

ANNUAL NARRATIVE REPORT

OF

G. E. BLACKLEDGE
County Agricultural Agent

SANTA CRUZ COUNTY

July 1, 1949 to November 30, 1949

I N D E X

	<u>Page</u>
SUMMARY OF ACTIVITIES AND RESULTS - - - - -	1
GRASSHOPPER CONTROL - - - - -	2-5
RANGE MANAGEMENT - - - - -	6
ORGANIZATION - - - - -	7
AGRICULTURAL SITUATION, including tentative work for next year - - - - -	8

SUMMARY OF ACTIVITIES & RESULTS

GRASSHOPPER CONTROL

Preliminary surveys were made on grasshopper infestation. When it was discovered that the Boopedon Nubilium was the predominant species, and was known as non-bait eater on range land, test baits were put out in heavy infested areas. Twelve test bait plots were run, both dry and wet bait. The kill was very satisfactory.

Baiting operations followed the test baiting closely. The U.S. Bureau of Entomology's airplane baiting crew came and covered some of the heaviest infestations with a dry bran bait containing $\frac{1}{2}\%$ Chlordane per 100 cwt. This was the cheapest and yet the most successful bait in the test plots. The airplane baiting covered approximately 20,000 acres of range land. This was not solid coverage, but took in the draws or low land where populations were heavy. An estimated 80% kill was obtained from this baiting.

Then the wet baiting operations took care of some other heavily infested areas. 77,829 pounds of dry bait was distributed to eleven ranchers for use as wet bait on 7,134 acres of range and irrigated land. This material is spread with ground equipment. Three blower type spreaders were loaned to Santa Cruz ranchers for spreading wet bait. It is estimated that a substantial saving of range grass and other forage on irrigated land was saved by the baiting operations.

RANGE MANAGEMENT

A start on ant control on range land was made. Some tentative plans on re-seeding range land have been made.

GRASSHOPPER CONTROL

Santa Cruz County Hit by Hoppers

Ranchers in the County started noticing rather large numbers of grasshoppers during July. The situation looked serious to some of them by the first of August.

The Agent had accompanied Mr. J.L.E. Lauderdale, State Entomologist, through Pima and Santa Cruz Counties on a grasshopper inspection tour. Areas which had been infested in the past were visited. Only one serious infestation was discovered. This was on the Bell Ranch in Santa Cruz County where the young hopper count ranged from a count of 100 per square yard to 150 per square yard. Mr. Bell was advised to use chlordane in the infested area. Mr. Bell agreed to use a spray rig wherever it was possible to do so. According to the history of the grasshopper infestations in these two counties the hatches do not generally occur until summer rains have set in. All ranches contacted were warned to be on the look-out for the young hoppers so that control operations could be started at an early date. It was pointed out that young hoppers are much easier to control than are the mature hoppers. Mr. Bell used a chlordane spray on the hot spot, and a later check showed excellent control.

Test Baits Used First

Attempts to start baiting operations were discouraged on account of the difficulties encountered in baiting the dominant species of grasshoppers found to be present. Experience of the Grasshopper Control Division of the Bureau of Entomology had been that the *Boopedon Nubilium* and the *Morsella* did not take bait in other areas. Tests carried on by Mr. J.L.E. Lauderdale, State Entomologist, in cooperation with Mr. Barnes of the Bureau of Entomology Field Station at Tempe were giving the same negative results.

Two and a half tons of bait were shipped to Nogales and wet bait testing was started in the middle of August. Test plots were established on the Hathaway Ranch, Green Cattle Company's San Rafael Ranch, the Mustang Ranch at Elgin and two areas in the Arivaca Valley. Upon making 72 hour checks the agent discovered that all specie of grasshoppers, including the *Boopedon* and the *Morsella* were taking the bait and that a kill somewhere between 70 and 80 per cent had resulted from the wet bait applications.

Due to this evidence, carload lots of bait material was ordered from the Denver Office of the Grasshopper Control Division of the Bureau of Entomology. In the meantime, the Agent was informed by Mr. Lauderdale that there was a possibility of obtaining assistance from the Western Division of the Grasshopper Control Division if the hoppers would take dry bait.

