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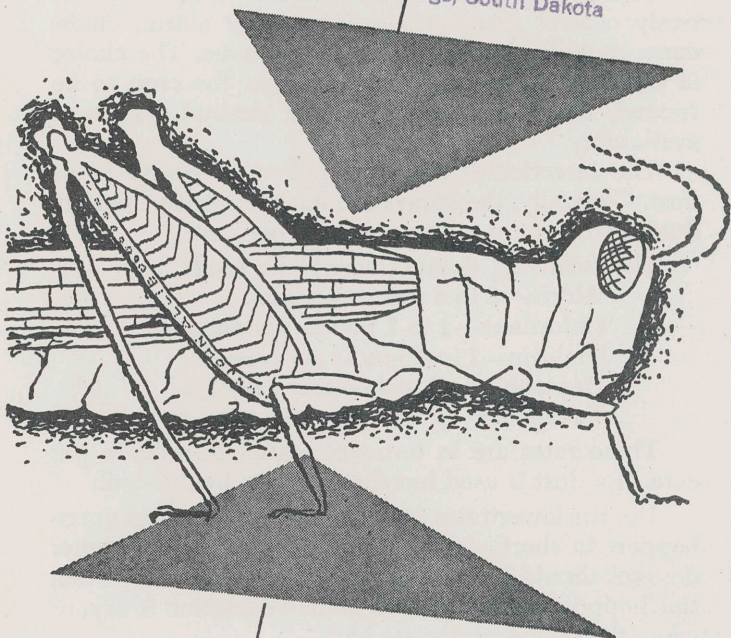
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**control
grasshoppers
with
insecticides**

AGRICULTURAL EXTENSION SERVICE
SOUTH DAKOTA STATE COLLEGE
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CONTROL GRASSHOPPERS WITH INSECTICIDES

John A. Lofgren

There are a number of insecticides which will effectively control grasshoppers. These are aldrin, chlordane, dieldrin, heptachlor and toxaphene. The choice of chemical to use will depend upon the crop to be treated, length of residual action desired and local availability.

The insecticides may be applied as sprays or as dust. Generally, the sprays are more effective than are dusts and require a lower dosage per acre.

The following dosages should be used:

Aldrin—2 to 4 ounces per acre

Chlordane— $\frac{1}{2}$ to 1 pound per acre

Dieldrin—1 to 2 ounces per acre

Heptachlor—2 to 4 ounces per acre

Toxaphene—1 to 1 $\frac{1}{2}$ pounds per acre

These rates are in terms of actual insecticide per acre. If a dust is used increase the rate by one-half.

Use the lower rates for young, newly-hatched grasshoppers in short, dense, leafy vegetation. The higher dosages should be used in tall dense vegetation, when the hoppers are full grown, if the vegetation is dry, or when the temperatures are high.

These chemicals are usually available in different formulations—oil solutions, emulsifiable concentrates, wettable powders, and dust. For the average low volume, low gallonage farm sprayer only the emulsifiable form should be used. The oil solutions may be diluted with an oil such as diesel fuel and are used mainly in airplane spray equipment. The wettable powders are designed for use in high gallonage, high pressure sprayers with mechanical agitation. The dust forms are to be used in dusters and applied dry. The table will help in calculating the amount of the various formulations to use.

SUGGESTED USES

To help you choose the proper chemical for the job the following suggestions are offered: :

Rangeland—Experience has shown that very effective control of range species of grasshoppers may be obtained with 1 ounce of dieldrin per acre applied in $\frac{1}{2}$ to 1 gallon of diesel fuel by airplane. The cost of the chemical for this treatment is a few cents per acre. Range hopper control should be undertaken when

Formulation	Amount to Use Per Acre
Aldrin —2 pound per gallon emulsion concentrate.....	$\frac{1}{2}$ to 1 pint
Chlordane —4 lb. per gallon emulsion concentrate.....	1 pint to 1 quart
8 lb. per gallon emulsion concentrate.....	$\frac{1}{2}$ to 1 pint
50% wettable powder.....	1 to 2 pounds (in at least 35 gallons of water)
5% dust.....	20 to 30 pounds
Dieldrin —1½ lb. per gallon emulsion concentrate.....	$\frac{1}{3}$ to $\frac{2}{3}$ pint
Heptachlor —2 lb. per gallon emulsion concentrate.....	$\frac{1}{2}$ pint to 1 pint
Toxaphene —6 lb. per gallon emulsion concentrate.....	1½ pints to 1 quart
40% wettable powder.....	4 to 5 lbs. in at least 35 gal. water
10% dust.....	10 to 20 lbs.

hatching of the predominant species of grasshoppers is completed and before they become full grown and lay eggs.

Aldrin or heptachlor may also be used on range grasshoppers but the length of residual action is not as long. Under some conditions, this shorter residual action may be desired. The following guide should be used when spraying pastures grazed by milk cows or by meat animals being finished for slaughter:

Aldrin—2 to 4 ounces per acre—wait 14 days before pasturing

Dieldrin—1 ounce per acre—wait 30 days

Heptachlor—2 to 4 ounces per acre—wait 7 days

Field Crops—Most grasshoppers which attack cultivated crops invade these crops from field margins, fence rows and roadsides where eggs are deposited. The most satisfactory and economical control will be obtained by spraying these sources of infestations before the insects move into the fields. This should be done just after the hatch is completed while the grasshoppers are still very small and concentrated. These areas may also be sprayed in the fall when the hoppers are concentrating to lay eggs, but full grown grasshoppers are harder to kill than young ones.

If the grasshoppers have spread into a field from one or more edges they may be controlled by spraying

the invaded area plus a band several yards wide beyond the line of advance.

If the insects have spread all through a field because of migration or as a result of eggs being laid all through the field then the whole field should be treated.

In the case of alfalfa, eggs are frequently laid throughout the field. These eggs usually hatch about the time the first hay crop is cut. If young grasshoppers become numerous at that time, treat the field before the regrowth is about six inches tall. Alfalfa to be grazed or cut for hay should be treated in such a way that residues are avoided.

If the alfalfa is to be fed to dairy animals or to meat animals within 60 days of slaughter wait the following number of days after treatment before cutting:

Aldrin—14 days; chlordane—21 days; dieldrin—30 days; heptachlor—7 days; toxaphene—40 days.

Alfalfa in bloom should not be treated during the day because of danger to bees. If it is necessary to treat blooming alfalfa use only toxaphene between 7:00 p.m. and 7:00 a.m. when the bees are not working.

Gardens and Yards—Gardens and yards may be protected from grasshoppers by spraying or dusting the margins of the gardens to kill the pests before they move in. Edible vegetables should not be treated with chemicals which will leave harmful residues. Chlordane is usually available in small packages suitable for treating the margins of the garden.

PRECAUTIONS

Insecticides should be handled and applied according to directions. **Do Not Overdose.** Do not eat or smoke while mixing or applying sprays or dusts. Wash thoroughly with soap and water after using insecticides. If any chemical is spilled on the skin or clothing remove the soaked clothing and immediately wash the skin with soap and water. Do not wash with kerosene or gasoline. Store insecticides in a safe place away from children, pets and farm animals. Read and follow the information on the labels of the insecticide containers.

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