

CO-OPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF CALIFORNIA

UNIVERSITY OF CALIFORNIA
COLLEGE OF AGRICULTURE
AND
UNITED STATES DEPARTMENT OF AGRICULTURE
CO-OPERATING

EXTENSION SERVICE
FARM ADVISOR WORK
AGRICULTURE CLUB WORK
HOME DEMONSTRATION WORK

AGRICULTURAL EXTENSION OFFICE
MERCED, CALIFORNIA

NARRATIVE REPORT
OF
COUNTY AGRICULTURAL AGENT

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For Merced County

From December 1, 1946 to November 30, 1947

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I. Summary of Post-War Programs

(1) Organization - Changes to Meet Post-War Conditions

(a) County USDA Council

The County USDA Council held only two meetings during the year. While the USDA Council has had no specific duties assigned to it, and for that reason seems to be a rather aimless organization, I believe it has been helpful in maintaining a good spirit of cooperation among the various local branches of the United States Department of Agriculture.

(2) Program Adjustments to Meet Post-War Conditions

(a) Agricultural Extension Planning Conference

Many of the recommendations of the Agricultural Extension Planning Conference held in 1946 were followed in drawing up the program of our office for the year 1947. It will be recalled that this Program Planning Conference recommended the addition of an Assistant Home Demonstration Agent and another Assistant County Agent to our staff and these two recommendations were fulfilled during the year. In addition, another Assistant Farm Advisor, who is to be primarily a specialist on soils, fertilizers, irrigation and drainage, was added to the staff early in November.

(b) Test Plots - Field Experiments

As a continuance of the post-war long-time Extension program in Merced County, there continues to be an increased emphasis in test plots and field experiments. In alfalfa production especially there has been a marked increase. A total of fifty-two field tests were established or continued during the year on various phases of the alfalfa Extension program. These plots included twenty-three tests on disease-resistant Hilmar strain of alfalfa, three tests of row planting of alfalfa for seed production, eleven tests of control of weeds in young and old stands, ten alfalfa fertilizer plots, one alfalfa variety trial, three tests of controlling lygus bugs by dusting with DDT, and one test on inoculation of alfalfa seed. Other fields of activity were also represented in an increased number of test plots and field experiments.

(c) Food Production

The need for continued maximum food production was stressed by the Agricultural Extension Service staff at all opportunities and we found the radio particularly helpful as a medium along these lines.

(d) Farm Labor

The Farm Labor situation was much easier in 1947 than it was in 1946 and as a result, we discontinued the Livingston Office. This left only one Farm Labor Office in the county and that was located in Merced. With a seasoned Farm Labor staff and only one office to supervise, the Farm Labor project took very little time of the Extension Agent's, and also, we believe that its war-time usefulness has practically disappeared. We therefore welcome the discontinuance of the Farm Labor program under Extension supervision.

(g) Fire Protection

Gradually, our responsibility in connection with the emergency farm fire protection program has been transferred to the County Fire Department, until in 1947 we feel that this project can be discontinued in our files.

II. Program of Work - Methods Employed and Results Achieved

(1) Factors Determining Program

The program of work in 1947 was based, to a large extent, on the recommendations of the Agricultural Extension Program Planning Conference held in 1946. The wide diversity of agricultural enterprises in Merced County has lead to an increase in the staff, and during the year we have rearranged the program so that each member of the staff has a clear cut assignment for working on the problems of a segment of our program. At the present time, farmers are very much interested in increasing crop production by the use of fertilizers and, therefore, many of our new test plots have to do with the problem of finding out the most economical fertilizer to use on each crop, and on each soil type.

4-H Club work is again on the upward swing and the new Assistant Home Demonstration Agent, who is specializing in 4-H Club work, has been very successful in increasing the number of girls' 4-H Clubs, as well as the enrollment in this phase of 4-H Club work.

(2) Project Activities and Results

(a) In Development of Extension Organization During the Year

(a1) Development of Community Program of Work

The County Farm Bureau has been the farm organization with which our office has cooperated closely along agricultural educational lines for a period of over 30 years. Although the Farm Bureau has now had a full-time Field Secretary for two years, and although commercial activities form an important part of the Farm Bureau program, this organization continues to work closely with us along educational lines.

During the year representatives of the Extension Service Office gave subject matter presentations at a total of 94 Farm Center meetings with a total attendance of 3,764.

(a2) Development of Demonstrations

There has been a considerable increase in the number of result demonstrations carried on in various fields of activity. This total has increased from 167 in 1946 to 192 in 1947. Of the total 99 method demonstrations that were held, 84 were given by the Home Demonstration Agent and the balance by the agricultural agents.

(a3) Development of Project Leaders

(a3-2) 4-H Clubs

(a3-2-1) Community Club Leaders

During 1947, eight of the thirty-nine 4-H Clubs were of the community type with eighteen leaders participating. The community type of club is becoming more popular than in recent years. Leaders in more communities are recognizing the fact that younger, as well as older, boys and girls like to mix and work together. These eight clubs were among the most active and received fine cooperation and recognition from the parents and communities as a whole.

(a4) Development of Recreation and Other Social Activities

(a4-1) 4-H Club Encampments, Hikes, Plays, etc.

The leaders planned and held a highly successful annual Summer Camp in Camp #9 of Yosemite National Park, June 12 to 21. The first session, June 12 to 15, was comprised of the Westside and Northern Council areas of Grammar School aged boys and girls. The second session, June 15 to 18, was composed of High School members from the entire county. The last session, June 18 to 21, was composed of the Central and Eastside Council areas of Grammar School aged members. The following tabulation gives the attendance of each session:

	<u>Boys</u>	<u>Girls</u>	<u>Adults</u>	<u>Total</u>
1st Session	59	69	16	134
2nd Session	53	50	18	121
3rd Session	78	60	21	159
	<u>190</u>	<u>179</u>	<u>55</u>	<u>424</u>

The boys and girls attending, totaling 369, represented 65 percent of the total club enrollments.

Mr. Orbie Sullivan, Field Secretary for the Merced County Farm Bureau, served as Camp Director and did a commendable job. The Camp Nurse was Miss Margaret Robertson, Merced County Health Nurse. The Chief Cook was again Mrs. Esther Falke of Hilmar. Assisting her were Mrs. Esther Jacobson of Dos Palos and Mrs. Ray Hall of Denair, formerly of Hilmar. The meals were well planned and of excellent quality. The Camp fee was \$4.70 plus transportation. Each community solved its own transportation problem.

Activities included hiking, swimming, bicycling, horseback riding, camp games, fire fighting demonstrations and a nightly Campfire program staged by the members themselves. The Park rangers and naturalists cooperated by giving interesting and instructive talks at the Campfire programs.

Mr. Woodbridge Metcalf, who was attending a forestry meeting in Yosemite Valley at the time, dropped in one day and led the members in singing.

The leaders felt the Camp was particularly successful and expressed the opinion that this event is the most important of the year in promoting club work throughout the county.

(a5) County and Community Fairs

There are now two county fairs held in Merced County. The Merced

County Spring Fair and Livestock Show is held in conjunction with the old Henry Miller May Day celebration at Los Banos, while the Merced County Fair in the Fall is held at the fairgrounds in Merced.

4-H Club work was well represented at both of these fairs and the boys and girls who have livestock projects showed many excellent animals at these events.

(b) In Soil Management

(b2) Irrigation

(b2-2) Irrigation Organizations

The 1947 irrigation season was one of the most critical in many years in Merced County. This was because of the light snow pack on the water shed of the Merced River and the river run-off in 1947 was estimated as being 49 percent of normal. Because of the very evident serious situation, the Merced Irrigation District established an emergency water distribution program aimed at the conservation of irrigation water to the highest degree. We cooperated with the Merced Irrigation District by interviewing the Chief Engineer in a series of radio talks. In these talks the critical water situation was clearly outlined and the cooperation of all irrigators in water conservation measures was urged. While at the beginning of the season it was thought that the water might be out of the canals by the first of September, if not earlier, the cooperation obtained from all farmers was such that the irrigation season lasted until September 18. How much effect our radio program had in solving this problem, of course, is hard to estimate, but our efforts were appreciated by the Irrigation District Management.

(b4) Soil Erosion

(b4-1) Erosion Control Demonstrations

(b4-1-2) Soil Conservation Districts and Associations

There is one Soil Conservation District in Merced County and that is known as the Los Banos Soil Conservation District. Its total area is about 23,000 acres, of which only about 3,000 or 4,000 acres is good land. The rest is land that can best be suited for gum clubs or range land, the production of which can be helped by swamping. We have worked cooperatively with the Soil Conservation Service represented in that area, making suggestions as to the most effective means for utilizing this land.

(b6) Cover Crops

Cover crops continue to be grown as a part of land management. The greatest use of cover crops is in the sandy soils and on that which has been recently levelled. Orchardists and vineyardists continue to use cover crops but there are a few who are going to clean cultivate through the use of oil for weed control and do not plant cover crops.

No tests have been made of new varieties for planting as the standards were gained from past years' work on cover crops.

(b7) Commercial Fertilizers

(b7-1) On Field Crops

During 1947 a series of ten alfalfa fertilizer trials were established in widely separated parts of the county to determine phosphorous responses, sulfur responses, and to get some information on a comparatively new fertilizing material known as Thermophos. Yield data was gathered on seven of these plots and the results of five of these are given below. One of the plots on the Livingston River road failed to give a response at all, indicating that sufficient phosphorous was available in that soil for maximum plant growth. On a plot in the Snelling area incomplete yield data was gathered, which indicated a phosphorous and a sulfur response. The data from these two plots are not being listed. The three plots that were not harvested were observed from time to time during the growing season and a phosphorous response was quite evident from an observation standpoint. Yields were not taken because of poor stands, irregular irrigation, or some other factor which would have contributed to incomplete yield data.

In all of these plots no attempt was made to harvest the first cutting because in some cases the fertilizing materials were applied late in the season and probably no response could be detected by first cutting time.

Athlone Area

Soil Type -- Heavy

Second year alfalfa

Fertilizer Applied -- January 6, 1947

Materials used Single Superphosphate 400 pounds per acre
and and

Rate of Application -- Thermophos 400 pounds per acre

Per Acre Yields in Pounds - Green Weight and Dry Weight*

Harvest Date	Thermophos		Single Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
5/31/47	16434	4109	15434	3859	13000	3250
7/15/47	19766	4941	21966	5491	16332	4083
8/26/47	18200	4550	17600	4400	17800	4450
10/14/47	11080	<u>2770</u>	9590	<u>2385</u>	10640	<u>2660</u>
TOTAL		16370		16135		14443

Summary: Yield difference between the fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1700 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

*Dry weight yield figures are calculated and used for ease in interpretation.

Hilmar Area

Soil Type -- Sandy loam

First Year Stand -- Alfalfa

Fertilizer Applied -- February 26, 1947

Materials used Single Superphosphate
and Thermophos

200 pounds per acre

200 pounds per acre

Rate of Application -- Treble Superphosphate

100 pounds per acre

Per Acre Yield in Pounds - Green Weight and Dry Weight*

Harvest Date	Thermophos		Superphosphate		Treble Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
5/29/47	5166	1292	7500	1825	8332	2083	3932	983
7/22/47	14100	3525	14100	3525	14340	3585	12740	3185
9/2/47	14134	3524	13366	3342	13268	3317	11400	2850
10/13/47	6230	<u>1560</u>	6470	<u>1618</u>	6430	<u>1608</u>	5070	<u>1270</u>
TOTALS		9911		10310		10593		8288

Summary: Yield differences between the three fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1700 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

Livingston Area

Soil Type -- Sandy loam

First Year Stand -- Alfalfa

Fertilizer Applied -- January 10, 1947

Materials Used -- Single Superphosphate
and and

400 pounds per acre

Rate of Application -- Thermophos

400 pounds per acre

Per Acre Yield in Pounds - Green Weight and Dry Weight*

Harvest Date	Thermophos		Single Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
6/24/47	8366	2092	8866	2217	8122	2031
8/7/47	9800	2450	9480	2345	8060	2015
9/30/47	8130	<u>2033</u>	7560	<u>1890</u>	5290	<u>1323</u>
TOTALS		6575		6452		5369

Summary: Yield differences between the fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1100 pounds of dry hay was obtained from the application of fertilizers in this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

Gustine Area

Soil Type -- Heavy

First Year Stand -- Alfalfa

Fertilizer Applied -- January 15, 1947

Materials Used -- Single Superphosphate 400 pounds per acre
and -- and

Rate of Application -- Thermophos 400 pounds per acre

Per Acre Yield in Pounds - Green Weight and Dry Weight*

Harvest Date	Thermophos		Single Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
6/23/47	15700	3922	15866	3967	14866	3717
8/4/47	16240	4060	16300	4200	14300	3575
9/11/47	18000	4500	18100	4525	16120	4030
10/24/47	9220	<u>2305</u>	9900	<u>2475</u>	7960	<u>1990</u>
TOTALS		14787		15167		13312

Summary: Yield differences between the fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1500 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

Ballico Area

Soil Type -- Sandy loam

Third Year Stand -- Alfalfa

Fertilizer Applied -- February 25, 1947

Materials Used -- Single Superphosphate 200 pounds per acre
and -- Thermophos 200 pounds per acre

Rate of Application -- Treble Superphosphate 100 pounds per acre

Per Acre Yield in Pounds - Green Weight and Dry Weight*										
Harvest	Thermophos		Single		Check		Treble		Check	
Date			Superphosphate				Superphosphate			
	Green	Dry	Green	Dry	Green	Dry	Green	Dry	Green	Dry
	Weight	Weight	Weight	Weight	Weight	Wt.	Weight	Weight	Weight	Weight
5/16/47	15120	5780	15680	3920	14320	3580	14260	5552	13340	3335
6/17/47	16940	4270	17940	4485	16500	4125	16340	4085	16100	4025
7/22/47	13585	3398	13425	3358	12865	3216	13270	3318	12420	3105
8/27/47	14100	3525	14220	3555	14060	3515	12800	3200	10400	2600
9/7/47	10230	2560	8910	2230	9230	2308	10200	2550	8740	2185
TOTALS		17533		17548		16744		16705		15250

These two plots were under a different irrigation set-up, therefore they cannot be compared with other plots.

Summary: Yield differences between plots fertilized with Thermophos and Single Superphosphate are not significant. Yield differences between the fertilized plots and the check or non-fertilized plots are significant. A net gain of approximately 800 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

(b7-2) On Fruits and Vines

Some observation plots were put out using phosphate on peaches to determine the effect on quality. There were no significant results from this one year's test. Potash was used in several orchards to determine if the trees would absorb more potash. Leaf analysis showed there was some small increase, but it had no effect on size or quality.

