

## LESSER GRAIN BORER

### SCIENTIFIC NAME:

*Rhyzopertha dominica*

**DESCRIPTION:** Voracious feeders, 1/8" long, brown/black cylindrical bodies; head not visible from above; strong flier capable of rapidly spreading infestations; c-shaped white larva has small dark head, three pairs of small legs.

**LIFE CYCLE:** Variable based on temperature, minimum 25 days

**FEEDING HABITS:** Adults and larvae bore into grain kernels, feed on whole grain or dust.

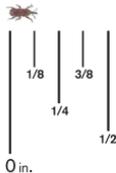


**SIGNS OF INFESTATION:** Live adult insects, fragmented kernels, and powdery residue; a sweet musty odor is associated with this insect. Damaged grain with “shot hole” appearance.

**CONTROL TIPS:** Clean and spray grain bins with Diacon® IGR *PLUS* prior to grain storage. Inspect and treat incoming grain with Diacon® IGR or Diacon® IGR *PLUS*; monitor grain throughout storage period.

**PRODUCT RECOMMENDATIONS:** Diacon® IGR, Centynal™ EC Insecticide, Diacon® IGR *PLUS*, Diacon®-D IGR, Pyronyl™ Crop Spray.

**APPLICATION TIPS:** When treating flowing grain on belts or at transitions, 2 or more nozzles are recommended; during auger or conveyor cup application, fewer nozzles may be used; position nozzles for full coverage of grain stream; avoid spraying onto sides of auger boots. Calibrate protectant flow rate and check often to help ensure proper application. Use automated switches to turn chemical pumps on when there is grain in the system and turn off when no grain is present.



# GRANARY WEEVIL

## SCIENTIFIC NAME:

*Sitophilus granarius*

**DESCRIPTION:** Cylindrical, shiny red-brown to black body, about 1/13" - 1/8" long; long head with distinct snout; ridged wing-covers, thorax marked with oval pits; flightless; cold tolerant.

**LIFE CYCLE:** Minimum 28 days

**FEEDING HABITS:** Adults feed on whole and broken kernels; larvae grow from eggs deposited inside kernels.

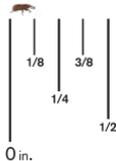


**SIGNS OF INFESTATION:** Live adult weevils, and damaged grain with “shot hole” appearance.

**CONTROL TIPS:** Clean and treat empty bins with a tank mix of Diacon® IGR *PLUS* and PBO-8® Synergist; monitor grain throughout storage period; use grain protectants to help suppress insect populations; fumigate if grain is found to be infested upon receipt or shortly afterward; aerate grain during warm weather periods of storage to help control moisture and temperature.

**PRODUCT RECOMMENDATIONS:** Combination of Diacon® IGR, Centynal™ EC Insecticide and PBO-8® Synergist or Diacon® IGR *PLUS* and PBO-8® Synergist.

**APPLICATION TIPS:** When treating flowing grain on belts or at transitions, 2 or more nozzles are recommended; during auger or conveyor cup application, fewer nozzles may be used; position nozzles for full coverage of grain stream; avoid spraying onto sides of auger boots. Calibrate protectant flow rate and check often to help ensure proper application. Use automated switches to turn chemical pumps on when there is grain in the system and turn off when no grain is present.



## RICE WEEVIL

### SCIENTIFIC NAME:

*Sitophilus oryzae*

**DESCRIPTION:** Small snout beetle about 3/32" - 1/8" long; dull red-brown to black; 4 light red to yellow markings; functional wings; densely-pitted thorax; not cold tolerant.

**LIFE CYCLE:** Minimum 28 days

**FEEDING HABITS:** Adults feed on whole and broken kernels, can also infest grain in field; larvae grow from eggs deposited inside kernels.



**SIGNS OF INFESTATION:** Live adult weevils, and damaged grain with “shot hole” appearance.

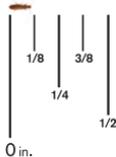
**CONTROL TIPS:** Two-step approach.

1) Treat all received grain with protectants to suppress insect populations.

2) Clean and treat empty bins with a tank mix of Diacon® IGR and Centynal™ EC Insecticide and PBO-8® Synergist or with Diacon® IGR PLUS and PBO-8® Synergist; fumigate received grain (likely to be infested with weevils during the growing period, particularly corn). Monitor grain throughout storage period; aerate grain during warm weather periods of storage to help control moisture and temperature.

**PRODUCT RECOMMENDATIONS:** A tank mix of Diacon® IGR, Centynal™ EC Insecticide and PBO-8® Synergist or Diacon® IGR PLUS and PBO-8® Synergist.

**APPLICATION TIPS:** When treating flowing grain on belts or at transitions, 2 or more nozzles are recommended; during auger or conveyor cup application, fewer nozzles may be used; position nozzles for full coverage of grain stream; avoid spraying onto sides of auger boots. Calibrate protectant flow rate and check often to help ensure proper application. Use automated switches to turn chemical pumps on when there is grain in the system and turn off when no grain is present.



# SAW-TOOTHED GRAIN BEETLE

## SCIENTIFIC NAME:

*Oryzaephilus surinamensis*

**DESCRIPTION:** Brown flattened body 1/10" - 1/8" long; distinctive saw-tooth projections on sides of thorax; flightless; running legs much like cockroaches.

**LIFE CYCLE:** Minimum 28 days

**FEEDING HABITS:** Secondary pests of oats, wheat, barley, animal feed; adults and larvae feed on grain dust, larvae prefer germ.

