ANNUAL REPORT
of
COUNTY AGRICULTURAL AGENT WORK.
NAVAJO COUNTY, ARIZONA.

December 1st 1927 to November 30th 1928.

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Snowflake, Arizona.
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One county agricultural agent and one part time home demonstration agent conduct the extension activities in Navajo County, Arizona. These agents cooperate with the County Farm Bureau and the Board of County Supervisors in materializing and carrying into effect a written program of work. Local community farm bureaus, committees, and local project leaders assist in community project work.

Local community farm bureaus have been organized in most of the communities. The officers are or should be elected annually. They are: a president, a vice-president, and a secretary-treasurer with committees appointed or elected according to needs.

The extension service aims to cooperate with all organizations and agencies working toward the betterment and progress of rural people. Good fellowship exists between all factors concerned with extension work in the county.

Program of Work.

Material progressive service and assistance are the chief factors considered in formulating a program of work. The particular projects to be conducted are determined by the county agent, in council with farm bureau officials or committees. The program is approved by the extension director and the president of the county farm bureau.

General Activities.

Extension work has been done in 18 communities, projects suited to the needs of each being selected and promoted. Ten junior and 45 adult leaders have earnestly assisted in promoting extension work. In addition to these a goodly number of others have assisted from time to time.

Eighteen junior or 4-H clubs have done extension work in gardening, poultry keeping, swine raising, and corn production. Membership 150; boys and 15 girls of whom 133 boys have finished their projects with records of activities. All of the girls have completed their projects. Approximately 20 former club members have entered college.

During the season 1259 farm visits and 114 home visits have been made, to 650 different farms and 64 different homes. Office calls number 599 and telephone calls 90.

In actively promoting extension work the agent has spent 74 days at office work and 245 days in field work making a total of 319 days of service.

Twenty three press articles have been prepared, 382 individual letters written and 1025 bulletins distributed.
One hundred twenty-one method demonstrations have been given with attendance of 3251 rural people. Two extension schools having attendance of 742 were conducted on dairy and poultry.

Meetings pertaining to miscellaneous other than that comprehended in written projects number 70 with attendance of 2644. Lantern slides, motion pictures, and charts have been presented before 5824 people at 70 meetings.

20. Farm Crops— Crop Rotation.

People have been slow to adopt systematic crop rotations. A suitable rotation more or less carefully is alfalfa 4 6 six years, followed by row crops such as corn, potatoes, beans, etc., one year, then small grain one year, and the next year seeding to alfalfa with small grain to be harvested for grain hay or threshing. This system is effective in weed control and in returning satisfactory yields. Corn yields two to eight tons of silage more per acre in rotation than without, with an average of four tons, wheat yields 4 to 6 bushels more, oats approximately 2, while potatoes make 25 sacks more.

Under dry farming the situation is more difficult because comparatively few crops are adapted to dry conditions obtaining in Navajo county. The growing of sweet clover as the basic legume has been stressed, in two or four years following with corn and sorghum and beans on part of the field. Follow the row crops with small grain, wheat and oats one year, then reseeding to sweet clover with or without small grain. Clover may be seeded in the fall after the ground is sufficiently cold to prevent germination, in this case it should be harrowed lightly, or it may be seeded in the spring while there is yet sufficient moisture near the surface to germinate and well root it. Usually success attends either method. Moisture is the chief determining factor. Often a good stand may be secured by seeding during the rainy season in July or August.

In rotation under irrigation alfalfa yields 750 to 1500 pounds of cured hay per acre than where left in stand more than five years. Loss of stand, grass, and dandelion are chief factors in reducing the yield. From year to year.

See photo 8, Silage corn on farm of J.V. Bushman, Winslow.
9, Silage corn on farm of J.L. Bushman, Joseph City. corn following alfalfa. Yield 16 tons per acre.
20, Careful preparation of land for corn crop following alfalfa. Silage yield 19 ½ tons per acre.
23, Watermelons and silage corn, Papago sweet, in rotation following alfalfa. Silage yield 19 tons per acre while the gross income from the melons was $400.

12,
Farm Crops.--- Corn Production.

