

73  
report  
pictures clear

ANNUAL REPORT  
OF THE  
COUNTY AGRICULTURAL AGENT  
FOR  
GREENLEE COUNTY  
PERIOD  
FROM DECEMBER 1, 1939 to NOVEMBER 30, 1940

BY  
K. A. BOEVERS  
COUNTY AGRICULTURAL AGENT  
DUNCAN, ARIZONA

INDEX

	PAGE
Cover Page.....	
Index.....	1
Summary of Activities and Accomplishments.....	2-3
Changes in County Extension Organization.....	4
Problems Determining Extension Program.....	5-7
Influence of State and National Agricultural Agencies Operating in County Upon the Extension Program.....	8-9
Activities and Results	
(A) Soils	
Green Manure.....	10
Commercial Fertilizer.....	11
Cereals.....	11
(B) Farm Crops	
Cotton Production.....	12
(C) Horticulture	
Mixed Vegetables.....	13
Lettuce Production.....	14
Potato Disease Control.....	14-18
Rodent Control.....	19
Irrigation Practice.....	19
Poultry Production.....	20
Range Management.....	21-22
Boys' and Girls' 4H Club Work.....	23
Dairy Herd Improvement.....	24
Weed Control.....	24
Orchard Improvement.....	25-26
County Fair.....	27
Farm Planning.....	27
Soil Conservation.....	28
Miscellaneous.....	28
Outlook and Recommendations.....	29-31

### III. SUMMARY OF ACTIVITIES AND ACCOMPLISHMENTS

The first gypsum ever used in Greenlee county was spread upon six acres of alkaline land on the Heaton Lunt farm during October of this year. The previous practice was to control alkalinity through the use of barnyard and green manure and flooding with heavy irrigation. One calcium-nitrate fertilizer test was applied to lettuce on October 4, but hail damage the first week in November prevented an accurate check on results.

The use of green manure was carried out on fifteen farms this year, this being an established practice among vegetable growers and people building up thin land. It has fitted in well with cereal cropping as when insect damage or lack of water causes the grain crop to be retarded the entire crop is turned under and some other crop planted.

Cotton improvement work resulted in certification of Acala cotton for six growers. One field of approximately 30 acres was planted from registered seed, and this cotton will be eligible for certification again next year. Publicity on cotton grades and new methods of culture have increased interest in the production of better staple. Due to Dr. Matlock's work on cultural methods, more cotton was irrigated during June than at any time in past years.

A potato plot, comprised of seventeen different varieties, greatly increased interest in potato production locally, and is paving the way for the use of several new varieties, which bid fair to increase returns to growers. One field meeting was held in June, at which farmers studied the characteristics of the seventeen varieties in the test plot. The work will be continued with the cooperation of the USDA and University of Arizona.

Increased interest in lettuce production resulted in the organization of a Vegetable Growers' Association. This Association worked with fair success although adverse prices greatly handicapped the thirteen members. Association members obtained a cooperative F.S.A. loan for the purchase of packing equipment, leased a packing shed, and put up vegetables under standard pack.

Irrigation work centered about the various problems arising with the installation of the pumping plants and the more efficient use of water which this increased cost of irrigation will bring about. The availability of water during the last several months has made it possible for the agent to stress the use of winter pasture crops and also the prod-

### III. (Continued)

uction of vegetables where vegetable production is feasible.

By working closely with poultrymen of the county and with Interstate Farmers Incorporated, which buys most of the local egg production, the extension service was able to establish standard market grades for nearly all eggs sold in the county. This is a decided improvement over past conditions in the egg market. Due to meetings and work with poultrymen, approximately ninety percent of the chicks purchased were from accredited hatcheries. Mrs. Williams, the largest poultry producer in the county, continued to cooperate with the extension service under the Poultry Improvement Plan, obtaining excellent results.

Work with dairymen resulted in the purchase of two splendid registered Holstein bulls in the county, the purchase of over fifty good heifer calves, and the adoption of improved feeding schedules by seven different dairymen.

Work with range cattlemen resulted in the beginning of range contour listing and range reseeding on a large scale, two ranchers listing and reseeding upward of 1400 acres. It also brought about the most successful and uniform range cattle sales ever obtained in the county, and with larger attendance at range cattlemen's meetings.

Weed control work resulted in the establishment of two demonstration plots wherein atlicide was used to control bindweed.

By carrying a great deal of responsibility, the agent was able to put the county fair on an exhibit basis once more. Although exhibits were limited to certain products this year, the general operation of the fair was again put on a sound basis.

Club work saw an increase in enrollment both among boys and girls. The largest delegation of 4H club members ever to attend Round-Up week were taken to the University this year. Three fat steers were exhibited in the Junior Livestock Show at Tucson; five judging teams were trained during the year, and a considerable increase of interest in 4H club work was in evidence at the close of the year.

Fifty-one individuals were assisted in formulating farm plans, and twenty-three were assisted in some manner in obtaining necessary agricultural financing.

#### IV. CHANGES IN COUNTY EXTENSION ORGANIZATION MADE DURING THE YEAR TO IMPROVE REGULAR PROCEDURES OR TO MEET EMERGENCIES.

One of the changes in organization made during the year was adoption of the practice of using groups of farmers for the expression of agricultural sentiment and agricultural needs. Groups of farmers, with the agent's assistance, were able to voice their wishes to the Board of Supervisors of the county, and thereby obtain county assistance in completing the bang's and tuberculin test among dairy cattle. They were likewise able to obtain more assistance in reorganizing the county fair than would have been possible otherwise.

The plan followed has been for the agent merely to assist the group in threshing out details of what they believe is for the agricultural good of the group or community, and also, determine how practical their requests may appear in the light of general conditions over the county.

Another change in organization has been a readjustment of work schedule and policy so as to bring extension work before a larger number of persons throughout the county, furnishing technical information for Garden Clubs, and similar procedures were used to attain this end.

During the year the agent adopted a policy of working directly only with Boards or Administrative groups of cooperative organizations or associations in the county. The matter of working with the Board of Directors and Forest Advisory Board of the Greenlee County Cattle Growers' Association might be taken as an example of this. By cooperating closely with these Boards and attending all of their meetings, it has been possible for the agent to be of greater service to the entire organization. This is a change in policy from the past, as previously no particular group of the organization had been selected for special work.

