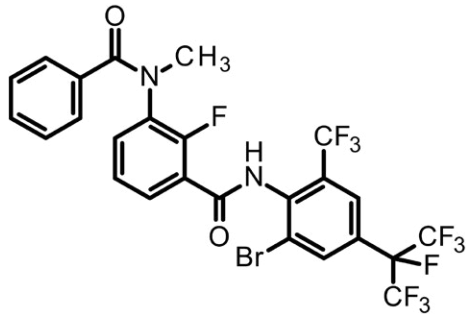
BASF
We create chemistry

Broflanilide Insecticide

Delivers powerful and versatile protection that lasts

Worldwide Interactive Guide



Welcome to Broflanilide insecticide — powerful and versatile protection that lasts.

Farmers and pest management professionals need new solutions to protect their most important crops and residential and commercial areas. Broflanilide insecticide is a powerful and versatile insecticide for farmers and pest management professionals who want the top performing pest control tool. With a new mode of action, Broflanilide insecticide controls the toughest chewing pests and offers growers the best chance to reap plentiful and healthy crops while families can protect their most valued investment.

Interactive Guide Navigation Features

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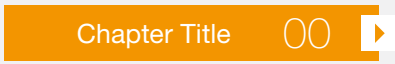

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Video Link

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Broflanilide Insecticide Introduction

With its unprecedented performance and versatility, Broflanilide insecticide will be a leading solution for farmers and pest management professionals who want the top performing pest control tool.

Broflanilide insecticide has strong broad-spectrum efficacy and can be applied in a range of ways, including: foliar, in-furrow and seed treatment for the control of tough chewing insects and soil-dwelling pests, like caterpillars (Lepidoptera), beetles (Coleoptera) and certain thrips in specialty and row crops, as well as urban and rural pests such as termites, ants, cockroaches and flies.

As an example, Broflanilide insecticide is an excellent solution in cereal seed treatment, where weakening performance of currently available insecticides enable wireworms to cause reduced stands and lower crop yields.

Broflanilide-treated wheat seeds

Market standard-treated wheat seeds

Untreated wheat seeds

NEW LEVELS OF POWER AND VERSATILITY

With Broflanilide insecticide, growers and pest management professionals have a strong ally providing best-in-class control of tough chewing pests throughout a variety of application techniques and uses.

26% of global crop loss is caused by destructive insect pests.

POWERFUL

Unique MOA

With its unique MOA, Broflanilide insecticide is among the first compounds in the market introduced under the new IRAC group 30. Plus, there's no known cross-resistance with existing products in the market, making it a superior insecticide resistance management tool.

Fast Acting, Best-In-Class Control

It is a fast acting compound that quickly works at all insect life stages to provide excellent, long-lasting control of pests like wireworms — where current market standard performance is weakening.

Low Dose Rates

Broflanilide insecticide has the lowest use rate compared to current standards, letting you use less product to produce the same (or better) effect.

Total Knockdown

As a top performer, it controls pests rather than just intoxicating them (which would leave the potential for recovery).

VERSATILE

Broad Spectrum

Broflanilide insecticide can be applied for crop and non-crop uses to control chewing insect pests, certain thrips, plus non-crop pests like termites, ants, flies and cockroaches.

Variety of Application Techniques

It can be used in seed treatment, in-furrow, foliar and for control of non-crop pests in a form of a bait or aerosol.

Advanced Compatibility

As an insecticide that's highly compatible with herbicides, fungicides and other insecticides, it's well-suited for tank mixes and various equipment.

Residual Control

Protecting initial growth stages of seeds and young plants, Broflanilide insecticide offers 14-21 days of residual control for foliar applications, a month or longer as a seed treatment, as well as up to five years of termite control in residential applications.