The need of higher yielding adapted varieties of corn has called forth a effort to find such varieties. For four years several varieties have been tested for silage and for grain yields. Results recorded in October report are worthy of attention. Duncan white dent, 4 X Fodder, and a native white corn were best yielders under irrigation. Mention must also be made of Papago, sweet, which yielded 19 tons silage per acre. Duncan yielded 16 to 22 tons silage per acre at Joseph City, Woodruff, Snowflake, and Taylor; native white dent 17 tons and 4 X Fodder 1t tons. 4 X carries a much larger percentage of grain than the other varieties. Duncan white is too late in maturing to "safe" one year with another. However it matures sufficiently for good silage at elevations from 5,000 to 5,700 ft. From 5,700 to 6,600 ft. 4 X, Cream dent, Hopi and Apache Indian corn, and Minnesota No. 13 are our best varieties. At higher elevations the flint corns and Minnesota are best yielders.

The main work for next season will be to stress the general use of the best varieties and introduce methods for improving these varieties under local conditions.

The dry farms were hard hit by drought this season. Photo No. 12 is a fair representation of results notwithstanding fairly favorable conditions in the spring.

See Photos No. 6, 9, 20, 23.

11. Silo filling on farm of E. J. Larson of Snowflake.

10. Silage making at Snowflake.

29. Farm Crops.---- 4-H Corn Clubs.

Five clubs were organized in the spring, with a membership of 36 boys all of whom finished their projects. They cultivated a total of 41 acres and harvested 961 bushels of corn worth $1248.75. This is the estimated quantity in bushels. Some of the corn was used for silage. See photo 13 for type of corn work done by the club members.

Meetings for enrolment purposes were held in April and during the season regular meetings presided over by the local club leaders were held once a week, two each month, or one per month as agreed. Usually the club president, a club member duly elected, was in charge of the meeting. At these meetings reports were heard, comments made, instructions given, and future events and proceedings planned. At least one picnic was enjoyed by each club. Once or twice during the growing season excursions or visits were made to the various field projects. There all sorts of useful information was given, usually by the county agent. Method demonstrations were also conducted. We aim to take two winners from each community where 4-H Club work is done, as delegates to the 4-H Club Week at the State University.
Need for a project in orchard management is shown by the many poorly kept orchards and the need for more and better home orchards.

Three result demonstrations were carried thru the year. In this project the selection of planting stock, planting methods, cultural methods, pruning, renovating old orchards, grafting, and packing for commercial purposes have been stressed. Progress, while slow, has been satisfactory.

The general tendency has been to buy two or three year old stock in an effort to shorten the time to fruit production. In most cases this method makes an ill shaped tree because the scaffold branches have not been selected with a view to developing strength and symmetry. A one year old tree from the bud can usually be pruned and trained to maximum strength and desirable symmetry. Orchards as well as other crops need fertilizer and cultivation in order to be profitable. This has been largely overlooked hence considerable stress has been placed on this subject. Gradually correct principles are being adopted.

The old orchards carry a rather large percentage of undesirable fruit trees. In order not to lose the time necessary to start a new orchard grafting desirable varieties onto old thrifty trees. This method is succeeding. Photo No. 35 shows a rebuilt apple tree at Snowflake bearing fruit the second year. Usually the tree bears the third year after grafting. The old orchard of Willard Whipple is an example of what renewing an orchard by grafting will do. A number of the trees are bearing profitably at three years growth.

There was a total failure of fruit in several communities last year. This condition was favorable to the extermination of the codling moth. These communities did not spray against this insect. Results are good, Starvation destroyed the pest. In communities where there was some fruit last year the pest was carried over and appeared in the orchards again this spring. The spray schedule was carefully carried out but less effective than is usually the case. We attribute this to the condition of weather in the spring when recurring cold periods checked bud development and complicated blossoming over a long period. The usual timing of spray applications did not serve well the destruction of the codling moth, hence we have a smaller percentage of marketable fruit than usual. We have the lesson—spray once more in the spring.

It is gratifying to note that many new home orchards have been planted during the past three or four years. Some of these are in bearing this year. As compared with two and more years ago when apples were marketed in sacks and all sorts of odd containers they are now marketed in standard boxes, and usually sorted to size and variety.
29, Horticulture — Truck Production.

The manufacturing, commercial, and professional population of the county is steadily increasing which creates an increasing demand for fresh vegetables. To meet this growing demand several good home gardeners have become truck gardeners. Products are marketed daily at Holbrook, McNary, Standard, and Winslow.

