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N A V A J O C O U N T Y A R I Z O N A

D E C E M B E R 1, 1933 t o N O V E M B E R 31, 1934

C.R.Fillerup, County Agricultural Agent

S N O W F L A K E

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COOPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF ARIZONA

—
SNOWFLAKE

UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE
U. S. DEPARTMENT OF AGRICULTURE
AND NAVAJO COUNTY COOPERATING

AGRICULTURAL EXTENSION SERVICE
HOME DEMONSTRATION WORK
COUNTY AGENT WORK

BRIEF HISTORY
of
Agricultural Extension Work
Navajo County, Arizona.

The Agricultural Extension Service was commenced in Navajo and Apache Counties, Arizona, under the direction of Stanley F. Morse November 16, 1915 in response to a petition circulated by Joseph Peterson, then of Lakeside, and others.

Charles R. Fillerup of the Cochise Dry-farm was appointed agent to serve both Counties. Headquarters was established at Snowflake as there was no available office space in the Court House at Holbrook.

The first automobile used by the agent was a ^{July 1917} model T Ford furnished by the Santa Fe Rail Road Company according to specifications of Director Morse. Approximately one half of the field time was devoted to each County, until June 30, 1923 when Apache County was organized into a separate extension unit by Director P. H. Ross. David W. Rogers of the St. Johns High School was appointed agent with headquarters at St. Johns.

Projects were formulated for the improvement of livestock; especially dairy cattle, range cattle then as now were of fair to good quality; poultry, field crops, orchards, and gardens. 4-H clubs were organized following introductory work by Leland S. Parke in 1914.

In the spring of 1916 the farmers of various communities organized Farm Improvement Associations. In 1919 ~~this name was~~ the organization name was changed to Farm Bureau and County organizations were effected. A. L. Larson of Snowflake was elected president of the Navajo County Farm Bureau and Ben B. Crosby of Eagar of the Apache. This organization still operates in communities and County. In cooperation with it the Extension Service functions.

Work on the project lines was at once begun. In March 1916 Wesley Palmer of Taylor went to Iowa and bought a car of Short-horn cattle for the farmers. Among them were such outstanding individuals as Roxie and Lela. Their descendants are still in evidence. There was but one small dairy in 1915, the Sunset, at Winslow, and fluid milk was sold only at Winslow.

Farm families generally milked herefor cows and many were without milk and butter for long periods during the winter. From 1916 to 1923 comparatively large numbers of Jersey and Holstein cattle were shipped into both Counties, and widely distributed among the farmers.

During the past eight years Guernseys have come into favor and are now the representative dairy breed. Much credit is due the Extension Specialists R.N.Davis and C.F.Rowe, and Professor Cunningham head of the Dairy Department.

No orchard spraying and but little pruning had been done prior to 1916. Now these activities are quite routine, and reflect in good fruit. Original plantings were largely Ben Davis apples, At this time a number of the best commercial varieties predominate. Credit is due Professors W.H.Lawrence, F.J.Crider, and A.F.Kinnison for substantial timely assistance and cooperation. Mr. Draper has given us many helpful suggestions during the past two years.

Poultry except two small flocks at Winslow and two at Snowflake was mongrel, and had little or no care. Egg production was almost entirely to the spring season. At this time there are eleven substantial commercial flocks in Navajo County. Effective assistance over the years has been rendered by Extension Specialists, Harris, Boggs, and Rowe. *limited*

In the early years White Flint corn was standard in both Counties. However, at Joseph City John Bushman and J.C.Hansen early developed an excellent variety of white dent corn which is still used for ensilage. Much credit is due Atof Larson of Snowflake, Frank Willis of Taylor, and the late Parich Denham of Shumway for careful seed selection and corn improvement work in their respective communities. In this regard mention must also be made of A.J.Merrill of Show Low and E.Thomas Jr. of Pinedale.

A.M.McOmie was influential in 1914 in getting Gus Hansen of Lakeside to build a silo. It is an 'overhead' built of 2 X 4 material. It is still in service and in good repair. This was the first silo in Northern Arizona. At this time there are over 400 silos in Navajo County. They vary in type from upright, semi-pit, pit. to trench. From 13,000 to 16,000 tons of ensilage is put up annually. Professors E.G.Thompson, R.N.Davis, S.P.Clark, and C.F.Rowe have been faithful cooperators in this progressive work.

