

ANNUAL REPORT
of the
ARIZONA AGRICULTURAL EXTENSION SERVICE

By
CHAS. U. PICKRELL
Director

FOR THE FISCAL YEAR ENDING JUNE 30, 1955
INCLUDING A REPORT ON PROJECT WORK
TO NOVEMBER 30, 1955

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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
 Graham P. Wright State Leader of 4-H Club Work
 Nellie Campion Administrative Assistant

County Agricultural Agents

C. L. Isaacson Apache County
 Carmy G. Page Cochise County
 Elmer Allen 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
 Robert L. Halvorson, Assistant Maricopa County
 Paul L. Hudson, Assistant Maricopa County
 James R. Carter, Assistant Maricopa County
 Otis Lough, 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
 Charles W. Fitzgibbon, Assistant Pinal County
 Rex W. Millhollon, Itinerant Assistant Pinal County
 Alvin Allen Yavapai County
 Albert R. Face Yuma County
 Ervin L. Bramhall, Assistant Yuma County
 Paul E. Lineberry, Itinerant Assistant Yuma County
 Ray Weick, Itinerant Assistant Yuma County

Home Demonstration Agents

Maryetta Gaskill Cochise County
 Mildred O. Eaton Graham & Greenlee Counties
 Isabell Pace Maricopa County
 Betty Jo Nelsen, Assistant Maricopa County
 Martha M. Bunge, Assistant Maricopa County
 Anne B. Shute Navajo & Apache Counties
 Ruth Linner Pima County
 Lucinda Hughes Yavapai-Coconino-Gila Counties
 Mariel Hopkins Yuma County
 Arjorie Bettie Mead, Assistant Yuma County
 Madeline Barley, Itinerant Assistant Tucson

Cooperative Specialists

Lyman R. Amburgey Extension Specialist in Soils
 Helen L. Church Extension Specialist in Clothing
 Theo H. Ellis Extension Economist
 Charles C. Ellwood Extension Specialist in Agronomy
 Ellen Kightlinger Assistant State Leader, 4-H Club Work
 Albert M. Lane Extension Specialist in Animal Husbandry

Cooperative Specialists

Joe McClelland Extension Information Specialist
Robert B. Hutchinson Assistant Information Specialist
James E. Middleton Extension Specialist in Irrigation
Elsie H. Morris Extension Nutritionist
J. N. Roney Extension Specialist in Entomology
Grace Ryan Extension Specialist in Home Management
Ivan J. Shields Extension Specialist in Plant Pathology
Harvey F. Tate Extension Horticulturist
W. R. Van Sant Extension Specialist in Poultry & Dairying
William T. Welchert Extension Specialist in Agricultural Engineering

APPOINTMENTS AND RESIGNATIONS

July 1, 1954 to June 30, 1955

Appointments

Rex W. Millhollon, Itinerant Assistant County Agent -
July 23, 1954
Charles W. Fitzgibbon, Assistant County Agent, Pinal County -
August 16, 1954
Elmer Allen, Assistant County Agent -
October 11, 1954
Carl Rang, Assistant County Agent -
December 1, 1954
Paul Hudson, Assistant County Agent -
January 3, 1955
Paul E. Lineberry, Itinerant Assistant County Agent -
May 1, 1955
Robert L. Halvorson, Assistant County Agent -
April 1, 1955

Mildred O. Eaton, Home Demonstration Agent, Graham & Greenlee Counties -
October 1, 1954
Arjorie Bettie Mead, Itinerant Assistant Home Demonstration Agent -
October 11, 1954
Madeline M. Barley, Itinerant Assistant Home Demonstration Agent -
February 7, 1955
Martha M. Bunge, Assistant Home Demonstration Agent, Maricopa County -
May 23, 1955

Graham P. Wright, State Leader, Boys & Girls Club Work -
December 6, 1954
Lyman R. Amburgey, Extension Specialist in Soils -
January 1, 1955
Wm. T. Welchert, Extension Specialist in Agricultural Engineering -
January 1, 1955
Theo H. Ellis, Extension Specialist in Agricultural Economics -
January 1, 1955
Robert B. Hutchinson, Assistant Information Specialist -
February 15, 1955

Appointments

Harriette W. Barker, Stenographer, State Office -
July 1, 1954
Elizabeth V. Nezelek, Stenographer, State Office -
August 1, 1954
Rose Gerber, Stenographer, Pima County -
September 16, 1954
Louise Tate, Stenographer, Yuma County -
September 16, 1954
Suzanne Daves, Stenographer, Gila County -
October 1, 1954
Erdine Baatz, Stenographer, Pinal County -
October 16, 1954
Jerry Braswell, Stenographer, Pinal County -
October 16, 1954
Hilda Tovrea, Stenographer, Coconino County -
November 1, 1954
Gladys Randall, Stenographer, State Office -
January 1, 1955
Mildred F. Ricks, Stenographer, Maricopa County -
January 1, 1955
Shirley Ross, Stenographer, Maricopa County -
January 1, 1955
Doris Lonsdale, Stenographer, Maricopa County -
January 1, 1955
Virginia Vaughan, Stenographer, State Office -
January 16, 1955
Helen Goetz, Stenographer, State Office -
January 16, 1955
Frances M. Chaffee, Secretary, Pima County -
March 16, 1955
Claire Cammisa, Stenographer, State Office -
March 16, 1955
Ferne Phillips, Stenographer, State Office -
March 16, 1955

Resignations

Richard Hoover, Assistant County Agent, Maricopa County -
January 31, 1955
Carl Rang, Assistant County Agent -
March 31, 1955
Robert Oberly, Assistant County Agent, Pima County -
June 30, 1955

Frances Lempe, Home Demonstration Agent, Pinal County -
June 15, 1955

Howard Ray, Specialist in Soils -
September 11, 1954
Thomas Stubblefield, Specialist in Agricultural Economics -
September 30, 1954
Ellen Kightlinger, Assistant State Leader, 4-H Club Work -
June 30, 1955

Resignations

Joyce Knuckey, Stenographer, Gila County -
June 29, 1954
Jill Cannon, Secretary, Yuma County -
September 29, 1954
Joyce Bogart, Stenographer, Maricopa County -
September 21, 1954
Lavon Oldham, Secretary, Boys & Girls Club Work, State Office -
December 13, 1954
Gladys Sabella, Stenographer, State Office -
December 24, 1954
Elizabeth Nezelek, Stenographer, State Office -
January 8, 1955
Helen Balsat, Assistant Secretary, Maricopa County -
February 14, 1955
Rose Gerber, Stenographer, Pima County -
January 31, 1955
Beverly Anderson, Secretary, Pima County -
March 8, 1955
Erdine Baatz, Stenographer, Pinal County -
March 18, 1955
Reina Sanchez, Stenographer, Navajo County -
May 29, 1955
Louise Tate, Stenographer, Yuma County -
June 30, 1955

Transfers

Ervin Bramhall, Transferred from Itinerant Assistant County Agent to
Assistant County Agent, Yuma County -
October 16, 1954
Arjorie Bettie Mead, Transferred from Itinerant Assistant Home Demonstration
Agent to Assistant Home Demonstration Agent, Yuma County -
February 1, 1955
Gertrude Herget, Transferred from Stenographer, State Office, to Secretary,
Boys & Girls Club Work, State Office -
December 16, 1954

On Leave

Virginia Twitty, Sabbatical Leave, September 20, 1954 - June 30, 1955

PUBLICATIONS

During the period July 1, 1954 to June 30, 1955, the following publications were issued:

<u>Number of Copies</u>	<u>Extension Circular</u>
1,750	"List of Available Publications"
5,000	#139 - Your 4-H Beef Calf (Rev.)
5,000	#203 - Defoliating Cotton in Arizona (Rev.)
8,000	#208 - Fertilizer Recommendations for Arizona (Rev.)
7,000	#210 - Arizona Insect Control Recommendations, 1955 (Rev.)
3,000	#219 - Control Worms on Fall Lettuce
5,000	#230 - Topworking Citrus and Other Trees
5,000	#221 - Chile Peppers
5,000	#222 - Growing Arizona Cotton
7,000	#223 - Insects and Diseases of Cotton
4,000	#224 - High Altitude Cakes
4,000	#225 - Grain Sorghum Insects and Diseases
5,000	#226 - Feeding Arizona Dairy Cows
4,000	#227 - Diseases of Garden Crops
5,000	#228 - You Can Make This Sewing Cabinet
5,000	#229 - Making Shirts for the Men of the Family (Printed by Oregon State College)
1,000	#230 - Beef Measles
3,000	Folder #67 - 4-H Entomology Project in Arizona

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>
1,800	Flower Planting Outline
200	Poultry Possibilities in Arizona
1,000	Weed Control in Arizona
2,500	Meeting the Recommended Protein Allowance
2,500	A Food Plan for Good Nutrition
1,500	Perennial Flowers and Bulbs for Southern Arizona
500	Culinary Herbs for the Home Garden
1,500	Ornamental Trees for Southern Arizona
1,000	Line and Design
600	Your Pots and Pans
500	Your Time and You
500	Helping Others to Take It Easy
500	Flowers and Bulbs for High Elevations in Arizona
500	Some Fruit, Nut, and Berry Varieties for Lower Elevations in Arizona
500	Your Study Center
300	Third Year 4-H Foods
500	Wardrobe Planning
250	4-H Project in Growing and Showing of Flowers
500	4th Year and Advanced Food Requirements
300	Notes on Coastal Bermuda
250	Flame Cultivation in Cotton

FINANCIAL SUPPORT

Summary of Expenditures by Projects, Showing Source of Funds for Extension Work under Smith-Lever Extension Act, July 1, 1954 to June 30, 1955

	Federal Funds	Offset Funds	Funds Not Used as Offset		Total
			College & State	County	
Administration	\$ 29,931.32		\$6,095.41		\$36,026.73
Publications	6,682.69		146.00		6,828.69
County Agent work (white)	91,622.23	\$55,458.28	14,985.15	\$68,678.70	230,744.36
Home Demonstration work (white).	26,182.08	36,611.96	3,190.08	9,239.78	75,223.90
Boys & Girls club work (white)..	6,972.43		7,228.75		14,201.18
Specialists:					
Horticulture	2,036.31	6,100.08	808.32		8,944.71
Animal Husbandry	7,732.14		868.12		8,600.26
Poultry-Dairy	1,458.82	5,899.92	1,773.85		9,132.59
Agronomy	6,886.61		1,111.44		7,998.05
Soils	947.17		5,041.10		5,988.27
Nutrition	2,336.73		4,716.72		7,053.45
Entomology	2,132.51	6,875.04	548.60		9,556.15
Plant Pathology	1,509.50	5,550.00			7,059.50
Agricultural Economics	1,105.48				5,991.88
Clothing	7,963.30		4,886.40		8,425.44
Information Specialists	11,156.20	6,352.90	462.14		22,378.97
Home Management	760.75		4,869.87		7,177.39
Agricultural Engineering	4,810.89		6,416.64		7,952.65
Irrigation	1,734.23		3,141.76		7,871.37
			6,137.14		
Total Expenditures	\$213,961.39	\$122,848.18	\$72,427.49	\$77,918.48	\$487,155.54
Unexpended balance00	.00	.00	4,606.23	4,606.23
TOTAL	\$213,961.39	\$122,848.18	\$72,427.49	\$82,524.71	\$491,761.77

INTRODUCTION

Programs of organized Extension work were conducted in all of the counties of the State except one - that of Mohave; that county was served by the Staffs in the three adjoining counties and from the State office. Significant results in the operations program are as follows:

