

A N N U A L
N A R R A T I V E R E P O R T
Y U M A C O U N T Y

December 1st, 1947 - November 30th, 1948

AGRICULTURAL EXTENSION SERVICE

Roy R. Young
County Agricultural Agent
Yuma County, Arizona

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ANNUAL NARRATIVE REPORT

of

Roy R. Young
County Agricultural Agent
Yuma County, Arizona
1948

A. YUMA COUNTY AGRICULTURAL.

Yuma County lies in the southwestern corner of the State of Arizona. The county is bordered on the north by Mojavi county, on the east by Yavapai, Maricopa and Pinal counties, on the south by the Republic of Mexico and on the west by the State of California.

The County lies in the area known as the Arid Southwest. It is cut off from the moderating influence of the Pacific Ocean and its moisture-laden winds by the Coast Range of mountains in California; and, as a result, it has the continental or inland climate characteristics of much of Arizona, southern Nevada, and parts of California. The climate is characterized by little rainfall, a dry atmosphere, rapid evaporation of moisture and an unusually high percentage of sunshine. The mean annual temperature is high, the summers are long and hot, and the winters are short and mild, with occasional frost.

The vegetation of lands in the vicinity of Yuma, was begun about 1890. With the construction of additional dams on the Colorado River, the acreage under irrigation in Yuma County, has increased to over 80,000 acres, with an additional 150,000 acres contemplated for development.

1948 was another year of high income for the farmers and ranchers of Yuma County. Flax was perhaps the most important crop this year. Flaxseed was supported at \$6.25 during 1948. With the support price for next year based on 90% of parity, the flax acreage will probably lower by 5,000 to 6,000 acres. Most of this acreage taken out of flax will be turned to alfalfa. Alfalfa acreage has suffered during the past year of high priced flax and only about 15,000 acres of alfalfa remained in 1948. This should increase to 20,000 or 25,000 acres by 1949.

The reduction of alfalfa acreage likewise reduced the number of cattle and sheep on pasture and in the feed pens during 1948. Next year should see a considerable increase in livestock feeding.

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YUMA COUNTY AGRICULTURAL (Cont'd)

Prices for alfalfa hay and seed were high during most of the year. At this time alfalfa hay is selling at around \$28.00 per ton roadside. Alfalfa seed is selling for 36¢ to 40¢ per pound for India and African, and around 31¢ per pound for Chilean and Hairy Peruvian. Ranger seed sold for around 75¢ per pound.

Small grain acreages were small during 1948, and prices were down. Most of the grain went at \$60.00 per ton, however, some is still being held with the price now around \$43.00 per ton.

This was a good year for the Bermuda seed growers; however, yield per acre was down. Presently seed is selling from 60¢ to 90¢ per pound.

Beginning watermelon prices were good, but like other melon and vegetable prices dropped off soon after the start of the season.

YUMA COUNTY EXTENSION ORGANIZATION.

Administration:

Administration of the Yuma County Extension Service was directed into three periods.

December 1 - January 1	Robert J. Moody, Agricultural Agent.
January 1 - February 1	Albert R. Face, Actg. Agricultural Agent.
February 1 - October 5	Roy R. Young, Agricultural Agent.
October 6 - January 1	Albert R. Face, Actg. Agricultural Agent.

Office Organization

The County Agricultural Extension office is located on the second floor of the Yuma County Court House in Yuma, Arizona. Extension staff consisted of County Agricultural Agent, Assistant County Agricultural Agent, Home Demonstration Agent, Secretary and Stenographer. During the period July 27 - September 24, the staff was increased by one Assistant County Agricultural Agent.

Previous to the first part of this year, the Home Demonstration Agent was headquartered in a different building. In order to consolidate the Agricultural Extension Service activities, alterations were made in the County Agent's office setup in the Court House.

Other alterations consisted of constructing a storage and work room, new bulletin boards and improved lighting arrangements.

