ANNUAL NARRATIVE REPORT

Apache County, 1950

by

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County Agricultural Agent
St. Johns, Arizona
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III. Summary of Activities and Accomplishments

Our program of work is developed as a result of information collected from Experiment Stations throughout the nation, Specialists, and the farmers.

Our main job is adult education, which is carried out by news letters, demonstrations, field trips, farm visits, and office calls. As a typical example of the progress we make with our projects is the spraying of cattle. Where we used, originally, rotenone and sulphur, we are at the present time using BHC and DDT, which saves a lot of labor for the farmers and ranchers annually.

Weeds are still a major problem in Apache County. We have been successful in having a few people in practically every community treat weeds with 2,4-D, which is a standard recommendation at the present time.

Our horticultural work has been carried out through pruning, spraying demonstrations, and a lot of education on the dormant spray, which will control the San Jose Scale.

With our livestock, deer flies, horn flies, big timber flies, lice, and mosquitoes, have been controlled with the spraying of BHC and DDT. We have treated for grubs with the use of rotenone and sulphur successfully. About twice as many people used this treatment this year as last year.

In our cattle fattening project we recommended the following ration per day per cow:

- Silage - 20
- Barley - 10
- Cottonseed meal - 1
- Alfalfa hay - 5

Our dairy work has consisted, mainly, of putting out educational information for the need of pasteurizing milk in the county, and testing cows for Brucellosis and Tuberculosis, so that our farmers would have a good milk supply.

In our field crops we tried to experiment with Buffalo and Ranger alfalfa's, and Sooner sorghum as better forage crops.
We made plans in irrigation for the weiring of ditches to measure the amount of seepage lost in our canals.

In our poultry program we have recommended that farmers have five hundred hens as a minimum farm flock, especially if they produce eighty per cent of their feed.

This year we held our county fair where we had one thousand and thirty seven exhibits brought into the fair, with two hundred and fifty people exhibiting. There were two hundred and fifty four blue ribbons awarded, and one hundred and ninety three red ribbons awarded.

This year we recommended for grasshopper control the spraying of vegetation that the hoppers were eating with chlordane. This seems to be superior to the old sodium fluosilicates.

We had 4-H Club's in Alpine, Eagar, St. Johns, and Sanders, with forty six members enrolled, and twenty two completing.

In our rodent control work this year we gave demonstrations on the control of gophers in five different communities.

As a result of our educational program on city sanitation, the cities of Eagar, Springerville, and St. Johns sprayed all houses and barns for flies and mosquitoes during the summer.

We have issued eighteen circular letters disseminating information on agricultural pursuits during the past year.

Our miscellaneous work has consisted of Recreation School held in Phoenix; demonstrations on home beautification; attending SCS meetings; helping the Triple-A program, and the Farm and Home Administration.
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IV. County Program of Work

Our program of work is developed as a result of a lot of research by Experiment Stations and collecting of data locally, and by the farmers and ranchers themselves asking for information and supplying certain data that we need in order to answer questions that we need to answer.

Fundamentally our whole activity boils itself down to adult education. In other words our whole job is to collect information from any source that is available which sources are usually Experiment Stations throughout the United States and the State of Arizona, from the farmers and ranchers themselves and our Specialists. This information that we collect from these sources is given to the farmers and ranchers when they ask for information, and is also given out through newspapers, letters, demonstrations and meetings.

It goes without saying that in adult education it is different than general school education. There is nothing compulsory about our program. We mean by this that if a farmer or rancher is not interested in the information we give we cannot force him to come to our meetings. Neither can we expect reports of his work as you might in classroom activities. However, our meetings are pretty well attended, lots of business calls are made on the County Agent for information, all of which bears fruit from year to year. We are aware of the fact, also, that the farmers exchange ideas among themselves and if we have given out information that is valuable it is passed on to other farmers without any direct effort on our part. However, to keep our ranchers and farmers properly informed about our program is a very challenging job and an interesting one.

A typical example of this is with the spraying of cattle for lice, flies and the control of grubs. When we started this program six or eight years ago we recommended the following formula:

1 lb. of 5% rotenone
10 lbs. of sulphur
to
100 gallons of water

In order to control lice and flies with this treatment they had to be dipped from eighteen to twenty days apart as this material did not kill the eggs of the lice. Then following this we started to use DDT according to the following formula:

12 lbs. 50% DDT --- (Niator)
\( \frac{1}{4} \) lbs. Bentonite-sulfur --- (Kolofog)
\( \frac{1}{3} \) lb. Z-1 Spreader
per
100 gallons of water
This material would always kill the lice and the flies, and because the residual effect would last from three weeks to five months, depending on the season it was put on, we felt that it was not necessary to spray the cattle but once with this sort of a spray. We therefore, by keeping up with the Specialists help and all the scientific information that was being produced by Experiment Stations throughout the Nation, secured the same results that we used to get with rotenone and sulphur with only one spraying with this material. This was a tremendous savings to our ranchers because it saved them from dipping another time and holding their cattle around for three weeks, and in this way we saved our ranchers a lot in the spraying of cattle.

Then came the following formula:

\[ 8 \text{ lbs. 50\% wettable DDT} \]
\[ \frac{1}{4} \text{ lbs. 6\% Gamma Isomer Benzene Hexachloride (BHC)} \]
\[ 6 \text{ lbs. Kolofog to} \]
\[ 100 \text{ gallons of water} \]

This not only killed the lice and flies, etc., that were alive at the time of spraying, but it killed the eggs as well. This is the first time it was known to the scientific world that we could kill the eggs of lice with a spray material.

