



INDIANA PECAN GRAFT
DUNCAN, ARIZONA
HEADQUARTERS
UNIVERSITY OF ARIZONA EXTENSION SERVICE
FOR
GREENLEE COUNTY

ANNUAL REPORT
OF THE
COUNTY AGRICULTURAL AGENT
FOR
GREENLEE COUNTY
PERIOD
FROM DECEMBER 1, 1935 TO NOVEMBER 30, 1936
BY
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STATUS OF COUNTY EXTENSION ORGANIZATION

During the past year the Greenlee County Farm Bureau, although inactive to a considerable extent, continued to direct the efforts of the Extension Service and formulate general policies. The Extension Service is greatly indebted to Farm Bureau President J. B. Simms for his services.

The Resettlement Administration proved to be of major importance in farming operations during the year. Through cooperation of this agency with the Extension Service, nearly all farmers in serious need of assistance were taken care of.

The Extension Service has also worked closely with a Federal Farm Loan Association, Farm Debt Adjustment, and the Emergency Seed Loan during the year.

The Agricultural Conservation Association has been carrying on through the office of the Extension Service in both its Range Program and its Farm Program. The Greenlee County Cattlemen's Association, functioning closely with the Extension Service proved to be a great assistance in obtaining cooperation between the general public and the Advisory Board of Grazing District No. 4, which embraced Greenlee County. The office of the Extension Service was used to explain most of the details, and supervised the applications of this program in Greenlee County.

The Duncan Valley Produce Grower's Association, a cooperative handling most of the onions and potatoes produced in the valley, continued to work closely with the Extension Service.

The Extension Service is greatly indebted to the following men, who acted as leaders in work with the previously named organizations during the year: Mr. J. B. Simms, Mr. Ralph Elledge, Mr. J. C. Burleson, Mr. R. D. Williams, Mr. S. A. Foster, Mr. Heaton Lunt, Mr. Elmer Stevens, Mr. Harry A. Day, Mr. Fred J. Fritz, Mr. O. G. O'Dell, and Mr. Tom Cauthen.

1V

PROGRAM OF WORK

Goals established, methods employed, and results achieved.

(1) Factors considered and methods used in determining program of work.

The Seames Decree greatly limited the amount of water available for irrigation in this county, causing a revision of farming practices, crop rotation, acreages of various crops, and may possibly hasten the introduction of several new crops. Likewise, the formation of a grazing district including all public domain in Greenlee County, has caused a revolution in range practices. Restriction of water available for irrigation and the greater expense incurred in the operation of pumping plants has a depressing affect on the values of land. Restriction in the number of animals allowed to be grazed on the range, and exclusion of livestock, unattached to leased land or carrying a grazing permit, is likewise having certain far reaching affects on the livestock industry of this county.

The use of green manure crops and the practice of fallowing have been encouraged during the past year by the Soil Conservation Program. Greater acreages have received the benefits of these two practices than ever before. As increasing soil fertility lessens the amount of water necessary for the production of a crop, this stress on soil fertility fits in very well with our present regular problems.

Former irrigation practices must be greatly altered if crop production is to continue in this county. During the past year constant stress has been laid upon economic use of the minimum amount of water necessary. Likewise, farmers must choose those crops which can be profitably grown on the least amount of water.

As cotton can be produced with less water than any other crop which will bring equal financial returns, cotton acreage is due to be greatly increased. There is still a necessity for work along the line of correlation between soil type and variety and also pure seed plot work.

Potato production continues to be very remunerative as new **diseases** and **new pests** occur there must be combating, hence, **disease control** work is a permanent necessity.

Planting dates seem to have been fairly well established for lettuce production during the last two years, but there is need of considerable variety work, there is, also, need of studying the marketing of lettuce more closely.

IV. Continued

(1) Factors considered and methods used in determining program of work (continued)

Each year there is call for a certain amount of help in the control of orchard pests and diseases. For this reason, orchard culture and the control of orchard pests and diseases is continued as a unit.

Work of the Soil Conservation Service in the control of injurious rodents has served to stimulate rodent control. Federal and State aid in furnishing poison grain, make it desirable to continue rodent control work on the same basis as in the past.

