessity in any type of progressive organization. There are several ways in which that professional advancement may be secured. All personnel is interested in the reading of current literature in his own and related fields. Encouragement is given extension personnel to spend some time in study in organized courses. This will in all probability be summer school attendance. A leave of absence is available under certain circumstances to extension personnel who wish to take advantage of it. Assistance is given to agents in the planning of the summer school program, and in the planning of the work in the county so that the advancement of the extension program will not be endangered.

4. Improvement of county staff relationships

A major objective in the county extension program is that the program be built around the needs of the farmers in the county. A gradual approach is being made to a program in the county which is built around the individual farm family. In other words, a single program set up for the county which includes the efforts of both county agricultural agent and home demonstration agent in its fulfillment. Certain phases of work must of necessity be done individually. On the other hand, other phases will be done cooperatively by the agents in the county.

B. Assistance to agents in the development of the extension program in the county

A primary function of a supervisor is to aid in the determination of the major problems in a county. The supervisor has an opportunity to look at the problem from a strictly objective viewpoint. In an effort to better analyze the problems in the county, surveys of agricultural resources have been under way for some time in several of the counties. The information so obtained can then be used in an analysis of the problems which are of greatest importance to the rural people. With all data assembled and the various problems thoroughly analyzed, the objectives of the extension program can be established.

In any planned work with rural people, those for whom it is planned should have a definite part in the planning. Organization of farmers for the purpose of county planning is as yet not fully developed, but progress is being made toward greater participation of farmers in the planning of the county extension program. A 4-H club council, composed primarily of 4-H leaders, takes an active part in the planning of the 4-H program in several counties, which is a forward step in program planning.

Assistance in the planning of the county extension program is often received from farmer commodity groups. The commodity group is always greatly interested in the advancement of its own welfare and often seeks assistance from the county agent in the solving of its problems. In these cases, the county agricultural agent, often calling in the specialist, sits down with the commodity group representatives and plans the method of procedure to solve the problem at hand.

When the principal problems in the county have been decided, extension specialists are called in to plan the method of procedure which will be followed to attain the objective. Their knowledge of subject matter offers a background of information in planning the proper solution to the problem. The county agent must of course take the lead in carrying out the planned program with the assistance of the specialist or the supervisor in certain phases of the problem.

The county extension plan of work is moving nearer to the goal of an integrated county plan of work set up for the farm family as a unit. The 4-H club program in Cochise County was reported as a unit program in 1948 for the first time in the history of the Arizona Extension Service. The Cochise County 4-H program during 1949 will be set up and operated as a single program for 4-H club members.

There are no urban county agents in Arizona at the present time. Considerable assistance is given to urban residents, especially in the two largest cities of Phoenix and Tucson, but no definite steps have as yet been taken to appoint an urban county agent. The urban work loan on the county agent in charge of horticultural work in Maricopa County is especially heavy at the present time. The service is primarily in regard to landscaping, pruning ornamentals, and disease and insect control.

C. Assistance to agents in carrying out extension programs

In carrying out the planned extension program, the agent is given the responsibility for its execution and fulfillment. With this in mind, he is given latitude in determining the method of procedure. With the suggestions of the specialists involved and the supervisor at hand, the decision as to the best approach is often left to him. The question of the use of local leaders is left to him inasmuch as he knows the capabilities of his local leaders and their reaction to the program. The county agent knows their interests and their influence with other farmers in the area.

The supervisor checks closely on the program from time to time throughout the year, offering suggestions as to any changes in procedure which might improve either the efficiency of the operation or the objective to be reached.

There is constant need for policy interpretation, especially with the newer agents. The need for assistance in working with people is often important and requires the careful analysis of a supervisor. The younger agent often needs assistance in the analysis of his relationship with his farmers.

IV. EVALUATION OF ACCOMPLISHMENTS IN TERMS OF MAJOR RESPONSIBILITIES

A. Extension conferences

The extension conference is a most important feature of the supervisory program. It offers an opportunity to accomplish several purposes. Extension personnel is brought closer together through extension conferences, resulting in better working relationships. The extension conference offers an opportunity to present subject matter information and discuss methods of procedure. It is conducive to a closer working relationship with Experiment Station personnel. Every conference should be a morale builder. Finally, it offers an opportunity to discuss the major problems affecting the agriculture of the state. This is the philosophy of the extension conference and was kept fully in mind in the preparation of the conference programs.

Three extension conferences were held in 1948. The annual extension conference held in early December stressed methods of extension procedure and subject matter material. Two out-of-state speakers assisted in the program with inspirational talks. Two regional conferences were set up for county agricultural agents in 1948. The spring conference, held in May of 1948, discussed subject matter, extension policy and methods. The program centered around soils, 4-H club work, new insecticides, and news writing. The fall conference, held in September, was a similar type of conference and stressed fertilizers, weed control, photography, and 4-H club work.

B. 4-H club work

The most important single project in the extension program is 4-H club work. Over 3,300 young people were enrolled in 4-H club work in 1948. Of this number, approximately two-thirds were girls. Every effort is being made to build a strong 4-H club program throughout the state. Every assistance has been given to the state leader in planning the program for the state and in the planning of special events for 4-H club members. It is felt that each county should have at least one county-wide event which can be planned in the interests of all 4-H club members in the county.

The 4-H Club Roundup was held in June on the campus of the University of Arizona with approximately 300 club members in attendance. Assistance was given as chairman of the boys' demonstration team contest and in the various other contests held at this annual event. During the year, five county 4-H club fairs were held, which were attended by either the Director or the Assistant Director or both. Two 4-H club camps were held during the year, and these camps likewise were visited by the supervisor. The supervisor also acted as a member of the committee to judge the state winners for the National 4-H Club Congress and the National 4-H Club Camp.

4-H club work is showing definite progress in the state, as indicated by the number of events for club members in the various contests, and the interest shown at these events. Club work is receiving popular support throughout the state.

C. County office arrangement and equipment

An efficiently organized county extension office with all necessary equipment is an essential in carrying on a successful county extension program. A well-arranged and neat-appearing office is attractive to rural people when they come to the office for assistance. An efficiently organized office is time-saving and will reduce the amount of energy necessary to carry on an effective program. Considerable progress was made in 1948 in the physical reorganization of county extension offices and in securing needed equipment.

Yuma County - The rearrangement of the Yuma County extension office which was initiated late in 1947 was completed in 1948. Separate offices were partitioned for the use of the various agents. The home demonstration agent, who had previously been officed in a different location, was brought into the county agent's office, and an office was set up for her there. In anticipation of future needs, a fourth office was set up, which is being used temporarily as a workroom and storeroom. With all county extension agents officed in the same room, the planning of the county extension program will be facilitated. Some additional equipment was purchased in 1948 for the county office. With the Yuma County office well equipped, primary effort can now be placed on the carrying out of the extension program.

Yavapai County - Yavapai County has one county agricultural agent, one home demonstration agent, and the secretary. Initial steps were taken in late 1948 in the rearrangement and equipping of this office. A separate office was partitioned for the county agricultural agent, and some rearrangement done within the office. Initial steps were also taken to secure necessary office equipment. The reorganization of this office should be completed in 1949.

Greenlee County - The Greenlee County extension office is in a rented office building, and therefore does not lend itself as readily to rearrangement. Initial steps were taken in late 1948 to secure additional equipment for the office.

Cochise County - With the appointment of a new county agricultural agent and a new home demonstration agent to the Cochise County office in 1948, some rearranging was done in accordance with the wishes of the agents. Additional equipment was secured, and the reorganization of that office will be completed in 1949.

D. Program planning

A properly planned program is essential to progress in county extension work. The greatest success in program planning can only be secured with the cooperation of those for whom planning is done. Every county program must of necessity include some service work for rural people. There should also be short-term projects which can be quickly set up to answer the immediate questions which arise. Every program should contain several long-term projects which may take several years to complete. The long-term project is quite often aimed at solving a potential problem which is expected to arise. Long-term projects are also based on problems which have already arisen. From the major problems of a service nature should be developed the short-term and long-term projects which can give answers to problems of a large number of patrons.

Over-all assistance was given to all agents in the state in program planning in 1948. The program planning was carried on in much the same way as it has been over a recent period of years. However, in 1947 and 1948 a rather thorough study was in progress to determine the most desirable method of county program planning. Not as much has been accomplished along this line as had been hoped, but progress is being made.

Program planning was initiated in Graham County in late 1947 and continued through 1948. The specialists and the state supervisor met with the county agent to discuss the agriculture of the county. After considerable discussion, a trip was made over the major agricultural areas in the county in order to get a first-hand picture of the problems. These problems were discussed in the field and again upon the return to the office. A tentative program was then established. As an example of this program planning by the county agent and the specialists, the Lebanon area in Graham County was thoroughly analyzed. This is an area of poor soil, with poor water supply, and with a rather low standard of living, due primarily to the low incomes. A survey of the agricultural resources was made and a brief report prepared for the Lebanon area. Meetings of the people in the area were called and a report was made to them of the results of the survey. Cooperation was received from the L.D.S. Church headquarters at Salt Lake City in the repair of the community building and in the landscaping. An effort was made to improve the water supply to the area. Soil improvement practices are being advocated.

A somewhat different plan was set up to be initiated in Yuma County in December. The illness of the county agent prevented establishing this procedure in that county, but it will be carried on in 1949. This plan contemplated the calling together of commodity groups to discuss their major problems. From the major problems pointed out

by each commodity group, projects would be set up and, insofar as possible, work initiated. The extension specialist works closely with the county agent in this program planning. Some preliminary work may be done by the state supervisor with the county agent, but before the program is fully established the specialist is given a definite part in it. With the experience gained in the work in Graham County and Yuma County, it is expected that a definite plan of program planning will be established in the state.

E. Selecting and training personnel

Although final selection of personnel is made by the Director of Extension, the county agent supervisor has some responsibility in the preliminary work of locating and selecting extension personnel. This problem has been a serious one throughout 1948. Several positions are open in the specialist staff, and two assistant agent positions are unfilled. Every effort is being made to locate qualified personnel.