Yuma County Farm Bureau

The Yuma County Farm Bureau was almost inactive at the beginning of this year with only one active local, the Roll-Wellton Farm Bureau. Since this is the only organization that covers all farmers and ranchers. The Agent was interested in its perpetuation as a means of reaching more farmers. Several meetings were held with key men in the area and plans for new locals set-up. One new local, known as the Gadsden Farm Bureau, was soon organized and played an important part in the Extension Program along with the Roll-Wellton Farm Bureau. After the homesteading of the Yuma Mesa Reclamation Project plans were started for a Yuma Mesa Local which should be very helpful as a means of easily reaching the new settlers.

The Agent received considerable advisory and active assistance from the Yuma County Farm Bureau Board of Directors.

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YUMA COUNTY EXTENSION ORGANIZATION (Cont'd)

The County Farm Bureau continue to administrate the handling of the Government house trailers under contract with the Federal Public Housing authority. This project is of great value to this area because of the large seasonable type of labor required.

Newspaper Publicity

The Yuma Daily Sun, the Yuma daily newspaper continues to be most cooperative with the County Agricultural Extension Service office. This paper provides one full page on each Saturdays edition for farm and ranch news. In addition to this page, the paper has cooperated in printing special and feature stories in promoting Extension projects. The middle of this year, the Extension office, in addition to the regular feature and special stories, started a weekly news column, titled "Gleanings from the County Agents Office". This column has proven very valuable as a means of getting interesting small items out to the farmers and ranchers. Very passable reports on the column have been received from the farm people.

Newspaper publicity plays an important part in the Extension Program in this county.

Radio Publicity

Radio Station KYUM, continues to offer a fifteen minute public service program each Saturday morning to the Extension Service staff for presenting timely subjects.

The radio programs were especially valuable in presenting discussion programs with Agricultural specialists and outstanding farmers in the area. The discussion periods with outstanding people was started just prior to the Agents leaving. Considerable comment was received on this type of program and it is felt that it increased the listener audience.

In addition to the Saturday morning program, the radio station presentated spot announcements as an additional public service.

Meetings and Demonstrations

The Agent participated in a total of 37 meetings during the 7 month period covered by this report. These included meetings with farmers and business men all over the county and represented an attendance of over 715. The Agent presented timely agricultural information and assisted in events connected with agriculture.

Field days held during this period included one on field crops; one on flax diseases, and one on alfalfa varieties.

YUMA COUNTY EXTENSION ORGANIZATION (Cont'd)

Meetings and Demonstrations (Cont'd)

The Agents office also assisted the Chamber of Commerce in handling a conducted tour of the farming area by a group of Minnesota farmers and their wives.

Yuma and Gila Reclamation Projects

Homestead openings on both the Yuma Project and the Yuma Mesa Division of the Gila Project were held during this period. Since many of the new settlers moving into the area were unfamiliar with irrigated agriculture, the Agents office prepared pamphlets containing cropping information for both the Yuma Valley and the Yuma Mesa areas. These pamphlets were given to the new settlers; also meetings were held with the settlers and Reclamation officials to discuss and assist the settlers in their various problems.

The Agents office also assisted the committee from the Wellton-Mohawk division of the Gila Project in preparing agricultural information on that project. Initial work has started on the Wellton-Mohawk project, which will bring under water from the Colorado River water approximately 75,000 acres of highly productive land. High soil salinity in that area will be a problem and will require considerable assistance from the Agents office.

Out of County Requests

Climatic conditions and high crop yields bring in minimum inquiries on agricultural opportunities in this area from all over the United States, Canada and Mexico. Also additional requests are received from Veterans interested in homesteading on the Gila and Yuma Reclamation project.

These letters were all answered and a brief summary of agricultural information and living conditions given in each case. All individuals were urged to make personal investigations of the area before making definite plans.

Field Crops

Alfalfa - High priced flax brought about a reduction in alfalfa acreage this year; however, alfalfa hay and seed production is still one of the more important crops in this area. The Agent devoted most of his time on the following phases of alfalfa farming:

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YUMA COUNTY EXTENSION ORGANIZATION (Cont'd)

Field Crops (cont'd)

Planting - While alfalfa is an old crop in this area, there is always the question of the time and preparation for planting to obtain the best stand. The Agent spent considerable time discussing planting dates and seed bed preparations with farmers over the valleys. Results indicate that best results are obtained from planting in October on a firm moist seed bed in a 1 inch mulch. Since an economic factor of income and expenses is important during the first year crop, it is recommended that a cover crop of barley be planted with the alfalfa. This gives an additional income during the first year and helps take care of the high planting costs and lower first year yields.