Increase in the price of dairy cattle and of dairy products has stimulated the interest in dairying. There will be no great increase in the number of dairy cattle kept in this county, but there will still be call for some extension work in dairying.

Poultry production continues to be fairly remunerative to those persons who are efficient poultrymen. Purchase of baby chicks during the coming season will be at least average and there is an increasing interest in the production of eggs for hatcheries. While the higher price of feed will perhaps discourage some poultrymen, there will be enough interest in poultry to justify its continuation and give it considerable attention.

Ranch problems have rapidly multiplied during the past year. The cooperation between the Extension Service and the Cattlemen's Association has been of great value in the Soil Conservation Program as it applies to range and also to the many problems that have arisen as cattlemen attempt to conform their range practices with the regulations of the Grazing District and the State Land Office. The various phases of range management have called heavily upon the time of the Extension Service in the past year and will continue to do so in the future.

While there was no county fair in the past year due to lack of funds, it was possible for the Extension Service to formulate a project whereby the race track and the grounds will be restored through the WPA labor. It is possible that a free fair can be held in the future following the restoration of grounds and equipment.

California Bind Weed continues to spread rapidly. There is much call for weed control work. This justifies the continuation of a weed control program.

1V.(Continued)

(1) Factors considered and methods used in determining program of work (continued)

Miscellaneous activities have included cooperation with the Soil Conservation Service, Farm Debt Adjustment, Emergency Seed Loan, Resettlement Service, complete supervision of the Soil Conservation Association and an immense amount of detail service work such as is necessary in small rural communities. As the above named organizations will no doubt continue to function in the future, miscellaneous work of another year will no doubt be much the same as in the past.

IV. Continued

(2) Project Activities and Results

A. Soils

Green Manure.

The goals for 1936 were to complete three green manure demonstrations and to promote the use of sweet clover.

Small grain crops were used as green manure crops by eleven farmers during the past year. During 1936 the increased fertility, brought about by this practice, was quite evident, due to the smaller amount of water available. Mr. Heaton Lunt and Mr. Broughton Lunt will not use land for onion or potato production, unless it has been recently fertilized in this manner. It has not been possible to obtain weighed yields of crops from fertilized and unfertilized ground, but in nearly every case the value of the practice is evident. Mr. R. D. Williams and Mr. John Holden used sweet clover as a soil builder on sandy land during the year.

Cereals

During 1936 the agent obtained comparative yields of Turkey Red, Early Bart, and Australian Club Wheat. A plot of Australian Club wheat, produced from pure seed obtained from the University farm and grown on the Heaton Lunt farm, averaged approximately 4 ft. 10 in. in height without any serious lodging. Turkey Red and Early Bart, grown on similiar land on adjacent farms, lodged very badly. The Australian Club plot produced slightly over 40 bushels per acre. With favorable winter conditions and more water, it would have done even better. While it may be possible to grow almost as much Turkey Red or Early Bart Wheat on this rich land, losses from shattering and lodging are so great that the final yield is generally seriously reduced. Pure seed plots of Turkey Red Wheat on the dry adobe soil near Franklin produced fairly well and for that soil type and that area the Turkey Red will perhaps produce nearly as much as Australian Club.

Mr. Stanley Coon grew a 10 A. plot of Pure Texas Red Oats which will be sold as seed in the community throughout this Fall and Winter.

B. Farm Crops

Cotton Production

The goals for this project were to establish four pure seed plots which were to be carried as demonstrations. Pure seed plots were established on the Stanley Coon Farm, Mortensen Farm, R. D. Williams Farm, and J. B. Cate Farm.



Pure Seed Plot of Stoneville
cotton, showing low, dense growth.
R. D. Williams Farm.
Aug. 11, 1936.
Eighty balls one inch or more in
diameter in the ten feet section of row.