Nitrogen is still the most necessary and widely used fertilizer in orchards and vineyards.

(b12) Crop Rotation and Summer Fallow

A long term rotation experiment is under way to determine the effects of annual cropping, summer fallow, stubble-mulch, and fertilizers on grain yields. It will be another year before we have any information other than a response to phosphorous which we obtained this year on the fertilized plots.

(c) In Crop Production

(c1) Field Crops

(cl-1) Cereals

(cl-1-2) Barley

Two barley variety plots were harvested, but one had been damaged by livestock. The two outstanding varieties in Merced County were Arivat and California Mariout.

(cl-1-3) Oats

An oat variety plot was set out but damaged so as to be worthless.

(cl-3) Corn

Two of the most promising hybrid corns were grown in several plots located on different soil types. The differences were small, but the variety Carlson 33 proved superior from a quality, or weight of grain basis. Results from the previous year's variety trials showed several plots with a 100 bushel per acre yield of grain.

(cl-5) Forage Crops

(cl-5-1) Alfalfa

During the 1947 season an alfalfa variety plot that had been scored by observation during the first and second years, was harvested and yields of each of the varieties were obtained. The following yield data was obtained:

Yield Per Acre - Calculated Dry Weight

<u>Variety</u>	<u>2nd Cutting</u>	<u>3rd Cutting</u>	<u>4th Cutting</u>	<u>5th Cutting</u>	<u>Total</u>
India	4615	3383	3900	2657	14559
Local #2	4300	3463	3350	2425	13538
Local #1	4035	3243	3416	2396	13090
Africa	3785	2935	3150	2257	12127
Buffalo	3600	3125	3033	2234	11992
Meeker Beltie	3650	3124	3300	1703	11777
Ladak	3785	3448	3050	1318	11601
Calif. Common	3235	2678	2950	2208	11071
Ranger	3285	3182	2783	1690	10940
Grimm	3265	2839	2766	1656	10526

From a hay quality standpoint, India alfalfa falls down rather badly. On all cuttings it was quite stony with most of the leaves on the upper parts of the stem. For this reason it probably would not find a wide acceptance among growers even though yields were high. Yield data the next few years will give a more complete picture of the adaptability of these varieties. The two local strains used in this plot are the Youngborg and Danbom strains from Hilmar. Indications are that this strain of alfalfa has a rather high degree of resistance to bacterial wilt. It was interesting to observe that these local strains proved to be high yielders this year.

Several growers in the Hilmar area have become interested in producing alfalfa seed partly because a good demand for this strain of seed exists and because they would like to produce seed as a part of their rotation schedule. In past years seed production in this area has not been too satisfactory because a stand would have to thin out before seed could be produced, which frequently meant waiting six or seven years for a satisfactory seed crop. As the stands thin out, weeds move in and present another problem in trying to produce good clean seed.

Because of the success in other areas in growing alfalfa in rows for seed production, it was decided to test row plantings out in this area. Accordingly, three plots were established in the Hilmar section in three-foot rows to see if by thinning out the stand to begin with, seed could be produced early in the life of the stand. The plots were established in late February and the results to date are:

One plot was lost because of weed competition. On another plot we failed to get a stand on about half of the plot. The third plot, about $1\frac{1}{2}$ acres in size, grew quite well and a good stand was obtained on most of the area. Weed competition was very bad on this plot and because of this, the stand was mowed several times, which eliminated the possibility of producing a seed crop the first year. In spite of this late mowing, the last crop set a lot of seed, which indicates that a fair seed crop could have been harvested here the first year if the weeds had been taken care of in a satisfactory way. Next year the weeds will be taken care of by spraying and cultivating and an attempt will be made to harvest a seed crop.

Bacterial wilt continues to be a major factor in shortening the life of alfalfa stands in the county. During the last few years a strain of alfalfa produced in the Hilmar section of the county has been observed, which seems to have a rather high degree of resistance to bacterial wilt. Stands of this alfalfa in a number of instances has produced commercial crops of hay for six or more years on ground that previous stands had died out on in three to four years. This strain of alfalfa was brought into the Hilmar section nearly forty years ago by a Mr. Axel Youngborg and planted on his ranch and an adjoining ranch owned by a Mr. A. G. Danbom. This strain of alfalfa has become known locally as a high yielder and a long-lived alfalfa.

Because the information at hand regarding this alfalfa seemed to warrant further investigation, it was decided to initiate a testing program which would assist in evaluating this strain. The thought was that if this strain was superior in that it would add a year or two to the productive life of a stand, it would be worth considerable to this county and other areas where this strain of alfalfa was adapted. Accordingly, a series of twenty-two test plots were established in all sections of the county to see if this alfalfa really would last longer than the strains of Common Chilean now being used. Information will be gathered over the next few years as to how this alfalfa yields as compared to that normally seeded. If this alfalfa proves to be a high yielder as it is known to be in the Hilmar area, this will further increase its value.

This year another series of test plots will be planted so that we will have in the neighborhood of fifty-plots in all sections of the county, which should give a rather complete picture as to the adaptability of this strain of

alfalfa. The plots are being made large enough so that if this strain is showing that it will last longer than the normally seeded Common Chilean, farmers will be inclined to leave the Hilmar strain in so that we can get information as to just how long it will produce commercial hay.

(cl-6) Cotton

(cl-6-2) Cotton classing and Market News Services

The cotton classing and market news service provided for by the Smith-Doxey Act was extended for another year. All forms were prepared here and signatures of officers of the local association obtained.

(cl-8) Vegetable Growing

Three trials were conducted on the effect of hormone sprays on tomatoes. The material was applied at strengths of 25 P.P.M., 50 P.P.M., and 100 P.P.M. The crown cluster spray was applied on April 17, 1947. The temperature was 72° with a moderate northwest wind. Application was made by the use of a small hand sprayer (fly sprayer) hitting only the clusters. The first flowers were opened and others of the cluster showed color. The general spray was applied April 30, 1947. The temperature was 86° with slight variable breeze. Approximately 30 plants were sprayed in each plot with the various dosages described above. The following table gives the results obtained from these trials:

<u>Cresci Plot - Crown Set</u>					
<u>Dosage</u>	<u>No. tomatoes</u>	<u>No. 1's</u>	<u>No. 2's</u>	<u>Wt. of #1's in lbs.</u>	<u>Wt. of #2's in lbs.</u>
25 P.P.M.	18	7	11	3	3
50 P.P.M.	26	11	15	5½	7½
100 P.P.M.	49	23	26	11½	13
Check 1	2	1	1	¼	1/8
Check 2	8	0	8	0	2½

<u>General Set</u>					
25 P.P.M.	5	3	2	¾	¼
50 P.P.M.	4	1	3	¼	¾
100 P.P.M.	5	0	5		1-1/4
Check	10	0	10	0	1-3/4

<u>Carignani Plot - Crown Set</u>					
25 P.P.M.	4	4	0	1-3/4	0
50 P.P.M.	8	2	6	1/2	¾
100 P.P.M.	23	10	13	4	5-1/2
Check 1	0	0	0	0	0
Check 2	0	0	0	0	0

<u>General Set</u>					
25 P.P.M.	9	5	4	2	1-1/4
50 P.P.M.)	none to harvest				
100 P.P.M.)					

There were no records of the plot at Bertinas as there was too much cracking³ (monkey faces). Mr. Bertina pulled all the tomatoes of the crown and first general set off the vines.

(cl-8-1) Home Garden 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. acres</u>	<u>Values</u>	<u>Costs</u>	<u>Profits</u>
11	7	2 $\frac{1}{2}$	\$465.00	\$354.00	\$111.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. acres</u>	<u>Values</u>	<u>Costs</u>	<u>Profits</u>
6	6	Included	Included in	Included in	Included
		in above	above	above	in above

(cl-9) Small Fruit Growing

(cl-9-1) Berry 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. acres</u>	<u>Values</u>	<u>Costs</u>	<u>Profits</u>
3	3	3	\$1032.00	\$692.00	\$340.00

(cl-10) Sweet Potatoes

Several sweet potato studies have been carried on this year. Heat curing or healing has been effective in increasing the safe period of storage. One large grower is using this heat treatment on his entire crop this year. The practice will result in a longer marketing period for sweet potatoes, and a more stable price. Stem rot continues to be our number one disease of sweet potatoes, and two projects were underway this year to find methods of control. Disease-free seed potatoes produced from stem cuttings is one method under observation. This seems to be a practical way to clean up our seed supply. Also this year, tests were made of various chemicals to disinfect seed from cut potatoes and of their effect on plants prior to being field planted. Although tests were of an exploratory nature, there is little evidence of the value of the treatment. In fact, it appears that cutting potatoes for seed is a poor practice.

(cl-11) Potatoes (white)

(cl-11-1) Potato 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. acres</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
1	1	2 $\frac{1}{2}$	\$1900.00	\$1084.00	\$816.00

(c2) Seed Improvement

Interest in certified seed production has increased, and during the past year we have produced certified seed of Blackeye #5 and Red Kidney beans, Merced rye, Atlas barley, Ramona 44, and White Federation 38 wheats. One field of Double Dwarf Milo 38 was withdrawn by the grower because of weeds. A Merced County grower has been allotted foundation seed of the new Atlas 46 for increase next year.

(c3) Orchard and Vineyard Crops

(c3-1) Orchard Planting (Pollination)

Several plantings of almonds have been made in which only two varieties have been planted. One planting is Jordanola and NePlus with Jordanola being in the ratio of 3 to 2 NePlus. Another planting was made using Texas and Peerless. These plantings will be observed as there is a desire by growers to plant only two varieties and have both heavy bearers or use only enough of one for pollinators for the other.

(c3-2) General Orchard Management

Tests were conducted to control lime induced Chlorosis on peach. Iron sulphate at the rate of 4 pounds per 100 gallons of water was applied during the early part of July. A second application of the same concentration was applied 10 days later. There was only a pin point greening on the leaves of the trees. There was no over-all greening or reduction of Chlorosis.

In the fall, iron compounds were placed in the crown of the trees to determine the value of this method of overcoming lime induced chlorosis. This method was used on tow peach orchards in the county. The materials used were: (1) Iron sulphate, (2) Iron oxalate and (3) Iron citrate. Ground applications of iron sulphate were made to trees in one orchard in the summer time. No results have been observed from the applications.

(c3-2-3) Frost Protection

Frost protection was discussed with growers of almonds. Smudge pots are used as orchard heating equipment. There are only a few wind machines in the county. The past season was a very light frost year. No damage occurred to crops from frost and it was necessary to protect the crops from frost on two occasions.

Frost warnings were again supplied to growers by radio through the cooperation of the United States Weather Bureau having a forecaster stationed in the district during the spring months.

(c3-3) Orchard Pruning

Demonstration meetings were held with growers to demonstrate the best methods of pruning bearing and non-bearing trees. In many almond orchards the trees have become crowded with large limbs that cut down the bearing area. Methods were shown whereby a long-time thinning out of these limbs would be of benefit and not increase sucker growth excessively. Many people have purchased orchards who are new to orchard management. These people called for and received advice on methods of pruning.

(c3-3-1) Thinning

Tests were conducted on the efficiency of polyethylene polysulfide chemical as a fruit thinner on peaches. The material was applied when the jackets had formed on the fruits. No results were obtained from this material. The fruit set was not reduced.

Pole thinning of peaches was demonstrated and past results of tests were shown at meetings. The practice of pole thinning has wide adaptation among the peach growers of this county.

(c3-4) Vineyard Planting

Grape planting continued at a fairly high rate during the past season. Many growers have discarded planting rooted vines. The method used is to plant the cuttings in the bottom of a furrow covering the cuttings to a depth of one or two inches. Water is then turned into the furrow for settling. The ground is kept moist through frequent irrigations. Under this method excellent stands are obtained. Wine variety grapes were planted in a larger volume than table or raisin grapes.

(c3-6) Vine Pruning

Demonstrations were held showing methods of pruning the different grape varieties as well as the methods of training new plantings.

(c4) Pest, Insect, and Disease Control

(c4-2) Disease Control

Oak root fungus (armillaria) has been found in several localities in the county. One plot was established in cooperation with a grower to determine the effectiveness of soil treatments by the use of a weed gun injector. The area affected followed a filled-in drain ditch. This seems to be the greatest source of oak root infection, and the banking in of dirt from creeks and rivers next.

The copper sprays are still recommended for control of blight and brown rot of stone fruits. Zinc sulphate added to the fall spray at the rate of 15.20 pounds per 100 gallons of spray solution will give good control of little leaf or zinc deficiency.

The use of zinc sulfate during the dormant season on apricots in the Los Banos area had no effect on little leaf control. As high as 25 pounds per 100 gallons of water was used. Zinc glazier points were put into limbs on the tree with no results. Last year Dr. Chandler suggested spraying with zinc sulphate before the leaves dropped. This was tried using 6 pounds of zinc sulphate in 100 gallons of water. The response on the six sprayed trees was remarkable. This work is being expanded in the Los Banos area.

(c4-3) Insect Control

One of the factors contributing to low alfalfa seed yields in the county has been damage to blossoming plants and immature seed by the lygus bug. This damage was quite evident from the number of blasted plants and the high percentage of shrunken off colored seeds produced.

During this past year we have worked rather closely with a group of interested growers in trying to find a satisfactory solution to the lygus bug problem. Demonstrations were held on determining lygus bug populations, timing dusting operation and methods of applying insecticides for lygus bug control. It was necessary to sweep a large number of fields for growers because they were not

too familiar with the sweeping technique. However, this next year most of the group should be able to use a net in a satisfactory manner and can make their own lygus population counts.

In all fields that were dusted for lygus bug control, the material used was DDT (5%) applied at the rate of 25 pounds per acre and all dusting was done before 6 a.m. There was no apparent damage to bees.

In all places where DDT was used and properly timed, the results from dusting were quite apparent. Blasting was just about eliminated and the seed produced on a whole was plump and heavy. Seed yield varied quite a bit but several fields yielded over 400 pounds to the acre and one field, where timing throughout the season was just about right, a seed yield of over 700 pounds to the acre was achieved. No accurate comparative yield data was obtained. However, all growers that did dust were quite sure that dusting had been a big factor in improving seed yields. Many dusted fields yielded 2 to 5 times as much seed as they did the year before when no dusting was done. Generally, all fields dusted were dusted when the lygus bug population reached 5 or more adults and nymphs. The stage of bloom when dusting was generally an early bloom stage. In practically all cases only one application of dust was used for the season.