## V. COUNTY EXTENSION PROGRAM

### (1.) Problems Determining Extension Program

In planning the program of work for the past year three factors were taken into consideration. First, the general outlook for farm and livestock prices seemed better; Second, there was better prospect of sufficient irrigation water on the farms, and moisture conditions and feed were better on the range; Third, due to a wide variation in causes, there was an increase of interest in agricultural pursuits. Bearing these factors in mind the agent attempted to carry on work under the different projects so as to be of the greatest value in a program which had for its purpose the permanent improvement of agriculture in the county.

In working out a program, problems were considered in the light of their importance to the entire agriculture of the county, and work on the different projects was planned accordingly.

Fertility and soil moisture are of importance wherever crops are grown, and presented important problems in this county, fertility being important because on the small acreages occurring in this county, high yield is very important. Moisture content of the soil is important due to the fact that irrigation is from temporary diversion dams, and lack of water in the river causes crop failure. The problem of irrigation was further complicated by the fact that a P.W.A. project was under way, which contemplated installing eight large wells to be equipped with desoil engines and so placed as to furnish ground water for use in the canals when river water was insufficient. No matter how the irrigation situation could be handled, it was evident that irrigation water would become increasingly expensive. Hence, the problem of the economical use of water also appeared in the picture.

In cotton production the agent was faced with the importance of establishing the county as an Acala cotton producing district, as Acala lint brings the greatest return. However, cultural practices were such that many farmers were having many unopened bolls or frost stained cotton, and it was evident that the extension service must work on the problem of cultural practices to correct this.

Likewise, potato growers were faced with a serious problem in the fact that the varieties which they were using and which were sufficiently hardy to meet growing conditions and yield requirements, are now outmoded in the market, due to the fact

V. (Continued)

(1). Problems Determining Extension Program

the market is demanding a smoother potato, and one adapted to a special trade. This made it necessary for the extension service to attempt the introduction of varieties which would be satisfactory, both from the growers' standpoint and from the market standpoint.

Vegetable production had been carried on to some extent for thirteen years in the county, but there was no organization among producers to obtain finance in the handling of the crop or to obtain uniformity. For this reason organization to produce uniformity of production and to obtain financing was the biggest problem facing the vegetable situation.

The most important problem in 4H club work at the beginning of the year was very plainly the lack of leaders. This problem had been attacked in various ways in the past and had never been satisfactorily solved.

The situation in the dairy industry resolved itself about the lack of interest in dairying occurring generally throughout the county, and the absence of good, young dairy stock. At the beginning of the year there was almost no foundation breeding stock in the county, and although the agent had met with various groups in an attempt to encourage the purchase of good, young stock, there had been little response to date. The supply of cheap feeds on the farms gave an ideal situation for the maintenance of small herds of dairy cows, providing the farmers could be sufficiently interested and would obtain the proper kind of stock.

Lack of uniform grades in the sale of eggs and the purchase of low grade chicks from hatcheries outside the state, presented a serious problem in the poultry industry. Nearly all eggs were sold flock-run, with the result that the person producing a good grade of eggs was severely penalized. A great many farmers, who were purchasing cheap chicks from outside the state of Arizona, were also bringing in many diseases and getting bad results with these chicks. There was great need for a drive to encourage the purchase of chicks from accredited hatcheries.

The range livestock industry was in a better condition at the beginning of the year than any other agricultural group in the county. However, the problem at hand was to improve the sales organization and to strengthen the Association and

## V. (Continued)

### (1). Problems Determining Extension Program

increase attendance at meetings. Range operators also were beginning to show interest in range improvement and reseeding problems. There was need of some means to work on these matters and put the facts before cattlemen of the county.

Bindweed has been a serious problem over a considerable acreage of farm ground in the Gila valley for years. Although various treatments had been used in the past, nothing very satisfactory had ever been worked out. The increasing rapidity with which the weed was spreading presented a really serious problem and cause for new attempts in the line of control measures.

One of the most serious conditions existing in the county is the lack of definite farm plans among the smaller operators. In many cases there is no attempt to work out a cropping and livestock enterprise fitted to the fertility, available water, and labor which may be supplied by the farm family. The agent considered the maladjustment of farm labor, crops, and livestock a very serious matter. Adequate and intelligent financing has also been a problem for a number of years. New tenants coming to the district and new cropping conditions have made this problem even more acute during the last several years.

Lastly, there appeared the matter of farm attitude. A successful farming community must look upon agriculture as a permanent industry, and handle its cropping system and livestock enterprises on a long-time basis. Perhaps the greatest problem confronting the agent in his work in this county has been the attitude of many of the farming people. They operate on the theory that farming is only a temporary occupation, and there is no attempt to build toward permanent improvement.

## V. COUNTY EXTENSION PROGRAM

### (2). Influence of State and National Agricultural Agencies Operating in County upon Extension Program.

The work of the various agricultural agencies operating in the same territory as the extension service has become so closely related to the extension service that almost every project appearing in the extension plan of work is affected in some way or other.

Taken in order of immediate importance and time required of the county agent, the Agricultural Conservation Program has perhaps the most effect upon extension work. Approximately one-tenth of the agent's time in this county was given to this work. The payments made under this program for certain conservation practices upon farms has made it possible for the extension service to obtain greater cooperation in soil building and crop rotation practices. The Agricultural Conservation Program has had a decided effect upon the Extension program in that there is now a material reward immediately available to farmers who follow certain approved practices, whereas, in the past, the award only appeared in increasing crop yields over a series of years. This has encouraged the extension service to lay special stress upon these practices.

Likewise, the fact that the range program offers certain remuneration for reseeding, water spreading, and various range improving practices has made it possible for the extension service to put more stress on these practices and obtain a greater number of cooperators and a more rapid adoption of these improvement practices by ranchers.

The Division of Grazing, or Federal Grazing Service, through its assistance to ranchers in fence building, tanking, and rodent control and through its control of the number of stock grazed on the districts, has also given stimulus to work which the extension service has been sponsoring for years. Officials of the Division of Grazing have given the agency information and assistance on livestock and range problems arising in the district, and have been of considerable importance in furthering the program which the agent has been working on through the last several years.

Officials of the Forest Service have cooperated closely with the extension service in matters of organization pertaining to the Cattlemen's Association of the county. While the program of the extension service has not been affected to a great extent by the Forest Service, the cooperation of the

. (Continued)

(2). Influence of State and National Agricultural Agencies  
Operating in County upon Extension Program.

