

TECHNICAL BULLETIN

DuPont™ Rynaxypyr™ insect control compound is the first insecticide from a new class of chemistry, the anthranilic diamides, controlling almost all economically important Lepidoptera and selected other species. When used early in the pest life cycle, Rynaxypyr™ prevents the build-up of pest populations, maximizing yield potential. The high larvicidal potency and long-lasting activity of Rynaxypyr™ provide excellent crop protection, even when circumstances prevent optimal application timing. The rapid cessation of feeding, strong residual activity and excellent rainfast properties of Rynaxypyr™ deliver nearly-immediate and long-lasting plant protection under a range of growing conditions.

Rynaxypyr™ has a new mode of action, controlling pests resistant to other insecticides, while its selectivity to non-target arthropods conserves natural parasitoids, predators and pollinators. These attributes make Rynaxypyr™ an excellent addition to Integrated Pest Management (IPM) programs and provide growers greater flexibility in field operations aimed at delivering high-quality produce that meets the demands of food retailers and consumers. Rynaxypyr™ has remarkably low toxicity to mammals, fish and birds and high insecticidal potency, setting a new standard for insecticides. Due to its favorable toxicological profile and recommended low use rates, Rynaxypyr™ is a sound choice for growers, farm workers and the environment.



KEY CROP GROUPS

- CORN
- COTTON
- GRAPES
- LEAFY & FRUITING VEGETABLES
- POME & STONE FRUIT
- POTATOES
- RICE
- SUGAR CANE
- TREE NUTS
- TURF

PROFILE OF RYNAXYPYR™ INSECT CONTROL

SUPERIOR CROP PROTECTION

- Rapid feeding cessation
- Long-lasting control
- Excellent crop safety

LOW IMPACT ON MAMMALS AND THE ENVIRONMENT

- Favorable mammalian toxicological profile
- Short Re-Entry Intervals & Pre-Harvest Intervals
- Low impact on fish and birds

COMPATIBILITY WITH IPM & IRM PROGRAMS

- New class of chemistry
- New mode of action
- Selective to beneficial arthropods

NEW MODE OF ACTION

Rynaxypyr™ controls insect pests through a new mode of action, activation of insect ryanodine receptors (RyRs). These receptors play a critical role in muscle function. Contraction of muscle cells requires a regulated release of calcium from internal stores into the cell cytoplasm. Ryanodine receptors act as selective ion channels, modulating the release of calcium. Rynaxypyr™ binds to the RyR, causing uncontrolled release and depletion of internal calcium, preventing further muscle contraction. Insects treated with Rynaxypyr™ exhibit rapid cessation of feeding, lethargy, regurgitation and muscle paralysis, ultimately leading to death. Due to its unique chemical structure and novel mode of action, Rynaxypyr™ shows excellent control of pest populations resistant to other insecticidal products (see Fig. 1).

Rynaxypyr™ binds to insect ryanodine receptors in muscle cells causing the channel to open and release calcium ions (Ca^{2+}) from internal stores into the cytoplasm. Depletion of Ca^{2+} stores results in paralysis and death.

