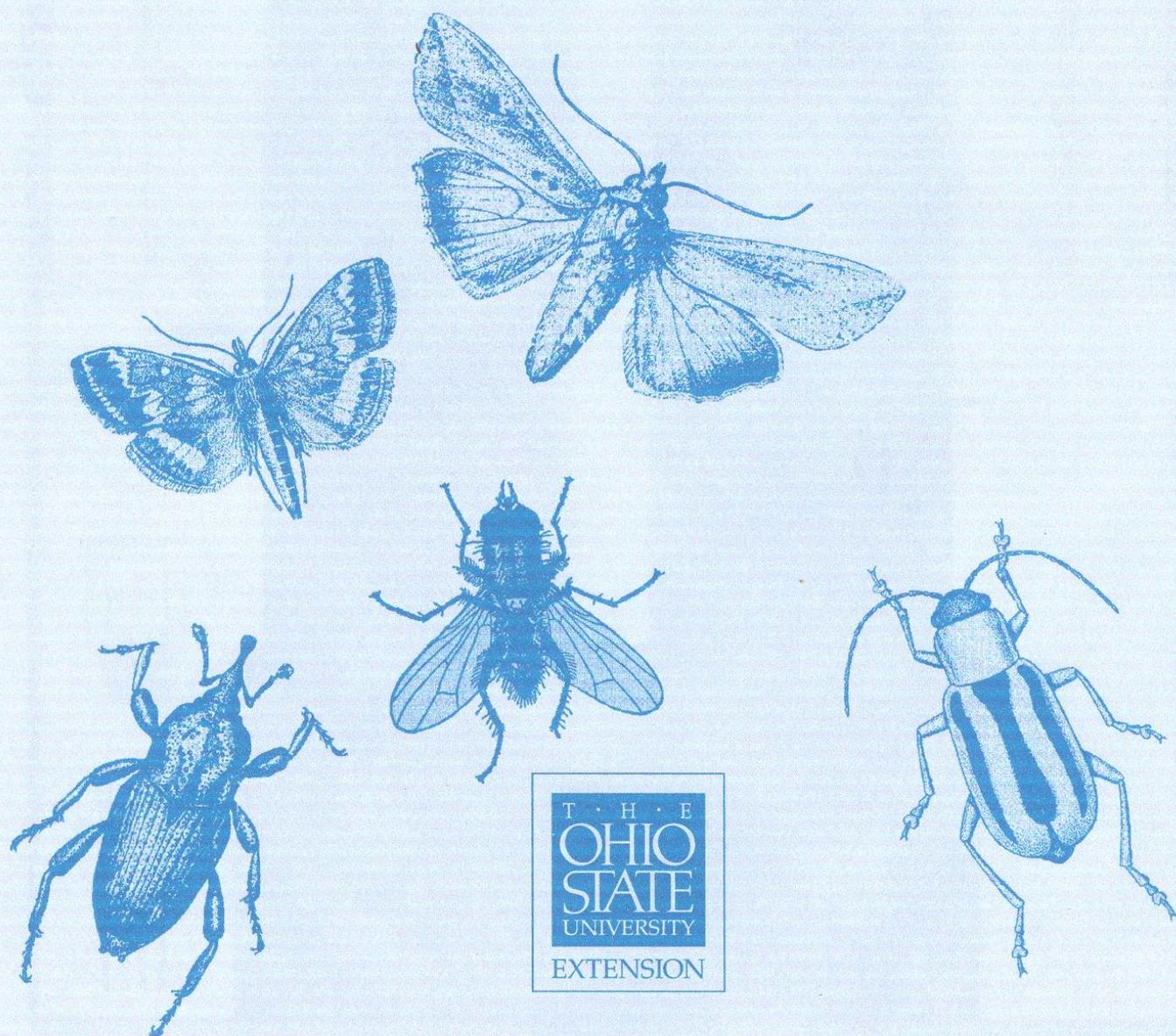


# Control of Insect Pests of Field Crops



T · H · E  
OHIO  
STATE  
UNIVERSITY  
EXTENSION

## Authors

**Ron Hammond**  
Extension Entomologist  
Department of Entomology  
Thorne Hall  
OARDC  
Wooster, OH 44691

**Andrew Michel**  
Research Entomologist  
Department of Entomology  
Thorne Hall  
OARDC  
Wooster, OH 44691

Bulletin 545

Copyright © 2011, The Ohio State University

OSU Extension embraces human diversity and is committed to ensuring that all education conducted by Ohio State Extension are available to clientele on a nondiscriminatory basis without regard to race, color, age, gender identity or expression, disability, religion, sexual orientation, national origin, or veteran status.

Keith L. Smith, Associate Vice President for Agricultural Administration and Director, OSU Extension  
Revised 1/11

# CONTROL OF INSECT PESTS OF FIELD CROPS

## Contents

<b>ALFALFA</b> .....	4	Hessian Fly .....	38
Alfalfa Weevil .....	4		
Potato Leafhopper .....	5	<b>SOYBEAN</b> .....	39
<b>CORN</b> .....	7	Bean Leaf Beetle .....	39
Armyworm .....	7	Grasshopper .....	41
Billbugs .....	9	Green Cloverworm .....	43
Common Stalk Borer .....	10	Japanese Beetle .....	45
Corn Leaf Aphid .....	12	Mexican Bean Beetle .....	46
Corn Rootworm .....	13	Potato Leafhopper .....	47
Cutworm .....	16	Seedcorn Maggot .....	50
European Corn Borer .....	20	Slugs .....	50
Flea Beetles .....	22	Soybean Aphid .....	50
Grubs .....	24	Spider Mites .....	52
Japanese Beetle .....	26	Stink Bugs.....	53
Seedcorn Maggots .....	27	<b>HANDLING OF PESTICIDES</b> .....	55
Slugs .....	29	Ohio's Restricted Pesticides .....	55
Stink Bugs.....	29	Toxicity of Pesticides .....	55
Western Bean Cutworm .....	30	Safety Tips .....	55
Wireworms .....	32	Rinsing Empty Containers .....	55
		Protecting Bees .....	55
<b>SMALL GRAINS</b> .....	34	Aerial Applications .....	56
Aphids .....	34	Sprayer Delivery Rates .....	56
Armyworm on Wheat .....	35	Poison Information Centers .....	56
Cereal Leaf Beetle.....	37		

### Using the Pesticide Recommendations

Common names and trade names of pesticides are used in this publication. When possible, information has been provided on such factors as application rates, pre-harvest limitations, application methods and timing. However, the pesticide container label is the authority for all information, restrictions and regulations. This publication should be used as a guide for registered pesticides, but product labels should always be consulted before application.

The pest complex affecting alfalfa includes a variety of insect populations of which one or more may become abundant enough to warrant insecticide treatment. In general, the alfalfa plant can tolerate a significant amount of feeding by a number of different insects before a rescue treatment is economically justified. However, insect pests such as potato leafhopper can cause significant injury to the alfalfa plant at very low population levels. Vigilance is needed to accurately determine when treatment is needed.

Following is a listing of insecticide products labeled for control of the pests that affect alfalfa (2011). Also listed in this section is information about formulation and rates of chemicals for specific pests. An asterisk (\*) indicates that the use is restricted to certified applicators.

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Alfalfa Weevil</b>	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	0 - 14	No action is warranted if no more than one late-instar weevil larvae are found per stem. If more than one larva is found per stem, early cutting or application of a rescue insecticide treatment should be implemented, depending on the value and height of the crop. Higher rates are for southern Ohio, where longer control may be required.  When possible, early cutting (alfalfa taller than 22 inches) should be practiced in place of chemical treatment to minimize upsetting populations of beneficial parasites.
	Arctic* 3.2 EC (permethrin)	4 - 8 fl. oz.	0 - 14	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	7	
	Carbaryl 4L (carbaryl)	1½ qt.	7	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	14 - 21	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	14 - 21	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	14 - 21	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	7	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	14 - 21	
	Imidan 70-W (phosmet)	1 - 1½ lb.	7	
	Kaiso* 24WG (lambda-cyhalothrin)	1.33 – 2.0 oz.	7	
	Lambda-Cy EC* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	7	
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	7	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	7	
	Lannate* (methomyl)	1 lb. SP or 3 pt. LV	7	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	14 - 21	
	Malathion (malathion)	1½ - 2 pt. 5EC 1½ - 2¼ pt. 57 EC 1 - 2 pt. 8	0 0 0 - 7	
	Mustang MAX* (zeta-cypermethrin)	2.24 - 4 fl. oz.	3	
	Nufos* 4E (chlorpyrifos)	1 - 2 pt.	14 - 21	
	PermaStar* AG (permethrin)	4 - 8 oz.	14	
Permethrin* 3.2 EC (permethrin)	4 - 8 oz.	0 - 14		
Perm-UP* (permethrin)	4 - 8 fl. oz. 3.2 EC 6.4 - 12.8 oz. 25DF	14 14		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Alfalfa Weevil</b> (cont.)	Pounce* (permethrin)	6.4 - 12.8 oz. 25WP	0 - 14	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	7	
	Respect* EC (zeta-cypermethrin)	2.24 - 4 oz.	3	
	Sevin (carbaryl)	1½ qt. 4F or XLR Plus 1⅞ lb. 80S	7 7	
	Silencer* (lambda-cyhalothrin)	2.56 – 3.84 fl. oz.	7	
	Stallion (zeta-cypermethrin & chlorpyrifos)	9.25- 11.75 fl. oz.	7	
	Steward EC (indoxacarb) (larvae only)	6.7 - 11.3 fl. oz.	7	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	7 7	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	14 - 21	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	7	
	Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	7	
	Warrior II* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	14 - 21	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	14 - 21	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	14 - 21	
<b>Potato Leafhopper</b>	Ambush* 25W (permethrin)	3.2 - 12.8 oz.	0 - 14	Treatment for PLH is justified when the number of leaf-hoppers collected/10 sweeps is greater than the height of the alfalfa in inches.  The PLH threshold should be increased 3 times for those varieties considered PLH resistant after the stand is established.
	Arctic* 3.2 EC (permethrin)	4 - 8 fl. oz.	0 - 14	
	Baythroid* XL (β-cyfluthrin)	0.8 - 1.6 fl. oz.	7	
	Carbaryl (carbaryl)	1 qt. 4L	7	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	14 - 21	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	7-13 fl. oz.	7 - 14	
	Dimethoate (dimethoate)	½ - 1 pt. 400 or 4EC ½ - 1 pt. Dimate 4EC	10 10	
	Govern* 4E (chlorpyrifos)	½ - 1 pt.	7 - 14	
	Grizzly Z* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	7	
	Hatchet* (chlorpyrifos)	½ - 1 pt.	7 - 14	
	Imidan 70-W (phosmet)	1 - 1⅓ lb.	7	
	Kaiso* 24WG (lambda-cyhalothrin)	1.0 - 1.67 oz.	7	
	Lambda-Cy EC* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	7	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	7	
	Lambda-T* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	7	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
Potato Leafhopper (cont.)	Lorsban* 4E (chlorpyrifos)	½ - 1 pt.	7 - 14	
	Malathion (malathion)	1½ - 2 pt. 5EC 1½ - 2¼ pt. 57 EC 1 - 2 pt. (8)	0 0 0 - 7	
	Mustang MAX* (zeta-cypermethrin)	2.24 - 4 fl. oz.	3	
	Nufos* 4E (chlorpyrifos)	½ - 1 pt.	7 - 14	
	PermaStar* AG (permethrin)	4 - 8 oz.	14	
	Permethrin* 3.2 EC (permethrin)	4 - 8 oz.	0 - 14	
	Perm-UP* (permethrin)	4 - 8 fl. oz. 3.2EC 6.4 - 12.8 oz. 25DF	14 14	
	Pilot* (chlorpyrifos)	½ - 1 pt.	7 - 14	
	Pounce* (permethrin)	6.4 - 12.8 oz. 25 WP	0 - 14	
	Proaxis* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	7	
	Respect* EC (zeta-cypermethrin)	2.24 - 4 oz.	3	
	Sevin (carbaryl)	1 qt. 4F or XLR PLUS 1¼ lb. 80S	7 7	
	Silencer* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	7	
	Stallion (zeta-cypermethrin & chlorpyrifos)	5.0 - 11.75 fl. oz.	7	
	Steward EC (indoxacarb)	9.2 - 11.3 fl. oz.	7	
	Taiga* Z (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	7	
	Tombstone Helios* (cyfluthrin)	0.8 - 1.6 fl. oz.	7	
	Warhawk* (chlorpyrifos)	½ - 1 pt.	7 - 14	
	Warrior* (lambda-cyhalothrin) Warrior II* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz. 0.96 - 1.60 fl. oz.	7 7	
	Whirlwind* (chlorpyrifos)	½ - 1 pt.	7 - 14	
Yuma* 4E (chlorpyrifos)	½ - 1 pt.	7 - 14		

# CORN

Management of invertebrate pests that affect corn requires agronomic practices that minimize the development of pest populations and use of chemical pesticides when pest populations threaten the economic production of the crop. Insecticide formulations applied to corn fall into three major categories: (1) seed treatments to prevent seed-feeding soil-borne insects; (2) soil insecticide treatments that may be before, during, or after planting in granular or liquid formulations; and (3) postemergence treatments applied in granular (early season) or liquid form.

Following is a listing of insecticide products labeled for control of the pests that affect corn (2011). An asterisk (\*) indicates that use is restricted to certified applicators.

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>1</sup>	Pre-Harvest Interval (days)	When to Treat
Army- worm	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	PRE, F	30	If stand infestation ranges from 5% to 20%, intensify monitoring and re-check field within a few days.
	Arctic* <sup>a</sup> 3.2EC (permethrin)	4 - 8 fl. oz.	PRE, F	30	
	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	F	21	
	Baythroid* XL ( $\beta$ -cyfluthrin)	1.6 - 2.8 fl. oz.	PRE, F	21	
	Belt SC (flubendiamide)	2 - 3 fl. oz.	F	28	
	Bifenthrin* <sup>a</sup> 2 EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Bifenture* <sup>a</sup> EC (bifenthrin)	2.56 fl. oz. 2.6 - 6.4 fl. oz.	PRE F	30 30	
	Brigade* <sup>a</sup> 2EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Capture* <sup>a</sup> LFR (bifenthrin)	3.4 fl. oz.	PRE	30	If stand infestation is greater than 20% and less than 50%, consider rescue treatment when corn is at early-whorl stage, or larvae are less than 1 inch long, or more than 1 larvae per plant, or defoliation of infested plants exceeds 50%
	Carbaryl 4L (carbaryl)	1 - 2 qt.	F	48	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	PRE, F	21	
	Cobalt* <sup>a</sup> (chlorpyrifos & gamma-cyhalothrin)	13 - 38 fl. oz. 13 - 26 fl. oz.	PRE F	21 21	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	F	28	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	F	21	
	Discipline* <sup>a</sup> 2EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Empower* 2 (bifenthrin)	3.5 - 8.7 lbs.	F	30	
	Entrust <sup>b</sup> (spinosad)	0.5 - 2.0 oz.	F	28	
	Fanfare* <sup>a</sup> 2EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	

<sup>a</sup> Material labeled for At Plant use for armyworm control. Check the label for rates.

