

TABLE OF CONTENTS

	Page
Organization	/
Appointments-Resignations-Transfers	1
Publications	4
Financial Statement	6
Introduction	7
County Agent Work and Home Demonstration Work	11
Agronomy	25
Animal Husbandry	25
Dairying	26
Economics	27
Entomology	28
Horticulture	29
Information	30
Irrigation	31
Plant Pathology	32
Poultry	33
Soils	34
Clothing	35
Home Management	35
Nutrition	36

ORGANIZATION

Richard A. Harvill	President of the University
Phil S. Eckert.....	Dean of the College of Agriculture
Chas. U. Pickrell	Director of Agricultural Extension Service
Howard R. Baker	Assistant Director of Agricultural Extension Service
Jean M. Stewart	State Leader of Home Demonstration Work
Ellen Kightlinger.....	Acting State Leader of 4-H Club Work
Nellie Campion	Administrative Assistant

County Agricultural Agents

C. L. Isaacson	Apache County
Carmy G. Page	Cochise County
William Brechan	Coconino County
S. W. Armstrong	Gila County
John L. Sears	Graham County
Roy B. Jeter	Greenlee County
J. H. O'Dell	Maricopa County
Richard Hoover, Assistant	Maricopa County
Otis Lough, Assistant	Maricopa County
James R. Carter, Assistant	Maricopa County
Ray Milne, Assistant	Maricopa County
Lewis Whitworth, Assistant	Maricopa County
W. E. Gregory	Navajo County
G. E. Blackledge	Pima County
Robert E. Oberly, Assistant	Pima County
Theodore H. Siek	Pinal County
Alvin Allen	Yavapai County
Albert R. Face	Yuma County
Ervin L. Bramhall, Itinerant Assistant	Yuma County
Ray Weick, Itinerant Assistant	Yuma County
E. S. Turville	County Agricultural Agent at Large

Home Demonstration Agents

Maryetta Gaskill	Cochise County
Virginia Twitty	Graham & Greenlee Counties
Isabell Pace	Maricopa County
Betty Jo Nelsen, Assistant	Maricopa County
Anne B. Shute	Navajo & Apache Counties
Ruth Linner	Pima County
Frances C. Lempe.....	Pinal County
Lucinda Hughes	Yavapai-Coconino-Gila Counties
Mariel Hopkins	Yuma County

Cooperative Specialists

Albert M. Lane	Extension Specialist in Animal Husbandry
Helen L. Church	Extension Specialist in Clothing
Charles C. Ellwood	Extension Specialist in Agronomy
Joe McClelland	Extension Information Specialist
James E. Middleton	Extension Specialist in Irrigation
Elsie H. Morris	Extension Nutritionist
Howard E. Ray	Extension Specialist in Soils
J. N. Roney	Extension Specialist in Entomology
Grace Ryan	Extension Specialist in Home Management
Ivan J. Shields	Extension Specialist in Plant Pathology
Thomas M. Stubblefield	Extension Economist
Harvey F. Tate	Extension Horticulturist
W. R. Van Sant	Extension Specialist in Poultry & Dairying

APPOINTMENTS AND RESIGNATIONS

July 1, 1953 to June 30, 1954

Appointments

Ervin L. Bramhall, Itinerant Assistant County Agent -
August 16, 1953
Ray Weick, Itinerant Assistant County Agent -
September 10, 1953
Roy B. Jeter, County Agricultural Agent, Greenlee County
September 1, 1953
Thelma Smith, Home Demonstration Agent, Pinal County -
August 1, 1953
Lena Anlauf, Home Demonstration Agent, Pinal County -
October 12, 1953
Betty Jo Nelsen, Assistant Home Demonstration Agent, Maricopa County -
January 1, 1954
Frances C. Lempe, Home Demonstration Agent, Pinal County -
February 1, 1954
Ruth E. Linner, Home Demonstration Agent, Pima County -
February 1, 1954
Albert M. Lane, Extension Specialist in Animal Husbandry -
September 10, 1954
Evangeline Sergeant, Stenographer, State Office -
August 1, 1953
Joyce L. Bogart, Stenographer, Maricopa County Office -
September 16, 1954
Dorothy Harrison, Stenographer, State Office -
October 1, 1953
Flossie Santee, Stenographer, Greenlee County Office -
October 1, 1953
Mary F. DeGenarro, Stenographer, State Office -
December 1, 1953
Gertrude B. Herget, Stenographer, State Office -
December 1, 1953
Gladys Sabella, Stenographer, State Office -
December 1, 1953
Helen A. Balsat, Assistant Secretary, Maricopa County Office -
January 1, 1954
Nancy J. Poer, Stenographer, Coconino County Office -
January 1, 1954
Jill Cannon, Secretary, Yuma County Office -
January 16, 1954

Resignations

Robert McCreight, Assistant County Agricultural Agent, Yuma County -
July 27, 1953

S. L. Owens, County Agricultural Agent, Graham County -
August 31, 1953

Maurice Bossuyt, Assistant County Agricultural Agent, Pinal County -
January 5, 1954

Thelma Smith, Home Demonstration Agent, Pinal County
September 30, 1953

Rosemary Shepherd, Assistant Home Demonstration Agent, Maricopa County -
September 30, 1953

Lena Anlauf, Home Demonstration Agent, Pinal County -
November 28, 1953

Madeline Barley, Home Demonstration Agent, Pima County -
January 26, 1954

Laurayne Kennedy, Assistant Home Demonstration Agent - Maricopa County -
May 18, 1954

Kenneth McKee, State Leader, 4-H Club Work -
July 26, 1953

Daniel Ralston, Assistant Information Specialist -
May 26, 1954

Catherine Johnson, Stenographer, State Office -
August 17, 1953

Barbara Fishel, Stenographer, Greenlee County -
August 15, 1953

Jeanne Cross, Stenographer, State Office -
August 28, 1953

Marvel Nichols, Assistant Secretary, Maricopa County -
September 15, 1953

Treesa Cotton, Stenographer, Maricopa County -
November 3, 1953

Maxine Wiley, Stenographer, Coconino County -
November 4, 1953

Joan Clasen, Stenographer, State Office -
December 9, 1953

Eileen Ellis, Secretary, Yuma County Office -
November 27, 1953

Mary DeGennaro, Stenographer, State Office -
March 31, 1954

Nancy Poer, Stenographer, Coconino County -
June 3, 1954

Lois Hammer, Stenographer, Pinal County -
May 31, 1954

Joyce Eastin, Stenographer, Maricopa County -
June 7, 1954

Dorothy Harrison, Stenographer, State Office -
June 9, 1954

Nancy Hastings, Stenographer, State Office -
June 11, 1954

Transfers

Theodore H. Siek, Transferred from Itinerant Assistant County Agent to
County Agricultural Agent, Pinal County -
August 1, 1953

John L. Sears, Transferred from County Agricultural Agent, Greenlee County,
to County Agricultural Agent, Graham County -
August 1, 1953

PUBLICATIONS

During the period July 1, 1953 to June 30, 1954, the following publications were issued:

<u>Number of copies</u>	<u>Extension Circular</u>
2,000	"List of Available Publications"
8,000	#122 - Control Garden Insects (Rev.)
4,000	#128 - Turkeys in Arizona (Rev.)
7,545	#130 - Arizona Home Gardening (Rev.)
7,000	#131 - Cattle Feeding in Arizona (Rev.)
7,000	#179 - Cotton Insect Control in Arizona (Rev.)
5,000	#184 - Second Year 4-H Foods (Rev.)
5,000	#187 - 4-H Activities (Rev.)
5,000	#194 - Making Bound Buttonholes (Rev.)
6,000	#199 - Control Insects of Flowers, Shrubs, and Shade Trees (Rev.)
5,000	#200 - Culling Poultry for Profit (Rep.)
5,009	#205 - Water Management (Rep.)
6,000	#208 - Fertilizer Recommendations for Arizona, 1954 (Rev.)
6,000	#210 - Arizona Insect Control Recommendations, 1954 (Rev.)
5,000	#211 - Soil Management
4,000	#212 - Help Yourself to Laundry Aids
5,000	#213 - Home Storage of Vegetables
1,000	#214 - Farmer's 1953 Income Tax
5,000	#215 - Wash Your Blankets
5,000	#216 - Simple Equipment for Pressing
5,000	#217 - Kill Weeds in Small Grains
4,000	#218 - Sorghums in Arizona
5,000 Folder	#55 - 4-H Junior Leadership (Rev.)
5,000 Folder	#66 - Join a 4-H Tractor Club (Rev.)