Thru careful selection of varieties and due attention to standardizing, truck production has become a profitable endeavor. Cultural practices that make for high quality, insect control and treatment for diseases are the chief activities that have been stressed. Making the garden plot highly fertile by applying farm fertilizer, irrigating well with little or no flooding, and practicing clean cultivation has increased garden production approximately one fifth in the past three years.

Demonstrations on insect and disease control have been conducted and the farm application of same has resulted in a saving of $3200.00 worth of crop this season. Aphids, larvae, and grasshoppers are the chief insect pests this season. In most cases these have been satisfactorily controlled.

The growing of home gardens has been greatly stressed in an effort to have a small home garden on every farm. This is important since the first principle of prosperity is in the production of home and farm supplies so far as possible economically and the best use of these supplies, with always something to sell. We shall continue to promote the home garden project next season.

29, Horticulture — 4-H Garden Clubs.

Five garden clubs were organized in the spring. There were enrolled 56 boys and 6 girls. All of the girls have finished their projects and 46 of the boys. The activities of these 62 club members have contributed substantially to the support of 66 families. The acreage is not great being a fraction less than 9 but the yield has been entirely satisfactory with a production of 1759 bushels of choice vegetables. From one tenth to two tenths of an acre is the usual size of the 4-H garden plot.

The club members have been taught the principles of vegetable production, insect pest control, disease control and marketing. Six communities participated.

Monthly or semi-monthly meetings have been held at which members made reports, presented problems, witnessed demonstrations, took part in recreational activities. One picnic was held during the season. Observation parties were conducted and all projects visited by as many members as could arrange to participate. These were very fruitful securing and giving information.
31, Rodents, Predatory Animals. — Rodent Control.

This project was conducted in cooperation with Mr. D.A. Gilchrist of the U.S. Biological Survey in charge of the work in Arizona. In this project we have 71 cooperators who received 1,480 quarts of poisoned bait, which was used in treating 10,962 acres of crop and grazing land. This service has been worth a dollar per acre to the land owners. The bait was furnished by the Biological Survey and a specialist had charge of the distribution in connection with the county agent. This service is of material help in protecting crops and should be extended and intensified.

32, Animal Husbandry — 4-H Pig Clubs.

In this project were six organized clubs with 56 boys and 3 girls enrolled. The girls have finished their projects and of the 56 boys 50 have completed their work and turned in reports. Twenty three pure bred animals were secured for these club members. Seven unusually fine registered Poland China pigs are among the number above noted. Meetings for instructional purposes have been held and get-togethers* recreation and entertainment activities. The Navajo Indians call gatherings for entertainment and singing Bageens. How would it be to have 4-H Club Bageens!

33, Dairy Husbandry — Dairy Management.

In cooperation with the State Veterinarian and the Bureau of Animal Industry under the direction of Dr. James E. Ewers, U.S. Veterinary Inspector 1556 dairy cattle were tested for tuberculosis. There were 18 reactors, which were shipped under inter state regulation to the stock yards at Los Angeles. In this work we have 238 cooperators. The work was planned and outlined by the agent while the Federal Veterinarian made the actual tests. The farmers responded well thereby fulfilling their obligation in the cooperation. It appears from this number of reactors that another test will need to be made next season. Reactor herds have been retested which resulted in getting three reactors, included in the number reported above.

Fourteen pure-bred sires have been secured during the season. Among these are promising sires of excellent production qualities. All of these except one are a year old or under. This is the best piece of herd improvement work that has been done. There are in Navajo County approximately 2000 head of dairy cattle. Feeding methods have advanced considerably during the season. Professor Rowe of the extension service has assisted materially in making this project a success. Also much credit is due Professor R.H. Davis, former specialist in dairying.

To take care of the increasing number of dairy cattle and the better feeding methods about 60 new silos have been made during the season. There are now 121 silos in the county carrying 3020 tons of silage. These are in 12 communities.
34, Poultry Husbandry—Poultry Management.

Work done in 16 communities. Approximately 30,000 day old chicks shipped into the county during the season. Probably one half as many farm or home hatched.

Selection of stock, brooding, feeding, and general management are the subjects that have been stressed. Thanks to Professor Rowe our extension poultryman for assistance in conducting a poultry extension school. Considerable advancement has been made in the management of poultry. Returns are mounting up at a corresponding rate. The predominating breeds are R.I Reds for meat and general purpose and White Leghorns for egg production. Generally the average production of well kept flocks is 160 eggs per year.

