A N N U A L N A R R A T I V E R E P O R T

****

July 1, 1949

to

November 30, 1949

****

by

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County Agricultural Agent

Agricultural Extension Service

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COCONINO COUNTY

ARIZONA

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HIGHLIGHTS
(May 15, 1949 to November 30, 1949)

This agent was transferred from Casa Grande, Arizona, Pinal County, to Flagstaff, Arizona, Coconino County on May 15, 1949. This agent was to be Assistant County Agent until June 30, at which time he was to replace Mr. C. G. Lueker as County Agricultural Agent. This first month and a half was used by the Assistant Agent in acquainting himself with the new county, its work and its people.

On July 1, 1949, this agent became County Agricultural Agent of Coconino County with headquarters in the County Court House in Flagstaff, Arizona. By this time many acquaintances were made by the new agent and word had spread that a new County Agent was now in Coconino County. Many, many problems, questions and requests were received almost immediately by this office. Much to this agent's regret, all could not be handled at that time because of the time and work involved to solve each person's desire.

One of the first undertakings of this agent was insect and disease control for trees, crops and flowers in this county. There was urgent need for this work, especially the small home gardeners and flower growers. Several newspaper articles and numerous home calls soon had the small gardener and flower grower well informed on up-to-date insect and disease control measures recommended by our department.

The red spider or two-spot mite caused considerable damage again in Oak Creek on apples. This problem was fought constantly by this agent and by Dr. J. N. Roney, Extension Entomologist, and was kept under fair control.

A serious unknown root disease to the delicious apple in Oak Creek on Walter Jordan's place was studied and worked with by this agent and Harvey Tate, Extension Horticulturist. Root specimens were sent to different laboratories and at the time of this writing, it is felt we have at last identified the disease as fire blight which has never been detected in the root of an apple tree without being also above ground. Work is continuing on this, and Dr. R. B. Streets, Associate Plant Pathologist of the University of Arizona, is now going to go to work for a preventative or cure to this disease.

This agent has "scratched" the surface of the cattle and sheep men in this county. Very little, if any, work or cooperation has been done with these enterprises the past years. Several sheep and cattle men have been contacted and an increasing amount of requests and visits from these men have resulted during the past five months. Several poisonous weed problems were handled by this agent for cattlemen and sheepmen this summer.

Perhaps the biggest job, and as yet incomplete, is the reorganization of the office. The filing system was in such disorder that no one could find anything, and useless correspondence back to 1933 was occupying much needed file space. These files have been completely gone through and a new filing system set up. The bulletin board was moved and made smaller. A new arrangement of bulletins on the board was also

finished. Other work is to be done and new equipment, which is needed very badly in this office, is on request.

This agent gave considerable help to the 4-H clubs in the county by visiting their meetings and homes. Most club members and leaders needed help in conducting their projects and programs according to our state rules and regulations. All 4-H clubs participated in the County Fair by exhibiting their work in a club booth.

This agent helped stimulate the first County Fair for this county in nineteen years. This office did all the administrative work for the Fair and helped the two Fair Commissioners, Tom Anderson and Tom Pendley, in arranging the Armory for the exhibits. Work has already been started in preparation for next year's County Fair.

This agent helped the two County Fair Commissioners select and pack exhibits for the State Fair. Here, too, all administrative work was done by this office. For the second year in a row Coconino County won first place in the agricultural booth exhibit.

Weed control and eradication is a great problem in Coconino County. This agent, in cooperation with the Soil Conservation Service districts in this county, was able to assist many farmers in spraying with 2,4-D ester to eradicate bindweed. Other weeds were also sprayed with the cooperation of the SCS. A great deal was accomplished in educating the farmer this summer on the necessity and methods of a successful weed control program.

A small grain nursery was planted and harvested this summer by this agent. Varieties of barley, oats and wheat were grown in Bonita Park. Fairly satisfactory results were obtained but early frosts and unusual wet weather were two factors that made good results impossible. Varieties of hybrid corn were grown on Joe Lawson's farm east of Flagstaff but early frosts here also made results unreliable.

Three varieties of potatoes were grown for experimental purposes this year but early frosts, hail and unusual wet weather made this experiment a failure.