Farm and home visits	15,850
Office calls	18,508
Telephone calls	22,141
News articles or stories prepared	2,406
Radio broadcasts prepared	1,154
Television programs prepared	121
Bulletins distributed	94,370
Result Demonstrations conducted	170
Training Meetings held for local leaders for Adult work	181
Attendance	2,470
Training Meetings held for local leaders for 4-H work	162
Attendance	1,956
Other meetings held by or participated in by members of Extension Staff	1,326
Attendance	67,673
Number enrolled in 4-H Projects	4,919
Number of 4-H Projects	27
Number of Families assisted directly or indirectly by the Extension program in making some change in Agricultural practices	14,737
Number of Families assisted directly or indirectly by the Extension program in making some change in Home- making practices	3,948
Total Different Families assisted by Extension program	17,402

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

Director
Assistant Director

State Subject Matter Specialists

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

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

12 County Agricultural Agents
14 Assistant County Agricultural Agents
8 Home Demonstration Agents
4 Assistant Home Agents
1 Home Demonstration Agent (Part Time)

Clerical staff of 32

PRODUCTION, INCOME

The area in crop land during the year 1955 was 1,200,000 acres distributed as follows:

<u>County</u>	<u>Acres</u>
Apache	12,000
Cochise	100,000
Coconino	4,000
Graham	35,000
Greenlee	6,000
Maricopa	485,000
Navajo	12,000
Pima	55,000
Pinal	290,000
Santa Cruz	8,000
Yavapai	20,000
Yuma	170,000

VALUE OF CROPS AND LIVESTOCK PRODUCED IN ARIZONA FOR SALE
(IN MILLIONS OF DOLLARS)

<u>Commodity</u>	<u>1955</u>	<u>1954</u>	<u>Average 1945-54</u>
Cotton lint and cottonseed	\$137	\$184	\$115
Cattle and calves	66	70	52.5
Lettuce and other vegetable crops ^a	52	49	46.1
Commercial feed grains ^b	18	22	9.9
Dairy products	17	15	12
Alfalfa and other hay ^b	16	11	10.6
Sheep, lambs and wool	5	5	4.8
Citrus, fruits ^a	4	5	4.3
Eggs, chickens and turkeys	4	5	5
Seed crops	3	4	3.9
Miscellaneous crops	9	6	8.2
Miscellaneous livestock and livestock products and Federal Government payments	<u>4</u>	<u>4</u>	<u>3.5</u>
Total Value	\$335	\$380	\$275.8

^aYear ended August 31, 1955.

^bIn addition to the quantities of the 1955 crop sold or to be sold, hay fed by Arizona producers had an estimated value of seven million dollars; grain crops fed by the producer, five million dollars; and dairy, poultry, and other products consumed by producer families, three million dollars.

Crops and livestock produced in 1955 for sale had a value of 335 million dollars, compared with 380 million dollars in 1954. Principal among the sources of income were cotton lint and seed. 137 million dollars: cattle and calves, 66 million; lettuce and other vegetable crops, 52 million. Other important sources were commercial feed grains, 18 million dollars; dairy products, 17 million; alfalfa and other hay, 16 million. Lesser contributors to the income included sheep, lambs and wool, five million dollars; citrus, four million; poultry and eggs, four million; and seed crops -- bermuda, sugar beet, and alfalfa--three million. Horticultural specialties returned an added amount which included early table grapes two million dollars and rose plants two million.

Of the 1955 gross farm and ranch income 120 million dollars went to labor at wages averaging around \$1 per hour plus fringe benefits which often included housing. Thirty-five million dollars was spent for water; 35 million dollars for services performed by workers in the first processing plant and for material while the product was still the farmer's property. This includes cotton ginning with bags and ties, vegetable harvesting and packing, and commercial hauling of products to market; 15 million dollars went for tractors,² fuel and oil, other machines, and repair parts and installation; 13 million dollars went for inorganic fertilizer, insecticides, and materials used in weed control; and 10 million dollars went for taxes. Smaller items of expense were five million dollars for industrial insurance and social security, and two million dollars for planting seed.

Of course some of the foregoing are only approximations and many small items have been omitted. Much of the remaining income, however, constitutes the return on a one billion dollar private investment at current sale prices in land, livestock and improvements; and a management return to some 10,000 owners, renters, and professional managers.

In the cotton growing area of Arizona the profit pattern of farming established in 1954 continued through 1955 and may continue in 1956. Cotton is the profitable crop while in many areas substitute crops have been unprofitable. The principal substitutes -- barley, grain sorghums, and alfalfa -- did not generally bring enough money above growing cost to pay for the high investment in land as measured by recent sale prices. The determined attempt of many growers to enlarge their income from these crops through a cattle feeding program was often costly because of the additional large investment and the inadequate margin between the price paid for feeder cattle and the sale price of fat cattle.

²New tractors and machines 4-1/4 million dollars, repair parts 3 million, gasoline for off highway use 4 million. Other items include diesel oil.

The most striking phenomenon is the relationship between the following: (1) The agricultural industry and closely allied industries probably constitute the least prosperous business group in America at the beginning of 1956 -- a period of unprecedented prosperity for other segments of the economy. (2) At the same time as the foregoing condition prevails, the basic production factor in agriculture, land, is continuing to sell at high prices -- higher in 1955 than in any preceding year. Current returns for agricultural products, even with the high yields, are insufficient to justify the land price.

There are at least two non-agricultural factors that contribute to this situation. One is the increasing demand in Arizona for land for residential purposes. When first developed, the Salt River Project, with its 240,000 acres, was the second largest irrigation project in America, and now one-fifth of this acreage is in subdivisions or other non-agricultural uses. And the other is the desire of many people with accumulated savings to place their investment in productive land which they feel will retain some measure of value even though the country has a continued period of inflation with falling dollar values.

WATER

The continued shortage of irrigation water and its rising cost has called for water conservation measures, and for a new look into possible sources of additional supplies for irrigation. Recent experiments at Yuma have indicated that more efficient use of irrigation water can be obtained by adding fertilizer. When 60 pounds of nitrogen were applied per acre, 1-3/4 tons of barley were produced on one acre with only 1 1/2 acre feet of water; when no fertilizer was used more water per ton of barley was required. When varying amounts of fertilizer were applied to alfalfa, nearly maximum net returns were obtained by using 100 pounds P₂O₅ annually per acre, and only two-thirds as much water was used per ton of hay as on places where the phosphate applied was but 25 pounds.

Much water is being saved through the extension of concrete ditch lining and the laying of concrete tile. At the beginning of 1956 about one-third of the farm laterals in the state were being served by these water saving devices; that is, nearly 3,000 miles of the farm laterals have been improved, compared with around 200 miles at the beginning of 1949.

The possibility of getting more of the rain water which falls on Arizona mountains routed into the streams and reservoirs is to get renewed consideration in 1956. An estimation of the amount of such additional water under a modified watershed management program will be made for selected Arizona drainage areas. Then the financial benefits of such additional water will be considered along with additional grazing benefits. These, in turn, will be weighed against the probable costs involved.

Two million one hundred thousand acre feet of gravity water was diverted from streams and reservoirs for use in irrigation in 1955, or an almost identical amount to that diverted in each of the years 1954 and 1953. The amount of water pumped is roughly estimated at 3,700,000 acre feet, making a total supply of water for irrigation of 5,800,000 feet.

One percent less electricity and about five percent less gas were used for pumping irrigation water in 1955 than in the preceding year. While the reduction is so small that it might be accounted for by the increased rainfall in July and August, even so, it is the first year since ground water became a major source of irrigation supply that there has not been a substantial increase in the use of both gas and electricity for pumping purposes. In view of the increased pumping lift, it appears that the amount of water pumped was between six and eight per cent less than the preceding year.

More than one-half of the State's 1955 cotton crop was produced on large farms averaging 417 acres of cotton, and producing more than two bales to the acre. More than one-half of the cattle feeding was done in large operations, the smallest of which turned out 12,000 head in 1955. One-half of the milk was produced in dairies averaging 100 cows, and one-half of the eggs were produced in poultry plants averaging 3,000 hens. Mass production is significantly present in the vegetable industry, where one-half of the lettuce was produced on farms the smallest of which harvested 450 acres of lettuce.

With respect to large machines, concrete tile and concrete ditch lining machines for irrigation ditches and large feed-mixing and grinding mills for feeder operations have been added recently to the growing list of major mechanical devices commonly used in Arizona, such as, the 15' x 80' leveling machine, the one and two row cotton harvesters, and the 100 horsepower track-laying tractors. The 1954 Census shows there is one crawler tractor for every 545 acres cropped.

The Arizona answer to rising wage rates has been to reduce manpower. In many poultry plants 3,000 hens can be cared for with the services of one man. On dairies it is not unusual for one man to milk and care for 60 cows. In the picking of cotton it is common for a man with a machine to harvest six bales per day. With modern mixing machines and feed distribution facilities three men can care for 1,500 head of cattle on feed.

SUMMARY OF RESULTS BY PROJECTS

Agricultural Engineering

The Extension agricultural engineering project was reactivated effective January 1, 1955 with the appointment of a new specialist.

Since cotton production accounts for more than half of the agricultural income of the state, cotton mechanization problems were given much attention during the year.

In Pima and Santa Cruz counties, morning glory control is a severe problem. The value of flame cultivation in mid-season was demonstrated. It was estimated that the use of flame cultivation and the application of CMU might reduce cultivation costs to less than half. Cotton picker adjustment schools were held at Phoenix, Buckeye, Mesa, Casa Grande, Glendale, and Chandler during the year. These schools emphasized the need for cotton quality preservation and were designed to teach picker operators how to adjust their pickers to do an efficient job of quality harvesting.

Because of reduced cotton acreages many farmers have expanded their corn acreage. Previously most of the state's corn was harvested as silage. This year approximately 40 percent of the corn produced was for grain. Corn harvesting equipment was not generally available, and farmers were assisted in the selection of equipment with operating characteristics most suited for the Southwest.

About 15 percent of the specialist's time was spent on problems dealing with farm structures. A few new plans were added to those already available for use of Arizona farmers. Requests for 297 plans were filled.

The specialist accompanied the Extension economist to Estancia, Mountain Air, and Deming, New Mexico to study pinto bean processing and storage plants and equipment. Slides and plans for basic processing and storage requirements were prepared. With this background material a meeting was held in Coconino County to discuss these problems with producers. The Extension economist discussed marketing and purchasing organizations while the agricultural engineer discussed storage and processing problems. As a result of this meeting, a new bean processing organization was formed that now processes about 80 percent of the beans produced in the area.

The agricultural engineer accompanied the livestock specialist and assisted in planned feedlot operations in Pinal County and aided in developing a shade plan patterned after an existing installation in Pima County.

Approximately 32 percent of the specialist's time was spent aiding the 4-H department in the development of the tractor and electric projects in the state. The tractor program completed its second active year in the state with an enrollment of 6 percent of the total 4-H membership. Program material for the electric project was developed, and the first enrollment in this project began with the new club year in October. To date reports on the acceptance of this project are very encouraging.

Agricultural Economics

The Extension agricultural economist was employed for the period January 1 to October 8, 1955.

The work of the Extension economist was divided into five major projects: (1) county economic survey; (2) agricultural economics information; (3) farm management; (4) Federal farm programs; and (5) miscellaneous programs.

The county survey was devoted to the tabulation of secondary data for all counties. This is practically complete. The farm management project consisted of preparation of a poultry record book and a cost-and-returns schedule for vegetable crops and citrus.

The Federal farm program project supplied information, by dittoed releases to the county agents, on changes in support programs, the instigation of the new wool-incentive program, and Old Age and Survivors Insurance.

Miscellaneous projects dealt with cooperative formation, an egg survey, and crop acreage estimates.

Agronomy

With the decreased cotton acreage due to acreage allotments, the emphasis has been on high acre production. It is not expected that the production in 1955 of short-staple cotton will equal the per-acre average of 1,051 pounds of lint per acre produced in 1954.

The cotton wilt problem is increasing in area and intensity. Ten cotton variety tests with wilt tolerant varieties were planted by the Extension Service in 1955. Tests at the Safford Experiment Station have shown 29-76-16 as the variety with the best wilt tolerance. It is being increased as fast as possible for commercial planting in 1956. The plantings of 29-76-16 look better than any other variety for wilt tolerance.