Tests were conducted to find a control for the grape or pubescent hoplia. This insect causes damage to grapes in the early spring by eating the forms and riddling the leaves. Crops have been reduced as much as 30 percent by attacks of this insect.

In cooperation with Mr. Dwight Barnes of the Bureau of Entomology and Plant Quarantine, USDA, stationed at Fresno, the following materials were tested as dusts:

1. 5% Fernate (ferric dimethyl dithiocarbamate) and 95% dusting sulfur.
2. 5% mixed isomers of Benzene hexachloride and 95% Thiomate. This dust contained about 0.5% gamma isomer.
3. 0.75% gamma isomer, 50% dusting sulfur and the other isomers of benzene hexachloride and filler.
4. 1% rotenone dust with unknown filler. This dust has been commonly used for hoplia control.

These materials were tested on two different Thompson seedless vineyards where the population of hoplia was high. The population within each set of plots appeared to be rather uniform when they were treated.

In the 10 days following dusting examinations were made of each plot. The effectiveness of the treatments was measured by striking the wire sharply and recording the number of beetles which fell from the vines. This method probably cleared the vines of beetles at each examination. The number found per vine are recorded in the following table.

Vineyard #1

Number of beetles per vine in plots 1 to 10 days after treatment, April 18

Plot	Treatment	April 19	April 21	April 24	April 28
1	0.75% gamma & 50% sulfur	1.3	0.3	0.0	0.0
2	Thiomate 19	7.0	3.0	1.0	1.0
4	1% rotenone	7.0	2.0	-	1.7
3	Control	10.0	4.7	2.1	1.7

Vineyard #2

Number of beetles per vine in plots 1 to 10 days after treatment, April 18

Plot	Treatment	April 19	April 21	April 23	April 28
4	0.75% gamma & 50% sulfur	0.3		0.0	0.0
3	Thiomate 19 & mixed isomers of benzene hexachloride 1/	1.3		1.5	0.0
2	Thiomate 19	7.0		6.3	0.0
1	Control	15.0		14.0	1.3

1/ Contained about 0.5% gamma isomer

Flower and grass thrips cause a great amount of damage to nectarine by scarring the embryo fruit while still in the jacket. Scarred fruits are not marketable for shipping. In order to test the efficiency of a 1% DDT spray as a control several tests were made. The spray was first applied just after full bloom and a second spray applied at petal fall. The results obtained were very good. The sprayed tree had 1.3% of the fruits scarred while the unsprayed showed a 36.3% scarring of the fruits.

The grape bud mite has become quite wide spread in the county. No effective control has been worked out. In cooperation with Dr. E. M. Stafford of the Division of Entomology, University of California, testing of several untried materials was carried out this fall before the frosts. The materials used are as follows:

899 + Vatsol K
3422

Kerosene + rotenone + blood albumin
C-342

3422 + 899 + Kerosene

Although counts have not been completed as yet, the results so far are rather disappointing.

The 0.75% gamma isomer 50 % dusting sulfur appears to be the answer to hoplia control. Before the end of the season benzene hexachloride was being sold as the "sure cure".

The oriental fruit moth had been found in the county in 1945. In order to check the efficiency of the control methods used, the Division of Entomology under the direction of Frank Summers set up a program to trap these moths. Trapping was started on June 13, 1947 and continued until July 2, 1947. A string of 60 traps was established in the area in which the moth was found in 1945. These traps were visited every other day, strained for moths, refilled and replaced in the tree. A record of performance was kept on each trap. Any suspicious moth was sent to the Oriental Fruit Moth Laboratory for identification. No oriental fruit moths were taken from this trapping operation.

(c4-4) Weed Control

The use of oil for the control of weeds in orchards and vineyards was demonstrated through plots established early in the year. Johnson grass and Bermuda grass can be controlled in vineyards under the vines through the use of

oil. Sulfur was added to the oil but this proved of little value as a weed killer. The practice of controlling weeds through spraying is becoming widely adopted in the county.

During the year a number of test plots were established using selective herbicides and contact herbicides to try to control a number of different weeds in alfalfa. The following are some of the results from these plots:

Controlling Winter Weeds in Old Alfalfa Stands

Two plots were established to attempt control of annual broad-leaf weeds and foxtail, ryegrass and other grasses in the stand. Materials used consisted of a mixture of diesel oil, water and Dow General or Sinox General in the following proportions: Diesel oil - 30 to 60 gallons, Dow General - 1 quart, Water - 120 gallons.

Results were: Broadleaf weeds are controlled easily with low concentration of oil. Grasses are killed out of a stand in greater amounts as the percentage of oil is increased. The materials needed per acre depend on the density and height of the stand of weeds and alfalfa. Large weeds in most instances were not killed out but were burned back. Growth of alfalfa on sprayed areas was just as good, if not better, than in areas not sprayed. Timing appears to be an important factor in getting successful control in that the smaller the weeds are the more easily they are controlled.

Controlling Summer Weeds in Old Alfalfa Stands

Weeds are costing alfalfa growers money. Yearly losses from weeds may amount to \$50 or more per acre in reduced quality and quantity of alfalfa produced, in increased operation costs, and in damage to alfalfa stands. It has been estimated that weed damage in alfalfa in 1946 in Merced County amounted to \$2,000,000. The use of chemical sprays appears to offer a practical means of minimizing these losses.

Sandbur Control Plot

Materials Used: Diesel oil, water, Dow General, Sinox General, Dow Selective, sulphur, a detergent.

Results to date: It appears that it is going to be possible to control and eradicate sandburs in alfalfa stands without damage to the alfalfa stand and without loss of hay yield.

Most effective materials: Diesel oil (30 to 40 gallons) plus one quart of Dow General in 80 gallons of water. This amount applied to one acre immediately after the cutting, just before the sandburs go to seed gives effective control. The number of times this material will have to be applied will vary with the extent of the sandbur infestation. Badly infested areas may require three applications.

Diesel oil (40 gallons) plus 4 pounds of sulfur plus a detergent in 80 gallons of water shows promise of doing an effective job. If this proves out, it will cut material costs about in half. Further investigational work will have to be done before a recommendation can be made.

Three test plots were established to attempt control of weeds in seedling alfalfa stands. Materials used consisted of Dow Selective Herbicide and water in the following proportions: Dow Selective Herbicide - 4 to 6 pints, Water-100 gallons. Amounts used per acre varied from 100 to 150 gallons, depending on the amount and density of weed growth. Results in general were that small weeds (2 to 5 leaf stage) were killed out. Larger weeds were quite resistant to the spray. Where the higher concentrations of Dow Selective were used, some spotting of the alfalfa was noted and some plants were killed out, but the number killed was so small that it was of no consequence. Knotweed and Winged Pigweed were very resistant to the spray. It appears that in order for these selectives to be effective, the weeds must be sprayed at a very early growth stage. Alfalfa is quite tolerant of this spray material in the lower concentration, even when the plants are just emerging so spraying should be done when weed growth is at the right stage, regardless of the stage of growth of alfalfa.

Dodder in alfalfa is quite bad in a number of places in the county. A fair control of this parasite can be achieved by the timing of cuttings to prevent Dodder seed formation. This method has its disadvantages so this year a number of test plots were established to determine if a method using spray materials could be worked out that was practical and economical and one that would eradicate this pest. A series of eleven test plots were established to determine materials and methods that might be used. The following materials were used in varying amounts and combinations: Dow Selective, Dow General, Sinox General, Diesel Oil, crankcase oil, light miscible oil, sodium hydroxide, water, Shell 20.

Results from the first exploratory sprayings indicated that the materials doing the most effective job were Dow General and Sinox General. Proceeding with this in mind, different combinations and concentrations of these two materials were tried and the results were as follows:

On Seedling Stands

The problem here is to kill the parasite without damaging the alfalfa. The most effective material was Dow General or Sinox General and water, using the following concentration: 80 gallons water, 1 quart Dow or Sinox General. The mix must be well agitated and a thorough job of applying done. The leaves will be burned off of the alfalfa plants but all plants observed made a complete recovery except those that were obviously weakened from the Dodder infestation. Those that were in such a weakened condition would probably have died anyway whether sprayed or not.

On Old Alfalfa Stands

On old stands the problem of control is quite simple in that old crown seem to make a complete recovery from the effects of the contact herbicides used. Satisfactory control was gotten with Dow General or Sinox General in water at the rate of 1 quart to 80 gallons of water. Diesel oil may be added to this mix and the inclusion of oil gives a greater toxicity. However, the oil does not seem to help a great deal in killing the Dodder.

In applying these materials it is absolutely essential that all Dodder plants get thoroughly covered with the spray. For best results and economy of application, the materials should be applied to a stand immediately after a cutting. If this is done, 80 to 90 gallons of material will easily cover one acre and do a thorough job of wetting if properly applied.

(d4-4-2) Feeder 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
26	21	39	\$2640.00	\$2038.00	\$602.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
4	4	Included in above	Included in above	Included in above	Included in above

(d6) Poultry Improvement

(d6-5) Poultry 4-H Projects

(d6-5-1) Egg Production 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. Birds</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
32	22	564	\$1936.00	\$1655.00	\$281.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. Birds</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
10	6	Included in above	Included in above	Included in above	Included in above

(d6-5-2) Brooding 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. birds</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
5	3	105	\$247.00	\$219.00	\$28.00

(d7) Livestock Disease and Parasite Control

(d7-1) Diseases and Parasites of Cattle

(d7-1-2) Brucellosis

For a number of years we have advocated the control of Brucellosis by the vaccination of dairy heifers with Strain 19. We find approval of this program quite general and we think our county will be very cooperative when the compulsory vaccination of dairy heifers starts early in 1948. Our radio and newspaper columns have been quite helpful in educating the dairymen along the lines of controlling Brucellosis.

(d7-1-3) Mastitis

Here again we have found our radio and newspaper columns quite helpful in informing dairymen of the latest methods in treating Mastitis, particularly as to the possibilities and limitations of penicillin.

(d7-1-5) Cattle Grub

Cattle grub control measures have been initiated by quite a number of stockmen in the county. All who have treated are well satisfied

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
122	94	138	\$16,023.00	\$13,793.00	\$2230.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
18	18	Included in above	Included in above	Included in above	Included in above

(d1-5) Dairy Cow 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
44	34	143	\$37,671.00	\$31,477.00	\$6,194.00

(d1-6) Bred Heifer 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
11	9	12	\$1970.00	\$1540.00	\$430.00

(d2) Beef Cattle Improvement

(d2-4) Beef Cattle 4-H Projects

(d2-4-2) Feeder 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
17	13	30	\$7007.00	\$6374.00	\$633.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
2	2	Included in above	Included in above	Included in above	Included in above

(d3) Sheep Improvement

(d3-4) Sheep 4-H Projects

(d3-4-2) Feeder 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
5	5	19	\$610.00	\$350.00	\$260.00

(d4) Swine Improvement

(d4-4) Swine 4-H Projects

(d4-4-1) Breeding 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
4	4	32	\$980.00	\$703.00	\$277.00

(d) In Livestock Production

(dl) Dairy Improvement

(dl-1) Cow Testing

Interest in the use of cow testing records as a guide to dairy improvement continued to increase. During the year the number of units in the Testing Association was increased to a total of ten. The peak number of cows under test in any one month reached a high of 15,500 and the total number of cows tested during the year will approach 18,000, which is over 25 percent of the cows in the county. That the dairymen of Merced County are using their records to good advantage, is shown by the average production in the Cow Testing Association which last year was 344 pounds fat per cow, as compared to the average of the entire county of 257 pounds.

(dl-2) Better Stock

(dl-2-1) Better Sires

Gradually, Merced County dairymen are selecting better herd sires and during the past year, through the Dairy Herd Improvement Association, 28 were assisted in selecting good bulls for their herds. A number of good purebred ^{herds} ~~sires~~ of all three of the major breeds of dairy cattle is increasing steadily and there are very few members of the Dairy Herd Improvement Association whose herds are not headed by purebred sires. The number of good purebred herds of all three of the major breeds of dairy cattle is increasing steadily in Merced County and in view of the excellent registered young sires available in our county, it is seldom necessary for any of our dairymen to go outside of the county to get good purebred sires.

(dl-2-2) Better Females

Merced County dairymen continue to use testing records in improving the quality of their herds and during the year, 2,175 "boarder" cows were sent to the butcher.

(dl-3) Better Feeding

(dl-3-2) Balanced Rations

We are using our radio and newspaper columns in a program aimed at the complete utilization, by dairymen, of by-products from some of the other branches of our county's widely diversified agriculture. Besides conserving grain, our dairymen are also cutting feed costs when they substitute by-product feeds for grain in their dairy rations. Here are some of the by-products that are being used by Merced County dairymen to conserve grain, and at the same time, to reduce feed costs: cull figs, cull sweet potatoes, cull raisins, other cull dried fruits of various kinds, such as peaches and apricots, and cull blackeye beans. Other by-products which are available to supplement the alfalfa hay in the rations are lima bean straw, blackeye bean straw, green lima bean vines and pods, beet tops, and sweet potato vines, or tops.

(dl-4) Dairy Calf 4-H Projects

Following is a report of this project:

with the results. However, the thought is continually being expressed that in order to get complete control, a community-wide program of treating cattle is necessary. Many stockmen feel that a compulsory program of treatment should be started.

This past year we have made a local colored moving picture showing methods of treating cattle for cattle grub and have shown this movie at a series of farm meetings. This seems to be quite an effective way of getting subject matter over to fairly large groups. The movie has been well received where shown and the fact that it is about local people and places makes it particularly effective.

One field demonstration was conducted on a group of about 120 head of cattle in a rather isolated area. This group of cattle were very grubby, but two treatments practically eliminated heel fly trouble on this ranch. The owner stated that his cattle did not run once during the heel fly season after treating. The herd will be checked again this fall and treated again if necessary. This herd is apparently so well isolated that complete eradication of this pest is possible on this ranch.

(d7-1-8) Lice

Lice this past year were particularly bad on both dairy and beef cattle. Three field demonstrations were conducted on lice control. Two of them involved the use of DDT along with rotenone-sulfur in grub control. DDT was used to see if a long enough period of carry-over could be obtained to kill any lice hatching after the initial treatment. In one case of beef cattle where the material was applied in a spray-dip rig, this period of carry-over was apparently long enough because the lice were cleaned up with the one treatment.

