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EC82-1509 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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Agricultural Extension Entomologists

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 never perfect. The suggestions are designed to benefit Nebraska farmers when they need control programs. NebGuides containing more specific information are listed under insect headings. They are available from county extension offices.

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

Recommendations enclosed in boxes indicates that these compounds may provide more consistent or efficient results based on University of Nebraska and other states' research and field experience. This does not indicate that these products are the only ones that should be used or that other products are not effective.

IMPORTANT

All insecticides listed in this publication are subject to many label restrictions on use or on use of the crop after application. Restrictions are so lengthy it is not practical to list all of them here. It is essential that labels be examined before purchasing or using any product to be certain that its use does not result in illegal application, danger to the user or environment, or residues that exceed tolerances.

Insecticides that are classified RESTRICTED USE included in this circular are: Amaze 20G, Furadan 4F, Di-Syston emulsifiable concentrates greater than 65%, Dyfonate emulsifiable concentrates greater than 44%, methomyl, ethyl parathion, methyl parathion, Penncap M and Penncap E. Application of these products must be made by, or under the direct supervision of a certified applicator. Other products may be classified restricted use in 1982.



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Revised November, 1981

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. It is very important that the labels of every insecticide be studied until they are understood. 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, Furadan 4F, methyl parathion, EPN, Di-Syston, Thimet, Counter, Dyfonate and Amaze. Skull and crossbones and the word Poison appear in red on the label of highly toxic materials. The chemicals are not recommended for farmer application as sprays. They must be applied only by certified 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 only if special precautions are taken.

Moderately toxic insecticides are Diazinon, Furadan 10G, Mocap 10G, Lorsban, Sevin, Malathion, dimethoate, Metasystox-R, toxaphene, Ethion, Trithion and lindane. They must be used with special care. Familiarize yourself with all warnings given on the labels.

Registrations of some chemicals listed in this publication are subject to review and withdrawal in 1982. Visit with your county agricultural agent before making the final decision of which insecticides to use.

INSECTS BELOW GROUND

CORN ROOTWORM LARVAE (NebGuide G76-206, 1982)

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 late July and August, a soil insecticide is indicated. Corn following other crops may be damaged by rootworm larvae if beetles in adjacent corn fields were numerous the previous August and were attracted to flowering weeds, sorghums, or sunflowers. Rotation is usually an effective prevention for corn rootworms and soil insecticides are not necessary in most first year corn fields.

Effectiveness of soil insecticides is reduced if soil remains dry after application, if excessive rainfall occurs, if soils are highly alkaline, or if applied at planting time (especially true on early planted corn). Control is more reliable if an insecticide is applied at cultivation time in late May or early June. If corn is to be planted before May 15 it may be best to delay soil insecticide application until first cultivation, before June 10. Cultivation treatment is particularly desirable if soil is alkaline, since high pH accelerates decomposition of insecticides.

Many failures to control rootworms can be traced to poor calibration of granular applications. In many cases, amounts used are below those recommended on the label. REMEMBER THAT LABEL RECOMMENDATIONS ARE BASED ON 40 INCH ROW SPACINGS. If corn is planted in rows narrower than 40 inches, there are more linear feet of row per acre. This means that more insecticide must be applied

per acre to obtain the proper rate needed to protect the corn. By calibrating applicators to deliver the suggested amount per 1,000 feet of row, the amount per acre will be correct regardless of row spacing. Refer to the following table when calculating an insecticide purchase order and when applicators are calibrated.

Table 1. Amounts of formulated insecticide needed per acre at various row spacings based on the recommended rate of ozs/1000 ft of row for four different percentage granular formulations of rootworm insecticides.