BROFLANILIDE INSECTICIDE PERFORMANCE TIME-LAPSE VIDEO: SEED TREATMENT

BROFLANILIDE INSECTICIDE PERFORMANCE TIME-LAPSE VIDEO: FOLIAR USE

Exceptional Features

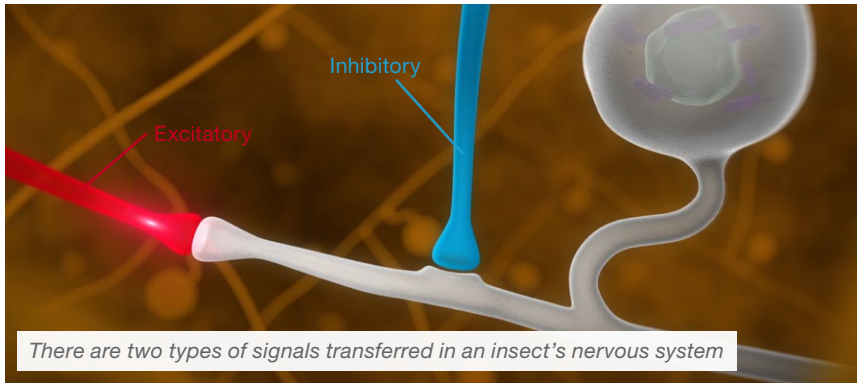
NEW MODE OF ACTION

What a standout! The Insecticide Resistance Action Committee (IRAC) approved the unique mode of action of Broflanilide insecticide and designated this insecticide among the first members of its new IRAC Group 30. There is no known cross resistance with currently available products in the market.

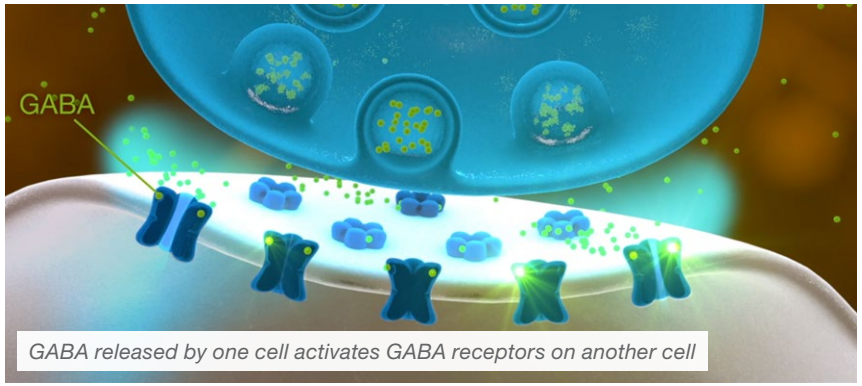
Here is how Broflanilide insecticide works: In the insect's nervous system there are two types of signals transferred between cells — excitatory signals and inhibitory signals. Balance between these signals is crucial for normal insect behavior. Neurotransmitters, such as GABA, communicate these signals between cells.

In a normally functioning nervous system, GABA released by one cell activates GABA receptors of another cell, resulting in inhibition. Broflanilide insecticide prevents GABA from transmitting inhibitory signals, which causes overexcitation of the nervous system and leads to incapacitation of the insect. It does this by binding to a novel insecticide site on the GABA receptor that locks it closed.

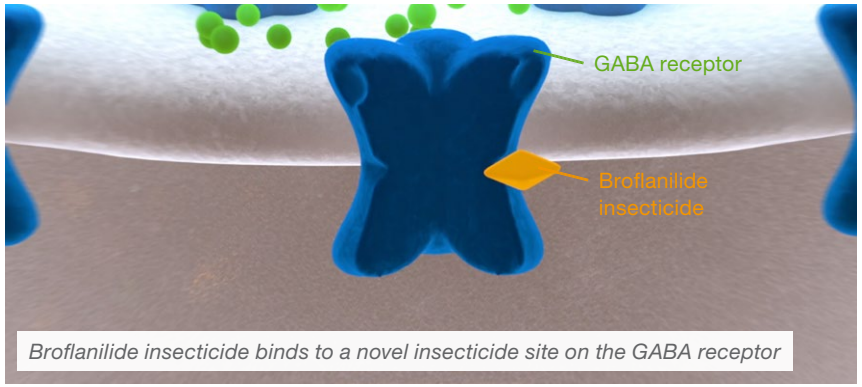
Ultimately, Broflanilide insecticide reduces the pest population and insects are prevented from causing damage.