The specialist helped agents get samples of Dalapon to put out demonstration plots on Johnson grass. A number of these were put out and are showing striking results in many cases. The amine form of 2,4-D was demonstrated in Greenlee County as an excellent chemical to use on bindweed, even in cotton fields. C.M.U. and the flame cultivator were used to good advantage for morning glory control in cotton fields.

Demonstration plots of Coastal Bermuda have been started in Greenlee, Graham, Cochise, Pima, Maricopa, Apache, and Navajo counties. Bill Wooten in the Wellton-Mohawk area, pastured 321 head of cattle on 32 acres of regular Bermuda. The first 29 days on pasture the cattle gained over 5,000 pounds. Coastal Bermuda is the first grass that has been tried in Southern Arizona that will take the hot summer temperatures and the high salt condition so often found. In Graham county, where the salt is so high that even alfalfa will not do good, Coastal Bermuda has an excellent chance of being a good crop in the rotation.

The corn acreage in Arizona increased from 36,000 acres in 1954 to 50,000 in 1955. Corn varieties were furnished to each county agent for demonstration plots. The planting date seems to be one of the critical factors in corn production in Arizona. It appears at this time that early planting in the southern part of the state is necessary for good corn production.

The spotted alfalfa aphid killed a lot of alfalfa fields in 1954 and destroyed a number of new plantings in the fall. This has been a severe blow to crop rotation in Arizona and has increased the planting of corn and sorghum for silage.

Clothing

The number of women reached by the Extension clothing program tends to increase each year. This increase is shown in two phases. Selection and Buying of Clothing in 1953 totaled 1,125; in 1955 it was 3,029. Clothing construction enrollment was 1,945 in 1953 and 3,240 in 1955.

Clothing costs have been somewhat stationary, but farm income has decreased. Paying for homes and furniture drains the family budget. As a result, more economy in clothing can be observed. The making of children's clothing seems to be in the homemaker's plan. When many children are to be clothed, families have purchased new sewing machines. Some of them are quite expensive. Many of the women do not know how to sew. As a result requests for construction techniques increase.

Some 359 local leaders were trained by the clothing specialist and agents to assist women with their clothing problems. These leaders functioned in the 4-H Club program with young people as well as in the adult program.

The following table gives a summary of results of programs in the counties for the past three years:

	<u>1953</u>	<u>1954</u>	<u>1955</u>
Number of local leaders assisting	234	368	359
Selection of buying of clothing	1,125	2,323	3,029
Care and mending of clothing	700	1,478	1,568
Clothing construction	1,945	2,261	3,240
Selection, use, and care of sewing			
and pressing equipment	584	1,030	1,267
Good grooming and posture (personal appearance).	1,128	811	1,273

Learning efficient methods of clothing construction is foremost among the needs of most women. This is evidenced by their selection of projects like "Professional Finishes and Techniques," "Decorative Finishes," "Making Best Use of Your Sewing Machine," and "Pattern Alterations."

Satisfaction from money spent is also important as many were interested in "Buying of New Textiles" and "Textiles with New Finishes." Purchasing garments of correct design was important to women interested in "Design for the Individual."

Dairy

The past year brought many problems and changes in the dairy program throughout the state. The most significant were basically economic, having to do with marketing and feed production. During the latter part of 1954 and again in January, 1955, price cuts to the dairymen occurred due to price cutting to the consumer. The situation resulted in efforts by the handlers and producers to bring legislation to correct the condition. Another economic problem was the heavy infestation of the spotted alfalfa aphid which caused considerable damage to alfalfa.

The Dairy Herd Improvement Association program is the most important phase of the extension herd improvement project. There was an increase of 862 cows tested per month and a decrease of ten herds tested per month as compared with the previous year.

The principal changes in feed production consisted of an increase in the use of soiling crops and grain as well as silage, with a decrease in the production of hay due to the spotted alfalfa aphid. County agents received more requests than in former years for information on balancing rations to be fed. A bulletin was prepared by the specialist entitled, "Feeding Arizona Dairy Cows" and released in May, 1955. Judging by the number of requests received, the bulletin is filling a definite need.

In the field of disease and parasite control, an accelerated brucellosis eradication program was inaugurated. The specialist has been a member of the State Brucellosis Committee which drafted a bill and presented it to the legislature. However, it did not get out of committee and was not acted upon. As a result of this situation, the Extension Service worked with the State Committee and assisted in organizing county committees. Information dealing with state and national programs for the control of brucellosis and tuberculosis was made available. Results show that participation in these two programs increased during the year.

During the year a survey was inaugurated with the D.H.I.A. supervisors gathering the information. Results show that there is an increase in the use of the flat walk-through and the two-level parlor milking barn, an increase in pipe line milkers, an increase in farm cold-wall

storage tanks, an increase in the use of field choppers and in the feeding of green chop. Also there was an increase in the use of silage. All of these trends indicate more efficient management by Arizona dairymen.

In the field of marketing, the Arizona Dairy League requested and received a hearing to establish a federal milk marketing order which was accepted and put into operation in November, 1955. This program should stabilize the market situation in Arizona for the benefit of the dairymen.

The specialist assisted county agents throughout the state by providing information for 4-H Club dairy projects. Demonstrations of 4-H Club practices were given. The specialist provided the procedure and regulations in cooperation with the breeders organizations on putting on a Dairy Heifer Selection Program.

Entomology

The year 1955 saw many of the farmers of Arizona become almost panicky because of the presence of the spotted alfalfa aphid. The khapra beetle continues to cost feed and flour mill operators huge sums of money, and some farm storage is showing infestations. The heavy infestations of cotton insects along with very adverse summer weather caused cotton yields to drop off a little; however, the 1955 yields will be close to 970 pounds of lint per acre.

The alfalfa acreage in Arizona was slightly less during 1955 because of the presence of the spotted alfalfa aphid in late 1954 and early 1955 destroying or reducing the newly planted stands as much as 100 percent when insects were not controlled. Many growers claimed that they could not control the aphid economically and that they would grow other crops. Several growers found that they had to make a decision to control the spotted alfalfa aphid if they intended to grow alfalfa. One grower stated, "I dusted for the control of the spotted alfalfa aphid and the increased price of hay more than paid for the cost of the dust." Another grower remarked, "In controlling the spotted alfalfa aphid, I controlled leafhoppers, treehoppers, and other insects and this increased my alfalfa hay yields."

With an increase in the corn acreage during 1955, the desert flea beetle caused the greatest injury during the early part of the season. Growers were constantly informed that it was not profitable to control the corn earworm in field corn. The southwestern cornstalk borer may develop into a major pest of corn and grain sorghum if the corn acreage increases.

Houseflies continued to be a health hazard in parts of the state. The specialist has helped many communities control flies by stressing sanitation as the number one problem. In mosquito control, it was suggested to several communities that they treat stagnant water with an oil-DDT spray or some similar material.

The so-called crown blight of cantaloups continued to be the number one problem of melons. A serpentine leaf miner caused considerable injury to melons in Maricopa and Yuma counties. Where growers controled the leaf miners with parathion, melons were produced unless the so-called crown blight killed the plants.

The grasshopper populations were very low in 1955 in all parts of the state. One large acreage was treated on the San Carlos Indian Reservation. A total of 73,000 acres were sprayed with 2 to 3 ounces of aldrin in one gallon of kerosene. Other acreages of crop lands treated were, by counties: Apache, 100; Cochise, 500; Maricopa, 500; Navajo, 1,000; and Yavapai, 300.

The 4-H Club insect project showed an increase in members in 1955. Collections exhibited at each 4-H Club Fair, as well as the 24 collections exhibited at the Arizona State Fair, are evidence that the project is growing more every year.

Home Management

The general home demonstration program for Arizona in 1955 resulted from the activities of planning committees from Homemakers' County Councils. County programs provided for 8 phases of management and 5 of furnishing. Homemaker groups, numbering 84, provided 2,251 enrolled homemakers, while 72 additional groups totaled 2,985 possible contacts. A total of 3,393 families received assistance from the agents and specialist.

The chief methods of accomplishing these results were - (1) leader training (by specialist or agent); (2) direct group contact, by the same means; (3) leader relay meetings to clubs; and (4) mass media. Among the 8 projects, two were of major importance. These were Easier Housework and Money Management. Easier Housework included a most interesting approach for one county when 9 leaders who had been pioneers in the 1954 Heart Program gave 54 "quickie" demonstrations to 9 clubs, assisting 195 homemakers with short cuts in housework. Seventy-two additional leaders from two counties helped 691 women with Better Methods. Five additional counties helped 491 homemakers to conserve energy and time by informal service.

Money management interested 272 women in three counties, offered through one leader meeting for 30 leaders, two special-interest meetings by the specialist, and 19 relay meetings by the leaders. The project, to date, resulted in 140 families adopting planned spending and 30 investigating legal problems of importance to families. The joint staff reports from 12 counties credit extension with assisting 1,384 families with financial matters on a non-project basis.

Minor home management projects reached 1,041 families. Pima county reported 210 women using better cleaning methods and correct cleaning compounds. Approximately half of the homemaker enrollment in Cochise county used better practices in the care and cleaning of hard surface floor coverings. A simple electrical project stimulated 256 families to check electrical loads, while 171 investigated the kind, number, and safety of house circuits; and 358 homes adopted safety measures in the use of electricity.

Home furnishing projects included furniture renovation, lighting, picture selection and framing, carpet selection, and drapery making.

In 1955, there were 176 girls in 11 counties enrolled in 4-H Room Improvement, from a simple beginning of 7 girls in 1947. Completions were 71.2 percent.

Horticulture

Crown blight of melons has been the most important problem in commercial vegetable production during 1955. The cantaloup crop was reduced by 50 percent in Maricopa and Yuma counties. No effective control measure has been worked out for this disease.

To pool research information on this disease, meetings were held with research and extension personnel at the University of Arizona Vegetable Research Center, Mesa, and at the Chamber of Commerce Building in Yuma. Both meetings were attended by Extension personnel, research workers, and research people for the U. S. Department of Agriculture in Arizona and California. All research work was discussed and the methods of approach for further research work were planned. The only leads so far are to keep the melon beds at a high-moisture level and at a high-nitrogen level during the setting and harvesting of the fruit.

Vegetable variety trials which included tomatoes, chili peppers, sweet corn, and beans were conducted in Yavapai, Coconino, Cochise, Graham, and Greenlee counties. The Improved Pearson tomato proved best under the wide variety of conditions. The New Mexico College No. 6 and Strain No. 46-11 of chili peppers were rated best by commercial and home market gardeners.

The major problem in citrus fruit production during 1955 was chlorosis in lemon trees on the Yuma mesa and chlorosis in producing orchards in Maricopa County. Several chelated iron compounds have been effective in working out control methods. The most important are Chel 128 and Chel 330 as well as Permagneen. Chel 128 has been most effective in correcting the condition in older bearing trees, but the material is not available in commercial quantities. It is being used only on an experiment basis, and because of the high cost of manufacture, will not be made available. Chel 330 was most effective in controlling the condition in young lemon trees. These materials with Permagneen have been set up as result demonstrations in several orchards in the two counties.

Grape pruning and thinning demonstrations in commercial orchards were completed this season. The two-bud system of pruning is the standard recommendation, and thinning the number of bunches on Cardinal grapes to 24-36 bunches per vine is standard practice.

Home beautification demonstrations were held in three counties in cooperation with organized farmers or home demonstration groups. Areas where this work had not been done before were selected. At each demonstration, plant material in suitable containers was used to show the kinds of material adapted to the area and where it should be planted around the home and farmstead.

Ornamental and orchard pruning demonstrations were held in 8 counties. The commercial production of roses is now an important enterprise in Arizona. The largest planting is in Maricopa county with additional plantings being made in Pinal county and also in Maricopa county. Extension Service staff members have been working in cooperation with the growers on the problems of pest control and the control of chlorosis in the new plantings.