This is just a typical example of how necessary it is to keep up with the progress of the scientific world as it applies to agriculture.

This also applies to the control of codling moth. We have gone from the arsenical sprays where it took thirteen annual sprayings in order to control the codling moth, to the DDT spray that controls it with two to three sprayings.

A. Project Activities and Results

1. Weeds

Our problem in Apache County about eight years ago was to find a method of eliminating bindweed and other perennial weeds. The people in Apache County at that time petitioned their Congressmen in Washington for help in weed eradication. The problem therefore, was transferred to the Extension Service for solution by different Federal Agencies.

This problem was in effect to save the best soil in Apache County for agricultural purposes for the present and future generations.

The background and the reason for this problem was both economic and social. That is, if the best land were taken out of production by weeds, naturally the income of the people would be reduced, and if the income were reduced, naturally we would have fewer people in this scattered area. Therefore, the social side
of the weed problem was and is very serious, if our population
is reduced our schools are reduced and various other reductions
are made.

The history of the work with weeds is about as follows:

The Extension Service secured a large four wheel spray
outfit with the best materials known for weed eradication,
which was acid and arsenic, about ten years ago. As a result
of this effort, we, through the efforts of the Extension Service,
gave weed control demonstrations in about ten different
communities in Apache County. The results of this spraying
was anything but satisfying. The weeds were checked in thirty
days and they had come back seemingly with more vigor than they
had had previously. Naturally this was quite a blow to the
Extension Service as well as others interested in this project.
However, we submitted the problem to the University authorities
who decided that the last chapter hadn't been written on weed
control. Therefore, they called on Dr. Charles Homer Davis to
experiment on weed control in Apache County.

As a result of this effort Dr. Davis experimented for
practically four years in Apache County for the control of
bindweed. He had as assistants in this work Mark Davis and
the full cooperation of the County Agent. As a result of
this work however, we definitely had information on weed
control, which was six pounds of sodium chlorate per square
rod put on the land in the fall of the year. This was to
have controlled 98% of the bindweed. This proved to be very
accurate and valuable information.

The Agent put on a very vigorous campaign for weed
control with the use of sodium chlorate. However, about this
time war broke out and chlorate couldn't be purchased for any
price for this work, because it was all used for the war effort.
However, since the war is over we have again started our work
along this line and with some good cooperation at the present
time we are eradicating weeds with this method.

We are, however, recommending that 2, 4-D be used as a
spray instead of any other material that we have recommended
in the past. This material is exceptionally good for both
annual and perennial weeds such as sunflowers, cockleburs,
binding and willows.

As a result of our efforts this year one ditch company
at Round Valley sprayed their willows and made practically a
hundred per cent kill. If this could be followed through we
would soon have very clean ditch banks and with this method
save a lot of water through evaporation that these plants
cause.

Charley McCullough at Hunt did an exceptionally good
job in killing weeds with 2,4-D this year. We used a little
different method than we have recommended in the past. In previous years we found that by using a power spray that at times the ground would be so soft that the power equipment could not be used on the land. Therefore, as a result of this past experience he put a power rig on a horse drawn trailer which made it possible for him to spray his weeds, regardless of the moisture in the soil. We feel that we can recommend this practice because if weeds are to be killed with 2,4-D they must be sprayed at the proper times, and quite often the wetness of the soil will make it impossible to spray at the proper time when power equipment is used.

At Round Valley, ditch banks were sprayed this year with 2,4-D for the purpose of killing willows and other perennial weeds. This spraying was a success and we can highly recommend that other companies follow the example of the Round Valley Ditch Company.

In Round Valley we have a very bad perennial weed known as white top or hoary cress. We organized the people in that area so that all of their weeds could be sprayed at the same time with success. We hope, however, to follow through in a little more detail another year.

In the St. Johns area Gleason Sherwood, Byron Heap, Joy B. Patterson and Company, all sprayed their corn for the purpose of killing cockleburs, bindweed and sunflowers. In most cases they had practically one hundred per cent kill. Also, Avard Hall, Eddie Jepson and Willard Skousen of Alpine and Garland Lee, Howard Hulsey and Walter Jarvis of Nutrioso have sprayed for the control of their annual and perennial weeds.

Our weed problem is quite typical of all the rest of the projects in that it takes a long time to get even a small per cent of our farmers into the project activities, even though it is very important to their interests.