There are two types of signals transferred in an insect's nervous system



GABA released by one cell activates GABA receptors on another cell



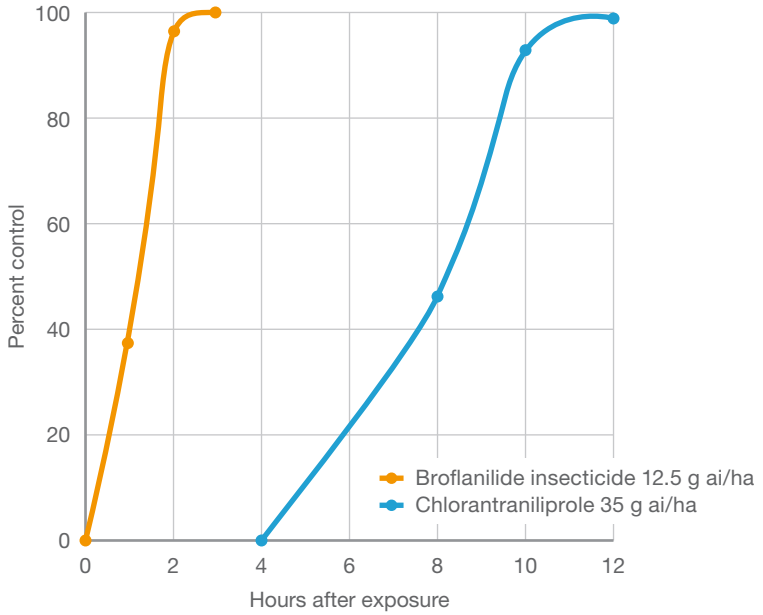
Broflanilide insecticide binds to a novel insecticide site on the GABA receptor

BROFLANILIDE INSECTICIDE MODE OF ACTION VIDEO

FAST ACTION

Broflanilide insecticide is a fast acting compound. At the recommended dose (12.5 gai/ha), reduced coordination and appetite of *Spodoptera eridania* (southern armyworm) were recorded within the first hour after direct exposure. 100% mortality of the pest was achieved at 2 hours after exposure to Broflanilide insecticide. The current chlorantraniliprole insecticide, applied at the labeled rates, took 5x longer to reach the same result, enabling pests to further damage crops (Figure 1). Several factors might affect speed of kill, such as insect species, its life stage and water volume.

Figure 1:
Speed of Kill — *Spodoptera eridania* (southern armyworm moth)



Spodoptera eridania exposed to Broflanilide insecticide future recommended label rate (12.5 g ai/ha) at a water volume of 300 l/ha.

DUAL EXPOSURE

Broflanilide insecticide is a powerful insecticide which works at very low rates on the target pest through both ingestion and contact. Studies conducted on *Heliothis virescens* (tobacco budworm) indicate that Broflanilide insecticide is slightly more effective by contact than by ingestion (Figure 2).

Figure 2:
Dual Exposure — *Heliothis virenscens* (tobacco budworm)

	LC_{50} (µg / insect)		LC_{90} (µg / insect)	
	Ingestion	**Contact**	**Ingestion**	**Contact**
Broflanilide	0.34	0.08	0.93	0.65

Confidence intervals (CI) values obtained using a two-logistic model with 95% CI.