Fertilizers - During the year, the Agent met with various farmers; with W. T. McGeorge, Soil Chemist from the University of Arizona, and with members of the Bureau of Plant Industry staff, concerning alfalfa fertilization. Results from experiments and comparative hay yields indicate the following:

Yuma Valley lands - 10 - 15# actual Nitrogen and 70# of actual phosphate at planting followed by a 70# phosphate application every other year.

Yuma Mesa Lands - 15# actual nitrogen and 200# of actual phosphate at planting followed by 100# - 150# of actual phosphate each year.

Varieties - There are presently four main alfalfa varieties planted in this area - India, African, Chilean 21 - 5 and Hairy Peruvian. During the last few years the two varieties, India and African, have increased in importance largely as a result of their rapid growth, early spring growth, and price paid for the seed produced. However, there is a tendency for the stands of these two varieties to start dying out after about three years. It is still too early to say which of the four varieties is the best for this area. Experiment so far has varied in their results. There have been some reports of discrimination against Indian and African hay by hay buyers. Since the release of the Indian and African varieties there has been a reduced effort in the breeding work carried on with Chilean 21-5 and Hairy Peruvian varieties. The Agent discussed this situation with Professor Bryan and members of the Agricultural Extension staff. Arrangements were made to increase the breeding work on these two varieties.

YUMA COUNTY EXTENSION ORGANIZATION (Cont'd)

Varieties (Cont'd) - Another alfalfa variety, which is increasing in importance is the Ranger variety. This is a northern variety of alfalfa and while two cuttings of hay are obtained each year, the main income is from seed production. Demand for this seed from northern growers is good and Ranger acreage in this area is increasing. With the exception of 40 acres on the Yuma Mesa, Ranger alfalfa acreage is presently confined to the Roll-Wellton area.

Arrangements have been started for obtaining seed of the Buffalo variety. This is also a northern variety and will be grown mainly for seed production.

Seed Production - Low annual rainfall in this area, makes ideal conditions for alfalfa seed production. This year between 8,000 and 9,000 acres of alfalfa was turned to seed production in Yuma. High hay price cut down the total acreage. Of this total acreage 4,658 acres were certified under the Crop Improvement Program for seed production. This was made up of:

India	-	1913 acres
African	-	1216 acres
Chilean 21-5	-	762 acres
Ranger	-	555 acres
Hairy Peruvian	-	172 acres

Several experiments were conducted this year on the use of a defoliant spray on alfalfa seed fields and direct combining the seed. Results of these experiments have varied, but are encouraging. The reduction in seed loss from shattering and handling in the wind rows should more than pay for the cost of spraying. Additional experiments along that line should be encouraged.

Bermuda - Bermuda Seed production continues to be an important crop in this County producing approximately 85% of the world's seed supply.

Last year there was an unexplained reduction in the seed yield per acre. The Agent assisted by Dr. J. W. Roney, Extension Entomologist and cooperating farmers, spent considerable time on experiments and investigations to determine the cause for this reduced yield. Results indicate that insect infestations is the main cause. Main insect seemed to be the Chirothrips Mexicanas. After practicing controls for this insect, yields increased on fields and plots tested. More will be said about this insect later on in the report.

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Yuma County, Arizona
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YUMA COUNTY EXTENSION ORGANIZATION (Cont'd)

Varieties - (Cont'd)

Cotton - Cotton variety experiments started the first of this year failed. Field plantings gave some information and indicated that the Paula variety of cotton is a good variety for this area. There were about 3,000 acres of cotton planted in the county this year, and the acreage is expected to greatly increase next year.

Flax - Under the price support program of \$6.25 per bushel, 24,000 acres of flax were planted last year. In connection with this crop, the Agent devoted his time to the following phases:

Weed Control - Experiments and meetings were conducted on this subject. Senox, 24D and Shell selective sprays were experimented with on controlling weeds in young flax. It was determined that senior selective sprays gave the best results on all weeds except wild oats. Application should be made when the flax is about 6 inches high and when the weeds were still comparatively young and tender.