The training of personnel is an important responsibility of the state office. During 1948, four individuals received training in anticipation of final assignment to county extension work. The training period for the county extension work included a preliminary period of one month in the state office. During this time the trainee was made fully acquainted with state office procedure. He worked with the various specialists in order that he might know how they carried on their work. He was also able in this manner to secure additional information regarding their subject matter fields. At the state office he also became acquainted with extension policy. The trainee was then placed in the county to work with the county agent on the problems which arose in the county. This period of work in the county lasted from one month to three months, depending upon the general situation. If time and facilities permitted, the trainee was sent to two or three different counties in the state in order to get a better knowledge of county problems and county agent procedures. The above procedure was changed in one instance and the training period shortened due to the emergency need in the county office.

The greatest need of the more experienced county agricultural agents is for subject matter. The extension conferences planned and carried out during the year 1948 were planned with this idea in mind. Methods of procedure are exceedingly important and were also included as training purposes for all agents.

Every effort was made in 1948 to develop a definite summer school or post-graduate educational program for extension personnel. Extension personnel was urged to plan a professional improvement program for themselves through attendance at recognized colleges or universities. One member of the county extension force and one member of the state staff attended summer school in 1948.

F. Miscellaneous supervisory responsibilities and accomplishments

A principal function of the state extension office is to assist the county extension agents in the development and execution of the county extension program. The following brief resume briefly indicates several types of assistance given both to county extension agents and the state staff in 1948.

1. County fairs

One of the responsibilities of the county extension agent is assistance in planning and holding the annual county fair. This assistance generally includes suggestions for the preparation of the premium book, the mechanical organization of the fair, and assistance in the operation of the fair itself.

With several new agents appointed during 1948 who would have their first experience with the county fair, it was decided that a brief publication containing suggestions for the organization and operation of a county fair would prove valuable. The state supervisor contacted the fair committee of the Extension Service and the specialists and outlined briefly to the committee and specialists the type of publication which would assist a county agent in organizing and managing his fair. The various subject matter specialists prepared pertinent information in their own fields of work, and the state supervisor prepared that portion of the bulletin pertaining to the physical organization of the fair. This publication discussed fully the various types of records to be kept on entries, judging, and other pertinent information. The completed publication carried a suggested premium list from which county agents could select those entries which would normally be exhibited in his county. This report was mimeographed and copies sent to all extension agents in the state.

The state supervisor attended three county fairs during the fall months of 1948, including the Cochise County Fair on September 25, the Yavapai County Fair on September 30, and the Graham County Fair on October 28. Some assistance was given to the agent in each of these fairs, especially in organization and operation. The State Fair was visited one day and the various exhibits reviewed. The 4-H club exhibit at the State Fair proved to be a very satisfactory display of the various activities in 4-H club work.

2. County extension school

Apache County in northern Arizona is rather distant from the state headquarters of the University of Arizona. For this reason, farmers in that county seldom get down to the University and thus are not able to meet as many of the College of Agriculture staff as they otherwise might. In order to carry more information to them, an extension school was planned for the farmers in Apache County.

This school, consisting of one full day, was held at St. Johns and Eagar. At the Eagar meeting, 65 different individuals were present for the morning, afternoon, and evening sessions. At St. Johns, Arizona, where the program was repeated on the second day, 45 farmers were in attendance during the three sessions, with an additional 46 high school students being present for the day sessions.

This extension school was held early in March prior to the start of early spring farm work. A survey of the two areas had been made prior to the extension school in an effort to determine the need for such a school and the type of subject matter desired. The program was essentially the same at both locations. It covered soils and crops, home gardens, orchards, home beautification, dairying, poultry raising, general livestock, and agricultural economics. The county extension agent was thoroughly satisfied with the school and felt that it was an excellent method of bringing the latest agricultural information to the farmers of these communities. The program will be continued in 1949.

3. Special assistance to county agricultural agents

Two special reports were prepared during the year on Arizona crops and mailed to the extension agents concerned. A rather complete survey was made of the flax situation and the information assembled into a brief publication entitled "The Flax Situation." This publication showed the production and utilization of flax in this country for the past twenty-five years. It also includes figures on imports and exports, supplies on hand, and the carry-over each year. It discussed the prospective 1948 flax crop and its impact upon an already large supply of the commodity. The report included a rather complete analysis of the Government program for flax. A personal letter to the agent accompanying each report carried the recommendation that at the current market price for flax farmers should sell rather than place their flax under a Government loan. The chief reason for this recommendation was that supplies were so heavy there was little chance of the market price rising above the support price. In that case, farmers holding flax for a higher market price would be forced to pay the carrying charges and the freight to a buying center, probably Los Angeles. The recommendation was to the effect that advantage should be taken of the market price offered of \$6.25 per bushel as harvested.

At the request of a county agent from one of the northern pinto bean growing counties, a brief survey was made of the pinto bean situation including the Government program and recommendations made. With plentiful supplies of beans and a loan price of approximately \$8.25, it was felt that the price of pinto beans in a free market would closely approximate the support price. This brief report on pinto beans discussed the supply situation, the demand situation, and the price support for pinto beans.

Both of the above reports were sent to those county agricultural agents in counties producing flax or pinto beans. It was then urged that these reports be mailed to farmers.

4. Soils school and soils committee

In September of 1947 the state supervisor determined that the best method of carrying subject matter to the county agricultural agents was to have an extension school for county agents. With this in mind, he discussed the idea with the Soils Department in an effort to secure their cooperation. They whole-heartedly agreed to be on the program for the soils school, which was held early in September. The school was sufficiently successful that it was decided to carry the idea a little farther. A soils committee was suggested to the county agricultural agents and to the Soils Department. Originally, a soils committee composed of Experiment Station representatives and Extension Service representatives was suggested by the state supervisor. This was changed to a committee of extension workers only, at the suggestion of one of the specialists dealing primarily with soils problems. The thought was that the extension committee could serve as an organization to bring problems to the Experiment Station. Three county agents were named to this committee - one from Navajo County, one from Maricopa County, and one from Pinal County. The primary purpose of this committee was to determine the major problems in the field of soils and select those which seemed of most importance to present to the Soils Department.

The problem of hard spots in alfalfa was the chief problem attacked. A meeting of the soils committee and members of the Experiment Station staff in Maricopa County in July resulted in soil samples being taken from eight different farms in Maricopa County. These samples were thoroughly analyzed by the Soils Department for nitrogen, phosphorus, pH values, total soluble salts, sodium calcium ratio, and other characteristics. To date, nothing final has been worked out, but progress is being made.

The second phase of the program of the soils committee was the preparation of a handbook for county agricultural agents. Cooperation was received from the Soils Department and a member of the extension staff in the preparation of this handbook. Completion of the handbook is expected in early 1949.

5. Subject matter information for agents

Another responsibility of the state office is to keep the county agents informed regarding research information and extension methods of other colleges and universities. As research bulletins were obtained in fields not represented by specialists, copies of the bulletins were obtained and mailed to the extension agents. Subject matter of several of these bulletins sent to the agents were weed control, cooperative marketing, and special publications of the U. S. Department of Agriculture. Many agricultural commodities are included in the price support program of the Commodity Credit Corporation. An effort was made during the year to keep county extension agents fully informed regarding the price supports on those commodities included in the program.

6. Price indexes

In an effort to assist the agents in obtaining a better knowledge of price movements over a period of years and prospective price movements in future years, charts were prepared showing the prices of six major Arizona commodities for a period of approximately twenty-five years. The commodities for which price charts were made were alfalfa, barley, grain sorghums, cotton, wheat, and beef cattle. These price charts carried the prices of these individual commodities from 1925 to the present. Thus, these prices were shown during the inflation period of 1929, the depression of the early 1930's, and the period of the last war.

Another chart included in this series was a chart of the four most important indexes of general business conditions. This chart is for use in the county agent's office and carries index figures from 1929 to the present. The four indexes included on this chart are industrial production; wholesale commodity prices, which is indicative of the price level in the United States; farm prices, in which rural people are most interested; and department store sales, which is indicative of the spending being done by the American people. It was felt that these four indexes would more nearly present the picture of general business conditions in the United States than any other price indexes. All four indexes were based on the five-year period 1935-39 as equal to 100. This made them more comparable.

7. Pinto bean survey

The state supervisor participated in a pinto bean survey in Chino Valley early in the summer. Four major problems were found by the plant pathologist to be of importance in this bean producing area. These were primarily rhizoctonia, bean blight, chlorosis, and wilt. These diseases were found to be rather widespread throughout the Valley. In discussing the matter with the county agricultural agent, it was decided to send a letter to all farmers telling them of the problems facing them. It was further decided to set up a control program to be followed the next spring prior to planting time. This program stressed the use of disease free seed and urged seed treatment. Some effort will probably be made to cooperatively treat the seed for the Valley.

8. Miscellaneous

Some assistance was given to the annual regional meeting of the home demonstration agents at Flagstaff in August. Two subjects were rather fully discussed. One was the various sources of information pertaining to rural areas and their utilization by home demonstration agents. The other topic of discussion was economic conditions in the United States.

The Assistant Director is a member of the University of Arizona retirement committee, which deals with retirement problems of the entire University staff. Complete information on the Civil Service Retirement Program was assembled and sent to extension personnel throughout the state. Mandatory and optional payments were figured for the entire staff and this information sent to extension personnel. In cooperation with the retirement committee and University authorities, a plan was developed whereby assistance would be given extension personnel in getting into the Federal Civil Service Retirement Program. A great deal of preliminary work on the development of the final plan was done. With the Civil Service Retirement Program made available to extension personnel, all but three of the staff members made application for the Program.