Unique Mode of Action

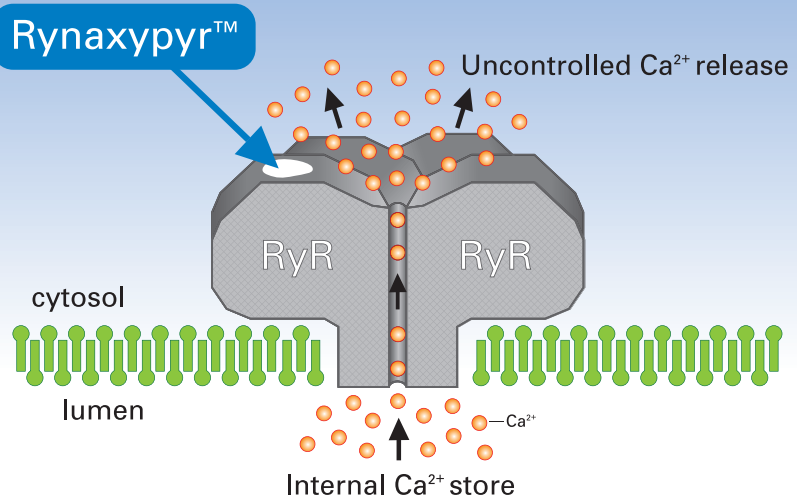
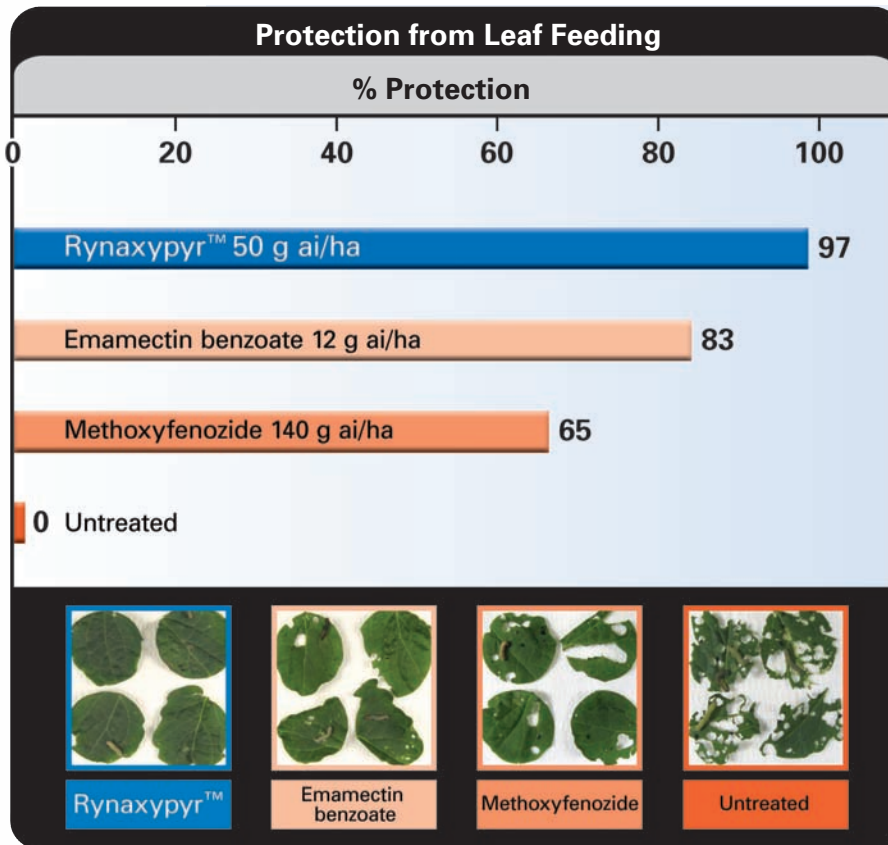


Figure 1

SUPERIOR CROP PROTECTION

Several features of Rynaxypyr™ work together to provide crop protection that is superior to many commercial standards (see Fig. 2).



This study demonstrated that Rynaxypyr™ provides superior protection from leaf feeding.

Source: DuPont Stine-Haskell Research Center – Delaware, USA.

Figure 2

Rynaxypyr™ is fast acting — causing target pests to stop feeding within minutes of ingestion which results in nearly-immediate crop protection (see Fig. 3).

Feeding Cessation of *Spodoptera exigua* 3rd Instar Larvae Exposed to Dry Insecticide Residues on Treated Tomato Leaves

Treatment	Rate (g ai/ha)	ET ₅₀ (minutes)
Methoxyfenozide 2F	140	885 c*
Emamectin benzoate 5WG	12	170 b*
Rynaxypyr™ 20SC	50	7 a*

In this study, Rynaxypyr™ was 24 to 126 times faster than commercial standards in eliciting feeding cessation.

*Values followed by the same letter within a column are not significantly different (P > 0.05).

Source: DuPont Stine-Haskell Research Center – Delaware, USA.

Figure 3

HIGHLY EFFECTIVE

Rynaxypyr™ is highly potent and efficacious against a wide range of economically important Lepidoptera species. Rynaxypyr™ also effectively controls selected species from other orders such as Coleoptera, Diptera, Hemiptera and Isoptera (see *Insects Controlled*).

Larvicidal Activity

Rynaxypyr™ provides unprecedented larval control and is frequently one to two orders of magnitude more potent against target pests when compared to commercial standards (see *Fig. 4*).