This agent worked very closely with the pinto bean growers this summer. Not too many problems were given to the agent as most bean farmers are very well acquainted with the problems that confront them each season. Late spring rains, a killing frost in early August, and early fall rain and snow made the bean yield very low for most farmers.

I. THE AGRICULTURE OF COCONINO COUNTY

Coconino County is located in the northern part of Arizona. It is the largest county in the state and second largest county in the United States. Most of the county consists of National Forests and Indian Reservations. There are approximately 25,000 acres of land that is, or has been, under cultivation during recent years. Most all agriculture is dry farming, with a small acreage near Fredonia, Arizone and the Oak Creek Canyon area irrigating from creeks which are most always dependable for a year-round supply. Farming is very diversified, mainly because of the small acreages and the altitude variation of 4,500 to 8,500 feet in the farming areas. Crops raised according to their importance would be pinto beans, small grains, orcharding, truck crops, and forage crops.

Acres of land planted to various crops for the 1948-49 year are as follows:

Pinto beans	10,500 acres	)
Small grains	6,050 "	) Figures are
Forage crops and pasture	4,100 "	)- unofficial;
Truck crops	1,100 "	) only
Orcharding	250 "	) estimates.
Idle land	3,000 "	)
Total.....	25,000 acres	

The approximate yields of the various crops raised during the 1948-49 crop year are as follows:

Crop	Individual Yield	County Average
Pinto beans	1½ to 8 sacks per acre	4 sacks per acre
Winter wheat	15-35 bushels " "	21 bu. " "
Spring wheat	12-18 bushels " "	14 " " "
Spring oats	10-20 bushels " "	14 " " "
Winter rye	10-25 bushels " "	12 " " "
Alfalfa hay	2-3 tons " "	
Alfalfa seed	200-500 lbs. " "	
Field corn	Very good yield	
Truck crops	Above average yields made in all crops	
Apples	15-35 boxes per tree	
Pears	Very high yield	
Apricots	" " "	
Peaches	" " " ,excellent quality	
Plums	Above average yield	
Cherries	Above average yield	
Berries, all kinds	Yield good to excellent	

The large number of acres in Coconino County consisting of forest land makes it one of the main range livestock grazing counties in Arizona. The high elevation makes grazing somewhat of a summer enterprise. Most cattle come into the county in May and leave in early November. The approximate number of range cattle grazing in Coconino

County this summer was 40,000 head. From this number about 18,000 head remain in the county the year around. Sheep come to this county in May or June and leave in October. This year there were approximately 26,148 sheep in the county. There are only around 350 dairy animals in the county. High feeding costs during the winter prohibit extensive dairying in this county.

This county, like most all counties, has numerous problems. Many of the problems are being worked on, but still there are some that have not been started. The following list are the main problems of Coconino County at the time of this writing:

1. Bindweed eradication
2. Marketing facilities
3. Crop insect and disease control
4. New varieties of small grain
5. Orchard insect and disease control
6. More publicity for county's agriculture
7. More cooperative county planning of agricultural problems

II. ORGANIZATION

At the time of this writing there is no extension planning organization in Coconino County. It is hoped, however, that a county planning organization can be organized in the near future.

The Arizona Farm Bureau Federation organized three local Farm Bureaus and one County Farm Bureau in Coconino County this summer. The locals are located at Oak Creek Canyon, Parks, and the Black Bill-Doney Park area. These locals meet monthly and discuss agriculture and home problems. This agent has used these locals some in promoting parts of his program. It is hoped they can be used more for this purpose.

This office has been cooperating with the San Francisco Peaks and Sitgreaves Soil Conservation Districts in weed control work this summer. These districts have purchased the most up-to-date weed sprayers and have a man to run the apparatus. Their district buys and handles all the chemicals used in the weed control program. Recommendations for weed control is made at this office and the farmer then contacts this group for application.

III. INFORMATION PROGRAM

The information program for Coconino County is terribly deficient at present but it is hoped in the following year a well-rounded program can be carried out in this department.

This agent has used circular letters very little as this office has no memo machine and it has been difficult to secure the use of one. There has been four circular letters prepared of which a total of 558 copies were mailed. It is hoped that a monthly circular letter can be mailed in the near future.