Two out-of-state meetings were attended during the year. The Administrative Workshop at Baton Rouge, Louisiana, was attended in February. This was a supervisory workshop with a program based on administrative problems. The Assistant Director worked with the group on program planning. The other out-of-state meeting was the annual Outlook Conference held in Washington, D. C. in the fall of 1948. Detailed information concerning the current economic situation and future prospects was obtained. Upon his return to the state, this information was disseminated to farmers and to extension personnel through meetings, radio, and the press.

As a member of the radio committee of the College of Agriculture, three meetings were attended during the year to develop the program for the Farm and Home Hour. Program subjects were outlined by the committee and speakers secured. The University of Arizona radio committee also met three times during the year to prepare the program titles and participants for the Radio Forum programs.

A large number of meetings were attended during the year. These included the annual meetings of several commodity groups in the state. Among these were the State Beekeepers Association, the Arizona Crop Improvement Association, the Arizona State Farm Bureau, and the Arizona Cooperative Council. Several county cattlegrowers associations annual meetings were attended, including those of Gila, Yavapai, and Greenlee counties. Two Bureau of Reclamation meetings were attended, both in Yuma County and referring to the Gila Project.

V. EXTENSION ACTIVITIES AND ACCOMPLISHMENTS WITHIN THE COUNTIES

The following is a brief summary by counties of the extension program accomplishments for the year 1948:

APACHE COUNTY

The most important phase of agriculture in Apache County is the livestock industry. There are approximately 7,000 to 8,000 acres of irrigated land in the county, and a small acreage of dry farm land. Crops grown include alfalfa, corn, and small grains. In the dry-farming areas, oats is a crop commonly grown. A problem of major importance in the irrigated area is the shortage of irrigation water.

Of major importance in the extension program is the project for the control of grubs, lice, and flies. A program for the control of these insects is fairly well established in the county. Grubs are controlled through the use of a spray mixture of 5 lbs. of 5% rotenone, 10 lbs. of wettable sulphur in 100 gallons of water. This spray is applied to the backs of the cattle under pressure. Under certain circumstances, the dusting program for warble control is used. The mixture, to be used as a dust and rubbed into the backs of the cattle, is composed of equal parts of sulphur and 5% rotenone. Five demonstrations on grub control were given during the year, with a total attendance of 43. Flies and lice were controlled by means of a spray composed of DDT. In an effort to secure a spray formula best adapted to Apache County, three different formulas were used in 1948. The formula which contained benzene hexachloride proved to be the best spray to use. This formula gave control of the deer fly as well as lice. Nineteen meetings on the control of flies and lice were held, with a total attendance of 406. This insect control program also includes the control of ear ticks in cattle through the use of pine tar and cottonseed oil in equal parts. In addition to the meetings on the control of insects, a circular letter containing all of the information was sent to cattlemen in the county. Lumpy jaw continues to be a problem in Apache County, and in view of this three meetings were held, with a total attendance of 17, at which lumpy jaw was discussed in detail.

It is felt that a certain number of cattle could be fed in the county on locally grown feeds, thus better utilizing the crops grown in the area and retaining the manure for fertilization purposes on the farms. With this in mind, the county agent held nine meetings during the year, with 72 individuals present, to discuss the question of feeding cattle. The county agent gives assistance to poultrymen in the county primarily along management lines. Proper feeding of poultry, adequate and proper housing, and control of diseases in poultry are stressed. Poultrymen are being assisted in keeping records.

Soils and irrigation problems are important in Apache County agriculture. After a supply of water is secured, a properly leveled piece of land is the most important requisite. Farmers have been encouraged to level their land and to borrow the extension owned farm level if necessary. Well measurements are being made at various locations in the county in an effort to determine depth to water and underground water movement. Soil sampling continues to be done by the agent in an effort to determine the needs of soils.

A field test plot in one area of the county indicated the preferred varieties of barley, oats, and wheat. Weed control is important in Apache County. Sodium chlorate has been used very effectively for years. In an effort to improve the weed spraying program, tests were made in 1948 on the use of 2,4-D. Twelve meetings on weed control were held with 137 in attendance.

The extension program in horticulture is built primarily around the spraying and pruning of small home orchards in the county. Eleven meetings pertaining to the pruning of fruit trees were held, with 93 individuals in attendance. Codling moth is a serious insect in apple orchards in the county. Twenty farmers in Round Valley tree-banded their apple trees for control of codling moth at the suggestion of the county agent. Two applications of DDT spray were also recommended for the control of the codling moth. Woolly aphis in St. Johns has been controlled by means of a parasite introduced a few years ago. In 1948, this parasite was placed in apple orchards in Concho and Round Valley in order to control the woolly aphis there. Red spider has been unaffected by spraying with DDT. The control measure recommended is a dormant lime sulphur spray applied twice during the winter months, once just after dormancy begins and the second spraying just before the buds break. Six meetings with a total attendance of 38 were held to discuss the grasshopper problem in the county. During the year, 440 acres of crops were baited for grasshoppers.

The county agricultural agent has cooperated closely with the Agricultural Conservation Program, the Soil Conservation Service program, the County Fair Commission, and other agencies and organizations in the county. An extension school was held in two locations in the county, with 125 individuals present. The primary purpose of this school was to instruct rural people in the latest information regarding agricultural production. In an effort to keep rural people more fully informed, every possible means was taken to disseminate information among them. Eighteen press articles were prepared during the year, carrying information of value to rural people.

Three boys' 4-H clubs were organized during the year and carried to completion. Leadership is again a problem in Apache County.

COCHISE COUNTY

Irrigated acreage in Cochise County has increased materially in the last two or three years. There are now approximately 22,000 acres of irrigated land in Cochise County, of which about half is in the southern part of the county. The remainder of the county is given over to the range livestock industry. Rainfall has been at a minimum during the last few years, which has had its effect upon the range and upon the water supplies underground. Almost the entire acreage is pump irrigated, and with the shortage of rainfall in the last few years water shortage problems are anticipated.

The livestock industry in Cochise County is the most important phase of agriculture. The drought in 1948 resulted in many requests for assistance in the supplemental feeding of range cattle. The spray program of the Extension Service has been widely accepted in Cochise County, and is being even more widely stressed in 1948. A circular letter discussing the spray program in detail has been sent to all cattlemen. One demonstration was held with 63 present, at which time 300 head of cattle were sprayed with the rotenone, sulphur, benzene hexachloride spray.

The organization of the Cochise County Dairy Herd Improvement Association was completed early in 1948. A tester was trained by the county agricultural agent and the dairy extension specialist and assigned to the Association. Assistance was given by the agent during the first few months in order that the Association program might get off to a smooth start. Assistance was also given in the Bangs and TB control program in the county. County agent assistance was given to poultry producers throughout 1948 as requested. Poultry management problems were of greatest importance, including feeding, housing, and disease control.

Much attention is given to the soils program in Cochise County because of the various types of problems which arise. Basic in the program is the taking of soil samples and their analysis in an effort to determine the needed soil amendments and fertilizers. In general, soils tend to be somewhat heavy, with a rather high salt content. Recommendations have centered primarily on gypsum, sulphur, and, most important of all, barnyard manure, in the control of soil problems in the county. Considerable subsoiling has been done on one of the farms with especially heavy soil, and this project is being watched closely in an effort to determine its value for the area as a whole. Water penetration was greatly improved after subsoiling.

Cotton acreage has increased greatly over 1947. The 2,000 acres grown in 1947 have expanded to 8,500 acres in 1948. Average production was approximately three-fourths of a bale. The cotton production project of the Extension Service covers several principal points in cotton production. Chief among these are soil preparation,

cultural practices, and insect control. Assistance has been given by the county agricultural agent in the releveling of land where necessary. Thirty-two farmers were given individual assistance on cotton. Insect control practices were discussed individually with farmers and through circular letters to cotton growers. Publicity in the form of press articles and radio articles were presented.

Approximately 900 acres of pinto beans were produced in Cochise County in 1948, of which 700 acres were in the Willcox district. Assistance was given to bean growers in selection of adapted varieties, cultural practices, and harvesting. Bean test plots were continued in an effort to find better adapted varieties. Chili production continues to be an important source of income to farmers in Cochise County. In an effort to develop a better type of chili plant, eighteen different seed selections of chili plants were planted in one community. Several of the plants are promising and will be increased for future seed supplies. Test plots were carried for the purpose of determining the varieties best adapted to Cochise County conditions.

Small home orchards are rather widespread in Cochise County. Pruning demonstrations were held in six different communities during the year. Assistance was given in soil management problems, cultural practices, and disease control. Home beautification continues to be an important phase of the county extension program, with considerable individual assistance being given to home owners in the landscaping of their home grounds. Landscaping demonstrations were given in three different communities in 1948.

The corn variety test plot carried in previous years was continued in 1948. Yield data will be collected and combined with that of previous years in an effort to determine the variety of corn best adapted to Cochise County conditions. Permanent pastures are not as prominent in Cochise County agriculture as they have been in past years. Apparently alfalfa offers as much or more feed with a somewhat lower water requirement.

The extension program in agricultural engineering deals primarily with irrigation practice and farm building plans. Some assistance has been given during the year in land leveling. An overhead irrigation system has been established by one farmer in Cochise County, and it will be watched closely for possible application to other areas. Its economic value is doubted by the agent. Added attention is being given by the Extension Service to underground water supply within the county.

There were many requests in 1948 for information and assistance on insect and disease problems. The county agent made regular checks on insect populations in cotton and issued weekly cotton insect reports on his findings. These reports were distributed to farmers in the county regularly and to the state extension entomologist, who incorporated the report in his state report. This state report went to farmers and agents in all counties. Three cotton meetings were held during the year, with

137 farmers present. Discussed at these meetings were cotton insects and their control, cultural practices, and labor problems. Farmers were shown how to check their fields for cotton insects, and in many cases they were able to make their own insect population counts. Most of the dusting was done with ground machinery, although some airplane dusting was done. In general, insect damage was light, especially in fields where control measures had been practiced. Many requests were received during the year for information on the control of insects on other field crops and on ornamental plants. A most serious disease in the county was verticillium wilt which attacked cotton. Some root rot loss in cotton was also experienced by a number of farmers. The grasshopper situation was watched carefully in an effort to anticipate a serious outbreak. Control measures were not necessary.

