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EC76-1509 Insect Control Guide for Corn and Sorghum in Nebraska

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INSECT CONTROL GUIDE FOR CORN AND SORGHUM

NEBRASKA

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Insect control suggestions in this guide are based on University of Nebraska research results, U.S.D.A. recommendations, and label registrations. Insect control is not perfect. The suggestions are designed to benefit Nebraska farmers when they need control programs.

In some instances trade names have been used. No endorsement is implied by the Nebraska Cooperative Extension Service and no discrimination is intended.

TOXICITY OF INSECTICIDES

All insecticides are poisonous and must be used with caution. They should always be stored in the original container out of the reach of children, uninformed adults, and livestock. Empty containers and left-over materials must be disposed of by burying at least 18 inches in the soil away from water supplies. It is very important that the labels of every insecticide be studied until they are understood. Safety precautions and use instructions are on all labels. Follow these completely to avoid accidental poisoning or death, and to prevent illegal residues in crops.

The highly toxic insecticides in this publication are ethyl parathion, methyl parathion, Phosdrin, EPN, Di-Syston, Thimet, Counter, Dyfonate and Dasanit. Skull and crossbones and the word Poison in red appear on the label of highly toxic materials. These chemicals are not recommended for farmer application as sprays. They must be applied only by well-trained, responsible and insured commercial operators. However, with proper precautions, farmers should be able to use granular formulations for soil application to control corn rootworms. Furadan 4F is highly toxic orally--farmers can use this product if special precautions are taken.

Moderately highly toxic insecticides are Furadan 10G, Mocap, Lorsban, toxaphene, Ethion, Trithion, heptachlor and lindane. They must be used with special care. Familiarize yourself with all the warnings given on the labels.

Revised November 1975

Extension work in "Agriculture, Home Economics and subjects relating thereto," The Cooperative Extension Service, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, Cooperating with the Counties and the U.S. Department of Agriculture
Leo E. Lucas, Director

Registrations of some chemicals listed in this publication are subject to review and withdrawal in 1976. Visit with your county agricultural agent before making the final decision of which insecticide to use.

INSECTS BELOW GROUND

CORN ROOTWORM LARVAE

Corn rootworm larval damage is most likely to occur in continuous corn production fields. If one or more beetles per plant were observed the previous August, soil insecticides at planting or cultivation are indicated. Corn following other crops may be damaged by rootworm larvae if beetles in adjacent corn fields were numerous the previous August. Rotation is usually an effective prevention for corn rootworms and soil insecticides are not necessary in most first year corn fields. Always leave a small untreated strip for comparison.

Effectiveness of soil insecticides is reduced if soil remains dry after application, excessive rainfall occurs, or soils are highly alkaline. Control on alkaline soils is more reliable if applied at cultivation time in early June.

Many failures in previous years could be traced to poor calibration of granular applicators. In most cases amounts used were either accidentally or intentionally below recommended amounts of soil insecticides. REMEMBER THAT LABEL RECOMMENDATIONS ARE BASED ON 40 INCH ROW SPACINGS. If planting in rows narrower than 40 inches, there are more rows per acre which requires more insecticide per acre to obtain the proper rate. By calibrating applicators to deliver the suggested amount per 1000 feet of row, the proper amount per acre with any row spacing will be correct.

It is essential that insecticides be covered with soil. Granules or liquids remaining on the surface are lost and poor control is likely.

Fertilizer in combination with a soil insecticide must be applied in bands on each side of the seed furrow, not in the furrow or below the seed. Placement below seed level is not effective. Seed furrow applications of insecticides for rootworm control are not recommended.

Some feeding on roots will occur, regardless of material used. When rootworm numbers are high or egg hatch extended, do not expect complete control.

Growers who have experienced unsatisfactory results at planting time with any insecticide, especially after using it 2 or more years, should consider switching to one in a different category. If an organic phosphate (Counter, Dyfonate, Lorsban,

Dasanit, Mocap or Thimet) has not provided acceptable control, rotate to a carbamate (Furadan). If Furadan has not performed well, rotate to an organic phosphate (Counter, Dyfonate, Lorsban, Mocap or Thimet).