The project on home beautification has been completely revised and circulars and lesson outlines have been prepared for use by 4-H Club members. Also, requirements for different phases of home beautification projects have been prepared and made available for all club leaders. Vegetable judging schools for training 4-H judging teams were held in Maricopa, Navajo, and Pima counties to train the older 4-H Club members, leaders, and county agents in judging vegetables. Gardening schools on the preparation, irrigation, and fertilization of vegetable gardens were held with 4-H Club members, leaders, and county agents in Navajo, Yuma, Maricopa, and Greenlee counties.

Information

The overall Extension information job in Arizona was more completely done by Extension workers during 1955 than during any other year. Agricultural and home economics news was furnished by Extension workers, and use in the daily and weekly newspapers of the state increased 75 percent this year over last. More local use was made of agricultural and home economics radio programs. The media of television was used to better advantage this year. More agricultural and home economics photographs were taken -- and used -- as a part of the overall information program.

County agricultural agents and home demonstration agents materially increased their local news coverage during 1955. A total of 35,800 column inches of county extension news represented an 85 percent increase over the amount used by the state's newspapers in 1954. Seventy-eight percent of the entire lineage of Extension information used by Arizona's newspapers during 1955 was furnished through the county extension offices.

County agricultural agents and home demonstration agents made better use of local radio facilities this year. Regular programs were carried by 9 radio stations in 8 Arizona counties. A considerably larger amount of extension subject-matter information was supplied to farm radio through these radio programs. Helping in this increase, the Extension information specialists sent a total of 202 taped radio programs to county agents during the year.

Only 17 circulars totaling 81,000 copies, were published by the Extension Service during 1955. Seven of these circulars were revisions of earlier publications with 10 being new circulars. Efforts were made during the year to improve the effectiveness not only of the preparation of Extension circulars but also of their distribution to the farm people of Arizona.

Extension information specialists continued a regular program of training Extension workers in the use of the many information "tools" during 1955. Much of the production work by information specialists - such as writing news stories, preparing radio tapes, taking photographs, etc. - actually was part of the overall training program. The fact that a considerable increase was shown during the year in the use of various information media by Extension workers indicates that the training program is having a definite effect, and that Extension workers throughout the state are doing a better job of Extension communications.

Irrigation

Continued emphasis on maximum production on the available water supply on allotted acres has sustained the cotton yields for this year with estimated production about equal to that of last year with a two-bale average predicated on short staple cotton and a 600 pound yield on long staple.

The Wellton-Mohawk project in Yuma County is a new area of 75,000 acres being brought into production by the Bureau of Reclamation. The soils and irrigation specialists have in the past worked with the agents in this county on recommendations for leveling the land and reclaiming the soils, since well water high in salts has been previously used which induced a saline-alkaline condition. Also, some of the native soil has a saline or alkaline condition or both.

The present soils specialist and the irrigation specialist made a farm-to-farm survey of this area in the fall of 1955 to determine the progress of land development to date and to determine what added reclamation recommendations are needed for land already developed and that yet to be developed. Thirty thousand acres are now in some stage of development, but in many instances, the full productivity of the land has not been reached, either due to all the saline-alkaline condition not being leached out of the soil or fertility not built up.

Therefore, recommendations will be worked out with the Yuma County Agents on all phases of leveling, reclamation, irrigation, and crop rotations under the present allotment program to give maximum financial returns while reclaiming this land. Many small farmers are in the area, including veterans with 160-acre allotments.

Corn variety demonstrations in the Wellton-Mohawk areas showed great variations in growth. The soils specialist and the irrigation specialist endeavored to correlate the growth with the salinity of this newly leveled soil, but found that the difficulty was structural rather than chemical.

The 4-H subject-matter project is conducted in cooperation between the soils and irrigation specialists. It is relatively new, and the leaders' guide was re-written this year incorporating the suggestions of previous leaders on the project and suggestions from previous experience of the soils specialist.

Livestock

Educational emphasis in the livestock project has dealt with performance testing of beef cattle or weight for age, with selection of better sires, better management of breeding herds, and greater attention to the dam and offspring. Crisscross swine breeding programs were set up in counties that have swine production.

More ranchers at the end of this year were practicing deferred grazing, rotational grazing, control of noxious weeds and plants, and improved management of grass land. The main emphasis for this range-improvement program has been in developing the county agents' skills in this field. They have been supplied periodically with range-improvement information. They have been taught range improvement at subject-matter schools, and have been helped in setting up details of demonstration plots. The livestock specialist also has worked cooperatively with the American Society of Range Management (Arizona Section), the Arizona Cattle Growers Association, and county and local livestock associations in bringing better management practices to members of these groups.

In livestock feeding, several things have been accomplished this past year. On small farms, primarily in Graham and Greenlee counties, the number of hogs on feed has been materially increased and the Extension livestock specialist has, through meetings, radio, newspapers, and personal contact, worked with the county agents to develop sound swine-feeding programs. Many of these small farms do not have the financial backing to go into cattle feeding. They do have surplus supplies of small grains. Even though 1955 has been a poor year to be feeding swine, that area is adapted to a long-time hog feeding program.

Cattle feeding has continued to increase in value, the increase being primarily with farmer-feeders -- men who are utilizing home-grown feeds and marketing those feeds through cattle. In January 1954 there were 100,000 head of cattle on feed. January 1955 showed 170,000 head of cattle on feed. The Extension Service has worked very closely with these new feeding enterprises, not only in teaching farmers how to handle their cattle and feed their cattle, but in planning their cropping and harvesting systems, and in setting up their cattle feeding programs.

4-H livestock projects continued to be the dominant project activity in the agricultural field. One phase of this project to which the specialist gave a good deal of attention was the teaching of livestock judging. Judging is an activity in which any 4-H'er can participate, regardless of his financial status. It develops self-confidence, the ability to make comparisons, to arrive at a decision, and how to express himself clearly and concisely.

This past year has shown increased interest in judging and county agents and 4-H agents have added training systems in this important 4-H activity. The numbers of steer, lamb, and swine projects did not vary materially from previous years. The overall quality, however, is improving. Considerably more of the 4-H members are showing properly fitted animals at local fairs.

Nutrition

The two major problems of the food and nutrition program are: the great need of most families to learn to spend the food dollar wisely, and to provide well-balanced meals for the family. County home demonstration agents assisted and advised about 1500 families with food preservation and storage problems. They made use of mass media, radio, publications, newspaper stories and television, to supplement leader training and method demonstration.

The greatest 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 becomes a stabilized program in Arizona. Home demonstration agents trained at the freezing workshop, March 1953, are carrying on this project in their counties. Trained leaders are still holding local relay meetings and serving as resource people in their communities. Demonstrations emphasize the selection of moisture-vapor-proof wrappings, blanching vegetables, length of time and storage temperatures, and food freezer management.

The nutritionist trained 222 homemakers as local leaders in each of the 12 counties in meal planning and nutrition projects. The greatest acceptance from project work has been the increased use of milk, both fluid and dry milk powder. Many homemakers are now drinking a glass of milk for breakfast. Skim milk powder is used to enrich baked foods and to supplement the fluid milk supply.

More and more families are eating good breakfasts as a direct result of project work. The homemakers who adopted the practice claim that they feel better, have more energy to do household tasks, avoid the eleven o'clock slump, and can control their weight more easily.

Over 200 homemakers have had an opportunity to check their daily protein intake and to plan their meals following "A Pattern for Meal Planning." The value of checking protein intake lies in the awareness of meeting protein allowances of family members. The contribution of dairy products to protein allowances leads many homemakers to include more milk in family meals.

Food preparation 4-H demonstrations were outstanding. At least 75 percent of these 34 demonstrations could be used creditably on television programs. The most impressive improvements were in the synchronizing of working with reasons of why and how, and evidence of the use of resource material for background by the demonstrators.

Plant Pathology

The majority of the diseases that are of economic importance in Arizona are soil-borne, so that planting in disease-free soil, crop rotation, soil fumigation or resistant varieties must be exercised before the disease actually appears. It is not always easy for these preventative measures to be taken, because of several circumstances.

Each year a larger percentage of the agricultural lands are losing their identity as newly-cleared land. As a longer cropping history accumulates, so the soil-borne diseases build up. Thus planting in disease-free soil looks good in a control measure, but it is becoming less and less likely to be put into practice. The rates of clearing new land has slowed somewhat with cotton acreages under allotments, so that it becomes less likely that crops will be planted on new lands.

A sizeable percentage of the farms in Arizona are planted to specialty crops, quite often managed by handlers or processors of a particular commodity, so that crop rotation is not feasible. A vegetable grower quite often grows only vegetables or only several vegetables. If they are susceptible to the same diseases, the crop-rotation practice loses its advantages.

In 1954, all of Arizona's cotton fields were rated as (1) having no verticillium wilt or only a trace; (2) moderate infestation; and (3) severe infestation. In rechecking the same area in 1955, over 50 percent of the severely infested fields were not in cotton in 1955, over 35 percent of the moderate infestations had been rotated, and less than 25 percent of the zero to trace fields had been rotated. This demonstrated that if a grower's attention is called to a disease problem, he sees the pronounced losses from the diseases, and he will move his cotton to other fields.

Seed treatment is being rather generally practiced, especially in cotton and sorghum. The advantage of seed treatment is being checked in vegetables by the Plant Pathology Department. Poor nodulation of soybeans has been evident in most soybean fields in Arizona. This may be due to faulty inoculation techniques or to unfavorable soil conditions. With attention being centered on soybean inoculation, more growers have been inoculating their alfalfa seed also.

Placing current plant-disease information in a plant-disease handbook, has proved to be an effective way to inform county agents and other specialists. This has been especially useful in keeping the agents posted on fungicide tolerances as released under the Miller Bill.

As a result of a rather extensive cantaloup crown blight survey, research workers of Arizona and California were granted \$50,000 to increase work on the disease. The Arizona Extension plant pathologist has been able to function as a coordinator in this problem and has been asked to write a summary of the crown blight situation to be used as a reference for all workers concerned.

A rapid build-up of verticillium wilt of cotton has occurred in certain areas of cotton production in Arizona. This spread has been recorded by surveys conducted the past three seasons by the Agricultural Extension Service. The problem has been referred to the Departments of Plant Breeding, Agronomy, and Plant Pathology, and they have already planned an extensive experiment on the wilt-infested plots that were in the field demonstration trials the past season.

Poultry

Poultry raising in Arizona is beginning to develop into a sound, important, specialized industry. In 1954, it ranked seventh in cash income from Arizona farm and ranch production. In 1935 the Bureau of Agricultural Economics reported an average egg production of 133 eggs per bird in Arizona. In 1953, the production had increased to 168 eggs per bird. At the average farm price of \$.55 per dozen, this 35-egg increase per bird in 1954 returned to Arizona poultrymen \$1.69 more per bird for a total of \$968,370.00 for hens on farms on January 1, 1955.

In 1935 a good poultryman could produce a 3-pound fryer on 12 pounds of feed in 12 weeks. In 1954, this same poultryman produced a 3-pound fryer on 9 pounds of feed in 9 weeks as a result of increased efficiency in nutrition and breeding.

The Arizona Poultry Improvement Program was affected by the general poultry situation, with less participation during the year. This program is handled by the Arizona Poultry Improvement Board, which is the Official State Agency administering the National Poultry Husbandry Branch of the USDA Agricultural Research Service and the Agricultural Extension Service of Arizona.

The N.P.I.P. flocks produced 39.5 percent of the total hatching egg 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 increased from 0.3 percent in 1954 to 0.5 percent in 1955.

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 daily egg production. With the increase in individual cage operation, the control of temperature by using sprinklers and fog systems is important, particularly in the lower elevations during the summer.