Seventeen 4-H clubs were organized in Cochise County in 1948, of which nine were school enrolled clubs and eight were community clubs. Twenty adult leaders and one junior leader assisted with these clubs. Four leadership training meetings were held during the year. 128 club members completed 144 projects. Publicity concerning 4-H club work included eight radio programs and twelve news stories for the local papers. Judging teams and demonstration teams were trained during the club year and represented the county at the 4-H Club Roundup. Club members exhibited their project work at the Cochise County Fair. Achievement days were held by all of the clubs. Beef calf club members exhibited their calves at the Cochise County Fair and auctioned them on the last day of the Fair.

COCONINO COUNTY

Livestock production is the most important phase of agriculture in Coconino County. There is a small acreage of irrigated land in the county and a considerable acreage of dry farming. With an altitude ranging between 7,000 and 8,000 feet, the crop growing season is rather short, with injury from frost always a possibility. The greater part of the land area is given over to the range industry. With this in mind, the extension program in the county is built around the production of beans and small grains on the farm land and the range industry. The dipping and spray program for lice and grubs was again carried in 1948. Plans for a dipping vat were given to one of the largest livestock companies in the county in furtherance of this program. Probably 15,000 head of cattle were sprayed in 1948. One spraying demonstration and one warble control demonstration were given in 1948. Attendance at the spraying demonstration was 35 individuals, with 28 individuals present at the warble demonstration.

Individual service was given to several small hog producers during the year. Poultry numbers have declined in the county, due primarily to high labor and feed costs. Assistance was given to the few poultrymen in the county in feeding problems and in the raising of baby chicks.

Soil erosion continues to be a principal problem in Coconino County. Terracing was initiated by the Extension Service a number of years ago and continues as a primary project in Coconino County. Strip cropping and farming across the slope are also recommended in the soil conservation project.

The principal farm crop in Coconino County is pinto beans. There are several phases of the extension program in pinto bean production. Two bean test plots were carried in the extension program in 1948. In one test plot, four varieties of beans were planted in an effort to determine the best yielder. These were importations from Colorado. In another test plot, two newly introduced strains from New Mexico were tested for adaptability and yield. A Wyoming introduction also being tested yields somewhat less than native beans but matures earlier and is consequently safer from frost. It is being watched carefully and tested thoroughly. The second phase of the extension program with beans in Coconino County is cultural practices. Proper planting in order to take advantage of soil moisture and correct culture are stressed. The control of insects is of some importance. The third phase of the extension program in pinto bean production is assistance in the marketing of beans. Complete information regarding support prices was mailed to bean growers. Market news service was also given them during the marketing season.

Potato acreage in Coconino County has declined to less than 40 acres, compared with 800 acres six years ago. Some twenty-five years ago, Coconino County was the most important potato producing county in the state. Acreage reduction in potatoes has been due to disease and also to the fact that pinto bean production is much more profitable. Work with potato growers is being continued, however, in anticipation of a larger potato acreage in future years. Three farmers were assisted in securing disease-free Pontiac seed potatoes from Colorado. Seed from this production is being saved for 1949. Potato diseases were watched closely, and at the proper time circular letters were sent out to producers warning against the diseases and recommending the proper methods of control. A demonstration project started several years ago, in which Canadian field peas are grown one year as a green manure and potatoes the next, is being continued.

A hybrid corn variety test using twelve varieties of corn was carried during the year. Two varieties were chosen as superior and will be continued in a test plot in 1949. Practically all of the wheat, oats, and barley grown in Coconino County were introduced by the Extension Service in experimental grain nursery test plots in previous years. Markton oats, Hannchen barley, and Reliance wheat are the principal varieties of these three crops. Nursery work with small grains is being continued, with new introductions being compared with the older and more successful varieties. Five replications of ten varieties of oats, thirteen varieties of barley, and fifteen varieties of wheat, constituted the small grain nursery in 1948. A green manure project recommends Austrian winter peas in an effort to increase the organic matter in the

soil. A variety test of nine varieties of sorghums was planted in 1948. Results of one year's test are inconclusive.

In three test plots the agent attempted to secure wilt resistant varieties of tomatoes during the year. One meeting with the Flagstaff Garden Club was held with 17 present. A similar group met in another area of the county with 12 present. Orcharding is important in the agriculture of Coconino County. The extension program includes projects on pruning, disease control, and cultural practices. A project on the control of red spider was set up during the year. Previous dustings had not controlled red spider, as apparently it is resistant to DDT. A test program on the use of lime sulphur spray as a dormant application is being made. A project has also been set up on the control of root rot in Oak Creek Canyon. Fertilizer application is likewise recommended in the extension program. A test was set up during the year to check the effect of DDT on bees in an orchard. The test showed that DDT did not kill bees.

Weed control continues to be an important phase of the extension program. Bindweed is the most serious weed in the county. Results to date indicate that the ester form of 2,4-D is the proper one for the dry climate of Coconino County. Control is fairly effective if followed through. The Sitgreave Soil Conservation District made weed control its major project and requested the assistance of the county agent in this project. Results of testing by this District indicate that 2,4-D applied in June is most effective. A weed spraying demonstration in mid-June was attended by 23 farmers. This demonstration encouraged others to spray. The spray program is also attempting to control milkweed, another serious weed in the county.

Three 4-H clubs were organized in three communities in Coconino County in 1948. The county agent's office kept in close touch with club leaders, supplying them with literature as needed and assistance in the carrying on of the work. Thirty club members completed the year's work. One representative attended the Roundup at Tucson. Two others attended the 4-H Club Camp at Prescott.

The county agent cooperated closely with various organizations and agencies in his county, including the County Fair Commission, the Soil Conservation Service, the Agricultural Conservation Program, and also with local agencies.

GILA COUNTY

Three hundred farm and home visits were made by the Gila County agricultural agent in carrying on the extension program during 1948. 603 office calls and 127 telephone calls were received on matters pertaining to agriculture. A total of twelve method and result demonstrations were held during the year with an attendance of 78. Twenty-eight other meetings attended and participated in had a total attendance of 3,136.

Gila County is primarily a range county with very little farm land. The extension program is based primarily upon range problems. The external parasite control program has been rather widely adopted throughout the county. This program deals with the control of lice and flies. There are now ten spray rigs on ranches in the county, mainly as a result of the extension program. Each of these rigs is used by several different ranchers. The extension program on warble control is not as widespread as the fly and lice control program, primarily because treatment for warbles must be given in December and January when cattle are out on the range and in rather inaccessible areas. Two lumpy jaw demonstrations were held during the year. Individual assistance was given to several ranchers during the year in disease problems and injuries to cattle. A listing service of cattle for sale is prepared each year and mailed to prospective buyers. Assistance is given the Gila County Cattle Growers Association in their annual meeting and in plans for their monthly meetings.

The county agent is assisting in the TB and Bangs control program with dairy cattle. There is no TB in dairy cattle in the county and only a small number of Bangs reactors. One milk fever control demonstration was held during the year. Assistance was given a number of horse owners in the handling of distemper. There are only a few commercial poultry flocks in Gila County, and therefore assistance must necessarily be of an individual type. This assistance pertains primarily to feeding, housing, and disease control. Considerable assistance has been given in the compounding of rations for poultry. Poor quality, yet high-priced, feeds have caused several poultrymen to go out of business.

Three grain sorghum test plots with twelve varieties of sorghums were planted in 1948. The lack of rainfall caused the abandonment of these plots. Tests will be rerun in 1949. Several planting of permanent pasture were made on irrigated farms during the year. A few small orchards in the county require that an orchard project be carried. DDT was recommended for the control of codling moth and proved very successful. Dusting with sulphur for red spider also proved very successful. Control methods for thrips in two orchards were suggested, the recommendation being that the spray be put on before the blossoms opened. One fruit tree grafting demonstration was held and a number of pruning demonstrations. The home garden project of the Extension Service has been carried on in the county for several years. Adapted varieties, cultural practices, and disease and insect control have been included in this program. Four meetings were held during the year on farm fire and safety programs for rural people.

Two 4-H clubs were organized during the year and given assistance in carrying on their work. They were both insect clubs. Meetings were held, and achievement days at the conclusion of the work. Assistance was given the San Carlos Indian tribe at an Indian Fair at San Carlos in November. Assistance was given in planning the Fair, also in judging the crops and livestock exhibited by the Indians. The Gila County agricultural agent also judged at the Navajo County and Apache County Fairs during the fall months.

GRAHAM COUNTY

The relationship between the Extension Service and other agencies and organizations in Graham County is excellent. The county agent works closely with the chambers of commerce in the county, the rural churches, and the local service clubs. Good cooperation is received from the County Farm Bureau. The Valley National Bank assists in financing 4-H club members in the purchase of better livestock. Other local business concerns are also very cooperative.

The spraying program for the control of lice and flies in the county is being continued, as is the warble control program. One demonstration was given showing the spraying of cattle with 350 to 400 lb. pressure sprayer, using 4 lbs. of benzene hexachloride, 5 lbs. of 5% rotenone, and 10 lbs. of wettable sulphur mixed in 100 gallons of water. 65 were in attendance at this demonstration. Assistance has been given to hog men in the control of lice and internal parasites with hogs. Work with hogs is being encouraged through 4-H club work. A fly control program at the local packing plant was established.

The dairy extension program is built around several phases of dairying. The Dairy Herd Improvement Association is well under way, after having been set up in 1947, and receives considerable assistance from the county agricultural agent. Plans for dairy barns and milk-houses have been given to several dairymen in the county. Dairymen have also been assisted in the control of dairy cattle diseases and insect pests. Cooperation is given in the Bangs and TB test programs. One meeting was held with 40 dairymen present to discuss the question of artificial insemination of dairy cattle. There are few commercial poultrymen in Graham County, but a large number of individual small farm flocks. One poultry culling demonstration was held. Assistance was also given to poultrymen in the control of parasites, in their housing problems, and in the purchase of better quality baby chicks.