One lot of dairy cattle was treated with rotenone-sulfur and DDT and the material applied with a Hardie Spray Rig. In this case, the DDT apparently did not carry-over and a reinfestation occurred. One explanation for the lack of carry-over could possibly be that it rained quite hard after applying the material and probably most of the residual DDT was washed off. This lot of cattle was treated a second time with DDT alone and apparently a good carry-over was obtained because no lice were found on these cattle after the second treatment.

One field demonstration was conducted on about 120 head of mixed cattle that were badly infested with lice. The lousicide used in this instance was Benzene Hexachloride. This material appears to be an excellent lousicide. The treated cattle were critically examined on the 14th, 22nd and 32nd days following treatment and no lice were found on any cattle examined. Before treating, this lot of cattle was constantly rubbing and very restless. About one hour after treating we took particular note of how the cattle had quieted down and ceased rubbing entirely. Apparently this material works quite fast as well as giving control with one treatment.

(d7-3) Diseases and Parasites of Swine

Roundworms in swine occasionally are a problem in parts of the county and in the past, treating hogs for roundworms involved individual treatment for satisfactory control. Because of this, most growers have not been inclined to treat for worms in swine unless they were pretty bad. Some growers have used

phenothiazine with only a fair degree of control. The United States Department of Agriculture reported considerable success in ridding pigs of roundworms with sodium fluosilicate and in view of their findings, we decided to conduct a field trial using this material to see just how it would work. Two lots of feeder pigs weighing about 100 pounds each were selected, one lot consisting of about 70 head and the other lot about 40 head. These pigs were on the Earl Porter ranch near Le Grand. The pigs were slightly underfed the day before treating and then were put on their regular ration to which had been added 1 percent sodium fluosilicate for a 24 hour period. Results were not good in that the pigs went off feed and only consumed a small portion of their regular amount of feed, hence apparently did not consume enough feed with the sodium fluosilicate in it to do any good. One pig became sick and died. However, the veterinarian on the case did not think death was caused from the sodium fluosilicate. In order for this treatment to be effective it appears quite necessary to have the pigs hungry before feeding because the sodium fluosilicate is apparently quite distasteful to them, even in small amounts in their feed.

One lot of about 150 head of swine that were badly infested with lice were sprayed with Benzene Hexachloride to test the effectiveness of this material on hog lice. It was not possible to completely wet all of the hogs sprayed. However, in examining the hogs after treating we found that the lice had been practically eliminated. It appears that this material has fumigating properties because an excellent job of lice control on this particular lot was achieved even though the animals were not completely wet. Suckling pigs were not sprayed. However, their nests were doused with the spray materials and in examining these pigs after treating, no lice were found. Before treating, each suckling pig examined had five to six lice crawling on their abdomens.

(d8) Rabbits

(d8-1) Rabbit 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
26	23	212	\$1003.00	\$915.00	\$88.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
1	1	Included in above	Included in above	Included in above	Included in above

(e) In Farm Economics

(e2) Federal Agency Programs

(e2-1) Agricultural Conservation Program

As ex officio member of the Merced County Agricultural Conservation program, from time to time during the year I discussed with the County Committee and the Executive Secretary of the Association, the rules as to the best methods of using the \$250,000 allocated to Merced County, so that the practices for which this money was used would bring about a permanent improvement in Merced County's agriculture.

(e3) Marketing

(e3-2) Crop Marketing

(e3-2-2) Selling

(e3-2-2-3) Field Crops

The sweet potato growers voted against the prorate marketing program. A group within the Farm Bureau has organized to work together on their marketing problems. They are getting special market reports daily from the State and Federal Marketing News Service. In the past, buyers have been the only ones familiar with current market conditions on the Pacific Coast.

(f) In Agricultural Engineering

(f1) Farm Buildings and Structures

The Agricultural Extension Office has had good response to the farm building plan service which it maintains. During the year numerous plans for dairy, beef cattle, and swine buildings were distributed through this medium.

Poultrymen have felt the need for further information on the housing of poultry and the development of labor-saving devices and equipment. We have established several test plots using new types of housing and equipment and made a survey on this subject in Merced and adjoining counties. Beef cattlemen have desired information on good cattle corral layouts and labor-saving equipment. We have developed plans and tested systems in this section to help them with this problem.

(g) In Farm Home Betterment

(g5) Improvement of Homes and Grounds

(g5-2) Home Furnishing

(g5-2-5) Home Furnishing 4-H Projects

Following is a report of this project:

<u>Girls enrolled</u>	<u>Girls completing</u>	<u>Rooms improved</u>	<u>Articles made</u>
12	10	12	115

(g7) Clothing

(g7-5) Clothing 4-H Projects

Following is a report of this project:

<u>Girls enrolled</u>	<u>Girls completing</u>	<u>Garments made</u>	<u>Garments remodeled</u>
234	200	637	8

(g8) Nutrition

(g8-2) Food Preservation

(g8-2-1) Food Preservation 4-H Projects

Following is a report of this project:

<u>Girls enrolled</u>	<u>Girls completing</u>	<u>Quarts canned</u>	<u>Pounds frozen</u>
12	12	288	14

(h) In Boys and Girls 4-H Club Work

During 1947 the club leaders elected to continue the organization of the leaders into four regional club councils. These council areas are determined by the geographical distribution of the clubs in the county. The County 4-H Executive Committee is composed of the four council presidents, a chairman elected by all leaders and the 4-H Extension Service personnel serving in an advisory capacity. This type of leader organization is preferred because of a more local approach to the problems and a greater attendance at the council meetings. Seventy-two leaders actively participated in regularly scheduled monthly meetings. The leaders of each council meet regularly once a month from October to May. The Regional Council meetings are essentially leader training meetings in addition to being devoted to handling local club problems. The leaders are actively interested and capable in handling their 4-H activities. The Executive Committee, which coordinates the 4-H program in the county, meets when the occasion demands. In 1947 this group met five times in planning county-wide activities.

Of the total of thirty-nine clubs, eight were of the community type and thirty-one of the neighborhood type. The leaders largely prefer, through experience, clubs of either boys or girls of the same aged group. The girls' clubs and the boys' clubs, however, when existing in the same community, work closely together and frequently have joint meetings and activities. The leaders of the county have preferred organization of the older boys and girls into High School aged clubs, rather than on the basis of Senior 4-H Clubs. These clubs include the word "Hi" in their club names and include more social activities in their program than the clubs of younger members. There were six of these "Hi" clubs comprised of one hundred and five members of whom 90 percent completed their project work.

The 4-H Clubs participated in several educational events which were well attended. Two Dairy Field Days were held in the Spring, one in Hilmar and the other in McSwain, with a total attendance of one hundred and seven. Two 4-H Fairs were held in May, again in Hilmar and McSwain, with five hundred and fifty boys, girls and adults attending. A third 4-H Livestock Show was held in conjunction with the Dos Palos F.F.A. with one hundred and fifty persons attending. In addition to the above activities, the Annual Summer Camp in Yosemite National Park was attended by 424 persons and a county-wide 4-H Achievement Day was held in Merced on November 8 and attended by 600 members and adults.

The total enrollment in Merced County in 1947 was 568, including 298 boys and 270 girls. This represented an increase of 108 members over 1946. The percentage of members completing was 82 percent, which compares with 68 percent in 1946 and is the highest completion percentage since 1941. The favorable percentage was realized by the leaders who made a concerted effort to have more members carry their projects to completion. The leaders are whole-heartedly attempting to increase the quality of the projects as well as to expand the 4-H program generally.

(i) Community Project Activities

(11) Fire Protection - Farm Fire Protection

The volunteer farm fire protection organization that was built up during the war with a total of 226 farm fire groups numbering over 2,200 men is now a thing of the past, as far as we are concerned. We have submitted to the County Fire Warden a list of the companies and personnel and it is our belief that this project can best be carried on, from now on, under the County Fire Warden's supervision.

(12) 4-H Clubs

The Hilmar Hi Boys' Club had as a community project the placing of road signs at the intersections in and around the community of Hilmar. The boys secured lumber for the posts, stenciled the street names on the cross bars and painted the posts. This project was not fully completed during the year and will be carried over into 1948.

The Winton Juniors 4-H Club and the Winton Combiners 4-H Club collected, repaired and purchased children's toys and books to present to the hospitalized children in the Bloss Memorial Hospital of Winton. The presentation of gifts was made at the hospital during a special party given by the Winton clubs to the children.

(j) Young Extension Cooperators - Methods and Development

The importance of the Young Extension Cooperators project was recognized after presentation at several office conferences. After the decision to go ahead with the project in a State-wide way, gradually, as young farm men and women between the ages of 20 and 30 came into the office, they were told the purpose of the program and were signed up. This method has resulted in a slow but steady increase in the Young Extension Cooperators until at the present time there are 160 cooperators, of which sixty-three are men and ninety-seven young women. We have not held any county-wide organization meeting of this group but we do find that they are extremely interested in our Extension program and quite a number of them are cooperators in our tests and field experiments.

The Home Demonstration Agent solicited the assistance of home demonstration groups in reaching young farm women and many of her registrants were obtained in this manner. The organization is steadily developing and during the coming year we plan on holding county-wide meetings where this group may become better acquainted with one another and develop a group spirit. Several of our field tests were located on the farms of the young Extension cooperators. The same applies to work of the Home Demonstration Agent with some of the young women.

(4) Analysis and Interpretation of Tabular Summary

The trends of Extension work in Merced County can be observed by a review of the following statistics of the work of the Agricultural Agents:

Statistics on Work of Agricultural Agents

Local Leaders Assisting

<u>Year</u>	<u>No. Leaders</u>
1943	319
1944	319
1945	319
1946	311
1947	431
1948	456

Farm Visits Made

<u>Year</u>	<u>No. Visits</u>
1943	2430
1944	2639
1945	3293
1946	3310
1947	3407
1948	3280

Total Method and Result Demonstrations

<u>Year</u>	<u>No. Meetings</u>	<u>Total Attendance</u>	<u>Avg. Attendance</u>
1943	3	148	49.0
1944	24	467	19.5
1945	105	2008	19.1
1946	49	844	17.2
1947	14	271	18.6
1948	86	4238	49.3

Days in Office and Days in Field

<u>Year</u>	<u>Days in Office</u>	<u>Days in Field</u>
1943	453	125
1944	508	770
1945	486	890
1946	469	815
1947	448	839
1948	669	984 1/2

Phone and Office Calls

<u>Year</u>	<u>Phone Calls</u>	<u>Office Calls</u>
1943	4602	2907
1944	4891	3060
1945	7912	3091
1946	5501	3211
1947	5292	2842
1948	5910	3208

Farm Center Meetings

<u>Year</u>	<u>Number</u>	<u>Attendance</u>	<u>Avg. Attendance</u>
1943	125	4258	34
1944	94	3814	41
1945	90	3010	33
1946	95	3173	34
1947	94	3764	40
1948	85	3678	43

Farm Bureau Membership

<u>Year</u>	<u>No. Centers</u>	<u>Membership</u>
1943	11	662
1944	10	757
1945	10	756
1946	10	952
1947	11	1472
1948	11	1556

III. Outlook and Recommendations

In Merced County we now have an Agricultural Extension staff of eight persons. Our staff has increased by three in the last twelve months and this means that there is some organization work to do as to project activities. During the coming year we believe that each member of the staff will become adjusted to his particular field and a rather complete Extension program for the county will be developed.

IV. Summary of Activities and Accomplishments

During the past year the program of the Agricultural Extension Service had affected many branches of Merced County agriculture. After many years of steady effort, the Dairy Improvement program seems to have reached a stage where widespread response is evident, and over 300 herds, with a total of over 15,000 cows, are now participating in this program.

The outlook for 4-H Club work is bright. There has been a definite increase in number and quality during the past year and with two members of the staff working full time with this project, our hopes are that within a comparatively short length of time 1,000 members will be enrolled.

CO-OPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
STATE OF CALIFORNIA

UNIVERSITY OF CALIFORNIA
COLLEGE OF AGRICULTURE
AND
UNITED STATES DEPARTMENT OF AGRICULTURE
CO-OPERATING

EXTENSION SERVICE
FARM ADVISOR WORK
AGRICULTURE CLUB WORK
HOME DEMONSTRATION WORK

Office of the Director
College of Agriculture
Berkeley 4, California

October 20, 1947

ANNUAL REPORT

TO THE FARM ADVISORS AND HOME DEMONSTRATION AGENTS OF CALIFORNIA:

Your annual report is due here not later than Monday, December 1. As usual, this will consist of two parts; namely, a statistical and a narrative report.

A special statistical farm labor report has been requested. However, the time and work of regular extension agents (not the time and work of Farm Labor Project employees) on the Farm Labor Project should be included in the regular statistical report. The regular narrative report should include all work in Farm Labor by the Agricultural Extension Service and should cover the time and work of both regular extension agents and Farm Labor Project employees.

The combined statistical report is designed for the use of all extension agents in the county except Farm Labor Project employees. Make three copies of the combined statistical report; retain one copy for your file and forward two copies to us. One of the two copies sent to us will be forwarded to Washington and the second copy will be retained for our files.

The farm advisor should make four copies of a separate narrative report and retain one copy for his files. Three copies should be forwarded to us. One of the copies sent to us will be forwarded to Washington, one copy will be clipped for subject matter purposes and one copy will be retained for our files.

The home demonstration agent should make four copies of a separate narrative report and retain one copy for her files. Three copies should be forwarded to Miss Nye by November 17 for the same use as in the case of the farm advisor.

Statistical Report

Enclosed are copies of the annual statistical report blank. The blank should be carefully studied by all members of the county staff, as its preparation requires close cooperation of the entire staff. The home demonstration agent (if any) will furnish the farm advisor with all necessary figures pertaining to home demonstration work, which figures should be included in the one combined report so as to avoid duplication.

The statistical blank has changed but little during recent years; therefore, we are not supplying explanatory notes. Rather than be concerned with minor statistical interpretations, we believe it more important that you and the members

of your staff bear in mind that the only purpose of an annual report is to fairly and conservatively portray what has been accomplished by the Agricultural Extension Service within the county. Unless the report does that, it will be of little practical use to you or to us. This means that duplication should be avoided and that all tendency to exaggerate figures which will result in padding should be eliminated. All members of your staff should understand that the statistical report is a combined one and should be prepared cooperatively and not competitively.