Forest Service has made it possible for the extension service to obtain better results in work with cattlemen operating upon national forest grazing lands.

The Farm Security Administration and the Emergency Crop and Feed Loan Office of the Farm Credit Administration have made it possible for the extension service to include many farmers in the extension program who would otherwise have been so greatly handicapped for operating funds that they could not have farmed to any advantage. By cooperating closely with these agencies the extension service has been able to formulate a program whereby farmers who come to the county agent's office with loan needs receive information on the requirements and merits of these loans, and are immediately referred to the persons in charge of these loans.

Lastly, without the aid and cooperation of the Division of Predator and Rodent Control of the Fish and Wild Life Service, it would be impossible for the extension service to successfully carry on rodent control work within the county.

## V. COUNTY EXTENSION PROGRAM

### (3). Activities and Results

#### (A). SOILS

##### GREEN MANURE

There are two types of soils especially in need of treatment by green manure crops in this county, the first type being the alkaline soil which needs the acid set free in the decomposition of green vegetable matter. The other type of soil is the soil in need of humus, and this type is generally represented by the extremely sandy soil or by adobe soil which has a tendency to bake or to become slick.

The objective in this work was to have twenty farmers adopt the use of green manure crops as a regular soil improvement practice. Farm visits were used in encouraging the adoption of this practice. The general custom used by the agent consisted of bringing up the use of green manure when going over farm plans with the operator. Fifteen farmers plowed under green crops as a definite practice with the purpose of improving soil conditions. There were also additional acreages of grain plowed under because of insect damage. R. D. Williams has followed this practice for several years, and is rapidly building up some thin river bottom sand. The general practice he follows is to use oats as the green crop, pasturing it up until some time in April, and then allowing it to make a good growth and turning it under.

The use of barnyard manure is a practice which has increased during the past several years. Potato growers and onion growers are applying barnyard manure to practically all land to be put in these crops. The increased interest in vegetables has also brought more attention to the use of barnyard manure. At a meeting of the Vegetable Growers' Association, the agent stressed the use of barnyard manure in special crops, and ten of the thirteen Association members used barnyard manure during the year to step us the fertility of land to be planted to vegetables.

##### COMMERCIAL FERTILIZER

During the year the use of commercial fertilizer was discussed on numerous occasions. It was recommended by the agent in certain cases to prevent Texas root rot on ornamentals



Jerseys on grain pasture at R. D. Williams  
farm--March 18, 1940.  
This grain was later turned under as green manure.

V. (Continued) -

(3). Activities and Results

(A). SOILS (Continued)

COMMERCIAL FERTILIZER (Continued)

or fruit trees. One test was begun on October 4th, wherein a plot of lettuce belonging to Allen Fletcher was treated with a side treating of calcium-nitrate. However, a severe hailstorm so damaged the crop on the 6th of November that no final data could be obtained.

Mr. Heaton Lunt applied commercial gypsum to about eight acres of highly alkaline land during the month of October. Upon recommendation later received from Mr. Steenbergen, the agent advised Mr. Lunt to plow the gypsum treated land, and thereby put the gypsum at a greater depth in the soil. Previously, the gypsum had only been harrowed in the soil. If gypsum proves to be a practical control for alkalinity under the conditions occurring in this valley, the use of gypsum should increase. Although the use of barnyard manure, green manure crops, and the practice of heavy flooding with irrigation water has given fairly good control of alkalinity in the past, the agent believes that the use of gypsum would be a more economical control in many cases providing it gives satisfactory results.

CEREALS

The agent had interviewed Mr. S. W. Coon prior to the beginning of this year in regard to establishing a field of California red oats. This oats was planted in October, 1939, and showed up very well until insect damage affected it in May, 1940. Insect damage was so great that the yield of this plot was negligible, and the quality of the grain so poor that none was kept for seed. However, Mr. Coon has already obtained and planted a second plot of California red oats to give it a further test.

Circular letters and bulletins were sent to fourteen corn growers urging them to use rigid selection in picking their seed corn, and also urging them to treat the corn against seed-born diseases. Sales records from a local merchant, selling the required disinfectant, showed that twelve different farmers treated their corn against various seed-born diseases. The agent made field visits through the

V. (Continued)

(3). Activities and Results

(A). SOILS (Continued)

CEREALS (Continued)

summer and fall, and obtained three cooperators who saved plentiful amounts of carefully selected seed to meet next year's local needs. At the present time Duncan White Dent, Duncan Yellow Dent, St. Charles, and June corn are used in the valley, depending on soils and uses for the crop.

As in previous years circular letters were also used urging farmers to plant grain sorghums because of the small water supply during the spring and summer. An excellent acreage of grain sorghum was grown, and the greater part of the acreage being of Hegari and Milo Maize. Work with wheat consisted mostly of answering questions regarding the yield of various varieties under local conditions. The agent continued to advise the use of Club wheat for local use, except on a few soil types in the Franklin area where Turkey Red can be raised.

(B). FARM CROPS

COTTON PRODUCTION

After discussing the matter with Dr. Robert Matlock, the agent encouraged several local people to bring in certified Acala seed from New Mexico in the hope that it might be of slightly earlier maturity. A series of circular letters and one meeting, at which Dr. R. L. Matlock discussed cotton grades and cotton culture, were used to impress farmers with the importance of certified seed. Two farmers brought in strains from New Mexico which have been very satisfactory this year.

At the meeting on cotton production, Dr. Matlock also discussed the matter of earlier irrigation for cotton. He reviewed the work of Mr. Harris, and due to his discussion of irrigation methods, Mr. S. W. Coon practiced earlier and regular irrigation upon a field of approximately thirty acres of Acala cotton, with the result that this cotton reached much earlier maturity than cotton on similar soil which was not watered until later.

V. (Continued)

(3). Activities and Results

(B). FARM CROPS (Continued)

COTTON PRODUCTION (Continued)

Six growers cooperated with the Arizona Crop Improvement Association to the extent of obtaining certification on their cotton, since they have saved practically all seed. By working with one of the gins located at Safford, the agent was able to devise a plan whereby this seed will be sold to growers in Graham county desiring certified seed. The agent also continued to advise farmers to grow the acreage of cotton best adapted to their farm plan, as cotton continues to be one of the best paying crops. Ninety-eight office calls and thirty-four farm visits were used in assisting farmers with cotton problems during the year.