In past years, Graham County farmers depended largely upon the flow of water in the Gila River for their irrigation water supply. When supplemental water became necessary, wells were dug. However, the use of this well water has increased the salt content of the land. A soils project has been set up to develop proper handling methods of soils with high salt content. Soil samples and water samples have been taken and sent to the soils laboratory at the University. One meeting was held with 55 farmers present to discuss soil analysis and necessary soil amendments. A project was set up to test the problem of hard spots in alfalfa fields. Soil samples from both hard spots and adjoining normal spots were taken, but the analyses showed no great difference. Assistance has been given farmers in running levels on their land in order to improve water distribution and water penetration.

One-half of the irrigated acreage in Graham County is in cotton, mostly California Acala. In an effort to use improved varieties of cotton, two meetings were held to discuss cotton varieties. As a result of these meetings, over one-third of the cotton grown in 1948 was the

New Mexico 15-17 strain, which is resistant to wilt. A field variety test, using six varieties of cotton, was planted in three locations in order to determine best adapted varieties of cotton. This test proved that the 15-17 New Mexico cotton was the most resistant to wilt. It also yielded well. The county agent cooperates closely with the Crop Improvement Association in the production of pure seed. A field test of commercial fertilizer was set up on one farm to determine the results from the fertilization of cotton. The growing of a small acreage of African alfalfa is being recommended on a trial basis. Work continues to be done in the selection of corn varieties adapted to Graham County conditions. Results to date indicate that the local Mexican June corn still is the best adapted corn for the county. Assistance was given the Experiment Station in the annual field day at the Graham County Experimental Farm.

The 250 acres of pecans in the valley require considerable attention and help from the county extension agent. Assistance is given in budding, grafting, rosette control, fertilization and general cultural practices. Chlorosis has been a serious problem in fruit trees in Graham County. Eleven field tests were carried on in 1948 using iron sulphate and iron citrate as controls for chlorosis. An effort to locate a curly top resistant tomato proved unsuccessful. Home beautification and landscaping is an important phase of the extension program. Five rose pruning demonstrations were given during the year. Ten demonstrations were given on the pruning of fruit trees, with 55 people in attendance. Colored slides and motion pictures are being used successfully in the county in an effort to encourage home beautification. Newspaper publicity and radio talks were presented on home beautification.

Weed control is a project of the Extension Service in the county. Tests on the spraying of Johnson grass indicate that spraying can be effective if started early in the life of the plant. Six field test plots for the control of bindweed with 2,4-D were set up. Eradication has not been too successful to date. Three field tests using 2,4-D for horse nettle were successful, only one spraying being necessary. Field tests for the control of other weeds were fairly successful using 2,4-D. Considerable assistance was given during the year in the rodent control programs in the county. Chief among these rodents is the pocket gopher, which severely damages canal banks and alfalfa stands.

Insect pests continue to be a serious problem in Graham County. A cotton insect control program has been carried on for several years in the county. Insect counts are taken during the year in various locations, and when insect populations become serious dusting recommendations are sent out. Two field meetings were held to acquaint farmers with cotton insects, sweeping technique, and dust controls. For the first time, benzene hexachloride has been included in the dust mixture for the control of stink bugs. The grasshopper situation was watched closely during the year in an effort to determine the need for baiting. No

baiting was necessary in 1948, but in 1949 will be watched closely. Chlordane dust has been recommended for the control of ants in Graham County.

Five 4-H livestock clubs were organized, and one 4-H crops club was organized in Graham County in 1948, making a total of six clubs in six communities. Livestock judging and demonstration teams were trained and taken to the 4-H club Roundup at Tucson. They also competed at the Tucson Livestock Show. Club members were assisted financially in purchasing improved livestock by the Valley National Bank. The County Farm Bureau and the local Kiwanis Club assisted financially in sending club members to the Roundup. Eighteen 4-H club boys had entries in livestock at the Graham County Fair in 1948. Twenty individuals attended the 4-H Club Roundup at the University.

GREENLEE COUNTY

With the exception of 2,500 acres under irrigation, the land area in Greenlee County is given over almost entirely to the production of beef cattle. The extremely dry weather of the last few years has severely reduced range carrying capacities. The drought was most noticeable in the southern part of the county where altitudes are somewhat lower. Approximately one-third of the irrigated land is used in the production of cotton. Other crops grown include alfalfa, grain sorghums, and truck crops.

The extreme drought of the last few years has forced a decided reduction in cattle numbers, especially in the southern part of the county. With reduced numbers of cattle on the range, their condition was somewhat improved over the last few years despite the drought. Many cattlemen have bought small farms in order to produce supplemental feed and pasture. The spray program set up by the county extension office for the control of lice, grubs, ticks, and flies has not been fully adopted throughout the county. However, progress is being made. The supplemental feeding of range cattle with a mixture of cottonseed and salt has been advocated during the year and followed by many of the cattlemen. Several demonstrations on blackleg vaccination were given by the agent during the summer months. Also included in this demonstration was the proper method of castration of calves. An experimental project on the control of pinkeye through the use of trisulphanol was set up during the fall months. Ranchers were given assistance with management problems throughout the year.

The county agent assisted the TB and Bangs control program with dairy cattle owners. Eight cases of milkfever were diagnosed and treated during July and August. Complete instructions were given on the feeding of dairy cows in an effort to eliminate or reduce milkfever cases. The intravenous injection of calcium gluconate is a standard practice with dairymen. A mastitis control program was established at the only dairy in the Duncan Valley. Sanitary precautions are being taken and penicillin

sticks used. Ten demonstrations with 30 individuals present were held by the agent on the abdominal method of the castration of young pigs. This method has three advantages - namely, faster healing, less danger from screw worms, and less danger from injury by other animals. Poultry flocks are greatly reduced in numbers over previous years. The extension poultry program recommends the purchase of accredited baby chicks. The greatest need of poultry producers in Greenlee County is better equipment and more attention to sanitation methods. This is included in the extension program.

The extension program in soils is based on three important soil problems - improperly leveled land, low fertility, and poor soil structure. The plowing under of all crop residues for soil improvement is recommended together with the use of green manures. Farmers are also encouraged to plow their land rough and leave it in that condition during the winter in order to improve soil structure and increase the moisture content. Much assistance has been given farmers in the leveling of their land. Field tests of fertilizer on cotton were established in early April. Sulphate of ammonia, treble superphosphate, and a node fertilizer check plot were set up. Fertilizers were applied at different rates in order to check the proper application rate. Two plots were also set up in a field of oats and a field of alfalfa to check fertilizer response. Results to date are inconclusive. Soil samples and water samples continue to be taken and sent to the University laboratory to determine soil needs and the quality of the water used for irrigation. Tests to date indicate that organic matter is the biggest need in Greenlee County soils. A fertilizer test was established on a fall lettuce field with the application of 250 lbs. of 26% ammonium sulphate. The contrast between the fertilized and unfertilized lettuce was so great that the farmer is planning to fertilize his entire lettuce crop in 1949 with ammonium sulphate. A major problem in Greenlee County is the proper leveling of the land.

Acreage of cotton in Greenlee County in 1948 was approximately 2,000 acres, all of which was planted to the New Mexico 15-17 Acala variety, almost entirely to the wilt resistant strain. Assistance was given farmers in securing registered seed for planting purposes. In turn, this registered seed produces certified seed, which is sold in both New Mexico and Arizona. Some foundation seed was secured and allotted to three farmers in the Valley. The county agent works closely with the Duncan Valley Pure Seed Association. The agent assists the Association in the establishment of seed quotas and the price of certified and registered seed. In an attempt to eliminate any dissatisfaction among growers, the price for certified and registered seed was made the same to the grower. The price is, of course, somewhat different to the purchaser. A meeting of cotton growers was held early in the year to discuss the possibility of cooperating with New Mexico in their lint certification program. Eight cotton producers attended the meeting. Greenlee County is a one variety cotton district and the farmers cooperate fully in the growing of their registered and certified seed. The Association markets the seed for the farmers.

Another phase of the cotton program of the Extension Service was the insect control program. Cotton fields were checked regularly for insect populations and insect damage. Dusting during the year was unnecessary. Government grades on cotton produced in 1948 were the highest ever received.

Assistance was given farmers in their small grain production during the year. Alfalfa variety test plots established in 1947 were checked carefully in 1948. In this test, African, India, and Chilean 21-5 are being compared. Little difference is noted in yield and adaptability to date. One test checking the value of guar as a green manure was established in 1948.

A home beautification project carried by the county agent is showing definite results. Two demonstrations on the pruning of shade trees were given at the high school during the year. The effective control of caterpillars on cottonwood trees was secured through spraying with lead arsenate. Two demonstrations were given on the control of weeds in lawns, 2,4-D being used as the spray material. A home beautification program put on by the Rotary Club of Duncan is being given assistance by the county agent.

Potatoes and onions continue to be the chief vegetables grown commercially in the county. Eighty acres of onions and thirty-five acres of potatoes were grown commercially in the county. Considerable assistance was given by the agent in insect and disease control on both these crops. As a result of previous test for adapted varieties, the White Rose potato is being used exclusively. Eighty acres of cantaloupe were planted in 1948. Disease control assistance was given melon growers as requested. Two pruning demonstrations were presented during the year. Some work is being done on chlorosis in orchards in the county. Iron sulphate is recommended. A circular letter on the spraying of fruit trees was sent to all producers prior to spraying time.

The storing of water in the soil through winter irrigation is a standard practice recommendation of the Extension Service. Assistance was given in a rodent control program throughout the county. Several demonstrations on the use of sprays for the control of weeds were given during the year. The use of 2,4-D sprays on field bindweed has proved fairly satisfactory.