We feel that we have accomplished a great deal these last few years in that we have had some people in practically every community spray their weeds with 2,4-D, or treated them with sodium chlorates, or some of the other methods that we have recommended. They have acquired quite a bit of new methods and techniques as to the proper time to apply the material and the proper machines to use in applying it with. We, therefore, feel that this project is fairly well along its way to success and that our job in the future will be to continually check on the old cooperators to see that they are doing the work correctly and checking results, holding meetings and demonstrations showing the results of their work.
<table>
<thead>
<tr>
<th>Weed</th>
<th>Irrigated Land</th>
<th>Dry-Farm Land</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bindweed</td>
<td>Cultivate every 7 to 14 days for two summer seasons with sweeps or blades, or</td>
<td>Spring plow, then cultivate every 7 to 14 days through one summer with sweeps or blades, or</td>
</tr>
<tr>
<td></td>
<td>Use 2,4-D or</td>
<td>Use 2,4-D or</td>
</tr>
<tr>
<td></td>
<td>Use carbon bisulphide or</td>
<td>Use carbon bisulphide or</td>
</tr>
<tr>
<td></td>
<td>Sodium Chlorate, 2 lbs. per square rod. Each application beginning in spring.</td>
<td>Sodium Chlorate, 2 lbs. per square rod. Each application beginning in the spring.</td>
</tr>
<tr>
<td>Johnson-grass</td>
<td>Spring plow, then summer fallow every 10 to 15 days with disk, or Use 2,4-D or</td>
<td>Spring plow, then summer fallow every 10 to 15 days with disk, or Use 2,4-D or</td>
</tr>
<tr>
<td></td>
<td>Use carbon bisulphide 3-4 inches deep, or Sodium Chlorate as spring spray, or</td>
<td>Use carbon bisulphide 3-4 inches deep, or Sodium Chlorate as spray during growing season.</td>
</tr>
<tr>
<td></td>
<td>dry 2 lbs. per sq. rod followed by light irrigation.</td>
<td></td>
</tr>
<tr>
<td>Nut-grass</td>
<td>Fall plow, then disk every 6 to 10 days through the next summer using 2,4-D</td>
<td>Fall plow, then disk every 6 to 10 days through the next summer using 2,4-D</td>
</tr>
<tr>
<td>Perennial ragweed</td>
<td>Fall plow, then cultivate about every 3 weeks through one season with sweeper or</td>
<td>Same treatment for dry-land as for irrigated land.</td>
</tr>
<tr>
<td></td>
<td>Use 2,4-D or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use carbon bisulphide or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sodium Chlorate spray or dry, 2 lbs. per square rod as growth occurs.</td>
<td></td>
</tr>
<tr>
<td>Russian knapweed</td>
<td>Fall plow, then cultivate every 7 to 10 days through one season with sweeps, or</td>
<td>Same treatment for dry-land as for irrigated land.</td>
</tr>
<tr>
<td></td>
<td>Use 2,4-D or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use carbon bisulphide or</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sodium Chlorate spray</td>
<td></td>
</tr>
</tbody>
</table>
2. Horticulture

Our horticultural problem has been to be sure that the people who are producing horticultural crops, produce them economically without waste. This is important for two reasons: First, because of the food supply that is produced brings into the family certain foods which we get little of if we do not produce them ourselves. And, second, because the County as a County does have a good opportunity to expand its commercial production of crops through horticulture, probably more than any other way.

We can produce melons of all kinds, tomatoes, lettuce, cabbage, apples, pears, onions, and all kinds of such crops for the last of August and September delivery, if we just wanted to do so. These crops, fortunately, come on at the time of the year when the people in the Salt River Valley do not produce very much of this kind of produce for their own use. In other words, we have a good potential market connected with good roads for anything that we might want to produce along this line for the last of August and September sale.

In the past, both at Alpine and at Richville, we have produced commercially some of our horticultural crops and sold them in the southern part of the state, but we have never worked out the technique and the know-how of producing commercial crops in quantity and quality so that we could establish a market for this produce in areas other than in Apache County.

This year we put on a campaign for dormant spraying for the 2-spotted mites, clover mites and the San Jose Scale. The reason we put this campaign on during the winter was that the only time these insects can be controlled is when the trees are dormant. We recommended that they use a lime-sulphur mix according to the directions on the container that they bought it in.

We made examinations of trees to see if we had the red spider in quantity in our trees and found that in St. Johns and Concho we had quite a few of these spiders on the trees. However, it does seem that the red spiders are increasing in number in the county and we will have to shortly put on a very vigorous campaign in the control of these red spiders, as they are very detrimental to the trees if they are left uncontrolled.

Through our Horticultural Specialist, Mr. H. F. Tate, we put on several pruning demonstrations trying to show the people how to prune the young orchard as well as the old. We have done this in previous years and we feel that our farmers are pretty well educated to the proper method of pruning fruit trees.

3. Range Livestock

Since range livestock is one of our big industries in the county we try to render all assistance possible to these
cooperators that we can.

The range livestockmen have many problems to solve and we try to help them solve all the problems that they have. This year as in the past few years we have worked with our range livestockmen helping them to control flies, lice, grubs, and feeding cattle.

a. **Lice and Flies**

Our formula for lice control for the past year has been as follows:

\[
\begin{align*}
&\text{4 lbs. of wettable Gamma Isomer Benzene} \\
&\text{Hexachloride (BHC)} \\
&\text{8 lbs. of DDT} \\
&\text{to} \\
&\text{100 gallons of water}
\end{align*}
\]

This not only controls the lice but it kills the louse egg as well at the time of spraying. This is an important characteristic of our BHC, since it makes it possible to practically clean up our lice with one spraying or dipping.

Since this material also kills the horn flies we do not spray specifically for horn flies, but the horn flies are controlled with the same spraying that we use for lice.

We carried out several rather closely supervised experiments this year on the control of the big deer fly which is known in the mountains as the timber fly. We have fortunately been able to get a good number of our ranchers and stockmen to spray their cattle just before going on the forest. In some cases these people report that it is noticable that calves going on the mountains are protected a great deal more than the calves that are born on the mountains. This, according to Victor Udall and others, seems to indicate that spraying before going on the mountains should become a rather common practice. Of course this spraying should be done every three to four weeks during the year.

Practically all the cattle at the Big Lake Allotment were sprayed several times this year, whereas the cattle at the adjacent allotment, known as the Burro Creek Allotment, were not sprayed. It seems to indicate that the spraying kept the flies off to the extent that the cattle would not bunch in the day time as they did on the Burro Creek Allotment.