Poultry diseases continued to be a problem. County agents were called upon to diagnose and recommend practices for control. There were three virus diseases--Newcastle, Fowl Pox, and Laryngo-tracheitis--for which vaccination was recommended for control. Chronic Respiratory, or Air Sack disease, continued to cause trouble. The use of antibiotics, particularly Aureomycin, in the feed gave some results. Recent research work indicates that the injection of Aureomycin intramuscularly will provide better results.

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 testing the breeding of 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 only 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

All factors influencing the productivity of soils were included in the work of the soils specialist during 1955. This included the sub-projects of soil fertility, soil management, soil amendments, 4-H Club work, and miscellaneous soil problems.

In spite of the fact that considerable information has been obtained during the past five years regarding the response of cotton to the application of commercial fertilizers on a wide variety of soils, results are somewhat inconclusive. More information is needed concerning the effectiveness of the different forms of fertilizer and the different methods of application.

Correlation of recommendations (and use of commercial fertilizers in terms of increased yields) to the results of soil analyses continue to be a real problem. Although attempts have been made to secure information concerning fertilization of other field crops such as corn,

sorghum, small grains, and pinto beans, the available information is still extremely limited. Since such information can be obtained only from the use of demonstration plots, such demonstrations were established where possible. They were designed to obtain added information and to show good fertilizer practices.

The use of commercial fertilizers was discussed by the specialist in most counties in the state. This has become an annual event in most of the counties, but was curtailed somewhat this year due to the fact that the specialist was new to the area. In counties where meetings were not held, the subject was discussed with the agent and with interested individual farmers.

The value of soil amendments is seriously questioned by some authorities in the West. Although it has not been feasible to carry out extensive studies or demonstrations using the various soil amendments, limited demonstration work has been done and information from the Arizona and California experiment stations has been disseminated. Claims made regarding the value of some soil conditioners or amendments have not been sustained and their value, physical and economic, is seriously questioned. Much gypsum and sulfur have been used where they were not needed, but there does appear to be a definite need for such materials under certain conditions.

Soil management has involved stressing the importance of integrating all operations such as tillage, fertilization, irrigation, seedbed preparation, etc., time and time again. The work in this field consisted primarily of the dissemination of information. Radio, television, meetings, news releases, and mimeographed circulars are the means used in presenting this program.

The Soil, Water, and Sunshine 4-H Club project received considerable attention during the year. The specialist and the irrigation specialist rewrote the first year Leaders' Guide to be used and tested during the year. Soils judging was carried on as a 4-H activity for the second year. This is intended to stimulate interest. It will, in the future, be made a part of the Soil, Water, and Sunshine project. Judging this year was on an individual basis as compared to a team basis last year. This stimulated personal interest and increased the knowledge of the individual.

SUMMARY OF COUNTY REPORTS

Apache

Although TB and Bang's disease are not a problem in the county, a testing program has been under way to check the beef cattle and dairy herds. Federal and state veterinarians aim to test all dairy cattle in the county, all registered cattle, and 20 percent of beef herds. The county agricultural agent has assisted in this work and helped organize a county brucellosis committee.

Ground work has been done during the year in connection with the possibility of forming an organization to improve cattle marketing. Such an organization is expected to be formed before the next marketing season and should assist in bringing buyers and stockmen together in an organized manner. Assistance was given to ranchers taking part in the emergency hay purchase program. Juniper control on ranches has been started in some areas, but there is much to be done in this regard. Practically all of the control has been by cabling.

Dairy cattle work included proper feeding, care and prevention of common disease troubles and the selection of dairy stock. Both commercial poultry producers and home flock owners have been assisted during the year in management and marketing activities.

Agronomy work centered around the production of grain crops in the high areas, pasturing grasses in the medium and low elevations, and the control of weeds in all areas. Horticulture included improved management of home orchards. Many of these orchards are being renovated and new trees planted. Home ground beautification included work for farm homes and also public buildings.

There was only one active home demonstration club in Apache county during 1955, though the home economics program was conducted through various other groups. Foods projects have been the most popular in the county, with emphasis on good nutrition.

There were 12 community 4-H clubs in the county led by 20 adult leaders with the assistance of 2 junior leaders. Total membership in 4-H Club work was 193 boys and girls taking 235 projects. Agricultural projects included beef, poultry, sheep, rabbits, garden, swine, and entomology, with the emphasis being on beef. Home economics clubs included clothing, foods, and home furnishings, with foods the most popular.

Cochise

Acreage in cultivation in Cochise county increased during the year. The increase, however, was much less than in 1954. The 1955 acreage under irrigation is estimated to be over 100,000 acres. Grain sorghums were the most important crop, with plantings being made on over one-half of the total acreage. Cotton acreage was cut from 38,500 in 1953 to approximately 19,000 in 1954 and 12,500 in 1955 as a result of acreage allotments.

Use of fertilizers for increasing cotton and grain production was practiced by a greater percent of the farmers than in any previous year. Average yields of corn and sorghum crops were excellent. Thirteen cooperative field tests were conducted on cotton, alfalfa, grain sorghums, barley, corn, and soybeans. A field day, September 9, to observe 8 field tests was especially successful. The interest of farmers attending the field day indicated that this is a valuable type of activity in the county program.

Summer rains were a great help to the cattle industry in the county as the rainfall was greater over most of the county than has been the case for the past several years. More favorable years will be needed, however, to restore the range to its former carrying capacity.

Selling weight of calves was light according to most reports. This was due to poor range conditions during the winter and spring months. Control of external parasites, herd improvement by weight for age of calf crop, mesquite control, and rodent control were livestock activities conducted during the year.

Home economics work was conducted in 13 communities through 10 homemakers clubs, 2 relief societies, and 1 community organization. Clothing, house and furnishings, food preservation, food selection and preparation, health and safety, recreation and community life, and home beautification were subjects included in the year's program.

A total of 108 homemakers attended 14 leader training meetings. These leaders held 73 meetings with a total attendance of 1,036 Cochise county homemakers.

Continued interest in activities of community service, and the improvement in quality of 4-H Club meetings were the most important items in the county 4-H program this year. There were 113 club members taking 197 projects in 11 4-H clubs, with 21 adult leaders and 4 junior leaders. Completions reached 80.53 percent for the year.

Coconino

The year 1955 was a year of uncertainty for farmers, ranchers, and orchardists in Coconino county. The majority of the farmers experienced their worst season in many years. An extremely dry and

cold spring resulted in poor soil moisture conditions during planting time. Continued cold temperatures well into July caused poor stands and growth on beans and small grains. Unusually heavy summer rains caused considerable erosion and stimulated root rot in the Pinto beans. Market demand and prices were very poor on Pinto beans and only average on grains.

Stockmen experienced a good grazing season on the forests. Good summer rains gave ample water supply and kept ranges in top condition. The months of September and October were very dry, however, and ranges dried up earlier than normal. Cattle prices were only fair. Cattlemen had hoped for 18 cents and 20 cents yearling heifers and steers, respectively, but the contracting price was about 2 cents below the expected price.

The orchardists in lower Oak Creek suffered quite severely from late spring freezes and had only a small crop of peaches and apples. The orchardists in Upper Oak Creek, however, had their largest crop of apples in their history. A very heavy pear crop in upper Oak Creek was also grown this summer. Apple prices were good on the majority of the fruit. Number one grade fruit brought as high as 17 cents a pound in Phoenix.

One thing happened this year that the County Agent considers very important to the agriculture in this county. The bean and grain farmer is beginning to gradually go into more diversified farming. Several are buying small amounts of livestock to help utilize their bean straw and small grain hay. They are also beginning to grow silage crops such as corn and sweet sudan. In other words, they are realizing a one-cash crop has not and will not return to them a profitable return in their agricultural business.

During this year, the commercial fertilizer program developed during the past four years was adapted by orchardists with excellent results. The control of fruit insects and diseases continued during the year with fruit growers following approved recommendations.

Permanent pastures are becoming more and more popular with Coconino county stockmen. Several new areas were planted and excellent stands secured. Commercial fertilizing of permanent pastures is being recommended and recognized by stockmen as a necessary management practice. Coconino county was re-accredited as a brucellosis-free county in the summer and fall of 1955. The county agricultural agent assisted in the educational phases of the program and helped to organize a county brucellosis committee.

Weed control received considerable attention of farmers during 1955. Recommendations provided in a county weed circular issued by the County Agricultural Agent in late 1954 were followed with good results. The program will be continued during the coming year.

The women participated well in the entire home demonstration program this year. The project which received most attention was "Specialty Breads." Homemakers seem to be universally interested in making fancy, wholesome breads. Leader training meetings were held in all sections of the county. Leaders reported that attendance was exceptionally large and interest was high. Other projects for the year were health, home management, nutrition, clothing, and recreation.

The 4-H Club program in Coconino county was continued through 4 community clubs with 13 adult leaders and 1 junior leader. There were 80 members enrolled in 96 projects. Participation in county-wide events was exceptionally good during the year. A new Indian Service home demonstration agent plans a greatly increased 4-H Club program for the coming year in cooperation with the Coconino county home demonstration agent.

Gila

All Extension work in Gila county for cattlemen is carried on through the county cattle growers association. Gila county cattle suffered from a severe drouth in the spring of 1955. The Extension Service was called on to assist in an emergency drouth program. The drouth situation was becoming very serious when heavy unexpected rains fell in June. A number of cattlemen who had signed up for emergency feed did not have to buy it, and actually only a few purchases were made under the emergency program.

The use of salt and meal mixture on the range with the addition of grain in some cases was used by practically all stockmen in the county during the drouth periods and has enabled many stockmen to maintain herds.

Drouth conditions prevented any range reseeding or planning of permanent pastures. Also, a hybrid corn-test plot was ruined by severe drouth.

The control of external parasites has been one of the most important phases of the extension beef cattle program in the county. Most cattlemen now have power sprayers and are able to control parasites with recommended procedures. Work in horticulture included the proper care of home orchards and assistance to the few commercial fruit growers in the county, home beautification, and home gardens. The latter are very important in the county because fresh vegetables have been hard to purchase and are not available in many of the rural communities.

As there is no home demonstration agent in Gila county, the county agricultural agent has carried on all home economics work for several years. Homemaker clubs operated in 7 communities during 1955. A county homemakers council developed the year's program, which included dry cleaning, sewing methods, home furnishings, wood finishes, ironing

methods, foods, and home beautification.

Three 4-H clubs were organized during the year with a membership of 15 girls and 4 boys. The county 4-H Club work is carried by two local leaders. The 4-H Club program formerly carried on the San Carlos Indian Reservation suffered a loss of members this year because the children from the 7th grade up are now being transported by bus to the Globe schools. As they are away from the reservation from 7:00 a.m. to 5:00 p.m. each school day, little time is available for other activities.

Graham

One-hundred fifty farmers and ranchers attended the second all-day farmers' meeting in the Graham county courthouse in Safford, Arizona on January 31, 1955. They received latest information on the new cotton varieties, fertilizer tests, new crops being tried at the Safford Experimental Farm, cattle feeding problems, and control measures being used to combat the alfalfa aphid.

This year two cotton field days were held in Graham county on October 4 and 5, with 45 farmers attending. Field demonstration plots comparing varieties of cotton and fertilizer tests were also held. Two variety tests, testing four different kinds of short-staple cotton were set up on farms in two different areas of the county. Two cotton fertilizer tests were set up this year on the same farms.

On June 10 and 11 the Graham-Cochise Cattlemen's Association was host to more than 400 cattlemen and their wives from all parts of the state. The County Agent was in charge of the tours. A tour of the valley and of the packing plant were made on the closing day. A weight-judging contest at the packing plant climaxed the activity of the meeting.

The C.M.U. tests to control morning glory in cotton were continued this year. Safford was the only area in the state where C.M.U. did not absolutely control the annual morning glory. Tests on the Lea Hunt Farm at Thatcher and the Pace Farm at Solomon, did not show any outstanding results.

