STORED GRAIN INSECT CONTROL

STORED GRAIN INSECTICIDE PERFORMANCE RATING, 2026

Rating Scale: 0 = no control 10 = excellent	**Chemistry**	**IRAC Code**	**Length of Residual Activity (Months)**	**Restricted Use (R)**	**Rice Weevil Maize Weevil**	**Sawtoothed Grain Beetle**	**Red Flour Beetle**	**Confused Flour Beetle**	**Indian Meal Moth**
Actellic	OP	1B	24	X	9	9	6	8	
Bacillus thuringiensis	MD	11A	2		0	0	0	0	7
Centynal	SyP	3A	4-12	X	7	7	7	6	
Diacon IGR	IGR	7A	2		4	5	4	4	
Diacon IGR Plus	IGR+SyP	7A + 3A	4-6		6	5	7	7	
Malathion	OP	1B	24		9	9	5	5	
Sensat	SP	5	4						
Silocon dioxide	MD	UNM	6		5	4			

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control.

Type Treatment	**Insect**	**Insecticide**	**Rate**	**Application/Comments**
Preventive treatments for bins (empty bins, walls, ceilings, beams, outside storage, foundations and grain-handling equipment)	**Beetles and Moths**	Centynal 0.42 Malathion 5 EC Suspend 0.42 SC Tempo Ultra 1 SC	**(Rate/1,000 sq ft)** 0.25-1.5 oz/ gal water 5.12 oz/gal water 0.25-1.5 oz/ gal water 0.27-0.54 oz/gal water	Clean bins before application. Use malathion for wooden or metal bins. Malathion will not control Indian meal moth. **Malathion is NOT labeled for rice storage facilities. DO NOT APPLY DIRECTLY TO GRAIN.**
Preventive treatment sprays for grain	**Beetles and Moths**	Actellic 5 E	9.2-12.3 oz/30 tons grain (1,071 bushels)	Shelled corn and grain sorghum only.
		Centynal 0.41 EC	**(Rate/1,000 bushels)** Barley – 7.75-15.5 fl oz Corn, Popcorn, Rye – 9-18 fl oz Oats – 5.15-10.3 fl oz Rice – 7.2-14.4 fl oz Sorghum – 8-16 fl oz Wheat – 9.6-19.2 fl oz	Use higher rates if grain will be in storage for longer than 6 months. Adding PBO (piperonyl butoxide) at a ratio of 1 part Centynal to 1.5 parts PBO can increase control when beetles show tolerance or resistance.
		Gravista EC	**(Rate/1,000 bushels)** Barley – 31 fl oz Corn, Popcorn, Rye – 35.6 fl oz Oats – 20.38 fl oz Rice – 28.5 fl oz Sorghum – 31.7 fl oz Wheat – 38 fl oz	deltamethrin + (s)-methoprene + PBO
		Gravista-D	11 lbs/1,000 bushels	deltamethrin + (s)-methoprene + PBO
		Sensat	**(Rate/1,000 bushels)** Barley – 8.2 fl oz Corn, Sorghum – 9.8 fl oz Oats – 5.9 fl oz Wheat – 10.5 fl oz	Effective against all grain-infesting moths as well as confused flour beetle and flat grain beetle. Provides suppression only of other weevils and beetles.

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Type Treatment	Insect	Insecticide	Rate	Application/Comments
Preventive treatment sprays for grain (cont.)		Diacon-D Diacon IGR 2.5	8-10 lb/1,000 bushels **(Rate/1,000 bushels)** Barley, Rice – 3-6 fl oz Corn, Sorghum, Wheat – 3.5-7 fl oz Oats, Peanut, Sunflower – 2-4 fl oz	Diacon is a growth regulator and does not control adults but is effective against larvae.
		Max Kill Dusta-Cide (Malathion) 6% Dust	10 lb/1,000 bushels (wheat, corn, oats, rye or barley)	**Malathion is not labeled for rice or sorghum**. Apply as grain is being loaded or moved into final storage for protection from beetles and moths.
		Silicon dioxide (Insecto, Dryacide)	1-2 lbs per ton of grain	OMRI certified for organic production. Excessive use may lower grain grade and may reduce test weight.
Surface treatment (inside bins and grain treatment)	**Beetles and Moths**	Max Kill Dusta-Cide (Malathion) 6% Dust	5 lb/1,000 sq ft	Apply as top-dress on grain bin surface for protection against moths and beetles. **Malathion is not labeled for rice or sorghum. May be reapplied 60 days after first application.**
		Sensat	2.6 fl oz/1,000 sq ft	Effective against all grain-infesting moths as well as confused flour beetle and flat grain beetle. Provides suppression only for other weevils and beetles.
		Diacon-D Diacon IGR 2.5	8 lb/1,000 sq ft 1/30 fl oz (1 mL)/1,000 sq ft	Diacon is a growth regulator and does not control adults but is effective against larvae.
		Silicon dioxide (Insecto, Dryacide)	2-3 lbs/1,000 sq ft	OMRI certified for organic production. Excessive use may lower grain grade and may reduce test weight.
	Moths only	*Bacillus thuringiensis* (Dipel, SOK-Bt, etc.)	Follow label directions.	Apply as a top-dress for protection against moths only. Incorporate into top 4 inches. OMRI certified for organic production.
Grain fumigation	**Beetles and Moths**	Aluminum Phosphide (**R**) (Phostoxin, Fumitoxin, Gastoxin, Killz-All, DetiaPhos, PH3, Weevil-Cide)	**Silos and Concrete Bins** 200-900 pellets/1,000 bu 40-180 tablets/1,000 bu 10 pellets/ton 6 tablets/ton (check label also) **Butler-Type Bins** 450-900 pellets/1,000 bu 90-180 tablets/1,000 bu **Space Treatments** pellets: 100-725/1,000 cubit ft tablets: 20-145/1,000 cubic ft **Bagged Grain or Feed** 150-450 pellets/1,000 cubic ft 30-90 tablets/1,000 cubic ft	Grain surface should be level. Apply in gas-tight bins when grain temperature is 60°F or higher. Leave for at least 3 days, preferably 5 days. DO NOT fumigate when temperatures are below 40°F. Use higher rates when infestations are high and/or temperatures are low. Always use a gas mask and never fumigate alone. Fumigated grain should be aerated thoroughly before feeding. Use a self-contained breathing apparatus and a safety rope. Seal all buildings and storage bins airtight before fumigation. Fumigation is not recommended for storage bins not equipped with fans for aeration. Be careful under hot, humid conditions when using aluminum phosphide because phosphine gas may be released quickly under these conditions. Phosphine needs at least 72 hours to kill some immature insects. Special training and precautions are needed before using aluminum phosphide. For more information on treatment using aluminum phosphide: **http://www.degeschamerica.com/.**
HOME STORAGE Protection of small quantities of grain for home storage to be eaten	**Beetles and Moths**	Heat oven until center of grain is 120 degrees F.	30 minutes	Place in a tight container. Temperature should be checked with meat thermometer. DO NOT use heat on seed to be planted.
		Cold or freezer treatment at 0 degrees F.	4 days	Place container in deep freeze.