Turkeys in lots of fifty to five hundred have been raised by two dozen farmers. The turkey season was not so good as last incident to late cold weather in the spring. Turkey production will be increased from year to year.

There has been less disease among the poultry flocks this year than last or in fact for three years. This is due to better management methods.

34, Poultry Husbandry—4-H Poultry Clubs.

We have had but two poultry clubs with an enrollment of six boys and seven girls. All of these members have completed their projects. Satisfactory work has been done. Miss June Brinkerhoff of Woodruff is the champion poultry raiser. Last year she got 1000 baby chicks from which she raised 550 good laying hens. Cocksrels and culls were disposed of during the season. This year she started with 750 day old chicks. She has 350 fine pullets for winter egg production.

From the club membership of last year 13 winners from various communities were selected as delegates to the 4-H Club Week at the State University week of May 31, this year. This event is outstanding in effect for progress among the club members generally. About one half of the time was used for instruction and demonstration work, the other half for entertainment and recreation. Much credit is due the management for well planning and conducting the convention. Director Ross, and Professors Ballentine and Brown are chiefly responsible for the success of the occasion. These winnings are outstanding in educational value.

One Chicago trip was won, the Montgomery Ward & Company award. Miss Rachel Nelson of Taylor was the winner. This trip to the International at Chicago and the Boys and Girls Congress is the big educational trip of the season. Chicago winners always become enthusiastic club leaders.

These events are well worth while and are not forgotten. They lay a foundation that is firm and substantial for progress; our winners of the past are among our very best college students.
In the spring of 1927 a Morgan stallion was secured from the Government Remount Service for Mr. James M. Flake of Snowflake. Thirty-seven mares were bred last summer. Thirty-one colts of good conformation and uniformly showing good quality are the result of this demonstration.

We have four cooperators in the control of predatory animals. These are sheep men who are making an effort to protect their flocks. They have received 5000 strychnine tablets to be used in meat bait for the destruction of the prowlers. Mr. M.A. Candelaria reports having found 110 dead predatory animals on his sheep range following a poisoning campaign. Mr. Candelaria covers about four townships in an effort to protect his sheep. He puts out bait twice each year, in spring and in late fall. He has 8 bands of sheep, and is the sheep king of Navajo County. The Candelaria family has raised sheep in this part of the country for 130 years. During this time they have ranged over much of the country between Albuquerque, New Mexico and Flagstaff, Arizona. Under Spanish rule they had large land grants in New Mexico.

The other three cooperators have destroyed approximately as many predatory animals as Mr. Candelaria.

At Joseph City and Lakeside there was a heavy infestation of grasshoppers during the early part of the summer. The range was very dry and the pest concentrated in areas where there was green forage, usually selecting cultivated crops. The infestation was 45 to 85 hoppers per square yard over an area of four sections at Joseph City. Considerable effort was put forth to control the pest. Poisoned bait and mechanical hopper-catchers were used with good results by a number of farmers. Farmers might daily be seen coming in with one to three tubsful of grasshoppers. The pest was reduced to say a half dozen per square yard. Meantime considerable damage had been done to forage crops.

Approximately 200 more steers will be fed this winter than last. This is encouraging since most of the beef used during the winter is shipped in from outside points, i.e. from outside the State. There are vastly more cattle than can be used in the county but we are short on butcher animals during the winter. This year marks a good beginning at beef feeding.
Summary.

Crop rotation is effective in weed control and increased yield of crops; corn two to eight tons of silage, wheat two to six bushels, oats eight bushels, potatoes 25 sacks, and alfalfa a ton and a quarter.

Corn production for silage end for grain; at 5000 to 5700 feet elevation Duncan white dent yields 16 to 22 tons, Native white dent 17 tons, 4 X Fodder corn 16 tons, and Papago sweet 19 tons. At 5700 to 6600 feet Cream dent, Hopi and Apache Indian corn, and Minnesota No. 13 are the best varieties. 4 X Fodder corn carries the highest percentage of grain.

4-H Corn Clubs; five clubs with an enrollment of 36 boys all of whom have finished their projects.