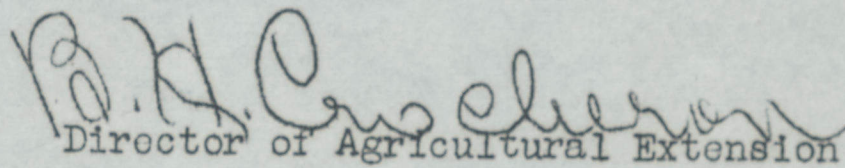
Most of the difficulty with duplication involves meetings participated in by the home demonstration agent and one or more members of the farm advisor's staff. The meeting questions on pages 3, 4, and 4a are for the primary purpose of ascertaining the number of different meetings held or participated in and the attendance thereat, rather than the number of meetings in which each agent participated. On pages 3, 4, and 4a, only, the circle method can be used to avoid duplication. Example: If the home demonstration agent and the farm advisor participate in the same meeting, decide the one to whom the meeting should be credited and report it in the proper column for that agent "out of a circle." It can be reported in the proper column for the other agent "in a circle." Thus, the straight addition of the figures "out of circle" in columns A and C will give the county total in column D without duplication. In any case of difference in understanding, the farm advisor should consult this office.

Narrative Report

Enclosed herewith are copies of outlines giving headings and subheadings for the narrative reports of the farm advisor and the home demonstration agent. In writing the narrative reports, follow these outlines, and bear in mind that "volume of production" is not required. The length of the narrative should be reduced to the minimum necessary to convey a sharp picture of what was done. Cut out extra words and sentences. Stress the important projects. Omit unnecessary items. In typing, be sure to single space, with double space between subheadings. Photographs may accompany or be incorporated with the narrative report.

The third "cut-up" or "clip" copy of both narrative reports should not be on thin paper, because such paper is difficult to tear into subject matter sections and is otherwise difficult to handle.

Very sincerely,


Director of Agricultural Extension

Enclosures:

- 5 or 7 copies of statistical report blank
- 2 copies of 1947 Outline of Annual Narrative Report for Farm Advisors
- 1 or 2 copies of 1947 Outline of Annual Narrative Report for Home Demonstration Agents

CO-OPERATIVE EXTENSION WORK
IN
AGRICULTURE AND HOME ECONOMICS
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CO-OPERATING

EXTENSION SERVICE
FARM ADVISOR WORK
AGRICULTURE CLUB WORK
HOME DEMONSTRATION WORK

AGRICULTURAL EXTENSION OFFICE
MERCED, CALIFORNIA

NARRATIVE REPORT
OF
COUNTY AGRICULTURAL AGENT

Wm. H. Allison

For Merced County

From December 1, 1946 to November 30, 1947

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III. Outlook and Recommendations (including suggestive program of work for next year)

IV. Summary of Activities and Accomplishments.

I. Summary of Post-War Programs

(1) Organization - Changes to Meet Post-War Conditions

(a) County USDA Council

The County USDA Council held only two meetings during the year. While the USDA Council has had no specific duties assigned to it, and for that reason seems to be a rather aimless organization, I believe it has been helpful in maintaining a good spirit of cooperation among the various local branches of the United States Department of Agriculture.

(2) Program Adjustments to Meet Post-War Conditions

(a) Agricultural Extension Planning Conference

Many of the recommendations of the Agricultural Extension Planning Conference held in 1946 were followed in drawing up the program of our office for the year 1947. It will be recalled that this Program Planning Conference recommended the addition of an Assistant Home Demonstration Agent and another Assistant County Agent to our staff and these two recommendations were fulfilled during the year. In addition, another Assistant Farm Advisor, who is to be primarily a specialist on soils, fertilizers, irrigation and drainage, was added to the staff early in November.

(b) Test Plots - Field Experiments

As a continuance of the post-war long-time Extension program in Merced County, there continues to be an increased emphasis in test plots and field experiments. In alfalfa production especially has there been a marked increase. A total of fifty-two field tests were established or continued during the year on various phases of the alfalfa Extension program. These plots included twenty-three tests on disease-resistant Hilmar strain of alfalfa, three tests of row planting of alfalfa for seed production, eleven tests of control of weeds in young and old stands, ten alfalfa fertilizer plots, one alfalfa variety trial, three tests of controlling lygus bugs by dusting with DDT, and one test on inoculation of alfalfa seed. Other fields of activity were also represented in an increased number of test plots and field experiments.

(c) Food Production

The need for continued maximum food production was stressed by the Agricultural Extension Service staff at all opportunities and we found the radio particularly helpful as a medium along these lines.

(d) Farm Labor

The Farm Labor situation was much easier in 1947 than it was in 1946 and as a result, we discontinued the Livingston Office. This left only one Farm Labor Office in the county and that was located in Merced. With a seasoned Farm Labor staff and only one office to supervise, the Farm Labor project took very little time of the Extension Agent's, and also, we believe that its war-time usefulness has practically disappeared. We therefore welcome the discontinuance of the Farm Labor program under Extension supervision.

(g) Fire Protection

Gradually, our responsibility in connection with the emergency farm fire protection program has been transferred to the County Fire Department, until in 1947 we feel that this project can be discontinued in our files.

II. Program of Work - Methods Employed and Results Achieved

(1) Factors Determining Program

The program of work in 1947 was based, to a large extent, on the recommendations of the Agricultural Extension Program Planning Conference held in 1946. The wide diversity of agricultural enterprises in Merced County has lead to an increase in the staff, and during the year we have rearranged the program so that each member of the staff has a clear cut assignment for working on the problems of a segment of our program. At the present time, farmers are very much interested in increasing crop production by the use of fertilizers and, therefore, many of our new test plots have to do with the problem of finding out the most economical fertilizer to use on each crop, and on each soil type.

4-H Club work is again on the upward swing and the new Assistant Home Demonstration Agent, who is specializing in 4-H Club work, has been very successful in increasing the number of girls' 4-H Clubs, as well as the enrollment in this phase of 4-H Club work.

(2) Project Activities and Results

(a) In Development of Extension Organization During the Year

(a1) Development of Community Program of Work

The County Farm Bureau has been the farm organization with which our office has cooperated closely along agricultural educational lines for a period of over 30 years. Although the Farm Bureau has now had a full-time Field Secretary for two years, and although commercial activities form an important part of the Farm Bureau program, this organization continues to work closely with us along educational lines.

During the year representatives of the Extension Service Office gave subject matter presentations at a total of 94 Farm Center meetings with a total attendance of 3,704.

(a2) Development of Demonstrations

There has been a considerable increase in the number of result demonstrations carried on in various fields of activity. This total has increased from 167 in 1946 to 192 in 1947. Of the total 99 method demonstrations that were held, 84 were given by the Home Demonstration Agent and the balance by the agricultural agents.

(a3) Development of Project Leaders

(a3-2) 4-H Clubs

(a3-2-1) Community Club Leaders

During 1947, eight of the thirty-nine 4-H Clubs were of the community type with eighteen leaders participating. The community type of club is becoming more popular than in recent years. Leaders in more communities are recognizing the fact that younger, as well as older, boys and girls like to mix and work together. These eight clubs were among the most active and received fine cooperation and recognition from the parents and communities as a whole.

(a4) Development of Recreation and Other Social Activities

(a4-1) 4-H Club Encampments, Hikes, Plays, etc.

The leaders planned and held a highly successful annual Summer Camp in Camp #9 of Yosemite National Park, June 12 to 21. The first session, June 12 to 15, was comprised of the Westside and Northern Council areas of Grammar School aged boys and girls. The second session, June 15 to 18, was composed of High School members from the entire county. The last session, June 18 to 21, was composed of the Central and Eastside Council areas of Grammar School aged members. The following tabulation gives the attendance of each session:

	<u>Boys</u>	<u>Girls</u>	<u>Adults</u>	<u>Total</u>
1st Session	59	69	16	134
2nd Session	53	50	18	121
3rd Session	78	60	21	159
	<u>190</u>	<u>179</u>	<u>55</u>	<u>424</u>

The boys and girls attending, totaling 369, represented 65 percent of the total club enrollments.

Mr. Orbie Sullivan, Field Secretary for the Merced County Farm Bureau, served as Camp Director and did a commendable job. The Camp House was Miss Margaret Robertson, Merced County Health Nurse. The Chief Cook was again Mrs. Esther Falke of Hilmar. Assisting her were Mrs. Esther Jacobson of Dos Palos and Mrs. Ray Hall of Denair, formerly of Hilmar. The meals were well planned and of excellent quality. The Camp fee was \$4.70 plus transportation. Each community solved its own transportation problem.

Activities included hiking, swimming, bicycling, horseback riding, camp games, fire fighting demonstrations and a nightly Campfire program staged by the members themselves. The Park rangers and naturalists cooperated by giving interesting and instructive talks at the Campfire programs.

Mr. Woodbridge Motcalf, who was attending a forestry meeting in Yosemite Valley at the time, dropped in one day and led the members in singing.

The leaders felt the Camp was particularly successful and expressed the opinion that this event is the most important of the year in promoting club work throughout the county.

(a5) County and Community Fairs

There are now two county fairs held in Merced County. The Merced

County Spring Fair and Livestock Show is held in conjunction with the old Henry Miller May Day celebration at Los Banos, while the Merced County Fair in the Fall is held at the fairgrounds in Merced.

4-H Club work was well represented at both of these fairs and the boys and girls who have livestock projects showed many excellent animals at these events.

(b) In Soil Management

(b2) Irrigation

(b2-2) Irrigation Organizations

The 1947 irrigation season was one of the most critical in many years in Merced County. This was because of the light snow pack on the watershed of the Merced River and the river run-off in 1947 was estimated as being 40 percent of normal. Because of the very evident serious situation, the Merced Irrigation District established an emergency water distribution program aimed at the conservation of irrigation water to the highest degree. We cooperated with the Merced Irrigation District by interviewing the Chief Engineer in a series of radio talks. In these talks the critical water situation was clearly outlined and the cooperation of all irrigators in water conservation measures was urged. While at the beginning of the season it was thought that the water might be out of the canals by the first of September, if not earlier, the cooperation obtained from all farmers was such that the irrigation season lasted until September 18. How much effect our radio program had in solving this problem, of course, is hard to estimate, but our efforts were appreciated by the Irrigation District Management.

(b4) Soil Erosion

(b4-1) Erosion Control Demonstrations

(b4-1-2) Soil Conservation Districts and Associations

There is one Soil Conservation District in Merced County and that is known as the Los Banos Soil Conservation District. Its total area is about 23,000 acres, of which only about 3,000 or 4,000 acres is good land. The rest is land that can best be suited for game clubs or range land, the production of which can be helped by swamping. We have worked cooperatively with the Soil Conservation Service represented in that area, making suggestions as to the most effective means for utilizing this land.

(b6) Cover Crops

Cover crops continue to be grown as a part of land management. The greatest use of cover crops is in the sandy soils and on that which has been recently levelled. Orchardists and vineyardists continue to use cover crops but there are a few who are going to clean cultivate through the use of oil for weed control and do not plant cover crops.

No tests have been made of new varieties for planting as the standards were gained from past years' work on cover crops.

(b7) Commercial Fertilizers

(b7-1) On Field Crops

During 1947 a series of ton alfalfa fertilizer trials were established in widely separated parts of the county to determine phosphorous responses, sulfur responses, and to get some information on a comparatively new fertilizing material known as Thomophos. Yield data was gathered on seven of these plots and the results of five of these are given below. One of the plots on the Livingston River road failed to give a response at all, indicating that sufficient phosphorous was available in that soil for medium plant growth. On a plot in the Snelling area incomplete yield data was gathered, which indicated a phosphorous and a sulfur response. The data from these two plots are not being listed. The three plots that were not harvested were observed from time to time during the growing season and a phosphorous response was quite evident from an observation standpoint. Yields were not taken because of poor stands, irregular irrigation, or some other factor which would have contributed to incomplete yield data.

In all of these plots no attempt was made to harvest the first cutting because in some cases the fertilizing materials were applied late in the season and probably no response could be detected by first cutting time.

Athlens Area

Soil Type -- Heavy

Second year alfalfa

Fertilizer Applied -- January 6, 1947

Materials used Single Superphosphate 400 pounds per acre
and and

Rate of Application -- Thomophos 400 pounds per acre

Per Acre Yields in Pounds -- Green Weight and Dry Weight*

Harvest Date	Thomophos		Single Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
5/31/47	16434	4309	15434	3359	13000	3250
7/15/47	19766	4041	21966	5491	16332	4003
8/26/47	18200	4560	17600	4400	17800	4430
10/24/47	11000	<u>2770</u>	9590	<u>2335</u>	10640	<u>2600</u>
TOTAL		16370		16155		14443

Summary: Yield differences between the fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1700 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

*Dry weight yield figures are calculated and used for ease in interpretation.