<sup>b</sup> Listed by the Organic Materials Review Institute (OMRI) for use in organic production.

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Army- worm (cont.)	Govern* <sup>a</sup> 4E (chlorpyrifos)	1 - 2 pt.	PRE, F	35	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Hatchet* <sup>a</sup> (chlorpyrifos)	1 - 2 pt.	PRE, F	35	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	F	30	
	Intrepid 2F (methoxyfenozide)	4 - 8 fl. oz.	F	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.33 - 2.0 oz.	F	21	
	Lambda-Cy EC* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lannate* (methomyl)	¾ - 1½ pt. LV or ¼ - ½ lb. SP	F	21	
	Lorsban 4E* (chlorpyrifos)	1 - 2 pt.	PRE, F	21	
	Malathion 5EC (malathion)	1½ - 2 pt.	F	5	
	Mustang* MAX (zeta-cypermethrin)	3.2 - 4.0 fl. oz.	PRE, F	30	
	Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Nufos* 4E (chlorpyrifos)	1 - 2 pt.	PRE, F	21	
	Penncap-M* (methyl parathion)	2 - 3 pt.	F	12	
	PermaStar* <sup>a</sup> AG (permethrin)	4 - 8 oz.	PRE, F	30	
	Permethrin* <sup>a</sup> (permethrin)	4 - 8 oz. 3.2 AG or 3.2 EC	PRE, F	30	
	Perm-UP* <sup>a</sup> (permethrin)	4 - 8 fl. oz. 3.2 EC 6.4 - 12.8 oz. 25DF	PRE, F PRE, F	30 30	
	Pilot* 4E (chlorpyrifos)	1 - 2 pt.	PRE, F	35	
	Pounce* <sup>a</sup> (permethrin)	6.4 - 12.8 fl. oz. 25 WP	PRE, F	30	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Radiant SC (spinetoram)	3 - 6 fl. oz.	F	28	
	Respect* EC (zeta-cypermethrin)	3.2 - 4 oz.'	F	30	
	Sevin (carbaryl)	1 - 2 qt. 4F or XLR Plus 1¼ - 2½ lb. 80S	F F	48 48	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Sniper* <sup>a</sup> (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion* (zeta-cypermethrin & Chlopyrifos)	9.25 - 11.75 fl. oz.	F	30	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Army-worm</b> (cont.)	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Tracer (spinosad)	1 - 3 fl. oz.	F	28	
	Tundra*.a EC (bifenthrin)	2.56 fl. oz. 2.6 - 6.4 fl. oz.	PRE F	30 30	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	PRE, F	21	
	Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Warrior* II (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	PRE, F	35	
Yuma* 4E (chlorpyrifos)	1 - 2 pt.	PRE, F	21		
<b>Billbugs</b>	Acceleron IC-609 (clothianidin)	1.25 mg a.i./kernel (commercial seed treatment)	AP	na	The term "billbug" applies to a group of snout-nosed beetles; the feeding of the adult forms can damage corn in the spring.  A rescue treatment may be warranted if extensive billbug feeding is detected early and potential stand loss is significant.
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	38 - 42 fl. oz.	F	21	
	Chlorpyrifos* 4E AG (chlorpyrifos)	2 - 3 pt.	F	21	
	Counter* 15G (terbufos)	6 - 8 oz./1000 row ft.	AP	30	
	Cruiser 5FS (thiamethoxam)	1.25 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Force* (tefluthrin)	4 - 5 oz./1000 row ft. 3G (suppression only) 0.46 - 0.57 fl.oz./1000 row ft. CS (suppression only)	AP	na	
	Govern* 4E (chlorpyrifos)	2 pt.	F	35	
	Hatchet* (chlorpyrifos)	2 pt.	F	35	
	Lorsban 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	21	
	Lorsban* 4E (chlorpyrifos)	2 pt.	F	21	
	Nufos* 4E (chlorpyrifos)	2 - 3 pt.	F	21	
	Pilot 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	Pilot* 4E (chlorpyrifos)	2 pt.	F	35	
	Poncho 600 (clothianidin)	1.25 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Regent* 4 SC (fipronil)	0.24 fl. oz./1000 row ft.	AP	90	
Saurus (chlorpyrifos)	8 oz./1000 row ft.	AP	35		
Senator 600 FS (imidacloprid)	1.34 mg. a.i./kernel (commercial or end use seed treatment)	AP	na		

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>1</sup>	Pre-Harvest Interval (days)	When to Treat
<b>Billbugs</b> (cont.)	Warhawk* (chlorpyrifos)	2 pt.	F	21	
	Whirlwind* (chlorpyrifos)	2 pt.	F	35	
	Yuma* 4E (chlorpyrifos)	2 pt.	F	21	
<b>Common Stalk Borer</b>	Adjourn* (esfenvalerate)	5.4 - 9.6 fl. oz.	F	21	This problem is common in weedy areas, especially where grass is present and with minimum-tillage operations. Larvae of the common stalk borer are easily identified due to the obvious purplish stripes.
	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	F	30	
	Arctic* 3.2 EC (permethrin)	4 - 8 fl. oz.	PRE, F	30	
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	F	21	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	PRE, F	21	
	Bifenthrin* 2EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Bifenture* EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Brigade* 2EC (bifenthrin)	2.56 fl.oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Capture* LFR (bifenthrin)	0.2 - 0.39 fl. oz. 3.4 fl. oz.	AP PRE	30 30	
	Chlorpyrifos* 4E AG (chlorpyrifos)	2 - 3 pt.	F	21	Prevention of stalk borer damage is best accomplished by maintaining weed-free fields
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	38 - 42 fl. oz.	F	21	
	Consero* (spinosad & gamma-cyhalothrin)	3 fl. oz.	F	28	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	PRE, F	21	
	Discipline* 2EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Fanfare* 2EC (bifenthrin)	2.56 fl. oz. 2.1-6.4 fl. oz.	PRE F	30 30	
	Govern* 4E (chlorpyrifos)	2 pt.	F	35	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Hatchet* (chlorpyrifos)	2 pt.	F	35	
	Hero* (zeta-cypermethrin & bifenthrin)	2.6 - 6.1 oz.	F	30	
Kaiso* 24WG (lambda-cyhalothrin)	1.33 - 2.0 oz.	F	21		
Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Common Stalk Borer (cont.)	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lorsban* 4E (chlorpyrifos)	2 pt.	F	21	
	Mustang* MAX (zeta-cypermethrin)	2.72 - 4.0 fl. oz.	F	30	
	Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Nufos* 4E (chlorpyrifos)	2 - 3 pt.	F	21	
	PermaStar* AG (permethrin)	4 - 8 oz.	PRE, F	30	
	Permethrin* (permethrin)	4 - 8 oz. 3.2 EC or 3.2 AG	PRE, F	30	
	Perm-UP* (permethrin)	4 - 8 fl. oz. 3.2 EC 6.4 - 12.8 oz. 25DF	PRE, F PRE, F	30 30	
	Pilot* 4E (chlorpyrifos)	2 pt.	F	35	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Prolex* (gamma-cyhalothrin)	1.02 - 1.54 fl. oz.	F	21	
	Pounce* 25 WP (permethrin)	6.4 - 9.6 oz.	PRE, F	30	
	Respect* EC (zeta-cypermethrin)	2.72 - 4 oz.	F	30	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Sniper* (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	9.25 - 11.75 fl. oz.	F	30	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Tundra* EC (bifenthrin)	2.56 fl. oz. 2.1 - 6.4 fl. oz.	PRE F	30 30	
	Warhawk* (chlorpyrifos)	2 pt.	F	21	
	Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Warrior* II (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
Whirlwind* (chlorpyrifos)	2 pt.	F	35		
Yuma* 4E (chlorpyrifos)	2 pt.	F	21		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Corn Leaf Aphid</b>	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	Heavily infested corn may show signs of stress and the aphids secrete honeydew that can interfere with pollination if a high proportion of emerging tassels are affected. If the aphid colonies appear to be a primary cause of plant stress or significant colonies of aphids are building in 50 percent or more of the plants, rescue treatment should be applied during the late-whorl or early-tassel stage.
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	
	Bifenthrin* 2 EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	F	21	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	13 - 26 fl. oz.	F	21	
	Consero* (spinosad & gamma-cyhalothrin)	3 fl. oz. (suppression)	F	28	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz. (suppression)	F	21	
	Dimethoate (dimethoate)	½ - 1 pt. 4EC or Dimate 4EC	F	14	
	Discipline* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Fanfare* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	F	35	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. (suppression only)	F	21	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	F	35	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	F	30	
	Kaiso 24WG* (lambda-cyhalothrin)	1.33 - 2.0 oz. (suppression only)	F	21	
	Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. (suppression only)	F	21	
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. (suppression only)	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. (suppression only)	F	21	
	Lannate* (methomyl)	¾ - 1½ pt. LV, ¼ - ½ lb. SP	F	21	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
	Malathion (malathion)	1 pt. 8 or 8E or 1½ pt 5EC	F	5	
	Mustang* MAX (zeta-cypermethrin)	2.72 - 4.0 fl. oz.	F	30	
Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz. (suppression only)	F	21		
Nufos* 4E (chlorpyrifos)	1 - 2 pt.	F	21		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Corn Leaf Aphid (cont.)</b>	Penncap-M* (methyl parathion)	2 - 3 pt.	F	12	
	Pilot* 4E (chlorpyrifos)	1 - 2 pt.	F	35	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz. (suppression only)	F	21	
	Prolex* (gamma-cyhalothrin)	1.02 - 1.54 fl. oz. (suppression only)	F	21	
	Respect* EC (zeta-cypermethrin)	2.72 - 4 oz.	F	30	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. (suppression only)	F	21	
	Sniper* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	9.25 – 11.75 fl. oz.	F	30	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. (suppression only)	F	21	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	21	
	Warhawk* (chlorpyrifos)	1 - 2 pt	F	21	
	Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Warrior* II (lambda-cyhalothrin)	1.28 - 1.92 fl. oz. (suppression only)	F	21	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	F	35	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
<b>Corn Rootworm (Adult Control)</b>	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	Rescue treatment is warranted if 5 or more beetles are found per silk mass when 75 percent of the plants have silked and silk clipping to ¼ inch or less is observed. If silks are wilting and turning brown, pollination is complete and additional silk clipping by the beetles will not affect yield.
	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	F	30	
	Arctic* 3.2 EC (permethrin)	4 - 8 fl. oz.	F	30	
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	F	21	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Bifenthrin* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Carbaryl 4L (carbaryl)	1 - 2 qt.	F	48	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	F	21	
	Cobalt* (chlorpyrifos & gamma- cyhalothrin)	13 - 26 fl. oz.	F	21	