In addition to the printed circulars, mimeographed material was supplied in sufficient quantities to meet immediate needs. The following list shows the important mimeographed circulars issued during the year.

<u>Number of copies</u>	<u>Title</u>
4,000	A Pattern for Meal Planning
500	"Ideal" Weights for Women
1,000	Farm Grain Storage
1,500	Supplement to Arizona Meals the 4-H Way - 3rd Year
300	Ornamental Trees for Northern Arizona
200	Forage Crops Adapted to Irrigation in Arizona
2,000	Quick Way to Fold and Iron Fitted Sheets
1,000	Poultry Possibilities in Arizona
800	Problem Windows and Doors
1,000	Some Hardy Evergreen and Deciduous Shrubs
500	Wardrobe Planning
500	Improve Your 4-H Room
1,000	Measure Curtains Accurately

FINANCIAL SUPPORT

Summary of Expenditures by Projects, Showing Source of Funds for Extension Work under Smith-Lever Extension Act,
July 1, 1953 to June 30, 1954

	Federal Funds	Offset Funds	Funds Not Used as Offset		Total
			College & State	County	
Administration	\$ 27,110.51		\$ 4,879.41		\$ 31,989.92
Publications	8,500.66		125.00		8,625.66
County agent work (white)	60,284.30	\$ 58,256.41	10,977.69	\$ 64,371.11	193,889.51
Home demonstration work (white) ..	30,180.96	20,748.46	1,231.47	9,430.88	61,591.77
Boys & Girls club work (white) ..	10,099.01		2,096.83		12,195.84
Specialists:					
Horticulture	2,104.72	5,700.00	724.36		8,529.08
Animal Husbandry	2,096.42	4,445.70	119.22		6,661.34
Poultry-Dairy	2,091.14	2,973.67	4,129.84		9,194.65
Agronomy	6,239.09		2,036.09		8,275.18
Soils	2,511.27		5,676.98		8,188.25
Nutrition	1,603.30		4,903.06		6,506.36
Entomology	3,980.63		4,687.56		8,668.19
Plant Pathology	1,942.14		4,999.92		6,942.06
Agricultural Economics	2,103.47		4,915.14		7,018.61
Clothing	6,371.90		698.25		7,070.15
Information Specialists	6,757.85		12,660.96		19,418.81
Home Management	6,531.19		214.58		6,745.77
Agricultural Engineering	1,117.78		237.30		1,355.08
Irrigation	1,666.11		5,669.68		7,335.79
Total Expenditures	\$183,292.45	\$92,124.24	\$70,983.34	\$73,801.99	\$420,202.02
Unexpended Balance	585.00				585.00
TOTAL	\$183,877.45	\$92,124.24	\$70,983.34	\$73,801.99	\$420,787.02

INTRODUCTION

As in previous years, all the counties of the state except one, that of Mohave, were served by organized county programs. Mohave County was served by the staffs of the three adjoining counties and from the State Office.

Results of important activities are here presented:

- 13,026 Farm and home visits
- 16,302 Office calls
- 18,756 Telephone calls
- 1,570 News articles or stories prepared for the papers of the state
- 1,167 Radio broadcasts prepared and delivered
- 97 Television programs prepared
- 85,927 Bulletins distributed
- 142 Result Demonstrations
- 145 Training meetings held for local leaders for adult work
- 1,953 Attendance
- 134 Training meetings held for local leaders for 4-H work
- 2,075 Attendance
- 1,378 Other meetings held by or participated in by Extension staff
- 11,510 Attendance
- 4,494 Number enrolled in 4-H projects
- 28 Number of 4-H projects
- 14,881 Families assisted directly or indirectly by the Extension program in making some change in agricultural practices
- 3,545 Families assisted directly or indirectly by the Extension program in making some change in homemaking practices
- 16,356 Total different families assisted by Extension program

The area in crops in Arizona during the year 1954 was approximately 1,250,000. Cultivated land located in the various counties is as follows:

Apache	13,000 acres	Navajo	13,000 acres
Cochise	85,000 acres	Pima	48,000 acres
Coconino	5,000 acres	Pinal	290,000 acres
Graham	35,000 acres	Santa Cruz	5,000 acres
Greenlee	6,000 acres	Yavapai	17,000 acres
Maricopa	530,000 acres	Yuma	170,000 acres

Crops and livestock produced within the state for sale in 1954 had a value of \$330,000,000. The volume of production represents an achievement on the part of the producers.

As the year 1954 opened the Arizona farmers had been faced with a reduction of about a quarter of a million acres in their principal crop, cotton. They acted quickly to meet the new situation. The large income in 1954 resulted from higher yields on the restricted cotton acreage, from the use of substitute crops and from greater production of beef. Principal sources of agricultural income were cotton, \$184,000,000; cattle and calves, \$70,000,000; lettuce and other vegetable crops, \$49,000,000. The most significant change was an increase in the income from feed grains. These, including hay and grains fed by the producer, had a value of about \$30,000,000--twice the value of the crop of the preceding year. Increases in cattle feeding also accounted for \$10,000,000 additional income.

VALUE OF CROPS AND LIVESTOCK PRODUCED IN ARIZONA FOR SALE
(In Millions of Dollars)

Commodity	1954
Cotton lint and cottonseed	\$184
Cattle and calves	70
Lettuce and other vegetable crops ^a	49
Commercial feed grains ^b	22
Dairy products	15
Alfalfa and other hay ^b	11
Citrus fruit ^a	5
Sheep, lambs and wool	5
Eggs, chickens and turkeys	5
Seed crops	4
Miscellaneous crops	6
Miscellaneous livestock and livestock products and Federal Government payments	4
TOTAL VALUE	\$330

a - Year ended August 31, 1954.

b - In addition to the quantities of the 1954 crop sold or to be sold, hay fed by Arizona producers had an estimated value of 5 million dollars; grain crops fed by the producer, 8 million dollars; and dairy, poultry, and other products consumed by producer families, 3 million dollars.

Farmers used four per cent more energy for irrigation pumping in the form of electricity and gas in 1954 than in 1953, but they pumped

about five per cent less water because of the greater lift. The 1954 consumption for lifting water from ground water sources was as follows: electricity, 1 1/3 billion kwh; natural gas at atmospheric pressure, six billion cu. feet.

The total water available for irrigation amounted to nearly six million acre-feet of which two million were diverted from streams and storage dams measured at the point of diversion and about four million were pumped. This was about the same amount of water as that used in 1953, but it was used on fewer acres partly because of concentration of water on the smaller cotton acreages and partly because of double cropping of grains. Of the gravity water available for irrigation, the Colorado River contributed about 900,000 acre-feet; the Salt River system 805,000; and the Gila River above the Salt, 220,000¹.

Seven or eight thousand acres of new land were irrigated in Yuma County in 1954. Included were 2,160 acres on the Colorado Indian Reservation and 2,000 acres in the Wellton-Mohawk Division of the Gila Project. In the Yuma-Mesa area, citrus planting increased to 3,300 acres at the beginning of 1955. Included are 1,706 acres of lemons of which 1,131 were planted in 1954. Lands being prepared for planting to lemons in 1955 comprise 480 acres.

Nineteen hundred fifty-four was Cochise County's biggest agricultural year. Much new land that did not get water until late 1953 produced crops for the first time in 1954. Crops included grain sorghum, 50,000 acres, and cotton, nearly 17,000 acres.

1 - The basic water supply of the year 1954 furnished by the Gila and its tributaries as reported by the Surface Water Division, U.S.G.C., was the following: The Salt and Tonto Rivers above Roosevelt Lake and the Verde River above Horseshoe Reservoir, 682,000 ac. ft.; flow into the San Carlos Reservoir, 165,000 ac. ft.; The Santa Cruz River at Cortaro, 54,000 ac. ft.; and the Aqua Fria above Lake Pleasant, 26,000 ac. ft. Also, the Gila River brought 80,000 ac. ft. into the state only part of which reached the San Carlos Reservoir.

There are three main divisions of the program:

1. Service to the farm and ranch.
2. The rural home.
3. The junior division, which consists chiefly of Boys' and Girls' Club Work.