Al Voight's cattle were sprayed this year several times because they were suffering from the timber fly a great deal. Mr. Voight seemed to think that our spraying was effective from ten to fifteen days; after that the cattle started to bunch again. In some cases our BHC would protect our cattle
from the deer fly for as much as four weeks and in some cases, when the weather is not so warm, we have a protection for a little more than four weeks. However, we can’t recommend that our BHC and DDT is effective against the big deer fly for over two to three weeks in the real hot part of the summer.

However, when one considers that our BHC and DDT will control flies, horn flies, lice, kill lice eggs, mosquitoes, and also control the deer fly for from three to four weeks, we are sure that this spraying is a very profitable operation for our cattlemen.

b. Grubs

For years, at least ever since the cattlemen in the country have produced cattle, grubs has been a serious problem with our livestock interests. The grub itself causes a lot of harm to the cattle, injuring a lot of cattle hides, but the main trouble is caused in the spring of the year when the grub has turned to a fly and attempts to lay eggs on the heals of the cattle. This causes lots of running and stampeding of the cattle, and sometimes they will run into arroyos and gutters which cripple them, or in some cases kills them. The only treatment for this grub problem is the following formula:

5 lbs. Cube or Derris 5% rotenone  
10 lbs. wettable sulphur  
100 gallons of water

This must be put on when the grub is in the back and after he has made a slight hole in the hide, and before he comes out. Therefore, we feel that the time of year that the grub is in the back is from the last of December to the first of February. We feel, also that if this rotenone and sulphur is applied four weeks apart that this grub will be controlled. This material can be sprayed with a spray rig according to the above formula or sprinkled on in dust form mixed 50 50 by weight and put on by hand. Generally the livestockmen can use a small can with holes in or put holes in the lids of fruit jars and sprinkle it on with that.

There is one thing that has been very hard to have our ranchers appreciate, and that is the necessity for having this material put on properly. There are only two proper methods of putting this material on that we know of. One is to have a good dipping vat and have this material stirred constantly before dipping and while dipping. Another method is to have this material put on with a high pressure spray with three to five hundred pounds of pressure and have this material agitated constantly. The reason that this has to be agitated constantly, is that this material is in suspension and not in solution and therefore it settles to the bottom of the tank when not agitated, and if it is sprayed on with -
out high pressure it will not go into the hair of the animal and do the job that we recommend that it will do.

In our county this last year we had a spray rig at the V. D. Brown ranch at Sanders which had twelve nozzles on it and when they turned this on the animal, which was put in a little pen to do it with, the pressure was not strong enough to go into the hair. We certainly do not recommend this kind of spray rig because of the reasons mentioned before. We are sure that people who are using such a spray rig ultimately will not get the satisfactory results that they should get for the use of gamma isomer benzene hexachloride (BHC), DDT and Kolofog.

c. Cattle Feeding

One of the very hard jobs in livestock feeding, as well as everything else in livestock, is to keep modern or up-to-date.

In years past it was a common practice for our cattlemen to loose a big part of their herd, because of lack of supplemental feed and severe cold, they would have to re-stock before they could go on with their cattle outfits. Now, however, due to produce produced on the farms as well as roads and automobiles which permit our ranchers to bring in supplemental feed from out of the county, they are not losing the cattle they did before. The practice is now to keep their cattle alive regardless of the conditions of weather and have never taken a general loss as they have in the past.

The Garcia Bros. and some others did not feed any supplemental feed this last year, but M. J. Wiltbank, Laverl Hall, Pacer Wiltbank, the Platt's, Leverton's, Chilcott's, and practically everybody fed some supplemental feed during the past winter. For the most part this feed consisted of about one-half salt and one-half cottonseed meal.

Harry Wilhelm, Harbon Heap, Albert Brown, E. I. Whiting, and Gleason Sherwood, did quite a bit of fattening of cattle in addition to feeding their commercial herd supplemental feeds. We recommend the following ration for feeding cattle in this county:

<table>
<thead>
<tr>
<th>Month</th>
<th>Silage</th>
<th>Barley</th>
<th>Cottonseed meal</th>
<th>Alfalfa Hay (ground)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Mo.</td>
<td>25 lbs.</td>
<td>6 &quot;</td>
<td>1 &quot;</td>
<td>5 &quot;</td>
</tr>
<tr>
<td>2nd Mo.</td>
<td>23 lbs.</td>
<td>8 &quot;</td>
<td>1 &quot;</td>
<td>5 &quot;</td>
</tr>
<tr>
<td>3rd Mo.</td>
<td>20 lbs.</td>
<td>10 &quot;</td>
<td>1 &quot;</td>
<td>5 &quot;</td>
</tr>
<tr>
<td>4th Mo.</td>
<td>20 lbs.</td>
<td>10 &quot;</td>
<td>1 &quot;</td>
<td>5 &quot;</td>
</tr>
</tbody>
</table>

If barley or wheat straw is on hand, it could be sub-
stituted for most of the alfalfa hay by adding another one pound of cottonseed meal to the ration.

Cattle should be brought on to these feeds (grain) slowly, reaching the top for each period in about thirty days.

All in all this looks good for our farmers, but one of our real jobs will be to see that the farmers take care of their manure by putting it out on the land properly and not let it waste as they have done in the past.