The press has been the greatest outlet for information from this office so far. The Local Daily Sun is 100% cooperative with this office on news articles. Many timely articles have been written on various subjects. This agent also sends a monthly letter to the "Arizona Farmer", a bi-monthly farm paper published in Phoenix, Arizona. A story of the agriculture in Coconino County for that month makes up the letter. The "Arizona Cattlelog", also a Phoenix publication by the Arizona Cattle Growers' Association, is sent a monthly letter on the Agriculture in Coconino County.

This county has no radio station. The office is also without any type of camera or projector; therefore, these means of distributing information are impossible at the present.

IV. PROJECTS

A. Pinto Bean Growing

Pinto beans have long been the principal crop in Coconino County. The main reason is that the growing season is so short, 122 days, that only a very limited number of crops can be raised. The pinto bean requires a minimum amount of labor and also can produce on a limited amount of rainfall. The pinto bean is planted in early June and harvested in early September. They are planted in rows and are usually tractor cultivated about three times during the summer.

The principal problems that have been and still are confronting the pinto bean farmer are (1) increase yields, (2) improve threshing practices, (3) secure a suitable market, and (4) secure up-to-date information on insects and diseases that affect the pinto bean.

This crop year, 1949, the yields were quite low. This can be attributed to possibly two factors; the weather and improper tillage. At bean planting time this year the weather was especially wet and this delayed planting in some cases as much as three weeks. Naturally this made the plants slower in maturity toward the end of the season. On August 10 there was a frost in most of the bean areas. It frosted for eight mornings straight. Some of the lower "pocket" fields suffered very heavily, while other fields hardly felt the frost. This naturally cut yields in all fields injured by this early frost. Then at harvest time, early September, which had been preceded by almost three weeks of very dry weather, more rain began that prevented proper drying of the bean. This weather kept up until the first snow in early October that also prevented threshing of beans still in the field. The quality of the pinto bean was lowered because of these latter factors.

It is assumed from a couple experiments conducted in this county prior to this agent's arrival, that fall working of bean ground before the snow comes will increase bean yields the following summer. If deep tillage was practiced this would enable more moisture to set itself into the soil to a greater depth, thus being available for the spring crop. Experiments showed this to be true on some fields in 1948.

The time of year the pinto bean has to be threshed presents a problem in this county. Beans are cut and windrowed about the 5th to

the 10th of September. There they must lay for one to three weeks to properly dry before being threshed. During this period the farmer is gambling with rain, hail or snow to come as it did this year. Normal years good drying weather can usually be depended on until September 15. The agent has been talking with several growers trying to figure a way to enable the beans to be threshed by September 15. At present the only idea that may work out is to cut the beans in early September and to immediately haul the vine while green to small mesh wire silos or some storage facility where they can naturally dry or be artificially dried. Then if wet weather begins early the bean may be held and threshed later, or can be threshed under shelter during wet weather. Wet weather doesn't necessarily cause delayed drying while the bean is in the field but it prohibits the thresher from getting into the field. The above solution would solve that problem.

A desirable pinto bean market for all beans raised in Coconino County has been and still is a grave problem. Farmers have tried to organize in earlier years and secure a good market outlet but very little success has ever resulted. Most farmers have no storage facilities and are forced to sell their crop to local buyers who usually give a very low price. Storage facilities in Flagstaff are quite limited, thus making it hard for farmers wishing to secure storage to hold their bean crop. This agent has met with several bean growers this summer and fall and has discussed possible ways of creating a market for the pinto bean and also ways of creating more storage space for the farmer.

The pinto bean farmer is always in urgent need of any late information on diseases and insects that may attack his crop. Bacterial wilt is always a threat as is mildew. This agent has kept constant watch on the bean fields this past summer and kept the bean farmer informed personally or by letter on late information.

It is this agent's plan to work even more closely with the pinto bean farmer this coming year. It is hoped several cooperators will conduct a few experiments in the planting procedure and also on commercial fertilizers. By next September it is hoped at least one cooperator will try drying his beans in a silo and that a suitable marketing program can be worked out through the use of the Farm Bureaus. Timely newsletters are going to be sent to bean farmers this year covering all phases of insect and disease work. This agent will also keep a close personal check on the bean fields for insect or disease infestations. There is being planned a field day in early spring that will demonstrate new tillage machinery and other late practices that will be usable by the bean farmer.