Fields having any large amount of weeds should not be planted to flax.

Pre-harvest Sprays - Experiments on the use of pre-harvest sprays on weedy fields proved very satisfactory and the use of these sprays definitely increased the per-acre yield of flax by reducing shattering loss. Best results were obtained from the use of 3 pints of a general weed killer and 16 gallons of deisel oil per acre.

Experiment on the use of pre-harvest started out as a means of permitting the direct combining weedy field which otherwise would have to be cut and wind-sowed. Results obtained on some of these weedy fields showed that flaxseed which was already satannically made was ripened by the spray and thus permitted the earlier combining of the flax. It is now felt that the use of pre-harvest spraying may be of importance in permitting the early combining of weed free fields and thus give time for the planting of a summer crop.

Fertilizer

During the year, the Agent spent considerable time on flax fertilization. From discussions with farmers and experiments conducted at the Meloland Experiment Station it was felt that the following fertilizers practice will give best results:

Depending upon soils and previous crops, a pre-planting application of 65-70 pounds of actual P2 O5 and 15-20 pounds of nitrogen, followed by about 30 pounds of actual nitrogen at the first irrigation. Application of nitrogen at first irrigation has been giving better results than application at second irrigation or at both first and second irrigations. Also it has not been definitely shown that any benefits are received from nitrogen applications after the feed stage.

Final results of the 1947-48 crop are as follows:

Total acreage	-	24,800 acres
Total Yield	-	750,000 Bushels
Average yield/acre	-	30.25 Bu/acre

The 1948 crop showed approximately a 6 bushel per acre increase over the 1947 average yield.

It is expected that there will be a reduction in the 1948-49 acreage as a result of the unsettled price support program. Anticipated acreage is around 18-19,000 acres.

Varieties

The main variety planted in this area is the Common Punjab variety. About 80 to 100 acres of the Dakota wilt resistant variety was planted last year on wilt infested ground - this will be covered under "Diseases".

Dr. Goar of the Meloland Experiment Station has been conducting an extensive breeding program and has developed two higher yielding strains of Punjab. These strains are known as the Imperial Punjab and Punjab 47. The Agent made arrangements for obtaining 6,000 pounds of the Imperial Punjab strain and 200 pounds of the Punjab 47 strain for planting in Yuma County this year. Growers were contacted and arrangements made for certifying these fields for seed production. According to experiments the Punjab 47 will out-yield common Punjab by 7 bushels per acre and Imperial Punjab will out-yield the common Punjab by 5 bushels per acre.

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Small Grains

Small grains in the county during the past few years have run into great competition with flax and as a result the small grain acreage this year was quite small; however, yields were generally very good. The main varieties grown are Aravat in Barley and White Federation wheat. Mr. Bradley and Mr. Westerbeck, in the Gila Valley both averaged close to 120 bushels per acre on their Arivat barley. Other important varieties grown this year and comments on each were:

Montcolm barley	-	Shattered badly
Henchim barley	-	Below average yield and considerable lodging.
Markton Oats	-	Fair yield good pasture.
Mariate barley	-	Low growing, fair yield, no lodging.

An experiment on the use of 24D and pre-harvest spray for knocking down alfalfa in grain fields was conducted in the Roll area. Results were only fair. It is felt that a heavier application per acre would give good results.

The latter part of this year, the Agent was contacted by several seed companies in Minnesota, North Dakota and Wisconsin, regarding seed increase of Moore barley and two varieties of wheat. The Agents office contacted interested farmers and made arrangements for the production of the seed. The seed companies have guaranteed premium price for the harvested seed.

Seed increase should increase in importance in this area, since northern growers can send their new varieties into this area in the fall and the crop harvested in the spring in time to be sent back to the northern states for their spring planting, thereby obtaining, 2 years seed increase in one year. Because of this potential the Agents office is spending considerable time on this project.