Horticulture; selection of varieties, and best type of stock, planting, cultural and pruning methods stressed. Gratifying results have been secured in rebuilding thrifty trees by grafted in suitable varieties. Fruit production second year.

Truck production; splendid headway being made in quality production and marketing methods. Insect and disease control are important factors in truck growing. Home gardens stressed.

4-H Garden clubs; five clubs organized with 56 boys and 6 girls enrolled. All of the girls and 46 of the boys have finished their projects.

Rodent control; seventy-one cooperators using 1490 quarts of poisoned bait have treated 10932 acres of crop and pasture land with satisfactory results.

Dairy management; 1559 dairy cattle tested for tuberculosis, 15 reactors. Fourteen good dairy bulls secured during the season. Sixty new silos. More than 6000 tons of corn put into silos.

4-H Pig clubs; six clubs organized with 56 boys and three girls enrolled. All the girls and 50 of the boys have finished their projects. Twenty-three pure bred pigs secured.

Poultry Husbandry; 20000 day old chicks shipped in as compared with 40000 last year. Better stock and better management methods are the order of the day.

4-H Poultry clubs; two clubs organized with 13 members all if whom have finished their projects. June Brinkerhoff of Woodruff an outstanding poultry club member.

Miscellaneous;

Horses; thirty-one fine uniform Morgan colts procured from breeding 37 mares.
Summary continued

Predatory animals: Approximately 240 predatory animals destroyed by four operators using 5000 strychnine tablets in meat bait, Candelaria covering approximately four townships.

Grasshopper control; grasshopper infestation at Joseph City and Lakeside satisfactorily checked or controlled.

Beef feeding; approximately 200 more animals will be fed than last year.

Respectfully submitted,

C.R. Fillerup
County Agricultural Agent.
1. 4-H Club group, winners of the University trip June, 1928. In the White Mountains near Lakeside on the morning of starting.

2. 4-H Club group, winners of the University trip, June, 1928. In the country of the great Sahuara near Mesa on return trip.
3. 4-H club delegates, winners of the University trip, June, 1928

5. 4-H Club group on close of club meeting at Show Low, Arizona, August, 1928.

6. University busses in readiness to carry the 4-H Club delegates to places of interest in and near Tucson. June, 1928
7. Commercial truck garden at Winslow. Cabbage and sweet corn. This truck farm yielded $3000, income. J. V. Bushman, owner, August, 1928.

8. Silage corn on farm of J. V. Bushman, Winslow. More than 600 tons of silage produced and put into trench silo for beef steer feeding.

The season was intensely dry and crops under farm conditions yielded but little. This corn was well planted early in May. The picture shows condition in the latter part of August. Farm of Fred A. Turley, Aripine.
13. Corn and potatoes in 4-H Garden Club at Taylor. Chester Lewis is the happy boy responsible for this good garden. Chester made more winnings at the State Fair than any other 4-H member. September, 1928

15. Dairy cows on pasture of S. Fenrod, Pinetop.


18. Unloading the pigs at Snowflake, May, 1928
19. Corrugator, home made, for making irrigation furrows. Farm of Logan Brimhall, Taylor, April, 1928.

20. Preparing a demonstration plot of corn land for irrigation before planting. Farm of Logan Brimhall, Taylor.
21. 4-H Club Garden. Woodruff, August, 1928.

22. Commercial truck, watermelons on farm of John L. Bushman, Joseph City. Yield $400 per acre. August.
23. Watermelons and silage corn, Papago sweet, on farm of John L. Bushman, Joseph City. Yield 19 tons per acre. Irrigated. September, 1928.

24. Horse shoeing demonstration on farm of Fred A. Turley, Arivane. Five saddle horses are kept on this ranch. July, 1928.
25. Melon bust at Woodruff, August, 1928. President Gammage of the Teachers, College at Flagstaff in foreground. Occasion of Parent Teachers Ass'n meeting.

27. Part of crowd of 3500 pleasure bent and sporting people on Pioneer Day, July 24, ad Snowflake.

29. At the sports, Snowflake, July 24. Holding wild horse by the ears while the fellows "fix" their spurs preparatory to riding.


32. Two good clowns, both down. At the sports, Snowflake July 24.


37. Same pump outfit as photo 36, on dry farm of Wm. A. Hunt, Clay Springs. A dependable water supply insures a good garden on the dry farm. July.