GRASSHOPPER CONTROL

Test Baits Used First (continued)

Due to this situation, the Agent established dry bait tests in three areas in the Arivaca Valley, two areas in the San Rafael Valley and one area in the Elgin District. These dry bait tests proved to be equally as effective as the wet bait tests had been. Mr. Neerney, of the Bureau of Entomology, assisted in putting out some of the tests and supervised the checking of all dry bait tests.

Information obtained from these tests influenced a favorable decision on some emergency control work which would employ airplane baiting. Practically no baiting operations were carried on except in test baiting during the month, due primarily to the absence of baiting material. However, plans for extensive baiting operations were made during August and the ground-work was laid for extensive operations in early September.

Results of bait tests were as follows:

Location	Bait Material Used	Est.per Sq.Yd. Count Before Baiting	Est.per Sq.Yd. Count 2 days After Baiting	Est.per Sq.Yd. Count on check Before Baiting	Est.per Sq.Yd. Count on check 2 days After Baiting	Est. % Control
Green Cattle Co.	1/2# Chlordane	59	12		60	80
Green Cattle Co.	Wet					70
Green Cattle Co.	2# Toxaphene	37	7	43	52	81
Green Cattle Co.	1# Chlordane	35	21			41
Green Cattle Co.	1/2# Chlordane	23	3	137	112	88
Green Cattle Co.	1# Toxaphene	38	10			75
Green Cattle Co.	1/2# Chlordane	41	9			80
Mustang Ranch Elgin	Wet	30	10			67
Mustang Ranch	2# Toxaphene	17	6			65
Mustang Ranch	1# Chlordane	18	8			55
Mustang Ranch	1/2# Chlordane	24	5	24	28	77

All bait was applied at the rate of 10 pounds dry material per acre. All plots were one acre each, except the wet bait material on the Green Cattle Co. Ranch, where it was on a 20 acre plot basis. Checking was made by strong vigorous sweeps. Ten sweeps were made on each plot, before and after baiting. The check plots were adjacent to treated plots, and were chosen to be representative of baited plots, both as to grasshopper population and vegetation. Other species of grasshoppers besides the Boopedon which were found on the heavily infested range land were: Morseiella, Dactylotum Veragatum, Erachystola (Lubber), and Lychinis.

GRASSHOPPER CONTROL

Baiting Operations Begin

Wet bait material arrived during the first week in September. At the same time the Grasshopper Control Division of the Bureau of Entomology moved into Nogales with a mobile bait mixing unit and two airplanes. The largest plane, a DC-3 was equipped to carry 8,000 pounds of dry bait material. The small plane, a N-3-N, carried 500 pounds and was used for short runs.

Since large-scale baiting operations had never been carried on for the control of the Boopedon or Morseiella, the two dominant species of grasshopper that were damaging range grass in Pima and Santa Cruz Counties, the airplane baiting operation was considered an experiment by Mr. James Dutton, in charge of the Denver Office. These two species of grasshoppers are considered non-migratory. The object of the demonstration or experiment was to eliminate damaging populations of grasshoppers in 1950. The population this year was heavy enough in some areas so that a population was possible next year that could destroy all the range grass in those areas, if left undisturbed.

Results Look Good

The immediate results were: First, better than an 80% reduction in population was estimated where the dry bait was applied by airplane, and about the same results were obtained where wet bait was applied with ground equipment. Second, a large amount of fall and winter feed was saved due to the reduction in grasshopper population. Third, a large amount of range grass seed was saved. (Grasshoppers cut the grass at a point near the ground, thus destroying the immature seed besides destroying the forage.) Fourth, the number of females left for depositing eggs for future generations were greatly reduced in the baited areas.

The future results are expected to appear next year in the form of a reduced population of hoppers in the baited areas.

The three areas in Pima and Santa Cruz Counties where bait was distributed by plane were chosen on the basis of known heavily populated areas, and the accessibility to an airport.