MATERIAL	AMOUNT FORMULATION PER 1000 LINEAR FEET	RESTRICTIONS
PLANTING TIME BEFORE MAY 7:		
Counter 15G (Terbufos)	8.0 ounces	Field corn only. Follow label restrictions for subsequent crops and feeding forage.
Furadan 10G (carbofuran)	12.0 ounces	Field corn
PLANTING TIME AFTER MAY 7:		
Counter 15G (Terbufos)	8.0 ounces	Same as above.
Dasanit 15G (Fensulfothion)	8.0 ounces	Field, sweet & popcorn.
Dyfonate 10G	12.0 ounces	Field, sweet & popcorn.
Dyfonate 20G	6.0 ounces	Field, sweet & popcorn.
Furadan 10G (Carbofuran)	12.0 ounces	Field corn.
Furadan 4F (Carbofuran)	2.4 Fluid ounces	Apply in split boot in combination with starter fertilizer at seed depth or above, or in 7" band over the row.
Lorsban 15G (chlorpyrifos)	8.0 ounces	Field corn. See label for subsequent crops.
Mocap 10G* (Etoprop)	12.0 ounces	Field corn.
Thimet 15G* (phorate)	8.0 ounces	Field and sweet corn.

* Do not allow to fall into seed furrow, or reduced stands may result.

POST EMERGENCE - (Before June 10, or at lay-by for emergence control)

Dasanit 15G (Fensulfothion)	8.0 ounces	Basal only.
Diazinon 14G	8.5 ounces	Basal or over plants.
Dyfonate 10G	12.0 ounces	Basal or over plants.
Dyfonate 20G	6.0 ounces	Basal or over plants.
Furadan 10G (Carbofuran)	12.0 ounces	Basal or over plants.
Mocap 10G (Etoprop)	12.0 ounces	Basal only.
Thimet 15G (phorate)	8.0 ounces	Basal or over plants.
Diazinon AG 500	2.4 fluid ounces	Basal spray on each side of row and cover with soil immediately.

CUTWORMS

Corn following sod or stubble is most likely to be damaged by cutworms. Continuous, clean cultivated corn is a deterrent to cutworm infestations except in low-land fields that have a history of cutworm infestations, eco fallow, and center pivot on small grain stubble.

PREPLANT MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
*Chlordane	2 pounds	Broadcast 2 to 3 weeks before planting or before replanting and disc 3 or 4 inches into the soil. Do not use on fields that will be planted to root or legumes the following year. DO NOT USE ON DAIRY FARMS.
*Heptachlor	4 pounds	
Diazinon	4 pounds	Broadcast and disked in before replanting where stands have been destroyed by cutworms.

* Under EPA review. Subject to cancellation. Check with local county extension agent for legal status before purchasing.

POSTEMERGENCE

Toxaphene	2-3 pounds	Band spray over rows when first evidence of cutworm infestation is detected and before worms are more than 1 inch long. Treatment is justified when one plant out of 20 shows cutworm feeding injury. Apply in 10 inch band using at least 20 gal. of water per acre.
Diazinon	2 pounds	
Dylox (trichlorfon)	1 pound	
Sevin 5% bait (carbaryl)	1 pound	

WIREWORMS - AND SEED DESTROYING INSECTS

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Counter 15G (Terbofos)	1 pound	Apply 8 oz. per 1000 ft. 15% granules in seed furrow at planting.
Furadan 10G (carbofuran)	1 pound	Apply 12 oz. per 1000 ft. 10% granules in seed furrow at planting.
Heptachlor	1 pound	Apply as band spray over rows at planting.
Seed treatment lindane diazinon heptachlor		Mix with seed in planter box. Follow package directions for amount. Never mix treated seed with feed grains.

SOD WEBWORMS

Sod webworms frequently occur in first year corn following pasture, especially when slot planting in grass.

Toxaphene	3 pounds	Apply in 10 inch bands over rows, using at least 20 gallons water per acre.