Plot of Australian Club
Wheat, showing shorter growth due to a dobe soil.
J. E. Crockett farm.
June 28, 1936



Plot of Australian Club Wheat.
Heaton Lunt Farm.
Duncan, Arizona, June 29, 1936

IV. Continued

(2) Project Activities and Results

The Stanley Coon Farm is comprised of a rich adobe soil, is very level, and in the past Acala has not opened well on this adobe soil. Mr. Coon obtained 500 lbs. of Oklahoma Triumph 44 cotton seed. This seed was brought through quarantine and planted on his farm. Treatment in quarantine produced a poor stand of cotton, but even under that condition the results were gratifying. All seed from this farm has been carefully saved as the variety is a good producer in this locality, opens early, and produces a desirable staple. The plot on the J. B. Cate Farm was of Acala. On certain soil types and with certain methods of farming this variety can be produced in Greenlee County. Acala was grown on eleven farms in the Duncan Valley this year, however it is limited to warm soils which possess considerable slope. Maturity must also be hastened by a great deal of cultivation. R. D. Williams and Iler Mortensen produced Stoneville Cotton. This yields the most heavily of any variety that can be grown in this county. It does not shed its bolls as badly when subject to drought, and if watered late and picked closely it does not carry an objectionable amount of trash. Samples of Stoneville lint sent in from this county received a grade of strict middling, length 1 3/32 in. As cotton will produce a greater amount of net returns on a scantier water supply than any other crop, the cotton acreage in Greenlee County will perhaps be doubled next year.

C. Horticulture

Cabbage and Cauliflower Production

Various test work on the Hancock Farm showed Golden Acre far in advance of Charleston Jersey Wakefield or Dannish Baldhead for early Spring planting. A plot of about 1½ A., containing these four varieties was planted in February, and produced marketable cabbage throughout July, August, and the first two weeks in September. A plot of about four acres of Danish Baby Baldhead, planted June 10, was ready for the first cutting November 1. By planting this variety rather thickly on rich ground it produces an immense amount of popular sized heads.

Lettuce Production

The goals in lettuce production for this year were to complete one variety test, and assist growers in establishing a more desirable market. Most variety test work was done. A series of letters sent out by the agent to determine the amount of lettuce used by towns

IV. Continued

Ø2) Project Activities and Results

within easy trucking distance, proved to be of some value to several of the growers. At the present time most farmers with the soil type and the amount of water necessary for lettuce production, prefer to grow onions or potatoes. Their contention is that on a five year average, onions and potatoes are much more certain to show favorable returns. The extreme range in temperatures in the Duncan Valley apparently continues to prevent lettuce production on a very large scale.

Potato Disease Control

Goals for 1936 were to complete three demonstrations on germination and to determine the relation of Psyllid Yellow to cold storage treatment. The change in the amount of water available for irrigation of potatoes has made it almost impossible to produce second crop potatoes without the use of pumps. As pump water is clear and cold and cools off the ground sufficiently to produce rapid germination, it has removed the necessity of further work on the chemicals to promote germination. The natural germination obtained by cold moist soil is superior to any other. Work was done on both Early Blight and Psyllid Yellow. The attack of Early Blight progressed so slowly that no spraying was done, although the machine and material was kept in readiness. Psyllid Yellow appeared in a number of fields. It invariably appears more frequently in the earlier planted potatoes, and also in potatoes which have been treated by low temperatures in refrigerators to hasten germination. Observation to date would lead one to believe that a certain amount of control may be obtained by careful attention to planting dates and by giving up the practice of refrigerating second crop seed.

IV. Continued

(2) Project Activities and Results

D. Rosent Control

The goals for 1936 were to organize canal companies so as to treat all farm aldn in the Duncan Valley for gopher infestation.

Due to various regulations, it was impossible to use WPA labor on this project, hence the valley was not treated as an entire unit, however, 89 cooperating individuals treated 97 A. of crop land and 3000 A. of range as well as dwellings and other buildings for rodent control.