B. Potatoes

Potato growing used to be a fairly large enterprise in Coconino County. The past two years, however, have seen it decline to almost nothing. There have been three, or possibly four, reasons for this: (1) Potato psyllid, (2) ring rot, (3) drought conditions, and (4) labor requirements. It has been fairly difficult to secure good clean seed potatoes here in Flagstaff and by the time the farmer plants here in Flagstaff all top seed potatoes in Colorado are gone. The farmer has

also been able to make more money with less work on pinto beans the past few years; thus the potato average has fallen to almost zero.

This summer this agent helped a few farmers secure seed potatoes locally and from Colorado and New Mexico. There were only around 30 acres planted in all Coconino County. One grower had ten acres of certified Katahdin potatoes and got a very good yield. He had considerable insect trouble earlier in the summer but was never bothered with the psyllid. Another grower near by this first farmer did have psyllid trouble and had his yield cut almost in half. This agent hopes to encourage more potato growing next spring and will try to get a market for them as seed potatoes in Southern Arizona.

This year an experiment was conducted on seed potatoes. Mr. Harvey Tate, Extension Horticulturist, sent this office sixty pounds of foundation seed from Minnesota of the Russet Sebago variety. This seed was planted in Bonita Park and also at John Gunzenhauser's farm. A number of Pontiacs and Katahdins were also planted for comparative yields. The Russet Sebago variety only gave an approximate 70% stand while the others were almost 100%. The early frost in August gave all varieties a severe shock but did not completely kill them. After a frost in late September the potatoes were dug and it was found the Russet Sebago still needed about 30 to 45 days longer for tuber development. The plants had numerous tubers but only about the size of a marble. The other plants, the Pontiacs and Katahdins, yielded large potatoes and many. It is this agent's conclusions that the Russet Sebago is not adapted to this area but needs at least 30 to 45 more days growing weather than has Coconino County near Flagstaff.

C. Small Grains

Small grains in Coconino County is the second ranking crop. Many different grains are grown -- wheat, barley, oats, rye, Michaels grass, and spelt. Corn is also grown in the county, which is usually the Lawson White Dent for field corn and different varieties of sweet corn for home use. The main small grain problem at this time is the development of more varieties and especially a variety of oat that will withstand winter temperatures so it can be planted in the fall.

The agent recommended seed treatment for all grains at planting time to prevent smut. Some growers treated their seed but still many did not. Because of an exceptionally wet summer, considerable smut occurred in the county. Some corn fields were very heavy with the black smut. This agent tried to impress on many farmers the importance of seed treatment and possible prevention of smut such as we had this year.

This agent conducted the small grain nursery again this year that Mr. Lueker has been conducting for many years. Varieties of barley, oats, and wheat were planted in Bonita Park and twelve varieties of hybrid corn was planted on Joe Lawson's farm. At the time of this writing grain weights on the barley, oats and wheat have not been received from Norris Gilbert, Extension Agronomist. Five replications of barley were planted in sixteen-foot rows one foot apart. The planting was made on May 19 and 21, 1949. Five replications of oat varieties were planted on May 21 and three wheat varieties

were planted on May 24. All grains were harvested in the last week of September. The varieties of hybrid corn were planted in early May and harvested in early November. The following notes and conclusions were recorded during the summer.

BARLEY

1. Compana Barley - This variety is early in maturing and has a short stalk but a good size head. On the September 19 check it was found that wind, rain, and hail had just about shed all this grain.

2. Ezond Barley - This variety showed good early maturity with a very good size head. The stalks, however, were fairly short. Even though this grain was very mature on the second check, very little shedding was noticed.

3. Gem Barley - This is a very early maturing grain but has a very small head and fairly short stalk. The stand was very thin.

4. Glacier Barley - This barley was almost identical to the Gem variety.

5. Hannchen Barley - This was a late maturing grain but had a good head and stalk size.

6. Moore Barley - This variety showed good maturity for this area, good size head and stalk, and no lodging. It was the only variety that showed signs of smut.

7. Vaughn Barley - This variety showed good maturity but the head and stalk were very small. This variety also showed some hail damage.