The matter of treating seed grain to prevent smut ~~was~~ is common practice now while prior to 1919 only a few farmers treated their seed. During the twenty year period from 1915 to 1935 bunt in wheat has been almost entirely eliminated, and smut in oats reduced to less than two per cent. For this good work credit is due Professors E.G.Thompson, R.S.Hawkins, Doctors Brown and Streets.

Livestock losses from loco poisoning ⁱⁿ bad 'loco' years have been and still are considerable. Cross fencing and out fencing are control measures to an extent. Regularity in salting and watering is helpful in deterring the disease and better still feeding one to two pounds of cotton cake daily on the range. Most of the cattle on a loco range may be carried over the loco periods by feeding cotton cake and ~~salting and watering~~ providing plenty of salt and water.

Dr.C.D.Marsh, G.W.Barnes, A.B.Ballantyne, and C.U.Pickrell have done much in cooperating and assisting livestock men overcome many of their loco difficulties.

In May 1918 about a ton of loco hay was baled and shipped by Charles Fillerup Jr. to Dr.C.D.Marsh at Salina , Utah for experimental work.

That bees feeding on loco nectar would become locoed was probably not accepted as fact until reported by the writer following observations in collaboration with the late E.M.Whiting of St.Johns. The only control measure so far found^u to move the bees out of flying range.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "C. R. Fillerup".

County Agricultural Agent.

I N D E X

	Page
Organization,	4
Program,	4
Cereals,	4
Legumes,	7
Home Gardens,	7
Truck,	7
Agricultural Engineering,	8
Poultry,	8
Dairy,	9
Beef,	9
Sheep,	10
Swine,	10
Agricultural Economics,	11
Community Activities,	11
Insect Pests	11

ANNUAL REPORT. NAVAJO COUNTY, ARIZONA. 1934.

The organization through which the extension service functions is the Navajo County Farm Bureau, which elects officers annually, Floyd F. Avery of Snowflake being president this year. Briefly stated its purpose is to promote the agricultural and home economics programs of the U. S. Department of Agriculture and the Extension Service of the University of Arizona. The local program is formulated by the Extension Agent and the officers or committees of the Farm Bureau suitable to the needs of each community and the County as a whole and is approved by the State Extension Director. It serves rural adult people and 4-H Club members in particular. It also initiates and promotes desirable activities in general welfare, rural social relationship, education, health, road improvement, and is interested in all progressive measures pertaining to rural communities.

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PROGRAM OF WORK,- The program of work is a written instrument which outlines activities to be conducted along specific lines designated as projects. Activities have been conducted under eleven projects as follows; poultry, orchard, dairy, 4-H Clubs, corn, truck, crop rotation, rodents, weeds, livestock, and soils.

CEREALS,- For several years treatment of seed wheat and oats has been stressed. In 1932 sixty-two fields were carefully inspected and smut counts made. Of the 62 fields 15 were smut free. The other fields ranged from one to 85 smut heads to the square rod. The high figures are 48, 54, 84, 85. In 1933 thirty-two of the 54 fields were smut free with 22 carrying smut in counts up to 32 to the square rod. This is a substantial improvement over the 1932 record.

This year 24 fields, five of wheat and 19 of oats, were inspected and smut counts recorded. Two of the wheat fields were smut free. Of the 19 fields of oats 12 were smut free, while seven were infected, carrying from two to 28 smut heads to the square rod. The table below shows the field size, number plants to square foot, number smut heads to square rod, number square feet for each smut head, ratio of smut ~~to total~~ ~~number of heads~~ heads to normal heads, and per cent infection.

Owner.	Field size, acres;	No. plants to sq. ft.	No. smut heads to sq. rd.	No. sq. ft. for each smut plant;	Ratio smut to normal heads.	Per cent infection
Owens	5	50	20 loose	14	1 ; 700	0.14
Ramsay	7	38	16 loose	17	1 ; 646	.15
Hansen	6	38	10 loose	27	1 ; 1026	.1-

Owner.	Field size. Acres.	No. plants to sq.ft.	No. smut heads to sq.rd.	No. sq.ft. for each smut plant	Ratio smut to normal	Per cent infection
Lewis	5	50	28	9.7	1 ; 485	.28 +
Lewis	6	45	20	14	1 ; 890	.11
Palmer	6	44	18	15.5	1 ; 682	.14 -

Only a trace of bunt has been found in wheat fields for several years. On the other hand loose smut is increasing a little in some areas. Formaldehyde has been used in treating oats and copper carbonate in treating wheat.