One of the very hardest jobs that anyone has to do is to keep modern and up-to-date with things as they develop. In our county we are no exception to the rule. We have had developed the last ten or twelve years a good highway from here to Phoenix which makes it possible to truck cattle to Phoenix most any day of the year. Yet, with all of these advantages, we have not fattened our cattle like we could have and should have to ship them to Phoenix fat, because we have had the habit over the years of shipping feeder cattle instead of fat animals to Phoenix. Therefore, it will be one of our constant jobs for the next few years to do everything we can to have our cattle-men fatten where possible and ship to Phoenix fat cattle instead of feeders. If this could be done our farmers would accomplish two things. First, they would get a better price for the cattle because they would cut out several middle men, and second, because they would earn their hay and grain in for a good price and have a lot of fertilizer left for their farms that they don't have at this time.

4. Dairying

From the point of view of dairy production in this county our main purpose so far has been to produce a good home milk supply, free from diseases such as bangs disease and T.B. This is very important, because it is impossible for many of our people to buy pasteurized milk in the county and therefore our main object is to get a high grade local milk supply. Having this in mind we tested, through the cooperation of Dr. Ward R. Lee, Federal Veterinarian at Phoenix, all most every cow in the county for Tuberculosis and Brucellosis this year.

We have put on several educational campaigns in the county for the purpose of helping the dairymen with the problems they have in the county, and in this connection W. R. Van Sant, Poultry and Dairy Specialist from the University, has helped us a lot. During some meetings we held in the county this year Mr. Van Sant made the following recommendations:

Alfalfa silage packed good, makes good silage without sorghum and other syrups.

Four things are important in the dairy business. One
is good cows; good feed and plenty of it; keep cow in good
health, and a good market for dairy products. A good cow
fed well will produce more than a poor cow fed anyway you
want to feed her.

Black Swiss are good cows for this county, but because
the Holstein cattle are more in abundance, and will produce
a fairly good grade of milk, it was recommended that our dairy-
men make two-thirds of their herd Holstein cows.

Every dairymen should have a good milk house, and
plans for these houses can be secured from the Serge Milking
Company and other places.

It costs about two hundred and five dollars to feed a
cow annually.

A good cow will produce about three hundred and thirty
six pounds of fat and should make a good profit of about one
hundred dollars above feed costs.

It takes a very good cow to produce over three hundred
pounds of butter fat per year, but if they do, they generally
make a profit.

It was recommended that in this county, where we do
not have Testing Associations, that our dairymen secure their
bulls, constantly, from some good dairyman, and always continue
to purchase from him when buying bulls. In this way they will
almost always have as good a herd as the person they purchased
their bulls from.

Churned cream sells for seventy two cents a pound, and
manufactured cream for ninety cents per pound, and grade-A
cream for whole milk purposes, one dollar and forty eight
cents per pound.

Three hundred dairymen in Maricopa County are producing
pasteurized Grade-A milk.

sixty per cent of all the milk sold in cities is sold
through retail stores.

Since it is impossible for a person to go into the
pasteurizing business with a small amount of milk, it is very
necessary that we have good milk production from at least
twenty five cows before we go into the pasteurizing business,
and that we have a market for this milk.

There is only one place in the Salt River Valley where
churned cream can be shipped, and that is the Associated
Dairy Producers, Glendale, Arizona.

When buying cattle for the dairy business we must buy
them direct from the dairymen where we know they have good cattle, and never secure them from the auction ring.

Within a few years it will be illegal to sell cheese produced with un-pasteurized milk.

All of the above recommendations indicate very strongly that the dairy business in Apache County will be limited largely to the production of whole milk. Where one dollar and forty eight cents per pound of butter fat can be secured, seventy two cents and ninety two cents per pound of butter fat seemingly will not make a profit in this county.

However, it is possible that some of our people in the mountain area could go into the production of cheese on a large scale to make pasteurization feasible, and in that way produce a commercial grade of cheese. It does, however, eliminate the production of cheese where we just have a few cows, as they have done in the past. In other words, the dairy business must be gone into on a comparatively large scale in order to make it pay, which was not so in the past.

5. Field Crops

Our field crops are fundamental to the economy of Apache County. They are the foundation of the dairy business, livestock business, the feeding business, and all the other businesses we have, and we feel, therefore, that we should constantly be on the alert to help improve our field crops.

This year we had Walter Jarvis of Nutrioso, and Hyrum Nelson of Eagar, plant Buffalo alfalfa seed to see how it would go in the higher elevations. It was impossible for Mr. Jarvis to plant this alfalfa as he did not have enough water to keep it going, and Mr. Nelson’s plantings did not mature very well. Therefore, we cannot state exactly how Buffalo alfalfa will do in these elevations.

We had Avard Hall of Alpine and Walter Jarvis of Nutrioso, plant some Sooner sorghum, but because of the drought this experiment was not successful.

However, as a result of our field crop activities we do have the best stacks of alfalfa hay that we have ever had in the county, and we also have thirteen large silos filled with good silage, and a lot of other people have their field crops harvested ready for anything that develops during the winter, so that they can take care of their livestock.

6. Irrigation

It has been our opinion for a good number of years that the farmers in Apache County were losing a lot of irrigation
water due to seepage in the ditches. The percentage of loss has been variously estimated at between ten per cent and twenty five per cent, but to date we do not know what the actual loss is in the county, or where it is being lost.

Through the efforts of James E. Middleton, Irrigation Specialist from the University, we made plans to weir all the important ditches in the county, but the irrigation season was over before this plan could be put into operation, so we have had to put this work off until another year. We are expecting to follow this work up another year and if it seems advisable to cement the ditches we will recommend it and hope that the farmers will cement their ditches.