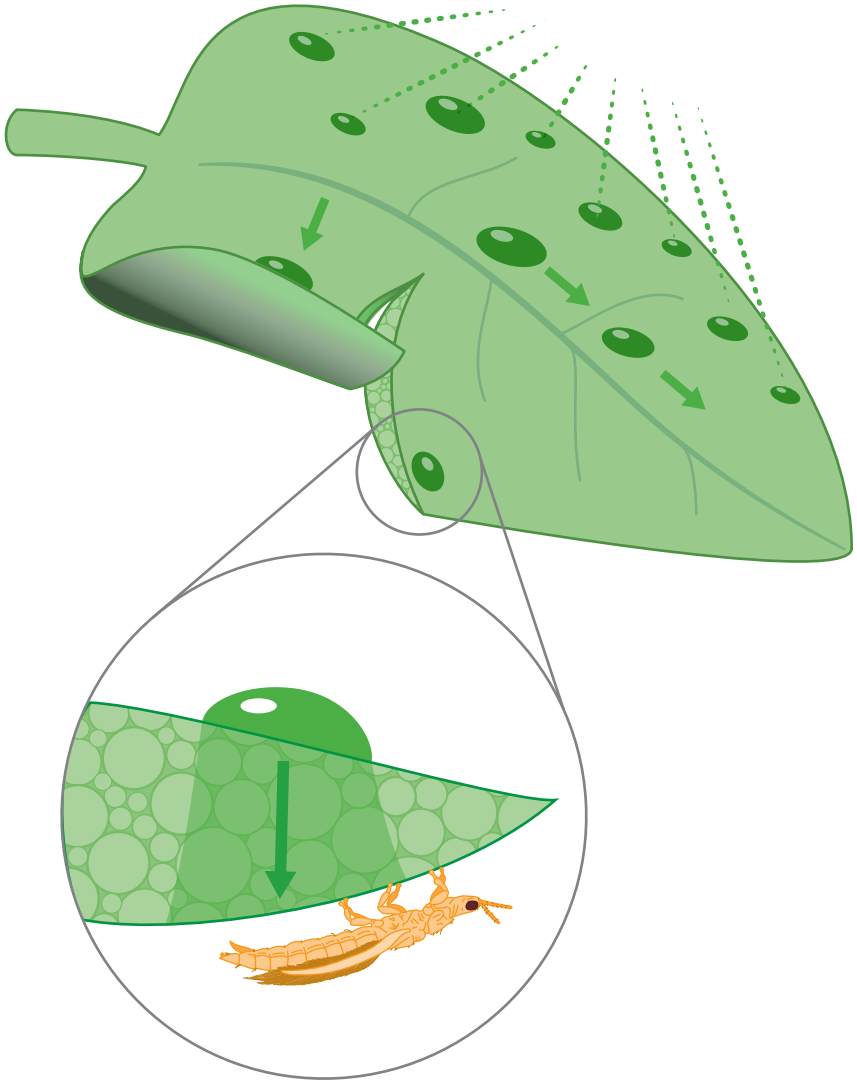
Broflanilide insecticide is active by contact and ingestion routes of exposure.

LC50/LC90 are the lethal concentrations required to control 50%/90% respectively of the population.

TRANSLAMINAR MOVEMENT

A valuable and important aspect of Broflanilide insecticide is its ability to move across leaf tissue after a foliar application (from one side of the leaf to the other), otherwise known as translaminar movement, ensuring that the active ingredient moves throughout insect-feeding areas. Translaminar movement offers growers the ability to control targeted insect populations, such as thrips that may feed on the underside of the leaf, even if the product was applied on the upper side of the leaf and may not have come into direct contact with the target pest during the foliar application.

To demonstrate the translaminar movement of Broflanilide insecticide, droplets of the product solution were placed on the upper surface of the leaf. For this bioassay, Broflanilide insecticide was applied at approximately half the recommended dose for thrips control to better exhibit the differences between the treatments applied. Thrips were then placed on the underside of the leaf, and control was evaluated for each treatment. The testing included the use of penetrating adjuvants, which enhance translaminar movement resulting in greater leaf protection through increased control.



Products	Use Rates	% Control
Broflanilide	10 g ai/ha	55%
Broflanilide + Plurafac	10 gai/ha + 0.2%	67%
Broflanilide + Assist	10 g ai/ha + 0.5%	79%

Bioassay was conducted with half of the recommended dose for thrips control to be able to observe the differences between treatments.

TARGETED PROTECTION

Because of its very low water solubility, Broflanilide insecticide stays where its applied, offering growers improved seed performance and protection for their valuable seed investments. This versatile insecticide — used as a seed treatment or in-furrow application — remains at the site of application, reducing insect pressure and limiting the damage that pests like wireworms can cause, allowing for healthier roots and more uniform stands, helping high-value crops to thrive.

When applied as a foliar spray according to label instructions, Broflanilide also stays where it is sprayed due to its low water solubility and lack of systemic movement.

Because Broflanilide is not systemic, growers should feel confident that Broflanilide will not affect any beneficial insects above ground when applied to the soil or seed according to the label recommendations, nor will it affect beneficial insects on plant parts not exposed to the product application.

