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NEW INSECTICIDES FOR THE CONTROL OF GRASSHOPPERS IN NEBRASKA

Ephriam Hixson, Department of Entomology

When do we start:

The best time to control grasshoppers with insecticides is immediately after they hatch and before they leave the egg beds. Adults collect in large numbers during the fall and lay eggs in weedy, grassy field margins, in packed soil and in meadows. The eggs are laid in the ground of a relatively small area called "eggbeds".

The three most important species of crops feeding grasshoppers in Nebraska are the large yellow (differentialis), large, two-striped (bivitattus), and the lesser migratory grasshopper (mexicanus). To time the control of these insects properly, the date of egg hatching should be known.

The Dates of Hatching of Grasshopper Species in Nebraska for the 11 Years 1938-1948

Species	Hatching Dates Earliest	Latest	Average
Large yellow	May 11	June 15	May 28
Two-striped	April 20	May 21	May 5
Lesser migratory	April 15	May 26	May 5

Generally, hatching is earliest in the southwest part of the state and latest in the northeast. The earliest hatch will occur when it is warm and dry; while cool, wet springs delay hatching.

Cooperative Extension Work in Agriculture and Home Economics University of Nebraska College of Agriculture, and the United States Department of Agriculture cooperating, H. G. Gould, Acting Director, Lincoln.

Time and place to make applications:

Make applications of the insecticide when the small nymphal grasshoppers are present in large numbers in the weedy field margins or meadows. On an average, this will be May 1 to May 15. Later applications should be made to field margins wherever grasshoppers are feeding. Applications are not effective in fall wheat due to sparse vegetation.

What to use:

There are three new insecticides that are effective. Each insecticide has its merits for certain conditions. Use the one that will do your job best.

BENZENE HEXACHLORIDE is a fast killing insecticide that has about 3 or 4 days residual effect. It is best where there is sparse vegetation under hot, dry conditions where immediate contact kill is wanted, or in dense vegetation where little or no migration from outside the treated area will occur. It is equally effective as a dust or spray.

CHLORDANE is a slow acting insecticide that has an effective residual period of from one to two weeks. It gives its best results under moist, cool conditions when applied to dense growing vegetation where the grasshoppers are feeding actively. Sprays have generally given better results than dusts.

CHLORINATED CAMPHENE is a slow acting insecticide that has an effective residual period of from two to three weeks. It gives its best control on dense growing vegetation where the grasshoppers are feeding actively during warm weather. Best results with this insecticide have been obtained when it was used as a spray or in bran bait.

Method of application:

Either ground machinery or airplanes may be used

successfully to apply these insecticides. The number of gallons of spray per acre does not matter so long as the proper amount of toxicant is used and good coverage is obtained. Spraying with chlordane or chlorinated camphene has generally given better results than dusting due to the longer residual kills.

Amount of toxicant to use per acre:

Sprays:	Chlordane	1 pound
	Chlorinated camphene	1 1/2 pounds
	Benzene hexachloride	1/3 pound gamma isomer
Dusts:	Chlordane	1 1/2 pounds
	Chlorinated camphene	2 pounds
	Benzene hexachloride	1/3 pound gamma isomer

(Under conditions of tall, dense vegetation late in the season when the grasshoppers are mature or nearly mature, the amounts of chlordane and chlorinated camphene should be increased by one half pound per acre and benzene hexachloride to one half pound (0.5) of the gamma isomer per acre.)

Dry bait:	To 1/2 gallon oil solution add,	
	Chlorinated camphene	1 pound
	or	
	Chlordane	0.5 (1/2) pound
	Flaky bran	100 pounds

To mix the bait:

Use straight run bran having course flakes relatively free of "shorts". Dilute the solution concentrate of chlordane or chlorinated camphene with kerosene, No. 10 base oil, or No. 2 fuel oil so as to have 1/2 pound of chlordane or 1 pound of chlorinated camphene in each half gallon of solution. Spray a half gallon of the oil solution uniformly over the 100 pounds of flaky bran so that each flake is wet. This can be done by adding spraying equipment to a large mixer or by spreading the bran thinly on a concrete

floor and spraying the oil solution on with a hand sprayer. Continually turn the bran until all flakes are wet.

The bait is broadcast in the usual manner at the rate of five pounds per acre. The wet-bait broadcast spreader does not work very well because of the narrow swath. Ordinary crop dusters can be adjusted to spread this bait. Hand spreading and blower spreaders or airplanes can be used successfully with the bait.

This bait is best used on range land, dry stubble or sparse vegetation, and wheat field margins. It has also been very effective in growing vegetation.

Suggestions and precautions:

(1) These insecticides are poisons and should be handled accordingly. Read the container label.

(2) To avoid possible injury or failure, do not use more or less of the insecticide than is recommended.

(3) Do not use treated forage to feed dairy animals or animals soon to be slaughtered. These insecticides are absorbed into the fatty tissues and in milk in quantities dangerous to the health of man, especially infants. Vegetable crops and fruits should be treated only if the residue can, and will, be removed before being eaten.

(4) If an entire alfalfa field is infested with damaging numbers of grasshoppers, it is usually best to cut the hay, leaving a few strips uncut, and treat the margins and uncut alfalfa after the grasshoppers have migrated and concentrated in those areas.