The budget provides for the following positions:

Director
Assistant Director

State Subject Matter Specialists

Agricultural Economics
Agricultural Engineering
Agronomy
Animal Husbandry
Clothing
Entomology
Home Management
Horticulture
Information
Assistant Information Specialist
Irrigation
Nutrition
Poultry and Dairying
Plant Pathology
Soils

State Leader of Home Demonstration Work
State Leader of 4-H Club Work
Assistant State Leader of 4-H Club Work

12 County Agricultural Agents
11 Assistant County Agricultural Agents
2 County Agents at Large (Part Time)
8 Home Demonstration Agents
3 Assistant Home Demonstration Agents
2 Home Demonstration Agents (Part Time)

Clerical staff of 32

SUMMARY OF COUNTY AND PROJECT REPORTS

Apache County

A program of Juniper control was started in the county with a number of cattlemen using the cable method. The identification of poisonous plants on the range has been an important activity during the year in a program to reduce losses from poisonous plants on the range. A program of "weight for age" tests for beef cattle is just getting started in the county.

Due to surplus of eggs and related problems, a group of poultrymen in the county formed a loose organization for organized egg marketing. Assistance was given to poultry raisers in disease control and management problems.

Work in agronomy was limited somewhat by lack of irrigation water. A crop recommendation bulletin is being prepared for local use. Work was done with the small grains and irrigated pastures in an attempt to supply additional livestock feed.

A spraying program for codling moth and the control of spider mites assisted fruit growers materially during the year. A program was also initiated to eliminate all aged and half-dead trees and establish good production methods. Vegetable growers were helped in developing insect control programs, and in weed control and fertilization.

Home economics work was conducted through three homemaker clubs and 8 other groups during the year. Foods work has been most popular, with emphasis on good nutrition.

Four-H activities were carried through 12 community 4-H clubs, with 96 boys and girls enrolled in 105 projects. The work was centered mainly on clothing and foods for home economics clubs and beef and home beautification for agricultural clubs.

Cochise County

The acreage under cultivation in Cochise county continued to increase in 1954, totalling an estimated 100,000 acres. Grain sorghums have been the most important crop, being planted on about half the total acreage. Cotton acreage was reduced from 38,500 acres in 1953 to 19,000 this year. The use of fertilizers increased during the year, and a better job was done by farmers in controlling cotton insects.

Cochise County (Cont'd)

Eleven cooperative field tests were conducted on cotton, alfalfa, grain and forage sorghums, and barley. Considerable interest throughout the county was shown in these tests, and the results are a valuable contribution to better farming in the area.

Although summer rains helped, cattle ranges are still not back to their former carrying capacity. Selling weight of calves was light, due to poor range conditions during the spring months. Control of external parasites was a major livestock project carried by the extension agent during the year.

Horticultural work continued with chile seed improvement and pruning of fruit trees to aid production. The county agent reports that "the practice of the Extension Service following up with pruning demonstrations from year to year has not resulted in general systematic proof in a majority of small orchards. Less effort on demonstration each year and more publicity regarding advantages of the practices, including distribution of bulletins on pruning, is planned."

Home economics work was carried on in 22 communities through 13 homemakers' clubs, 5 relief societies, and 9 church and civic organizations. Clothing projects selected by Cochise county homemakers were "Selection and Care of Fabrics," and "Mending, Darning, and Reweaving." Food and nutrition work included "Emergency Food Shelves," "Home Freezing," and "Home Mix."

An "Emergency Mass Feeding" project was started in July of 1953 with the city of Willcox organizing a local civil and defense program. A total of 45 homemakers from 8 communities and 18 women's organizations attended mass feeding training sessions in which the Extension Service cooperated.

Home furnishing work was conducted in 15 communities, and 3 clubs studied home health and safety.

Four-H Club work was conducted through 10 clubs, with 20 leaders and 89 members. Total individual percentage of completions was raised from 58.4 percent for the 1952-53 club year to 78.7 percent for the 1953-54 club year.

Coconino County

The Extension program in Coconino county showed a considerable increase during the year in contacts with farmers and requests for information and assistance in all phases of agriculture. Both

Coconino County (Cont'd)

cattlemen and farmers had a good year, although a market price situation regarding beans caused farmers to hold their crop until spring.

Orchard insects in the Oak Creek areas continue to be a constant threat. Growers who followed extension recommendations and used 50 percent wettable DDT controlled codling moth in apples almost 100 percent. Others who followed the old lead-arsenate method realized their serious mistake about two weeks after their first Calyx spray and ended up with a 60 to 70 percent wormy fruit crop.

Weed control was a major program during the year, and a county-wide weed control was organized.

Home economics work was conducted in 7 communities through 2 home-maker clubs, 2 LDS groups, 2 Farm Bureau groups, and 3 Indian groups. The 1954 program was well planned by county women and well participated in by them. Foods and nutrition work created the most interest, with emphasis on proper nutrition, economics, and time-saving methods. Clothing and home furnishing projects were also popular. Health activities included simple home nursing and mental health clinic activities.

Four-H work was conducted through 14 clubs with 17 adult leaders and 123 members enrolled in 167 projects. The county-wide recreation program had good support throughout the year.

Gila County

The production of feeder or stocker cattle is the most important agricultural crop in Gila county. More than 90 percent of land in the county is in National Forests or Indian Reservation. The control of external parasites is vital to livestock production and has been part of the Extension program during the year. Most of the cattlemen now use power sprayers twice each year. Some cattlemen are beginning work on the control of dwarfism. A supplemental feeding on the range has been stressed.

Several ranchers in the Pine area are clearing juniper trees from their range land. The Forest Service is sharing the expense with the ranchers by paying for half the cost. The ranchers are standing all the cost of clearing brush on patented land. The cost is approximately \$3.00 per acre.

Pruning demonstrations and educational meetings were held during the year in the fruit producing areas of the county. Farm gardens continue to be an important part of the work in horticulture, along with home beautification activities.

Gila County (Cont'd)

The home economics program, which is carried by the county agricultural agent, consists of 5 organized homemakers' clubs with 165 members in 7 communities. A county homemakers' council was formed this year with representatives of all the local clubs. Most of the subject-matter information is presented by the state staff specialists. The county agent does all of the organization work and assists with subject matter and activities, such as the sewing machine clinics, held during the year.

Three 4-H Clubs were organized during the year with a membership of 8 boys and 8 girls who completed 22 projects with 100 percent completion.

Graham County

Agronomy work during the year was highlighted by a County Farmers' Day attended by 157 farmers and ranchers. Crop reduction and cattle feeding were emphasized in the program. Also, a very successful Cotton Field Day was held in the fall. Cotton variety tests and fertilizer tests were conducted during the year to emphasize better production methods.

Weed control tests with CMU in cotton fields were conducted in the county in cooperation with the USDA weed investigation. Insect control continued to be a major problem, and an insect control program was conducted during the year.

On January 12 more than 100 dairymen and farmers attended a dairy herd classification meeting at the Carl Morris dairy at Safford. Dairy Herd Improvement Association work continued during the year with the agent cooperating in the educational phases. Most dairy-men in the county feed green chop, use the two-level milking parlor, and have a milk-line system which runs into the tank. Milk is hauled by tank trucks to Tucson.

Disease control of poultry and the control of flies, particularly where the cage system is used, has been important.

Home economics work was carried in the county in 3 communities by 3 homemaker clubs and 5 other groups. Home management projects included the care of floor and floor coverings and home laundering time and energy saving. Food preparation and preservation, home pasteurization of milk, freezing foods, and several clothing projects made up the county programs during the year.

Boys' and girls' 4-H Club work included 86 members taking 132 projects in 10 clubs. The 12 adult leaders were assisted by

Graham County (Cont'd)

3 junior leaders. Although leadership is still the problem that limits club work in the county, local farm organizations were very cooperative in the 4-H program this year. A county 4-H Leaders' Council was organized.

Greenlee County

Cotton fertilizer tests continued during the year showed that commercial fertilizer is not practical for cotton in Greenlee county. Although 1954 was one of the worst years in history for harmful insects, prompt planning and application of insecticides cut cotton losses to a minimum. Some losses occurred from diseases. Cotton yields were above average with most farmers harvesting two or more bales per acre.

Three field demonstrations again showed that phosphate is effective on alfalfa on most Greenlee county soils. Test applications increased yields as much as 40 percent. Due to a reduction in cotton acreage, forage crops acreage has increased this year. Most corn and sorghum grains were cut for silage.

Livestock feeding has been increasing in the county, and green chop feeding was started this year. Most of the cattle are marketed through the local packing plant at Safford.