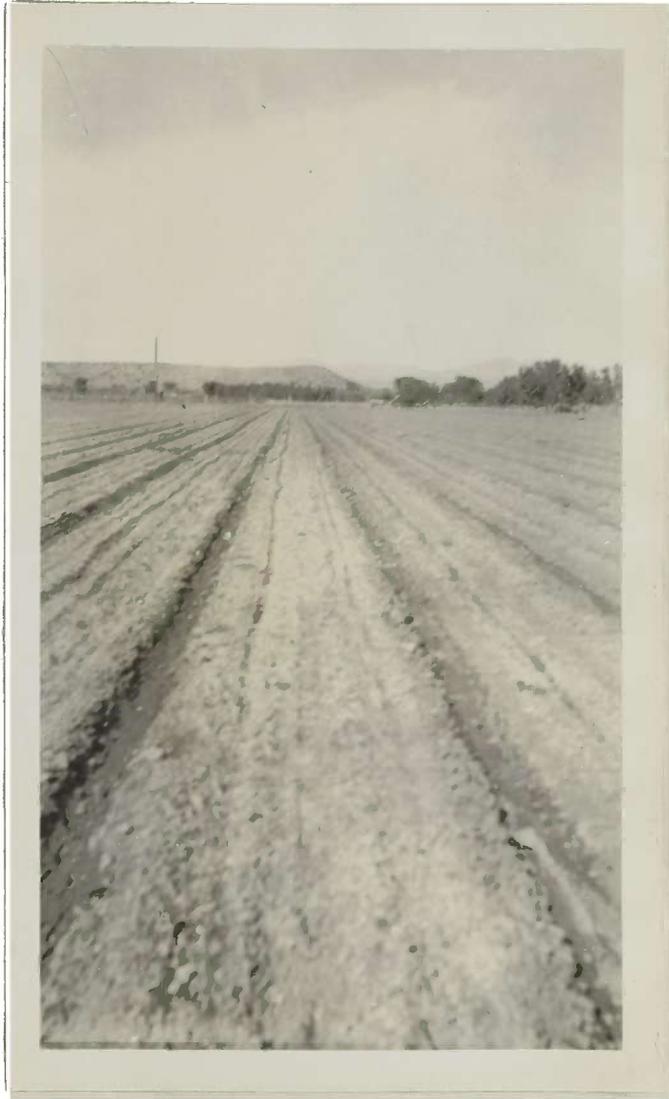
D. Irrigation Practice

Irrigation problems have been of the greatest importance in the last 12 months, due to the fact that the Seames Decree went into operation Jan. 1, 1936. This decree enforced the division of the water flowing in the Gila River in a manner highly detrimental to agriculture in the Duncan Valley. During the past year crops in this valley suffered to a greater extent for lack of water than in any previous year on record. The Agent cooperated with the Franklin Irrigation District Board, and also with the various boards of the canal companies in obtaining the various data information and financial necessity for the installation of pumping plants, however, the farming operations on many of the farms are not carried on in an efficient enough manner to justify the use of the more expensive pump irrigation. Likewise, some of the higher soils would have to have the pump water conveyed to them through as much as six miles of canal. In these particular cases, loss by percolation would be very great.

During the year the agent attempted to help farmers in the selection of drought resistance crops and in so arranging their farming program as to reduce the water requirements of their farms. If the water decree continues to be enforced as in the past year it will necessitate either the fallowing or else the retirement from irrigation of a considerable acreage of land in the Duncan Valley. A number of pump projects have been discussed, but to date no pump projects of any size have been agreed upon in the Duncan Valley. Due to the great difference of soil types and of the efficiency of the various farmers it seems impossible to work out an equitable basis for the division of water from a large pump plant.

F. Poultry Production

The goals for 1936 were to complete two demonstrations on brooding, and one on parasite control. One brooding demonstration was completed whereby Rhode Island Red



Land properly prepared for
vegetable planting.
Hancock Bros. Farm,
June 15, 1936, Duncan, Arizona

IV. Continued

(2) Activities and Results

chicks were placed on clean ground and all sanitary precautions were exercised for the first six months. During that time the death loss amounted to only 8%, and it was almost entirely accidental. This cooperator had previously suffered high chick mortality annually.