INSECTS DAMAGING CORN ABOVE GROUND

CORN ROOTWORM ADULTS

Corn rootworm adults may interfere with pollination - if there are sufficient adults to chew silks to husks during the pollen-

shed period. Controls are indicated when severe silk chewing is occurring at 25 to 50 percent pollen shed. Most likely to be a problem in late planted corn.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Di-Syston (disulfoton)	4 ounces	28 days. Commercial application only. One treatment per season.
EPN	4 ounces	14 days. Commercial application only.
Ethyl or methyl parathion	4 ounces	12 days. Commercial application only.
Gardona	1 pound	5 days
Malathion	1 pound	5 days
Malathion ULV	4 ounces	5 days. Commercial application.
Sevin (carbaryl)	1 pound	None
Sevin 4 Oil	1 pound	N.R.

CHINCH BUGS

Control when migrations are occurring from harvested small grains adjacent to corn or sorghum. Spraying barrier strips around margins of fields is suggested when bugs first begin to damage border rows. Use high gallonage (20-30 gallons) directed at base of plants and on the soil.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Toxaphene	2 pounds	Do not feed treated foliage.
Sevin (carbaryl)	2 pounds	None.

EUROPEAN CORN BORERS

Apply chemical controls when first brood corn borer larvae are present in 50% of corn plants that are 36 inches or higher in extended leaf height, determined by "shot-hole" feeding signs in leaves. There is no reliable guide to the necessity for control

of second brood - consider early harvest if second brood appears to be present in large numbers, to reduce field loss. Second brood borers will be more serious in late maturing corn.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Dasanit 15G (Fensulfothion)	1 pound	Second Brood only.
Diazinon 14G	1 pound	10 days
Dyfonate 10G	1 pound	45 days harvest or grazing.
EPN 4G	0.3 pound	14 days
Furadan 10G (carbofuran)	1 pound	First brood only. Do not exceed 2 pounds active ingredient for both soil and foliar treatment.
Thimet 15G or 10G	1 pound	First brood only. 30 days. Do not make more than 1 application over plants.
Sevin 80WP (carbaryl)	2 pounds	Use nozzles over whorls for first brood and 4 nozzles per row for second brood so leaf axils and ear zones are thoroughly covered with spray. Harvest limitations same as for granules.
EPN EC (commercial application)	8 ounces	
Diazinon EC	1 pound	

GRASSHOPPERS

Prevent damage to corn by controlling grasshopper nymphs when there are 10 or more nymphs per square yard in field margins.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Chlordane EC	1 pound	Field margins only. Do not feed treated forage.
Diazinon	8 ounces	None
Malathion EC	1 pound	5 days
Parathion EC	8 ounces	Commercial application only. 12 days.

Sevin 80WP (carbaryl)	2 pounds	No restrictions.
Toxaphene EC	2 pounds	Field margins only. Do not feed treated forage.

WESTERN BEAN CUTWORMS

Use chemcial controls when 14% of plants are infested with larvae in tassels and/or eggs on leaves and corn is 95-100 percent tasselled.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Sevin WP, Sevimol (carbaryl)	2 pounds	No restrictions.
Dylox (Trichlorfon)	1 pound	28 days

SPIDER MITES

Apply chemical control if 2 to 3 of the large lower leaves are killed by mites and corn has not reached dent stage. Insecticides do not kill eggs, so reinfestation frequently will occur.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Di-Syston 15G (disulfoton)	1 pound	40 days. Commercial application.
Thimet 15G (phorate)	1 pound	30 days. Commercial application.
AFTER AUGUST 1		
Diazinon EC	8 ounces	None
Dimethoate (Cygon, Defend, Dimex)	8 ounces	14 days forage, 42 grain. Not more than 3 applications.
Di-Syston 15G (disulfoton)	1 pound	40 days. Commercial application.
Ethion EC	1 pound	50 days. One application. Do not feed treated forage.
Metasystox-R EC (oxydemetonmethyl)	8 ounces	7 days.

Parathion EC	12 ounces	12 days. Commercial application.
Thimet 15G (phorate)	1 pound	30 days. Commercial application.
Trithion EC (carbophenothion)	1 pound	21 days. One application.