Sugar Beets

Small acreage of sugar beets have been grown in Yuma County at various intervals during the past 10-15 years; however, because little interest in commercial plantings was found until last year, when two Sugar Companies became interested in the area. These two companies were Spreckles Sugar Company and Holly Sugar Company. Test plantings were made in the different vallies and cultural recommendations sent out from the agents office. The unusually cool spring

Sugar Beets (Cont'd)

this year retarded the early maturity of the beets and as a result first sugar analysis were not too good. First analysis from the plots were:

	<u>%Sugar</u>	<u>PURITY</u>	<u>Av. Wt. Per. Beet. (02)</u>
Yuma Mesa - 1-E	14.6	88.7	35.8
Yuma Mesa - 2-E	14.4	87.9	34.4
Yuma Mesa - 3-E	15.0	86.7	34.0
Yuma Mesa - 4-E	14.0	83.5	47.0
Yuma Mesa - 5-E	14.2	83.2	42.0
Yuma Mesa - 6-E	13.3	86.9	39.8
Yuma Mesa - 7-E	14.3	83.8	44.8
U. of A. Farm- 14.9 (No Potash)	14.9	87.3	33.4
U. of A. Farm (Potash)	14.2	85.9	38.0
McDaniel Farm	12.8	81.6	53.2
McLaren Farm-1	12.9	83.0	45.2
McLaren Farm-2	13.2	80.9	40.2
Bard Farm (56)	15.5	87.2	36.8
Bard Farm (15)	15.2	89.8	35.7
G. & S. Farm	12.0	77.2	46.6

The above samples were taken the first of June. The last of June additional samples were taken and 3 to 4% increase on percent sugar content which would make an average around 17% to 18% sugar.

The agent then contacted the Sugar Companies concerning their plans for sugar beet acreages in this area. Spreckles Sugar Company reported that they were not further interested in this area. Holly Sugar Company stated they were interested in an acreage this year of from 2,000 to 3,000 acres, provided California would permit the shipment of beets from this area into California. Action was started along this line and at present arrangements have been made whereby beets grown upon acreage certified free from root-rot or an acreage under proper rotation practices will be permitted to be shipped into California for processing. While the time involved in obtaining this agreement prevented early plantings of beets, it is felt that the start in acreage this year will increase considerably next year. Arrangements were underway for a meeting between farmers and sugar beet representatives.

Horticulture

Vegetable and melon crops comprise two of the highest

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Horticulture (Cont'd)

income crops in this area. While vegetable production is almost continuous from November to May, the production is cut into two separate deals, called the winter deal from November to February, and the spring deal from February to May. The agent was able to offer assistance to these farmers in insect control; however, little was done on cultural problems as most of these growers are large operators and employ specialists along that line.

During the past year, variety tests on the resistancy of watermelon varieties to Fusarium Wilt have been made. These tests were continued this year; however, due to the unusually cool spring germination results were very poor and little information was obtained. It is planned to continue this experiment next spring.

The Agent, assisted by Mr. C. W. Van Horn, Superintendent of the University Valley Experiment Farm, Mr. Harvey Tate, Extension Horticulturist and Dr. Pultz, Head of the University Horticultural Department, met with Valley melon growers to determine outstanding problems and ways and means of meeting such problems in melon production. The following points were discussed:

1. Cantaloupe 45's are coming off about one week late and are not holding out long enough.
2. The 45's are going down in production. When the 45's were first introduced, from two to three hundred crates were produced per acre; however, there has been a gradual downward trend and at present one hundred crates per acre is considered a good yield. This downward trend in production seems to have been the case in all of the different varieties.
3. There was interest in the selection of 45's called the Arizona 45's, available at the Tempe Experimental Station. This seed should be increased for further testing with local farmers.
4. Prior to the introduction of the 45 cantaloupe, cantaloupes were picked about half slip. These melons then ripened in transit. It is felt that the development of a variety which could be picked at half slip would be desirable and would probably increase the yield of marketable melons.
5. Another point is that the 45's need more vigorous plant growth. The plants are not supplying needed foliage. This vigorous plant growth will

Horticulture (Cont'd)