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>1</sup>	Pre-Harvest Interval (days)	When to Treat
<b>Corn Rootworm (Adult Control) (cont.)</b>	Consero* (spinosad & gamma-cyhalothrin)	3 fl. oz.	F	28	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	F	21	
	Dimethoate (dimethoate)	$\frac{2}{3}$ - 1 pt. 4EC or Dimate 4EC 1 - 1½ pt. 2.67	F F	14 14	
	Discipline* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Fanfare* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	F	35	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	F	35	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	F	30	
	Kaiso* 24WG (lambda-cyhalothrin)	1.33 - 2.0 oz.	F	21	
	Lambda-Cy* EC (lambda- cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lannate* (methomyl)	$\frac{3}{4}$ - 1½ pt. LV, $\frac{1}{4}$ - ½ lb. SP	F	21	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	F	5	
	Malathion (malathion)	1 pt. 8 or 8E or 1½ pt. 5EC	F	3	
	Mustang* MAX (zeta-cypermethrin)	2.72 - 4.0 fl. oz.	F	21	
	Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Nufos* 4E (chlorpyrifos)	1 - 2 pt.	F	12	
	Penncap-M* (methyl parathion)	1 - 2 pt.	F	30	
	PermaStar* AG (permethrin)	4 - 8 oz.	F	30	
	Permethrin* (permethrin)	4 - 8 oz. 3.2 AG or 3.2 EC	F F	30 30	
	Perm-UP* (permethrin)	4 - 8 fl. oz. 3.2 EC 6.4 - 12.8 oz. 25DF	F	35	
	Pilot* 4E (chlorpyrifos)	1 - 2 pt.	F	30	
	Pounce* (permethrin)	6.4 - 12.8 fl. oz. 25 WP	F	21	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Prolex* (gamma-cyhalothrin)	1.02 - 1.54 fl. oz.	F	30	
	Respect* EC (zeta-cypermethrin)	2.72 - 4 oz.	F	48	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Corn Rootworm (Adult Control)</b> (cont.)	Sevin (carbaryl)	1 - 2 qt. 4F or XLR Plus 1¼ - 2½ lb. 80S	F F	48 48	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Sniper* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	9.25 – 11.75 fl. oz.	F	30	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Tundra* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	F	21	
	Warrior* (lambda-cyhalothrin) Warrior* II (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. 1.28 - 1.92 fl. oz.	F F	21 21	
	hirwind* (chlorpyrifos)	1 - 2 pt.	F	35	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
<b>Corn Rootworm (Larval Control)</b>	<b>Seed Treatments</b>				Where a significant potential for rootworm injury exists in continuous corn or first year corn following soybean, a preventive treatment will reduce injury.
	Acceleron IC-609 (clothianidin)	1.25 mg a.i./kernel (commercial seed treatment)	AP	na	
	Avicta Complete Corn (thiamethoxam & nematicide & fungicides)	1.25 mg. a.i./kernel of thiamthoxom (commercial seed treatment)	AP	na	
	Cruiser 5FS (thiamethoxam)	1.25 mg a.i./kernel (commercial seed treatment)	AP	na	
	Poncho 600 (clothianidin)	1.25 mg a.i./kernel (commercial seed treatment)	AP	na	
<b>Granules and Liquids</b>					
<b>Corn Rootworm (Larval Control)</b>	Aztec* (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft. 2.1G 3 oz./1000 row ft. 4.67G	AP AP - SB	na na	
	Bifenthrin* 2EC (bifenthrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Bifenture* EC (bifenthrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Brigade* 2EC (bifenthrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Capture* LFR (bifenthrin)	0.39 - 0.49 fl. oz./1000 row ft	AP	30	
	Counter* 15G (terbufos)	6 - 8 oz./1000 row ft.	AP	30	
	Defcon* 2.1G (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft.	AP	na	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Corn Rootworm (Larval Control) (cont.)</b>	Discipline* 2EC (bifenthrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Empower* 2 (bifenthrin)	6.4 - 8 oz./1000 row ft.	AP	30	
	Fanfare* 2EC (bifenthrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Force* (tefluthrin)	4 - 5 oz./1000 row ft. (3G) 0.46 - 0.57 fl. oz./1000 row ft. (CS)	AP AP	na na	
	Fortress* (chlorethoxyfos)	7.4 oz./1000 row ft. 2.5G 3.7 oz./1000 row ft. 5G	AP AP – SB	na na	
	Govern* 4E (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	35	
	Grizzly Z* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Hatchet* (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	35	
	Kaiso* 24WG (lambda-cyhalothrin)	0.33 oz./1000 row ft.	AP	21	
	Lambda-Cy* EC (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Lambda-T* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Lorsban 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	21	
	Mocap* 15G (ethoprop)	8 oz./1000 row ft.	AP	30	
	Phorate 20G* (phorate)	6 oz./1000 row ft.	AP	30	
	Pilot 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	Prolex* (gamma-cyhalothrin)	0.26 fl. oz./1000 row ft.	AP	21	
	Regent* 4 SC (fipronil)	0.24 fl. oz./1000 row ft.	AP	90	
	Saurus (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	SmartChoice 5G (chlorethoxyfos + bifenthrin)	3.0 – 5.0 oz/1000 row ft.	AP-SB	30	
	Sniper* (bifenthrin)	0.30 fl. oz./1000 row ft.	AP	30	
Tundra* EC (bifenthrin)	0.30 fl.oz./1000 row ft.	AP	30		
Warhawk* (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	21		
Whirlwind* (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	35		
<b>Cutworm</b>	Acceleron IC-609 (clothianidin)	0.25 – 0.50 mg a.i./kernal	AP	na	Rescue treatment is justified when (1) 3 percent or more of the plants have been cut or tunneled, (2) corn plants are in the 2- to 6-leaf stage, and (3) larvae
	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	PRE, F	30	
	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	PRE, F	30	
	Arctic* 3.2EC (permethrin)	4 - 8 fl. oz. 0.30 fl. oz./1000 row ft.	PRE, F AP	30 30	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Cutworm (cont.)	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	PRE, F	30	are 1 inch or less in length.  Preventive control of cutworms can be achieved by at-planting (AP) or pre-emergent (PRE) use of some of the materials listed in this section.
	Avicta Complete Corn (thiamethoxam & nematicide & fungicides)	0.50 mg. a.i./kernels (commercial seed treatment)	AP	na	
	Aztec* (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft. 2.1G 3 oz./1000 row ft. 4.67G	AP AP-SB	na na	
	Battalion* 0.2 EC (deltamethrin)	7.7 - 11.5 fl. oz.	F	21	
	Baythroid* XL (β-cyfluthrin)	0.8 - 1.6 fl. oz.	F	21	
	Belt SC (flubendiamide)	2 - 3 fl. oz.	F	28	
	Bifenthrin* 2 EC (bifenthrin)	0.15 - 0.30 fl.oz./1000 row ft. 2.56 fl. oz. 2.1 - 6.4 fl. oz.	AP PRE F	30 30 30	
	Bifenture* EC (bifenthrin)	0.15 - 0.30 fl.oz./1000 row ft. 2.56 fl. oz. 2.1 - 6.4 fl. oz.	AP PRE F	30 30 30	
	Brigade* 2EC (bifenthrin)	0.15 - 0.3 fl. oz./1000 row ft. 2.56 fl. oz. 2.1-6.4 fl. oz.	AP PRE F	30 30 30	
	Capture* LFR (bifenthrin)	0.2 - 0.39 fl.oz./1000 row ft. 3.4 fl. oz.	AP PRE	30 30	
	Carbaryl 4L (carbaryl)	2 qt	F	48	
	Chlorpyrifos* 4E AG (chlorpyrifos)	2 - 3 pt. 1 - 2 pt.	F PRE	21 21	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	1.89 fl. oz./1000 row ft. 13 - 38 fl. oz. 13 - 26 fl. oz.	AP PRE F	21 21 21	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	F	28	
	Cruiser 5FS (thiamethoxam)	0.25 – 0.50 mg a.i./kernel (commercial seed treatment)	AP	na	
	Defcon* 2.1G (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft.	AP	na	
	Delta Gold* (deltamethrin)	0.8 - 1.5 fl. oz.	F	21	
	Discipline* 2EC (bifenthrin)	0.15-0.30 fl.oz./1000 row ft. 2.56 fl. oz. 2.1 - 6.4 fl. oz.	AP PRE F	30 30 30	
	Empower* 2 (bifenthrin)	6.4 – 8 oz./1000 row ft.	AP	30	
	Fanfare* 2EC (bifenthrin)	0.15 -0.3 fl. oz./1000 row ft. 2.56 fl. oz. 2.1 - 6.4 fl. oz.	AP PRE F	30 30 30	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Cutworm (cont.)	Force* 3G (tefluthrin)	4 - 5 oz./1000 row ft. (3G) 0.46-0.57 fl oz/1000 row ft.(CS)	AP AP	na na	
	Fortress* (chlorothoxyfos)	7.4 oz./1000 row ft. 2.5G 3.7 oz./1000 row ft. 5G	AP AP – SB	na na	
	Govern* 4E (chlorpyrifos)	2.4 fl. oz./1000 row ft. 1 - 2 pt	AP PRE, F	35 35	
	Grizzly Z* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft. 1.92 - 3.20 fl. oz.	AP F	21 21	
	Hatchet* (chlorpyrifos)	2.4 fl. oz./1000 row ft. 1 - 2 pt.	AP PRE, F	35 35	
	Hero* (zeta-cypermethrin + bifenthrin)	2.6 - 6.1 oz.	F	30	
	Kaiso* 24WG (lambda-cyhalothrin)	0.33 oz./1000 row ft. 1.0 - 1.67 oz.	AP F	21 21	
	Lambda-Cy* EC (lambda-cyhalothrin)	0.66 fl. oz/1000 row ft. 1.92 - 3.20 fl. oz.	AP F	21 21	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft. 1.92 - 3.20 fl. oz.	AP F	21 21	
	Lorsban 15G (chlorpyrifos) Lorsban* 4E (chlorpyrifos)	8 oz./1000 row ft. 1 - 2 pt.	AP PRE, F	21 21	
	Mustang* MAX (zeta-cypermethrin)	0.16 fl. oz./1000 row ft. 1.28 - 2.8 fl. oz.	AP PRE, F	30 30	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	F	21	
	Mocap 15G* (ethroprop)	8 oz./1000 row ft.	AP	na	
	Nufos* 4E (chlorpyrifos)	1 - 2 pt.	PRE, F	21	
	Penncap-M* (methyl parathion)	4 pt.	PRE, F	12	
	PermaStar* AG (permethrin)	4 - 8 oz. 0.30 oz./1000 row ft.	PRE, F AP	30 30	
	Permethrin* (permethrin)	4 - 8 oz. 3.2 AG or 3.2 EC	PRE, F	30	
	Perm-UP* (permethrin)	4 - 8 fl. oz. 3.2 EC 6.4 - 12.8 oz. 25DF	PRE, F PRE, F	30 30	
	Pilot 15G (chlorpyrifos) Pilot* 4E (chlorpyrifos)	8 oz./1000 row ft. 1-2 pt.	AP PRE, F	35 35	
	Poncho 600 (clothianidin)	0.25 – 0.50 mg a.i./kernel (commercial seed treatment)	AP	na	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Cutworm</b> (cont.)	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.5 mg. a.i./kernal (commercial seed treatment)	AP	na	
	Pounce* (permethrin)	6.4 - 12.8 fl. oz. 25 WP	PRE, F	30	
	Proaxis* (gamma-cyhalothrin)	0.16 fl. oz./1000 row ft. 1.92 - 3.20 fl. oz.	AP PRE, F	21 21	
	Prolex* (gamma-cyhalothrin)	0.26 fl. oz./1000 row ft. 0.77-1.28 fl. oz.	AP F	21 21	
	Respect* EC (zeta-cypermethrin)	0.16 fl. oz./1000 row ft. 1.28 - 2.8 oz.	AP F	30 30	
	Saurus (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	Sevin (carbaryl)	2 qt. 4F or XLR PLUS 2½ lbs. 80S	F F	48 48	
	Silencer* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft. 1.92 - 3.20 fl. oz.	AP F	21 21	
	SmartChoice 5G (chloroethoxyfos + bitenthrin)	3.0 – 5.0 oz/1000 row ft.	AP-SB	30	
	Sniper* (bifenthrin)	0.15-0.3 fl. oz./1000 row ft. 2.56 fl. oz. 2.1 - 6.4 fl. oz.	AP PRE F	30 30 30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	0.68 fl. oz./1000row ft 3.75 – 11.75 fl. oz.	AP F	30 30	
	Taiga* Z (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft 2.56 - 3.20 fl. oz. 1.92 - 3.20 fl. oz.	AP PRE F	21 21 21	
	Tombstone Helios* (cyfluthrin)	0.8 - 1.6 fl. oz.	F	21	
	Tundra* (bifenthrin)	0.15-0.3 fl. oz./1000 row ft. 2.56 fl. oz. 2.1 - 6.4 fl. oz.	AP PRE F	30 30 30	
	Warhawk* (chlorpyrifos)	2.4 fl. oz./1000 row ft. 1 - 2 pt.	AP F	21 21	
	Warrior* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft. 2.56 - 3.20 fl. oz. 1.92 - 3.20 fl. oz.	AP PRE F	21 21 21	
	Warrior* II (lambda-cyhalothrin)	0.33 fl. oz./1000 row ft. 1.28 – 1.60 fl. oz. 0.96 – 1.60 fl. oz.	AP PRE F	21 21 21	
	Whirlwind* (chlorpyrifos)	2.4 fl.oz./1000 row ft. 1 - 2 pt.	AP PRE, F	35 35	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	PRE, F	21	

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>a</sup>	Pre-Harvest Interval (days)	When to Treat
European Corn Borer	Adjourn* (esfenvalerate)	7.8 - 9.6 fl. oz.	F	21	Rescue treatment for <u>First-Generation</u> :  first-generation control is warranted when 50 percent or more of the plants exhibit feeding damage in the whorl and early instar larvae can be readily found either on the foliage or in the whorl
	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	F	30	
	Arctic* 3.2EC (permethrin)	4 - 8 fl. oz.	F	30	
	Asana* XL (esfenvalerate)	7.8 - 9.6 fl. oz.	F	21	
	<i>Bacillus thuringiensis</i> (several Bt products)	Check label	F		
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	F	21	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Belt SC (flubendiamide)	2 - 3 fl oz.	F	28	
	Bifenthrin* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Carbaryl 4L (carbaryl)	1½ - 2 qt.	F	48	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	F	21	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	F	21	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	F	28	
	Coragen (chlorantraniliprole)	3.5 – 5.0 fl. oz.	F	14	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	F	21	
	Discipline* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Empower* 2 (bifenthrin)	3.5 - 8.7 lbs. (1 <sup>st</sup> gen.)	F	30	
	Entrust <sup>a</sup> (spinosad)	0.5 - 2 oz.	F	30	
	Fanfare* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	F	35	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	F	35	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	F	30	
	Intrepid 2F (methoxyfenozide)	4 - 8 fl. oz.	F	21	
Kaiso* 24WG (lambda-cyhalothrin)	1.33 - 2.0 oz.	F	21		
Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21		
					<u>Second-Generation</u> : Treatment of second generation corn borer is recommended if egg masses average one or more per plant or if 50 percent or more of the plants have larvae or egg masses.
					<sup>a</sup> Listed by the Organic Materials Review Institute (OMRI) for use in organic production.