We, also, checked the flowing well developed by the Garcia Bros. of St. Johns, and found that the water was of good quality for irrigation use, and found, also, that the well produced four hundred gallons of water per minute. This should be a wonderful thing for these people as it will make it possible for them to produce a lot of forage for their cattle right on the range.

7. Poultry

The only way that anybody can go into any business, regardless of information or money that they may have, is to start in a business in a small way and grow into it, during which time they learn the business in such a way that they can manage it and handle it successfully.

The poultry business in Apache County is one of those agricultural pursuits that a young man with a limited amount of money can start into as a stepping stone for a permanent agricultural industry in the county. It is also a business which people who have been in the county for a long time can supplement their present income with without going away from home or changing their agriculture to any great extent. We feel, therefore, that poultry in the county is a very important agricultural project and one which the people should study and establish on their farms more in the future than they have in the past.

A few years ago when we started our poultry project we did not have a person in the county who had a modern poultry house, or anyone who secured their chickens at the proper time of the year, which we figure is along in April, in order for them to mature in such a time that they could make a profit in the poultry business. At the present time we do not know exactly the number of poultry house in the county, but would estimate it to be one hundred and fifty to two hundred modern poultry houses. Most of these poultrymen secure their chickens in the spring of the year so they start to laying in the fall when the price of eggs is high and in that way get
Practically twelve months production from each bird.

W. R. Van Sant, Poultry and Dairy Specialist from the University, works with us very closely in our poultry projects and keeps us pretty well up-to-date with modern developments along this line.

Mr. Van Sant recommended that we as farm people have five hundred birds per farm, and that we have good poultry houses, plus plenty of feed with all the other care we can give them, and we should make one dollar and fifty cents per bird for labor.

One thing about the poultry business is that we are shipping into Arizona two-thirds of the eggs used by consumers, and therefore, if Arizonans can produce good eggs they should not have any trouble finding a ready market for them.

Sixty five per cent of cost of producing eggs is in feed and we should produce as much of this feed as possible on our local ranches in order to reduce the freight charges of imported feed.

Quality chickens are the first pre-requisite in the poultry business, and where we do get good quality chickens we should easily raise ninety nine per cent of them.

Turkeys generally require in initial cost, feeding and handling, etc., by the time they are ready for market, seven dollars per bird. A good feed mix for turkeys is two to three pounds of rolled barley soaked in milk, fed to one hundred turkeys daily.

All of the Western States are shipping eggs in except Utah. At the present time anybody going into the poultry business must go into it on a business like basis and with a good sizable unit or they will not be successful.

A few years ago we got one hundred and twenty eggs per bird, now we get one hundred and forty eggs per bird, but in order to do this we must be good poultrymen. They must have a good poultry house, one, thirty by sixty to house five hundred hens with five inches per bird for roost, and a feeding space of eight inches per bird, and one nest for each five birds.

Forty per cent of the fryers in the United States are now produced by commercial producers.

It was very emphatically impressed on the people that they must not let chickens out of the coop at anytime during the year.

Sometimes lime will have to be added to the litter in order to keep the bacterical conditions down. We should keep
minerals before the chickens all the time.

Better egg production will be reached when the hens have the day extended to fourteen hours which is generally done by artificial lighting.

It is generally recommended that twenty per cent annually of the flock should be culled, and that we should be culling continually because the early molers are the poorer birds and will have to be culled all the time.

It is our intention in as many ways as possible to keep our farmers up-to-date on agricultural subjects. We, therefore, this year held some demonstrations on the preparation of livestock such as poultry and turkeys, for deep freeze processing.

The day has past when farmers in the county can sell poultry or turkeys alive. The market prefers dressed and frozen poultry and not the live animals.

Through the cooperation of the Home Demonstration Agent, Miss Lida E. Logan, we held two demonstrations in the county giving specific information on the preparation of poultry for the deep freeze market. We are confident that all the poultry and turkeys that we can produce in this county can be marketed if our people would process them for the deep freeze market.

We do not have records of the profits or losses that our poultrymen are making and none of them are keeping an exact record of depreciation, losses, etc., but Jake Neal has been keeping records for several years and he knows now just about what he makes off of his chickens. He says that he will make above feeding cost four dollars per bird at the present price. This does not include labor, interest on the investment or depreciation on the investment. It only includes the amount of money made above his feed costs.

8. County and State Fairs

The Apache County Fair Commission consisted of Ove Overson, St. Johns, Chairman, Leslie Noble, Alpine, Member, and Ada McDonald, Chambers, Member.

Our County Fair was held the twenty ninth and thirtieth of September.

These Fair's bear a lot of fruit for our people as they can compare their produce with others and in that way see what improvement they can make in their own produce.

All of our judging was done by the Extension Service, which is a very tedious job. Our judging as in the past years
was exceptionally well done. It just doesn't seem like we could get better judging any place because our judges do an excellent job with a friendly spirit and get along well with the people, and we feel that our judging is done in an excellent and efficient manner. The judges this year at our County Fair were Mr. H. F. Tate, Mr. Charles C. Ellwood, Mr. Jim Armer, Miss Helen Church, and Miss Madeline Barley.

Our State Fair exhibit was collected and exhibited by Mr. Ove Overson, who did a very fine job, and who won fifth place at the State Fair as well as many first places on his exhibits.

We feel that our fair can be twice as good next year by advertising it a little better, and by getting more livestock facilities built, but if we do not get them built we cannot have our livestock at the fair. However, if we do get new facilities built for our County Fair we can have the finest Hereford cattle in the world on exhibit.