Recommended amount of formulated insecticide per 1000 feet of row		Pounds of formulated insecticide needed to cover one acre					
		40 inch	38 inch	36 inch	34 inch	32 inch	30 inch
		rows	rows	rows	rows	rows	rows
10% Granules -	12.24 oz	10.00	10.51	11.11	11.77	12.48	13.33
14% Granules -	8.75 oz	7.15	7.51	7.94	8.42	8.92	9.53
15% Granules -	8.16 oz	6.67	7.01	7.41	7.85	8.32	8.88
20% Granules -	6.12 oz	5.00	5.26	5.55	5.89	6.24	6.66

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 at seed level, not in the furrow or below the seed. Placement below seed level is not effective. Seed furrow applications of liquid or granular insecticides for rootworm control are not recommended because some compounds may reduce the stand when in direct contact with germinating seeds, also seed furrow placement reduces the effectiveness of any compound because the treated zone is too narrow to protect lateral roots.

Some feeding on roots will occur, regardless of material or placement used. When rootworm numbers are high or egg hatch is extended, do not expect complete control. Leave untreated strips to evaluate 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, Mocap or Thimet) has not provided acceptable control, rotate to a carbamate (Furadan). If Furadan has been used in the same field for 2 or more years, control problems may be encountered under heavy populations, and/or in early planted fields.

RECOMMENDATIONS FOR REDUCTION OF CORN ROOTWORM LARVAE

- A. Rotate corn with other crops.
- B. If corn is planted prior to May 15, apply one of the granular insecticides at cultivation time between May 25 and June 10 and cover with soil at base of plants.


C. If planting after May 15, apply one of the granular insecticides in a 7-inch band over rows and cover with soil. If corn is listed, apply at cultivation time regardless of planting date.

D. Rescue Treatment - After June 10: Emergency treatment at lay-by time can be made by applying any of cultivation time granules to the soil at the base of plants. Cover the insecticide with 1 to 2 inches of soil. This treatment will not kill all rootworms present because the insecticide will not penetrate the soil. It may help reduce further root damage by establishing a barrier between the rootworms and developing roots.

Insecticide	Amount Formulation Per 1,000 Feet	Restrictions
carbofuran (Furadan 10G)	12.24 oz	Field corn. Planting <u>1/</u> , cultivation - over plants or basal.
chlorpyrifos (Lorsban 15G)	8.16 oz	Field, sweet and popcorn. Planting, cultivation - over plants or basal.
diazinon 14G	8.75 oz	Field, sweet and popcorn. Cultivation only - over plants or basal.
ethoprop (Mocap 10G)	12.24 oz	Field and sweet corn. Planting <u>2/</u> , cultivation - basal only.
fonophos (Dyfonate 20G)	6.12 oz	Field, sweet and popcorn. Planting <u>2/</u> , cultivation - over plants or basal.
 isofenphos (Amaze 20G)	6.12 oz	Field, sweet and popcorn. Planting, cultivation - basal only. Wait 75 days before harvest.
phorate (Thimet 15G)	8.16 oz	Field and sweet corn. Planting <u>2/</u> , cultivation - over plants or basal.
(Thimet 20G)	6.12 oz	
terbufos (Counter 15G)	8.16 oz	Field, sweet and popcorn. Planting, cultivation - basal only.

1/ In certain locations the continued use of Furadan has resulted in unreliable control. It is advisable to use one of the other listed compounds if Furadan has been used two consecutive years.

2/ Do not allow granules to fall into seed furrow, as stand reduction may occur.

 Insecticides thus marked are currently on the restricted use list.

CUTWORMS (NebGuide G80-501)

Corn following sod, alfalfa, soybeans or small grain stubble or fields with heavy crop or weed residues are most likely to be damaged by cutworms. Treatment is justified when one plant out of 20 shows cutworm feeding injury. Early detection is essential. Crusting, or dry surface soil will reduce efficacy of control. If surface is dry or crusted, rotary hoeing immediately before or after insecticide application may increase control if soil is not dry more than one inch deep.

RECOMMENDATIONS FOR CONTROL OF CUTWORMS IN CORN WHEN 5% OF PLANTS HAVE BEEN CUT OR HAVE FEEDING INJURY, AND CUTWORMS ARE PRESENT.

chlorpyrifos (Lorsban 4E).....1 pound AI per
acre broadcast, if soil is dry or crusted. Follow
immediately with a rotary hoe.