Two demonstrations were completed on parasite control. One of these embracing the flock belonging to Mrs. C. T. Bourgeois; consisting of the treatment of 125 five-months-old pullets with Iodine Vermicide. These pullets had been generously fed, but were suffering from a severe infestation of round worms and tape worms. Up to the age of 5 months they had not begun to produce. Following treatment and a general clean up of premises, these birds showed immediate improvement, and five weeks after the date of treatment, were producing well. A great deal of interest is being shown in the Iodine Vermicide treatment. The agent assisted ~~twenty-two~~ cooperators with feeding problems, and also discussed the possibility of selling eggs to hatcheries with 12 different poultrymen. At the present time Mrs. R. D. Williams is the only person in the county with a hatchery egg contract, however, it is hoped that within another year several other people will be able to shape up flocks which can meet the regulations.

G. Orchard Improvement

Goals for this project were to complete three demonstrations.

During the year the agent made three trips to the Adolpho Garcia ranch on the Eagle River. Work was done on the control of Woolly Aphis and fertilization to improve the size of the peach crop was also attempted. The result demonstration for control of the Aphis was fairly successful. Guano from a nearby cave was mixed with rotted leaves, and applied as fertilizer to peach trees. It seemed to be of some value in increasing the size of fruit and, also in preventing the falling of immature fruit, however, this fertilizer must be used with extreme care, as over application will produce disastrous results.

Mr. T. M. Miller, on an apple ranch on the San Francisco River, also agreed to begin applying fertilizer to his trees this year.

A beginning was also made in pecan work. Previously, pecan varieties used here were insufficiently hardy or quick maturing to meet our conditions, however, Mr. Harvey Tate, Extension Specialist, introduced the variety known as Indiana.



Indiana pecan graft.
Graft made April 26, 1936.
Picture, September 3, 1936.
Tom Dees lot, Duncan, Arizona



Heavy set of strong beans on
rich land fallowed previous
winter and spring.
Hancock bros. farm,
Oct. 5, 1936, Duncan, Arizona



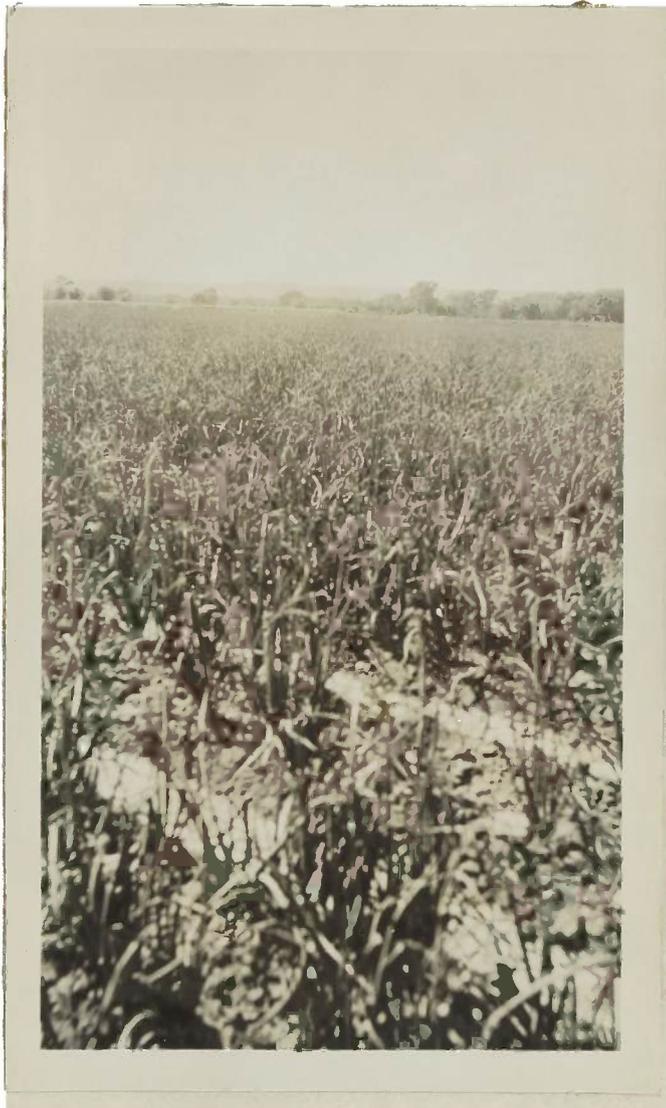
Carrot plot which produced
gross return of over three
hundred dollars per acre.
Hancock Bros. farm.
Duncan, Arizona. Sept. 20, 1936



Dense growth of cucumber vines,
Kentucky Wonder beans in back
ground. Produced on land receiving
frequent cultivation through winter
and spring.
Hancock Bros. farm.
Duncan, Arizona, Sept. 20, 1936.