A cooperative small grain variety test was conducted at Show Low during the season. Due to bird damage the results are unsatisfactory and can not be used for comparison purposes.

In as much as a large portion, about 65 per cent, of the corn grown in the County is used for ensilage six variety demonstrations were conducted cooperatively with the Department of Agronomy at Lakeside, 7000 feet elevation; Show Low, Linden, and Claysprings, 6500 feet elevation; Snowflake, 5600, and Joseph City 5000. The Snowflake demonstration was outstanding in results. The purpose of the demonstrations or tests was to find suitable higher yielding varieties for ensilage and for grain.

The table below shows the variety, the number of stalks in twenty-one hills, number of ears on these stalks, and the weight of the plants at harvest time. The maturity condition is also noted. All plantings were made between May 8 and 22. Harvesting was done September 23 to 27. Killing frost occurred September 28.

Variety	No. stalks in 21 hills	No. ears in 21 hills	Weight of plants in 21 hills	Condition at harvest time
4 X Yel. Dent	55	47	88 lbs.	good ensilage.
Supercroper	46	51	136	early ensilage,
Mexican June	50	55	160 ✓	green, milk stage
Ferguson	49	53	142	soft dough, green
Big Jim	59	48	118	early ensilage, glazing
Alof (Local)	55	35	95	mature
Colorado Y D	48	46	73	mature
Mastodon	44	39	84	ensilage
Golden Repub.	67	49	131	early ensilage
Golden Beauty	65	64	164 ✓	green, milk stage
Bloody Butch.	62	55	141	good ensilage
Supercroper Somner	47	49	116	early ensilage
Doubet	68	57	127	early ensilage, leafy
Reeds	61	60	115	early ensilage

Mexican June	60	60	174 ✓	very green, blister
Surecropper	60	50	178 ✓	fair ensilage cond.
Alof (Local)	45	39	78	mature
Big Jim	44	42	120	fair ensilage
Ferguson	53	53	169 ✓	green, milk stage
Krug	54	50	140	good ensilage
Jarvis	66	55	123	green, milk stage
Lowman	63	60	148	green, milk stage
Hastings	58	61	157 ✓	green, milk stage
Duncan W.D.	63	52	186	green, milk stage.

It would have been better to plant first part of May than middle of May which would have made it possible for several of the varieties to mature into good ensilage condition. As now appears such varieties as Surecropper, Mastodon, Golden Republic, Krug, Reeds, and Doubet will be suitable for best quality of ensilage at the elevation of Snowflake, 5600 feet. Ferguson, Golden Beauty, Mexican June, and Duncan are suitable for our lower elevations at Winslow and Joseph City. Nearly all varieties tested are of too long season for our higher elevations. There we must have Minnesota 13, Cream dent, Flint, and Indian corn.

Due to very droughty conditions the corn yield on dry farms was only 20 to 30 per cent of normal, thence there is a shortage of feed.

Five Boys' 4-H Clubs were organized in April. Thirty-nine were enrolled and all except one completed their projects. Seven communities are represented in the enrollment. There were 108.5 acres in the boys' projects. The total yield was 714.25 tons of ensilage.

Lester Porter of Joseph City won the State championship in corn production and has been awarded the trip to the 4-H National Congress and International Stock and Grain Show at Chicago December 1 to 8. The trip is at the courtesy and consideration of the Nelson Knitting Company. Thanks.

In the work with cereals Professors Matlock and Bartel were the cooperating specialists. The Department of Agronomy furnished the seed for the test plots and assisted at planting and made inspection tours.

We had twenty-three Corn-Hog signers who by virtue of their contracts took out of production 293 acres. On April 14 the following were elected members of the Allotment Committee; Martin of Show Low, Lawrence Rogers of Linden, and Gus Hansen of Lakeside. These men have carried the responsibility nobly and well.