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
European Corn Borer (cont.)	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lorsban 15G(chlorpyrifos)	5.0 - 6.5 lbs. 15G (1 <sup>st</sup> gen.)	F	21	
	Lorsban 15G (chlorpyrifos)	6.5 lbs. (2 <sup>nd</sup> gen.)	F	21	
	Lorsban* 4E (chlorpyrifos)	1½ - 2 pt.	F	21	
	Mustang* MAX (zeta-cypermethrin)	2.72 - 4.0 fl. oz.	F	30	
	Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Nufos* 4E (chlorpyrifos)	1½ - 2 pt.	F	21	
	Penncap-M* (methyl parathion)	2 - 4 pt.	F	12	
	PermaStar* AG (permethrin)	4 - 8 oz. fl. oz.	F	30	
	Permethrin* (permethrin)	4 - 8 oz. 3.2 AG or 3.2EC	F	30	
	Perm-UP* (permethrin)	4 - 8 oz 3.2 EC	F	30	
		6.4 - 12.8 oz. 25DF	F	30	
	Phorate 20G* (phorate)	5 lb. (1 <sup>st</sup> gen.)	F	30	
	Pilot 15G (chlorpyrifos)	5 - 6.5 lb. (1 <sup>st</sup> gen.)	F	35	
	Pilot 15G (chlorpyrifos)	6.5 lb. (2 <sup>nd</sup> gen)	F	35	
	Pilot* 4E (chlorpyrifos)	1½ - 2 pt.	F	35	
	Pounce* (permethrin)	6.4 - 12.8 oz. 25 WP	F	30	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Prolex* (gamma-cyhalothrin)	1.02 - 1.54 fl. oz.	F	21	
	Radiant SC (spinetoram)	3 - 6 fl. oz.	F	28	
	Respect* EC (zeta-cypermethrin)	2.72 - 4 oz.	F	30	
	Saurus (chlorpyrifos)	5.0 - 6.5 lb. (1 <sup>st</sup> gen.)	F	35	
		6.5 lb. (2 <sup>nd</sup> gen.)	F	35	
	Sevin (carbaryl)	½ - 2 qt. 4F or XLR Plus	F	48	
		1⅞ - 2½ lb. 80S	F	48	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Sniper* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion (zeta-cyermethrin & chlorpyrifos)	9.25 - 11.75 fl. oz.	F	30	
	Taiga*Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	F	21		
Tracer (spinosad)	1 - 3 fl. oz.	F	28		
Tundra* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>European Corn Borer</b> (cont.)	Warhawk* (chlorpyrifos)	1 - 2 pt.	F	21	
	Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Warrior* II (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	F	35	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
<b>Flea Beetles</b>	Acceleron IC-609 (clothianidin)	0.25 – 0.50 mg a.i./kernel (commercial seed treatment)	AP	na	Several flea beetles may attack corn of which the corn flea beetle is the most important. The corn flea beetle is a vector of Stewart's wilt disease. Most corn varieties are now resistant to or expect significant beetles on corn after mild winters.  Rescue treatment is warranted if plants begin to wilt and a potential loss in stand appears likely.
	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	
	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	F	30	
	Arctic* 3.2EC (permethrin)	4 - 8 fl. oz.	F	30	
	Asana* XL (esfenvalerate)	5.9 - 9.6 fl. oz.	F	21	
	Avicta Complete Corn (thiamethoxam & nematicide & fungicides)	0.50 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Battalion* 0.2 EC (deltamethrin)	7.7 - 11.5 fl. oz	F	21	
	Baythroid* XL (β-cyfluthrin)	0.8 - 1.6 fl. oz.	F	21	
	Bifenthrin* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Carbaryl 4L (carbaryl)	1 - 2 qt	F	48	
	Chlorpyrifos* 4E AG (chlorpyrifos)	2 - 3 pt.	F	21	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	13 - 26 fl. oz.	F	21	
	Concur (imidacloprid)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Consero* (spinosad & gamma-cyhalothrin)	3 fl. oz.	F	28	
	Cruiser 5FS (thiamethoxam)	0.25 - 1.25 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Delta Gold* (deltamethrin)	1.0 - 1.5 fl. oz.	F	21	
	Discipline* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Fanfare* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
Govern* 4E (chlorpyrifos)	1 - 2 pt.	F	35		
Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Flea Beetles (cont'd)	Hatchet* (chlorpyrifos)	1 - 2 pt.	F	35	
	Hero* (zeta-cypermethrin & bifenthrin)	2.6 - 6.1 oz.	F	30	
	Kaiso 24WG* (lambda-cyhalothrin)	1.33 - 2.0 oz.	F	21	
	Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lannate* (methomyl)	¾ - 1½ pt. LV or ¼ - ½ lb. SP	F	21	
	Latitude (imidacloprid)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
	Mustang* MAX (zeta-cypermethrin)	2.72 - 4.0 fl. oz.	F	30	
	Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Nufos* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
	PennCap-M* (methyl parathion)	2 - 3 pt	F	12	
	PermaStar* AG (permethrin)	4 - 8 oz.	F	30	
	Permethrin* (permethrin)	4 - 8 oz. 3.2 AG or 3.2EC	F	30	
	Perm-UP* (permethrin)	4 - 8 fl. ozs. 3.2 EC 6.4 - 12.8 ozs. 25 DF	F F	30 30	
	Pilot* 4E (chlorpyrifos)	2 pt.	F	35	
	Poncho 600 (clothianidin)	0.25 - 1.25 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Poncho/Votivo (clothianidin & Bacillus firmus [nematicide])	0.50 mg. a.i./ernal (commercial seed treatment)	AP	na	
	Pounce* (permethrin)	6.4 - 12.8 fl. oz. 25 WP 4 - 8 fl. oz. 3.2 EC	F F	30 30	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Respect* EC (zeta-cypermethrin)	2.72 - 4 oz.	F	30	
	Senator 600 (imidacloprid)	0.60 - 1.34 mg ai/seed (commercial or end use seed treatment)	AP	na	
	Sevin (carbaryl)	1 - 2 qt. 4F or XLR Plus 1¼ - 2½ lbs. 80S	F F	48 48	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Flea Beetles (cont'd)	Sniper* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	9.25 – 11.75 fl. oz.	F	30	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Tombstone Helios* (cyfluthrin)	0.8 - 1.6 fl. oz.	F	21	
	Tundra* (bifenthrin)	2.56 - 3.84 fl. oz.	F	30	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	F	21	
	Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Warrior* II (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	F	21	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	F	35	
Yuma* 4E (chlorpyrifos)	1 - 2 pt.	F	21		
Grubs	Acceleron IC-609 (clothianidin)	0.25 – 0.50 mg a.i./kernal (commercial seed treatment)	AP	na	If stand emergence is reduced or irregular, a number of plants should be dug to detect pre-sence of C-shaped grubs that may range in size from ½ to 1 inch when extended.  No effective rescue treatment is available if a grub problem is identified. However, treatment is recommended if replanting is warranted.
	Avicta Complete Corn (thiamethoxam & nematicide & fungicides)	0.50 mg. a.i./kernal (commercial seed treatment)	AP	na	
	Aztec* (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft. 2.1G 3 oz./1000 row ft. 4.67G	AP AP – SB	na na	
	Baythroid* XL (β-cyfluthrin)	0.14 - 0.16 fl.oz./1000 row ft.	AP	21	
	Bifenthrin* 2EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Bifenture* EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Brigade* 2EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Capture* LFR (bifenthrin)	0.20 - 0.39 fl.oz./1000 row ft.	AP	30	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	2.87 fl. oz./1000 row ft.	AP	21	
	Concur (imidacloprid)	1.5 oz./42 lb. of seed	AP - HST	na	
	Counter* 15G (terbufos)	6 - 8 oz./1000 row ft.	AP	30	
	Cruiser 5FS (thiamathoxam)	0.25 - 1.25 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Defcon* 2.1G (tebupirimphos & cyfluthrin)	6.7 oz.1000 row ft.	AP	na	
	Discipline* 2EC (bifenthrin)	0.15 - 0.30 fl.oz./1000 row ft.	AP	30	
	Empower* 2 (bifenthrin)	6.4 - 8.0 oz./1000 row ft.	AP	30	
Fanfare* 2EC (bifenthrin)	0.15 - 0.3 fl. oz./1000 row ft.	AP	30		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Grubs (cont'd)	Force* (tefluthrin)	4 - 5 oz./1000 row ft. (3G) 0.46 - 0.57 fl. oz./1000 row ft. (CS)	AP AP	na na	
	Fortress* (chlorothoxyfos)	7.4 oz./1000 row ft. 2.5G 3.7 oz./1000 row ft. 5G	AP AP - SB	na na	
	Govern* 4E (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	35	
	Grizzly Z* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	na	
	Hatchet* (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	35	
	Kaiso* 24WG (lambda-cyhalothrin)	0.33 oz./1000 row ft.	AP	21	
	Lambda-Cy* EC (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Lambda-T* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Latitude (imidacloprid)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Lorsban 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	21	
	Mocap 15G* (ethroprop)	8 oz./1000 row ft. (suppression)	AP	na	
	Nufos 15G (chlorpyrifos)	8 - 16 oz./1000 row ft.	AP	21	
	Phorate 20G* (phorate)	6 oz./1000 row ft. (reduction)	AP	na	
	Pilot 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	Poncho 600 (clothianidin)	0.25 - 1.25 mg. a.i./kernel (commercial seed treatment)	AP - CST	na	
	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.5 mg. a.i./kernel (commercial applied treatment)	AP	na	
	Proaxis* (gamma-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Prolex* (gamma-cyhalothrin)	0.26 fl. oz./1000 row ft.	AP	21	
	Regent* 4SC (fipronil)	0.24 fl. oz./1000 row ft.	AP	90	
	Saurus (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	Senator 600 FS (imidacloprid)	0.60 - 1.34 mg. a.i./kernel (commercial or end seed treatment)	AP - CST	na	
	Silencer* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	SmartChoice 5G (chlorothoxyfos + bifenthrin)	3.0 - 5.0 oz./100 row ft	AP-SB	30	
Sniper* (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30		
Taiga* Z (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Grubs</b> (cont'd)	Tombstone Helios* (cyfluthrin)	0.14 - 0.16 fl. oz./1000 row ft.	AP	21	
	Tundra* (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Warhawk* (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	21	
	Warrior* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Warrior* II (lambda-cyhalothrin)	0.33 fl. oz./1000 row ft.	AP	21	
	Whirlwind* (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	35	
	Yuma* 4E (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	21	
<b>Japanese Beetle (Adult)</b>	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	F	21	Damage from Japanese beetle adults is normally confined to possible silk clipping around the edges of the field. Treatment may be warranted if 2 or more adults are found per silk mass when 75% of the plants have silked and silk clipping - ¼ inch or less is observed.
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	F	21	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Bifenthrin* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Carbaryl 4L (carbaryl)	1 - 2 qt.	F	48	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	38 - 42 fl. oz.	F	21	
	Consero* (spinosad & gamma-cyhalothrin)	3 fl. oz.	F	28	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	F	21	
	Discipline* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Fanfare* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz	F	30	
	Kaiso* 24WG (lambda-cyhalothrin)	1.33 - 2.0 oz.	F	21	
	Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Mustang* MAX (zeta-cypermethrin)	2.72 - 4.0 fl. oz.	F	30	
	Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl.oz.	F	21	
Penncap-M* (methyl parathion)	2 - 4 pt.	F	12		
Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21		