Hilmar Area

Soil Type -- Sandy loam

First Year Stand -- Alfalfa

Fertilizer Applied -- February 26, 1947

Materials used Single Superphosphate
and Thermophos

200 pounds per acre

200 pounds per acre

Rate of Application -- Treble Superphosphate

100 pounds per acre

Per Acre Yield in Pounds -- Green Weight and Dry Weight*

Harvest Date	Thermophos		Superphosphate		Treble Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
5/29/47	5166	1292	7500	1825	8532	2033	3932	983
7/22/47	14100	3525	14100	3525	14340	3535	12740	3185
9/2/47	14134	3524	13366	3342	13268	3317	11400	2850
10/13/47	8230	<u>1500</u>	6470	<u>1618</u>	6430	<u>1608</u>	5070	<u>1270</u>
TOTALS		9911		10810		10593		8238

Summary: Yield differences between the three fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1700 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

Livingston Area

Soil Type -- Sandy loam

First Year Stand -- Alfalfa

Fertilizer Applied -- January 10, 1947

Materials Used -- Single Superphosphate
and and

400 pounds per acre

Rate of Application -- Thermophos

400 pounds per acre

Per Acre Yield in Pounds -- Green Weight and Dry Weight*

Harvest Date	Thermophos		Single Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
6/24/47	8366	2092	8866	2217	8122	2031
8/7/47	9800	2450	9430	2345	8000	2015
9/30/47	8130	<u>2033</u>	7560	<u>1890</u>	5290	<u>1323</u>
TOTALS		6575		6452		5369

Summary: Yield differences between the fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1100 pounds of dry hay was obtained from the application of fertilizers in this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

Gustine Area

Soil Type -- Heavy

First Year Stand -- Alfalfa

Fertilizer Applied -- January 15, 1947

Materials Used -- Single Superphosphate 400 pounds per acre
and -- and

Rate of Application -- Thomaphos 400 pounds per acre

Per Acre Yield in Pounds -- Green Weight and Dry Weight*						
Harvest Date	Thomaphos		Single Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Weight
6/23/47	15700	3922	15000	3067	14900	3717
8/4/47	16240	4080	16000	4200	14300	3575
9/11/47	18000	4500	18100	4535	16130	4080
10/24/47	9220	2305	9900	2475	7900	1990
TOTALS		14787		15167		13312

Summary: Yield differences between the fertilizer materials used are not significant. Yield differences between the fertilizer plots and the check or non-fertilized plot are significant. A net gain of approximately 1500 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

Dallies Area

Soil Type -- Sandy loam

Third Year Stand -- Alfalfa

Fertilizer Applied -- February 25, 1947

Materials Used -- Single Superphosphate 200 pounds per acre
and -- Thomaphos 200 pounds per acre

Rate of Application -- Triple Superphosphate 100 pounds per acre

Per Acre Yield in Pounds - Green Weight and Dry Weights										
Harvest	Thermophos		Single		Check		Treble		Check	
Date	Thermophos		Superphosphate		Check		Superphosphate		Check	
	Green Weight	Dry Weight	Green Weight	Dry Weight	Green Weight	Dry Wt.	Green Weight	Dry Weight	Green Weight	Dry Weight
5/16/47	15120	3760	15600	3920	14320	3690	14200	3552	15340	3335
6/17/47	16940	4270	17940	4435	16300	4125	16340	4035	16100	4025
7/22/47	13535	3398	13425	3353	12665	3216	13270	3313	12420	3106
8/27/47	14100	3625	14220	3555	14000	3515	12900	3200	10400	2600
9/7/47	10230	<u>2560</u>	8910	<u>2230</u>	9230	<u>2308</u>	10200	<u>2550</u>	8740	<u>2185</u>
TOTALS		17533		17548		16744		16705		16250

These two plots were under a different irrigation set-up, therefore they cannot be compared with other plots.

Summary: Yield differences between plots fertilized with Thermophos and Single Superphosphate are not significant. Yield differences between the fertilized plots and the check or non-fertilized plots are significant. A net gain of approximately 800 pounds of dry hay was obtained from the application of fertilizers on this particular plot.

* Dry weight yield figures are calculated and used for ease in interpretation.

(b7-2) On Fruits and Vines

Some observation plots were put out using phosphate on peaches to determine the effect on quality. There were no significant results from this one year's test. Potash was used in several orchards to determine if the trees would absorb more potash. Leaf analysis showed there was some small increase, but it had no effect on size or quality.

Nitrogen is still the most necessary and widely used fertilizer in orchards and vineyards.

(b12) Crop Rotation and Summer Fallow

A long term rotation experiment is under way to determine the effects of annual cropping, summer fallow, stubble-mulch, and fertilizers on grain yields. It will be another year before we have any information other than a response to phosphorus which we obtained this year on the fertilized plots.

(c) In Crop Production

(a1) Field Crops

(ol-1) Cereals

(ol-1-2) Barley

Two barley variety plots were harvested, but one had been damaged by livestock. The two outstanding varieties in Harrod County were Arivat and California Mariout.

(ol-1-3) Oats

An oat variety plot was set out but damaged so as to be worthless.

(ol-5) Corn

Two of the most promising hybrid corns were grown in several plots located on different soil types. The differences were small, but the variety Carlson 53 proved superior from a quality, or weight of grain basis. Results from the previous year's variety trials showed several plots with a 100 bushel per acre yield of grain.

(ol-5) Forage Crops

(ol-5-1) Alfalfa

During the 1947 season an alfalfa variety plot that had been scored by observation during the first and second years, was harvested and yields of each of the varieties were obtained. The following yield data was obtained:

Yield Per Acre - Calculated Dry Weight

<u>Variety</u>	<u>2nd Cutting</u>	<u>3rd Cutting</u>	<u>4th Cutting</u>	<u>5th Cutting</u>	<u>Total</u>
India	4015	3303	3000	2057	14355
Local #2	4300	3463	3350	2425	13538
Local #1	4035	3243	3416	2396	13090
Africa	3785	2935	3150	2257	12127
Buffalo	3600	3125	3033	2234	11992
Neelker Baltic	3650	3124	3300	1703	11777
Ladak	3785	3443	3050	1318	11601
Calif. Common	3235	2673	2950	2208	11071
Ranger	3235	3102	2703	1690	10940
Orken	3235	2839	2766	1656	10536

From a hay quality standpoint, India alfalfa falls down rather badly. On all cuttings it was quite stony with most of the leaves on the upper parts of the stem. For this reason it probably would not find a wide acceptance among growers even though yields were high. Yield data the next few years will give a more complete picture of the adaptability of these varieties. The two local strains used in this plot are the Youngborg and Danben strains from Hilmar. Indications are that this strain of alfalfa has a rather high degree of resistance to bacterial wilt. It was interesting to observe that these local strains proved to be high yielders this year.

Several growers in the Hilmar area have become interested in producing alfalfa seed partly because a good demand for this strain of seed exists and because they would like to produce seed as a part of their rotation schedule. In past years seed production in this area has not been too satisfactory because a stand would have to thin out before seed could be produced, which frequently meant waiting six or seven years for a satisfactory seed crop. As the stands thin out, weeds move in and present another problem in trying to produce good clean seed.

Because of the success in other areas in growing alfalfa in rows for seed production, it was decided to test row plantings out in this area. Accordingly, three plots were established in the Hilmar section in three-foot rows to see if by thinning out the stand to begin with, seed could be produced early in the life of the stand. The plots were established in late February and the results to date are:

One plot was lost because of weed competition. On another plot we failed to get a stand on about half of the plot. The third plot, about 1½ acres in size, grew quite well and a good stand was obtained on most of the area. Weed competition was very bad on this plot and because of this, the stand was mowed several times, which eliminated the possibility of producing a seed crop the first year. In spite of this late mowing, the last crop set a lot of seed, which indicates that a fair seed crop could have been harvested here the first year if the weeds had been taken care of in a satisfactory way. Next year the weeds will be taken care of by spraying and cultivating and an attempt will be made to harvest a seed crop.

Bacterial wilt continues to be a major factor in shortening the life of alfalfa stands in the county. During the last few years a strain of alfalfa produced in the Hilmar section of the county has been observed, which seems to have a rather high degree of resistance to bacterial wilt. Stands of this alfalfa in a number of instances has produced commercial crops of hay for six or more years on ground that previous stands had died out on in three to four years. This strain of alfalfa was brought into the Hilmar section nearly forty years ago by a Mr. Axel Youngborg and planted on his ranch and an adjoining ranch owned by a Mr. A. G. Denham. This strain of alfalfa has become known locally as a high yielder and a long-lived alfalfa.

Because the information at hand regarding this alfalfa seemed to warrant further investigation, it was decided to initiate a testing program which would assist in evaluating this strain. The thought was that if this strain was superior in that it would add a year or two to the productive life of a stand, it would be worth considerable to this county and other areas where this strain of alfalfa was adapted. Accordingly, a series of twenty-two test plots were established in all sections of the county to see if this alfalfa really would last longer than the strains of Common Chilean now being used. Information will be gathered over the next few years as to how this alfalfa yields as compared to that normally seeded. If this alfalfa proves to be a high yielder as it is known to be in the Hilmar area, this will further increase its value.

This year another series of test plots will be planted so that we will have in the neighborhood of fifty-plots in all sections of the county, which should give a rather complete picture as to the adaptability of this strain of

alfalfa. The plots are being made large enough so that if this strain is showing that it will last longer than the normally seeded Canyon Chilean, farmers will be inclined to leave the Hilmar strain in so that we can get information as to just how long it will produce commercial hay.

(ol-6) Cotton

(ol-6-2) Cotton classing and Market News Services

The cotton classing and market news service provided for by the Smith-Dawsey Act was extended for another year. All forms were prepared here and signatures of officers of the local association obtained.

(ol-6) Vegetable Growing

Three trials were conducted on the effect of hormone sprays on tomatoes. The material was applied at strengths of 25 P.P.M., 50 P.P.M., and 100 P.P.M. The crown cluster spray was applied on April 17, 1947. The temperature was 72° with a moderate northwest wind. Application was made by the use of a small hand sprayer (fly sprayer) hitting only the clusters. The first flowers were opened and others of the cluster showed color. The general spray was applied April 30, 1947. The temperature was 86° with slight variable breeze. Approximately 50 plants were sprayed in each plot with the various dosages described above. The following table gives the results obtained from these trials:

<u>Cresci Plot - Crown Set</u>					
<u>Dosage</u>	<u>No. tomatoes</u>	<u>No. 1's</u>	<u>No. 2's</u>	<u>Wt. of 1's in lbs.</u>	<u>Wt. of 2's in lbs.</u>
25 P.P.M.	18	7	11	5	3
50 P.P.M.	26	11	15	5 1/2	7 1/2
100 P.P.M.	49	23	26	11 1/2	13
Check 1	2	1	1	1/2	1/8
Check 2	8	0	8	0	2 1/2
<u>General Set</u>					
25 P.P.M.	5	3	2	3/4	1/2
50 P.P.M.	4	1	3	1/4	3/4
100 P.P.M.	5	0	5		1-1/4
Check	10	0	10	0	1-3/4
<u>Carignani Plot - Crown Set</u>					
25 P.P.M.	4	4	0	1-3/4	0
50 P.P.M.	8	2	6	1/2	3/4
100 P.P.M.	23	10	13	4	5-1/2
Check 1	0	0	0	0	0
Check 2	0	0	0	0	0
<u>General Set</u>					
25 P.P.M.	9	5	4	2	1-1/4
50 P.P.M.)	none to harvest				
100 P.P.M.)					

There were no records of the plot at Bertinas as there was too much cracking (monkey faces). Mr. Bertina pulled all the tomatoes of the crown and first general set off the vines.

(ol-8-1) Home Garden 4-H Projects

Following is a report of this projects

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. acres</u>	<u>Values</u>	<u>Costs</u>	<u>Profits</u>
11	7	2 1/2	\$485.00	\$354.00	\$131.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. acres</u>	<u>Values</u>	<u>Costs</u>	<u>Profits</u>
8	6	Included in above	Included in above	Included in above	Included in above

(ol-9) Small Fruit Growing

(ol-9-1) Berry 4-H Projects

Following is a report of this projects

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. acres</u>	<u>Values</u>	<u>Costs</u>	<u>Profits</u>
8	8	8	\$1032.00	\$892.00	\$140.00

(ol-10) Sweet Potatoes

Several sweet potato studies have been carried on this year. Heat curing or healing has been effective in increasing the safe period of storage. One large grower is using this heat treatment on his entire crop this year. The practice will result in a longer marketing period for sweet potatoes, and a more stable price. Stem rot continues to be our number one disease of sweet potatoes, and two projects were underway this year to find methods of control. Disease-free seed potatoes produced from stem cuttings is one method under observation. This seems to be a practical way to clean up our seed supply. Also this year, tests were made of various chemicals to disinfect seed from cut potatoes and of their effect on plants prior to being field planted. Although tests were of an exploratory nature, there is little evidence of the value of the treatment. In fact, it appears that cutting potatoes for seed is a poor practice.

(ol-11) Potatoes (white)

(ol-11-1) Potato 4-H Projects

Following is a report of this projects

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. acres</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
1	1	2 1/2	\$1900.00	\$1054.00	\$846.00

(ol-12) Seed Improvement

Interest in certified seed production has increased, and during the past year we have produced certified seed of Blackeye #5 and Red Kidney beans, Harwood rye, Atlas barley, Roman 44, and White Federation 38 wheats. One field of Double Dwarf Milo 38 was withdrawn by the grower because of weeds. A Harwood County grower has been allotted foundation seed of the new Atlas 46 for increase next year.

(c3) Orchard and Vineyard Crops

(c3-1) Orchard Planting (Pollination)

Several plantings of almonds have been made in which only two varieties have been planted. One planting is Jordania and NePlus with Jordania being in the ratio of 3 to 2 NePlus. Another planting was made using Terra and Peerless. These plantings will be observed as there is a desire by growers to plant only two varieties and have both heavy bearers or use only enough of one for pollinators for the other.

(c3-2) General Orchard Management

Tests were conducted to control lime induced Chlorosis on peach. Iron sulphate at the rate of 4 pounds per 100 gallons of water was applied during the early part of July. A second application of the same concentration was applied 10 days later. There was only a pin point greening on the leaves of the trees. There was no over-all greening or reduction of Chlorosis.

In the fall, iron compounds were placed in the crown of the trees to determine the value of this method of overcoming lime induced chlorosis. This method was used on two peach orchards in the county. The materials used were: (1) Iron sulphate, (2) Iron oxalate and (3) Iron citrate. Ground applications of iron sulphate were made to trees in one orchard in the summer time. No results have been observed from the applications.

(c3-2-3) Frost Protection

Frost protection was discussed with growers of almonds. Smudge pots are used as orchard heating equipment. There are only a few wind machines in the county. The past season was a very light frost year. No damage occurred to crops from frost and it was necessary to protect the crops from frost on two occasions.

Frost warnings were again supplied to growers by radio through the cooperation of the United States Weather Bureau having a forecaster stationed in the district during the spring months.

(c3-3) Orchard Pruning

Demonstration meetings were held with growers to demonstrate the best methods of pruning bearing and non-bearing trees. In many almond orchards the trees have become crowded with large limbs that cut down the bearing area. Methods were shown whereby a long-time thinning out of these limbs would be of benefit and not increase sucker growth excessively. Many people have purchased orchards who are new to orchard management. These people called for and received advice on methods of pruning.

(c3-3-1) Thinning

Tests were conducted on the efficiency of polyethylene polysulfide chemical as a fruit thinner on peaches. The material was applied when the jackets had formed on the fruits. No results were obtained from this material. The fruit set was not reduced.

Pole thinning of peaches was demonstrated and past results of tests were shown at meetings. The practice of pole thinning has wide adaptation among the peach growers of this county.

(e3-4) Vineyard Planting

Grape planting continued at a fairly high rate during the past season. Many growers have discarded planting rooted vines. The method used is to plant the cuttings in the bottom of a furrow covering the cuttings to a depth of one or two inches. Water is then turned into the furrow for settling. The ground is kept moist through frequent irrigations. Under this method excellent stands are obtained. Wine variety grapes were planted in a larger volume than table or raisin grapes.