Two 4-H clubs were organized in Greenlee County among the boys. Leaders were secured for these clubs and a program outlined for the year. Judging practice and demonstration team training were carried on during the year, with the teams participating in the Roundup at Tucson. Club members also exhibited their projects at the Greenlee County Fair. Clubs met regularly throughout the year, with an achievement meeting at the conclusion of their work.

A great deal of assistance was given by the agent to various organizations in the county. A fly control campaign was carried on by the agent in Duncan and Clifton, and in other smaller areas throughout the county. Publicity on fire prevention and accident prevention was carried throughout the year. Assistance was given the Fair Commission in planning and conducting the Greenlee County Fair. The county agent cooperated closely with the Greenlee County Cattle Growers Association, the U. S. Employment Service, the Employment Security Commission, the Farmers Home Administration, the Veterans Administration, the Agricultural Conservation Program, and the Soil Conservation Service.

MARICOPA COUNTY

With more than half the irrigated land in the state in Maricopa County, this county is the largest and most important agricultural county in the state. Chief crops are cotton, alfalfa, grain sorghums, barley, and wheat. Livestock enterprises center around the fattening of beef cattle, dairying, poultry, and sheep. The extension program is built around the problems which have appeared in the county. The county agricultural agent cooperates closely with the many different agencies and organizations in the county - the Soil Conservation Service, the Agricultural Conservation Program, the chambers of commerce, and the many commodity organizations of the farmers in the county.

The Dairy Herd Improvement Program is an important phase of extension work. In 1948, 172 herds with over 7,000 cows were on test in the Dairy Herd Improvement Association. These seven associations in the county showed an increase of 70% in both number of herds and number of cows under test in 1947. Considerable assistance has been given by the county agent in disease control of dairy animals. Assistance with feed rations has also been important. Many requests come in during the year from poultrymen in the county. 277 requests for information on poultry diseases were received during the year. The extension program stresses the purchase of quality baby chicks, the proper feeding and housing of laying pullets and hens, and proper sanitation and disease control.

Several fertilization tests were carried on by the county agent during the year. Prior to fertilization, soil samples were taken in an effort to analyze the needs of the soil. Test work with phosphate application indicates that soils which will respond to phosphate fertilization will have a higher phosphate test on a dry soil basis than on a wet soil basis. This is a most important determination of the work with fertilizers. It is not conclusive, but will be followed up in future years to check its accuracy. Field fertilization tests were carried on with barley, definite results being found from the use of nitrogen fertilization. A total of six field test plots were established to check fertilizer needs of small grains, cotton, and sorghum. Results to date indicate that definite results can be expected from the use of nitrogen fertilizer on small grains.

In field crop work, 27 individual were assisted in working out crop rotations for their farms. A large part of one agent's time is spent in assisting the Arizona Crop Improvement Association. Ten meetings of the Association were held during the year to discuss various problems. The pure seed program as carried on by the Crop Improvement Association is rather extensive. 163 growers made application for certification of 23,167 acres of grain sorghums, consisting of twelve varieties. 3,609 acres of small grains were approved for registered and certified seed purposes. This was for oats, barley, and wheat. 1,476 acres of Chilean 21-5 and African alfalfa were accepted. 471 acres of Santan Acala cotton seed were accepted, and 170 acres of Punjab flax. In this Crop Improvement Association program, the county agent accepted applications from growers, sent out information regarding regulations for handling and growing the crops, made the necessary inspections during the growing season, and made final inspections prior to harvest. Combine inspections, gin inspections, and seed house inspections were made at the proper times. A large acreage of seed was thus produced for planting both within and without the state. An exhibit at the State Fair showed the work of the Crop Improvement Association. The extension program on alfalfa in Maricopa County is likewise an important one. The program deals primarily with cultural practices, fertilizing, insect control, and the production of quality alfalfa hay. Assistance was given during the year in setting up a hay and seed grading service for farmers and dealers.

Assistance was given in the Smith-Doxey Cotton Classing program. Gins were contacted and the necessary information gathered on the cotton producers. Necessary papers were signed in order to secure this classing service.

Twelve method demonstrations on the pruning of deciduous fruit trees, grapes, and ornamentals were presented and attended by 358 individuals. These demonstrations were presented in ten different communities. 93 individuals were assisted during the year in the pruning of various types of plants. Three method demonstrations on the topworking and budding of pecans were presented during the year, with a total of 81 people in attendance. One demonstration on the care and processing of dates was presented to 46 individuals at a meeting. Citrus production is important in Maricopa County and project work is carried on with citrus grove owners. Three method demonstrations on the budding of young citrus trees were attended by 81 individuals. 26 individuals were assisted in top working mature grapefruit trees into another varieties. A root stock variety test was also established.

Weed control is an important problem in Maricopa County and receives close attention from the county agent's office. Information on weed control was furnished in 1948 to 211 different individuals. A weed control test plot on flax was carried throughout the year. Results were not too satisfactory, which indicates that the control program is not fully worked out. Two weed control demonstrations conducted in the county showed rather good results. The clipping of alfalfa was demonstrated as

one method of killing young weeds in alfalfa. Clean cultivation was demonstrated as a method of controlling weeds. The use of 2,4-D has been proved very satisfactory on certain weeds, as demonstrated by five weed control plots established in the county.

Irrigation practice is important in Maricopa County. With a shortage of irrigation water, utilization must be effected. A problem arose in citrus groves where water was limited to two acre feet. A badly defoliated condition appeared and in some cases the trees died. Thorough testing by the county agent's office indicated that salt accumulation due to insufficient water supplies was probably the cause. The matter is being looked into further. Several field tests were set up during the year to determine the necessary soil treatment to secure water penetration.

Insect and disease control problems continue to be paramount in Maricopa County. 353 individuals were given advice on insect control during the year. Tartar emetic has been fairly effective throughout the years in the control of thrips, although there is reason to believe that thrips are now becoming somewhat resistant to this spray. Tests are being made with DDT as a control measure for thrips. Damage to new growth on top-worked citrus trees is in evidence. Apricot damage by thrips was controlled through a spray mixture of 50% wettable DDT at the rate of 6 to 8 lbs. per 100 gallons of water. This spray should be applied when the fruit is young. Four meetings were held on grasshopper control and the necessary baits put out for control on several thousand acres in the county. The use of chlordane and chlorinated camphene on harvester ants was tested and is being recommended. Insect pest control was discussed at two garden club meetings held during the year. 539 individuals were assisted with disease control problems during the year.

An emergency situation arose during the year and was quickly handled by the county agent's office. Individual citrus trees and even entire groves began to die. In an effort to fully solve this problem, citrus specialists from California were brought to the valley to make a survey. At the conclusion of the survey a meeting was held with 150 citrus growers present, at which time citrus growers were told that the quick decline which had been so injurious in California was not the cause of the present problem. They did find some other problems and the extension office was made fully acquainted with these other problems and the solutions. The previous recommendation of the Extension Service that trees budded on rough lemon stock were shorter lived and less tolerant of salt was verified by the California specialists. It was finally decided that the death of the citrus trees was due primarily to insufficient water, salt accumulation, and in certain cases nematode injury.

The cantaloupe acreage in the valley is a large one and presents many insect and disease problems. Mosaic was found to be quite prevalent in cantaloupe fields throughout the valley. A survey was made and it was determined that the disease was seed borne. Crown gall is prevalent on many deciduous fruit trees and ornamentals in the valley. Chlorosis is likewise a problem and is being worked on by the county agents.

Twenty-nine communities in Maricopa County carried 4-H club work in 1948. 42 local leaders assisted in this program of 4-H club work. During the year livestock judging schools were held and participated in by a large number of livestock club members. Later on, these livestock judging members competed at the annual 4-H club fair and at the 4-H Roundup in Tucson. Six field days have been held for the purpose of giving instructions in judging. Seven local junior fairs were held where 4-H club boys and girls competed. The annual 4-H Club Fair was held as usual with 1506 entries. Club members also participated in the annual State Fair and the Tucson Livestock Show. A total of 709 boys and girls were enrolled in agricultural 4-H club work, with 438 completing their work. Thirty-five students at the Arizona State College at Tempe carried on a leadership training course at the college with 100% of them completing the work. A leadership training conference was held early in the club year for the purpose of training leaders for the coming year's work. Fifty leaders were in attendance, including several junior leaders. This program discussed the local, state, and national contests, the year's program for club work, projects, record keeping, and other matters pertinent to 4-H club work.

The leadership group from Arizona State College conducted the annual 4-H Club Fair. The fat stock auction was held at the conclusion of the Fair, at which time 17 head of fat steers and a considerable number of hogs and sheep were sold. Fifty-five Maricopa County 4-H club members attended the annual 4-H Club Roundup and competed in the various contests, including judging contests, fitting and showmanship contests, and demonstration team contests. Two junior leaders and five adult leaders also attended. Teams were selected for judging at the State Fair. Club members also competed for national contests, winning their share of the awards. Twenty-eight boys and girls attended the 4-H summer camp at Prescott.

NAVAJO COUNTY

Range livestock production is the most important phase of agriculture in Navajo County. As a result of more rainfall in 1948, range conditions have improved somewhat over the previous year. Assistance from the county agricultural agent and the Extension Service has been primarily along the line of a disease and insect control and poison weed control program. Calf pneumonia has been a problem again in 1948, and the county agent is stressing a program of vaccination prior to shipping. A lice and fly control program and a grub control program on cattle has been fully established, but not as widely received as desired. Range management practices have also received attention from the county agent's office. Supplemental feeding has been encouraged, primarily a mixture of cottonseed and meal in the proportion of three to one or four to one. Additional range improvements have been made during the year in the form of stock watering tanks and spreader dams. A cedar control plot has been

set up in the county to test the best means of eradication of cedar. A juniper test eradication plot is receiving consideration.