The home economics program was conducted during the year in 4 communities through 4 Extension homemaker clubs and 3 other groups. "Making Your Freezer Work for You" was a popular activity in the food preservation and storage project. In clothing and textiles, a better-dress project was presented to 14 leaders who helped other members of other clubs carry out the project.

In the 4-H program 8 clubs with 108 members and 11 leaders were active during the year. Girls' 4-H work consisted of foods, clothing, home furnishing, freezing, and junior leadership. Boys' work was mainly in beef, sheep, swine, poultry, dairy, rabbits, home grounds beautification, crops, insects, tractor maintenance, electricity, and junior leadership. A Greenlee county 4-H Leaders' Council was organized and has assisted in developing a unified 4-H program throughout the county.

Maricopa County

The county agent in Maricopa county, with the help of 5 subject-matter assistant agents, completed another intensive agricultural extension program. In cooperation with extension specialists and members of the University of Arizona Experiment Station staff, farmers were kept informed of new or timely facts to aid them in

Maricopa County (Cont'd)

more efficient production. This was accomplished through the use of articles in local newspapers, distribution of bulletins and circulars, news letters to specialized producer groups, field days, talks to local farmer groups and service clubs, and radio and television programs. Cooperation of farmers and farmer organizations was sought and obtained to a very satisfactory degree.

Horticultural work included specialized cultural methods for growing grapes, variety trials in cantaloups and sweet potatoes, and nematode and weed control projects. Intensive surveys of the citrus insect and disease problems were conducted during the year. Top working of citrus was an important part of the program, and deciduous fruit demonstrations were conducted with emphasis on proper cultural practices in insect and disease control.

Livestock work concerned feeding, management, equipment plans, and disease and parasite control. In addition to Dairy Herd Improvement Association work, feeding and management were stressed in the extension program in dairying. Poultry projects included feeding and management and disease and parasite control.

An acreage restriction was placed on cotton again this year, and there was a large shift going on from cotton to grains. This emphasized the need for efficient and economic production in the less profitable crops and the need to get highest possible yields from the limited cotton acreage -- the most profitable of the field crops. Farmers were assisted in selecting alternate crops; in using adapted varieties of crops; in proper seedbed preparation, and planning and cultural practices; in the selection and use of fertilizer and fertilizer application; in the identification and control of harmful insects and crop diseases; in the proper use of available irrigation water; in the use of the best harvesting methods and marketing practices; and in planning for the whole farm operation.

Farmers were encouraged to treat their operations as a business as well as a way of life and to plan for long-term problems of production as well as solving immediate cropping problems.

The home economics program was again conducted in the county through the homemaker clubs made up of elected delegates and project leaders from each of the local homemaker clubs. The county-wide program represents the major areas of homemaking -- food preparation, clothing, home furnishings, and home management.

In foods work improved nutrition was the goal through the use of fresh fruits and vegetables in the family diet. Also, the "Food in Relation to Fatigue" project helped develop habits relevant to food

Maricopa County (Cont'd)

preparation, service, and activities.

Home furnishings work included window trims and drapery-making techniques.

The clothing project was "How to Make Professional Looking Western Shirts."

Office calls and telephone calls and bulletins were used extensively to answer requests for information coming from people not enrolled in organized clubs. An estimated 2,000 families were reached directly by one or more phases of the extension program during the year.

The 39 4-H Clubs in the county were led by 109 leaders and 37 junior leaders and at a total enrollment of 786. These boys and girls enrolled in 1,086 projects. In some areas of the county 4-H Clubs are the means of holding the community interest, and most community activities revolve around this group of young people. Many 4-H Club members have appeared on radio and TV programs during the year. This has helped the individuals taking part and has also provided an excellent way of telling the 4-H story to the people of Maricopa county.

Navajo County

Disease control was a major livestock project during the year. About half the beef cattle in the county were tested for Bang's disease under the USDA control program, with none reacting. Feeder cattle prices were better this year than the low of 1953. Ranges were in better condition with August and September rains.

Dairy herds of Navajo county were reaccredited as free of tuberculosis. The county should also soon be certified as Bang's free, as dairy cattle were all tested this year. A number of educational demonstrations in connection with horticultural crops were held early in the year. Home beautification has been an important activity. Poultry work included marketing and other problems.

Farmers are continuing to grow new varieties of corn, wheat, barley and oats. In county variety tests Buffalo alfalfa has out-yielded Ranger, although the latter remains the best stand. In the test, Arizona common alfalfa was plowed under by the farmer as too poor a stand. Irrigation work has included attention to well drilling as a supplementary water supply source.

Many insect control problems were handled during the year with up-to-date control methods. Malathion proved to be the best killer of

Navajo County (Cont'd)

house and stable flies. The city of Snowflake and many ranchers were well pleased with results when this insecticide was used.

The home economics program was carried in 11 communities through 10 homemaker clubs and 19 other groups. These included 6 Indian Service clubs and on the Apache and Hopi Reservations. Foods project work continued to be the most popular in the county. The women are interested in good nutrition for their families at low cost -- and in the new menu ideas. Other work included freezing foods and canning.

In clothing work the project "Making Better Dresses" was well received. A lamp-shade project was conducted in the county in the home management program. Community projects included co-operation in a county-wide program to develop a health program with a county public health nurse.

Boys and girls 4-H Club work was carried on in the county through 24 clubs and 21 leaders and 258 club members. The boys and girls worked in 342 4-H projects. Lack of adult leadership continues to be one of the most difficult problems in the county 4-H program.

Indian Service 4-H Clubs were organized by the agency workers in the fall with the help of county agents. Seven such clubs were organized at the White River Reservation in clothing and beef. The Hopi Indian Agency enrolled 5 clothing and foods clubs.

Pima County

Seven result demonstrations on cotton fertilizers were established this year, and the first nitrogen foliage application was tried. Results of all tests were provided to cotton farmers in an annual report. Meetings, field tours, and news articles were used in presenting the cotton information. Increased use of nitrogen was noted during the year.

Many home orchard growers and gardeners were assisted with information on fruit and vegetable growing through meetings, demonstrations, farm visits, and bulletins. In an attempt to find a cash crop to replace cotton, 11 trial plantings of castor beans were made in 1953, and 2 plantings of soybeans of a shatter proof variety were planted this year. Although results were not encouraging, a working interest has been aroused on the part of several county farmers.

The satisfactory use of soil correctives and green manure cropping

Pima County (Cont'd)

were stressed this year. There was increased use and interest in gypsum. The planting of winter green manure crops was started this year and is a real forward step. Also, increased plantings of alfalfa resulted in better soil management.

Farmers in general did a better job of pre-irrigation and use of available water supplies this year as a result of the extension irrigation program. Dairy Herd Improvement Association work and an educational program in cooperation with the Southern Arizona Poultry Association assisted dairy and poultry farmers during the year.

Cattlemen were furnished with information on the control of external parasites, livestock diseases, and the control of grasshopper and harvester ants on rangeland. Some work on range grass reseeding has been carried on with mediocre results. Range management continues to be an important part of the program. New interest in pen feeding of cattle has coincided with cotton acreage reductions.

Five new homemaker clubs were organized during the year. The 16 clubs now have a total enrollment of nearly 400 women. Activities included "Accessories for the Home," "Freezing Foods," "Egg and Cheese Cookery," "Poultry Cookery," "Help Yourself to Easier Housework," "Electricity in the Home," and a number of activities in clothing and textiles.

A total of 299 boys and girls were enrolled in 204 4-H Clubs led by 29 leaders. Leaders, parents and club members took a much more active part this year and carried more responsibility for the county 4-H program. The 4-H Council became much stronger and attendance at meetings was tripled. A problem of completions still remains, but steps are being taken to improve the completion record another year.

Pinal County

Two Pinal county cotton improvement associations were organized during 1954 so that members might receive free cotton classing service under the Smith-Doxey Act. Although no cotton fertilizer demonstrations were conducted in 1954, assistance was given to several farmers in setting up their own demonstrations on their farms. Cotton variety tests were again conducted, emphasizing the value of the standard Arizona variety over varieties producing poorer quality cotton.

A considerable amount of information was supplied to cotton growers in connection with insect control work through newspaper articles, radio programs, bulletins and special insect control meetings.