(e3-6) Vine Pruning

Demonstrations were held showing methods of pruning the different grape varieties as well as the methods of training new plantings.

(e4) Pest, Insect, and Disease Control

(e4-2) Disease Control

Oak root fungus (armillaria) has been found in several localities in the county. One plot was established in cooperation with a grower to determine the effectiveness of soil treatments by the use of a weed gun injector. The area affected followed a filled-in drain ditch. This seems to be the greatest source of oak root infection, and the banking in of dirt from creeks and rivers next.

The copper sprays are still recommended for control of blight and brown rot of stone fruits. Zinc sulphate added to the fall spray at the rate of 15.20 pounds per 100 gallons of spray solution will give good control of little leaf or zinc deficiency.

The use of zinc sulfate during the dormant season on apricots in the Los Banos area had no effect on little leaf control. As high as 25 pounds per 100 gallons of water was used. Zinc glasier points were put into limbs on the tree with no results. Last year Dr. Chandler suggested spraying with zinc sulphate before the leaves dropped. This was tried using 6 pounds of zinc sulphate in 100 gallons of water. The response on the six sprayed trees was remarkable. This work is being expanded in the Los Banos area.

(e4-3) Insect Control

One of the factors contributing to low alfalfa seed yields in the county has been damage to blossoming plants and immature seed by the lygus bug. This damage was quite evident from the number of blasted plants and the high percentage of shrunken off colored seeds produced.

During this past year we have worked rather closely with a group of interested growers in trying to find a satisfactory solution to the lygus bug problem. Demonstrations were held on determining lygus bug populations, timing dusting operation and methods of applying insecticides for lygus bug control. It was necessary to sweep a large number of fields for growers because they were not

too familiar with the sweeping technique. However, this next year most of the group should be able to use a net in a satisfactory manner and can make their own lygus population counts.

In all fields that were dusted for lygus bug control, the material used was DDT (8%) applied at the rate of 25 pounds per acre and all dusting was done before 6 a.m. There was no apparent damage to bees.

In all places where DDT was used and properly timed, the results from dusting were quite apparent. Blasting was just about eliminated and the seed produced on a whole was plump and heavy. Seed yield varied quite a bit but several fields yielded over 400 pounds to the acre and one field, where timing throughout the season was just about right, a seed yield of over 700 pounds to the acre was achieved. No accurate comparative yield data was obtained. However, all growers that did dust were quite sure that dusting had been a big factor in improving seed yields. Many dusted fields yielded 2 to 5 times as much seed as they did the year before when no dusting was done. Generally, all fields dusted were dusted when the lygus bug population reached 5 or more adults and nymphs. The stage of bloom when dusting was generally an early bloom stage. In practically all cases only one application of dust was used for the season.

Tests were conducted to find a control for the grape or pubescent hoplia. This insect causes damage to grapes in the early spring by eating the forms and riddling the leaves. Crops have been reduced as much as 30 percent by attacks of this insect.

In cooperation with Mr. Dwight Barnes of the Bureau of Entomology and Plant Quarantine, USDA, stationed at Fresno, the following materials were tested as dusts:

1. 5% Permate (ferrie dimethyl dithiocarbamate) and 95% dusting sulfur.
2. 5% mixed isomers of Benzene hexachloride and 95% Thiomate. This dust contained about 0.5% gamma isomer.
3. 0.75% gamma isomer, 50% dusting sulfur and the other isomers of benzene hexachloride and filler.
4. 1% rotenone dust with unknown filler. This dust has been commonly used for hoplia control.

These materials were tested on two different Thompson seedless vineyards where the population of hoplia was high. The population within each set of plots appeared to be rather uniform when they were treated.

In the 10 days following dusting examinations were made of each plot. The effectiveness of the treatments was measured by striking the wire sharply and recording the number of beetles which fell from the vines. This method probably cleared the vines of beetles at each examination. The number found per vine are recorded in the following table.

Vineyard #1

Number of beetles per vine in plots 1 to 10 days after treatment, April 18

Plot	Treatment	April 19	April 21	April 24	April 28
1	0.75% gamma & 50% sulfur	1.3	0.5	0.0	0.0
2	Thiomate 19	7.0	3.0	1.0	1.0
4	1% rotenone	7.0	2.0	-	1.7
5	Control	10.0	4.7	2.1	1.7

Vineyard #2

Number of beetles per vine in plots 1 to 10 days after treatment, April 18					
Plot	Treatment	April 19	April 21	April 23	April 28
4	0.75% gamma & 50% sulfur	0.3		0.0	0.0
3	Thionate 19 & mixed isomers of benzene hexachloride 1/	1.3		1.5	0.0
2	Thionate 19	7.0		6.3	0.0
1	Control	15.0		14.0	1.3

1/ Contained about 0.5% gamma isomer

Flower and grass thrips cause a great amount of damage to nectarine by scarring the embryo fruit while still in the jacket. Scarred fruits are not marketable for shipping. In order to test the efficiency of a 1% DDT spray as a control several tests were made. The spray was first applied just after full bloom and a second spray applied at petal fall. The results obtained were very good. The sprayed tree had 1.3% of the fruits scarred while the unsprayed showed a 36.3% scarring of the fruits.

The grape bud mite has become quite wide spread in the county. No effective control has been worked out. In cooperation with Dr. E. M. Stafford of the Division of Entomology, University of California, testing of several untried materials was carried out this fall before the frosts. The materials used are as follows:

899 + Vatsol K

3422

3422 + 899 + Kerosene

Kerosene + rotenone + blood albumin

C-342

Although counts have not been completed as yet, the results so far are rather disappointing.

The 0.75% gamma isomer 50 % dusting sulfur appears to be the answer to hoplia control. Before the end of the season benzene hexachloride was being sold as the "sure cure".

The oriental fruit moth had been found in the county in 1945. In order to check the efficiency of the control methods used, the Division of Entomology under the direction of Frank Sumner set up a program to trap these moths. Trapping was started on June 13, 1947 and continued until July 2, 1947. A string of 60 traps was established in the area in which the moth was found in 1945. These traps were visited every other day, strained for moths, refilled and replaced in the tree. A record of performance was kept on each trap. Any suspicious moth was sent to the Oriental Fruit Moth Laboratory for identification. No oriental fruit moths were taken from this trapping operation.

(04-6) Weed Control

The use of oil for the control of weeds in orchards and vineyards was demonstrated through plots established early in the year. Johnson grass and Barnard grass can be controlled in vineyards under the vines through the use of

oil. Sulphur was added to the oil but this proved of little value as a weed killer. The practice of controlling weeds through spraying is becoming widely adopted in the county.

During the year a number of test plots were established using selective herbicides and contact herbicides to try to control a number of different weeds in alfalfa. The following are some of the results from these plots:

Controlling Winter Weeds in Old Alfalfa Stands

Two plots were established to attempt control of annual broadleaf weeds and furbill, ryegrass and other grasses in the stand. Materials used consisted of a mixture of diesel oil, water and Dow General or Sinox General in the following proportions: Diesel oil - 30 to 60 gallons, Dow General - 1 quart, Water - 120 gallons.

Results were: Broadleaf weeds are controlled easily with low concentration of oil. Grasses are killed out of a stand in greater amounts as the percentage of oil is increased. The materials needed per acre depend on the density and height of the stand of weeds and alfalfa. Large weeds in most instances were not killed out but were burned back. Growth of alfalfa on sprayed areas was just as good, if not better, than in areas not sprayed. Timing appears to be an important factor in getting successful control in that the smaller the weeds are the more easily they are controlled.

Controlling Summer Weeds in Old Alfalfa Stands

Weeds are costing alfalfa growers money. Yearly losses from weeds may amount to \$50 or more per acre in reduced quality and quantity of alfalfa produced, in increased operation costs, and in damage to alfalfa stands. It has been estimated that weed damage in alfalfa in 1946 in Herrod County amounted to \$2,000,000. The use of chemical sprays appears to offer a practical means of minimizing these losses.

Sandbar Control Plot

Materials Used: Diesel oil, water, Dow General, Sinox General, Dow Selective, sulphur, a detergent.

Results to date: It appears that it is going to be possible to control and eradicate sandbars in alfalfa stands without damage to the alfalfa stand and without loss of hay yield.

Most effective materials: Diesel oil (30 to 40 gallons) plus one quart of Dow General in 80 gallons of water. This amount applied to one acre immediately after the cutting, just before the sandbars go to seed gives effective control. The number of times this material will have to be applied will vary with the extent of the sandbar infestation. Badly infested areas may require three applications.

Diesel oil (40 gallons) plus 4 pounds of sulfur plus a detergent in 80 gallons of water shows promise of doing an effective job. If this proves out, it will cut material costs about in half. Further investigational work will have to be done before a recommendation can be made.

Three test plots were established to attempt control of weeds in seedling alfalfa stands. Materials used consisted of Dow Selective Herbicide and water in the following proportions: Dow Selective Herbicide - 4 to 6 pints, Water - 100 gallons. Amounts used per acre varied from 100 to 150 gallons, depending on the amount and density of weed growth. Results in general were that small weeds (2 to 5 leaf stage) were killed out. Larger weeds were quite resistant to the spray. Where the higher concentrations of Dow Selective were used, some spotting of the alfalfa was noted and some plants were killed out, but the number killed was so small that it was of no consequence. Knotweed and Winged Pigweed were very resistant to the spray. It appears that in order for these selectives to be effective, the weeds must be sprayed at a very early growth stage. Alfalfa is quite tolerant of this spray material in the lower concentration, even when the plants are just emerging so spraying should be done when weed growth is at the right stage, regardless of the stage of growth of alfalfa.

Dodder in alfalfa is quite bad in a number of places in the county. A fair control of this parasite can be achieved by the timing of cuttings to prevent Dodder seed formation. This method has its disadvantages so this year a number of test plots were established to determine if a method using spray materials could be worked out that was practical and economical and one that would eradicate this pest. A series of eleven test plots were established to determine materials and methods that might be used. The following materials were used in varying amounts and combinations: Dow Selective, Dow General, Sinox General, Diesel Oil, crankcase oil, light miscible oil, sodium hydroxide, water, Shell 20.

Results from the first exploratory sprayings indicated that the materials doing the most effective job were Dow General and Sinox General. Proceeding with this in mind, different combinations and concentrations of these two materials were tried and the results were as follows:

On Seedling Stands

The problem here is to kill the parasite without damaging the alfalfa. The most effective material was Dow General or Sinox General and water, using the following concentrations: 80 gallons water, 1 quart Dow or Sinox General. The mix must be well agitated and a thorough job of applying done. The leaves will be burned off of the alfalfa plants but all plants observed made a complete recovery except those that were obviously weakened from the Dodder infestation. Those that were in such a weakened condition would probably have died anyway whether sprayed or not.

On Old Alfalfa Stands

On old stands the problem of control is quite simple in that old crops seem to make a complete recovery from the effects of the contact herbicides used. Satisfactory control was gotten with Dow General or Sinox General in water at the rate of 1 quart to 80 gallons of water. Diesel oil may be added to this mix and the inclusion of oil gives a greater toxicity. However, the oil does not seem to help a great deal in killing the Dodder.

In applying these materials it is absolutely essential that all Dodder plants get thoroughly covered with the spray. For best results and economy of application, the materials should be applied to a stand immediately after a cutting. If this is done, 80 to 90 gallons of material will easily cover one acre and do a thorough job of wetting if properly applied.

(d) In Livestock Production

(dl) Dairy Improvement

(dl-1) Cow Testing

Interest in the use of cow testing records as a guide to dairy improvement continued to increase. During the year the number of units in the Testing Association was increased to a total of ten. The peak number of cows under test in any one month reached a high of 15,500 and the total number of cows tested during the year will approach 18,000, which is over 25 percent of the cows in the county. That the dairymen of Merced County are using their records to good advantage, is shown by the average production in the Cow Testing Association which last year was 344 pounds fat per cow, as compared to the average of the entire county of 257 pounds.

(dl-2) Better Stock

(dl-2-1) Better Sires

31 Gradually, Merced County dairymen are selecting better herd sires and during the past year, through the Dairy Herd Improvement Association, 28 were assisted in selecting good bulls for their herds. A number of good purebred sires of all three of the major breeds of dairy cattle is increasing steadily and there are very few members of the Dairy Herd Improvement Association whose herds are not headed by purebred sires. The number of good purebred herds of all three of the major breeds of dairy cattle is increasing steadily in Merced County and in view of the excellent registered young sires available in our county, it is seldom necessary for any of our dairymen to go outside of the county to get good purebred sires.

(dl-2-2) Better Females

Merced County dairymen continue to use testing records in improving the quality of their herds and during the year, 2,175 "boarder" cows were sent to the butcher.

2543

(dl-3) Better Feeding

(dl-3-2) Balanced Rations

We are using our radio and newspaper columns in a program aimed at the complete utilization, by dairymen, of by-products from some of the other branches of our county's widely diversified agriculture. Besides conserving grain, our dairymen are also cutting feed costs when they substitute by-product feeds for grain in their dairy rations. Here are some of the by-products that are being used by Merced County dairymen to conserve grain, and at the same time, to reduce feed costs: cull figs, cull sweet potatoes, cull raisins, other cull dried fruits of various kinds, such as peaches and apricots, and cull blackeye beans. Other by-products which are available to supplement the alfalfa hay in the rations are lima bean straw, blackeye bean straw, green lima bean vines and pods, beet tops, and sweet potato vines, or tops.

(dl-4) Dairy Calf 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
122	94	188	\$16,023.00	\$15,793.00	\$230.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
18	18	Included in above	Included in above	Included in above	Included in above

(d1-5) Dairy Cow 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
44	34	143	\$37,671.00	\$31,477.00	\$6,194.00

(d1-6) Bred Heifer 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
11	9	12	\$1970.00	\$1920.00	\$50.00

(d2) Beef Cattle Improvement

(d2-4) Beef Cattle 4-H Projects

(d2-4-2) Feeder 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
17	13	30	\$7007.00	\$6374.00	\$633.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
2	2	Included in above	Included in above	Included in above	Included in above

(d3) Sheep Improvement

(d3-4) Sheep 4-H Projects

(d3-4-2) Feeder 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
6	3	19	\$816.00	\$350.00	\$466.00

(d4) Swine Improvement

(d4-4) Swine 4-H Projects

(d4-4-1) Breeding 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
4	4	32	\$960.00	\$703.00	\$277.00

(d4-4-2) Feeder 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
26	21	39	\$2640.00	\$2036.00	\$602.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
4	4	Included in above	Included in above	Included in above	Included in above

(d6) Poultry Improvement

(d6-5) Poultry 4-H Projects

(d6-5-1) Egg Production 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. Birds</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
32	22	564	\$1936.00	\$1655.00	\$281.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. Birds</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
10	6	Included in above	Included in above	Included in above	Included in above

(d6-5-2) Brooding 4-H Projects

Following is a report of this projects:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. birds</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
8	3	105	\$247.00	\$219.00	\$28.00

(d7) Livestock Disease and Parasite Control

(d7-1) Diseases and Parasites of Cattle

(d7-1-2) Brucellosis

For a number of years we have advocated the control of Brucellosis by the vaccination of dairy heifers with Strain 19. We find approval of this program quite general and we think our county will be very cooperative when the compulsory vaccination of dairy heifers starts early in 1948. Our radio and newspaper columns have been quite helpful in educating the dairymen along the lines of controlling Brucellosis.