Potency by Ingestion of Rynaxypyr™ vs. Standards (feeding bioassay against 3rd instar larvae on leaves)

Treatment	<i>H. virescens</i> LC ₅₀ (ppm)	<i>P. xylostella</i> LC ₅₀ (ppm)
Cypermethrin	13.5 a*	2.1 a*
Indoxacarb	1.5 b*	0.5 b*
Rynaxypyr™	0.1 c*	0.05 c*

*Values followed by the same letter within a column are not significantly different ($P > 0.05$).

Source: DuPont Stine-Haskell Research Center – Delaware, USA.

Figure 4

Ovicidal and Ovi-larvicidal Activity

Rynaxypyr™ is particularly potent against neonates as they hatch from the eggs (ovi-larvicidal activity). In addition, significant ovicidal activity is observed at varying levels depending on the pest species. Ovicidal effects are enhanced when eggs are laid on treated surfaces. When applied at the time of egg lay, the long-lasting activity of Rynaxypyr™ combined with its effects on eggs and larvae prevents the establishment and growth of pest populations at low use rates (see *Fig. 5*).

Target species are highly susceptible to Rynaxypyr™ at early stages of development.

Source: DuPont Paulinia Research Station – São Paulo, Brazil.

Effects on Eggs and Emerging Neonate Larvae



1. Ovicidal:

Larvae died inside the egg before hatching.



2. Ovi-larvicidal:

Larvae died inside the treated egg after ingesting a small portion of the membrane.



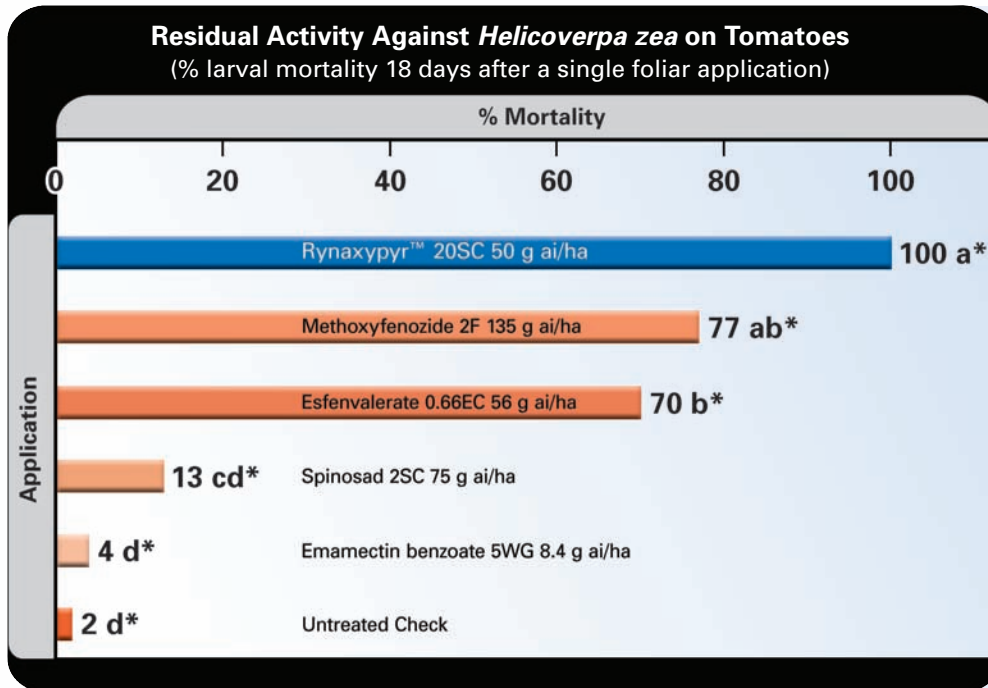
3. Ovi-larvicidal:

Larva died before completely exiting the egg.

Figure 5

LONG-LASTING CROP PROTECTION

Rynaxypyr™ moves into leaf tissue where it is protected from wash-off while remaining available to chewing insects feeding on either surface of the leaf. This translaminar activity, rainfastness, insecticidal potency and resistance to photo-degradation are the bases for the long-lasting crop protection observed with Rynaxypyr™ (see Fig. 6).



