

# 7. Stored Grain

## STORED-GRAIN INSECTS

**Table 7-1.** Control Options for Insects in Stored Corn, Wheat and Soybeans — Rusty Grain Beetle

Integrated Pest Management Options	Active Ingredient	Trade Name	Rate	Comments (label precautions, restricted entry intervals, etc.)
<b>RUSTY GRAIN BEETLE (<i>Cryptolestes ferrugineus</i>)</b>				
This beetle feeds on cracked or sound grain. Damage can be throughout the pile of grain. High infestations generate heat, causing grain to mould. The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management.				
<b>Protectant</b>				
The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a> .	diatomaceous earth	Protect-It	Empty bin: 500 g/100 m <sup>2</sup>  Stored grain: 500–1,000 g/metric tonne of grain	This product can be applied to dry containers where grain is transported or stored. The structure must remain empty for 1–2 weeks. For maximum effectiveness, the relative humidity must remain below 55% and the temperature above 15°C. See label for spot and crack treatment rates. For wheat grain treatment, 100 g/tonne of wheat can be used to control rusty grain beetle. Dust may be applied to grain as it enters the auger or conveyor feeder system during grain transfer into the storage facility.
<b>Fumigant</b>				
The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a> .	aluminum phosphide	Fumitoxin	880–2,560 pellets 250–500 tablets /100 m <sup>3</sup> grain bin	These products must be applied by a professional licensed applicator. Do not fumigate below 5°C. Exposure to moist air or liquids releases flammable and toxic phosphine gas. Ensure bin is tightly sealed. Not to be used for vacuum fumigations. See label for minimum length of pest exposure periods at various temperatures.
		Phostoxin		
		Gastoxin	880–2,500 pellets 180–500 tablets /100 m <sup>3</sup> grain bin	

## STORED-GRAIN INSECTS

**Table 7–2.** Control Options for Insects in Stored Corn, Wheat and Soybeans — Indian Meal Moth

Integrated Pest Management Options	Active Ingredient	Trade Name	Rate	Comments (label precautions, restricted entry intervals, etc.)
<p><b>INDIAN MEAL MOTH (<i>Plodia interpunctella</i>)</b>            This moth is resistant to malathion. Larvae spin webbing, high populations result in a mat of grain with silks up to 50 cm deep. Remove webbed layer of grain before fumigation. The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i>, for more information on stored-grain insect management.</p>				
<b>Protectant</b>				
<p>The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i>, for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a>.</p>	diatomaceous earth	Protect-It	Empty bin: 500 g/100 m <sup>2</sup>  Stored grain: 500–1,000 g/metric tonne of grain	<p>Apply at monthly intervals with the first appearance of moths and continue until early fall. In severe infestations, break up webbing with a rake before dusting and make second application 2 weeks later. Can be applied to dry containers where grain is transported or stored. The structure must remain empty for 1–2 weeks. For maximum effectiveness, the relative humidity must remain below 55% and the temperature above 15°C. See label for spot and crack treatment rates. Dust may be applied to grain as it enters the auger or conveyor feeder system during grain transfer into storage facility.</p>
<b>Fumigant</b>				
<p>The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i>, for more information on stored-grain insect management.</p> <p>Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a>.</p>	aluminum phosphide	Fumitoxin Phostoxin Gastoxin	880–2,560 pellets 250–500 tablets /100 m <sup>3</sup> grain bin  880–2,500 pellets 180–500 tablets /100 m <sup>3</sup> grain bin	<p>These products must be applied by a professional licensed applicator. Do not fumigate below 5°C. Exposure to moist air or liquids releases flammable and toxic phosphine gas. Ensure bin is tightly sealed. Not to be used for vacuum fumigations. See label for minimum length of pest exposure periods at various temperatures.</p>