(C). HORTICULTURE

MIXED VEGETABLE PRODUCTION

Realizing, that improved business conditions would help the mixed vegetable trade throughout this area, the agent attempted to increase the acreage of mixed vegetables throughout the valley insofar as soil type, equipment, and market facilities justified an increase. A goal of ten mixed vegetable growers was set up for this project. Vegetables considered as mixed vegetables did not include lettuce or potatoes which are special crops, and have been treated as such.

Onion, carrot, cabbage, and string bean plantings appeared to be the most practical under local conditions. Sixteen farmers were assisted in planning plantings of these crops. Some of these plantings proved to be failures, but, nevertheless, some served as a good medium through which to work on other crops. Considerable success was attained in the handling and marketing of cabbage, green onions, cantaloupes, carrots, and string beans during the course of the year. By sending out circular letters giving planting dates and informing farmers of most requirements and similar matters, a number of farmers were given help which should be of great assistance in growing vegetables in the future.



Working out onions on B. Lunt farm--July 15, 1940.

Warm winter and March freeze caused white Valentias  
in picture to seed heavily.

Mr. Lunt has changed to Crystal Wax for fall planting.

V. (Continued)

(3). Activities and Results

(C). HORTICULTURE (Continued)

LETTUCE PRODUCTION

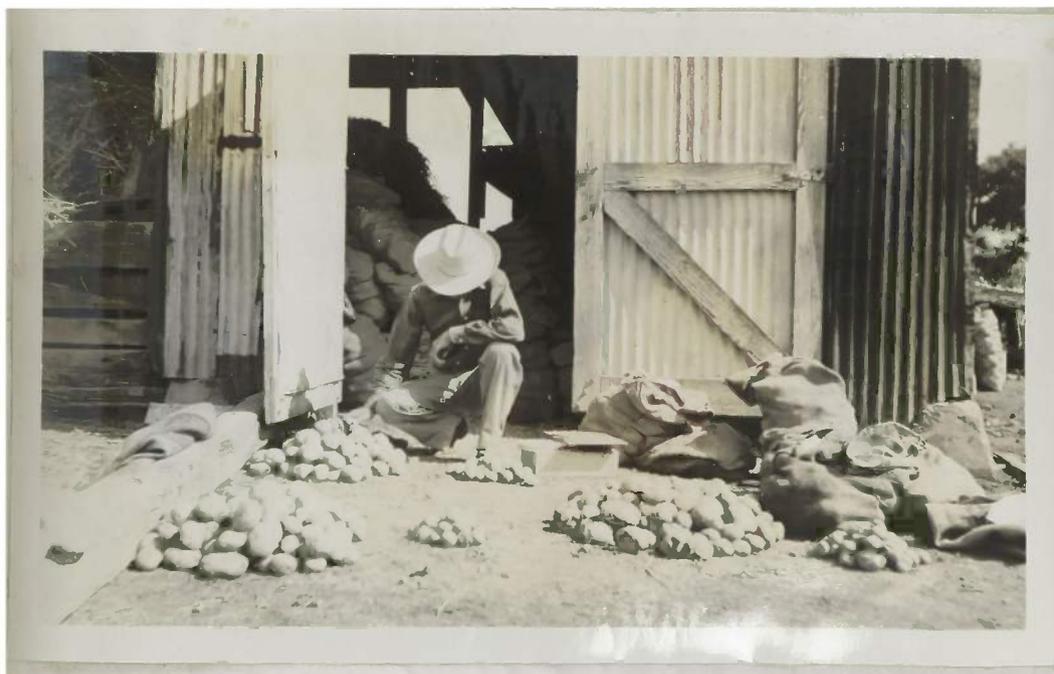
Previous work had established the matter of varieties for the Duncan valley; hence, the goals for the past year were to work out a satisfactory marketing set-up for lettuce and carry out to completion one commercial fertilizer trial.

During the first part of the year, Mr. Harvey F. Tate accompanied the agent on a series of visits to the main lettuce growers. Culture and marketing were discussed, and sufficient interest engendered to cause a demand for a marketing Association. In March and April a series of meetings were held in the county agent's office, at which thirteen growers formed a Vegetable Marketing Association primarily for the purpose of marketing lettuce. Officers were elected, a constitution adopted, and a small loan for the purchase of crates and equipment obtained from the Farm Security Administration. This organization handled both the spring and fall crops with good success, considering market conditions at the time that the Duncan lettuce was harvested.

The chemical fertilizer test plot established in the Allen Fletcher lettuce field was subjected to a severe hailstorm the 7th of November; hence, no data was obtainable. However, Mr. Harvey Tate and Dr. Finch have stated that they will assist the agent in further work on commercial fertilization of lettuce.

POTATO DISEASE CONTROL

The goals set up in potato disease control were to establish one potato variety test plot and to complete the work begun the previous year on psyllid control. Mr. Harvey F. Tate and Dr. Finch accompanied the agent on field visits during the winter and early spring, contacting farmers and increasing the interest in test work. With their cooperation the agent called two of the leading growers together and planned a field test on the Heaton Lunt farm. Twelve varieties were obtained for the test from Mr. J. F. Stevenson, Senior Geneticist, of the United States Horticultural Station, Beltsville, Maryland. Six other varieties were obtained by Mr. Harvey F. Tate. These



Sorting and weighing on experimental plot  
of potatoes on H. Lunt farm--August 8, 1940.



Potato growers examining vines and tubers of varieties in variety test plot on H. Lunt farm-- June 29, 1940.



Looking for psyllids in potato plot on Heaton  
Lunt farm--October 18, 1940.

V. (Continued)

(3). Activities and Results

(C). HORTICULTURE (Continued)

POTATO DISEASE CONTROL (Continued)

eighteen varieties were planted under the direction of Dr. Frazier on the 7th of April. They were irrigated and tended carefully and observed sufficiently often to note the growth tendency of the varieties.

On June 29, Mr. Harvey F. Tate visited the county, and a field day resulted in attendance of nineteen farmers who studied the varieties and noted their characteristics. Due to the fact that several of the varieties were rather late maturing, they were not harvested until August 7th. At this time the potatoes from an average 50 feet of row of each variety were graded and weighed. Potatoes from five of the varieties, showing the most favorable yield and most desirable characteristics, were sent to Tucson to be placed in cold storage and planted again next spring. These will be checked against the same varieties brought directly from the Government Station at Beltsville, Maryland in the second year of the test work. The members of the Potato Growers' Association are very enthusiastic over this work.