8. Velvon 11 - This variety showed good maturity as well as good head and stalk size. The plant was average height.

9. Trebi Barley - This is perhaps the latest maturing barley we had. On the September 19 check there were still some grain not fully matured. The head and stalk size was good.

Conclusions: It appears only three or possibly four varieties could be recommended from the tests run this year. Ezond, Moore, and Velvon 11 seem to be adapted to this area. Hannchen might do well but its late maturity might be a decided disadvantage.

OATS

1. Bannock Oats - This variety of oats was fair early in maturing. By the last check, September 19, the grain was mature and ready for cutting. The stalk on this variety was very sturdy and good height. The head was good.

2. Bridger Oats - This variety seems to be a later maturity than we would like in this area. The stalk is very sturdy with good heads.

3. Brunker Oats - This was perhaps the earliest maturing variety. The September 2 check showed that the grain was ripe, and on the September 19 check, the grain had shed very badly. The stalk and heads, however, were small and this agent would hesitate to recommend this variety because of those two factors.

4. Clinton Oats - This, too, was an early maturing variety. The heads and stalks were only fair in size, but due to a poor stand of this particular variety, definite conclusions cannot be determined.

5. Colorado 37 Oats - This variety was a good early maturing grain. On the September 2 check the grain was ripe enough for binding. On the September 19 check the grain was very mature but very little, if any, shedding was noticed. The stalk is tall and sturdy with a large head.

6. Markton Oats - This oat also showed good in maturity, stalk size and head size for this area.

7. Vicland Oats - The variety was about average in maturity and medium in stalk height. The head size was fair with a sturdy stalk.

Conclusions: It seems that Colorado 37 would be the best oat from this year's test. However, I would not hesitate to recommend Bannock, Markton, and Vicland along with Colorado 37. It is hoped that perhaps enough seed from these four varieties can be secured to plant a larger area next year so we can see what this grain will do under field conditions.

WHEAT

1. Baart 38 - Good maturity with a nice size head. Stalk tall but no sign of lodging.

2. Carlton - Quite a later maturing wheat and exceptionally tall stalk and thin stalk. Head fair size. Some lodging.

3. Federation - Maturity was average with a good stalk and head.

4. Lemki - Maturity good along with stalk and very fine head. Plant very sturdy.

5. Newthatch - Maturity fairly late. Head and stalk small. Some hail damage.

6. Pilot - Maturity good, stalk thin but good head on short stalk. Some hail damage.

7. Stewart - Maturity average. Stalk tall and thin but good head.

8. Thatcher - Maturity good, stalk and head fair size.

Conclusions: The stands were all poor and not much accurate information could be secured. Varieties that did look good were: Baart, Federation, Lemki, Pilot, Stewart, and Thatcher.

CORN
Hybrid Variety Test Plots

Twelve varieties of hybrid corn were planted on the Joe Lawson farm, 12 miles east of Flagstaff, the first part of May. The plantings were made in four rows, each variety taking about 30 feet of the rows. The varieties planted were as follows:

1. Wisconsin 464
2. Wisconsin 531
3. Wisconsin 595
4. Wisconsin 606
5. Wisconsin 641AA
6. Wisconsin 692
7. Wisconsin 701A
8. Minnesota 500
9. Minnesota 800
10. United 32
11. United 37
12. United 41

On August 9 a check was made by this agent and the following comments and observations were recorded:

W-464 - Smut fairly heavy. Maturity fair.
W-531 - Smut fairly heavy. Maturity late.
W-595 - Smut heavy. Maturity fair.
W-606 - Smut heavy. Corn showing burning. Maturity fair.
W-641AA - Very smutty. Corn mature. Stalk small and showing burning.
W-692 - Smut light. Maturity to be late.
W-701A - Smut quite common. Showing burning. Maturity fair.
M-500 - Corn smutty, very green and late maturity.
M-800 - Corn fairly smutty. Maturity fair.
U-32 - Very little smut. Small stalk showing drying. Maturity fair.
U-37 - Smut fairly common. Stalk small. Drying bad. Porcupine damage.
U-41 - Smut fairly heavy. Corn green. Ears fairly mature.