Pinal County (Cont'd)

The value of predatory insects was demonstrated as an important part of the insect control program. Cotton diseases proved to be one of the main problems of cotton production during the 1954 season. Losses varied from slight up to a bale an acre. It has been estimated that verticillium wilt caused growers in Pinal county over a quarter of a million dollars this past year.

Small grain production, a minor crop until this year, became more important in the cropping picture of Pinal county. Wheat, barley and sorghum acreages increased. Further increases in grain crops are anticipated as interest in cattle feeding is growing.

Alfalfa acreage has also increased during 1954. Problems in connection with alfalfa production and alfalfa seed production include the cost of irrigation water and the increased cost of insect control brought about by the infestation of yellow clover aphids.

Dairy Herd Improvement Association work continued during the year with 10 members having 630 cows on test. Poultry production has increased, and the extension program has assisted poultrymen to solve many of the problems of this industry.

Home economics work was actively carried in 8 communities through 8 homemaker clubs. Activities included clothing techniques and sewing machine clinics in the clothing project; consumer education in the foods and nutrition project; and family economics and control of household pests in the home management project. In order to unify the homemakers' clubs of the county and to have a representative group to plan a county-wide program, the Pinal County Homemakers' Council worked closely with the home demonstration agent. Five clubs carried health and safety activities, and the Eloy Homemakers' Club continued its "Well Baby Clinic."

There are 391 4-H Club members taking 503 projects, assisted by 47 leaders. A new 4-H project for the county is tractor maintenance. Considerable interest is being shown.

As a small token of the appreciation of 4-H members, a recognition banquet was given for the county leaders and the county award winners for the first time this year.

Project completions during the year were approximately 61 percent, or 3 percent above that of last year. More emphasis will be placed in the future on enrolling only members who plan to conduct projects over the entire 4-H year.

Santa Cruz County

As a result of cotton variety test work during the past four years, growers have been able to take advantage of a wilt-resistant variety in combatting verticillium wilt this year. It is estimated that the growing of wilt-resistant cotton this year has given the growers about \$80,000 in additional income. Cotton growers also have followed fertilization and cotton insect control recommendations during the year.

Variety recommendations on barley, corn, grain sorghums, and alfalfa were largely followed this year. More farmers also are using recommended practices of irrigation and fertilization.

Livestock work included range management, control of external parasites, and the control of harvester ants on rangeland.

Horticultural activities included vegetable growing and deciduous fruits. Home ground beautification has also been a popular activity during the year.

The Santa Cruz county home economics program is carried in the Patagonia vicinity, with one organized club of 26 members. Some of these women drive more than 20 miles to attend the meetings regularly. Santa Cruz county shares a home demonstration agent with Pima county, and the same projects are carried in both counties, with few exceptions. Great distances, no telephones, and irregular mail service are some of the handicaps in the Santa Cruz county home economics program. Work conducted during the year included projects in home furnishings, food selection and preparation, family economics, home management and clothing and textiles.

The 4-H program in Santa Cruz county includes 4 clubs with 65 members taking 89 projects. There are 7 leaders and 7 junior leaders in the county. A very active 4-H Club Council has shown great interest in the program. Junior leadership work has been outstanding. In the past 2 years the older boys and girls have been of great assistance in helping members with their project work and with developing the 4-H program.

Yavapai County

Production of feeder calves on native ranges is the most important single agricultural industry in the county. A "weight for age" program with beef cattle was started this year. Other work has included grasshopper control, range management, range plant identification, control of livestock pests, and a summer supplemental feed test.

Yavapai County (Cont'd)

Work in dairying centered around Dairy Herd Improvement Association activities and marketing of dairy products. Despite marketing problems, the poultry industry in the county continues to be an important one, with cage laying plants on the increase. Problems in which assistance has been given include marketing, financing, and disease control.

Two small grain variety tests, an alfalfa variety test, bean variety fertilizer and disease control tests and variety tests with sun flowers, sorghums and corn were conducted during the year. Orchardists and gardeners were given assistance on production and marketing problems through field visits, letters, and demonstrations.

The home economics program was highlighted by the nutrition project, which included pre-planning and economy, broiler and one-dish meals, and the nutritive value of foods with emphasis on protein. The program is carried in 10 communities by 4 homemaker clubs and 4 other groups.

Other projects included health, clothing and textiles, home furnishings and home management. The health program was centered around early recognition of disease and simple home remedies. The county nurse cooperated very closely in this project.

The 4-H Club program included 13 clubs with 22 leaders and 190 members taking 348 projects. Support of local and civic organizations and merchants has been very good during the year. The 4-H calf sale at the County Fair, however, was disappointing, with low prices prevailing. This may result in lower enrollments next year and shifts to other project work.

Yuma County

The Yuma County Agricultural Extension program in 1954 was diverted particularly to two new avenues of work, as compared to previous years. With the ever increasing development of the Wellton-Mohawk area, and the establishment of two development farms, the Extension Service established numerous cooperative tests with the respective farm operators. The second phase to which a particular emphasis was given was a livestock program.

The County Agent continued to follow the practice of establishing a number of cooperative farm tests. A large number of these tests were established on development farms in the Wellton-Mohawk area. In 1954, twenty five field crops tests, four vegetable tests, three insect control tests and one soil amendment test were established.

Yuma County (Cont'd)

Nine cotton tests from 1953 were completed and data compiled in 1954. This makes a total of 42 tests with which the Extension Service worked in 1954.

With the more than 50 percent reduction in cotton acreage, extension agents felt it was a good time to encourage diversification through livestock feeding programs. Materials were prepared, television programs were conducted, farmer meeting programs were presented, field tours were conducted, news stories were written, and radio programs were presented to encourage and assist the cattle feeding program in Yuma county.

A continuing effort was made to increase farmer's cotton yields by conducting seven tests and presenting, again in 1954, a cotton conference at which a complete all-day program was presented on cotton production.

In cooperation with the University of Arizona Experiment Station, a field day was conducted to develop the interest of Yuma county farmers in a sheep experiment that was in progress. AN alfalfa seed field day also was held.

County agents completed their first full year of television program over KIVA. A number of compliments have come to Extension Agents from varied sources throughout the year. For the second full year Extension Agents conducted an agricultural and 4-H five minute radio program, Monday through Friday at 7:20 a.m. over KYUM. Varied programs were obtained through the use of a portable tape-recorder furnished by the radio station.

The County Agent cooperated with the Yuma County Pureseed Association in bringing 700 acres of over-winter seed increases to Yuma County. It was necessary for the County Agent to answer a number of inquiries from mid-Western states and Canada in this connection, and to advise local growers on dates of planting and cultural practices to best meet the needs of those requesting the increases.

The Yuma County home economics program reached farm women in all sections of the county through 9 homemaker clubs and other groups. A County Homemakers' Council continued to function effectively during the year in developing the program.

A nutrition program with a wide scope was conducted by the Home Demonstration Agent with the assistance of the Extension Nutritionist. The clothing program was very popular during the year and a number of meetings held regarding clothing techniques. The home management and family economics work included home lighting, laundering methods,

Yuma County (Cont'd)

and other projects. Household accounts are being kept by most of the home demonstration club members.

The 4-H Club program continued to be very active during the year, with 514 members enrolled in 21 clubs. There has been a need for 4-H leadership training, and such a program is planned for the coming year. Completions in the clubs this year have been 75 percent.

The 4-H program has grown not only in numbers this year, but in basic interest among younger members and their parents. New interest also has developed in some areas where 4-H Club work had not been active previously.

SUMMARY OF RESULTS BY PROJECTS

Agronomy

Extension agronomy work during the year included a series of 55 demonstrations plots developed in cooperation with county agricultural agents in most of the counties of the state. These demonstrations included small grains, pastures, corn sorghum, cotton, alfalfa, pinto beans, soybeans, green manure crops, sunflowers, and weed control. Results were well publicized in the counties in order that farmers would be able to make best use of the information obtained.

Major emphasis on crop production during the year was directed towards increasing the per-acre yield of cotton and thereby reducing production costs. Arizona had 56 percent as much cotton acreage in Upland cotton in 1954 as in 1953, but produced 72 percent more cotton. Also with 37 percent as many acres this year in long staple cotton, Arizona produced 59 percent as much cotton.

Alfalfa, barley, and sorghum acreages were increased during the year, but the production per acre of these crops has changed very little. As many farmers growing these crops had been growing only cotton before, much of the extension program was directed towards proper feed crops. Considerable interest has been shown in cattle feeding, and additional feed crops are needed.