To date, the Chippewa and also one other cross-bred variety, which is called by a number for identification, appear to be far superior to any varieties previously grown in this district. One or two more years of this test work should result in making it possible for the growers to obtain new varieties which will meet market demands. Complete data on this test plot will be found on the following pages.

The psyllid work was continued as in the past year, and complete control was obtained. A system of two sprays was used under the supervision and at the strength suggested by Dr. H. G. Johnston. From present appearances, two sprays, properly applied and properly spaced as to time, would seem to give complete control of the psyllid in this area.

NOTES ON  
 POTATO VARIETY TEST PLOT  
 HEATON LUNT FARM--1940

Varieties supplied by F. J. Stevenson, Senior Geneticist  
 of the United States Horticultural Station, Beltsville, Maryland:

<u>Variety</u>	<u>Parentage</u>
Warba	-----
Chippewa	-----
Katahdin	-----
181-14	Irish Cobbler x Katahdin
46923	Earlaine x S 43055
46925	" "
46928	" "
46941	" "
46944	" "
46945	" "
46950	" "
46974	" "

Varieties supplied through the Extension Service and  
 Experiment Station of the University of Arizona:

Red McClure  
 Irish Cobbler  
 White Rose  
 Sequoia  
 Bliss Triumph  
 Early Ohio

Data taken August 7, 1940

<u>Variety</u>	<u>Weights of Two Grades</u>	<u>Remarks from Observation Throughout Season</u>
Red McClure	3 lbs firsts 7 lbs. seconds	Excessive top growth; late tuber; tendency to second growth; tubers very small and irregular, and at ends of long stolons.
Irish Cobbler	22 lbs. firsts 9 lbs. seconds	Good keeping qualities but eyes too deep; Smooth skins.

Data Taken August 7, 1940 (Continued)

<u>Variety</u>	<u>Weights of Two Grades</u>	<u>Remarks from Observation Taken Throughout Season</u>
Katahdin	70 lbs. firsts 10 lbs. seconds	Good top growth, but rather late maturing for this locality. Peeled some when dug; excellent yield, but irregular in size. In future, test planting must be made earlier. Except for irregular size and peeling, excellent quality.
No. 46974	14 lbs. firsts 3 lbs. seconds	Small top, moderately late maturing; shallow eye; slightly russetted. Might be included in later tests.
No. 46945	7 lbs. firsts 2 lbs. seconds	Green top of medium growth; medium time of maturity; very small, inferior tubers.
No. 46950	12 lbs. firsts 3 lbs. Seconds	Medium weak top; early; good type tuber; smooth skin; shallow eyes.
o.46944	3 lbs. firsts 2 lbs. seconds	Very weak top; small, inferior potato.
No 46925	4 lbs. firsts 3 lbs. seconds	Early; very weak top; small, inferior potato.
Warba	25 lbs. firsts 7 lbs. seconds	Pink eye; top similar to Cobbler; eyes too deep; final yield not equal to early appearance.
No. 46928	25 lbs. firsts 7 lbs. seconds	Small stem; small green top; shallow eye; slightly russetted; smooth; early maturity; good keeping quality. Should be included in further tests.
No. 46941	9 lbs. firsts 1 lb. seconds	Early; smooth; thin skins; small early top.
No. 181-14	47 lbs. firsts 10 lbs. seconds	Green, moderately-late top; moderate sized bush; white tuber; good yielder, but eyes too deep; closely resembles Irish Cobbler, but eyes are deeper.

Data Taken August 7, 1940 (Continued)

- <u>Variety</u> -	<u>Weights of Two Grades</u>	<u>Remarks from Observation Throughout Season</u>
No. 46923	18 lbs. firsts 12 lbs. seconds	Fair size; vine green at late date; good early prospect, but final yield falls short; tubers are too rough and eyes too deep; too many irregular and ill-shaped.
Early Ohio	55 lbs. firsts 7 lbs. seconds	Large top; medium late; large tuber; tendency for tuber to break at stem end; tests should be repeated on sandy ground with very early planting.
Bliss Triumph	31 lbs. firsts 6 lbs. seconds	Imperfect stand partly accountable for poor yield; tubers were of average Bliss quality and type.
Chippewa	53 lbs. firsts 4 lbs. seconds	Moderate late; heavy stem; growthy vine; tubers large and smooth; shallow eyes; best appearance and best keeping qualities of all potatoes in test. Should be included in further test work.
White Rose	50 lbs. firsts 16 lbs. seconds	As usual, vines rather small, and having tendency to droop by having large leaf surface. Yield excellent, but quality rather poor because test was on heavy soil. Further test work in White Rose must be on sandy soil. Also would seem to have higher water requirement than other varieties.
Sequoia	4 lbs. firsts 3 lbs. seconds	Vines very coarse and woody; tubers small and inferior; variety apparently too late for this climate, although it might be included another year in case it could be planted on very sandy ground very early.

V. (Continued)

(3). Activities and Results

RODENT CONTROL

The goals selected for rodent control work were to complete range project in rodent control work and improve gopher control work on irrigated land. Only very few farm visits were made in this work, the policy being to discuss rodent control with farmers and range men when they happen to visit the office on some other work.

Early in the year the agent contacted the Biological Survey and obtained a promise of aid in controlling the prairie dog colonies on the Lazy B ranch. However, due to the transfer of one of the employees of the Biological Survey and the reorganization occurring in the service when it was changed to the Fish and Wild Life Service, it was impossible to get at this work during the year. Mr. Crews, who is now doing predator and rodent control work for the Fish and Wild Life Service, has made a survey of the dog work, and has promised to cooperate on this project in the near future.

Rodent control on the irrigated farms was carried on very much as in the past. Available poison grain was kept at the office at all times, and farmers were advised of the proper method and time for using it. During the year cooperative farmers treated 1,065.5 acres of irrigated land, and also used poison grain in 23 sets of farm or ranch buildings to control rodents. In all 176 pounds of poison grain was used on 71 farms and ranches.

IRRIGATION PRACTICES

The irrigation problems of the county were such that the agent found it difficult to set up definite goals. At the beginning of the year a P.W.A. project was partially completed. The project had for its aim the installation of eight large irrigation pumps, driven by diesel engines to furnish additional water for irrigation pumps on the various canals. With this in mind the agent had set up the economical and efficient use of water on irrigated land as the goal toward which to strive. This being a very indefinite goal, it was necessary to proceed along the general lines of work



Privately owned irrigation well on Broughton  
Lunt farm--May 14, 1940.