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Japanese Beetle (Adult)</b> (cont'd)	Prolex* (gamma-cyhalothrin)	1.02 - 1.54 fl. oz.	F	21	
	Respect* EC (zeta-cypermethrin)	2.72 - 4 oz.	F	30	
	Sevin (carbaryl)	1 - 2 qt. 4F or XLR Plus 1¼ - 2½ lbs. 80S	F F	48 48	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Sniper* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion* (zeta-cypermethrin & chlopyrifos)	9.25 - 11.75 fl. oz.	F	30	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Tundra* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Warrior* (lambda-cyhalothrin) Warrior* II (lambda-cyhalothrin)	2.56 - 3.84 fl. oz. 1.28 - 1.92 fl. oz.	F F	21 21	
<b>Seedcorn Maggot</b>	Arctic* 3.2EC (permethrin)	0.30 fl. oz./1000 row ft.	AP	30	In general, seed-corn maggot problems are most likely to occur in situations where (1) high organic matter or decaying vegetation attracts egg-laying adult flies (i.e., a green cover crop such as rye or alfalfa is plowed or disked under, and (2) cool, damp soil conditions delay seed germination and prolong the period vulnerable to maggot attack.
	Acceleron IC-609 (clothianidin)	0.25 - 0.50 mg a.i./kernal	AP	na	
	Avicta Complete Corn (thiamethoxam & nematicide & fungicides)	0.50 mg. a.i./kernal (commercial seed treatment)	AP	na	
	Aztec*.b (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft. 2.1G 3 oz./1000 row ft. 4.67G	AP AP - SB	na na	
	Baythroid* XL (β-cyfluthrin)	0.12 - 0.16 fl.oz./1000 row ft.	AP	21	
	Bifenthrin*.b 2EC (bifenthrin)	0.15 - 0.30 fl.oz./1000 row ft.	AP	30	
	Bifenture*.b EC (bifenthrin)	0.15 - 0.30 fl.oz./1000 row ft	AP	30	
	Brigade*.b 2EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft	AP	30	
	Capture LFR* (bifenthrin)	0.20 - 0.39 fl.oz./1000 row ft	AP	30	
	Cobalt*.b (chlorpyrifos & gamma-cyhalothrin)	2.87 fl. oz./1000 row ft.	AP	21	
	Concur.b (imidacloprid)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Counter*.b 15G (terbufos)	8 oz./1000 row ft.	AP	30	
	Cruiser 5FS.b (thiamethoxam)	0.25 - 1.25 mg a.i./kernel (commercial seed treatment)	AP	na	
	Defcon*.b 2.1G (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft.	AP	na	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Seedcorn Maggot (cont'd)	Discipline*.b 2EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft	AP	30	
	Empower*.b 2 (bifenthrin)	6.4 - 8.0 oz./1000 ft.	AP	30	
	Fanfare*.b 2EC (bifenthrin)	0.15 - 0.3 fl. oz./1000 row ft.	AP	30	
	Force*.b 3G (tefluthrin)	4 - 5 oz./1000 ft.	AP	na	
	Fortress* (chlorethoxyfos)	7.4 oz./1000 ft. (2.5G) 3.7 oz./1000 ft. (5G)	AP AP - SB	na na	
	Govern*.b 4E (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	na	
	Grizzly Z*.b (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	na	
	Hatchet*.b (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	na	
	Kaiso*.b 24WG (lambda-cyhalothrin)	0.33 oz./1000 row ft.	AP	21	
	Kernel Guard Supreme <sup>b</sup> (permethrin)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Kickstart VP (permethrin)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Lambda-Cy*.b EC (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft	AP	21	
	Lambda-T*.b (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Latitude <sup>b</sup> (imidacloprid)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Lorsban <sup>b</sup> 15G (chlorpyrifos)	8 oz./1000 ft.	AP	21	
	PermaStar* AG (permethrin)	0.30 oz./1000 row ft.	AP	30	
	Perm-UP* 3.2EC (permethrin)	0.30 oz./1000 row ft.	AP	30	
	Pilot <sup>b</sup> 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	Poncho <sup>b</sup> 600 (clothianidin)	0.25 - 1.25 mg a.i./kernel (commercial seed treatment)	AP - CST	na	
	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.50 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Proaxis*.b (gamma-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Prolex*.b (gamma-cyhalothrin)	0.26 fl. oz./1000 row ft.	AP	21	
	Regent*.b 4 SC (fipronil)	0.24 fl. oz./1000 row ft.	AP	na	
	Saurus (chlorpyrifos)	6 oz./1000 row ft.	AP	35	
	Senator 600 FS (imidacloprid)	0.60 mg. a.i./kernel (commercial or end use seed treatment)	AP	na	
	Silencer* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>1</sup>	Pre-Harvest Interval (days)	When to Treat
<b>Seedcorn Maggot</b> (cont'd)	SmartChoice 5G (chlorothoxyfos + binethrin)	3.0 – 5.0 oz./1000 row ft	AP-SB	30	
	Sniper* (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Taiga* Z (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Tombstone Helios* (cyfluthrin)	0.12 - 0.16 fl. oz./1000 row ft.	AP	21	
	Tundra* (bifenthrin)	0.15-0.3 fl. oz./1000 row ft.	AP	21	
	Warhawk* (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	21	
	Warrior*.b (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Warrior*.b II (lambda-cyhalothrin)	0.33 fl. oz./1000 row ft.	AP	21	
	Whirlwind*.b (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	21	
	Yuma*.b 4E (chlorpyrifos)	2.4 fl. oz./1000 row ft.	AP	21	
<b>Slugs</b>	Deadline MPs (4% metaldehyde)	10 lbs.	Brd	na	Treatment may be necessary if the new growth has greater than 40% defoliation or if more than 3% of the plants are being killed.
	Metarex (4% metaldehyde)	7.5 lbs.	Brd	na	
	Prozap Snail and Slug Bait (3.5% metaldehyde)	10 lbs.	Brd	na	
	Sluggo (iron phosphate)	24 - 44 lbs	Brd	na	
<b>Stink Bugs</b>	Battalion 0.2 (deltamethrin)	11.5 – 14.1	F	21	No thresholds are established. If stink bug injury is occurring, especially to seedling corn, and stink bugs are present, an insecticide is warranted.
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl oz.	F	21	
	Belt SC (flubendiamide)	2 - 3 fl oz.	F	28	
	Bifenthrin* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Carbaryl 4L (carbaryl)	2 qt.	F	48	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	F	21	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	F	28	
	Delta Gold* (deltamethrin)	1.5 – 1.9 fl. oz.	F	21	
	Discipline* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>1</sup>	Pre-Harvest Interval (days)	When to Treat
<b>Stink Bugs</b> (cont'd)	Fanfare* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Grizzly Z* (lambda-cyhalothrin)	2.56 – 3.84 fl. oz.	F	21	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 – 10.3 oz.	F	30	
	Kaiso* 24WG (lambda-cyhalothrin)	1.33 – 2.0 oz.	F	21	
	Lambda-Cy* EC (lambda-cyhalothrin)	2.56 – 3.84 fl. oz.	F	21	
	LambdaStar* (lambda-cyhalothrin)	2.56 – 3.84 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	2.56 – 3.84 fl. oz.	F	21	
	Mustang MAX* (zeta-cypermethrin)	2.72 - 4 oz.	F	30	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	F	21	
	Penncap-M* (methyl parathion)	1 -3 pt.	F	12	
	Pounce* 25WP (permethrin)	3.2 - 6.4 fl. oz.	F	30	
	Proaxis* (gamma-cyhalothrin)	2.56 – 3.84 fl. oz.	F	30	
	Radiant SC (spinetoram)	3 - 6 fl. oz.	F	30	
	Respect* EC (zeta-cypermethrin)	2.72 - 4 oz.	F	28	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Sniper* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	9.25 – 11.75 fl.oz.	F	30	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	F	21	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
Tundra* (bifenthrin)	2.1 - 6.4 fl. oz.	F	21		
Warrior* II (lambda-cyhalothrin)	1.28 – 1.92 fl. oz.	F	21		
<b>Western Bean Cutworm</b>	Adjourn* (esfenvalerate)	2.9 - 5.8 fl. oz.	F	21	Inspect the upper 3-4 leaves on 20 consecutive plants at five locations. Scout hybrids in different stages of development separately. A nominal
	Arctic* 3.2EC (permethrin)	2 - 4 fl. oz.	F	na	
	Asana* XL (esfenvalerate)	2.9 - 5.8 fl. oz.	F	21	
	<i>Bacillus thuringiensis</i> (several Bt products)	Check label	F	na	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl oz.	F	21	
	Belt SC (flubendiamide)	2 - 3 fl oz.	F	28	
	Bifenthrin* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>1</sup>	Pre-Harvest Interval (days)	When to Treat
<b>Western Bean Cutworm</b> (cont.)	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	threshold is 8 percent of the plants with eggs or young larvae found on the flag leaf or in the tassel during the silking/blister/early milk-stage corn stages (R1-early R3).
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Carbaryl 4L (carbaryl)	2 qt.	F	48	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	F	21	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	13 - 26 fl. oz.	F	21	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	F	28	
	Coragen (chlorantraniliprole)	3.5 – 5.0 fl. oz.	F	14	
	Delta Gold* (deltamethrin)	1 - 1½ fl. oz.	F	21	
	Discipline* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Entrust <sup>a</sup> (spinosad)	0.5 - 2 oz.	F	28	
	Fanfare* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	F	35	
	Grizzly Z* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	F	21	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	F	35	
	Hero* (zeta-cypermethrin & bifenthrin)	2.6 - 6.1 oz.	F	30	
	Intrepid 2F (methoxyfenozide)	4 - 8 fl. oz.	F	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.0 - 1.67 oz.	F	21	
	Lambda-Cy* EC (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	F	21	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	F	21	
	Lambda-T* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	F	21	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
	Mustang MAX* (zeta-cypermethrin)	1.76 - 4 oz.	F	30	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	F	21	
	Nufos 4E* (chlorpyrifos)	1 - 2 pt.	F	21	
	PennCap-M* (methyl parathion)	2 - 4 pt.	F	12	
	PermaStar* AG (permethrin)	2 - 4 oz.	F	30	
	Permethrin 3.2EC* (permethrin)	2 - 4 oz.	F	30	
	Perm-Up* (permethrin)	2 - 4 fl. oz. 3.2 EC	F	30	
		3.2 - 6.4 oz. 25DF	F	30	

<sup>a</sup> Listed by the Organic Materials Review Institute (OMRI) for use in organic production.

Preventive treatment is warranted when a field has a history of wireworms or wireworms are detected in the field prior to planting.

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
<b>Western Bean Cutworm</b> (cont.)	Pilot 4E* (chlorpyrifos)	1 - 2 pt.	F	35	
	Pounce* 25WP (permethrin)	3.2 - 6.4 fl. oz.	F	30	
	Proaxis* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	F	30	
	Radiant SC (spinetoram)	3 - 6 fl. oz.	F	28	
	Respect* EC (zeta-cypermethrin)	1.74 - 4 oz.	F	30	
	Sevin (carbaryl)	2 qt. 4F or XLR Plus 2½ lbs. 80S	F F	48 48	
	Silencer* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	F	21	
	Sniper* (bifenthrin)	2.1 - 6.4 fl. oz.	F	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl.oz.	F	30	
	Taiga* Z (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	F	21	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	F	21	
	Tracer (spinosad)	2 - 3 fl. oz.	F	30	
	Tundra* (bifenthrin)	2.1 - 6.4 fl. oz.	F	21	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	F	21	
	Warrior* (lambda-cyhalothrin) Warrior* II (lambda-cyhalothrin)	1.92 - 3.20 fl. oz. 0.96 - 1.60 fl. oz.	F F	21	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	F	35	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	F	21	
<b>Wire- worms</b>	Acceleron IC-609 (clothianidin)	0.25 – 0.50 mg a.i./kernal (commercial seed treatment)	AP	na	
	Artic (tebupirimphos & cyfluthrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Avicta Complete Corn (thiamethoxam & nematicide & fungicides)	0.50 mg. a.i./kernal (commercial seed treatment)	AP	na	
	Aztec* (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft. 2.1G 3 oz./1000 row ft. 4.67G	AP AP – SB	na na	
	Baythroid* XL (β-cyfluthrin)	0.12 - 0.16 fl.oz./1000 row ft.	AP	21	
	Bifenthrin* 2EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Bifenture* EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Brigade* 2EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	

Pest	Product Name (Common Name)	Amount per Acre	Application Method'	Pre-Harvest Interval (days)	When to Treat
Wire- worms (cont.)	Capture* LFR (bifenthrin)	0.20 - 0.39 fl.oz./1000 row ft.	AP	30	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	2.87 fl. oz./1000 row ft.	AP	21	
	Concur (imidacloprid)	1.5 oz./42 lb. of seed (commercial seed treatment)	AP	na	
	Counter* 15G (terbufos)	6 - 8 oz./1000 row ft.	AP	30	
	Cruiser 5FS (thiamethoxam)	0.25 - 1.25 mg a.i./kernel (commercial seed treatment)	AP	na	
	Defcon* 2.1G (tebupirimphos & cyfluthrin)	6.7 oz./1000 row ft.	AP	30	
	Discipline* 2EC (bifenthrin)	0.15 - 0.30 fl.oz./1000 row ft.	AP	30	
	Empower* 2 (bifenthrin)	6.4 - 8.0 oz./1000 row ft.	AP	na	
	Fanfare* 2EC (bifenthrin)	0.15 - 0.3 fl. oz/1000 row ft.	AP	na	
	Force* (tefluthrin)	4 - 5 oz./1000 row ft. 3G 0.46-0.57 fl. oz./1000 row ft.CS	AP AP	na	
	Fortress* (chlorethoxyfos)	7.4 oz./1000 row ft. 2.5G 3.7 oz./1000 row ft. 5G	AP AP - SB	na na	
	Grizzly Z* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	na	
	Kaiso* 24WG (lambda-cyhalothrin)	0.33 oz./1000 row ft.	AP	na	
	Kernel Guard Supreme (permethrin)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP	na	
	Lambda-Cy* EC (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	na	
	Lambda-T* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	na	
	Latitude (imidacloprid)	1.5 oz./42 lb. of seed (hopper box seed treatment)	AP - HST	na	
	Lorsban 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	na	
	Mocap* 15G (ethoprop)	8 oz./1000 row ft.	AP	na	
	PermaStar* AG (permethrin)	0.30 fl. oz./1000 row ft.	AP	21	
	Permethrin* 3.2 EC (permethrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Perm-UP* 3.2 EC (permethrin)	0.30 fl. oz./1000 row ft.	AP	30	
	Phorate 20G* (phorate)	6 oz./1000 row ft.	AP	30	
Pilot 15G (chlorpyrifos)	8 oz./1000 row ft.	AP	30		
Poncho 600 (clothianidin)	0.25 - 1.25 mg a.i./kernel (commercial seed treatment)	AP	35		

Pest	Product Name (Common Name)	Amount per Acre	Application Method <sup>1</sup>	Pre-Harvest Interval (days)	When to Treat
Wire- worms (cont.)	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.50 mg. a.i./kernel (commercial seed treatment)	AP	na	
	Proaxis* (gamma-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Regent* 4 SC (fipronil)	0.24 fl. oz./1000 row ft.	AP	90	
	Saurus (chlorpyrifos)	8 oz./1000 row ft.	AP	35	
	Senator 600 FS (imidacloprid)	1.34 mg. a.i./kernel (commercial or end use seed treatment)	AP	na	
	Silencer* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	P	21	
	SmartChoice 5G (chlorethoxyfos + binfenthrin)	3.0 – 5.0 oz/1000 row ft	AP-SB	30	
	Sniper* (bifenthrin)	0.15-0.3 fl. oz./1000 row ft.	AP	30	
	Taiga* Z (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Tombstone Helios* (cyfluthrin)	0.12-0.16 fl. oz./1000 row ft.	AP	21	
	Tundra* EC (bifenthrin)	0.15 - 0.30 fl. oz./1000 row ft.	AP	30	
	Warhawk* (chlorpyrifos)	2.4 fl. ozs./1000 row ft.	AP	21	
	Warrior* (lambda-cyhalothrin)	0.66 fl. oz./1000 row ft.	AP	21	
	Warrior* II (lambda-cyhalothrin)	0.05 fl. oz./1000 row ft.	AP	21	

<sup>1</sup> AP = material applied at planting time either in a band or in-furrow, AP-SB = material applied at planting time either as a band or in-furrow through the SmartBox seed system, F = material applied broadcast foliar, Brd = material broadcast over the soil, PRE = material applied broadcast either pre-plant or pre-emerge

# SMALL GRAINS

Management of insect pests of small grains often emphasizes non-chemical control measures. Hessian fly on wheat is controlled primarily by timing of sowing dates and the use of resistant varieties. Cereal leaf beetle on oats usually is controlled by beneficial parasites introduced from the beetle's native land.

However, populations of some pests, especially armyworms, may occur in numbers warranting rescue treatment with an insecticide. Following is a listing of insecticide products labeled for control of the pests that affect small grains (2011). An asterisk (\*) indicates use is restricted to certified applicators only.

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat	
Aphids	Baythroid * XL ( $\beta$ -cyfluthrin)	1.8 - 2.4 fl. oz.	30	Of the various aphid species that occur on small grains, only the greenbug causes damage that may warrant rescue treatment.	
	CruiserMaxx (thiamethoxam) + Cruiser 5FS (thiamethoxam)	5 fl oz./cwt seed+ 0.48 - 1.00 fl. oz./cwt seed (commercial seed treatment)	AP AP		
	Dimethoate (dimethoate)	$\frac{1}{2}$ - $\frac{3}{4}$ pt. 400, 4EC or Dimate 4E 0.75 - 1.13 pt. 2.67	35 35		Rescue treatment is warranted if an average of 50 greenbugs is found per linear ft of row on small plants in the fall or 100 per linear ft of row in the spring.
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30		
	Kaiso* 24WG (lambda-cyhalothrin)	1.33 - 2.0 oz	30		
	Lambda* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	30		
	Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30		
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30		
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30		
	Lannate* (methomyl)	$\frac{1}{4}$ - $\frac{1}{2}$ lb. SP or $\frac{3}{4}$ - 1 $\frac{1}{2}$ pt. LV	7		
	Malathion (malathion)	1 $\frac{1}{2}$ pt. 5EC or 1 - 1 $\frac{1}{4}$ pt. 8-E 1 $\frac{1}{2}$ - 2 pt. 57 EC	7 7		
	Mustang MAX* (zeta-cypermethrin)	3.20 - 4.0 oz.	14		
	Mystic Z* (lambda-cyhalothrin)	1.92 fl. oz.	30		
	PennCap-M* (methyl parathion)	2 - 3 pt.	15		
	Proaxis* (gamma-cyhalothrin)	3.84 fl. oz.	30		
	Prolex* (gamma-cyhalothrin)	1.02 - 1.54 fl. oz.	30		
	Respect* EC (zeta-cypermethrin)	3.2 - 4 oz.	14		
	Senator 600 FS (imidacloprid)	0.4 - 2.8 fl. oz./cwt seed (commercial seed treatment)	AP		
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30		
	Stallion (zeta-cypermethrin & chlorpyrifos)	9.25 - 11.75 fl. oz.	14		
Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30			