- probably run hand in hand with an earlier developing melon.
6. Another point in that while the 45 melon is excellent in shipping quality, size of cavity and percent sugar, the tasting quality of the melon should be improved. The markets for cantaloupes have been dropping down in recent years and it is felt that flavor may be a factor. Along this line, it was felt a project on how to increase and best market cantaloupes would be valuable.
 7. It was felt that a pure seed program in cantaloupes and watermelons should be developed. Present seed sources are not under supervision by the Crop Improvement Association.
 8. Variety work on the V-1 variety of cantaloupe should be developed. Since this meeting the agent, Mr. Van Horn and Mr. Tate, outlined plans for meeting some of the problems and developing the various projects. Early work on these problems will be of great benefit to a large number of growers and certainly increase the standing of Extension Service and Experimental Stations work to these growers, who here-to-face have not derived a great amount of our services.

Plant Diseases

The main problems in this department concerned the following diseases:

Fusarium Wilt in Flax - This disease first became of economic importance last year, and has been increasing no doubt, the disease was present prior to that time; however, because small infections were not noticable, work was not started on this problem earlier. Last year, County Agent Moody, started an experiment on variety resistance and fungicidal applications. This year, the agent followed this experiment and the following results determined:

1. Dakota variety proved highly resistant to the disease.
2. Cyanamid applications at rates of 500#, 1000#, and 1500#, did not show any effects on the disease, Punjab Flax planted in these plots was killed.
3. Larvacide applications were not satisfactory as plantings were made too soon after fungicide application and flaxseed failed to germinate.

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Plant Diseases (Cont'd)

4. Shell D.D. applications showed some possibilities and should be used in the next experiment.

The agent spent a considerable portion of his time during the year on this disease problem and plans for further experiments. Assistance was received from Dr. R. B. Streets, Asst. Plant Pathologist at the University of Arizona; Howard Cords, University Agronomist; C. E. Van Horn, Superintendent University Experimental Farm; William Wooton, Manager, University Experimental Farm; Mr. L. G. Goar, Superintendent Meloland Field Station and Dr. Culbutson, U.S.D.A. Specialist from Minnesota.

The agent worked out plans for further experiments on this disease with members of the Experimental Station staff and Mr. Roy Barclay, farmer cooperator. Mr. Roy Barclay agreed to furnish two acres of heavily wilt infested soil for experiments and the Experiment Station agreed to handle the experiment. Plans are to plant approximately 30 different varieties in three applications to determine resistancy and yield. Also several fungicidal treatments will be given to various plots. Fungicid treatment are not expected to be of much importance except in stamping out small infections.

Root Rot - This disease continues to be a problem to susceptible crops in this area. The agent advised farmers as to best rotation practices to follow.

Bermuda Grass - In the Roll-Wellton area, a serious dying out of bermuda plants occurred this year. The agent assisted by specialists from the University and Bureau of Plant Industry spent considerable time on tests and analysis to determine the cause of this dying out. While definite conclusions have not been reached, it is felt that the disease possibility should not be discarded.

Insects

The following insects presented problems during the year. The agent was assisted by Dr. J. N. Roney, Extension Entomologist in combating these problems:

Grasshoppers - While past grasshopper control efforts have been very effective in reducing this annual re-infestation, control problems arose in the Roll-Wellton area, spot infestations in the lower Yuma Valley and in the Gila Valley, and on the Yuma Mesa.

Insects (Cont'd)

At the start of the infestations, the Agent held meetings in the different areas and methods of control were explained. On controls, grasshopper bait mixing stations were opened at Wellton and in the Gila Valley; however, because of the effectiveness of the new insecticides poison from bait was not used as heavily as in previous years. Both Chlor-dine and Toxaphine dusts and sprays were used with good results. The agent sent out letters covering the use of these insecticides and recommended that they not be used on crops to be fed to warm blooded animals.

The Bureau of Entomology conducted experiments in the Roll area on the effectiveness of Chlordane and Chlorinated Camphene in the control of grasshoppers. Results indicated that both insecticides were equally effective. All plots showed over 90% control.