On November 4, this hybrid corn was harvested and weighed. Observations made at that time were that the severe early cold spell we had on October 19 and 20 caused all immature ears to shrink very badly. Much of the seed was completely ruined and it would have been a waste of time to try and harvest a large planting. Smut also had taken about 50% of the crop. This agent picked the ears from 13 hills of each variety and weighed them. The same number of hills of Lawson's White Dent were weighed for comparison. It is this agent's conclusion that W-701A and M-500 might be equal to Lawson's White Dent; however, further plantings would be recommended before it would be safe to recommend either variety to farmers.

It is felt that this corn experiment may not be accurate this year as this agent was not in the county when it was planted. Records of the plantings were lost and it was assumed the same pattern was followed as the previous year; however, at harvest time this was doubtful. It is there fore recommended by this agent that these results be taken somewhat reluctantly. The weight records will be shown on the following page.

WEIGHT RECORDS

VARIETY	HILLS	SMUT	WEIGHT	VARIETY	HILLS	SMUT	WEIGHT
W-464	13	6	5.75	M-500	13	6	7.13
W-531	13	5	5.12	M-800	13	5	5.1
W-595	13	7	4.2	U-32	13	4	5.85
W-606	13	5	4.25	U-37	13	6	5.45
W-641AA	13	7	4.95	U-41	13	5	6.60
W-692	13	7	6.75	Lawson's	13	5	6.1
W-701A	13	6	7.51				

D. Fruits and Vegetables

Oak Creek Canyon is located in the southern part of Coconino County. In this canyon there is considerable orcharding. Most every type of fruit tree is raised here -- apple, peach, pear, plum, cherry, quince, and walnut. There are all types of berries and vegetables also raised in Oak Creek Canyon. Apples are the largest crop, followed by peaches. Both these crops produce some of the best quality fruit in the Southwest.

Two main problems are confronting the growers in Oak Creek Canyon: (1) insect and disease control, and (2) market for their produce.

During recent years the red spider or two-spot mite has been a serious menace to the apple crop. This insect attacks the leaves in early spring and if not controlled will completely kill the leaf, thus starving the fruit. This agent and Dr. J. N. Roney, Extension Entomologist, worked on this all summer. A constant check was kept on the insects and recommended spraying was given. The use of parathion was recommended and gave good results if used about every ten days. Extreme caution was recommended to each grower in the use of parathion because of its deadly effects on humans. This agent earlier in the summer sent a circular letter to all growers and also to the local physicians on what the symptoms of parathion poisoning are, and what to do in case someone does get the symptoms.

When this agent first came to this county he was asked to try to get some results on an apple root disease that has been doing considerable damage to Walter Jordan's orchard. This disease seems to be only in the one orchard and only to be affecting the Delicious variety. Fire Blight was suspicioned but because of the fact that there was no sign of fire blight above the ground, Dr. J. G. Brown, Plant Pathologist, University of Arizona, declared it could not be Fire Blight. This agent and Mr. Harvey Tate, Extension Horticulturist, dug roots from one of these trees and sent specimens to Fort Collins, Colorado, and Pullman, Washington, to their Universities, hoping they might give us a clue as to its identity. Washington's answer was that the disease was not root rot or Oak Root fungus but gave no idea what it was. Fort Collins gave us the answer that it was definitely Fire Blight. They ran several tests and each one ended up with the same answer - Fire Blight. To

their knowledge this is the first case where Fire Blight was found in apple roots and not also being present above ground. No definite control or cure recommendations were given by Fort Collins. This agent then took this additional information to the University of Arizona with the hope of securing help in finding a control measure. The Plant Pathology Department stated they still did not believe it to be Fire Blight and would like more roots for further study. A letter earlier in the year stated that woolly aphis was the chief trouble in Mr. Jordan's orchard which the agent is sure is not the main trouble. Mr. Tate and this agent met with Mr. Jordan the last of November and new root specimens were taken to the University of Arizona where Dr. R. B. Streets, Associate Plant Pathologist, agreed to see what he could uncover. This disease has caused the loss of 22 mature apple trees in Mr. Jordan's orchard in the last two years. This agent expects to carry on this work until a satisfying answer is received and a control measure is worked out.

Numerous small tracts of land in Oak Creek raise all types of berries and garden vegetables. Many problems arose during the summer with these growers. Disease and insect control were the two main problems. This agent worked closely with all these growers and recommended insect control measures in many cases.