Yellow clover aphids threatened to kill all the county's alfalfa in the spring of 1955. Field days were held, radio programs were given, and newspaper articles were used to tell the farmers how to control this pest. The insect was brought under control and a good many tons of good alfalfa were harvested in Graham county. On March 3 some 50 dairy farmers and their wives attended the Second Annual D.H.I.A. Banquet at Eastern Arizona Junior College.

Home economics work in the county was conducted through 3 homemaker clubs, with a total enrollment of 50 women, and a number of other groups and organizations. The program was organized through a county council. Clothing construction, sewing machine workshops, and other clothing projects were popular during the year. Foods and nutrition activity included family menus and shopping to save. Home management work included family security and investment problems, ironing methods and equipment, and refurnishing furniture. Health and safety activities included first aid in the home.

The 4-H program was conducted through 12 clubs with 12 leaders and 4 junior leaders. The 129 boys and girls enrolled carried 172 projects.

Greenlee

The program of the County Extension Agent in Greenlee county during 1955 was determined by the requests and obvious needs of the rural farm people. Plans were made with the help of local commodity groups and by consulting with the state Extension staff.

It has now been proved once and for all that commercial fertilizer is not practical to use on cotton in Greenlee county. Four demonstrations using nitrogen and phosphorus gave results in only one demonstration. The lone response was on light sandy soil. Here, it was not great enough to warrant an all-out fertilizer campaign. Similar tests have been conducted over the past three years with each season being entirely different.

This was one of the worst years in history for cotton bollworms in Greenlee county. Prompt planning and application of insecticides cut losses to a minimum. Insects of other kinds were less prevalent than in 1954. Verticillium wilt and Texas root rot were severe in 1955. A poor season for cotton growth resulted in greater disease damage to the cotton crop. Losses from diseases were severe in many fields. Three verticillium control demonstrations using 2976-16 wilt resistant variety were established. The latter showed a high wilt resistance but was late in maturing.

Cotton acreage was reduced to 1,711 acres in Greenlee county in 1955. It was slightly raised for next year, 1956. Yields this year were below average with most growers harvesting about one and one half bales per acre. The valley yield was down by 3,000 bales under 1954.

New Mexico 1517 is the lone cotton variety produced in Greenlee county. The 1517 C Pure Seed Association produces the seed for local farmers. Though 2976-16 is showing much wilt resistance and may gain favor, it is dangerously late in maturing.

Forage crops acreage was increased again in 1955. This came about due to reduction in cotton acreage. Most corn and sorghum grain was cut for silage. About 80 percent is being fed on the farms and livestock feeding is gaining in popularity. "Green-chop" feeding was introduced to the county in 1954. Approximately 700 head of cattle were fed out in 1954. Approximately 1,000 head were fed in 1955. With the cost of controlling alfalfa spotted aphid, many green-chop enthusiasts are becoming discouraged. Year around silage feeding may replace green chop.

Hog production has more than doubled in the past year. It has been found that cheap pork can be grown by making use of alfalfa pasture and farm-produced grain. The sudden decline in hog prices may prove detrimental to this program, however.

The home economics program in Greenlee county is organized through the assistance of a county council. Work in 1955 was conducted through three homemaker clubs and three other groups. The projects on clothing, foods, and nutrition, home management, and home furnishings were well received. Work also was accomplished during the year in the health and safety project as "First Aid in the Home."

The county had a 4-H Club enrollment of 107 boys and girls carrying 181 projects. There were 6 clubs with 11 adult leaders and 12 junior leaders. Leadership training was given by the county agents, and a strong community program has continued during the year. Through a 4-H leaders' council, a 4-H concession stand at the Greenlee County Fair made a net profit of \$200.00. The money is to be used for 4-H promotion and special 4-H educational events during the coming year.

Maricopa

A reduction of the cotton acreage allotment for Maricopa county for the year from 145,760 acres to 122,000 acres caused most farmers to look for a substitute cash crop. Part of this acreage was planted to hybrid corn of several types, seed being shipped in from the mid-western states. Approximately 10,000 acres were planted to corn of which half was harvested as silage. The acreage of alfalfa decreased some 10,000 acres from 58,490 acres of last year due to the damaging effects of the spotted alfalfa aphid.

Long-staple cotton of the American-Egyptian type, Pima S-1 increased in acreage from 6,865 to 7,900 during the year. Barley acreage estimated at 120,000 was down from 120,795 acres of the previous year. Interest in wheat production was reflected in an increase to 6,000 acres over 3,964 of last year. Oat acreage remained about the same at around 3,000 acres. All these small grain crops were harvested for grain. In addition, approximately 7,000 acres of barley and oats were cut for hay.

Grain sorghum production increased to 80,000 acres over 58,480 of last year with approximately 20,000 acres being cut for silage. Soybean acreage was estimated at 1,200 acres. Small acreages of flax, castor beans, and sesame were also planted.

Acreage of citrus remained the same as last year totaling 14,050 acres. Due to severe freezes during December and January many growers have installed wind machines to protect against frost. This was brought about by generally good results from this type of protection on the 1954 crop. Citrus growers, with the assistance of the Extension Service and Experiment Station personnel, formed a Citrus Institute and held the first meeting in June to discuss frost-protection methods.

As a whole the vegetable season was a satisfactory and profitable one for commercial growers and shippers. Spring and fall plantings of lettuce totaled 13,600 acres. Cantaloup and honeydew plantings were normal but approximately 50 percent of the plantings were lost due to a condition called crown blight, which caused the plants to lose foliage and set little or no fruit. Potato acreage remained the same as last year and produced a high quality product for which the market was poor. Sweet corn acreage was increased to over 700 acres. Production was excellent in most cases but the market poor.

The dairy situation was somewhat confused during the year, but the total number of cows increased approximately 2,000 over last year's average to a total of 35,000 head. Of this number, 32,500 were in 430 commercial grade "A" herds. The remainder were in grade "B" herds or kept as family cows.

Beef cattle feeding has increased with an estimated 60,000 head during the summer months and 100,000 head during the winter on feed in the county. This increase has accounted for the large acreage of corn and grain sorghum made into silage. Purebred herds of Herefords, Angus, Brahman, Shorthorn, and Charolaise are kept in the county but this phase of beef cattle production has decreased slightly during the year.

Alfalfa acreage decreased due to loss of new plantings as well as established stands. The loss was caused by the spotted alfalfa aphid and occurred during the winter and spring months. As the summer progressed and farmers became more cognizant of the problem and acquainted with control measures, the damage decreased. The high price of hay throughout the year encouraged growers to protect their stands. Many new plantings late this year have been put in, indicating that growers now feel confident they can produce good hay economically with a minimum of control.

With land values at an all-time high, little farm land is being sold. The present owners are putting in improvements in the form of new dwellings, concrete-lined ditches, and land-leveling to permit more efficient use of irrigation water and to cut down on labor costs. In conducting the Extension Program in the county, an attempt has been made

to keep farmers informed of better management practices. The addition to the staff of an Assistant County Agent to assist with the information program has helped materially. The information program was expanded to include a regular weekly television program and illustrated news articles in local papers. Radio, news letters, mimeographed circulars, meetings, and demonstrations have all been used in building up a better information program.

Through the media of meetings, field days, farm visits, phone calls, office calls, news letters, bulletins, circular letters, television, radio, and newspaper articles, Maricopa county farmers have been kept up to date on new developments in crop production and marketing.

The Extension program for grape and strawberry growers was centered around new information which would be useful in the production of these crops. Extension information was presented to vegetable growers by newsletters and personal contacts. Research data was received from the College of Agriculture and the United States Department of Agriculture and presented to the growers by television and radio. Nematode and weed control trials were established in cooperation with USDA workers. Field surveys were conducted with cantaloup growers in an attempt to determine possible causes of the crown blight problem.

A program was followed to assist citrus growers with their marketing, cultural, insect and disease problems. In cooperation with Specialist Roney, Specialist Shields and Entomologists of the Sunkist Citrus Marketing Exchange, intensive surveys of citrus insect and disease problems were conducted throughout the year. Circular letters were mailed to citrus growers describing the citrus thrip and its damage and giving control measures. Citrus topworking and budding demonstrations were held and the county citrus topworking circular was revised.

The cooperative University of Arizona, Agricultural Extension Service, Radio Station KOY, and Valley Garden Center vegetable garden, turf variety, and turf fertilization demonstration plots, which have been the basis of a 25-minute weekly radio broadcast for the past 15 years, were continued this year. Also, to meet the demand for reliable information pertaining to turf, ornamentals, and home plantings, County Agents with the assistance of other University of Arizona and USDA personnel held 42 demonstrations to bring information to the public.

Assistance was provided to farmers in selecting alternate crops for cotton excess acreages; selecting adapted varieties of crops to be grown; seedbed preparation; planting practices; the various cultural practices; the selection of proper fertilizer and fertilizer applications; the identification of harmful and beneficial insects and insect control; the identification and control of crop diseases; the proper use of available irrigation water; harvesting methods and marketing practices; and in planning for proper balance in their whole farming 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 at the same time they solve immediate cropping problems.

The livestock program related itself into making recommendations to individuals concerning feeding, management, equipment plans and construction, marketing and disease, and parasite control of beef cattle, swine, and sheep.

A two-day cattle-feeding tour was conducted to demonstrate how cattle feeding could be fitted into a cash-crop farming program.

The dairy program included Dairy Herd Improvement Association activities, meetings to discuss formula for determining cost of producing milk for individual dairymen, work with dairymen's organizations to determine present and future needs, studying possible use of self-feeding equipment and efficient dairy layout, balancing dairy rations, forage production, and disease and parasite control.

The poultry program stressed two major projects -- feeding and management and poultry disease and parasite control.

A new Assistant County Agricultural Agent, Bob Halvorson, joined the Extension Service and the Maricopa County staff on February 1, 1955, and assumed responsibility for the Extension information program at the county level in so far as general news releases were concerned. Working closely with other staff members, he prepared newspaper articles, radio releases and television shows covering all projects, including home demonstration work and 4-H Club activities. Contacts were made with the 28 publications and 10 broadcasting firms concerned with the county, and satisfactory arrangements were worked out for supplying them with information. Articles as newsworthy as possible and generally conforming to standards of good journalism were furnished weekly.

Through an arrangement with the managing editor, Assistant Halvorson supplied most of the news and feature articles appearing in the "Farm and Ranch Life" section of the Sunday Arizona Republic, the state's largest newspaper. Two feature-length stories, complete with photos, were supplied each week. In all, 148 articles and some 200 photos on recommended farming practices, 4-H activities, and general agricultural information were used. Articles also were furnished to the Arizona Farmer and other farm magazines enjoying a circulation in the Salt River Valley.

The homemaker's county-wide program represents the three major areas of homemaking -- foods, and nutrition, clothing and its related phases, and home furnishings or home management -- as a varied program seems to meet more fully the interests of the greater number of women in the county. An estimated 2,100 families were reached by one or more methods and phases of the work this year and an estimated 600 for the first time.

Fourteen homemaker clubs carried the entire program as planned. Another club, newly organized and made up of young mothers with small children, dropped out when two most active officers moved away. Early in the summer eleven Relief Society groups of the L.D.S. East Phoenix Stake participated in the clothing programs and received assistance with their food preparation and service programs along with other Relief Society organizations in the Salt River Valley.

Foods work included better use of pressure saucepans, food selection and preparation in relation to weight control and physical well being. Home management work included an understanding of electrical equipment and learning better methods for household tasks to save time and energy. Clothing projects were aimed at the problem of acquiring "ready-to-wear" clothing techniques in home sewing, and clothing buying guides.

In addition, a number of special interest topics were included in the various club programs throughout the year such as health, recreation, and first aid.

The Maricopa county 4-H program had a total enrollment of 842 boys and girls taking 1,160 agricultural and home economics projects. The 44 clubs in the county are led by 128 adult leaders and 43 junior leaders.