9. Grasshoppers

With our grasshopper control work new methods of controlling this pest is developing all the time. Up until the past year we have recommended that grasshoppers be controlled by the following formula:

6 lbs. Sodium Fluosilicates
to
100 lbs. of mix - The mix being two to three parts of sawdust to one part of bran.

This year we have recommended that the vegetation which the grasshoppers were eating be sprayed with a chlordane solution.

This year, Dr. J. N. Roney, our State Entomologist from the University, recommended that the dosage of chlordane be from one-half to one pound per acre. If a longer killing action were desired, naturally, one would use more of the material than where a short killing action was desired.

One of the most important advantages of applying this material is that it may be applied day or night, since the action lasts from two to three weeks. The time is really unimportant for it is our belief that this material can be bought and put on a lot cheaper than the sawdust and bran can be put on where it is given to the farmers without cost.

In checking the results of our chlordane recommendations we have found that in some cases BHC was quite as effective as chlordane.

Another method which is better than all others recommended
was turkeys. This year Byron Heap and Kenneth Raban shipped in about five hundred turkeys and as a result they practically cleaned up all the hoppers in the St. Johns, area.

10. 4-H Club

In a course I took in college entitled "Rural Institutions" under Dr. Mead, our instructor, he said that to have a good strong agriculture we had to educate our youth as to the necessity of rural life and the beauty of it. His idea was that the many fine things the city people have are sometimes taking the people from the rural areas to the city when they could have an abundant life out in the rural areas, and render service to the community quite as well as otherwise.

Now our 4-H Club is an organized method of giving the youth of our country some idea of the beauties of rural life.

Because this work has to be done, partly by local club leaders, it is not always possible to have as many club as desired because we cannot get good club leaders. However, we are getting better leaders all the time. We are putting on Extension Schools for the purpose of educating people for 4-H Club leadership, and in that way we are getting in a better position to do better club work all the time.

This last year we had 4-H Club's at Sanders, St. Johns, Eagar, and Alpine. We started out with an enrollment of forty six and we had a completion of twenty two.

We took some members to the Round-up at Tucson and a judging team to the State Fair, so that in various ways we feel that we have done quite a bit of club work, and hope, naturally, that we will do more another year.

We feel that an appreciation of rural life will come more through 4-H Club than any other activity devised which will fit into our program.

11. Rodent Control

On the tenth, eleventh and twelfth of July, with the cooperation of Isaac Rogers of the U. S. Biological Survey, we held gopher demonstrations at Vernon, Concho, St. Johns, Round Valley, and Greer.

These demonstrations were fairly well attended and all who did attend seemed amply paid for their time as they did get something out of the meetings.

It just happens that Mr. Rogers of the Biological Survey has a few little techniques in poisoning gophers that is rather
Valuable. Briefly the following is the way he recommends for the poisoning of gophers:

First, peel or scrape your carrots before applying the poison and cut the tops off and leave the carrots from three to five inches long so that the gopher cannot move them when placed in the hole, without eating them or cutting them up some way, and in that manner the gopher will get the poison.

Mr. Rogers stated that where raisins, small pieces of carrots, or poison grain are used the gopher carries this away and stores it for the winter and rarely if ever consumes it himself.

These large pieces of carrots after being poisoned according to the directions on the poison package, which can be bought from any of the stores, are to be placed in the main runway at the side of the hole and the hole definitely covered up. By this method the gopher is not suspicious of anything happening to his home and as he goes along his runway he discovers the carrot and presumably will eat it.

It is estimated that by this method of poisoning gophers, eighty five per cent of the gophers will be killed in one treatment and that the balance will be killed in one other treatment.

It is also estimated that the poisoning is three times as cheap as traps or any other methods so far known.

We have also worked very closely with the U. S. Biological Survey in coyote control work. We feel that the coyotes today are not the menace they used to be in the county as we don't hear of very much killing of cattle that we used to.

B. Miscellaneous Activities

1. City Sanitation

This year we worked rather closely with the three organized communities of the county, St. Johns, Eagar, and Springerville. Our purpose was to help them in their fly and mosquito clean-up campaign. We held several meetings at which time Dr. J. N. Roney, Extension Entomologist from the University, gave lectures on this work both to the public and the Mayor's of the different communities.

It was Dr. Roney's idea that everything, all the rubbish and cans should be cleaned up before they started spraying for fly and mosquito control. He stated that empty cans should be smashed together so that water could not get into them as a breeding place for flies. He emphasized that this should be
done to avoid this kind of trouble. As a result of our efforts along this line our three communities sprayed practically every barn and house once, and in some cases they sprayed two or three times during the year.

Dr. Newton McBride stated that where we generally have one hundred cases of dysentery in St. Johns, we had this year forty cases. We figure that our activities along this line was partly responsible for the reeducation of the dysentery cases.

2. Farm and Garden Notes

In past years we have tried to supply the local paper, weekly, with news items of an agricultural nature. Seemingly, however, the local paper has not seen it fit to publish very many of these articles, therefore, we have had to resort to circular letters, letters, etc. to disseminate this information. However, by paper and letters we have given out eighteen circular letters with a total of three thousand four hundred and seven copies of these circular letters. Also, we have mailed out a total of one thousand one hundred and forty nine letters.

We feel that this is very important information as it is part of our educational program. It is impossible to tell the amount of good that this has done through these efforts in our educational program, but like all other work it is our pleasant duty to give this information out and hope that a lot of it will be worked out by the people in the different communities.