E. Weed Control

Weed control in Coconino County is becoming or may have already reached a major program. The greatest problem in weed control is to educate the farmer to its necessity and also to get the most up-to-date methods down to a practical cost.

Bindweed is the chief weed in this county that is spreading over vast areas and making it impossible to grow any crop on the infested land. Other weeds that are also being treated are careless weed, ragweed, lemon weed, and several varieties of milkweed. The office has been cooperating with the local Soil Conservation District in helping get a weed control program under way. The SCS districts buy the equipment and chemicals and hire a man to drive the tractor. Then each farmer desiring weed spraying pays them so much an acre which in turn pays for the labor, chemical and helps pay for the equipment. When the equipment is paid for the spraying price lowers.

The ester form of 2,4-D has been used to the greatest success on bindweed in this area. There was some question this summer as to which form to use but it was agreed the ester form had proved itself and should be continued. There were around 125 acres sprayed this year in Coconino County with 2,4-D ester form. The kill ran as high as 95%. It is being recommended that anyone desiring to spray for bindweed should plan on spraying for three consecutive years and then to be on constant watch for seedlings to come up. It has been proven that the bindweed seed may lie for 30 years in the soil and still be capable of growing. The spraying was done this year for $6.50 per acre which included everything. High pressure spraying is recommended over low pressure spraying. It is also recommended that spraying take place when the weed is at its most vegetative growth which is usually after July 1. It is also recommended that no grazing of the weed be permitted prior or after spraying.

This agent has also encourage planting of small grains, especially in the fall, in fields heavily infested with weeds. Several farmers are doing that this fall. By next spring the grain will be large enough so the weeds are shaded when they sprout and never have a chance to get larger than the crop.

This weed control work will continue this year and it is hoped a larger percentage of our farmers will spray next summer. This agent will put out circular letters early in the year on weed control recommendations and again work in cooperation with the Soil Conservation Service districts next summer in applying the chemicals.

F. Range Livestock Work

Range livestock -- cattle and sheep -- is one of the large enterprises of this county. Because of the large areas of forest in Coconino County and high elevations, spring, summer and fall grazing is practiced by cattle and sheep men.

The past years the livestock men have drifted away from this office so that hardly any cattle or sheep men would request information or help through the extension office. Most of them would go to neighboring counties for their information.

The Third Quarter Annual Arizona Cattle Growers Directors Meeting and the Annual Arizona Wool Growers Meeting were both held here in Flagstaff. This agent attended both meetings and met many of the livestock men. Throughout the summer others have been met and some work with the livestock men was started. Mr. Walter Armer, Extension Animal Husbandman, and this agent made a two-day trip to the "Strip Country" in Houserock Valley and Fredonia. Here we contacted many cattlemen and were able to help them plan a spraying program and also answer many of their questions on cattle in general. Circular letters will be sent to the cattle and sheep men this winter and next spring giving them the latest recommendations on control of all livestock insects and parasites and also latest information on feeding practices. It is hoped by the end of next year, 1950, that the cattlemen and sheepmen will be working through this office with their problems and questions.

G. Insect Control

Insect control in Coconino County was practiced very little during recent years because the people did not know what to use or how to use the numerous chemicals that keep appearing on the market. The main problem in the county is to educate the people in the correct use of the correct insecticide.

This agent was called on many times to recommend insecticides for numerous tree, shrub and garden insects. No one in Flagstaff handled the recommended insecticides and this made the control program not too impressive. The agent has arranged for a local hardware store to handle insecticides for next year. The agent is to help this store

in selecting the correct insecticide to order and they will recognize the recommendations put out by this office.

A severe infestation of the gray Arizona blister beetle on ten acres of potatoes owned by Gene Donovan of Williams required some special work. This beetle is quite hard to control as most insecticides are not effective. This agent contacted Dr. J. N. Roney, Extension Entomologist, and 50% Cryolite was recommended after DDT in both 5% and 10% strength failed to check the hoards of beetles. The Cryolite immediately checked this beetle and after the second application with a few days, it completely controlled the beetle. Some damage resulted but most of the potato plants grew back.

Very little grasshopper control work occurred this summer. The hopper was very scattered and in no place in serious numbers. The alfalfa farmers of Fredonia are going to use what poison bran this county has left to help control their grasshoppers next spring and summer.