Legumes.- Four thousand pounds of alfalfa seed and 3000 pounds of sweet clover seed were planted in March and April, mostly in definite rotation systems. This makes a new seeding of 225 acres of alfalfa and 170 of sweet clover. Most of the sweet clover was planted on dry farms, while the alfalfa, which was seeded with nurse crops of wheat or oats was on irrigated farms. The harvest was a crop of grain hay and a crop of alfalfa thereafter on the same ground. Due to favorable spring conditions good stands of sweet clover were secured. Later in the season it became dry, seriously dry, and many of the seedlings died leaving a poor stand this fall.

An effort is being made to improve irrigated pastures and hay crops. To get variety and performance comparisons two test plots, one at Lakeside and one at Woodruff, were planted to various kinds of alfalfas, clovers, and grasses. Good stands of the varieties of alfalfa and clover were secured. Most of the varieties of grass germinated poorly due likely to unfavorable conditions, particularly as to moisture. The rye grasses made the best growth. Chilian alfalfa and the sweet clovers made really good growth. No effort was made to harvest and weigh the material for comparison purposes. This work was done co-operatively with the Department of Agronomy. Further work along this line will be done next season.

HOME GARDENS,- More and better home gardens than in the past were in evidence on the irrigated farms this year. The dry farms were too dry to make satisfactory gardens. The abundant and goodly variety of vegetables raised have been a substantial help to family sustenance, and a source of helpful cash income for products sold.

Insect pests have been numerous and difficult to control. Among the worst of them are the western flea beetle and the Mexican bean beetle. Grasshoppers were very numerous and wide spread this season. Control measures have been fairly successful where suitable equipment and insecticides were used.

We had five 4-H Clubs in vegetable gardening, with enrollment of 52 boys all of whom except two completed their projects. There were 15.45 acres in the Club gardens which yielded 4983 bushels of vegetables of table quality. There were some 380 adult gardens averaging one-third of one acre each with an approximate total yield of 40,000 bushels of vegetables. Large quantities of these products were canned and goodly supplies in many instances stored fresh.

There were nearly a hundred acres of commercial truck grown in the County this season. This is an increase of 35 per cent. Yields were not as good as last year but prices were better so the off-set is about equal. Large quantities of green peas, lettuce, cauliflower, cabbage, and broccoli were marketed in Phoenix and other valley towns. Joseph City and Winslow made a specialty of growing cantaloupes. The entire crop of 2200 crates was sold on the local market and to tourists.

AGRICULTURAL ENGINEERING,- Terracing was done on two dry farms over areas of 45 acres on each. Though mid and latter parts of the season were distressingly dry the merit of the system in conserving moisture was somewhat apparent. Seeing the demonstrations neighbors are asking for suggestions and help in terracing their farms. The demonstrations are at Linden and Burton.

Eight new silos have been made and twice that many repaired. The trench silo is coming into more general use especially on the larger farm units. Two new poultry houses have been built according to plans furnished by the extension service, and two trench brooders.

Repairs of machinery and implements have come in for their portion of attention, eleven units having been conditioned.

POULTRY,- The poultry population of Navajo County has decreased somewhat. This is due to unfavorable prices of eggs and other poultry products in the early part of the season. There are fourteen commercial poultrymen in the County who have 8,500 hens as compared with 10,100 last year. We have 1,050 turkeys this year as compared with 1,700 last year.

The poultrymen are good cooperators, being quite willing to apply practices recommended by the extension service. The trench brooder, which was recommended five years ago, is now in general use. It has been the means of overcoming much trouble in brooding and has decreased the mortality rate by five per cent. Keeping poultry measurable free from both external and internal parasites is a regular activity of the poultry keeper. Flocks have been comparatively free from diseases. Some trouble, however, has been experienced with range paralysis and colds. Mr. Clyde F. Rowe, Poultry and Dairy Extension Specialist has done much to help the poultrymen keep their flocks in production condition.

We had only two 4-H Poultry Clubs ~~MEMBER~~ with twelve members, eleven of whom completed their projects. These young people were systematically taught approved methods of brooding, feeding, sanitation, etc. Also how to control certain types of diseases. The eleven members who completed their projects had 968 birds. In this group were four girls who did their project work exceptionally well.