(d7-1-3) Mastitis

Here again we have found our radio and newspaper columns quite helpful in informing dairymen of the latest methods in treating Mastitis, particularly as to the possibilities and limitations of penicillin.

(d7-1-5) Cattle Grub

Cattle grub control measures have been initiated by quite a number of stockmen in the county. All who have treated are well satisfied

with the results. However, the thought is continually being expressed that in order to get complete control, a community-wide program of treating cattle is necessary. Many stockmen feel that a compulsory program of treatment should be started.

This past year we have made a local colored moving picture showing methods of treating cattle for cattle grub and have shown this movie at a series of farm meetings. This seems to be quite an effective way of getting subject matter over to fairly large groups. The movie has been well received where shown and the fact that it is about local people and places makes it particularly effective.

One field demonstration was conducted on a group of about 120 head of cattle in a rather isolated area. This group of cattle were very grubby, but two treatments practically eliminated heel fly trouble on this ranch. The owner stated that his cattle did not run once during the heel fly season after treating. The herd will be checked again this fall and treated again if necessary. This herd is apparently so well isolated that complete eradication of this pest is possible on this ranch.

(d7-1-8) Lice

Lice this past year were particularly bad on both dairy and beef cattle. Three field demonstrations were conducted on lice control. Two of them involved the use of DDT along with rotenone-sulfur in grub control. DDT was used to see if a long enough period of carry-over could be obtained to kill any lice hatching after the initial treatment. In one case of beef cattle where the material was applied in a spray-dip rig, this period of carry-over was apparently long enough because the lice were cleaned up with the one treatment.

One lot of dairy cattle was treated with rotenone-sulfur and DDT and the material applied with a Hardie Spray Rig. In this case, the DDT apparently did not carry-over and a reinfestation occurred. One explanation for the lack of carry-over could possibly be that it rained quite hard after applying the material and probably most of the residual DDT was washed off. This lot of cattle was treated a second time with DDT alone and apparently a good carry-over was obtained because no lice were found on these cattle after the second treatment.

One field demonstration was conducted on about 120 head of mixed cattle that were badly infested with lice. The lousicide used in this instance was Benzene Hexachloride. This material appears to be an excellent lousicide. The treated cattle were critically examined on the 14th, 22nd and 32nd days following treatment and no lice were found on any cattle examined. Before treating, this lot of cattle was constantly rubbing and very restless. About one hour after treating we took particular note of how the cattle had quieted down and ceased rubbing entirely. Apparently this material works quite fast as well as giving control with one treatment.

(d7-3) Diseases and Parasites of Swine

Roundworms in swine occasionally are a problem in parts of the county and in the past, treating hogs for roundworms involved individual treatment for satisfactory control. Because of this, most growers have not been inclined to treat for worms in swine unless they were pretty bad. Some growers have used

phenothiazine with only a fair degree of control. The United States Department of Agriculture reported considerable success in ridding pigs of roundworms with sodium fluosilicate and in view of their findings, we decided to conduct a field trial using this material to see just how it would work. Two lots of feeder pigs weighing about 100 pounds each were selected, one lot consisting of about 70 head and the other lot about 40 head. These pigs were on the Earl Porter ranch near Le Grand. The pigs were slightly underfed the day before treating and then were put on their regular ration to which had been added 1 percent sodium fluosilicate for a 24 hour period. Results were not good in that the pigs went off feed and only consumed a small portion of their regular amount of feed, hence apparently did not consume enough feed with the sodium fluosilicate in it to do any good. One pig became sick and died. However, the veterinarian on the case did not think death was caused from the sodium fluosilicate. In order for this treatment to be effective it appears quite necessary to have the pigs hungry before feeding because the sodium fluosilicate is apparently quite distasteful to them, even in small amounts in their feed.

One lot of about 150 head of swine that were badly infested with lice were sprayed with Benzene Hexachloride to test the effectiveness of this material on hog lice. It was not possible to completely wet all of the hogs sprayed. However, in examining the hogs after treating we found that the lice had been practically eliminated. It appears that this material has fumigating properties because an excellent job of lice control on this particular lot was achieved even though the animals were not completely wet. Suckling pigs were not sprayed. However, their nests were doused with the spray materials and in examining these pigs after treating, no lice were found. Before treating, each suckling pig examined had five to six lice crawling on their abdomens.

(d6) Rabbits

(d6-1) Rabbit 4-H Projects

Following is a report of this project:

<u>Boys enrolled</u>	<u>Boys completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
26	23	212	\$1003.00	\$915.00	\$88.00
<u>Girls enrolled</u>	<u>Girls completing</u>	<u>No. animals</u>	<u>Value</u>	<u>Costs</u>	<u>Profits</u>
1	1	Included in above	Included in above	Included in above	Included in above

(e) In Farm Economics

(e2) Federal Agency Programs

(e2-1) Agricultural Conservation Program

As ex officio member of the Merced County Agricultural Conservation program, from time to time during the year I discussed with the County Committee and the Executive Secretary of the Association, the rules as to the best methods of using the \$250,000 allocated to Merced County, so that the practices for which this money was used would bring about a permanent improvement in Merced County's agriculture.

(e6) Marketing

(e3-2) Crop Marketing

(e3-2-2) Selling

(e3-2-2-3) Field Crops

The sweet potato growers voted against the prorate marketing program. A group within the Farm Bureau has organized to work together on their marketing problems. They are getting special market reports daily from the State and Federal Marketing News Service. In the past, buyers have been the only ones familiar with current market conditions on the Pacific Coast.

(f) In Agricultural Engineering

(f1) Farm Buildings and Structures

The Agricultural Extension Office has had good response to the farm building plan service which it maintains. During the year numerous plans for dairy, beef cattle, and swine buildings were distributed through this medium.

Poultrymen have felt the need for further information on the housing of poultry and the development of labor-saving devices and equipment. We have established several test plots using new types of housing and equipment and made a survey on this subject in Merced and adjoining counties. Beef cattlemen have desired information on good cattle corral layouts and labor-saving equipment. We have developed plans and tested systems in this section to help them with this problem.

(g) In Farm Home Betterment

(g5) Improvement of Homes and Grounds

(g5-2) Home Furnishing

(g5-2-5) Home Furnishing 4-H Projects

Following is a report of this project:

<u>Girls enrolled</u>	<u>Girls completing</u>	<u>Rooms improved</u>	<u>Articles made</u>
12	10	12	115

(g7) Clothing

(g7-5) Clothing 4-H Projects

Following is a report of this project:

<u>Girls enrolled</u>	<u>Girls completing</u>	<u>Garments made</u>	<u>Garments remodeled</u>
234	200	637	0

(g8) Nutrition

(g8-2) Food Preservation

(gs-2-1) Food Preservation 4-H Projects

Following is a report of this projects

<u>Girls enrolled</u>	<u>Girls completing</u>	<u>Quarts canned</u>	<u>Pounds frozen</u>
12	12	288	14

(h) In Boys and Girls 4-H Club Work:

During 1947 the club leaders elected to continue the organization of the leaders into four regional club councils. These council areas are determined by the geographical distribution of the clubs in the county. The County 4-H Executive Committee is composed of the four council presidents, a chairman elected by all leaders and the 4-H Extension Service personnel serving in an advisory capacity. This type of leader organization is preferred because of a more local approach to the problems and a greater attendance at the council meetings. Seventy-two leaders actively participated in regularly scheduled monthly meetings. The leaders of each council meet regularly once a month from October to May. The Regional Council meetings are essentially leader training meetings in addition to being devoted to handling local club problems. The leaders are actively interested and capable in handling their 4-H activities. The Executive Committee, which coordinates the 4-H program in the county, meets when the occasion demands. In 1947 this group met five times in planning county-wide activities.

Of the total of thirty-nine clubs, eight were of the community type and thirty-one of the neighborhood type. The leaders largely prefer, through experience, clubs of either boys or girls of the same aged group. The girls' clubs and the boys' clubs, however, when existing in the same community, work closely together and frequently have joint meetings and activities. The leaders of the county have preferred organization of the older boys and girls into High School aged clubs, rather than on the basis of Senior 4-H Clubs. These clubs include the word "Hi" in their club names and include more social activities in their program than the clubs of younger members. There were six of these "Hi" clubs comprised of one hundred and five members of whom 30 percent completed their project work.

The 4-H Clubs participated in several educational events which were well attended. Two Dairy Field Days were held in the Spring, one in Hilmar and the other in McSwain, with a total attendance of one hundred and seven. Two 4-H Fairs were held in May, again in Hilmar and McSwain, with five hundred and fifty boys, girls and adults attending. A third 4-H Livestock Show was held in conjunction with the Dos Palos F.F.A. with one hundred and fifty persons attending. In addition to the above activities, the Annual Summer Camp in Yosemite National Park was attended by 424 persons and a county-wide 4-H Achievement Day was held in Merced on November 8 and attended by 600 members and adults.

The total enrollment in Merced County in 1947 was 503, including 293 boys and 270 girls. This represented an increase of 100 members over 1946. The percentage of members completing was 82 percent, which compares with 68 percent in 1946 and is the highest completion percentage since 1941. The favorable percentage was realized by the leaders who made a concerted effort to have more members carry their projects to completion. The leaders are whole-heartedly attempting to increase the quality of the projects as well as to expand the 4-H program generally.

(i) Community Project Activities

79 men
106 women

(11) Fire Protection - Farm Fire Protection

The volunteer farm fire protection organization that was built up during the war with a total of 226 farm fire groups numbering over 2,300 men is now a thing of the past, as far as we are concerned. We have submitted to the County Fire Warden a list of the companies and personnel and it is our belief that this project can best be carried on, from now on, under the County Fire Warden's supervision.

(12) 4-H Clubs

The Hilmar HI Boys' Club had as a community project the placing of road signs at the intersections in and around the community of Hilmar. The boys secured lumber for the posts, stenciled the street names on the cross bars and painted the posts. This project was not fully completed during the year and will be carried over into 1948.

The Winton Juniors 4-H Club and the Winton Combiners 4-H Club collected, repaired and purchased children's toys and books to present to the hospitalized children in the Bloss Memorial Hospital of Winton. The presentation of gifts was made at the hospital during a special party given by the Winton clubs to the children.

(3) Young Extension Cooperators - Methods and Development

The importance of the Young Extension Cooperators project was recognized after presentation at several office conferences. After the decision to go ahead with the project in a State-wide way, gradually, as young farm men and women between the ages of 20 and 30 came into the office, they were told the purpose of the program and were signed up. This method has resulted in a slow but steady increase in the Young Extension Cooperators until at the present time there are 100 cooperators, of which sixty-three are men and ninety-seven young women. We have not held any county-wide organization meeting of this group but we do find that they are extremely interested in our Extension program and quite a number of them are cooperators in our tests and field experiments.

The Home Demonstration Agent solicited the assistance of home demonstration groups in reaching young farm women and many of her registrants were obtained in this manner. The organization is steadily developing and during the coming year we plan on holding county-wide meetings where this group may become better acquainted with one another and develop a group spirit. Several of our field tests were located on the farms of the young Extension cooperators. The same applies to work of the Home Demonstration Agent with some of the young women.

(4) Analysis and Interpretation of Tabular Summary

The trends of Extension work in Morehead County can be observed by a review of the following statistics of the work of the Agricultural Agents:

Statistics on Work of Agricultural Agents

Local Leaders Assisting

<u>Year</u>	<u>No. Leaders</u>
1943	519
1944	519
1945	519
1946	511
1947	531

Farm Visits Made

<u>Year</u>	<u>No. Visits</u>
1943	2455
1944	2639
1945	5296
1946	3510
1947	3407

Total Method and Result Demonstrations

<u>Year</u>	<u>No. Meetings</u>	<u>Total Attendance</u>	<u>Avg. Attendance</u>
1943	3	143	49.0
1944	24	467	19.5
1945	105	2006	19.1
1946	49	844	17.2
1947	14	271	18.6

Days in Office and Days in Field

<u>Year</u>	<u>Days in Office</u>	<u>Days in Field</u>
1943	433	125
1944	508	770
1945	486	690
1946	469	815
1947	446	839

Phone and Office Calls

<u>Year</u>	<u>Phone Calls</u>	<u>Office Calls</u>
1943	4604	2507
1944	4891	3000
1945	7912	3001
1946	5501	3211
1947	5292	2842

Farm Center Meetings

<u>Year</u>	<u>Harbor</u>	<u>Attendance</u>	<u>Avg. Attendance</u>
1943	125	4256	34
1944	94	3814	41
1945	90	5010	33
1946	95	3173	34
1947	94	5704	40

Farm Bureau Membership

<u>Year</u>	<u>No. Centers</u>	<u>Membership</u>
1943	11	608
1944	10	757
1945	10	753
1946	10	932
1947	11	1472

III. Outlook and Recommendations

In Maroon County we now have an Agricultural Extension staff of eight persons. Our staff has increased by three in the last twelve months and this means that there is some organization work to do as to project activities. During the coming year we believe that each member of the staff will become adjusted to his particular field and a rather complete Extension program for the county will be developed.

IV. Summary of Activities and Accomplishments

During the past year the program of the Agricultural Extension Service had affected many branches of Maroon County agriculture. After many years of steady effort, the Dairy Improvement program seems to have reached a stage where widespread response is evident, and over 300 herds, with a total of over 15,000 cows, are now participating in this program.

The outlook for 4-H Club work is bright. There has been a definite increase in number and quality during the past year and with two members of the staff working full time with this project, our hopes are that within a comparatively short length of time 1,000 members will be enrolled.