Clover Mite - This insect became a serious pest in the area the first part of this year. The mite was first found in the alfalfa fields the first of March and soon spread from the alfalfa field to young cantaloupe fields where it caused serious injury. The agent assisted by the Extension Entomologist conducted a series of tests to determine best controls for this insect. For control in the alfalfa fields, dusting with a 325 mesh sulphur was recommended. Because of possible burning, sulphur could not be used on the cantaloupes. However, results from experiments with various insecticides showed that hexethyl atraphosphate and tetraethyl pyrophosphate sprays hydrolyzed rapidly and lost their killing power after 10-12 hours. The first dusts used were not effective over 2-3 days. Finally a tetraethyl pyrophosphate dust was developed which held its effectiveness for a period of 10 days to 2 weeks.

The agent and the extension entomologist gave recommendations for control of these mites in meetings, by radio broadcasts, news letters and newspaper articles.

It is felt that the mite problem was a result of the extensive use of DDT dusts during the past few years which killed off the predators of the mite and permitted their rapid increase. To overcome this problem

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Insects (Cont'd)

it is now recommended that in dusting alfalfa fields before the bloom stage with DDT dust, sulphur be added to the dust. This will keep down the clover mite population.

Lygus - This insect continued to be a pest in alfalfa seed fields. The agent and extension entomologist held meetings at the beginning of the alfalfa seed season and presented latest control recommendations. DDT and chlorinated camphene dusts gave good control and were recommended.

Beet army worm - Because of the cool spring, this insect did not present a great problem this year. The agent kept a close check on flax fields and where infestations occurred recommended control with a 5% DDT dust.

Chirothrips Mexicanus - Last year a serious reduction in Bermuda seed yield resulted and it was found that in the heads were a number of unfilled seeds. The Agent and Extension Entomologist started experiments in Bermuda fields the first of this year to determine the cause of this problem.

Finally in July, a heavy infestation of Chirothrips Mexicanus was found in most of the Bermuda fields. This insect attacks the seed heads and works on the immature seeds, damaging the seed end causing the immature seed either to shrivel up or fall out. Because of their working habits, these insects were hard to find and no doubt they have been in the Bermuda fields during previous years. When first found species of the insect were sent to the U.S.D.A. Station in California for identification and control measures. This station reported that the insect had not been previously found in any economic proportions in this area, so controls could not be recommended. Therefore experiments on effectiveness of different insecticides were started in the Gila Valley and the Roll area. Of the different insecticides tried, best results were obtained from one of the new phosphate dusts known as Parathion. Plants dusted with this material showed few unfilled seeds.

Alfalfa Caterpillar - In late July and August of each year, this insect presents a serious problem to alfalfa growers in this area. While DDT and other insecticides

Insects (Cont'd)

give good control, their use cannot be recommended since the hay is feed to warm blooded animals. This year, a new dust, Pipyrnol Cyclohexanone, was experimented with and good control obtained. This dust is non-toxic to warm blooded animals and should solve this insect problem.

Other Insects - Other insects which presented problems during the year were:

- Aphide in alfalfa fields.
- Cotton Bollworm in flax and cotton fields.
- Clover weevil in alfalfa fields.
- Crickets in alfalfa field.
- Cicadus in Cotton fields.
- Thrips in cantaloupe fields.
- Thrips in Citrus groves.
- Chinch bug in Cantaloupe fields.
- Flea beetle in corn fields.

Soils and Fertilizers

The agent was assisted by Mr. W. T. McGeorge, Soils Chemist from the University, on soil and fertilizer problems in this area. Some of the main problems worked on during the year were:

High water table - A high water table in parts of the Yuma Valley caused some real soil problems. The high water table prevented proper drainage and as a result salt content in the soil built up and percentage sodium in the soil increased. Attempts to remove this excess salt by surface draining did not prove satisfactory. The only solution to this problem is the use of pumps and additional drainage canals to lower the water table. When this is done, the addition of sulphur and/or gypsum to the soil followed by leaching operations should bring these soils back into good production.

Roll area

This area is faced with a serious soil problem as a result of their irrigation water. Their irrigation water has continued to increase in salt content during the past years. As a result the salt content in the soil has continued to build up thus forcing more of this good soil out of production. Numerous soil and water samples have been taken from this area; and it has been recommended that gypsum added in the irrigation water and that irrigations be heavy and frequent.