OTHER PRODUCTS REGISTERED:

Amounts Active Ingredient Per Acre

trichlorfon (Dylox).....	1 pound
Diazinon.....	2 pounds
Toxaphene.....	3 pounds
carbaryl (Sevin).....	2 pounds
carbaryl (Sevin 5% bait).....	20-40 pounds
formulation per acre	

WIREWORMS AND SEED DESTROYING INSECTS

First year corn, eco-fallow and early planted fields are more likely to be damaged.

RECOMMENDATIONS FOR CONTROL OF WIREWORMS, SEEDCORN MAGGOTS, AND SEEDCORN BEETLES IN CORN:

terbufos (Counter 15G).....	8 oz per 1,000 feet of row in seed furrow
carbofuran (Furadan 10G).....	12 oz per 1,000 feet of row in seed furrow
carbofuran (Furadan 15G).....	8.6 oz per 1,000 feet of row in seed furrow
Planter box treatments of diazinon, lindane or Lorsban (chlorpyrifos). See label for rates and restrictions.	

OTHER PRODUCTS REGISTERED:

ethoprop (Mocap 10G).....	12 oz per 1,000 feet of row as a 7" band over rows. Seed furrow placement will reduce stand.
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SOD WEBWORMS

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

<u>MATERIAL</u>	<u>AMOUNT ACTIVE INGREDIENT PER ACRE</u>	<u>RESTRICTIONS</u>
Toxaphene	2.5 lbs	Do not feed treated forage to dairy animals or animals being finished for slaughter. Broadcast or apply in 10" band, using at least 20 gallons water per acre.

INSECTS DAMAGING CORN ABOVE GROUND

CORN ROOTWORM ADULTS TO PREVENT SILK CLIPPING

Corn rootworm beetles occasionally interfere with pollination if there are sufficient beetles to chew silks to husks during the pollen-shedding period. Controls are indicated only when severe silk chewing is occurring at 25-50 percent pollen shed. In an average year, few fields will need to be sprayed to prevent silk clipping by beetles. Beetles are most likely to cause a problem in late-planted or late-silking fields. Delay spraying fields within 2 miles of apiaries, unless absolutely necessary if fields are shedding pollen. Warn beekeepers within 2 miles of the field to be sprayed and apply treatments in late afternoon or evening when bees are not foraging. Bees normally collect corn pollen during the morning hours.

REGISTERED TO CONTROL CORN ROOTWORM ADULTS TO PREVENT SILK CLIPPING: Amounts are active ingredient per acre

Diazinon.....	8 oz
☛ disulfoton (Di-Syston).....	4 oz
☛ EPN.....	4 oz
phosmet (Imidan).....	8 oz
Malathion.....	1 lb
☛ Malathion ULV.....	4 oz
☛ Parathion (ethyl or methyl).....	4 oz
carbaryl (Sevin).....	1 lb

☛ Restricted use

CORN ROOTWORM ADULTS TO REDUCE LARVAE THE NEXT YEAR

Controlling rootworm adults to reduce the number of larvae the next season may not be as reliable as soil insecticides because precise timing of control is essential, and more than one application of an insecticide may be necessary. If this method is used, it should be under the supervision of trained pest management personnel. To have a reasonable chance of success, begin scouting in early July. Control should be applied when there is an average of one rootworm beetle per plant and 10 percent of the female beetles have mature eggs. When this population is first recorded, apply one quart of Sevin 4-Oil per acre. The length of time of one application is effective will depend upon rainfall or irrigation practices. If beetles recur, make a second application when populations reach one beetle per two plants. The cost of two treatments will exceed that of a single soil treatment.