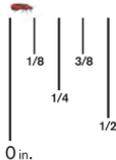


**SIGNS OF INFESTATION:** Overheating of grain; visible population build-up.

**CONTROL TIPS:** Clean empty bins with Diacon® IGR *PLUS*; treat received grain with Diacon® IGR, Diacon® IGR *PLUS* or Diacon®-D IGR; aerate grain during warm periods of storage to help control moisture and temperature; monitor grain throughout storage period.

**PRODUCT RECOMMENDATIONS:** Diacon® IGR, Centynal™ EC Insecticide, Diacon® IGR *PLUS*, Diacon®-D IGR, Pyronyl™ Crop Spray.

**APPLICATION TIPS:** When treating flowing grain on belts or at transitions, 2 or more nozzles are recommended; during auger or conveyor cup application, fewer nozzles may be used; position nozzles for full coverage of grain stream; avoid spraying onto sides of auger boots. Calibrate protectant flow rate and check often to help ensure proper application. Use automated switches to turn chemical pumps on when there is grain in the system and turn off when no grain is present.



# CONFUSED FLOUR BEETLE

## SCIENTIFIC NAME:

*Tribolium confusum*

**DESCRIPTION:** Reddish-brown body 1/8" long; antennae gradually expand toward end; flightless.

**LIFE CYCLE:** Minimum 42 days; can live 18 months

**FEEDING HABITS:** Primarily feed on grain dust, broken kernels and the milled grains in flour and cereal.

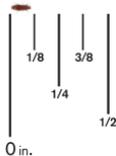


**SIGNS OF INFESTATION:** Foul odor and taste in products they infest; presence of adult insects, shed skins and fecal matter.

**CONTROL TIPS:** Clean empty bins and treat with Diacon® IGR *PLUS*; treat received grain with Diacon® IGR or Diacon® IGR *PLUS*; aerate grain during warm periods of storage to help control moisture and temperature; monitor grain throughout storage period.

**PRODUCT RECOMMENDATIONS:** Diacon® IGR, Centynal™ EC Insecticide, Diacon® IGR *PLUS*, Diacon®-D IGR, Pyronyl™ Crop Spray.

**APPLICATION TIPS:** When treating flowing grain on belts or at transitions, 2 or more nozzles are recommended; during auger or conveyor cup application, fewer nozzles may be used; position nozzles for full coverage of grain stream; avoid spraying onto sides of auger boots. Calibrate protectant flow rate and check often to help ensure proper application. Use automated switches to turn chemical pumps on when there is grain in the system and turn off when no grain is present.



## RED FLOUR BEETLE

### SCIENTIFIC NAME:

*Tribolium castaneum*

**DESCRIPTION:** Reddish-brown body 1/8" long; last three segments of antennae as distinct club.

**LIFE CYCLE:** Egg to adult within 30 days; adults can live up to 18 months

**FEEDING HABITS:** Generally classified as a scavenger, immature stages feed on broken or damaged grains. A common pest in mills and warehouses that store milled/bagged grain products.



**SIGNS OF INFESTATION:** Presence of adult beetles cause food to have pungent odor, foul taste and potentially a pink coloration.

**CONTROL TIPS:** Priority is cleaning; empty bins, and equipment should be free of grain debris. After cleaning, treat bins with Diacon® IGR *PLUS*. Treat received grain with Diacon® IGR or Diacon® IGR *PLUS*; aerate grain during warm periods of storage to help control moisture and temperature; monitor grain throughout storage period.

**PRODUCT RECOMMENDATIONS:** Diacon® IGR, Centynal™ EC Insecticide, Diacon® IGR *PLUS*, Diacon®-D IGR, Pyronyl™ Crop Spray.

**APPLICATION TIPS:** When treating flowing grain on belts or at transitions, 2 or more nozzles are recommended; during auger or conveyor cup application, fewer nozzles may be used; position nozzles for full coverage of grain stream; avoid spraying onto sides of auger boots. Calibrate protectant flow rate and check often to help ensure proper application. Use automated switches to turn chemical pumps on when there is grain in the system and turn off when no grain is present.



# INDIAN MEAL MOTH

## SCIENTIFIC NAME:

*Plodia interpunctella*

**DESCRIPTION:** Small brownish moth, about 3/8" long, 1/2" - 3/4" wing span; distinctive rusty brown or bronze wing tips; larvae are off-white with brown heads, about 2/3" long.

**LIFE CYCLE:** Minimum 42 days; adult moths do not feed, typically die within a week after laying eggs.

**FEEDING HABITS:** Larvae are generally top feeders, 4 to 6 inches from some type of surface; found in many types of pantry foods as well as processing and storage facilities.



**SIGNS OF INFESTATION:** Larvae produce dense webbing that binds to food fragments; adults present flying in vicinity of grain bin, larvae climbing up walls inside bins.

**CONTROL TIPS:** Clean empty bins and treat them with Diacon® IGR *PLUS*; treat received grain with Diacon® IGR or Diacon® IGR *PLUS*; aerate grain during warm periods of storage to help control moisture and temperature; monitor grain during entire storage period.

**PRODUCT RECOMMENDATIONS:** Diacon® IGR, Centynal™ EC Insecticide, Diacon® IGR *PLUS*, Diacon®-D IGR, Pyronyl™ Crop Spray.

**APPLICATION TIPS:** When treating flowing grain on belts or at transitions, 2 or more nozzles are recommended; during auger or conveyor cup application, fewer nozzles may be used; position nozzles for full coverage of grain stream; avoid spraying onto sides of auger boots. Calibrate protectant flow rate and check often to help ensure proper application. Use automated switches to turn chemical pumps on when there is grain in the system and turn off when no grain is present.

**For more information please contact your distributor, call 800.248.7763 or visit [grainbugs.com](http://grainbugs.com)**

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