The Maricopa county 4-H program has progressed in the past five years from almost entirely school clubs using school time and leadership to the much different community or project groups with strictly volunteer membership and leadership on out-of-school time. With this gradual change has come more permanent membership and leadership, increased parent and community support, more year-round planned programs, better quality of project work by individual members, and thus greater completions.

Navajo

Feeder cattle prices in Navajo County in 1955 were lower on cows and heifers. Other prices were about steady with 1954, but small bunches were hard to sell. The drouth hay program helped ranchers through the critical spring months until rains came in July. Juniper eradication has improved many sections of the range lands in the county this year.

Most of the county's dairy cattle were tested for Bang's disease in 1955. All testing is under the supervision of the Animal Disease Branch of the USDA at Phoenix. Competition continues to be very keen for the local dairyman. Carnation, Arden Farms, Borden, and Webster companies deliver milk in the county.

County pruning demonstrations were held at Pinetop and Holbrook with good attendance. Several orchards were pruned in the Show Low and Lakeside area. Many calls for help on gardens and home beautification were answered.

New varieties of wheat, alfalfa, sorghum, corn, and Bermuda grass were tried for the first time in 1955. Some stands of alfalfa were thinned due to lack of winter moisture. The irrigation farmers of Woodruff repaired their ditch irrigation system. More farmers are using winter irrigation to preserve their alfalfa stands.

The yellow clover aphid appeared for the first time July, 1955. Farmers were ready to spray to control but aphids did not build up harmful numbers. Grasshoppers were not serious. Spider mites were controlled by systematic spraying. Malathion sprays controlled the non-resistant house and stable fly.

Phosphate fertilizer demonstrations were conducted on alfalfa and irrigated pastures during the year. Plant diseases were less plentiful in 1955, but iron deficiency was present in some soils.

The home economics program in Navajo County was carried in 13 communities through 8 homemaker clubs, 5 Farm Bureau groups, and 8 other organizations during the year.

Four homemaker clubs are located on the Hopi Indian Reservation. The home agent for the Indian Service resigned early in June, but 2 of the clubs are carrying on a program with the help of the Agricultural Extension Service. This year Indian project leaders attended meetings on s tyle selection and program planning.

Subject matter covered in the home economics program during the year included food selection and preparation, clothing and textiles, and home management. Also, special study groups discussed the emotional development of children. The latter proved of considerable interest to women of the county and a continuation of the program is planned for the coming year.

The 4-H Club membership of 402 boys and girls is the largest enrollment ever reached in the county. These boys and girls had 438 projects in 31 separate 4-H Clubs. There were 38 adult leaders and 3 junior leaders assisting in the program. The lack of adult leadership continues to be one of the most difficult problems in the county 4-H program. Additional interest was shown by Indians on the Hopi Reservation this year. The Hopi people are concentrated in villages and are easier to organize than are other reservation Indians. School teachers on the reservation acted as leaders.

Pima

During the past few years there has been some renewed interest in home orchards in Pima County. New and improved varieties of peaches, apricots, and plums that are better adapted to warmer climates have made the growing of deciduous fruits more successful. Mr. W. T. Dudgeon established a small commercial orchard in the Flowing Wells district

which served well as a demonstration orchard for the Tucson area. Mr. Dudgeon planted about 90 different varieties of deciduous fruit to prove out the most successful varieties for the area. He has worked closely with the Extension Service in both making the orchard a success and making all information available to local residents.

Extensive project work on beef cattle production on range land, such as range management, is limited by the necessary facilities. Cattlemen are always interested in any project that will improve the feed or grass. Range grass re-seeding is of interest to many cattlemen, but very few successful demonstrations have been carried on. Water spreading and erosion control are very popular projects with many cattlemen.

External parasite control, disease control, and control of grasshoppers and harvester ants on range land are some of the practical demonstrations carried by the Extension Service.

Some work on range grass re-seeding has been carried on with mediocre results. Demonstrations on parasite control have been carried on successfully. The latest information on disease control, parasite control, and supplemental feeding has been made available to cattlemen.

Excellent moisture conditions on range land during the past season was especially welcomed by cattle growers. Supplemental feeding continues to be profitable, even where summer range conditions are exceptionally good. Keeping up the protein intake during the entire year is recognized as a sound range-management practice by a large majority of county cattlemen.

Along the lines of keeping up protein in range grasses, a new project was inaugurated this year. A result demonstration on nitrogen applications was established on the Baboquivari Ranch in cooperation with Mr. Karl Ronstadt. Plots with $7\frac{1}{2}$ lb., 15 lb., and 30 lb. of nitrogen gave excellent response. Denser stands of grass, taller plants and darker green color were noted. The green color remained much longer on the nitrogen plots than on the outside. This all denotes an increased percentage of protein in the grass, as well as an increase in weight and density of stand. Plans for more detailed work on this project are being made.

One of the main problems facing local dairymen is feed prices. The Extension Service has endeavored to point the way to greater and more economical feed production during the past nine years. The use of commercial nitrogen fertilizer on pastures and grain crops has been demonstrated during the past years. Cattle grub control demonstrations were conducted. Both of these practices have been in the campaign stage during the past five years. The County Agent's office has cooperated with local Dairy Herd Improvement Association in carrying on their worthwhile program during the past thirty years. Cutting and feeding green feed instead of pasturing has been recommended in some cases. Making grass ensilage under certain conditions has been suggested as an economical dairy feed production practice. The campaign on

increased forage crops and pasture by the use of nitrogen fertilizer was continued this year.

Nitrogen has been found to be the most essential element in cotton fertilization. Demonstrations have shown that nitrogen alone has been almost entirely responsible for the splendid gains in yields of cotton from fertilization. Phosphates have, in a minor number of cases, increased yields enough to show some small profit. The only response from phosphates has been in combination with nitrogen.

Four cotton variety tests were established this year. Result demonstrations on fertilization were carried on. All growers were furnished latest information on insect control, cotton diseases, and fertilization. Field meetings were held to further acquaint growers with the new problem of Verticillium Wilt. The number of growers to become acquainted with this spreading disease and what is being attempted to cope with it has increased this year.

Meetings were held for grower discussion of "new" crops such as hybrid corn, soybeans, and castor beans. Commercial acreages of these crops were planted. Five hybrid corn variety tests were conducted. One result demonstration on corn fertilization was carried to completion. Seven result demonstrations on soybean growing were conducted, and two on castor beans.

A definite improvement of Upland cotton grown in Pima County dates back to 1948. Growers in the county were the first to take advantage of an improved Acala strain developed by R. E. H. Pressley, cotton breeder for the University of Arizona. It was through the information gained from variety tests conducted by local growers in cooperation with the agent that it was possible for his county to pioneer the growing of the improved variety and to start the important function of pure seed production. The main variety was named Acala 44 and, since its introduction here in Pima county in 1948, it has become the major variety in the state.

Local growers, working in cooperation with the University of Arizona Experiment Station and the County Agent, carried on the preliminary work of satisfactorily introducing the new variety to the cotton mills. This work started out with samples from cooperative variety tests being sent to laboratories and mills. This was followed up by a bale identification program in 1949, 1950, and 1951. Dr. Scott Hathorn of the Agricultural Economics Department of the University of Arizona followed the bale identification work right into the mills during the first year of its inauguration. This personal contact with the mills gained favor for the identification work and brought home the welcome information that Acala 44 was well received by the cotton mill trade.

This is the ninth straight year that cotton variety tests have been carried on here in Pima County. Pima County growers have reaped important benefits from these tests, since it has been the guiding factor in varietal choices which has given them better yields and a superior cotton.

Verticillium wilt has been present in the county for at least the past eleven years. It has gradually increased in scope and severity until it is a serious consideration for some growers. It is for this reason that wilt-resistant varieties were included in the county's variety test work during the past five years.

Three new homemaker clubs were organized in Pima County during 1955. At the present time all 17 homemaker clubs in Pima County are urban. The approximate membership is 400 women.

Projects during the year included slip covers, freezing and canning foods, food selection and preparation, family economics and home management, clothing and textiles, and health and safety.

The "Belles of the Mission" home demonstration club took on a very worthwhile project for their community -- a Civil Defense Meeting. Mission Manor and Sunnyside are both close to aircraft plants, therefore a real need exists for the people in the community to know more about protecting themselves in case of an emergency. All members of the club participated in the planning and publicity for the meeting. The members appeared on five TV shows, two radio programs, and received coverage in the news broadcasts on four radio stations, four newspapers, and a school bulletin.

One of the goals set for 1955 was to make contacts in the rural areas of Marana, Sahuarita, and Avra Valley. As a result of these contacts, it was hoped that at least one organized group might develop. To date there is the possibility of a club in the Marana area.

The 4-H program in Pima County was conducted through 27 clubs with 37 leaders and 19 junior leaders. Total club enrollment for the year was 364 boys and girls who carried 593 projects. 4-H enrollments increased 22 percent this year. Participation of leaders, parents, and club members has been excellent during the year.

Pinal

Work has been completed on reorganization of the two county cotton improvement organizations in Pinal County. These improvement groups are organized to provide farmers with free cotton classing service. It has been necessary to contact each gin manager and receive from him a list of his growers, acreages, varieties, and mailing addresses. This in turn is given to the Phoenix classing office making the growers eligible for the service.

Cotton diseases are one of the main problems in Pinal County and more specifically in the Eloy area. In the Eloy area a large portion of the best farm land is infected with Verticillium wilt. It is in this technical phase that most emphasis is being placed on demonstration work. It is estimated, from surveys, that close to 30,000 acres of this fine black soil is infected or subject to infection from the soil-borne fungus causing Verticillium Wilt.

It was estimated that this disease last year cost farmers in the Eloy-Picacho area 1/3 of a million dollars. Demonstration work now in progress covers such practices as varieties, bed types, irrigations, and fertilization variances trying to determine those cultural practices that will reduce the effect of the disease and increase production.

Insect control work of the Extension Service has always been of great assistance to farmers. Technical information on insect identification and control is provided every grower in the county through field visits, news stories, radio programs, and Extension circulars. Insects have been no serious problem in cotton production in the county.

Small grain production has become more important in Pinal County since cotton allotments went into effect. Increased interest in cattle feeding has helped by providing a local market for much of the grain. Barley is the most important of the small grains with about 60,000 acres planted. About 50,000 acres was harvested for grain and 10,000 used as green-manure crop. Yields this year have been much better than last year.

Wheat planting has increased from 1500 acres last year to 10,000 acres harvested this year. Yields have also been satisfactory. Sorghums account for about 12,000 acres in 1955 with about two-thirds of this acreage used for grain and one-third being produced for ensilage.

Alfalfa acreage in 1955 is down from the 50,000 in 1954, due to the damage from the yellow clover aphid. Many new plantings were lost this spring and old stands reduced to the point where they have been taken out. The aphid has been brought under at least temporary control by the predators and perhaps next fall growers will again plant some of their extra land to alfalfa.

Reduction in the alfalfa acreage has created high priced hay to the dairymen and cattlemen and is seriously affecting the crop rotations that many farmers had finally accepted. Emphasis on alfalfa in a cotton rotation will have to be made so that growers will go ahead in this direction. Seed production of Northern adopted varieties has increased in Pinal County with seed now being produced on about 2,000 acres. This has been the first year farmers in this county have done much with seed production. Many farmers are also making seed on fields of African and Chilean 21-5 alfalfa.

Two new crops -- soybeans and corn -- have come in quite a bit of favor this year in Pinal County. Soybeans particularly hold some promise as a paying crop for Pinal conditions. Corn looks somewhat less promising but could also become a profitable feed crop and ensilage crop. One thousand acres of soybeans were planted and about 2,000 acres of yellow hybrid corn have been planted in Pinal County this year.

Dairy Herd Improvement work is handled along with Pima County by the agent in Pima County and Extension Specialist. There are 10 Pinal County dairymen in the association with almost 700 cows on test. Poultry production has increased in importance in Pinal County during the past year and a half. There are from 8,000 to 10,000 layers in commercial flocks in the county.