RECOMMENDATIONS FOR CONTROL OF CORN ROOTWORM ADULTS
TO REDUCE EGG DEPOSITION:


carbaryl (Sevin 4-Oil or XLR).....1 qt. formulation
per acre

CHINCH BUGS
(NebGuide G78-427, 1981)

Preventing chinch bug damage by cultural practices is more reliable than chemical controls. Where possible, do not plant corn into wheat stubble or adjacent to wheat fields. If chemical controls are necessary, apply a suggested insecticide in at least 30 gallons of water per acre. Use drop pipes from sprayer booms, so that spray is directed onto the lower stalks and soil around the plants. Broadcast sprays over plants are not effective. Sprays will not last more than 4 to 7 days. If migrations from adjacent wheat fields are heavy, reapplication may be necessary. Under heavy populations, chemical control may not be satisfactory.

RECOMMENDATIONS FOR CONTROL OF CHINCH BUGS IN CORN

Insecticide	Rate	Directions, Restrictions, Comments
AT PLANTING		
 carbofuran (Furadan 10G, 4F)	1.2 oz a.i. per 1,000 ft of row	Place in-furrow with seed. Should give 3 to 4 weeks protection.
POSTEMERGENCE		
carbaryl (Sevin 80W, Sevin XLR, Sevimol)	2 lbs a.i. per acre	Apply as directed spray with at least 40 gallons of water per acre.
chlorpyrifos (Lorsban 4E)	8 oz a.i. per acre	Apply as directed spray with at least 40 gallons of water per acre, using ground equipment only. Do not apply more than 24 oz of Lorsban 4E by postemergence application per season. Do not allow livestock to graze in treated areas or feed treated corn silage, fodder or grain to meat or dairy animals within 50 days after last treatment.
 parathion	12 oz a.i. per acre	Aerial application only. Do not apply within 12 days of harvest. Apply only when chinch bugs are exposed.
phorate (Thimet 15G)	1.2 oz a.i. per 1,000 ft	Apply granules at time of cultivation in a band at base of plants just ahead of cultivator shovels so granules are covered with soil as for corn rootworm control. Do not make more than one postemergence application per season. Do not graze or cut for forage within 30 days of treatment.

 Restricted use

EUROPEAN CORN BORER

The need for insecticide treatment for first brood is determined by examining whorls. Treat if 50 percent of the corn plants on dryland; 35 percent on irrigated; 25 percent on popcorn; or 5-10 percent on seed fields show shotholes and larvae are present in whorl leaves. Heaviest first brood borer activity is expected in earliest planted fields, or fields planted to susceptible varieties. Ask your seedcorn dealer if a variety is available for your area that produces high yields and has some resistance to European corn borers. If borers have already entered stalks, control is impossible. It is difficult to tell when control of second brood borers will be profitable. Fields that have green silks during the second brood moth flight in late July and August are especially attractive to moths for egg laying. When 50% of plants have egg masses, small borers in leaf axils, or a combination of egg masses and small borers, control may be feasible. Where possible harvest heavily infested fields early to reduce field losses. Second brood borers are most serious in late planted or long season hybrid corn.

RECOMMENDATIONS FOR CONTROL OF EUROPEAN CORN BORERS: Amounts are formulation per acre.

carbofuran (Furadan 10G).....	10 lbs
carbofuran (Furadan 15G).....	6.5 lbs
fonofos (Dyfonate 20G).....	5 lbs

REGISTERED FOR CONTROL OF EUROPEAN CORN BORERS: Amounts are formulation per acre.

Diazinon 14G.....	7 lbs
☉ carbofuran (Furadan 4F).....	8 oz
phorate (Thimet 15G).....	7 lbs 1/
☉ Restricted use	1/ First brood only

Sevin, diazinon, EPN and parathion are registered as sprays. Spray applications with most materials have not been effective. Permethrin, however, will be recommended if registration is granted.

GRASSHOPPERS ON CORN (NebGuide G74-106, 1980)

Prevent damage to corn by controlling grasshopper nymphs when there are 20 or more immature grasshoppers per square yard in margins around fields.

RECOMMENDATIONS FOR CONTROL OF GRASSHOPPERS ON CORN:
Amounts are active ingredient per acre.