Dairy,- Nineteen method demonstrations have been conducted on the following subjects; cheese making ,butter making, Collecting blood for the abortion test by the agglutination method, treatment for milk fever, control of parasites, dehorning, butchering, judging, selection of desirable animals, and feeding. Mr. Rowe our Specialist has rendered very baluable in the demonstrations , particularly in cheese and butter making. Due largely to these demonstrations 45 families have made 4800 pounds of cheese from surplus milk. Most of the product was used by the immediate families. Some was marketed. In general the quality was commercially acceptable.

We had ~~five~~^{three} 4-H Dairy Calf Clubs with twenty-one members. The four girls and sixteen of the boys completer their projects. These young people raised twenty dairy heifers, a number of which were pure bred.

Four pure bred sires have been secured, two Jersey, a Holstein, and a Guernsey. Sixty-nine head of cattle were tested for tuberculosis. No reactors were found. We know of no tubercular cattle in the County. These animals represent seven herds. For six owners twenty-four head have been tested for contagious abortion. In this number there were two positives both of which have been eliminated and disposed of. This work has been done in order to keep the County free from abortion cattle, if possible. For several years blood tests have been made where ever abortiond have occurred from unknown causes. This has been quite effective in identifying aborters. On the close of the year there are neither tubercular not aborter cattle in the County so far as is known.

Six cases of milk fever have been successfully treated and also numerous cases of minor ailments.

BEEF,- Eighteen method demonstrations have been conducted, most of them on butchering, dehorning, and vaccinating. Six hundred eighty-six calves have been vaccinated to prevent black-leg, under the direction of the county agent. Forty animals have been vaccinated for pink eye, sixty have been treated for this disease.

Three hundred steers have been fed and finished for beef, all except two cars were sold on local markets. The butchering demonstrations have been very helpful in putting the meat out in acceptable market condition. Due largely to poor butchering it has been difficult to market local beef. Now it is in demand at Whiteriver, McNary, Holbrook, and Winslow.

The winter season of 1933-4 was mild and open hence cattle wintered in better condition than they had for many years. It is not customary to feed range animals in winter in this part of the State except a small amount of cotton cake to tide thin weak animals over.

Good range forage due to early spring rains improved the condition of cattle materially and the outlook in June and early July was the best in many years. Timely summer rains did not come and range conditions deteriorated greatly. It was hoped that rains in August would improve the range and provide sufficient forage and water for winter. In this there was disappointment for the rains did not come, instead the drought intensified and it became necessary to request that Navajo County be declared an emergency drought area, for the purpose of selling drought stricken cattle to the Government. The cattlemen strongly urged this extreme measure. The County was declared a drought area October 8 and immediately concerted action was taken to prepare for the sale. The buying program was abruptly terminated October 16 without any animals having been purchased by the Government. It is sincerely hoped that the buying program will be favorably reconsidered and materialized. There is not sufficient forage on the ranges to carry the normal number of animals through winter. The situation is grave and unless relief be forthcoming losses will be considerable during the winter.

In normal years the range will carry twelve to fifteen cattle and their increase per section. The cattlemen represent that the annual sales turnover is about 20 per cent. It is estimated that if upwards of 3,000 head can be sold stock cattle can be carried over winter with but little loss provided some cotton cake or other concentrate be fed. This offering is approximately 10 per cent of the range cattle in the County not including the usual number of cattle in fall sales.

SHEEP,- In cooperation with the Biological Survey 2000 strychnine tablets have been used during the season in keeping predatory animals under control on six townships of sheep range. Fifty-eight predatory animals are reported as having been destroyed, probably as many more have not been accounted for.

Thirty-one cars of sheep have been shipped out of the County under the drought freight regulation which is 85 percent of regular fare one way and 15 percent on returning.

Six sheepmen have taken advantage of the Government Emergency Purchasing program. Under this program 2930 sheep have been sold and shipped and 163 have been condemned and destroyed.

SWINE,- Five 4-H Pig Clubs were organized in April. Thirty-four boys and two girls were enrolled. Thirty-two of the boys and both of the girls completed their projects. There were 84 pigs in these projects. A number of these demonstrations are outstanding.