The home economics program in Pinal County was conducted through 10 homemaker clubs. Two of these clubs were organized this year. Several projects in home management and home furnishings were well received in the county. In the clothing project, the topic "You and Your Clothes" was most popular, with 100 percent attendance at leader training meetings. It has been reported by several clubs that this lesson is one of the best clothing lessons that they have had because it pertained to all individuals. The leaders taking part in the training sessions spent a great deal of time in preparing the lessons they took back to give to their clubs.

Practical international cookery was a popular foods and nutrition project during the year. The objects of the project were to add greater variety to daily meals, to gain knowledge of the food habits of other countries, to learn how to prepare foreign dishes, and to gain greater knowledge of the nutrition value of different foods. The Red Cross instructors' course was sponsored by the Pinal County Extension Service and the Homemakers of Pinal County. As a result of this course Pinal County now has 7 certified instructors who may be called upon to give a lay course at any time. These women also are available in case of a national or local emergency, and are trained to help in a Civil Defense program. Several of the other women who took the latter course have expressed their gratitude for the knowledge they gained in being better able to take care of the sick in their own homes. The spirit and friendship during the three-week training period also was an important factor. The course definitely helped to cement good relationships of women from various parts of the county.

The 4-H Club project in the county was carried by 13 clubs including one Indian Club. Total county 4-H membership was 319 boys and girls carrying 488 projects. They were assisted by 49 leaders and 21 junior leaders. Project completions in the county were 70 percent as compared to 61 percent for 1954. An outstanding achievement during the year was the construction of buildings and facilities valued at \$14,000 on a 4-H fairgrounds area. Support of 4-H members, parents, leaders, and of various business establishments all combined to make the 4-H fairgrounds a reality.

Santa Cruz

Beef cattle raising is the main agricultural enterprise of Santa Cruz County. Major problems during the year included the control of external parasites, control of noxious and poisonous weeds, control of the harvester ant on range lands, and deficiencies in range grasses. Some effective work has been accomplished in lice

and grub control, screw worm and fly control during past years. Result demonstrations on harvester ant control were conducted during a two-year period. While it was demonstrated that fair control could be obtained with both Chlordane and Dieldrin, neither insecticide did a complete eradication job.

Three years' work has been devoted to a minor element deficiency project in range grasses. The Extension Service cooperated with the University of Arizona Animal Pathology Department and four cattle growers. Work was started this year with a different approach. Four sets of range grass fertilization plots were put out right at the beginning of the summer rains on ten individual plots. There were some interesting results obtained from the application of nitrogen fertilizer on these plots. First, the increase in density of stand was easily noticed on all plots. Second, the increase in seed heads of the Grama grasses was outstanding. Third, the increase in total forage was outstanding when considering both the increase in density of plants and the increase in size of plants. Fourth, the deeper green color showed up to a marked degree, and retained the green color two or three weeks longer than grass outside the nitrogen fertilized plots. The general rule is that the greener grass contains a higher percentage of protein.

Cotton has been the major farm crop in the county for the past several years. While the altitude is somewhat higher than most cotton growing areas, the adopted variety has been Arizona 44, which is planted nearly over the entire state. There is one reason why this variety is losing out in the county. That is the rather heavy infestation of Verticillium Wilt. Arizona 44 is not resistant or even tolerant to wilt.

Variety tests have been conducted in the county for the past six years, including this year. From the first variety test planted, on through the six years, it has been evident that wilt resistant varieties were needed for successful cotton growing in the county. The only variety carrying wilt tolerance, of which seed has been available, is WR 2946. Three years ago seed increase of this variety was made in the county by Mr. W. B. Allen. Since that time growers have mostly adopted the WR 2946. They have been fairly well satisfied with it.

The Extension home economics program in Santa Cruz County this year has all been carried on in the Patagonia vicinity. There are two organized clubs in the county, with 42 women on the active membership lists. Three, sometimes four, women drive more than 20 miles from north of Nogales to attend the meetings regularly. There are five women from the Trench Mine who attended the two club's meetings.

Last November a request was made from a group of Mexican ladies in Patagonia for some home economics programs. The group seemed to be primarily interested in some help on clothing problems. Since many of these women do housework for women on the nearby ranches, the home demonstration agent encouraged them to have the cleaning lesson

for the first meeting. This group of women have rather large families (one homemaker had 9 children) and were in need of help such as the Extension Service is able to give.

These women all speak English, but frequently in their conversations to each other, they speak Spanish. During the year they held eight meetings with four project lessons. They met regularly but did not have a formally organized group. Almost three-fourths of the women participating in the program live on ranches. The balance of the membership are closely associated with the ranches, a small percentage of the families earning their living from the copper mine.

Santa Cruz County shares a home demonstration agent with Pima County. This tends to limit the amount of organizational work that can be accomplished -- time being the major factor involved. The same projects are carried on in the two counties with few exceptions. Great distance, no telephones, and irregular mail service are some of the handicaps.

Work conducted during 1955 included a project in making lamp shades as a part of house and furnishings work, outdoor cookery, salads and salad dressings, packed lunches, and economical entertaining with ease under the food selection and preparation program. Family economics, home management, and clothing and textiles were other programs carried. The latter included clothing construction and sewing machine clinics.

The 4-H Club program in the county was conducted through 5 clubs with 7 leaders and 4 junior leaders. A total of 73 boys and girls were enrolled in 130 projects.

Yavapai

Production of feeder calves on native ranges is the most important single agricultural industry of Yavapai County. Both purebred and commercial breeders make up the industry. Purebred breeders have earned a nationwide reputation for quality of their breeding stock. Yavapai cattle growers cooperated with the agent in the 4-H beef program and in a brush burning and re-seeding demonstration.

Eight dairies serve Yavapai County at present. One distributing plant in Prescott and a small bottling plant in Cottonwood are the only local-owned distributors in the county. Carnation Milk Company, of Phoenix, has begun taking milk from the Verde Valley. They expect to increase their purchases materially since there is now an all-paved road from Camp Verde to Phoenix. Two Yavapai County dairymen are on D.H.I.A. test. Prospects are for two more to join in 1956.

Yavapai County is well-suited climate wise to poultry laying plants. Prices for eggs strengthened in last half of 1955 and feed costs lowered slightly. Cage-laying plants are expanding slowly. Adequate financing for poultry expansion is not available. A survey of poultry market conditions in Prescott was made during the year. One marketing company owned by growers is still in operation.

A small-grain variety test and five years of testing small grains have assisted Verde Valley farmers. An alfalfa variety test, distribution of seed of a new alfalfa variety, assistance in establishment of two safflower tests, assistance with a pinto bean disease-control test, and three corn variety tests were 1955 programs. Corn acreage increased by 200 percent in Yavapai County in 1955.

Two of the biggest accomplishments in the home demonstration program this year have been the reorganization of an active homemakers' club in Chino Valley, and the establishment in Camp Verde and Cottonwood of baby sitting services for children of young mothers wishing to attend homemakers' meetings.

The women participated well in the entire home demonstration program this year. The project which created most interest was "Speciality Breads." Homemakers seem to be universally interested in making fancy, wholesome breads. Leader training meetings were held in two sections of the county. Leaders reported that attendance was exceptionally large and interest high. Other projects for the year were health, home management, nutrition, clothing, and recreation. The program was conducted during 1955 through four homemakers clubs, 2 L.D.S. groups, the Yavapai Cowbells organization, and other civic groups in the county.

The 4-H Club program had an enrollment of 160 boys and girls who carried 280 projects. There were 13 4-H Clubs with 22 adult leaders and 12 junior leaders.

Interest in the 4-H program throughout Yavapai County is still good. The support of local and civic organizations, merchants, and banks, is excellent. Buyers at the 4-H calf sale this year were more numerous than was the case last year. Medals and special awards were adequately supplied at fair time. Two recognition dinners were held this year; the annual Kiwanis recognition luncheon and a newly instituted awards banquet sponsored by the Valley National Bank of Prescott.

Yuma

The Yuma County Agricultural Extension program continued to place considerable emphasis on its activities in the Wellton-Mohawk area. With the continued rapid development of this irrigation district, the new farmers of this area require a particular extension effort unlike other communities of Yuma County at this time. Tests established in the fall of 1954 were harvested and summarized and results were disseminated to Wellton-Mohawk farmers. In response to the requests of the Wellton-Mohawk Irrigation District, summer crop tests were established in two locations.

Field corn was emphasized in cooperative farmer test work in 1955. Test work was established in view of the successful field corn production observed by local Extension agents in the Palo Verde Valley some 75 miles north of Yuma in 1954. Results of the tests conducted in Yuma Valley were presented at a field day where considerable interest was shown by those in attendance.

There was a further reduction in Yuma County's cotton acreage, which seemed to indicate the need of little or no cotton test work in 1955. Extension Agents continued to present material that seemed to be important in the production of cotton in Yuma County.

Again in 1955, the County Agent's office met with representatives of canning companies to outline possibilities of bringing a canning industry to Yuma County. The possibilities seemed to be stronger than they had been in the past. There was also an interest in the freezing industry that had not been previously shown.

Considerable emphasis was given to the control of the yellow clover aphid now known as the spotted alfalfa aphid since its effect on the farm economy in Yuma County was quite serious. A number of field meetings were held in an effort to fully acquaint farmers in Yuma County with the insect, its habits, and methods of control.

Extension Agents continued to emphasize the importance of the cattle feeding industry in Yuma County. Diversification through cattle feeding was the prime objective. Extension Agents assisted in conducting a feedlot tour especially designed for the farmers of Yuma County in cooperation with the Yuma Livestock Association.

The County Agent's office is represented as an ex-officio member of the Yuma County Fair Board and assisted in making the third annual Yuma County Fair another complete success. A new domestic exhibit building, 240 x 70 feet was constructed on the grounds, which contributed considerably to the success of the third annual fair.

The County Agent's office assisted the directors of the Yuma County Pureseed Association in making plans for the 1955-56 over-winter seed increase in Yuma County. Early indications were that the seed increase for the coming winter would exceed that of 1945-55. However, this did not prove to be true.

The County Agent's office worked closely with the Yuma County Board of Supervisors for a considerable time in 1954 to obtain new office space for the Yuma County Extension staff. The supervisors rented office space in the Voyle L. Smith building at 1047 Fourth Avenue. These offices were occupied by the Extension staff on February 1, 1955. These new offices provide the County Extension staff with approximately two and a half times as much space than had previously been provided in the Yuma County Court House. These new offices contribute considerably to the efficiency of the County Extension program. There are four separate offices for the Agricultural and 4-H Agents, two for the Home Demonstration Agents,

a reception office for secretaries and stenographers, a mimeograph supply room, and a conference room. This total area represents approximately 25 x 60 feet.

Home economics work in Yuma was conducted through 9 home demonstration clubs and 4 associate clubs. Nutrition work was conducted with all of the home demonstration clubs by means of demonstrations, discussions, and work meetings. There has been a spread of influence in all communities through local leaders, and it is estimated that 400 families have been assisted by the adult program in nutrition and other subjects.

Clothing work included pattern alteration, Christmas gift suggestions, stay stitching, pressing, accessories, dress alterations, tailoring techniques, work dresses, altering ready-to-wear garments, sewing machine cleaning and adjusting, and making dress forms.

Work on refinishing furniture continues to be practiced in the county as a result of leader meetings in 1949 and 1950. The making of slip covers and re-upholstery of furniture continue to be practiced in all communities as a result of home demonstration work. Most of these practices are a result of demonstrations in previous years. During the current year, demonstrations or all-day work meetings have been held.

Total enrollment in the Yuma county 4-H program for 1955 was 405 boys and girls who made an outstanding record of 83.45 percent completions. With 7 new 4-H Clubs added during the year, the total number of clubs in the county was 29.

There were 56 adult leaders and 28 junior leaders. A total of 892 projects were carried by the county 4-H members in 1955.