V. (Continued)

(3). Activities and Results

IRRIGATION PRACTICES (Continued)

followed during the last year. No meetings were held to discuss the use of water as in the previous year, but the agent took occasion to discuss this matter with irrigation district groups whenever they met, also with the canal board members. Questions arising were referred to Mr. Steenbergen of the extension service or Dr. Smith and his staff of the University Station. In this way useful information was supplied to the persons working with the pumping problems whenever they were requested.

Irrigation problems were also discussed with the cooperative group organized for vegetable production in the county. The agent took occasion to stress various irrigation problems before this group at four of their meetings during the spring and summer. Forty-eight farmers called at the office to obtain information or advise on irrigation problems, and the agent also made seventeen farm visits on this work. As matters now stand, the eight irrigation wells are in operation, and all farmers receiving this pump water have been supplied with information regarding pumping problems and the most economical use of water.

POULTRY PRODUCTION

The goals for this work were to obtain two cooperators who would follow the Poultry Improvement Plan that is advanced by the extension service throughout the year, and to stop the purchase of inferior, weak and diseased chicks by poultrymen of the county. Mr. Clyde Rowe, Specialist in poultry and dairying assisted the agent at a meeting in February where poultry sanitation was stressed, and the Poultry Improvement Plan discussed. This was followed up by circular letters and farm visits with the result that over ninety percent of the chicks purchased within Greenlee county during the past season were from accredited hatcheries. Interstate Farmers, Incorporated, a concern which handles poultry feeds and poultry products, was very helpful in this program as they ordered only chicks from accredited hatcheries for their patrons.

Mrs. Roy Williams continued to follow the sanitation

V. (Continued)

(3). Activities and Results

POULTRY PRODUCTION (Continued)

practices as suggested by Mr. Rowe in the plan which he had drawn up for her the previous year. Through farm visits to the larger producers and by discussing the matter with the manager of Interstate Farmers, Incorporated, Mr. Rowe and the agent were able to assist in setting up marketing standards for eggs in the county. By the use of circular letters to poultrymen, wherein the advantages of selling only standard grades were explained, and the close cooperation of Interstate Farmers, a plan was worked out whereby practically all eggs sold, both within the county and to outside markets were put up in standard grades. The agent assisted Interstate Farmers in working up a very creditable poultry products and poultry feeds exhibit at the county fair for the purpose of increasing interest in poultry. Information was supplied at all times to Interstate Farmers and to the larger poultry plant operators in regard to feeding problems and marketing problems.

As a result of the above procedure, this county is selling a much higher grade of poultry products than at any time previous.

RANGE MANAGEMENT

Range management work revolved around two goals, the first of these being to improve the sales organization of the Greenlee County Cattle Growers' Association, and the second being to establish two reseeding demonstrations. In working toward the first of these goals, the agent worked very closely with the president of the Association and with the members of the Board of Directors and the Forest Advisory Board. By meeting with these groups it was possible to discuss organization and marketing sufficiently far in advance to have the sentiment of the different cattlemen at an early date, and to organize the various communities so that one or two men could contact the buyers for the entire group. Mr. Fritz, Mr. Davis, and Mr. Hunt gave this work considerable time.

Sales this year were more orderly and more uniform than



Contour furrow on H. A. Day ranch--September 14, 1940  
Received two light rains, but not enough moisture  
to sprout seed. Improved growth of old sod appears  
adjacent to furrows.



Examining four year old chamiza planting on H. A.

Day ranch--September 14, 1940.

Chamiza planted on lower side of tank, protected by  
fence.

V. (Continued)

(3). Activities and Results

RANGE MANAGEMENT (Continued)

at any previous date in the history of the county. Nineteen range operators pooled together to make the lower Blue, Clifton, and lower Eagle sale this year. They sold approximately two thousand head of cattle in a very satisfactory manner and to the complete satisfaction of the purchaser. Most of these cattle had not been seen by the purchaser until they arrived at the shipping pen, and the purchaser did not find it necessary to cut out any cattle at the time of their arrival at the pen.

All sales over the county proceeded in a very orderly manner. The agent believes this was due in part to the listing of cattle on the county listing sheet, and to the fact that orderly marketing was discussed and stressed at both of the Association meetings held during the year. The first of these meetings was held at Duncan in April, and the second at Clifton in August. Mr. J. T. Rigden of the extension service was of great assistance in planning and carrying out these meetings and in going over matters with the Board of Directors of the Association. Throughout the year he furnished valuable information to cattlemen in the county and assisted in all problems facing the county agent in regard to livestock production and range management.

Fourteen hundred acres of range land were listed or contour furrowed in the county during the year. By cooperating with the Soil Conservation Service and furnishing information to operators, it was possible to obtain artificial reseeding on about twelve hundred acres of this area. This will be carefully watched for results during the coming year. As rainfall was very light this year, only a very small percentage of the seed sprouted. In addition, one small plot of range grasses was planted under irrigation on the Mussett Coper farm. His purpose for planting this plot was to obtain seed for further range planting. The plot was planted during August and September at two different dates and irrigated thoroughly. The *Eragrostis Lehmaniana* had come to a fairly good stand at the time of freezing weather, but none of the other varieties had appeared to date.

Dr. W. J. Pistor and Professor Stanley also continued to work on the blood analysis of range cattle begun the previous year. Samples were taken twice during the year at

## V. (Continued)

### (3). Activities and Results

#### RANGE MANAGEMENT (Continued)

the Fritz, Seeley, and Harry Day ranches. To date, work of the two years as well as analysis of feed samples would seem to point toward the fact that factors other than calcium-phosphates determine the success of range cattle operation in this county. The work is of value, however, in pointing out little if anything can be gained by the use of dicalcium phosphate in livestock mineral mixtures.

#### BOYS' AND GIRLS' 4H CLUB WORK

Realizing the importance of increasing the scope of 4H club work in the county, a goal was set up in this project for the completion of ninety percent of all club enrollment and to obtain more 4H club leaders. Through the assistance furnished by Mr. Rovey on his several visits to this county during the year, there was increased interest in 4H club work. Mr. Rovey accompanied the agent on a number of home visits wherein people were interviewed for the purpose of obtaining 4H club leaders. Considerable work was accomplished along this line, and a number of people have consented to assist to some degree in the club work in the future.