Herman Smith of Lined is winner of the Chicago Trip awarded by the Santa Fe Railway Company, for outstanding work in swine production.

Agricultural Economics,- Four marketing associations have been in operation during the year. Their main lines are, dairy products, poultry and eggs, vegetables, and meats. The volume of business has been somewhat larger than last year, amounting to \$21,560.00. Products sold by individuals are estimated at \$13,760.00.

Community Activities,- Two fairs have been held, both agricultural, one at Snowflake, the other an Indian fair at Whiteriver. Attendance, 1000 at Snowflake and 5000 at Whiteriver.

The Snowflake fair was sponsored by the 4-H Club organizations and the Future Farmers of America. The exhibits were well selected and placed to advantage for displays. It was a good event held in September. The Whiteriver fair was for Apache Indians. It is a major Indian event. Agricultural and livestock exhibits were good and in line showing marked improvement in production methods and quality of products.

Insect Pests,- For grasshopper control 43,800 pounds of bait ~~was used~~ were used, 40,000 pounds from the Federal allotment and 3,800 pounds from the State. Sixty-two cooperators treated 2000 acres of crop land the grasshopper infestations ranged from 9 to 40 insects to the square yard. Results were, indeed, gratifying. The county agent inspected treated fields in all the infested localities and found that in many places the kill was 100 per cent. Only a few scattered insects could be found after the second application of bait.

S U M M A R Y

Organization; The Navajo County Farm Bureau is the organization through which the extension service expresses itself in its activities.

Program; The program of work is the written instrument by which the extension service is guided in its activities.

Cereals; Survey of smut infection shows that considerable improvement has been made.

Distinct progress is being made in the matter of selecting varieties of corn for the various elevations. Corn crop is light this year, 20 to 30 percent of normal on the dry-farms and 85 percent on irrigated farms.

We had five 4-H corn clubs with 39 members, 38 of whom completed their projects.

Lester Porter of Joseph City won championship in corn production and as such became a national winner of the Chicago trip to the International Grain and Stock Show. Herman Smith a winner in swine production likewise the Chicago trip award. These awards are by The Nelson Knitting Co. and the Santa Fe Railway Co. respectively.

We have 23 Corn-Hog contract signers.

Legumes, 4000 pounds of alfalfa seed and 300 sweet clover have seeded this year, mostly in crop rotation systems.

Home Gardens; 380 home adult gardens produced 40,000 bushels of vegetables.

There were five 4-H Clubs in gardening, 52 enrolled, 50 of whom completed their projects. There were 15.45 project acres which yielded 4983 bushels of products.

Agricultural Engineering; 95 acres of land on two dry farm terraced. Eight silos and two poultry houses built, 11 units of machinery repaired.

Poultry; 8,500 laying hens compared with 10,100 last year.

Two 4-H Poultry Clubs with 12 members all except one of whom completed their projects. 968 birds in the projects.

Dairy; Following cheese demonstrations 45 families made 4800 pounds of cheese. There were three 4-H Dairy Galf Clubs with 21 members, 20 of whom completed their projects. There were 20 calves in the projects.

Beef; 686 calves vaccinated for black-leg and 40 for pink eye. The range was good in the early part of the season and distressingly poor the latter part. 300 beeves fed and marketed.

Sheep; 31 cars shipped out of the County under drought regulations and 3093 sold to the Government under the Drought Emergency Administration. Six townships of sheep range have been cleared of predatory animals.

S U M M A R Y. Continued.

Swine; Five 4-H Clubs organized with 34 boys and two girls enrolled. Both girls and 33 of the boys completed their projects. There were 84 pigs in these projects. Herman Smith of Linden was winner of the Chicago trip offered by the Santa Fe Railroad Company.

Agricultural Economics: Four marketing organizations have made sales amounting to \$21,760.

Community Activities; Two fairs have been held, one at Snowflake by the 4-H Clubs and the F.F.A, attendance 1000; the other at Whiteriver by the Apache Indians, attendance 5000.

Insect Pests: 83,800 pounds of bait used in combatting grasshoppers, 2000 acres treated by 62 cooperators.

Respectfully submitted,



County Agricultural Agent.