Assistance continues to be given to the dairymen of the county and is beginning to show results. Several of the dairies have made modern improvements in their equipment, and all of the larger dairies in the county now have pasteurizers. Some also have homogenizers. All of the milk in the county is marketed through one of the dairies that has modern equipment throughout. The poultry industry in the county is on the upgrade. Assistance has been given in one area to the organization of a cooperative which plans to build a processing and frozen food locker to carry poultry, meat, and eggs from surplus periods into periods of shortage.

Grain production in Navajo County is primarily for local needs. The county agent is encouraging the use of fertilizers to increase production on irrigated and dry farm lands. A great deal of assistance is being given to the irrigation problems in the county. This includes water supplies, as well as distribution and methods of application. A settling pond is in operation in one area. This settling pond or desilting basin reduces tremendously the amount of silt carried on to the land. Assistance has been given irrigation companies in the improvement of their ditches and river embankments. In an effort to more nearly determine the needs of the soil, many soil samples have been taken during the year. Fertility, tillage practices, watering, and irrigation methods are the chief problems. Lack of organic matter is also a serious problem, and through a program of encouragement of the growing of green manures it is hoped that this problem can be solved.

The home garden project is an important one in Navajo County, and considerable assistance is given to home gardeners in this problem. Truck farmers were assisted in disease and insect control problems during the year. A weed control program for the control of bindweed, camelthorn, and Russian knapweed has been established. The new weedicides are being used on these demonstration trial plots.

Fifty-two club members were enrolled in club work during the year, primarily in livestock and crop projects. Meetings were held by club members and achievement days held at the conclusion of their work. Club members also attended the annual 4-H Club Roundup at Tucson.

PIMA COUNTY

The Pima County agricultural agent cooperated closely with local, state, and national agencies during the year. The Pima County Cotton Improvement Association, the Southern Arizona Poultry Association, the Pima County Fair Commission, the Tucson Livestock Show Commission, the Soil Conservation Service, and the Pima County Agricultural Conservation Service were a few of the organizations with which the Pima County agent

worked very closely. Local farmer commodity groups were also assisted. The Dairy Herd Improvement Association now has 21 herds, with 1,501 cows on test. Three herds are on official test. Considerable assistance was given to the Southern Arizona Poultry Association, a group of 200 poultrymen in the county. Monthly meetings were held, the agent assisting in the preparation of the program. Assistance was given poultry producers in disease control, feeding, and culling.

One demonstration on soil amendments was carried in 1948. The application of sulphur showed little result, possibly due, in the agent's opinion, to lack of sufficient water to leach thoroughly. No improvement in crop yields was noticed through the application of sulphur. A field test on the fertilization of cotton was carried throughout the year. The test was for type of fertilizer as well as placement and time of application. Results to date are rather inconclusive. It would appear from the test that fertilization on poor soils is very worthwhile. Four cotton variety tests were carried throughout the year. These tests compared two new varieties with the old standard variety. To carry the test to its ultimate conclusion, a bale of cotton from each variety planted was sent to the mills in the east for spinning. Split samples were also sent to laboratories for the testing of staple length, quality, etc. Several meetings were held during the year, at which time information on cotton varieties was presented. One meeting with farmers dealt with insect counts and dusting procedures. The county agent assisted in the increase of three newly developed varieties of cotton. Farmer cooperation was secured in a seed increase program of these three new varieties. The county agent worked closely with the Crop Improvement Association in the production of pure seed. Field tests were also carried on the application of ammonium sulphate and ammonium phosphate to barley with satisfactory results. Permanent pastures are receiving some attention from the county agent. Fertilization trials on permanent pastures are being made in an attempt to secure increased production. The extension program also includes a project on alfalfa production. Field tests with phosphates indicate that increased yields of alfalfa hay can be secured with the proper application of phosphates. Broadcasting on the surface gave very poor results. Peanut production has been an important development of the last two or three years. Considerable assistance was given to the few peanut growers in the county. Fertilization tests and variety tests were carried on in an effort to build this new agricultural industry. Encouragement has been given in the growing of home gardens in the county; the planting of small home orchards - peaches, plums, and apricots - is being encouraged. Home beautification and landscaping is likewise a project in the county extension program.

Weed control through the use of oil sprays and 2,4-D has been encouraged. Tests are being made on the most effective sprays to use for Johnson grass and bindweed.

Twenty 4-H clubs, with a total enrollment of 242, and completions of 101, were carried in boys' and girls' club work in Pima County in 1948. Completion percentages were high. Activities during the year included the training of judging and demonstration teams for the livestock show at Tucson, the 4-H Club Fair, and the annual Roundup at the University. Twenty radio talks were given during the year pertaining primarily to the 4-H club program. 264 farm and home visits were made to projects of 4-H club members. Twenty tours were taken by club members to visit other projects and for judging training purposes. Achievement days were held at the conclusion of the year's work.

PINAL COUNTY

The extension program in Pinal County serves all twenty-one communities in the county. During 1948, 460 farm visits were made; 1,650 office calls were received; and 770 telephone calls. 178 news stories were prepared for publication. A news column entitled "Along the Farm Front," was carried in the four local papers.

Work with livestock producers was carried on in sixteen communities. Twenty farmers were furnished information on feeding practices, eighteen on external parasite control, and fifteen on internal parasite control. The spray program for the control of lice, flies, and grubs is a definite phase of the extension program. Assistance was given to hog producers in the county in an outbreak of cholera in several small herds. The agent works closely with the Dairy Herd Improvement Association. Assistance was given to dairymen in nine communities in the county, emphasizing principally better feeding practices, the use of green pasture, and grain feeding. Cooperation has been furnished the Bureau of Plant Industry in the Bangs disease eradication program. Five days were spent with poultry growers in the county, with assistance being given to 21 producers in 18 communities. Poultry production was emphasized in six newspaper articles during the year.

Assistance in field crops was given in 19 of the 21 communities in the county. The agent worked closely with the Crop Improvement Association program in the certification of practically 3,500 acres of grain sorghums; 647 acres of barley, 59 acres of Markton oats, and 23 acres of Punjab flax. A field test on small grain fertilization was carried out very successfully, indicating the value of fertilizers on low fertility soils. The treatment of seed grain was stressed. Twelve farmers were assisted in securing improved varieties of alfalfa seed, fourteen were assisted in the control of injurious insects, seven in the control of noxious weeds, and four in the protection of their crops from rodents. A test planting of winter peas has been made in one area in an effort to determine their value as a green manure crop. With cotton a principal crop in the county, 48 days of the agent's time were spent with cotton growers. Eleven local leaders assisted the program in twelve communities. 65 farm and home visits were made regarding cotton. A variety test of five varieties of cotton was established to determine adapted varieties.

Three fertilization tests were established testing the value of fertilizers on cotton. Five local leaders assisted in a soil reclamation project. A farm level owned by the county agent's office has been used very effectively during the year by 57 farmers. A project to determine the benefits from deep plowing has been set up. The primary purpose of this deep plowing is to mix some of the sand at lower depths with the heavier surface soil, thus aiding water penetration. The lining of irrigation ditches is being stressed by the county agent. 17 different soil analyses and 18 water analyses were made to aid in soil reclamation work.

A home garden project is being carried in the county, with considerable publicity included. Preparation of the soil, fertilization, cultural practices, and disease and insect control are included in this project. Home beautification is an important phase of the extension program. The growing of ornamental plants, landscaping of the grounds around the house, and control of insects and diseases on these ornamental plants is included in this program. Newspaper publicity and radio programs are presented on this project. Assistance has been given to market, garden, and truck crop growers in the county through improved seed, fertilization, and disease control information.

The county agent has worked with 32 farmers in developing farm plans, with 16 in analyzing their farm business, and with 21 in discussing better leasing arrangements. Assistance has been given farmers in the marketing of their products, including the marketing of flax, alfalfa seed, cotton, and barley.

Fifty-five visits were made primarily in community welfare activities. Assistance was given to the Pinal County Research Committee in determination of water supplies and water needs for the valley. A total of 178 news stories were prepared and published. Assistance was given farmers in their farm labor activities. The agent participated in four meetings with a total of 147 farmers, pointing out the need for a labor recruitment program for cotton picking. The program was established. 206 farm and home visits were made in furtherance of the 4-H club program in the county. 167 telephone calls and 476 office calls were received in furtherance of the 4-H club program. 79 news articles were prepared in the interests of 4-H club work.

165 boys and girls were enrolled in agricultural 4-H clubs during the year in eight communities. Activities engaged in by club members during the year included the 12th annual Pinal County 4-H Club Fair, at which a majority of club members made exhibits. 950 separate exhibits were displayed, an increase of 400 over the 1947 Fair. There were eight boys demonstration teams, six livestock judging teams at the Pinal County 4-H Club Fair, which was attended by 7,000 people.

Assistance was also given during the year to the Women's Club Flower Show, and this group held their exhibit at the 4-H Club Fair.

Twenty-five club members from Pinal County attended the annual 4-H Club Roundup at Tucson. The county agent put on a 4-H club summer camp for Pima, Greenlee, Graham, and Pinal counties, with 95 club members in attendance.

YAVAPAI COUNTY

The county agent's office in Yavapai County continued to cooperate closely with various local and state organizations in the county. Close cooperation was had with the Yavapai Cattle Growers Association, and with other farmer organizations in the county. Assistance was given in planning their programs, and in carrying out those programs. The Bangs and TB programs with dairy cattle received considerable assistance from the agent during the year. Some assistance was given to the Mohair Growers Association, which has only six members at the present time. Dairymen were assisted with pasture management problems, feeding problems, and the marketing of their products. The poultry industry in the county is increasing in importance after several years of downtrend. Several new and inexperienced operators are going into the poultry business, and they make repeated calls on the agent for assistance. Three operators were assisted in remodeling their poultry buildings. One case of Newcastle disease appeared in a laying flock.