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Soils and Fertilizers (Cont'd)

Yuma Mesa

This new farming area is on a very sandy soil. Main problem on this area is obtaining the most efficient use of fertilizer. The agent received valuable assistance from the Bureau of Plant Industry who have been conducting experiments on the Mesa for the past several years.

Rural Sociology

The agent was assisted by Mr. Ballantyne, Extension Rural Sociologist, in making a survey of the area to determine the per acre labor requirements of the principal field crops in the area. It is felt that this information will be of value in determining our peak labor needs and in advising on crop rotation so as to take advantage of low labor requirement periods.

Arizona Crop Improvement Association

Alfalfa - This year field certifications on the following acreage were received:

India	1933 acres
African	1216 acres
Chilean 21-5	782 acres
Ranger	555 acres
Hairy Peruvian	172 acres

The agent spent considerable time with representatives of the Arizona Crop Improvement Association in inspecting these fields to determine if they met certification standards.

Ranger alfalfa fields were inspected in February for the presence of southern type plants.

Small Grains - The following small grain fields were certified for seed production:

95 acres - certified Arivat
25 acres - registered Arivat
34 acres - certified Markton

Flax - Arrangements were started this year for the certification of Imperial Punjab and Punjab 47 flax fields this fall under the Arizona Crop Improvement Program.

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Arizona Crop Improvement Association (Cont'd)

Annual Meeting - The agent and several members of the Arizona Crop Improvement Association from Yuma County attended the Annual Meeting of the A.C.I.A., held in Phoenix. The meeting was divided into commodity groups meeting in the morning and a joint meeting in the afternoon during which the recommendations of the commodity groups were discussed.

Summary

The past year was another year of high income to most farmers and stockmen. In most all cases markets were good; however, there were two periods of exceptions, one during the spring lettuce crop and the other during August and the first part of September, when cattle prices declined.

During the year, all extension offices were brought together for more efficient operations.

The Yuma County Farm Bureau became more active in assisting the farmer members and in assisting the Extension program.

News stories, radio programs, meetings and demonstrations were all used to good advantage in furthering the Extension program during the year.

Drawings and actual homesteading of the Yuma and Gila projects were completed during the year.

Requests for information of Arizona Agriculture and farming opportunities continued to increase during the year. Large soldier movements in this area, no doubt, has played a large part in advertizing the climate and agricultural conditions and increased outside interest.

Under field crops, alfalfa, bermuda, flax, cotton and small grains were of primary importance during the year. Excellent yields were received off of these crops and market prices were good. Flax was supported at \$6.25 per bushel. Most of the agents time on these crops was spent on variety and fertilizer problems and pre-harvest sprays.

Seed increase of northern small grain varieties increased in importance this year. The agent felt that this was a worth while project and spent

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Summary (Cont'd)

considerable time in bringing the farmer and seed houses together under an agreeable contract for the production of the seed. This program should increase in importance during the coming year. At present there is about 1,500-1,800 acres under this program.

Sugar beets is another crop in this area became an actual fact during the year. Experiments and tests proved the feasibility of growing the beets in this area and during the year agreement between California and Arizona for the transportation of the beets was agreed on. This years acreage is anticipated to be in the neighborhood of one thousand acres.

Vegetable and melon crops were good this year. Market conditions were good at the beginning of the season, but fell off as the season progressed. Insect infestations caused some damage.

Experiment on control of Fusarium Wilt in flax continued and some progress is being made. Other disease problems during the year were on root-rot and an unknown organism causing a dying out of bermuda grass.

Insect problem during the year covered infestation of grasshopper on alfalfa fields; clover mite in alfalfa and cantaloupes; Lygus in seed alfalfa fields; beet army worm in flax; thrips in bermuda, melons, and citrus; alfalfa caterpillar in alfalfa; ophids in alfalfa; cotton bollworm in flax and cotton; crickets in alfalfa; cicadas in cotton; chinch bugs in cantaloupes and flea beetle in corn fields.

High water table, high salt content and black alkali caused main soil problem during the year. Most soil and fertilizer problems were individual ones.

Survey of labor requirements per acre was started on the main field crops.

Production of pure seed under the Arizona Crop Improvement Association continued to be an important program in Yuma County.