CROP SAFETY

Broflanilide insecticide has been proven to be safe on a wide range of specialty crops (cabbage, tomatoes, eggplant, peppers, potatoes, etc.) and row crops (soybeans, corn, cotton, cereals, beans), at all tested application rates and methods e.g., foliar, in-furrow and seed treatment.

Performance — Insect Control & Market Comparison

North America

Complete Control: By controlling chewing pests and leaving no potential for their recovery, farmers can treat problematic pests and trust their most important crops to Broflanilide insecticide. With its excellent performance in controlling wireworms and other key pests, Broflanilide insecticide has the potential to become the cornerstone of pest management programs.

PROPOSED USES

Seed Treatment			
Crop	**Common Name**	**Scientific Name**	**Rate**
Cereal grains (Wheat, barley, rye, oats, triticale)	Wireworms	Elateridae (e.g. *Agriotes* spp., *Limonius* spp., etc.)	5 to 10 g ai/100 Kg seed 0.006 - 0.012 Lb/CWT 0.0017 to 0.0033 mg ai/seed*

* Calculated on the basis of 13700 seeds/Lb

Soil Applications: In-furrow and T-band			
Crop	**Common Name**	**Scientific Name**	**Rate**
Corn	Grubs	Scarabaeidae	18.5 – 25 g ai/ha 0.016 - 0.022 Lb/acre
	Seedcorn maggot	*Delia platura*	
	Corn rootworm (Northern & Western)	*Diabrotica* spp.	
	Wireworms	Elateridae	
Tuberous & Corm	Grubs	Scarabaeidae	25 – 50 g ai/ha 0.022 - 0.044 Lb/acre
	Wireworms	Elateridae	


Wireworm


Seedcorn maggot


Corn rootworm (western)

North America

PERFORMANCE VS. COMPETITORS

Seed Treatment Biological Performance vs. Standards			Broflanilide	Thiamethoxam
Crop	**Common Name**	**Scientific Name**		
Cereals	Wireworms	Elateridae	●	◕

In-Furrow Applications Biological Performance vs. Standard			Broflanilide	BT Trait	Tefluthrin	Bifenthrin	Fipronil
Crop	**Common Name**	**Scientific Name**					
Corn	Corn rootworm	*Diabrotica* spp.	◕	●	◕	◕	—
	Seedcorn maggot	*Delia platura*	◕	—	◕	◕	—
	Wireworms	Elateridae	◕	—	—	◕	—
Tuberous & Corm	Wireworms	Elateridae	●	—	—	—	●
	White Grubs	Scarabaeidae	◕	—	—	—	—

• Note: — symbol indicates that no direct comparison data is available.
• All comparison applications tested at the recommended application label rates.

Key	● Best-in-Class	◕ Good Efficacy	◑ Suppression	○ No Effect

Broflanilide insecticide-treated cereal seeds

Untreated cereal seeds

Central & South America

PROPOSED USES

Extended Control: With an additional 14–21 days of residual control after a foliar application, Broflanilide insecticide will be a highly effective and trusted tool for farmers. As a top-performing product with broad-spectrum control of Lepidoptera pests and key Coleoptera and thrips species, Broflanilide insecticide's new mode of action targets the toughest pests.

Foliar Uses			
Crop	**Common Name**	**Scientific Name**	**Rate (g ai/ha)**
Brassicas	Diamondback moth	*Plutella xylostella*	12.5 to 25
Coffee	Coffee berry borer	*Hypothenemus hampei*	12.5 to 18
	Neotropical coffee leaf miner	*Perileucoptera coffeella* *Leucoptera coffeella*	
Corn, Cotton, Dry beans	Larva-alfineta	*Diabrotica speciosa*	12.5 to 25
	Fall armyworm	*Spodoptera frugiperda*	
Cotton	Cotton leafworm	*Alabama argillacea*	12.5 to 18
Dry beans	Pea leaf miner	*Liriomyza huidobrensis*	12.5 to 18
Onion	Vegetable leaf miner	*Liriomyza sativae*	12.5 to 18
	Onion thrips	*Thrips tabaci*	15 to 18
			18 to 25
	Cotton bud thrips	*Frankliniella schultzei*	18