Dimethoate (Cygon 400) 2/.....	8 oz
☉ carbofuran (Furadan).....	4 oz
carbaryl (Sevin 4-0il).....	1.5 lbs

REGISTERED FOR GRASSHOPPER CONTROL IN CORN:
Amounts are active ingredient per acre

chlorpyrifos (Lorsban) 2/.....	8 oz
naled (Dibrom).....	12 oz
Malathion.....	1 lb
☉ Parathion.....	8 oz
☉ PennCap M 1/.....	8 oz
carbaryl (Sevin 80) 1/ 2/.....	2 lbs
carbaryl (Sevimo1) 1/ 2/.....	1.5 lbs
Toxaphene 2/.....	2 lbs

☉ Restricted use

- 1/ Do not use PennCap M or Sevin on corn shedding pollen, if beehives are within 2 miles.
- 2/ For use in margins around fields. Heavy foliage may reduce control.

WESTERN BEAN CUTWORMS
(NebGuide G76-290)

Use chemical controls when 8% of the plants infested with larvae in tassels and/or eggs on leaves and corn is 95-100 percent tasseled, and before worms have entered silks. It is probably not economical to control on silage corn.

RECOMMENDATIONS FOR CONTROL OF WESTERN BEAN CUTWORMS ON CORN:
Amounts are active ingredient per acre

carbaryl (Sevimo1).....	2 lbs
carbaryl (Sevin 4-0il).....	2 lbs
methyl parathion + EPN.....	8 oz

REGISTERED FOR CLIMBING CUTWORMS ON CORN:
Active ingredient per acre.

carbaryl (Sevin XLR).....	2 lbs
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SPIDER MITES
(NebGuide G75-50, 1981)

Apply chemical control if 1 lower leaf is yellowing and mite colonies are present to the ear zone before corn has reached the hard dent stage. Insecticides do not kill eggs, so reinfestation frequently will occur. More likely to develop when grassy weeds are in or adjacent to fields. Watch for early season buildup, especially during dry seasons.

REGISTERED FOR CONTROL OF SPIDER MITES ON CORN:
Amounts are active ingredient per acre

Dimethoate (Cygon 400).....	8 oz
Diazinon.....	8 oz
disulfoton (Dy-Syston 15G)1/.....	1 lb
☛ disulfoton (Di-Syston EC).....	1 lb
oxydemetonmethyl (Metasystox-R).....	8 oz
phorate (Thimet 15G)1/.....	1 lb
carbophenothion (Trithion).....	1 lb

1/ Granular formulations of Di-Syston or Thimet have provided longer control in Nebraska tests when applied early in mite buildup.

ARMYWORMS

Control when migration from adjacent grassy fields is sufficient to damage margin rows, or when field infestations are consuming lower leaves before hard dent stage. Develop in fields with grassy weeds.

RECOMMENDATIONS FOR CONTROL OF ARMYWORMS IN CORN:
Amounts are active ingredient per acre

trichlorfon (Dylox).....	1 lb
☛ methomyl (Lannate, nudrin).....	6 oz
carbaryl (Sevin).....	1.6 lbs

REGISTERED FOR ARMYWORM CONTROL ON CORN:

Parathion.....	8 oz
Malathion.....	1.5 lbs
Toxaphene.....	2.5 lbs

SORGHUM INSECTS

GREENBUGS AND CORN LEAF APHIDS
(NebGuide G76-266, 1982)

Corn leaf aphids (referred to as "aphids") rarely cause economic damage to grain sorghum grown under Nebraska conditions. Treatments applied for this insect

would seldom result in a yield increase that would pay for the cost of treatment.

Greenbugs have frequently caused serious yield losses in Nebraska grain sorghum since 1968. For a discussion of treatment guidelines on susceptible and resistant grain sorghum hybrids, refer to NebGuide G76-266 (revised 1981), available at your county extension office.

Certain sorghum varieties may be sensitive to organic phosphate insecticides. Red or brown spots where spray droplets contact leaves frequently occur. Usually these are not serious. Sensitivity can be determined by spraying a small area of a field and observing for several days for crop injury.

REGISTERED FOR CONTROL OF GREENBUGS ON SORGHUM:

Amounts are active ingredient per acre.

