

Grain Crops, Soybeans, Forages

Rod R. Youngman, Extension Entomologist, Virginia Tech

Note: before applying any insecticide to a crop, make sure that a definite insect problem exists. If you are unable to make this determination, contact your local county Extension agent for advice or assistance. Use pesticides only when necessary.

Cultural Control Methods

Although the recommendations in this publication deal primarily with chemical control, the use of insecticides on Field Crops should be considered supplementary to insect control by cultural methods. In many instances, growers who follow accepted cultural practices can expect little trouble from insect pests. This is especially true in the case of insects attacking conventionally tilled field corn.

Some of the most beneficial cultural methods for problem insects affecting Field Crops are plowing, fertilization, and crop rotation. Deep and clean plowing in the spring destroys insects in the soil (corn earworms and root aphids) and in dead stalks (European corn borer), as well as those feeding on winter weeds and clover (root webworms and cutworms). Proper fertilization gives corn and other Field Crops the ability to outgrow insect attacks. Rotating corn prevents trouble with corn root aphids and corn rootworms.

In addition to cultural methods, there are field crop varieties on the market that are resistant to certain insects. For example, some of the field corn varieties show resistance to corn leaf aphids and at least two of the varieties of wheat recommended in Maryland are resistant to Hessian fly.

Alfalfa Weevil

There are two cultural control tactics that can be utilized to reduce alfalfa weevil damage. In the late fall, remove the alfalfa for hay or by grazing. This removes the overwintering egg-laying sites for the adult weevils, and will help reduce the number of alfalfa weevil larvae attacking the crop the following spring. Early harvest can sometimes be used in the spring instead of insecticide sprays, if the crop has obtained sufficient growth before larval feeding damage becomes severe.

Potato Leafhopper

Spring-planting alfalfa with a companion crop of oats will help prevent soil erosion, and also reduce potato leafhopper infestations in the first summer cutting of alfalfa.

True Armyworm

In no-till corn planted into winter rye cover crop, research at Virginia Tech has shown that rotary mowing of the rye cover crop after it has initiated seed heads will not only kill the cover crop, but also will dramatically reduce the number of armyworm larvae early in the growing season when the corn is susceptible to damage from armyworm feeding. If mowing is to be used to kill the winter cover crop, corn planting should follow as soon as possible after mowing to facilitate coulters penetration of the rye mulch.

Northern and Western Corn Rootworms

Rotating corn with any other crop for one year will control western corn rootworm, since the eggs of this pest are laid in corn fields during the summer.

Note: Any insecticide applied to a crop in bloom will kill honey bees and other pollinating insects. The magnitude of bee loss can be lessened considerably by spraying in late afternoon or evening.

4-2 Insects: Grain Crops, Soybeans, Forages

Table 4.1 - Chemical Class, Oral LD₅₀, Worker Re-entry Time, and Toxicity of Insecticides Recommended in this Publication

Insecticides	Trade name	Toxicity to Mammals			Acute dermal	Worker re-entry time in days	Toxicity ³ to		
		Chemical class ¹	Oral LD ₅₀ ²	Acute oral			Birds	Fish	Bees
Acephate	Orthene	O P	361	Moderate	Moderate	*	Moderate	Low	NA
<i>Bacillus</i>	Biotrol, <i>thuringiensis</i>	L O Dipel, Thuricide	—	Very low	Very low	*	Very low	Very low	Very low
Carbaryl	Sevin, Sevimol	C	500	Low	Low	*	Low	Very low	High
Carbofuran	Furadan	C	8	High	Low	*	High	NA	NA
Chlorpyrifos	Dursban, Lorsban	O P	163	Moderate	Moderate	*	Moderate	NA	NA
Diazinon	Diazinon	O P	76	Moderate	Moderate	*	Moderate	High	High
Dimethoate	Cygon, Rebelate	O P	215	Moderate	Moderate	*	Moderate	Low	High
Disulfoton	Di-Syston	O P	2	High	High	*	Moderate	NA	Moderate
Ethion		O P	70	Moderate	Moderate	1	High	High	Low
Ethoprop	Mocap	O P	62	High	High	*	Moderate	NA	NA
Fenvalerate	Pydrin	P	450	Moderate	Low	*	NA	High	High
Lindane		C H	88	Moderate	Moderate	*	Moderate	High	High
Malathion		O P	1,000	Low	Low	*	Low	High	High
Methidathion	Supracide	O P	25-65	High	Moderate	*	NA	NA	NA
Methiocarb	Mesuroil	C	130	Moderate	Low	*	High	High	High
Methomyl	Lannate, Nudrin	C	17	High	Moderate	*	Low	NA	NA
Methyl parathion		O P	14	High	High	2	High	Low	High
Microencapsulated methyl parathion	Penncap-M	O P	270	Low	Low	*	High	High	High
Permethrin	Ambush, Pounce	P	4,000	Low	Low	*	NA	High	High
Phorate	Thimet	O P	1	High	High	*	Moderate	NA	Moderate
Phosmet	Imidan	O P	147	Moderate	Low	*	Moderate	NA	NA
Terbufos	Counter	O P	4	High	High	*	High	High	NA
Thiodicarb	Larvin	C	66	Moderate	Low	*	NA	NA	Moderate

*Worker cannot enter a treated field without protective clothing until the spray has dried or the dust has settled.

¹C = carbamate; CH = chlorinated hydrocarbon; LO = living organism; OP = organophosphate; P = pyrethroid.

²Based on technical product.

³NA=Not available

Table 4.2 - Restricted and General-use Pesticides

Insecticide	Restricted (R)¹ or general (G) use	Insecticide	Restricted (R)¹ or general (G) use
Acephate	G	Malathion	G
Azinphosmethyl	R 3	Methidathion	R 6
<i>Bacillus thuringiensis</i>	G	Methiocarb	G
Carbaryl	G	Methomyl	R 4, 8
Carbofuran	R 1, 2, 3	Methyl parathion	R 2, 4, 6, 8
Chlorpyrifos	G	(microencapsulated)	R 2, 4, 6, 8
Diazinon	G	Monocrotophos	R 6, 8
Dimethoate	G	Parathion	R 2, 3, 6, 7, 8
Disulfoton	R 2, 3	Permethrin	R 7
Ethion	G	Phorate	R 2, 6, 8
Ethoprop	R 2	Phosmet	G
Fenvalerate	R 7	Thiodicarb	G
Lindane	R 5		

¹Reasons for restrictions are as follows: R 1 = acute oral toxicity; R 2 = acute dermal toxicity; R 3 = acute inhalation toxicity; R 4 = accident history; R 5 = possible oncogenicity; R 6 = effects on birds; R 7 = effects on fish or other aquatic life; and R 8 = effects on terrestrial wildlife.

4-4 Insects: Grain Crops, Soybeans, Forages