Chart continues on next page

Diamondback moth

Onion thrips

Cotton leafworm

Central & South America

PROPOSED USES

Foliar Uses			
Crop	**Common Name**	**Scientific Name**	**Rate (g ai/ha)**
Pepper	Pepper weevil	*Anthonomus eugenii*	12 to 25
	Western flower thrips	*Frankliniella occidentalis*	12 to 18
	Vegetable leaf miner	*Liriomyza sativae*	
Potato	Larva-alfineta	*Diabrotica speciosa*	6.25 to 12.5
	Potato flea beetle	*Epitrix cucumeris*	
	Potato tuberworm	*Phthorimaea operculella*	
	Potato weevil	*Premnotripex* spp.	
Soybean	Velvetbean caterpillar	*Anticarsia gemmatalis*	6.25 to 12.5
	Old World bollworm	*Helicoverpa armigera*	12.5 to 18
	Soybean looper	*Omioides indicata*	
		Chrysodeixis includens	
		Rachiplusia nu	
	Fall armyworm	*Spodoptera frugiperda*	
Tomato	Larva-alfineta	*Diabrotica speciosa*	6.25 to 12.5
	Tomato moth	*Lacanobia oleracea*	
	South American tomato moth	*Tuta absoluta*	
Wheat	Lagarta-do-trigo	*Pseudaletia sequax*	6.25 to 18
	Fall armyworm	*Spodoptera frugiperda*	

Soybean looper

Tomato moth

Fall armyworm

Central & South America

PERFORMANCE VS. COMPETITORS

Biological Performance vs. Standards with Foliar Applications			Broflanilide	Chlorantraniliprole	Flubendiamide	Spinosad	Spinetoram	Indoxacarb	Chlorfenapyr	Thiamethoxam + Lambda cyhalothrin	Chlorantraniliprole + Lambda cyhalothrin
Crop	**Common Name**	**Scientific Name**									
Cabbage	Diamondback moth	*Plutella xylostella*	●	—	—	—	—	—	●	—	◕
Coffee	Coffee berry borer	*Hypothenemus hampei*	●	●	—	—	—	—	—	—	—
	Coffee leaf miner	*Leucoptera coffeella*	◑	●	—	—	—	—	—	—	—
Corn	Larva-alfineta	*Diabrotica speciosa*	●	—	—	—	—	—	●	●	—
Dry bean	Leaf miner	*Liriomyza* sp.	●	—	—	◑	—	—	●	—	◕
Onion	Onion thrips	*Thrips tabaci*	●	—	—	◕	◕	—	●	●	—
Soybean	Soybean looper	*Chrysodeixis includens*	●	◑	◑	◑	◕	◕	●	—	—
	Fruit borer	*Helicoverpa armigera*	●	◑	◑	◑	◕	◕	●	—	—
Tomato	South American tomato moth	*Tuta absoluta*	●	—	—	—	—	—	●	—	●

• Note: — symbol indicates that no direct comparison data is available.
• All comparison applications tested at the recommended application label rates.

Broflanilide insecticide-treated soybean plants

Untreated soybean plants

Key	● Best-in-Class	◕ Good Efficacy	◑ Suppression	○ No Effect

Asia & Pacific

PROPOSED USES

New Solution Customers Need: With no known cross-resistance and a novel mode of action, Broflanilide insecticide will be an excellent new tool for resistance management. The addition of Broflanilide insecticide to the ever-evolving BASF insecticide portfolio demonstrates the organization's commitment to creating practical and innovative solutions for growers around the world.

Foliar Uses			
Crop	**Common Name**	**Scientific Name**	**Rate (g ai/ha)**
Bengal gram	Pod borer	*Helicoverpa armigera*	12.5 to 18.5
Brinjal (Eggplant)	Fruit & shoot borer	*Leucinodes orbonalis*	18.5 to 25
	Palm thrips	*Thrips palmi*	
Cabbage	Diamondback moth	*Plutella xylostella*	12.5 to 25
	Tobacco cutworm	*Spodoptera litura*	12.5 to 18.5
	Cabbage caterpillar	*Crocidolomia binotalis*	12.5 to 25
	Flea beetle	*Phyllotreta striollata*	25
Cauliflower	Striped flea beetle	*Phyllotreta vittata*	12.5 to 25
	Fall armyworm	*Spodoptera frugiperda*	
	Cabbage worm	*Pieris brassicae*	
	Diamondback moth	*Plutella xylostella*	18.5 to 25