Five judging teams were trained during the year. Mr. Rovey and Mr. Rigden spent one day in the county giving demonstrations on the judging of classes of livestock, and getting with club boys and their parents to discuss club problems with them. Three club steers were shown from this county at the Tucson livestock show in February, and this county also was represented by a group of sixteen boys and girls and two leaders at the 4H club Round-Up at Tucson. Completions in both boys and girls 4H club work were better than ninety percent.

#### DAIRY HERD IMPROVEMENT

The dairy industry of the community can be no better than the dairy stock on the farms and the feeding programs of the operators. Goals set up for this project were to increase the purchase of registered or good grade dairy calves by

V. (Continued)

(3). Activities and Results

DAIRY HERD IMPROVEMENT (Continued)

dairymen of the county and to obtain five cooperators for improved dairy feeding schedules. Two farmers purchased registered Holstein bulls during the year, and over fifty dairy heifer calves were purchased by farmers of the community. None of these calves were accompanied by registration papers, but all of them are of excellent breeding.

In regard to the feeding program, Mr. Clyde Rowe assisted the agent in stressing the use of grain pasture, silage, local grain, and fodder which had been through the hammer mill. In cases where dairymen were unable to use a silo, due to the small number of stock kept, they were urged to purchase a hammer mill for handling grain sorghums, or to produce sweet sorghums for feed in addition to grain pasture and alfalfa hay. The use of economical feed was stressed in this work. Although no meetings were called, office visits and farm visits brought the matter of feeding before every person interested in dairying during the year. In all, fifty-one office calls, forty-one farm visits, and one circular letter was used to keep these matters before dairymen, with the result that seven dairymen adopted improved feeding schedules. The purchase of improved heifer calves has put dairying on a much more constructive basis.

WEED CONTROL

Goals set up for this project were to carry out a drive to make farmers conscious of the danger of noxious weeds and to establish two weed control plots. Dr. C. H. Davis visited the county early in the year, going over a number of bindweed infestations, studying soil types, and giving the agent the results of the weed control work he had carried on in other places. Dr. Davis and the agent discussed weed control with four different farmers at this time, and decided that, if possible, an Atlacide demonstration should be established.

Later in the season Dr. R. L. Matlock visited the county and assisted in further preparation for weed control work,



Dr. Matlock, applying Atlacide on result demonstration plot on J. B. Simms farm--October 16, 1940.



Dr. Matlock, applying Atlacide on Heaton Lunt farm--October 16, 1940. Atlacide was applied here both as a dust and dissolved in water.



Heavy plot of bindweed on J. B. Simms farm--  
October 16, 1940. Border in background. Picture  
taken just before treatment with Atlacide.

V. (Continued)

(3). Activities and Results

WEED CONTROL (Continued)

with the result that two cooperators were obtained who would furnish plots and assist in every possible way. On October 16th Dr. Matlock again visited the county, bringing a supply of Atlacide with him. A method demonstration was held at the J. B. Simms farm, whereat a small plot of bindweed was dusted with Atlacide and then given a thorough irrigation. Another demonstration was established on the Heaton Lunt farm, at which part of the plot was dusted and part of the plot was treated with Atlacide dissolved in water. The purpose of these demonstrations was two-fold, first, to show the limited number of farmers the proper method for applying, and second, to help the efficiency of the chemical under local conditions.

During the summer the agent took occasion to discuss bindweed control with a number of farmers while on field trips or while in the office. One circular letter was sent to farmers, wherein weed control was discussed. Farmers everywhere were urged to plant bindweed patches in alfalfa, as alfalfa thrives especially well on bindweed infested ground.

ORCHARD IMPROVEMENT

The goals for orchard improvement were to establish four result demonstrations on the control of chlorosis, and to continue pecan and walnut work with the three established cooperators. A news story on the control of chlorosis and one circular letter on both chlorosis control and pecan culture were used to bring these matters to farmers' attention.

Mr. Harvey Tate visited the county on April 26th, and the agent visited the pecan work at the Tom Dees place and the walnut work at the Wilkins place in order that Mr. Tate might see the progress of this work. As the agent was extremely busy with other work, Mr. Tate proceeded to the Mussett Cosper farm where he completed pecan grafts on three more trees, thus finishing all work at that place.

At a later date the agent made a trip to the W. N.

V. (Continued)

(3). Activities and Results

ORCHARD IMPROVEMENT (Continued)

Taylor ranch above Clifton where he observed old work in both pecan and walnut grafting performed by Mr. Tate two years ago, and where he also made a number of new walnut and pecan grafts. The work on the Taylor ranch has been carried on in an attempt to find out just how favorable that area is to pecan and black walnut production. Earlier in the season the Experiment Station had shipped the agent three Buceron pecan trees. These were planted in favorable areas close to Duncan and properly tended, but only one tree came out of its dormancy, the other two trees dying. This tree is on an irrigation ditch bank on the S. W. Coon farm near Duncan.

Early in the year severe chlorotic conditions were brought to the agent's attention in two orchards adjoining Duncan. One orchard was the property of Francis Zumwalt and the other was the property of S. W. Coon. The agent at once took up plans with the owners for the treatment of these orchards. Both operators at once sprayed the small trees affected with chlorosis with iron-sulphate solution as a temporary treatment. In the meantime, Mr. S. W. Coon ordered 500 pounds of commercial sulfur. 200 pounds of this sulfur was applied on the Coon orchard and 200 pounds on the Zumwalt orchard. Prior to frost when the leaves on these trees were last observed, they were in excellent condition, and apparently, showed complete recovery. One more result demonstration was carried out, that being on the public school grounds of Duncan. Here a large number of ornamentals were lightly affected by chlorosis, and complete control was obtained by the use of sulfur alone.

In addition to this work the agent assisted seven farmers and ranchers in making up selections of fruit trees for home planting, and gave nine other farmers and ranchers instructions or help in pruning. A pruning demonstration was held at the Joe Hunt ranch on Eagle in April. Six ranchers were assisted with pruning problems.

COUNTY FAIR

Goals for this project were to reestablish agricultural

V. (Continued)

(3). Activities and Results

COUNTY FAIR (Continued)

exhibits at the Greenlee county fair, and place the fair on a working basis. Cooperating with the county engineer and the Board of Supervisors, the agent was able to create enough interest among the farmers to have a group of them meet with the supervisors in regard to putting the county fair on an exhibit basis. Funds were supplied, whereby a great deal of improvement was done on the grounds. A small amount of money was made available by the supervisors for taking care of the exhibits. During the season the agent met with the Fair Commission on seven different occasions in planning the fair and in obtaining cooperation with other agencies and individuals. Livestock and school exhibits were put on a good basis at this early fair, and a very small beginning was made on farm crop exhibits. The work this year was successful in that it increased interest and also built up part of the exhibits to a very good basis.