November planted lettuce,
J. B. Simms farm.
April 20, 1936



Six acre field of Valencia
Onions, producing over 300
sacks of onions per acre.
Heaton Lunt farm.
June 18, 1936, Duncan, Arizona



Plot showing comparative
greater growth of Haberlandt
Soy Bean over growth of Manchu
variety. This growth was produced
with a minimum of water.
S. A. Foster,
Oct. 10, 1936, Duncan, Arizona.

1V. Continued

(2) Activities and Results

This variety was proven to be of great value under favorable climatic conditions. Five grafts were made with Indiana wood this year, and to date they give considerable promise.

H. Boy's and Girl's 4-H Club Work

17 boys and 12 girls were enrolled in 4-H Club work. Of these, 12 boys and 12 girls completed their work. Miss Helen Hoover, High School Domestic Science Teacher, acted as leader for the girls with the direction and aid of Mrs. Barmes.

I. Range Management

The goals for 1936 were to complete one demonstration, and to cooperate with the Soil Conservation and Grazing Service.

Meetings, circular letters, and ranch visits were used to obtain these ends. Three meetings were called and circular letters were used by the agent to familiarize ranchers with the Taylor Grazing Act. The Extension Service Office assisted 34 applicants with their grazing applications.

Three meetings and 2 circular letters were used to acquaint ranchers with the range program of the Agriculture Conservation Association. The Extension Service cooperated with the Forest Service in the working out of this program, handling all applications. In cooperation with the Soil Conservation Service and the Cattlemen's Association, tour of range which had been worked by the Soil Conservation Service was used to explain the purpose of this work. The tour lasted for $\frac{1}{2}$ day and was attended by 90 people.

One demonstration was held on the use of the emasculator, treating 47 animals.

IV. Contined

J. Dairy Herd Improvement

Goals for this project were to give 3 demonstrations to increase the use of dairy products.

Two demonstrations were given in the preparation and use of dairy products and one on the selection of dairy cattle. Eight owners of dairy cattle were assisted with feeding problems. Five people were assisted with butter and ice cream making.

L. Weed Control

Goals were to complete one result demonstration on the control of bindweed.

Seven different farmers were interviewed and tentative plans made for the use of Sodium Arsenite in controlling small patches of bindweed, however no work has been done to date.

M. State and County Fair

As there was no State Fair and as there was no money available for County Fair work, the only work affecting fairs accomplished this year was the sponsoring of a project whereby the buildings and grounds of the Greenlee County Fair Association will be restored to good order.

Miscellaneous

During the year 1936 the agent assisted 47 people with canning problems, 7 people with seed loan applications, 87 applicants under the Soil Conservation Association, and treated 142 head of livestock for various injuries or disease.

A test plot embracing 12 varieties of soy bean and an experimental plot on the adaptation of Giant White Jerusalem Artichokes were also conducted this year.

Leases, daeds, mortgages, contracts, or various other legal papers were drawn up for 92 people.

V.

Outlook and Recommendations (Including suggestive program of work for next year)

The projects to be carried on as majors in 1937 are Irrigation Practice, Soil Improvement, Cotton Production, Potato Disease Control, Boy's and Girl's Club Work, Poultry Production, Dairy Herd Management, Range Management, and Orchard Improvement.

There is greater need for work along the line of irrigation problems and the economical use of water than ever before in the history of the Duncan Valley. It will be necessary for the Extension Service to continue its work with the various canal companies, and to recommend such rotations and practices which will make it possible to continue farming under our present limited supply of water.