Chart continues on next page

Fruit & shoot borer

Diamondback moth

Flea beetle

Asia & Pacific

PROPOSED USES

Foliar Uses			
Crop	**Common Name**	**Scientific Name**	**Rate (g ai/ha)**
Chilli	Pod borer / Fruit borer	*Helicoverpa armigera*	12.5 to 18.5
	Tobacco cutworm	*Spodoptera litura*	
	Chilli thrips	*Scirtothrips dorsalis*	18.5 to 25
	Thrips	*Thrips parvispinus*	25 to 50
Chinese cabbage	Flea beetle	*Phyllotreta striollata*	25
	Diamondback moth	*Plutella xylostella*	12.5 to 25
Corn	Fall armyworm	*Spodoptera frugiperda*	15
Cucumber	Cucumber moth	*Diaphania indica*	12.5 to 18.5
	Palm thrips	*Thrips palmi*	18.5 to 25
Grape	Chilli thrips	*Scirtothrips dorsalis*	18.5 to 25
Pigeon pea	Pod borer	*Helicoverpa armigera*	12.5
Shallot	Beet armyworm	*Spodoptera exigua*	25
Soybean	Fruit borer	*Helicoverpa armigera*	12.5 to 18.5
	Semi looper	*Chrysodeixis acuta*	
	Tobacco cutworm	*Spodoptera litura*	
Tomato	Thrips	*Frankniella* sp. *Thrips* sp.	12.5 to 25
	Fruit borer	*Helicoverpa armigera*	
	Tobacco cutworm	*Spodoptera litura*	
Watermelon	Palm thrips	*Thrips palmi*	25

Pod borer / Fruit borer

Semi looper

Thrips

Asia & Pacific

PERFORMANCE VS. COMPETITORS

Biological Performance vs. Standards with Foliar Applications			Broflanilide	Chlorantraniliprole	Spinetoram	Spinosad	Cyantraniliprole	Flubendiamide	Pyridaben + Acetamiprid
Crop	**Common Name**	**Scientific Name**							
Brinjal (Eggplant)	Fruit borer	*Leucinodes orbonalis*	●	○	—	—	◕	—	—
	Palm thrips	*Thrips palmi*	●	—	—	●	—	—	—
Brassica	Diamondback moth	*Plutella xylostella*	●	◕	◕	◑	—	—	—
	Flea beetle	*Phyllotreta striolata*	●	—	—	—	—	—	◑
Chilli	Chilli thrips	*Scirtothrips dorsalis*	●	—	●	◕	—	—	—
	Tobacco cutworm	*Spodoptera litura*	●	●	◕	—	—	—	—
Cucumber	Palm thrips	*Thrips palmi*	●	—	●	—	—	—	—
Gram	Pod borer	*Helicoverpa armigera*	●	◕	—	—	—	—	—
Shallot	Beet armyworm	*Spodoptera exigua*	●	◕	◕	—	—	—	—
Soybean	Semi looper	*Chrysodeixis acuta*	●	●	—	—	—	◕	—
	Tobacco cutworm	*Spodoptera litura*	●	●	—	—	—	◕	—
Tomato	Fruit borer	*Helicoverpa armigera*	●	●	—	◕	◕	—	—

• Note: — symbol indicates that no direct comparison data is available.
• All comparison applications tested at the recommended application label rates.

Key	● Best-in-Class	◕ Good Efficacy	◑ Suppression	○ No Effect

Broflanilide insecticide-treated chilli

Untreated chilli

Versatility — Products & Uses

Broflanilide insecticide formulations offer versatility in application and can be applied for crop (seed treatment, in furrow or foliar) and non-crop uses (residential and commercial). Several formulations have been developed to ensure customers have the needed options to control chewing insect pests and certain thrips, as well as termites, ants, flies, cockroaches and other important pests. Broflanilide insecticide formulations are designed to be highly compatible with herbicides, fungicides and other insecticides, making it a well-suited tank mix partner.