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Aphids</b> (cont.)	Tombstone Helios* (cyfluthrin)	1.8 - 2.4 fl. oz.	30	
	Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Warrior II* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	30	
<b>Armyworm on Wheat</b>	Baythroid * XL (β-cyfluthrin)	1.8 - 2.4 fl. oz.	30	Rescue treatment is recommended if 6 or more armyworm larvae are found per foot of row or if head cutting occurs. Where larvae are abundant enough - justify action, treatment should be applied when larvae are in their early stage of development.  <sup>a</sup> Listed by the Organic Materials Review Institute (OMRI) for use in organic production.
	Carbaryl 4L (carbaryl)	1 - 1½ qt.	21	
	Entrust <sup>a</sup> (spinosad)	1 - 2 oz.	21	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Kaiso* 24WG (lambda-cyhalothrin)	1.33 - 2.0 fl. oz.	30	
	Lambda* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	30	
	Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	LambdaStar* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Lambda-T* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Lannate* (methomyl)	¼ - ½ lb. SP or ¾ - 1½ pt. LV	7	
	Malathion (malathion)	2 pt. 57 EC or 1 - 1¼ pt. 8	7	
	Mustang MAX* (zeta-cypermethrin)	1.76 - 4.0 oz.	14	
	Mystic Z* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	30	
	PennCap-M* (methyl parathion)	2 - 3 pt.	15	
	Proaxis* (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Prolex* (gamma-cyhalothrin)	1.02 - 1.54 fl. oz.	30	
	Radiant SC (spinetoram)	3 - 6 fl. oz.	21	
	Respect* EC (zeta-cypermethrin)	3.2 - 4 oz.	14	
	Sevin (carbaryl)	1 - 1½ qt. 4F or XLR Plus	21	
	Silencer* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Stallion (zeta-cypermethrin & chlorpyrifos)	9.25 – 11.75 fl. oz.	14	
	Taiga* Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Tracer (spinosad)	1 - 3 fl. oz.	21	
Tombstone Helios* (cyfluthrin)	1.8 - 2.4 fl. oz.	30		
Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30		
Warrior II* (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	30		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
Cereal Leaf Beetle	Baythroid* <sup>b</sup> XL (β-cyfluthrin)	1.0 - 1.8 fl. oz.	30	Rescue treatment is warranted when one or more larvae are found per stem.  <sup>a</sup> Listed by the Organic Materials Review Institute (OMRI) for use in organic production.  <sup>b</sup> Labeled for use on wheat but not oats.
	Carbaryl <sup>b</sup> 4L (carbaryl)	1 qt.	21	
	Entrust <sup>a</sup> (spinosad)	0.5 - 2 oz.	21	
	Grizzly Z* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Kaiso* <sup>b</sup> 24WG (lambda-cyhalothrin)	1.33 - 2.0 fl. oz.	30	
	Lambda* <sup>b</sup> (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	30	
	Lambda-Cy* EC (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	LambdaStar* <sup>b</sup> (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Lambda-T* <sup>b</sup> (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Lannate* (methomyl)	¼ - ½ lb. SP or ¾ - 1½ pt. LV	7	
	Malathion (malathion)	1 - 1½ pt. 5EC	7	
	Mustang MAX* <sup>b</sup> (zeta-cypermethrin)	1.76 - 4.0 oz.	14	
	Mystic* <sup>b</sup> (lambda-cyhalothrin)	1.28 - 1.92 fl. oz.	30	
	Proaxis* <sup>b</sup> (gamma-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Prolex* <sup>b</sup> (gamma-cyhalothrin)	1.02 - 1.54 fl. oz.	30	
	Radiant SC (spinetoram)	2 - 6 fl. oz.	21	
	Respect* <sup>b</sup> EC (zeta-cypermethrin)	1.76 - 4 oz.	14	
	Sevin <sup>b</sup> (carbaryl)	1qt. 4F or XLR PLUS 1¼ lbs. 80S	21 21	
	Silencer* <sup>b</sup> (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Stallion (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl. oz.	14	
	Taiga* <sup>b</sup> Z (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30	
	Tracer (spinosad)	1 - 3 fl. oz.	30	
	Tombstone Helios* <sup>b</sup> (cyfluthrin)	1.0 - 1.8 fl. oz.	21	
Warrior* (lambda-cyhalothrin)	2.56 - 3.84 fl. oz.	30		
Warrior II* (lambda-cyhalothrin)	1.28-1.92 fl. oz.	30		

# HESSIAN FLY

The problem of Hessian fly on wheat has been minimized by the development of resistant varieties and widespread adherence to planting wheat on or after fly-safe sowing date. The accompanying map depicts Ohio fly-free dates by county.

Wheat sown on or after the date indicated for each county will escape most egg deposition by the fall brood of Hessian fly. Egg-laying is completed within the 2- to 3-day female lifespan. Therefore, it is important to time autumn wheat sowing to escape most egg deposition on the plants.

CruiserMaxx Cereals (thiamethoxam) at 5 fl. oz./cwt seed + Cruiser 5FS (thiamethoxam) at 0.48 - 1.00 fl. oz./cwt seed and Senator 600 FS (imidacloprid) at 0.4 - 2.8 fl. oz/cwt seed are also labeled for control of Hessian fly.



# SOYBEAN

Insecticide application to manage soybean insect pests may be required at any time throughout the development of the crop. At planting time, seed treatments may be warranted for protection against seed maggots. On early-planted beans, rescue treatment following emergence may be required to control overwintering bean leaf beetles if severe stand loss appears likely. Up to bloom, soybean can tolerate up to 40 percent defoliation by the defoliating pests without an economic loss in yield that would justify a rescue treatment. Soybean becomes more susceptible to defoliation from bloom to pod-fill, and defoliation should not be allowed to exceed 15 percent during that time. Once pods have set, pod injury due to bean leaf beetle may be problem, especially on early-planted beans. If pod injury is detected, rescue treatment is warranted when injury of 10 percent or more of the pods appears imminent.

Following is a listing of insecticide products labeled for control of the pests that affect soybean (2011). An asterisk (\*) indicates that use is restricted to certified applicators only.