H. Rodent Control

The rock squirrel has become quite a problem in parts of Coconino County the past year. This animal does considerable damage to stored grain, planted grain and young trees.

This office has been the source of poisoned grain put out of the U. S. Fish & Wildlife Service. Recommendations for its use has been given to each cooperator. The agent has met with two local farm bureaus and has been asked to secure help for the control of this squirrel by next spring. This agent will write Mr. Everett M. Mercer, District Agent, for the above service, to see if a man can be placed in this county early next spring to conduct this work.

Prairie dog poisoning was carried on this summer by Mr. Walter Sharp, U. S. Wildlife Service, and this office cooperated with him in helping to inform farmers and ranchers of the program being carried out. The reports reaching this office indicate a very successful program was carried out the past summer.

I. Others

Many other projects were worked on by this agent of which a few will be mentioned below with a brief statement following each.

This agent worked with the dairy cattle people in this county and helped the Pinecrest Dairy at Williams secure building plans for a very modern dairy barn and milk house. The barn is now complete but it will be spring before the milk house can be completed. The barn is of rock structure with a Quonset type roof. There is a large loft in this barn that all hay and grain can be stored in during winter. Large feed mangers run the length of each side with the center open. During bad weather the cattle can be left in the barn.

Poultry work in the county consisted mostly of disease work. Early spring wet weather created ideal conditions for coccidiosis and

Newcastle. Several cases of the former occurred while really only one known case of the latter occurred in Sunnyside at Mr. Baca's place.

An outbreak of hog cholera at Mr. Bob Grantham's place near Williams caused some concern for hog growers in that area. However, severe control measures were put into effect and no further outbreaks occurred. Mr. Grantham lost 35 or all his hogs from this disease. The source of this outbreak was traced to feeding uncooked city garbage in which fresh pork was found to be present. It was recommended that any hogs being brought on the place be vaccinated with both the vaccine and virus.

This agent cooperated with the Arizona Farm Bureau Federation this summer in helping to organize Farm Bureaus in this county. Mr. Wendell Weller, Organization Director, was taken to several local farmers and introduced to them, that it might be easier for him to complete his work. The agent attended all organization meetings and helped answer agriculture questions that arose during the meetings. This agent has used Farm Bureau meetings some this summer to help conduct his extension program. It is his intention to continue to cooperate with the three local farm bureaus and one county farm bureau, as it is felt by this agent that this is the most logical place to further the extension programs.

V. OUTLOOK AND RECOMMENDATIONS

The outlook for agriculture in Coconino County can vary from very good to poor, depending on the phase of agriculture you are discussing. The cattleman has perhaps the best outlook for the coming year. He experienced one of the best years in the history as far as feed conditions go, and was able to get his cattle sold at a good price. He has also been able to get all his cattle off the high areas before any severe snow storm. He is in excellent shape for next spring. Snow and rain already this fall has placed much moisture in the soil and with further snow this winter, another top feed year should be experienced on the forest ranges.

The pinto bean farmer has an outlook which is really a huge question mark. He has so many factors that must be right before a bumper crop can be grown. There is good indication already that there will be ample moisture in the ground for spring planting. If he can get his crop in the ground by June 10, 1950, and have good summer rains through July and August and no frost until September 15 and no rain the first part of September, then he will have a good crop.

The orchardist, chiefly the apple and peach grower, has a good outlook for a good crop, but if marketing is as difficult as it was this year, not too good a return can be expected. The insect problem on apples should be well controlled this coming year as the growers know what will control them and this office will have all the latest information on the insect control program.

So the general outlook for the livestock man in Coconino County can be considered good. However, the outlook for the "dirt" farmer can be looked at with somewhat of a question.

This office could make several recommendations; however, it is felt that it is best to overlook most of them at this time and only make about two. It is felt that the farmers in this county should form some sort of a cooperative and all realize greater prices for their crops. They could also save considerable money in purchasing seed, fuel and equipment. It is also felt that the farmers in this county should take the weed situation more seriously. Bindweed, especially, and many others, are spreading and if not controlled they will soon make it impossible for the farmer to raise any profitable crop. When this happens, agriculture will be a thing of the past in Coconino County.