Some interest has been shown in the state in the growing of malting barley. Although yield per acre is lower, premium prices for malting barley may interest additional farmers if the program proves sound. Additional interest has been shown during the year in growing corn in Arizona.

Animal Husbandry

The Extension livestock project has been carried in all of the counties of the state. Cattle feeding has received special emphasis during the year and increased interest is being shown throughout the state. Many farmers are developing a feeding program to utilize feed crops grown on land formerly used for the production of cotton.

The livestock specialist, working with other Extension specialists and the county agents, established a rotation system for livestock feeding programs. This was set up on the basis of actual examples on a complete farm program from the raising of the feed to the final finishing of the animal. This program emphasized the need for a complete operation, or the unit approach, in cattle feeding activities.

Livestock tours were used to demonstrate proper feeding methods and equipment for feeding. Special emphasis was placed on the feeding of silage -- a practice that is growing in popularity in the state, but still is handicaped by many prejudices. Complete series of rations were worked out for different feeding operations, and many special rations were developed for individual farmers.

Also established during the year in cooperation with the Animal Husbandry Department was a performance testing program. The objective is to assist the cattlemen in selecting stock on the basis of the animal's individual ability.

4-H Club work received considerable support during the year in connection with judging demonstrations, judging contests, feeding and showing, and the feeding and handling of livestock. Special efforts were made to assist 4-H members in starting their livestock projects with better quality animals.

Dairying

The past year brought many problems and changes in the dairy program throughout the state. Two price cuts to the producers made it necessary to make adjustments in dairy operations. Also, the increased production of "Grade A" milk reduced the shortage that required the shipping in of milk for a shorter period.

Along with these adjustments to economic situations, there were some outstanding results. The Dairy Herd Improvement Association program continued to expand in 1954. There was an increase in the number of herds and cows on test per month. Herd averages for the association year increased 400 pounds of milk and increased 4.90 pounds of butterfat per cow year.

For the association year ending September 30, 1954, there was an average of 17,173 cows in 251 herds on test per month. This is an increase of 2,544 cows and 34 herds. Arizona ranks high in many phases of the D.H.I.A. program in the nation. On January 1, 1954, Arizona ranked first in the percentage of dairy cows on test, with 32.1 percent of an estimated total cows of 52,000.

In the Official Testing program there were 33 herds with a total of 1,273 cows on test in Advanced Registry and Herd Improvement Registry.

The breed organizations carried on many educational programs in cooperation with the Extension Service. Classification demonstrations, judging schools and field days were conducted with the Guernsey, Holstein and Jersey organizations. The Guernsey and Holstein state organizations had State Consignment Sales with excellent results. All breed organizations cooperated with the Extension Service in providing dairy heifers for a 4-H Club Dairy Heifer Selection Program.

During the year a survey was made in five counties covering equipment and management practices being followed by members of the D.H.I.A. organizations. In comparison with the previous year, there was an increase of milking parlors, pipeline milkers, and farm storage tanks for the bulk handling of milk. There was also an increase in the use of green-chop feed and grass silage, as well as an increase in the artificial breeding program.

During the year, state and federal programs of tuberculosis and Brucellosis control were continued with greater participation. Mastitis continued to be difficult to control. Management and sanitation programs were recommended.

The 4-H Club dairy projects were given good support throughout the year. In cooperation with breed associations, a Dairy Heifer Selection Day Program was organized. 4-H Club members were provided with dairying information and assistance was given in demonstrations and in judging.

Economics

Economics work in Arizona during the year included (1) county economics survey; (2) outlook and economics information; (3) farm management; and (4) federal farm programs. Greenlee county was selected for the economics survey project, and considerable data was gathered.

The outlook for agriculture was discussed in many meetings of farmers and business men and made available to the public generally through news releases and other information media. A monthly situation report on crop and livestock enterprises in the state was supplied to county agents.

The farm management project was initiated for the first time in 1954. It was felt that such a project was necessary in order to be able to inform farmers as to what they might expect the cost of producing alfalfa, barley and grain sorghums to be in 1954. These were the major alternative crops to be planted on acres diverted from cotton. The Extension economist, with the cooperation of the county agents, estimated the cost of producing these crops. The farmers were informed as to what these estimated costs were. If they were to make any profit from the production of grain sorghums and barley, they would have to produce an average yield of 2,600 pounds or more per acre.

One of the major topics considered in the farm program information was that of storing grain during 1954. The farmers were informed about the availability of Commodity Credit Corporation loans for farm storage. In addition to this, the Extension Economist worked with grain storage industry in estimating the total volume of commercial storage.

A special project during the year was in connection with marketing eggs produced in Arizona. A survey was made to determine the origin of the eggs consumed in Prescott and Yuma. The study will be continued in an effort to assist egg producers in Arizona with their marketing problems.

Entomology

The kharpa beetle and the yellow clover aphid are two new insects that have become problems in 1954.

The yellow clover aphid has caused great losses in alfalfa hay, seed and in new stands during the year. Several entomologists are of the opinion that this is the worst insect to hit Arizona, New Mexico and California in many years.

Cotton insect control work showed that County Agents endeavored to keep up with the insects in their county in order to give the growers the best information. They accomplished this by having many field meetings where farmers could see the harmful as well as the beneficial insects. Thrips were a problem in many fields. Control of thrips on cotton increased the yields over 826 pounds of seed cotton per acre where the field was dusted three times at weekly intervals with a 10 percent toxaphene dust. This would mean a gross profit of about \$105.00 per acre.

Lygus bugs did the greatest damage during 1954 in all parts of the state. In a few areas the cotton bollworms caused serious injuries, while in Yuma county the leaf perforator and leaf roller caused serious losses. In spite of the insects and diseases the state of Arizona will produce close to 1,000 pounds of lint per acre for 1954. The better control of injurious insects in some areas could have increased this yield which was favored by a very late fall.

Observations in Maricopa county showed many acres of grain sorghum were severely injured by the southwestern corn borer. Many acres were re-planted because of the presence of this insect. Research on this insect is in great need. Grain sorghums were also hit by beet armyworm, Prodenia cutworms and fall armyworms.

Very little work was done on external parasites other than fly control. Most dairymen and feeders, as well as ranchers, used malathion sprays around barns and corrals with good results. Several demonstrations on the use of sprays around corrals were given by the specialist in entomology. The scabies mite appeared in Maricopa county during the winter of 1954. Federal and state authorities sprayed infested animals with a benzene hexachloride spray. The cattle had come from Texas by way of Colorado. The infestations were cleaned up early in June.

Houseflies continued to be a problem in many communities of the state. Most places were being sprayed with a malathion-sugar or syrup spray. All reported very good results.

Vegetable insects were very important during 1954. The cabbage looper continued to be the worst pest on fall lettuce, cabbage, cauliflower, and broccoli. There was an increase in spring sweet corn during 1954. Most growers were able to produce ears free of worms by dusting with 5 to 10 percent DDT dust at three day intervals. Many growers had such success with the spring crop that they planted a late summer or fall crop.

Stored grain pests caused more concern during 1954, since many thousands of tons of grain were stored in the state. The khapra beetle showed up in many commercial stored grain bins during the year. Many people became concerned over the insect. Excellent control results were secured with lindane spray fumigation.

4-H Club insect project members were working in all parts of the state this year, and many good insect collections developed. The Extension Entomologist worked with 4-H Club members in Coconino, Yuma, Maricopa, Greenlee, Pinal and Cochise counties.

Horticulture

The selection of chile peppers for seed production was continued in Cochise county this season. Growers have requested a chile pepper that is hotter than the Anaheim type now grown. The New Mexico A & M College furnished seeds of three selection of College #9 for trial in Arizona. These were well received by farmers in Greenlee county.

Vegetable variety trials on sweet potatoes, tomatoes and sweet corn were conducted in Yuma, Maricopa, Greenlee and Coconino counties. Shoreland and Jersey Orange sweet potatoes produced high yields, but the shape and quality of the potatoes was not the kind desired by the commercial trade. The Ace tomato produced an excellent crop of fruit in a home garden in Coconino county. Commercial plantings will be made next season. The sweet corn varieties which gave best results where tried were Golden Cross Bantam, Ioana and Iochief.

A complete vegetable program was prepared for the State Prison Farm at Florence to furnish a supply of vegetables for use over a twelve month period. The program was worked out in cooperation with the county agricultural agent in Pinal county.