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Bean Leaf Beetle</b>	Acceleron IX-409 (imidacloprid)	1.6 – 3.2 fl. oz./cwt seed (commercial seed treatment)	na	Treatment is warranted when defoliation is greater than 40% pre-bloom, 15% bloom through pod fill or 25% after pod fill but prior to plant yellowing.  Treatment is also warranted when greater than 10% of the pods show feeding damage. The disease Bean Pod Mottle  Virus is transmitted by bean leaf beetles and may be important some years especially for producers growing seed for seed or food grade soybean.
	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	21	
	Ambush* 25W (permethrin)	3.2 - 6.4 oz.	60	
	Arctic* 3.2 EC (permethrin)	2 - 4 fl. oz.	60	
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	21	
	Avicta Complete Beans (thiamethoxam & nematicide & fungides)	3.0 fl. oz./cwt seed 1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	45	
	Belay <sup>a</sup> (clothianidin)	3.0 – 4.0 fl. Oz.	21	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Carbaryl 4L (carbaryl)	½ - 1 qt.	14	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	28	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	45	
	CruiserMaxx (thiamethoxam) Cruiser 5FS (thiamethoxam)	3 fl. oz./cwt seed 1.28 fl. oz./cwt seed (commercial seed treatment)	na na	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	21	
Dimethoate (dimethoate)	1 pt. 400, 4EC or Dimate 4E	21		
Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	4.0 - 4.5 fl. oz.	30		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Bean Leaf Beetle</b> (cont.)	Gaucho 600 (imidacloprid)	1.6 – 3.2 fl. oz./cwt seed (commercial seed treatment)	na	<sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product.
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Grizzly Z* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	28	
	Hero* (zeta-cypermethrin & bifenthrin)	2.6 - 6.1 oz.	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.0 - 1.67 oz.	45	
	Lambda* (lambda-cyhalothrin)	0.96 - 1.6 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Lambda-T* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Lannate* (methomyl)	¼ - ⅝ lb. SP or ½ - 1 pt. LV	14	
	Larvin* 3.2 (thiodicarb)	18 - 30 fl. oz.	28	
	Latiude (imidacloprid)	4.0 oz./cwt seed (hopper box seed treatment)	na	
	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.8 fl. oz.	45	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Mustang Max* (zeta-cypermethrin)	2.8 - 4.0 fl. oz.	21	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	45	
	NipsIt INSIDE (clothianidin)	1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Nufos* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Orthene 97 (acephate)	0.75 - 1.0 lb.	14	
	PennCap-M* (methyl parathion)	2 - 3 pt	20	
	Permethrin* (permethrin)	2 - 4 oz 3.2 EC or 3.2 AG	60	
	Pilot* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Perm-UP* (permethrin)	2 - 4 fl. oz. 3.2 EC 3.2 - 6.4 oz. 25DF	60 60	
	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.13 mg. a.i./seed (commercial seed treatment)	na	
	Pounce* 25WP (permethrin)	3.2 - 6.4 oz.	60	
	Proaxis* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
Prolex* (gamma-cyhalothrin)	0.77 - 1.28 fl. oz.	30		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Bean Leaf Beetle</b> (cont.)	Respect* EC (zeta-cypermethrin)	2.8 - 4 oz.	21	
	Senator 600 FS (imidacloprid)	1.6 - 3.2 fl. oz./cwt seed (commercial seed treatment)	na	
	Sevin (carbaryl)	½ - 1 qt. XLR Plus or 4F ⅝ - 1¼ lb. 80S	14 14	
	Silencer* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl. oz.	28	
	Taiga* Z (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	45	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	28	
	Warrior* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Warrior II* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	30	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	28	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	28	
<b>Grasshopper</b>	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	21	Grasshopper damage to soybean is generally concentrated along the field edges especially grassy ditch banks and roadways.  Such injury may build up during a growing season, possibly damaging pods in the late summer or early fall.
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	21	
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	2.0 - 2.8 fl. oz.	45	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Chlorpyrifos* 4E AG (chlorpyrifos)	½ - 1 pt.	28	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	7 - 13 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 – 3 fl. oz.	45	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	21	
	Dimethoate (dimethoate)	1 pt. 400, 4EC or Dimate 4E 1.5 pt. 2.67	21 21	
	Dimilin 2L (diflubenzuron)	2 fl. oz.	21	
	Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	4.0 - 4.5 fl. oz.	30	
	Govern* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Grizzly Z* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	30	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Grasshopper</b> (cont.)	Hatchet* (chlorpyrifos)	½ - 1 pt.	28	Rescue treatment of grasshoppers may be warranted when such damage is combined with one or more other de-foliating insects feeding on soybean.  <sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product.
	Hero* (zeta-cypermethrin & bifenthrin)	2.6 - 6.1 oz.	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.67 - 2.0 oz.	45	
	Lambda* (lambda-cyhalothrin)	1.60 - 1.92 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	45	
	Lambda-T* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	45	
	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.8 fl. oz.	45	
	Lorsban* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Mustang MAX* (zeta-cypermethrin)	3.2 - 4.0 oz.	21	
	Mystic Z* (lambda-cyhalothrin)	1.5 - 1.92 fl. oz.	45	
	Nufos* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Orthene 97 (acephate)	0.25 - 0.5 lb.	14	
	PennCap-M* (methyl parathion)	2 - 3 pt.	20	
	Pilot* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Proaxis* (gamma-cyhalothrin)	3.20 - 3.84 fl. oz.	30	
	Prolex* (gamma-cyhalothrin)	1.28 - 1.54 fl. oz.	30	
	Respect* EC (zeta-cypermethrin)	3.2 - 4.0 oz.	21	
	Silencer* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl. oz.	28	
	Taiga* Z (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	2.0 - 2.8 fl. oz.	45	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Warrior* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	30	
Warrior II* (lambda-cyhalothrin)	1.60 - 1.92 fl. oz.	30		
Whirlwind* (chlorpyrifos)	½ - 1 pt.	28		
Yuma* 4E (chlorpyrifos)	½ - 1 pt.	28		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Green Cloverworm</b>	Adjourn* (esfenvalerate)	2.9 - 5.8 fl. oz.	21	Rescue treatment is recommended when defoliation levels are greater than 40 percent pre-bloom; greater than 15 percent from bloom to pod-fill; and greater than 25 percent from full pod to harvest.  Leaves are not damaged after plants start to turn yellow.  <sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product.  <sup>b</sup> Listed by the Organic Materials Review Institute (OMRI) for use in organic production.
	Ambush* 25W (permethrin)	3.2 - 6.4 oz.	60	
	Arctic* 3.2 EC (permethrin)	2 - 4 fl. oz.	60	
	Asana* XL (esfenvalerate)	2.9 - 5.8 fl. oz.	21	
	<i>Bacillus thuringiensis</i> (several Bt products)	Refer to label for rate	0	
	Battalion* 0.2 EC (deltamethrin)	7.7 - 11.5 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	0.8 - 1.6 fl. oz.	45	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Carbaryl 4L (carbaryl)	½ - 1 qt.	14	
	Chlorpyrifos* 4E AG (chlorpyrifos)	½ - 1 pt.	28	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	7 - 13 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	45	
	Delta Gold* (deltamethrin)	1.0 - 1.5 fl. oz.	21	
	Dimilin (diflubenzuron)	2 - 4 oz. 25W or 2L	21	
	Endigo* <sup>a</sup> 3.2 EC (lambda-cyhalothrin & thiamethoxam)	3.5 - 4.0 fl. oz.	30	
	Entrust <sup>b</sup> (spinosad)	1 - 2 oz.	28	
	Govern* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Grizzly Z* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Hatchet* (chlorpyrifos)	½ - 1 pt.	28	
	Hero* (zeta-cypermethrin & bifenthrin)	2.6 - 6.1 oz.	21	
	Intrepid* 2F (methoxyfenozide)	4 - 8 fl. oz.	14	
	Kaiso* 24WG (lambda-cyhalothrin)	1.0 - 1.67 oz.	45	
	Lambda* (lambda-cyhalothrin)	0.96 - 1.6 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Lambda-T* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
Lannate* (methomyl)	¼ - ½ lb. SP or ¾ - 1½ pt. LV	14		
Larvin* 3.2 (thiodicarb)	10 - 30 fl. oz.	28		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Green Cloverworm</b> (cont.)	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.8 fl. oz.	45	
	Lorsban* 4E (chlorpyrifos)	½ - 1 pt	28	
	Mustang* MAX (zeta-cypermethrin)	2.8 - 4.0 oz	21	
	Mystic* Z (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	45	
	Nufos* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Orthene 97 (acephate)	0.75 - 1.0 lb.	14	
	PennCap-M* (methyl parathion)	2 - 3 pt.	20	
	Permethrin* (permethrin)	2 - 4 oz. 3.2 AG or 3.2 EC	60	
	Perm-UP* (permethrin)	2 - 4 fl. oz. 3.2 EC 3.2 - 6.4 oz. 25DF	60 60	
	Pilot* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Pounce* 25WP (permethrin)	3.2 - 6.4 oz.	60	
	Proaxis* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Prolex* (gamma-cyhalothrin)	0.77 - 1.28 fl. oz.	30	
	Radiant SC (spinetoram)	2 - 4 fl. oz.	28	
	Respect* EC (zeta-cypermethrin)	2.8 - 4 oz.	21	
	Sevin (carbaryl)	½ - 1 qt. XLR Plus or 4F	14	
	Silencer* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl. oz. .	28	
	Steward EC (indoxacarb)	5.6 - 11.3 fl. oz	21	
	Taiga* Z (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	0.8 - 1.6 fl. oz.	45	
	Tracer (spinosad)	1 - 2 fl. oz.	28	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Warhawk* (chlorpyrifos)	½ - 1 pt.	28	
	Warrior* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Warrior II* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	30	
	Whirlwind* (chlorpyrifos)	½ - 1 pt.	28	
Yuma* 4E (chlorpyrifos)	½ - 1 pt.	28		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
Japanese Beetle	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	21	Rescue treatment is recommended when defoliation levels are greater than 40 percent pre-bloom; greater than 15 percent from bloom to pod-fill; and greater than 25 percent from full pod to harvest.  <sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product.
	Ambush* 25W (permethrin)	6.4 - 12.8 oz.	60	
	Arctic* 3.2 EC (permethrin)	2 - 4 fl. oz.	60	
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	21	
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	45	
	Belay <sup>a</sup> (clothianidin)	3.0 – 4.0 fl. oz.	21	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Carbaryl 4L (carbaryl)	½ - 1 qt.	14	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	45	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	21	
	Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	4.0 - 4.5 fl. oz.	30	
	Grizzly Z* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	30	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.67 - 2.0 oz.	45	
	Lambda* (lambda-cyhalothrin)	1.60 - 1.92 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	45	
	Lambda-T* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	45	
	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.8 fl. oz.	45	
	Mustang Max* (zeta-cypermethrin)	2.8 - 4.0 fl. oz.	21	
	Mystic Z* (lambda-cyhalothrin)	1.60 - 1.92 fl. oz.	45	
	PennCap-M* (methyl parathion)	2 - 3 pt.	20	
	Permethrin* (permethrin)	2 - 4 oz. 3.2 AG or 3.2 EC	60	
	Perm-UP* (permethrin)	2 - 4 fl. oz. 3.2EC 3.2 - 6.4 oz. 25DF	60 60	
	Pounce* 25WP (permethrin)	3.2 - 6.4 oz.	60	
	Proaxis* (gamma-cyhalothrin)	3.20 - 3.84 fl. oz.	30	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Japanese Beetle</b> (cont.)	Prolex* (gamma-cyhalothrin)	1.28 - 1.54 fl. oz.	30	
	Respect* EC (zeta-cypermethrin)	2.8 - 4.0 oz.	21	
	Sevin (carbaryl)	½ - 1 qt. 4F or XLR Plus ⅝ - 1¼ lb. 80S	14 14	
	Silencer* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl. oz.	28	
	Taiga* Z (lambda-cyhalothrin)	3.20 - 3.84 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	45	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Warrior* (lambda-cyhalothrin) Warrior II* (lambda-cyhalothrin)	3.20 - 3.84 fl. oz. 1.60 - 1.92 fl. oz.	30 30	
<b>Mexican Bean Beetle</b>	Adjourn* (esfenvalerate)	2.9 - 5.8 fl. oz.	21	Rescue treatment is recommended when defoliation levels are greater than 40 percent pre-bloom; greater than 15 percent from bloom to pod-fill; and greater than 25 percent from full pod to harvest.  Treatments should only be applied when the observed level of defoliation and numbers of MBB both indicate that damage will increase.  <sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product
	Ambush* 25W (permethrin)	3.2 - 6.4 oz.	60	
	Arctic* 3.2 EC (permethrin)	2 - 4 fl. oz.	60	
	Asana* XL (esfenvalerate)	2.9 - 5.8 fl. oz.	21	
	Avicta Complete Beans (thiamethoxam & nematicide & fungides)	3.0 fl. oz./cwt seed 1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Battalion* 0.2 EC (deltamethrin)	11.5 - 14.1 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	1.6 - 2.8 fl. oz.	45	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Carbaryl 4L (carbaryl)	½ - 1 qt.	14	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 1½ pt.	28	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	45	
	CruiserMaxx (thiamethoxam)	3.0 fl. oz./cwt seed (commercial seed treatment)	na	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	21	
	Dimethoate (dimethoate)	1 pt. 400, 4EC or Dimate 4E 1.5 pt. 2.67	21 21	
	Dimilin (diflubenzuron)	2 - 4 oz. 25W, 2 - 4 fl. oz. 2L	21	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Mexican Bean Beetle</b> (cont.)	Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	3.5 – 4.0 fl. oz.	30	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Grizzly Z* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	28	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.0 - 1.67 oz.	45	
	Lambda* (lambda-cyhalothrin)	0.96-1.6 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Lambda-T* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Lannate* (methomyl)	¼ - ½ lb. SP or ¾ - 1½ pt LV	14	
	Larvin* 3.2 (thiodicarb)	18 - 30 fl. oz.	28	
	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.8 fl. oz.	45	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Mustang Max* (zeta-cypermethrin)	2.8 - 4.0 fl. oz.	21	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.6 fl. oz.	45	
	Nufos* 4E (chlorpyrifos)	1 - 1½ pt.	28	
	Orthene 97 (acephate)	0.75 - 1.0 lb.	14	
	PennCap-M* (methyl parathion)	2 - 3 pt.	20	
	Permethrin* (permethrin)	2 - 4 fl. oz. 3.2 EC	60	
	Perm-UP* (permethrin)	3.2 - 6.4 oz. 25DF	60	
	Pilot* 4E (chlorpyrifos)	1 - 1½ pt.	28	
	Pounce* (permethrin)	3.2 - 6.4 oz. 25WP	60	
	Proaxis* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Prolex* (gamma-cyhalothrin)	0.77 - 1.28 fl. oz.	30	
	Respect* EC (zeta-cypermethrin)	2.8 - 4 oz.	21	
	Sevin (carbaryl)	½ - 1 qt. 4F or XLR Plus ⅝ - 1¼ lb. 80S	14 14	
	Silencer* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl. oz.	28	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Mexican Bean Beetle</b> (cont.)	Taiga* Z (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	45	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	28	
	Warrior* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Warrior II* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	30	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	28	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	28	
<b>Potato Leafhopper</b>	Adjourn* (esfenvalerate)	2.9 - 5.8 fl. oz.	21	<p>Potato leafhopper damage to soybean is normally associated with areas bordering alfalfa early in the season. However, late plantings where the soybeans do not have sufficient development of their pubescence and leafhopper populations are large, usually in early June are also susceptible to injury.</p> <p><sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product.</p>
	Ambush* 25W (permethrin)	3.2 - 6.4 oz.	60	
	Arctic* 3.2 EC (permethrin)	2 - 4 fl. oz.	60	
	Asana* XL (esfenvalerate)	2.9 - 5.8 fl. oz.	21	
	Avicta Complete Beans (thiamethoxam & nematicide & fungides)	3.0 fl. oz./cwt seed 1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Battalion* 0.2 EC (deltamethrin)	7.7 - 11.5 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	0.8 - 1.6 fl. oz.	45	
	Belay <sup>a</sup> (clothianidin)	3.0 – 4.0 fl. oz.	21	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Carbaryl 4L (carbaryl)	1 qt.	14	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	45	
	CruiserMaxx (thiamethoxam)	3 fl. oz./cwt seed	na	
	Cruiser 5FS (thiamethoxam)	1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Delta Gold* (deltamethrin)	1.0 - 1.5 fl. oz.	21	
	Dimethoate (dimethoate)	1.5 pt. 2.67 1 pt. 400, 4EC or Dimate 4E	21 21	
	Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	3.5 – 4.0 fl. oz.	30	
	Grizzly Z* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	21		
Kaiso* 24WG (lambda-cyhalothrin)	1.0 - 1.67 oz.	45		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
Potato Leafhopper (cont.)	Lambda* (lambda-cyhalothrin)	0.96 - 1.6 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Lambda-T* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.0 - 3.8 fl. oz.	45	
	Mustang Max* (zeta-cypermethrin)	2.8 - 4.0 fl. oz.	21	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	45	
	NipsIt INSIDE	1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Orthene 97 (acephate)	0.50 - 1.0 lb.	14	
	PennCap-M* (methyl parathion)	2 - 3 pt.	20	
	Permethrin* (permethrin)	2 - 4 oz. 3.2 AG or 3.2 EC	60	
	Perm-UP* (permethrin)	2 - 4 fl. oz. 3.2EC 3.2 - 6.4 oz. 25DF	60 60	
	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.13 mg. a.i./seed (commercial seed treatment)	na	
	Pounce* (permethrin)	3.2 - 6.4 oz. 25WP	60	
	Proaxis* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Prolex* (gamma-cyhalothrin)	0.77 - 1.28 fl. oz.	30	
	Respect* EC (zeta-cypermethrin)	2.8 - 4.0 fl. oz.	21	
	Sevin (carbaryl)	1 qt. 4F or XLR Plus 1¼ lb. 80S	14 14	
	Silencer* (lambda-cyhalothrin)	1.92 - 3.2 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 - 11.75 fl. oz.	28	
	Taiga* Z (lambda-cyhalothrin)	1.92 - 3.2 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	0.8 - 1.6 fl. oz.	45	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
Warrior* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30		
Warrior II* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	30		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Seedcorn Maggot</b>	Acceleron IX-409 (imidacloprid)	1.6 tp 3.2 fl. oz./cwt seed (commercial seed treatment)	na	Seed maggot problems are most likely in situations where (1) high organic matter or decaying vegetation is incorporated into the soil where it attracts egg-laying adult flies (i.e., a green cover crop such as rye or alfalfa is plowed under; and (2) cool, damp soil conditions delay seed germination.
	Avicta Complete Beans (thiamethoxam & nematicide & fungides)	3.0 fl. oz./cwt seed 1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	CruiserMaxx (thiamethoxam) Cruiser 5FS (thiamethoxam)	1.6 – 3.2 fl. oz./cwt seed (commercial seed treatment)	na na	
	Gaucho 600 (imidacloprid)	1.5 oz./50 lb. seed (hopper box seed treatment)	na	
	Kernel Guard Supreme (permethrin)	4.0 oz.cwt. seed (hopper box seed treatment)	na	
	Latitude (imidacloprid)	1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	NipsIt INSIDE (clothianidin)	1.6 - 3.2 fl. oz./cwt seed (commercial seed treatment)	na	
	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.13 mg. a.i./seed (commercial seed treatment)	na	
	Senator 600 FS (imidacloprid)	1.6 – 3.2 fl. oz./cwt seed (commercial seed treatment)	na	
<b>Slugs</b>	Deadline MPs (4% metaldehyde)	10 lb.	na	Treatment may be necessary if defoliation is greater than 40% on new growth or stand is being reduced.
	Prozap Snail and Slug Bait (3.5% metaldehyde)	10 lb.	na	
	Metarex (4% metaldehyde)	7.5 lb.	na	
	Sluggo (iron phosphate)	24 - 44 lb.	na	
<b>Soybean Aphid</b>	Acceleron IX-409 (imidacloprid)	1.6 – 3.2 fl. oz./cwt seed (commercial seed treatment)	na	The threshold for spraying for soybean aphid is 250 aphids per plant, beginning at growth stage R1 or the flowering stage, and continuing through pod fill. Aphid numbers should be on the increase before spraying occurs.  <sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product.
	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	21	
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	21	
	Avicta Complete Beans (thiamethoxam & nematicide & fungides)	3.0 fl. oz./cwt seed 1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Battalion* 0.2 EC (deltamethrin)	9.0 - 11.5 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	2.8 fl. oz.	45	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Belay <sup>a</sup> (clothianidin)	3.0 – 4.0 fl. oz.	21	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Chlorpyrifos* 4E AG (chlorpyrifos)	1 - 2 pt.	28	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
Soybean Aphid (cont.)	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	13 - 26 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	45	
	CruiserMaxx (thiamethoxam)	3.0 fl. oz./cwt seed	na	
	Cruiser 5FS (thiamethoxam)	1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Delta Gold* (deltamethrin)	1.5 - 1.9 fl. oz.	21	
	Dimethoate (dimethoate)	1 pt. 400, 4EC or Dimate 4E	21	
	Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	3.5 – 4.0 fl. oz.	30	
	Furadan* 4F (carbofuran)	¼ - ½ pt.	21	
	Gaucho 600 (imidacloprid)	1.6 – 3.2 fl. oz./cwt seed (commercial seed treatment)	na	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Grizzly Z* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	28	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.0 - 1.67 oz.	45	
	Lambda* (lambda-cyhalothrin)	0.96 - 1.6 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Lambda T* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	45	
	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.8 fl. oz.	45	
	Lorsban* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Mustang Max* (zeta-cypermethrin)	2.8 - 4.0 fl. oz.	21	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	45	
	NipsIt INSIDE (clothianidin)	1.28 fl. oz./cwt seed (commercial seed treatment)	na	
	Nufos* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Orthene 97 (acephate)	0.75 - 1.0 lb.	14	
	PennCap-M* (methyl parathion)	1 - 3 pt	20	
	Poncho/Votivo (clothianidin & <i>Bacillus firmus</i> [nematicide])	0.13 mg. a.i./seed (commercial seed treatment)	na	
Proaxis* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	30		