The soils program is an important one in Yavapai County. Many different soil conditions require a number of different methods of handling. Soil amendment tests are being carried on in the county. Attention has also been given during the year to a chlorotic condition in certain crops. The county agent cooperated with the Experiment Station in the measurement of wells in several areas in the county in an effort to determine the underground water supplies and water movement. Information to date indicates a lowering of approximately one foot per year over the last few years in the water table.

A rather intensive campaign in the control of diseases on pinto beans is being carried on under the pinto bean project. A survey was made of the various diseases present and a circular letter sent to all producers in anticipation of the problems which might arise. Proper seed treatment and the securing of disease free seed were included in this project. A seed treating project on a community-wide basis is being planned for 1949. A test on bean varieties gave no conclusive results. Work with permanent pastures for dairymen in the county is continuing.

Fruit production is important in Yavapai County. This project included the dissemination of information on pruning, spraying, and cultural practices to all orchardists in the county. Two tomato variety test plantings were made during the year, with results rather inconclusive. The weed control program is an important phase of the extension program, but considerable more test work must be done before final

recommendations can be made. Plant diseases and insect diseases are found in almost every part of the county and require constant attention.

Two 4-H clubs were organized during the year and carried through to completions. Club members attended meetings, held an annual achievement day, and attended the annual 4-H Club Roundup at Tucson. A vegetable judging team from one of the clubs was taken to the State Fair.

YUMA COUNTY

The Yuma County extension office faced new problems in 1948. The opening of new lands of the Gila Project brought new problems with an entirely new type of soil. Some background information was available for the handling of these soils, but considerable information remains to be obtained. When all of the lands in the Gila Project have been brought under irrigation, the irrigated land in Yuma County will be more than doubled. Many requests from veterans looking to the opening of this new area were received during the year. A drawing held distributed 54 units to veterans of this last world war.

Over one-third of the irrigated area in Yuma County is planted to flax. The extension program on flax deals primarily with weed control in the earlier part of the season and with insect and disease control throughout the growing period. A test on flax varieties resistant to fusarium wilt brought out that the Dakota variety was highly resistant. The application of larvacide to soils in an effort to eliminate wilt was not particularly successful. Shell DD applications showed some possibilities.

Test plots were carried during the year, testing the local varieties of alfalfa - namely, Chilean 21-5 and hairy Peruvian - with African, India, and ranger alfalfas. From these tests, African and India alfalfa tend to lose their stands rather rapidly. Fertilization tests have fairly well proved the fertilizer needs of alfalfa. Some Ranger alfalfa continues to be grown for seed production. 4,650 acres were certified under the Crop Improvement program in 1948. Bermuda grass continues to be an important seed crop in Yuma County. The extension program has been built primarily around insect controls on Bermuda grass.

Cotton variety tests were carried during 1948, looking to the time when alfalfa acreage might again return to the valley. Paula showed very well in the tests, and is apparently rather well adapted to Yuma County conditions. Flax fertilization field tests were carried on in the county in an effort to determine the best fertilizers for flax. Moore barley was grown in a seed increase project for Mimesota and Wisconsin. This Moore barley was grown under the regulations of the Crop Improvement Association. Test plantings of sugar beets were made

in an effort to determine the possibility of growing sugar beets commercially. Assistance was given veterans on the farms on the Mesa in the handling of their soils and in other management problems which arose during the year. The county agent's office cooperated closely with the Crop Improvement Association in 1948. Approximately 4,700 acres of alfalfa seed were certified, 154 acres of small grains, and a small acreage of flax.

A large acreage in Yuma County is given over to the production of truck crops. Assistance was given to the vegetable producers with their insect and disease control problems, and to a certain extent with their fertilization problems. The county agent's office has been working closely with melon producers in Yuma County in an attempt to secure a watermelon which is wilt resistant. Some effort is being made to improve certain qualities of cantaloupes grown in the county.

Insect and disease control continues to require a lot of time of the extension program. The control of red spider in alfalfa fields is being successfully handled with sulphur. Clover mite has also become an important insect in alfalfa fields and is spreading from alfalfa fields to cantaloupe fields. After a series of tests, it was decided to dust with 325 mesh sulphur on alfalfa. Lygus on alfalfa continues to be an important pest. Tests in recent years indicate that DDT and chlorinated camphene dust is effective.

Soil problems continue to be important in Yuma County. A program based on the problem of high water table and improper drainage has been set up for the valley. The use of high salt content water in the Roll-Wellton area continues to be a problem there. With the development of Colorado River water, this problem should be handled satisfactorily.

The 4-H club program in Yuma County continues to grow. Enrollment in the county is approximately 250. 67 boys and girls and two leaders attended the 4-H club camp this year, as compared with 60 in 1947. The annual recognition banquet for club members and club leaders had an attendance double that of 1947. Twenty-nine 4-H club members attended the annual 4-H Club Roundup, four demonstration teams and four livestock judging teams competing at the Roundup. The Junior 4-H Club Fair had double the number of entries this year as compared with last. 53 beef calves sold at the highest average price ever to be received for fat club calves. 29 calves were exhibited and sold last year. The 4-H club council continued to take an active interest in planning the club program for the year. The livestock judging team took first place at the Tucson Livestock Show. Completions in 4-H club work averaged 85% in 1948.

VI. CHANGES IN PERSONNEL

Several changes in personnel were made during the year 1948. In Greenlee County Mr. Page resigned, effective June 30, and was transferred to Cochise County. Mr. Sears was named as county agent in Greenlee County as of July 1.

From Cochise County, Mr. Young was transferred to Yuma County in February of 1948, and Mr. Page was moved to Cochise County on July 1. In Yuma County, Mr. Moody resigned in January of 1948, and Mr. Young was assigned to Yuma County as county agent. In November, Mr. Young resigned, and Mr. Face, the assistant county agricultural agent, was later made county agricultural agent.

In Maricopa County, Mr. Harold B. Powers resigned in November. No replacement has been secured to date.

In Yavapai County, Mr. McLernon resigned February 15, and in the following August Mr. Eugene F. Thacker was made county agent.

In Pima County, Mr. O. W. Dishaw resigned, effective July 1, and Mr. Allen was appointed assistant county agricultural agent.

VII. COOPERATION

The state extension office cooperated closely with Federal agencies in 1948. Among these were the Soil Conservation Service, the Production & Marketing Administration, the Bureau of Plant Industry, and the Bureau of Reclamation. The Extension Service cooperated in preparing a handbook for the veterans on the Mesa Project and on the Yuma Valley Project. This handbook was prepared in cooperation with the Bureau of Reclamation. A meeting of the Bureau of Plant Industry and the Bureau of Reclamation in the Roll-Wellton area was attended. The primary purpose of this meeting was to survey and evaluate the various areas and soil types in the Mohawk Valley. The annual meeting of the Bureau of Plant Industry, the Bureau of Reclamation, and the University of Arizona, held in July, 1948, was attended.

At the request of the state project leader of the Food Conservation Program, considerable assistance was given to that program in the latter part of 1947 and in early 1948. This assistance took the form of determining those enterprises in which feed conservation could be advantageously practiced. Plans were developed whereby the program would be taken to each of the fourteen counties in the state.

The state supervisor acted as a judge for the state oratorical contest of the Future Farmers of America.

VIII. OUTLOOK AND RECOMMENDATIONS

Extension work in Arizona faces a greater challenge than ever before. There is every evidence of surplus production in certain phases of agriculture, and it is quite likely that this surplus situation will be accentuated in the period immediately ahead. With the development of these surpluses will come declining prices for agricultural products unless the farm program places rather high support prices under those farm commodities heavy in surplus production. With surpluses and resulting decline in prices, there will be additional need for assistance to the farmers in cutting their costs of production and marketing more efficiently. The Extension Service will be called upon for aid in this situation. Because of the farm programs in recent years, farmers have been accustomed to contact the county agricultural agent at frequent intervals. More office calls were received in 1948 than in any previous year, and there is little question but that this practice will continue to increase.

Many veterans and others unaccustomed to farming are going into some phase of agricultural production. These individuals need a great deal of assistance and will come first to the county agent's office. More time will be required per individual call on these problems than with the longer established farmers. Briefly summarized, the need for assistance to farmers will be much greater in the years immediately ahead than in any previous period. This increased need must be met through a better planned extension program and through increased personnel.

Probably the greatest need within the state is the need for improvement of program planning. The increased needs of the rural people can only be met through better planning. The service phase of extension work is taking an increasingly greater amount of time of the county personnel and it will be necessary to plan a project to meet some of the service needs through the mass teaching method. A basic need in improved planning is better organization of farmers who can give greater support to the extension program. They will be far more willing to conduct a program which they have helped to plan. The extension program must be planned carefully with all groups, both among farmers and the College of Agriculture, fully represented.

4-H club work is the most important phase of the extension program. Additional effort must be placed on the planning and execution of the club program. County 4-H club programs must be prepared, based on the individuals and the agricultural resources within the county. Leadership training must receive greater emphasis and each county must have a county-wide event in order that a greater number of club members may participate in the program.

Marketing must receive even greater emphasis in the future than it has in the past. With the almost inevitable surpluses which are accumulating in certain agricultural commodities, improved marketing practice must be developed.

Subject matter needs are rather numerous in the state and greater effort must be made in 1949 to prepare additional subject matter bulletins for use in the state.

Public policy has become of even greater importance in recent years because of the agricultural planning which is being done in Washington. A great deal of this planning should be done in the rural areas where there is a better understanding of the needs and where the practicability of the planning can be carefully weighed. There is a continuing need for the reorganization and improvement of county offices in order to more efficiently serve the needs of the rural people.

In order to satisfactorily meet these increased demands, additional personnel is unquestionably needed in the Extension Service. On the state staff there is need for several specialists. Each field should be under the direction of a specialist if it is to receive the attention necessary. A soils specialist, a plant pathology specialist, and a marketing specialist could be very effectively used in the state office in addition to present personnel. In the county extension offices there is added need for probably three assistant agents. Added personnel for 4-H club work could be used to advantage.