Twenty four pruning demonstrations were held in ten counties with a total attendance of 963. Two of the demonstrations were for training young trees; others for the pruning of bearing trees. At each demonstration cultural practices, fertilization, varieties, and pest control were discussed.

The interest in citrus production has shifted from the Salt River Valley to Yuma County on the Yuma mesa. Nearly 2,000 acres of young lemons are now planted in that area. Additional acreage will be planted during the winter and spring, which will possibly bring the average to 3,000 to 4,000 acres. Demonstrations on cover crops and irrigation practices have been set up in young lemon groves. In the older citrus plantings on the

Yuma mesa, tests are being conducted on a damage commonly known as "electric wind".

Five home beautification demonstrations were held in three counties during the year. These demonstrations are the most effective way to teach the principles of the use of different kinds of plants and flowers around the home. Each year new counties and communities are selected for the demonstrations.

Fourteen pruning demonstrations on ornamental plants were held in six counties.

The specialist in horticulture, in cooperation with the members of the Horticulture Department, furnished information on the landscaping of a public park and swimming pool in St. Johns, the community hospital in Winslow, the elementary school buildings in Yuma and Navajo counties, and the high school grounds at Willcox. These public areas are to be used as result demonstrations for a period of three to five years.

A leader training meeting for senior and junior leaders was held in Flagstaff the latter part of August. Work was carried out in all the different classes of vegetables -- root, leafy, and tubers. The leaders were taught how to set up the classes and select the vegetables as well as how to judge the exhibits in the classes. This judging school was used as a method of showing the leaders how they could be used as a method of conducting demonstrations at 4-H Club meetings. Vegetable judging schools for 4-H Club boys and girls were held in Yuma, Navajo and Apache counties.

Information

Agricultural and home economics information from the Agricultural Extension Service continued to be used as an important part of the area news coverage of the daily and weekly newspapers of the state in 1954. The total amount of such information used this year was second only to the record amount used in 1953, which was 2 percent larger.

County extension agents and home demonstration agents in most of the counties where radio stations are located continued to make use of these facilities during 1954. Extension state staff subject-matter specialists provided county workers with additional radio programming during the year through radio tape recordings made in the information office and supplied to the counties each week.

A farm TV program was started in the fall of 1954 with the cooperation of the University of Arizona Radio and TV Bureau, the Agricultural Experiment Station, and the Agricultural Extension Service. Although directed to the farm people, these programs were designed to furnish useful and interesting information in demonstration form to urban as well as rural residents of the state.

Agricultural and home economics subject-matter information continued to be supplied to the farm people of Arizona during the year through the means of the printed Extension circular. These brief and specific publications were designed to be easily read and understood, and to attract the attention of Arizona farmers.

Irrigation

The total crop land in the state has dropped during the year to a new low due to restrictions in cotton acreage. There were approximately 1,200,000 acres in 1953, and 1,006,000 acres in 1954. This fact shifted the emphasis of this project from planning on maximum production on all available acreage with available water supply to obtaining maximum yield on the allotted acreage, with crop rotation for the rest of the available water supply.

The emphasis on maximum production of cotton on allotted acres has paid off very well, as cotton acreages were reduced by approximately 50 percent in 1954 from the 1953 acreage. The 1954 yield was estimated to be 80 percent of the cotton yield of the 1953 crop. Farmers in the state have made better use of the water, fertilizer and crop varieties in producing better crops.

In Graham county, the emphasis was placed on reducing the number of early irrigations on cotton to reduce the plant kill from disease. There was less kill this year than last year, which is reflected in part in the higher yields.

The even depth of water penetration on crop land has been stressed by the irrigation specialist for several years, and a check was maintained by the specialist on farms in the different areas of the state. The results are good, since most of the fields checked have been found to have good, even water penetration. This is also reflected in the increased per acre yield this year, especially in cotton.

The emphasis throughout the year was on diversified farming which of necessity had to be practiced with the advent of the cotton allotments. The irrigation specialist cooperated with soils, agronomy, and animal husbandry in promoting this program. This was accomplished through farmers' meetings, circular letters, direct contact with the farmers, work with the county agents, and preparation of materials for county agents' use.

Irrigation work has been emphasized more through mass media, such as newspapers, radio talks, and TV. The main emphasis has been that there was now an opportunity to level land and re-align ditches, since cotton allotments allow for a diversified farming with some of the land idle for periods between crops. In the past, with cotton culture, there was only a short period when this could be accomplished, as cotton is for all practical purposes a 12 month crop in this state.

Emphasis was placed on the aid that could be received from the "action agencies", such as the Soil Conservation Service through the Soil Conservation Districts and the Agricultural Conservation and Stabilization Committees.

The 4-H subject-matter project is a cooperative project with the soils specialist, Mr. Howard Ray. The project is entitled, "Soil, Water, and Sunshine", and has only been out of the trial stage for one year. The enrollment in this project has been rather slow due to the lack of leaders, but has been well received by the 4-H boys who have enrolled in the project. A soil judging contest was used this year at the 4-H Roundup and stimulated great interest in this project, which should be reflected in increased enrollment for the coming year.

Plant Pathology

Plant disease control in general is best accomplished by preventative measures. Unlike insect control, once the disease is seen it is generally too late to prevent considerable damage to the crop. This is especially true in Arizona where many of the diseases of plants are soil borne. The most logical control of such diseases is to plant in disease free soil.

Due to earlier emphasis on seed treatment, especially cotton, over 90 percent of all cotton planted the past two years has been treated. This compares to 20 to 40 percent treated previous to that time. This phenomenal change was effected by not only getting the growers to request it, but to show various cotton seed distributors, gins and others the benefits they could expect from such seed treatment.

Articles to newspapers, in cooperation with the information specialist, were prepared. Radio and television programs were given in cooperation with several county agricultural agents as a medium of informing people concerned regarding this and other of the more common diseases.

The use of a plant disease handbook and the holding of a plant disease school for county agricultural agents was effected this spring. It is the intent to keep this handbook up to date on the latest information and one such handbook will be available in every county agent's office. Additional disease school sessions will be held in the future for the purpose of further recognition and disease control in the future.

The coordinating of information regarding the crown blight of melons has been a function of the plant pathologist. This disease is of a serious nature to the commercial melon areas of California, Arizona, New Mexico and Texas. Some progress has been made in breeding for tolerance in cantaloups, but much is to be learned regarding the cultural practices in controlling the disease. Higher rates of fertilizer and irrigation levels seem to delay the onset of the disease.

The problem losses from nematodes seems to be an ever increasing one. During a recent survey regarding the vegetable problems in the Camp Verde and Sedona areas, several peanut and strawberry plants showed root knot nematode infestations. This indicated the possible presence of another nematode.

In following the reports of outbreaks of yellow dwarf in wheat, oats and barley, the Extension Plant Pathologist located a number of suspicious fields in Arizona. The past season samples showing yellow dwarf symptoms were sent to Dr. Byron R. Houston, Plant Pathologist, University of California at Davis, who verified the presence of the virus disease in wheat and oats by aphid inoculation studies.

Misapplications or drift defoliant, sulfurs, and hormone weed killers, especially by airplane, have made a number of calls necessary to both the applicators and the growers involved. Once all people concerned are brought to the field in question and the disease is pointed out and distinguished from any other chemical injury or response, settlement usually results without much difference of opinion. The Extension Plant Pathologist's primary function in these instances is to show the incidence of disease.

Poultry

Poultry raising in Arizona is beginning to develop into a sound, important, specialized industry. In 1953 it ranked seventh in cash income from Arizona farm and ranch production.

The Arizona Poultry Improvement Program was affected by the general poultry situation with less participation during the year. The total hatching capacity of Arizona hatcheries participating in the National Poultry and Turkey Improvement Plans was 124,000 -- a decrease of 48.5 percent. There were three hatcheries participating and a decrease of 57.2 percent of the previous year. There was a decrease of 47.1 percent in the number of flocks and a decrease of 66.6 percent in the number of birds in flocks in comparison to the previous year. The N.P.I.P. flocks produced 17.3 percent of the total hatching eggs capacity of hatcheries. This means that the balance of hatching eggs had to be shipped in from outside of the state. Pullorum reactors in the breeding flocks decreased from 0.4 percent in 1953 to 0.3 percent in 1954.

Flock management continued to play an important part in the successful operation of a poultry enterprise, especially the proper culling to conserve feed and increase the percent of daily production. With the increase in individual cage operation, the control of temperature is important, particularly in the lower elevations during the summer by using sprinklers and fogging systems.