RAINFASTNESS

All current Broflanilide insecticide formulations intended for foliar use are rainfast (resistant to a heavy rain 1mm/min for 20 minutes) with 100% control when rain was simulated 1 hour after application.

Crop Use Products

Formulation	Use	Proposed Brand Names
100 g ai/L, SC	Foliar uses	Exponus™, Davantor™, Cimegra™, Nurizma™
300 g ai/L, SC		
300 g ai/L, SC	Seed treatment	Teraxxa™
68.5 g ai/L, SC	Seed treatment mixture	Teraxxa™ F4

Non-Crop Products

Formulation	Use	Brand Names
0.125%	Bait	Vedira™ Pressurized Fly Bait
0.005%	Bait	Vedira™ Ant Gel Bait
0.02%	Bait	Vedira™ Granular Ant Bait
0.25%	Bait	Vedira™ Cockroach Gel Bait
0.025%	Bait	Vedira™ Granular Fly Bait
0.2% + 0.05% Alpha-Cypermethrin	Aerosol	PT Vedira™ Pressurized Insecticide
100 g/L SC	Liquid termiticide	Terinda™ SC Termiticide/Insecticide
0.0045%	Termicide foam	Terinda™ Foam Termiticide/Insecticide

Resistance Management

Broflanilide is one of the first insecticides within the newly created insecticide mode of action Group 30 in the IRAC classification scheme (IRAC 2018a). Group 30 insecticides are called meta-diamides and defined as “GABA-gated Cl-channel allosteric modulators.” However, this group is unrelated to both Group 28 diamides and Group 2 “GABA-gated Cl-channel blockers.” Broflanilide insecticide has a unique mode of action, and no cross-resistance has been observed with any of the existing products.

As a powerful active ingredient with high biological efficacy, Broflanilide insecticide will be a key tool to control chewing pests and certain thrips, and will be the cornerstone of pest management programs.

Insects have the potential to develop resistance to even the most highly effective products. For example, lack of mode of action rotation and off-label applications have led to the development of insecticide resistant *Plutella xylostella*, *Helicoverpa* spp. and *Spodoptera* spp. These pests have high reproduction rates and result in devastating damage to crops.

To prevent the development of resistance to Broflanilide insecticide, products should be applied according to label instructions. BASF has developed use recommendations based on internal and external research and recommendations from IRAC.

- Label recommendations (rates, water volumes, application timing, etc.) were developed for maximum efficacy and best stewardship of the product. These recommendations should be followed strictly to reduce the potential for resistance development and reduced efficacy.
- Broflanilide insecticide should be rotated with other modes of action whenever multiple applications are needed.
- In foliar uses, Broflanilide insecticide applications should be limited to a maximum of two sequential applications targeting the same pest-cohort and included as part of a well-designed rotation program.

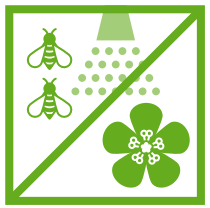
Stewardship

Please note: The following recommendations are preliminary and may be adjusted once the product registrations are obtained.

- Select at least one message for human and environmental protection each if there is not enough space for all. Where alternative wording for the same message is given: select preferred wording.
- Certain stewardship messages are more suitable/relevant for some countries/regions than for others.

Foliar Uses

- Not compatible with bees.
- No bloom applications.
- No application during foraging period of bees.

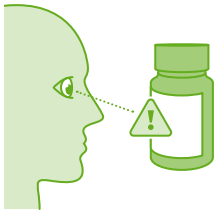


- Buffer zones to protect water bodies.
- Reduce spray drift to neighboring blooming crops or weeds, and to water bodies.

- Do not contaminate the environment.
- Properly dispose of tank washings and empty containers.

- Wear suitable protective equipment when handling the product.
- Protect yourself during mixing, loading and application.

- Always read and follow the label instructions.



Seed Treatment and Planting of Treated Seeds

- Buffer zones to protect water bodies.
- Reduce spray drift to neighboring blooming crops or weeds, and to water bodies.

- Wear suitable protective equipment when handling the product.
- Protect yourself during mixing, loading and application.

- Always read and follow the label instructions.

We create chemistry

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Always read and follow label directions.