## STORED-GRAIN INSECTS

**Table 7–3.** Control Options for Insects in Stored Corn, Wheat and Soybeans — Granary Weevil, Lesser Grain Borer

Integrated Pest Management Options	Active Ingredient	Trade Name	Rate	Comments (label precautions, restricted entry intervals, etc.)
<b>GRANARY WEEVIL (<i>Sitophilus granarius</i>)</b>				
Both adults and larvae feed on sound grain. Larvae spend their entire life in one kernel, feeding on the endosperm. The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management.				
<b>Protectant</b>				
The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a> .	diatomaceous earth	Protect-It	Empty bin: 500 g per 100 m <sup>2</sup>  Stored grain: 500–1,000 g/metric tonne of grain	This product can be applied to dry containers where grain is transported or stored. The structure must remain empty for 1–2 weeks. For maximum effectiveness, the relative humidity must remain below 55% and the temperature above 15°C. See label for spot and crack treatment rates. Dust may be applied to grain as it enters the auger or conveyor feeder system during grain transfer into the storage facility.
<b>Fumigant</b>				
The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a> .	aluminum phosphide	Fumitoxin	880–2,560 pellets 250–500 tablets /100 m <sup>3</sup> grain bin	These products must be applied by a professional licensed applicator. Do not fumigate below 5°C. Exposure to moist air or liquids releases flammable and toxic phosphine gas. Ensure bin is tightly sealed. Not to be used for vacuum fumigations. See label for minimum length of pest exposure periods at various temperatures.
		Phostoxin		
		Gastoxin	880–2,500 pellets 180–500 tablets /100 m <sup>3</sup> grain bin	
<b>LESSER GRAIN BORER (<i>Rhyzopertha dominica</i>)</b>				
<b>Fumigant</b>				
The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a> .	aluminum phosphide	Fumitoxin	880–2,560 pellets 250–500 tablets /100 m <sup>3</sup> grain bin	These products must be applied by a professional licensed applicator. Do not fumigate below 5°C. Exposure to moist air or liquids releases flammable and toxic phosphine gas. Ensure bin is tightly sealed. Not to be used for vacuum fumigations. See label for minimum length of pest exposure periods at various temperatures.
		Phostoxin		
		Gastoxin	880–2,500 pellets 180–500 tablets /100 m <sup>3</sup> grain bin	

## STORED-GRAIN INSECTS

**Table 7-4.** Control Options for Insects in Stored Corn, Wheat and Soybeans — Pea Weevils/Bean Weevils, European Grain Moth

Integrated Pest Management Options	Active Ingredient	Trade Name	Rate	Comments (label precautions, restricted entry intervals, etc.)
<b>PEA WEEVILS/BEAN WEEVILS (<i>Bruchus pisorum</i>/<i>Acanthoscelides obtectus</i>)</b>				
<b>Fumigant</b>				
Adults lay their eggs in maturing beans in the field with no apparent visible damage. Heavily infested peas or beans can be fed to livestock. The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a> .	aluminum phosphide	Fumitoxin	880–2,560 pellets 250–500 tablets /100 m <sup>3</sup> grain bin	These products must be applied by a professional licensed applicator. Do not fumigate below 5°C. Exposure to moist air or liquids releases flammable and toxic phosphine gas. Ensure bin is tightly sealed. Not to be used for vacuum fumigations. See label for minimum length of pest exposure periods at various temperatures.
		Phostoxin		
		Gastoxin	880–2,500 pellets 180–500 tablets /100 m <sup>3</sup> grain bin	
<b>EUROPEAN GRAIN MOTH (<i>Nemapogon granella</i>)</b>				
<b>Fumigant</b>				
Similar to Indian meal moth, the larvae of this pest spin webbing on the grain, which can typically be found within the top 50 cm. The key to controlling stored-grain insects is prevention through good sanitation and storage practices. See OMAFRA Publication 811, <i>Agronomy Guide for Field Crops</i> , for more information on stored-grain insect management. Additional Information can also be found at the Canadian Grain Commissions website at: <a href="http://www.grainscanada.gc.ca">www.grainscanada.gc.ca</a> .	aluminum phosphide	Fumitoxin	880–2,560 pellets 250–500 tablets /100 m <sup>3</sup> grain bin	These products must be applied by a professional licensed applicator. Do not fumigate below 5°C. Exposure to moist air or liquids releases flammable and toxic phosphine gas. Ensure bin is tightly sealed. Not to be used for vacuum fumigations. See label for minimum length of pest exposure periods at various temperatures.
		Phostoxin		
		Gastoxin	880–2,500 pellets 180–500 tablets /100 m <sup>3</sup> grain bin	