Fundamentally our educational work deals with only problems that the communities have or things that we think they should do. If we feel that our people should use a dormant spray in the winter to control San Jose Scale and other pests, we put on our campaign and hold demonstrations to show that this work is important to their welfare. Similar methods are used in most any other project that we have. Until our work is pretty well become a routine matter our work is continued in the different branches of our activities. However, when a project becomes a routine job with our farmers and ranchers we quit our work along that line and go on to another project. In a sense, therefore, our work is always of a pioneer nature that we are doing, but it is of such a character that it is very wonderful to work with people in an educational field where we feel that we can accomplish things that are beneficial to society.

3. Recreation School

This year the Agent attended a Recreation School at Phoenix, which was under the direction of the Extension Service of the University of Arizona.

Miss Farwell was supervisor of this school.
Our object in attending this school was to learn plays and other recreational activities to help us with our rural people and our 4-H Club work. We feel that a lot was accomplished at this Recreation School and it will help us a great deal in the future.

4. **Home Beautification**

Home Beautification has been a subject that we have given meetings and demonstrations on for a long time.

This year we held a meeting at Milford Hall's at Eagar, where we had previously done some landscaping showing the people the results of our plans. Next year we expect to hold meetings in every community in the county trying to give the fundamentals of landscaping to our farmers.

5. **SCS**

We have attended several of the SCS meetings this year and rendered service by so doing. Also, we answered office and field calls along this line.

6. **AAA**

We have worked harmoniously with the Triple-A all we can and feel that this organization is going along rather smoothly and does not need too much of our help at this time.

7. **Farm and Home Administration**

We have harmoniously worked as much as possible with the Farm and Home Administration answering calls and discussing the work with Mr. Jay Wiltbank, who has charge of this work and whose office is in Springerville.
Fig. Apache County Fair, Agricultural Dept., 1950.

Fig. Apache County Fair, Women's Dept., 1950
Fig. Spraying hoary cress (white top) at Eagar, 1950.
Fig. Preparing to spray weeds with 2,4-D, St. Johns, 1950.

Fig. Spraying weeds with 2,4-D, St. Johns, 1950.
Fig. Seriously considering how to prune a small tree. Mr. Tate, second from the left, will perform the operation as soon as the decision is made. St. Johns, 1950.

Fig. Fruit tree pruning demonstrations, St. Johns, 1950.
Fig. Fruit tree pruning demonstrations, St. Johns, 1950.

Fig. Thrashing Grain at Nutrioso, 1950.
Fig. Large feeding box used by V. D. Brown, Sanders, to feed cattle. The feeding mix used was, cake 50% barley 50% and salt 50%. 1950.

Fig. Feeding alfalfa hay to cattle at Laverl Hall's Ranch, 1950.
Fig. Lumpy jaw treatment at El Tule, 1950.

Fig. Cattle died as a result of whorl milk weed at Hunt, 1950.
Fig. Spraying demonstration, Joy Patterson's, St. Johns, 1950.

Fig. Building feed houses for ground alfalfa feed, Lee Wilhelm's, St. Johns. 1950.
Fig. Spraying cattle for lice and flies at St. Johns, 1950.

Fig. Gas well at Navajo in Apache County, 1950.
Fig. Flowing well Garcia Bros. Ranch, St. Johns, 1950.

Fig. Frozen water trough with a poorly constructed reflector in the trough, 1950.
Fig. 34. Two young bulls that Laverl Hall, St. Johns, bought from the Milky Way Hereford Ranch, 1950.

Fig. Bulls recently purchased by Wilhelm & Heap of St. Johns, 1950.
Fig. Opening silo at Laverl Hall's, St. Johns, 1950.

Fig. Joe Nelson, Springerville, looking over his silage. Notice there is only a little spoilage an inch or two at the top. 1950.
Fig. Dehorning Cattle, 1950.

Fig. Preparing prize hereford cattle for the show ring, 1950.
Fig. 4-H Club member and his garden at Alpine, 1950.

Fig. 4-H Club boys in Alpine heading for fishing party, 1950.
Fig. Feeding cattle Albert Brown's, St. Johns, 1950.

Fig. Spreading manure at Alpine, 1950.
Fig. Bringing cattle into Traweek Ranch to spray for flies. 1950.

Fig. Pulling cedars at the Lockhart Ranch, St. Johns, 1950.
Fig. 1. Gopher eradication demonstrations, Eagar, 1950.

Fig. 2. H. F. Tate giving information on the control of wilt on chili, St. Johns, 1950.
Fig. Giving demonstrations on gopher control, St. Johns, 1950.

Fig. Giving demonstrations on gopher control, Concho, 1950.
Fig. A meeting on landscaping, Sagar, 1950.
Fig. Spraying on 10 at Round Valley for fly control, 1950.

Fig. Spray rig used at Round Valley for fly control campaign, 1950.
Fig. Filling manure spreader at Alpine, 1950.

Fig. Manure going to waste Apache County, 1950.
Fig. Digging trench silos, St. Johns, 1950.

Fig. Filling a trench silo at Albert Brown's, St. Johns, 1950.
Fig. Ranchers judging cattle at the Tal Wi Wi Ranch, Alpine. 1950.

Fig. School bus loading up at Sanders, 1950.
Fig. Spreading manure at Alpine, 1950.

Fig. Snow at Alpine, 1950.
Fig. Opening silo at Bobby Trammell's, Springerville, 1950.

Fig. Taking out silage at Bill Spence's, Springerville, 1950.