GRASSHOPPER CONTROL

Results Look Good

The following is a partial list of ranchers who used wet bait for control measures:

<u>Name</u>	<u>Bait - Dry Wt.</u>	<u>Acreage</u>
James B. Meigs	20,000	2,000
Benito Morales	6,200	31
Mike Levy	200	3
Sam Frazier	200	20
Mr. Townsend	20,000	2,000
Karl Peterson	200	20
Thos. F. Griffin	3,216	321
Meade Place	4,421	400
C.E. Davis	3,232	323
Green Cattle Co.	16,160	1,616
Walter Kobly	4,000	400

Reports on the use of both the wet bait and dry bait applications indicate an 80% or better reduction in grasshopper population. The lighter rate ($\frac{1}{2}$ #) of Chlordane was used for the dry bait which was applied by airplane.

Hoppers Thrive in Warm Weather

A new hatch of grasshoppers in late October and early November was discovered in several parts of Santa Cruz County. The abnormal warm weather probably accounts for this late hatch. It is a light hatch in the areas that have been baited. If freezing weather occurs soon, it isn't likely that any of the late hatched hoppers will deposit eggs. In that case, the late hatch will tend to decrease the population in 1950, since the eggs that hatched late this fall would have laid over for an early hatch next year.

The proposition of organizing for community bait mixing for 1950 grasshopper control operations was discussed with Messers Meade Place, W.H. Hathaway, James Meiggs, Marshall Hartman, and Walter Colby. It is planned to discuss a plan of organization with all interested ranchers early next year.

RANGE MANAGEMENT

Red Harvester Ants and the large Black Ants are ruining great areas of range land. At least one cattleman is doing something about it. Mr. W.H. Hathaway has started an ant eradication campaign on his range. He is using 5% Chlordane bands around the ant hills. Mr. Hathaway reports splendid success. He considers the investment in Chlordane at \$9.90 per cwt. well worthwhile, when he sees the ant colonies checked so readily. Some discussion and plans for furthering the ant control work on range land resulted in a visit at his ranch. The possibility of purchasing the Chlordane in large volume for all ranchers was discussed. Means of carrying supplies on horseback was also discussed.

Range re-seeding was discussed with a couple cattlemen, and plans for demonstration work along these lines are taking form.

ORGANIZATION

Extension Service work has not been carried on in the County for several years. It appears that the only organized group of ranchers which could cooperate in formulating, and conducting an agricultural extension program at present is the San-Pima Cattle Growers Association. This organization of cattlemen could be very helpful in planning worthwhile extension projects, and certainly go a long way toward their success.

The Santa Cruz Chamber of Commerce has been very helpful in helping Extension workers get started with the work. Mrs. Lillian Shreive, Secretary for the Chamber, has been especially helpful in taking messages, giving directions where to contact ranchers and sharing office facilities. The grasshopper control work carried on during August and September would have been most difficult without this help.

An organized group of ranchers will be necessary for carrying on grasshopper control work in the County during next year. Several ranchers have been contacted on this and have favored the idea. This will be necessary if the ranchers are to receive any assistance from the government in the way of material. That is one of their requirements. Then too, the work can be accomplished more efficiently when an organized group is participating in any type of program.

Agricultural information check cards were sent out to Santa Cruz County rural box holders. These cards were accompanied by a letter asking the rancher to check agricultural subjects in which they were interested and wished to have pamphlets and bulletins on the subjects mailed to them as they were available in the County Agent's office. Forty-one ranchers and rural people returned cards requesting information on many subjects. 2,854 agricultural bulletins have been distributed from the County Agent's office in response to these requests.

AGRICULTURAL SITUATION

Santa Cruz County is primarily a range cattle producing district. Some of the finest range land in the State is located in the County. Any work that can be accomplished for the conservation of range grass or improving the grass and range land is of major importance. An example would be ant control if it can be established that satisfactory insecticide material is available at prices ranchers can afford to use. Some control work with Chlordane or other new promising material, with some cost figures to compare with results obtained would be the first proposal for an extension project.

Re-seeding range land is a long way from being worked out as a successful practice. However, ranchers in general are looking for grass improvements, and several are willing to spend money and work to find ways and means to successfully re-seed range land with different grasses. Some work on re-seeding may be feasible in the County.