ARMYWORMS

Control when migration from adjacent fields is sufficient to damage margin rows.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Carbaryl (Sevin)	1.6 pounds	No restrictions.
Dylox SP	1 pound	21 days. One application.
Malathion 57% EC	1.5 pounds	5 days.
Toxaphene EC	2.5 pounds	Do not feed treated forage to dairy cattle or animals being finished for slaughter. No restrictions on grain.

SORGHUM INSECTS

CORN EARWORMS AND FALL ARMYWORMS

Infestations may occur in whorls and later in heads. Usually not feasible to control whorl infestations. If two or more larvae per head are present, controls may be profitable.

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Sevin 80WP	1.6 pounds	21 days for grain
Toxaphene	1 pound	28 days. Do not feed treated forage to animals being finished for slaughter. DO NOT USE ON DAIRY FARMS.

GREENBUGS AND CORN LEAF APHIDS

Corn leaf aphid control is seldom necessary.

Economic levels of greenbugs will depend upon stage of plant development, the variety grown, and growing conditions. Usually yield increases can be expected from control if greenbugs are present and leaves have yellowed on plants less than 6" tall; average 50 or more per plant on plants 6" to 12" tall; average 100 or more on plants 12" tall to preboot; when one large mature leaf has been killed and less than 20% of the greenbugs are parasitized on plants in boot, bloom, and soft dough stages. After heading, predators and parasites may decrease greenbug populations rapidly. If 15% to 20% of greenbugs are parasitized (mummies), chemical controls should not be used.

Planting time applications of Di-Syston or Thimet granules will prevent infestations from developing on seedling sorghum if root development and moisture are sufficient for plant uptake. Protection should last about 30 days. Since most severe infestations develop after this time, planting time applications are not suggested for early planted sorghum. Late planted sorghum if often destroyed by greenbugs, therefore planting time applications of Di-Syston or Thimet are suggested for sorghum planted after June 10.

FARMER APPLICATION - GROUND EQUIPMENT

MATERIAL	AMOUNT ACTIVE INGREDIENT PER ACRE	RESTRICTIONS
Dimethoate (Cygon, Defend, Dimex)	6 ounces	28 days. Use drop nozzles and 20 gallons water per acre, so plant is covered.
Diazinon	8 ounces	7 days. Use drop nozzles and 20 gallon water per acre.
Di-Syston 15% granules (disulfoton)	8 ounces	30 days. Band over rows.
Thimet 15% granules	8 ounces	28 days. Band over rows.

COMMERCIAL APPLICATION - AIRCRAFT

Di-Syston EC (disulfoton)	8 ounces	28 days. Apply in 2-4 gallons water.
Di-Syston 15% granules	8 ounces	28 days. Apply broadcast.

Ethyl parathion	8 ounces	12 days. Apply in 2-4 gallons water.
Thimet 15% granules	8 ounces	28 days. Apply broadcast.

SEED INSECTS IN SOIL

Seed treatment in planter box with heptachlor, lindane, or diazinon. Follow package directions. NEVER MIX TREATED SEED WITH FEED GRAINS.

CONTAINER DISPOSAL

Proper disposal of insecticide containers is very important. Serious accidents have occurred when "empty" containers have not been disposed of safely. Suggested methods of disposal are:

PAPER BAGS: Be certain that all contents have been emptied into applicators or tanks. Burn paper containers, not to exceed 50 pounds, in open fields where; (1) regard is given to wind direction in relation to people, domestic animals, and water supplies, (2) where such burning is not in violation of Federal, State, or local ordinances, and (3) provisions are made to avoid contamination of surface water.

METAL, GLASS, OR PLASTIC CONTAINERS: Thoroughly rinse containers at least 3 times with water and dump rinse material into tanks to be used with regular applications. Recycle 5 gallon or larger metal drums where possible after complete decontamination. Containers that cannot be recycled should be punctured, crushed, and buried in a landfill, or 24 inches below the soil surface in a location that will not result in contamination of water, crops, man or animals.

The Cooperative Extension Service provides information and educational programs to all people without regard to race, color or national origin.