FARM PLANNING

Farm planning has been carried on almost entirely on an advisory basis. The agents plan was to take up problems as they arose, giving individual attention to each case. Sixty-three farmers made office calls in regard to planning, and the agent made twenty-one farm visits. Additional planning work was done in many cases where the main object of the call or visit was recorded under another project. In this work the agent attempted to assist the farmer in working out some form of procedure fitted to his finances, his water supply, his available farm labor, his soil conditions, for his own property. It is difficult to gauge results of this work. However, many of these people advised, proceeded to make as much of their living as possible from home production such as garden, poultry, and dairy.

V. (Continued)

(3). Activities and Results

SOIL CONSERVATION

Due to the newness of the work no goals were set up in soil conservation for the year. Mr. Steenbergen visited the county in February, and in company with the agent, went over fields belonging to several farmers. On a farm recently purchased by Broughton Lunt, Mr. Steenbergen made suggestions for the construction of dikes at the lower edge of the field with headgates to control flood water, or any run-off which might cross the field. A continuous dike with two headgates was later constructed by Mr. Lunt on this farm with excellent results. Several places showed as much as six inches of sediment when the agent inspected the work the first of September

On the Carl Duncan farm Mr. Steenbergen set up his level and made numerous suggestions for leveling and the handling of some sandy land just being put in irrigation. Part of the suggested outline for improving this farm was carried out by Mr. Duncan during the year, and the rest of the work will be completed later.

MISCELLANEOUS

Twenty-four days were devoted by the agent to the Agricultural Conservation Program. Six days were devoted to work with the Farm Security Administration, and various other government agencies such as the Forest Service and Division of Grazing also received cooperation with the corresponding use of the agent's time. The agent cooperated with the N.Y.A. supervisor and worked with the feed loan supervisor very closely in assisting farmers to obtain necessary seed loans. Five days time was given to the control of various infestations of field insects. Four people requested the assistance of the agent on canning problems, five on tanning problems, eleven on landscaping, and twenty-one requested information on land titles and descriptions. Seventeen people requested information on farm leases and twenty-one on rental agreements. There was also a great deal of work merely tabulated as 'miscellaneous', but rather important to the agriculture of a small community.

## VI. OUTLOOK AND RECOMMENDATIONS

The agricultural outlook for Greenlee county, insofar as the agricultural extension service is concerned, has changed considerably in one respect in the last twelve months. Sufficient water is now available through the use of recently established pumping plants on the canals to supply irrigation for intensive cultivation. The installation of these pumps will necessarily increase the cost of irrigation water a very considerable figure. The increased cost will have a tendency to force land owners to make better use of their land. Land producing part of a crop and land lying idle will be subject to water costs in an amount which will force the land owner to change his policies.

The outlook for general farming is better than a year ago because of the adequate water supply now available. Locally, prices for general farm products have not changed greatly during the last twelve months. All indications point to some increase in vegetable production, and also increase in dairying, poultry, and hog production.

Range livestock owners of the county are facing the brightest future they have seen in many years, as reduction in numbers of cattle have brought about a moderate amount of reserve feed on the ranges. Better range management, good price prospects, and better than average moisture conditions at the present time all point toward prosperous conditions in the cattle business the following year.

Recommendations for extension work in the county during the coming year can be made more briefly on a project basis. The agent intends to carry on the same projects as were carried during the past year.

Soil fertility and soil conservation work can be carried on jointly. The increased interest in vegetable production heightens the need of soil fertility work, which should consist of chemical fertilizer treatments on certain of the vegetable crops and the continuation of the use of green manure crops. There should also be some work done on certain of the soil types, either by subsoiling or the use of humus. Soil conservation work should consist of further attempts to encourage leveling and the use of check dams to prevent run-off and erosion.

Irrigation practice during the coming year will perhaps center around work on the conservation and more efficient use

## VI. Outlook and Recommendations (Continued)

of irrigation water, and if possible, embrace some work on penetration of water.

Cotton improvement work needs to follow the drive for the use of certified seed and also earlier seasonal irrigation as already begun in this county by Dr. Matlock.

Potato disease control is now in the middle of an important variety test, and this work will be continued. There is also need for a continuation of psyllid control and a study of further fertilization work.

General vegetable production and lettuce production both center very closely with the newly formed Vegetable Growers' Association. These two projects are in need of work on marketing methods, grading set up, and varieties and chemical fertilizer tests.

Boys' and girls' 4H club work needs to be carried along much the same as during the past year, with the exception that, if possible, the agent should have the club specialist visit the county more often and spend more time obtaining and assisting leaders.

Rodent control work can be carried in cooperation with federal representatives as in the past.

Much ground has been gained during the last year in dairy herd improvement. If possible, this ground should be held during the coming year through constant work on dairy feeding and dairy breeding. There is now a good supply of young dairy animals of excellent breeding in the county. The problem is to see that proper feeding and management methods are used on these animals.

At the present time poultrymen of the county need further assistance on the control of diseases. They also need help on marketing problems. It is on these problems that the agent should concentrate his attention during the coming year.

Certain of the range areas of the county have not received adequate attention during the last several years. It is the agent's plan to work as much as possible on these isolated areas during the coming year, and help them to put the management of their ranches on a basis with the rest of the county. The sales organization also will need help,

## VI. Outlook and Recommendations (Continued)

and there is a call for work on range reseeding which the agent should attempt to meet.

The future of the Greenlee county fair presents a serious problem. There has been a trend the past year to neglect agricultural exhibits and concentrate attention upon amusements. The majority of the farmers and cattlemen of the district are interested in building up the agricultural exhibits, and the extension service should give all possible aid toward the improvement of the exhibits.

Weed control was begun during the past year but needs to be continued with more demonstrations, and also publicity work to center farmers attention upon the spread of noxious weeds and the danger from them, as well as the need of control.

Control of chlorosis and general assistance to small orchard owners is perhaps all that can be done for deciduous fruits. Work with pecan and improved black walnuts should also be continued on a conservative scale with, perhaps, some work on vines and small fruits.