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Soybean Aphid</b> (cont.)	Prolex* (gamma-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Respect* EC (zeta-cypermethrin)	2.8 - 4 oz.	21	
	Senator 600 FS (imidacloprid)	1.6 – 3.2 fl. oz./cwt seed (commercial seed treatment)	na	
	Silencer* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	5.0 – 11.75 fl. oz.	28	
	Taiga* Z (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	2.0 - 2.8 fl. oz.	45	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	28	
	Warrior* (lambda-cyhalothrin)	1.92 - 3.20 fl. oz.	30	
	Warrior II* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	30	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	28	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	28	
<b>Spider Mites</b>	Bifenture* EC (bifenthrin)	5.12 - 6.40 fl. oz.	18	Rescue treatment is warranted when an entire field (all plants) exhibits some sign of infestation with speckling and some discoloration of the lower leaves.  Treatment of soybean for TSM requires thorough penetration of the foliar canopy, preferably by ground-rig application if the chemical applied does not have systemic properties.  <sup>a</sup> Do not apply this product within 45 days of planting if soybean seeds were treated with a neonicotinoid product.
	Brigade* 2EC (bifenthrin)	5.12 - 6.40 fl. oz.	18	
	Chlorpyrifos* 4EAG (chlorpyrifos)	½ - 1 pt.	28	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	13 - 26 fl. oz.	30	
	Dimethoate (dimethoate)	1.5 pt. 2.67 1 pt. 400, 4EC or Dimate 4	21 21	
	Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	4.5 fl. oz. (suppression only)	30	
	Govern* 4E (chlorpyrifos)	1 - 2 pt.	28	
	Grizzly Z* (lambda-cyhalothrin)	3.84 fl. oz. (suppression only)	30	
	Hatchet* (chlorpyrifos)	1 - 2 pt.	28	
	Hero* (zeta-cypermethrin & bifenthrin)	10.3 oz.	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.0 oz. (suppression only)	45	
	Lambda* (lambda-cyhalothrin)	1.92 fl. oz. (suppression only)	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	3.84 fl. oz. (suppression only)	45	
	LambdaStar* (lambda-cyhalothrin)	3.84 fl. oz. (suppression only)	45	
	Lambda-T* (lambda-cyhalothrin)	3.84 fl. oz. (suppression only)	45	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Spider Mites</b> (cont'd)	Lorsban 4E* (chlorpyrifos)	1 - 2 pt.	28	
	Mystic Z* (lambda-cyhalothrin)	1.92 fl. oz. (suppression only)	45	
	Nufos* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Pilot* 4E (chlorpyrifos)	½ - 1 pt.	28	
	Proaxis* (gamma-cyhalothrin)	3.84 fl. oz. (suppression only)	30	
	Prolex* (gamma-cyhalothrin)	1.54 fl. oz. (suppression only)	30	
	Silencer* (lambda-cyhalothrin)	3.84 fl. oz. (suppression only)	30	
	Taiga* Z (lambda-cyhalothrin)	3.84 fl. oz. (suppression only)	30	
	Tundra* EC (bifenthrin)	5.12 - 6.4 fl. oz.	18	
	Warhawk* (chlorpyrifos)	1 - 2 pt.	28	
	Warrior* (lambda-cyhalothrin)	3.84 fl. oz. (suppression only)	30	
	Warrior II* (lambda-cyhalothrin)	1.92 fl. oz. (suppression only)	30	
	Whirlwind* (chlorpyrifos)	1 - 2 pt.	28	
	Yuma* 4E (chlorpyrifos)	1 - 2 pt.	28	
<b>Stink Bugs</b>	Adjourn* (esfenvalerate)	5.8 - 9.6 fl. oz.	21	Take multiple 10-sweep samples with a sweep net in multiple locations throughout the field. Average the number of stink bugs in the 10-sweep samples. The threshold to sweep is 4 or more stink bugs, adults or nymphs. If soybeans are being grown for seed, the threshold can be dropped to 2 or more stink bugs. Pods should still be green.
	Asana* XL (esfenvalerate)	5.8 - 9.6 fl. oz.	21	
	Battalion* 0.2 EC (deltamethrin)	9.0 - 11.5 fl. oz.	21	
	Baythroid* XL (β-cyfluthrin)	2.8 fl. oz.	45	
	Bifenture* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Belay <sup>a</sup> (clothianidin)	3.0 – 4.0 fl. oz.	21	
	Brigade* 2EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Carbaryl 4L	1.0 – 1.5	21	
	Chlorpyrifos* 4E AG (chlorpyrifos)	2 pt	28	
	Cobalt* (chlorpyrifos & gamma-cyhalothrin)	19 - 38 fl. oz.	30	
	Consero* (spinosad & gamma-cyhalothrin)	2 - 3 fl. oz.	45	
	Delta Gold* (deltamethrin)	1.5 – 2.4 fl. oz.	21	
	Endigo* <sup>a</sup> ZC (lambda-cyhalothrin & thiamethoxam)	3.5 – 4.0 fl. oz.	30	
	Govern* 4E (chlorpyrifos)	2.0 pt.	28	
	Grizzly Z* (lambda-cyhalothrin)	3.20 – 3.84 fl. oz.	30	

Pest	Product Name (Common Name)	Amount per Acre	Pre-Harvest Interval (days)	When to Treat
<b>Stink Bugs</b> (cont.)	Hatchet* (chlorpyrifos)	2 pt.	28	
	Hero* (zeta-cypermethrin & bifenthrin)	4.0 - 10.3 oz.	21	
	Kaiso* 24WG (lambda-cyhalothrin)	1.67 – 2.0 oz.	45	
	Lambda* (lambda-cyhalothrin)	1.6 - 1.92 fl. oz.	45	
	Lambda-Cy* EC (lambda-cyhalothrin)	3.20 – 3.84 fl. oz.	45	
	LambdaStar* (lambda-cyhalothrin)	3.20 – 3.84 fl. oz.	45	
	Lambda T* (lambda-cyhalothrin)	3.20 – 3.84 fl. oz.	45	
	Leverage* 2.7 (imidacloprid & cyfluthrin)	3.8 fl. oz.	45	
	Lorsban* 4E (chlorpyrifos)	2 pt.	28	
	Mustang Max* (zeta-cypermethrin)	3.2 - 4.0 fl. oz.	21	
	Mystic Z* (lambda-cyhalothrin)	0.96 - 1.60 fl. oz.	45	
	Nufos* 4E (chlorpyrifos)	2.0 pt.	28	
	PennCap-M* (methyl parathion)	1 - 3 pt	20	
	Proaxis* (gamma-cyhalothrin)	3.20 – 3.84 fl. oz.	30	
	Prolex* (gamma-cyhalothrin)	1.28 – 1.54 fl. oz.	30	
	Respect* EC (zeta-cypermethrin)	3.2 - 4 oz.	21	
	Sevin XLR (cabaryl)	1.0 -1.5 fl. oz.	21	
	Silencer* (lambda-cyhalothrin)	3.20 – 3.84 fl. oz.	30	
	Stallion* (zeta-cypermethrin & chlorpyrifos)	9.25 – 11.75 fl. oz.	28	
	Taiga* Z (lambda-cyhalothrin)	3.20 – 3.84 fl. oz.	30	
	Tombstone Helios* (cyfluthrin)	1.6 - 2.8 fl. oz.	45	
	Tundra* EC (bifenthrin)	2.1 - 6.4 fl. oz.	18	
	Warhawk* (chlorpyrifos)	2 pt.	28	
	Warrior II* (lambda-cyhalothrin)	1.6 – 1.92 fl. oz.	30	
	Whirlwind* (chlorpyrifos)	2 pt.	28	
	Yuma* 4E (chlorpyrifos)	2 pt.	28	

# HANDLING OF PESTICIDES

## Ohio's Restricted Pesticides

Under Ohio's Pesticide Use and Applicator Law, certain pesticides are restricted and can be obtained and used only by (1) pesticide applicators and public operators licensed by the Ohio Department of Agriculture and (2) individuals obtaining a user's permit from the county OSU Extension agent.

Copies of the Pesticide Use and Applicator Law are available from:

Ohio Department of Agriculture  
Pesticide Regulation  
Reynoldsburg, OH 43068

Certain restricted pesticides require that notification be given before their use. At least 24 hours before treatment, applicators must notify all occupants within 1,000 ft of the affected area. These occupants also must be notified of the safety precautions for humans and animals. Specific pesticide formulations may be labeled "Restricted Use Only" by the Ohio Environmental Protection Agency or the registrant company.

## Toxicity of Pesticides

All pesticides are poisonous. However, some are more poisonous than others. The product label usually states the toxicity of the pesticide. For example, the "skull-and-crossbones" symbol always is placed on the label of highly toxic pesticides. Accordingly, those of medium toxicity carry less severe warning statements.

There are three signal words: CAUTION, WARNING or DANGER. Signal words will usually be in capital letters. Least toxic products carry the signal word CAUTION. Products with the signal word WARNING on the label are more toxic. The most toxic pesticides have the signal word DANGER on their labels.

Keep the following points in mind when using a pesticide:

1. Hazards presented by any compound depend on how it is used rather than its toxicity.
2. Toxicity may vary with species, age, sex, nutritional state, and pesticide formulation, as well as method of application.

## Safety Tips

- Do not breathe spray mist or dust.
- Do not smoke when handling or applying pesticides.
- Do not get pesticides in eyes or on skin or clothing.
- When using specific pesticides, wear a respirator of the type approved by the USDA. Information on respirators is available from your local county Extension offices.
- Wear natural rubber gloves and freshly laundered protective clothing.
- Wash thoroughly if pesticide is spilled on skin or clothing.

- Bathe promptly after working with these pesticides, and wash clothing with soap and water before reuse.
- Do not take pesticides internally.
- Wash hands and face thoroughly before eating.
- Dispose of pesticides and containers according to label instructions.
- Keep pesticides out of reach of children, preferably under lock and key.
- Call a physician at once in all cases of suspected poisoning. Symptoms of organic phosphate poisoning include blurred vision, abdominal cramps and tightness in the chest. Atropine is antidotal for some organophosphorous insecticides.

## Rinsing Empty Containers

Hazardous waste regulations that became effective November 19, 1980, address the disposal of empty pesticide containers. They require that containers that held waste pesticides or chemicals classified by EPA as hazardous waste be disposed of in designated hazardous waste sites, unless triple-rinsing and other requirements are met by the commercial pesticide applicator. Farmers or private applicators are exempt from these regulations, providing they follow instructions on the product label when disposing of waste pesticides and empty containers. Triple-rinsing each emptied container, using the rinse in the tank mix whenever possible, or disposing of the residue on the farm is required. Triple-rinsed containers may be disposed of at a sanitary landfill.

## Protecting Bees

Honeybees and other useful insect pollinators gather nectar and pollen in all fields with blooming plants. Honeybees work corn plants, soybean plants, hay fields, and weeds in bloom. Insecticides sprayed to prevent corn rootworm beetle and Japanese beetle damage to silks in corn fields, potato leafhopper damage in hay fields, and insect defoliation damage in soybean fields during bloom have the greatest potential for killing honeybees with insecticides at this time.

Ohio regulations state in 901:5-11-02 (Trained Servicepersons, Safety and Restrictions) of the Ohio Administrative Code " *No person shall: (15) Apply or cause to be applied any pesticide that is required to carry a special warning on its label indicating that it is toxic to honey bees, over an area of one-half acre or more in which the crop-plant is in flower unless the owner or caretaker of any apiary located within one-half mile of the treatment site has been notified by the person no less than twenty-four hours in advance of the intended treatment; provided the apiary is registered and identified as required by section 909.02 of the Revised Code of Ohio, and that the apiary has been posted with the name and telephone number of the owner or responsible caretaker. (16) Apply pesticides which are hazardous to honey bees at times when pollinating insects are actively working in the target area, however, application of calyx sprays on fruits and other similar applications may be made.*" The names and addresses of registered apiaries are available at the Ohio

Department of Agriculture at 1-614-728-6270 (Division of Plant Industry - Apiaries). Growers or applicators should contact this number as early as possible prior to a potential treatment to give them enough lead time to respond to your requests.

The following practices should also be observed:

- Do not spray a blooming crop unless absolutely necessary. Do not spray if there is danger of insecticide drift to nearby plants in bloom.
- Spray when bees are least active late in the evening (after 7:30 p.m.) or early in the morning (before 8 a.m.). Warm evening or mornings may extend these times.
- Quickly clean insecticide spills. Never allow sprays to puddle on the ground where bees may drink the liquid.
- Use an insecticide and insecticide formulation less toxic to bees whenever possible.

### **Aerial Applications**

Aerial insecticide applications for control of insects can be effective, but proper distribution of the insecticides is essential. Final results are influenced by wind velocity, altitude, location of the field in relation to obstructions, atmospheric conditions, and many other factors.

The highly toxic nature of some compounds requires that aerial application of these materials be done only by and for persons willing to assume full responsibility for the consequences of drift onto nontarget objects and areas, including human beings, livestock, apiaries, susceptible crops, schools, homes, pastures, reservoirs, and streams. The control of drift to adjoining property is the responsibility of the applicator.

Applications should be made at the lowest height compatible with effective dispersal and aerial safety and only when atmospheric conditions will minimize drift of released material from the target field. Specific details and precautions are available from pesticide manufacturer labels and United States Department of Agriculture (USDA) Handbook No. 287, Aerial Application of Agricultural Chemicals.

### **Sprayer Delivery Rates**

Pesticides must be applied at specified rates to provide the best control and protection and to stay within residue tolerances. Application equipment should be checked carefully for accurate delivery rates.

---

## Poison Information Centers

---

# National Poison Control Center 1-800-222-1222

(This number will automatically connect you to the center closest to you.)

**Cincinnati: 45229**

Drug and Poison Information Center  
University of Cincinnati  
Medical Center, Room 7701  
3333 Burnet Ave., ML 9004  
513-558-5111  
800-872-5111 (Ohio only)

**Cleveland: 44106**

Greater Cleveland Poison Center  
11100 Euclid Ave.  
216-231-4455  
888-231-4455

**Columbus: 43205**

Children's Hospital  
700 Children's Drive  
614-228-1323  
800-682-7625  
614-228-2272 (TTY)\*

\*Phone number for the deaf.

---

## Emergency Contacts

---

In the event of gross environmental contamination by pesticides, such as a spill or fire, contact:

**Ohio Environmental Protection Agency**

24-Hour Emergency Response Group  
122 South Front St.  
Columbus, OH 43266  
1-800-282-9378

**Ohio Department of Agriculture**

Pesticide and Fertilizer Regulation  
8995 East Main St.  
Reynoldsburg, OH 43068-3389  
614-728-6987  
800-282-1955  
8:00 a.m. to 4:30 p.m., Monday through Friday

In the event of chemical fire, spill, leak, exposure or accident on a highway, railway or waterway, contact:

**Chemtrec**

American Chemistry Council  
1300 Wilson Blvd.  
Arlington, VA 22209  
800-262-8200