Poultry disease continued to be a problem for county agents. They were called upon to diagnose and recommend practices for control. For other diseases, such as colds, cholera, organic toxins, and simple types of intestinal disorders, the sulfa drugs were recommended. Most of the disease troubles were traced to management, particularly sanitation. Pullorum disease, which is transmitted through the hatching egg, is being controlled by the participants in the National Poultry and Turkey Improvement Plans by the testing of the breeding flocks.

The price of eggs maintained a relatively high average throughout the year in comparison to the national average, due to the fact that Arizona produces about 23 percent of the total eggs consumed in the state. Most commercial poultrymen producing eggs do their own processing and marketing, thus receiving a greater return on their investment.

Soils

Considerable information has been obtained in Arizona during the past three or four years concerning the response of cotton to commercial fertilizers on a wide variety of soils. More information is still needed, however, concerning the effectiveness of different types of fertilizer materials and of different methods of application.

More information is also needed concerning the correlation of soil test results with response to commercial fertilizers. Although attempts have been made to obtain information concerning the fertilization of other field crops, such as small grains, corn, sorghum, and pinto beans, available information is still extremely limited. This information can only be obtained through the use of field demonstration plots. These are established whenever possible. They are designated to demonstrate good fertilizer practices, as well as to obtain additional information.

The use of commercial fertilizers was discussed by the soils specialist at meetings in most of the counties in the state. This has become an annual affair in most of the counties. In all such discussions, the importance of considering an entire crop rotation when planning a fertilizer program was stressed. In addition to the regular winter meetings, the soils specialist conducted fertilizer schools in several areas. At these schools various phases of the problem on fertilization were discussed. These included how to buy fertilizer, the effectiveness of different kinds of fertilizer, the advantages and disadvantages of various fertilizer materials, methods of application, and similar subjects.

The value of soil amendments has been seriously questioned by some authorities in the west. Although it was not possible to carry on extensive studies or demonstrations using various soil amendments, the specialist disseminated information from the experiment stations of Arizona and California on this subject. Much gypsum and sulfur have been used where they were not needed. Under certain conditions, however, there does appear to be a definite need for such materials.

In the field of soil management, the importance of integrating all operations, such as tillage, irrigation, fertilization, etc., was emphasized by means of television, radio, meetings, news releases, and mimeographed circulars.

Two projects in 4-H Club work received some attention by the soils specialist. The first year project circular of the Soil, Water, and Sunshine project was published in 1952. Soil judging was introduced in the 4-H Club Roundup for the first time.

Clothing

Clothing the family - one of the homemaker's responsibilities - found its way into every homemaker's program over the state in 1954. Helps and assistance given were in the field of buymanship of ready to wear, as well as construction of clothing. A total of 3,937 women adopted or used material given them.

Knowledge of buying new textiles was important to homemakers, whether they were buying fabric for constructing a garment or buying clothing for men, women and children in the family. The number of women who were assisted with buymanship problems during the year was 2,323. To do this job, 368 local leaders have assisted the clothing specialist and home demonstration agent in carrying out the adult and youth program.

Caring for and buying of new sewing machines has been a problem to most homemakers. Pressure advertising has led many a homemaker to buy or exchange her good machine for expensive machines, merely because they "embroider". In a state-wide training meeting home demonstration agents learned to operate some of the new automatic machines on the market. They learned to use the excellent bulletin, "Buying Your Home Sewing Machine". This bulletin was especially useful where agents have been asked to give advise on new machines. They reported having given this bulletin to 294 women who have wanted this information before buying. Also, 191 women learned the value of their own machines when cleaning and adjusting them in the clinics held by agents.

An effort was made to increase leader training meetings on 4-H Club subject matter. The clothing specialist held 8 leader training meetings, training 95 4-H leaders, during the year. Many leaders also receive help by attending the adult leader training meetings. There were 1,257 girls enrolled in clothing projects. Sixty percent of the total number of girls enrolled in 4-H work, agriculture, and home economics are enrolled in clothing projects.

Home Management

Laundering served 553 homemakers by teaching (1) how to handle hard water; (2) the conditioning of household woollens (blankets primarily); (3) moth-proofing of woollens; (4) what's new in bleaches and starches; (5) heat-testing of irons; and (6) handy ironing tools. This was accomplished by four leader meetings for 56 homemakers that they might teach others. Agents reported 224 samples of water tested, 398 blankets reconditioned, 90 women accepting simplified ironing, plus better use of bleaches and starches, plus 94 changing their wash day routines.

It is estimated that the blanket washing by Pinal county women brings the savings up to \$3,982 for the state in this one phase carried for three and a half years.

Assistance with electrical problems revealed the adoption of safety practices in 89 homes. One hundred twenty six women learned the significance of overloading electrical lines and outlets, while 132 interpreted information on appliance plants in terms of loads. A total of 79 checked the present use of circuits in their homes.

There was equal interest in the seven Home Furnishing phases, although window treatment had the widest coverage. As a result of this phase of work in three counties, 378 women received assistance in styling window hangings and learned to make draperies and curtains with a "professional touch". Group members report making 157 pairs of draperies in Maricopa and Santa Cruz counties.

In Cochise county, 33 women accepted better methods of making simplified slipcovers. Pima county reports rearrangement of room accessories by 63 individuals, neater housekeeping by 78, and the adoption of at least one principle of the use of room accessories by 60 women. In Yuma county 200 women reported the use of information about selection and hanging of pictures.

Some phase of Housing was reported by nine counties, reaching 63 families. It included 276 improved kitchens and laundries. Women improved 471 storage spaces. Agents assisted 138 persons with sewage problems and 67 with problems of "conditioning" homes, either for heat or cold. An additional 250 families planned electrical systems. Housing, although not a project, reached 1,333 families.

The 1954 4-H program in Home Furnishing showed growth. There were 152 girls enrolled in contrast to 119 for 1953. Completions were 70.39 percent, a fraction above state average.

Nutrition

County home demonstration agents assisted and advised 1,565 families with food preservation and storage problems. They made use of mass media, radio, publications, newspaper stories and TV to supplement leader training and method demonstrations. The greater emphasis in food preservation is on the preparation of foods for freezer storage. Owners of home freezers are turning to the Extension Service for facts and findings in this field, as freezer storage become a stabilized program in Arizona.

Home demonstration agents trained at a "freezing" workshop in March, 1953, carried on this project in their counties. Other agents were trained this year.

Pressure canner clinics in Navajo and Apache counties checked 48 pressure gauges. The Cochise county agent trained leaders for the project, "Emergency Food Shelves", following the leader training on "Mass Feeding". Reports show that 61 homemakers stocked an emergency

food supply; 60 replaced foods used from this supply; and 37 homemakers tried new recipes for using stored foods.

A total of 285 homemakers assisted in the meal planning and nutrition projects, working with 3,695 families who adopted one or more recommended practices. In 1954 reports show that 1,567 families were assisted with their home food supply; 2,323 with the selection of food; 2,707 with meal planning and preparation; 1,565 with food preservation and storage; and 1,724 improved their diets.

The greatest acceptances from project work has been the increased use of milk, both fluid and dry skim milk powder. Skim milk powder is used to enrich baked foods and to supplement the whole milk supply.

As a direct result of projects on meat cookery, 756 homemakers are using their broilers to broil not only steaks, but hamburgers and chickens. Homemakers need help in the efficient use of their ranges. These same homemakers had an opportunity to check their protein intake four times and they plan meals following "A Pattern for Meal Planning". Projects on meat cookery continue in 1955.

Two cooperative pilot studies were carried on in the field of food and nutrition. Partial reports show that leaders trained for "Mass Emergency Feeding" in Cochise county trained teams in eight communities and served the emergency meals to 17 civic groups, with an attendance of about 226 people.

The specialist in nutrition trained 16 leaders in the part of the program relating to "What Are Your Weight Problems?" Certificates from the leaders' physicians were requested for participation in the weight control program. Doctors in the area expressed surprise that such a service was available, as evidenced by postscripts on certificates. One leader was a heart patient and the doctor expressed a recommendation that she lose weight. This leader reduced her weight by 31 pounds and has not only regained her figure, but has reduced her blood pressure and has learned to evaluate calories.

Enrollments show that 1,257 farm women participated in food preparation and 87 members in 4-H Food Preservation Clubs.