Diazinon.....	8 oz
Dimethoate (Cygon).....	6 oz
disulfoton (Di-Syston 15G)1/.....	1 lb
disulfoton (Di-Syston EC).....	8 oz
fonofos (Dyfonate).....	1 lb
carbofuran (Furadan 4F).....	8 oz
carbofuran (Furadan 10G)2/.....	1 lb
Malathion.....	1 lb
oxydemetonmethyl (Metasystox-R)3/.....	8 oz
☛ Parathion.....	8 oz
☛ PennCap E.....	8 oz
phorate (Thimet 15G).....	1 lb

☛ Restricted use

1/ Di-Syston and Thimet granules can be used broadcast or as a band at time of planting.

2/ Furadan granules registered only for time of planting.

3/ CAUTION: Since certain sorghum varieties may be sensitive to organophosphate insecticides, Metasystox-R should be applied to a small area and observed for a few days to determine if any crop injury will occur.

WIREWORMS, SEEDCORN MAGGOT AND SEEDCORN BEETLE




Planter box seed treatment with lindane or diazinon. Follow package directions for amounts and restrictions.


CHINCH BUGS (NebGuide G78-427, 1981)

Preventing chinch bug damage to sorghums by cultural practices is more reliable than chemical controls. Do not plant sorghums following wheat stubble, or adjacent to winter wheat. Chinch bugs do not feed on legumes, so soybeans are ideal alternatives for sorghums in high chinch bug probability fields.

Research in Nebraska and Kansas indicates that Furadan granules applied in the seed furrow at time of planting provides the longest lasting control of chinch bugs moving into sorghums from adjacent wheat. Under conditions of high populations, chemical controls are not highly effective.

RECOMMENDATIONS FOR CHINCH BUG CONTROL IN SORGHUM:

Insecticide	Rate	Directions, Restrictions, Comments
AT PLANTING		
 carbofuran (Furadan 10G, 4F)	1.2 oz a.i. per 1,000 ft of row	Place in-furrow with seed. Should give 3 to 4 weeks protection.
POSTEMERGENCE		
carbaryl (Sevin 80W, Sevin XLR, Sevimo1)	2 lbs a.i. per acre	Apply as directed spray with at least 40 gallons of water per acre.
 carbofuran (Furadan 4F)	8 oz a.i. per acre	Apply as directed spray with at least 40 gallons of water per acre. Do not make more than two applications of Furadan per season, including planting time application. Do not apply after heads form. Do not harvest within 30 days of application.
chlorpyrifos (Lorsban 4E)	8 oz a.i. per acre	Apply as directed spray with at least 40 gallons of water per acre, using ground equipment only. Do not apply more than 12 oz of Lorsban 4E per season. The treated crop is not to be used for forage, fodder, hay or silage within 28 days after treatment. Do not treat sweet varieties of sorghum.
 ethyl parathion	12 oz a.i. per acre	Aerial application only. Do not apply within 12 days of harvest. Apply only when chinch bugs are exposed.

 Restricted Use


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 or 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.

Abbreviations

- AI - Active Ingredient
- EC - Emulsifiable Concentrate
- WP - Wettable Powder
- G - Granular
- lb - Pound
- oz - Ounce
- F - Flowable
-  - Restricted use (applicators must have EPA certification)

Metric Conversion Table		
English	Multiply By	Metric
Inch (in)	25.4	Millimeter (mm)
Inch (in)	2.54	Centimeter (cm)
Foot (ft)	0.3	Meter (m)
Ounce (oz)	28	Gram (g or gm)
Pound (lb)	0.45	Kilogram (kg)
Ounce per acre (oz/A)	69.2	Gram per hectare (g/ha)
Pound per acre (lb/A)	1.1	Kilogram/hectare (kg/ha)
Gallon (gal)	3.8	Liter (l)
Gallon per acre (gal/A)	9.39	Liter per hectare (l/ha)
Fahrenheit (°F)	$^{\circ}\text{F}-32 \div 1.8$	Celsius (°C)