Soil Fertility in the future will be of great importance from the standpoint of economical use of water as there apparently is not enough water to irrigate all of the land under the project, it will be more economical to irrigate that land which is high in fertility, or to build up the fertility of land which is now low.

Cotton Production and improvement should be continued along the lines of variety adaptation, and there shall also be some test work to determine the relation between the amount of water used, time of application and yield.

Potato Disease Control should be continued in relation to Psyllid Yellows and to Blight. These two diseases seem to be the most dangerous that are now appearing, and the potato growers need help in their attempt to combat with them.

Boy's and Girl's 4-H Club work will be continued jointly with the aid of the home demonstration agent and assistance from the state leaders. There is an excellent field for work in this line, providing that the agent can find the necessary leaders and the time to devote to it.

Dairy Herd Improvement work needs to be continued along the line of assistance in selection and feeding problems for the farmers on a small number of cows, and in assistance in management and distribution for the one commercial dairy in the county.

V. Continued

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

It may also be necessary to cooperate with the State Veterinarian in a testing program in this county during the year.

Although orchard improvement work will be continued, it will perhaps be confined to a small amount of pruning work and the eradication of pests and diseases. At the present time there is no interest in the planting of new varieties, however the Extension Service can be of some value in assisting in the management and renovation of old orchards.

Range management needs to be continued along the lines of the general range practice demonstrations. It will, also be necessary for the Extension Service to assist in bringing the Soil Conservation Program to ranch owners, and to help ranch owners adjust themselves to meet the changing conditions brought about by control of grazing.

Lettuce Production and Cabbage and Cauliflower Production is recommended for continuation as a minor project. It has been suggested to the Extension Service that an attempt be made to increase the lettuce acreage on those soils adapted to its production and receiving adequate water.

Rodent Control needs to be continued cooperatively with the Biological Service, it should also be extended to include the eradication of rats on certain range lands.

There is considerable call for a more or less ambitious campaign against California Bindweed during the coming year. Due to this request the Extension Service and the Plant Pathological Department of the University of Arizona plan to do considerable work during the coming year.

Miscellaneous work is planned to cover canning and garden work, Agricultural Adjustment Programs, first aid to livestock, the drawing up of leases, deeds, and mortgages, continuation of soy bean and artichoke test plots, and a great many other diverse tasks which come to the attention of this office.

VI.

Summary of Activities and Accomplishments

Soils

m Green manure crops used by 11 farmers, sweet clover used by 2 farmers.

Cereals

2 pure seed plots of Australian Club Wheat established. 1 pure seed plot of Texas Red Oats established.

Cotton Production

4 Pure seed plots established. Adaptation of variety to soil types established.

Cabbage and Cauliflower Production

1 variety test completed.

Lettuce Production

More data acquired.

Potato Disease Control

1 result demonstration completed.

Rodent Control

89 cooperators treated 970 A. of crop land and 3000 A. of range land for rodent infestation.

Irrigation Practice

Obtained information data and assisted in obtaining financial aid for all canals under Franklin Irrigation District.

Poultry Production

2 result and 1 method demonstration completed and use of Iodine Vermicide introduced.

Orchard Improvement

1 fertility and 1 insect pest demonstration completed, also new variety of pecan wood introduced.

Boy's and Girl's 4-H Clg'b Work

One boy's club and one girl's club enrolled, work completed for a year.

Vl. Continued

Summary of Activities and Accomplishments.

Range Management

6 meetings called reaching all cattlemen of county and explaining Soil Conservation of county and Taylor Grazing Act. Programs. 1 result demonstration completed, 1 tour conducted. 34 applicants assisted with Taylor Grazing Act applications.

Dairy Herd Improvement

3 demonstrations completed, 8 cooperators assisted with feeding problems, 5 cooperators assisted with dairy production problems.

State and County Fair

WPA project organizing to reestablish race track and fair buildings.

Miscellaneous

47 people assisted with canning problems, 7 people with seed loans, 87 people with Soil Conservation Applications, 142 head of livestock treated, and 92 people assisted with leases, deeds, or other legal papers.