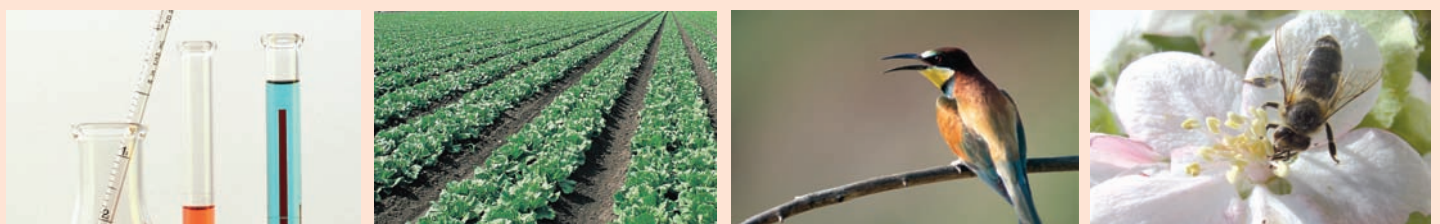
In this study, Rynaxypyr™ continues to provide 100% larval control 18 days after a single foliar application.

*Values followed by the same letter within a column are not significantly different ($P > 0.05$).

Source: DuPont Rio Grande Valley Station – Texas, USA.

Figure 6

EXCELLENT FIT WITH IPM & IRM PROGRAMS



- New Chemical Class and Mode of Action
- Highly Efficacious at Low Use Rates
- Selective to Beneficial Arthropods
- Excellent Environmental Profile
- Low Impact on Fish, Birds and Mammals

Selective to Beneficial Arthropods

Results of extensive multi-year laboratory and field studies show that Rynaxypyr™ has negligible impact on key parasitoids, predators and pollinators at field use rates. This impressive selectivity to beneficial arthropods, along with its robust pest control and favorable environmental profile, establishes Rynaxypyr™ as a strong tool for Integrated Pest Management programs, where a combination of chemical and biological control techniques is preferred (see Fig. 7).

Evaluation of Rynaxypyr™ on Key Predators and Parasitoids					
GROUP	ORDER	FAMILY	SPECIES	RESULT	
PREDATORS	Neuroptera	Chrysopidae	<i>Chrysoperla carnea</i> ¹	■	
			<i>Mallada signatus</i> ²	■	
	Coleoptera	Coccinellidae	<i>Hippodamia convergens</i> ¹	■	
			<i>Hippodamia variegatta</i> ²	■	
			<i>Harmonia axyridis</i> ³	■	
	Hemiptera	Nabidae	<i>Nabis kinbergii</i> ²	■	
		Anthrocoridae	<i>Orius insidiosus</i> ¹	■	
			<i>Anthocoris nemoralis</i> ⁴	■	
	Acari	Phytoseiidae	<i>Geocoris punctipes</i> ¹	■	
			<i>Amblyseius herbicolus</i> ⁵	■	
	PARASITOIDS	Hymenoptera	Trichogrammatidae	<i>Amblyseius andersoni</i> ⁶	■
				<i>Kampimodromus aberrans</i> ⁴	■
			Braconidae	<i>Euseius citrifolius</i> ⁵	■
				<i>Iphiseiodes zulgai</i> ⁵	■
				<i>Typhlodromus occidentalis</i> ⁷	■
Encyrtidae			<i>Typhlodromus pyri</i> ⁸	■	
			<i>Trichogramma pretiosum</i> ³	■	
Aphelinidae			<i>Trichogramma chilonis</i> ⁹	■	
			<i>Aphidius rhopalosiphii</i> ⁸	■	
POLLINATORS			Hymenoptera	Apidae	<i>Bracon hebetor</i> ³
	<i>Dolichogenidea tasmanica</i> ¹⁰	■			
	<i>Agonaspis citricola</i> ³	■			
			<i>Aphelinus mali</i> ²	■	
			<i>Apis mellifera</i> ^{11,12,13,14,15}	■	

■ = Low to No Impact (0–30% mortality). Rating according to the International Organization for Biological Control.

SOURCES:

(1) Cameron et al. 2005–2006, DuPont Stine-Haskell Research Center, USA.
(2) Cole et al. IPM Technologies Pty Ltd 2005–2006, Australia.
(3) Parra et al. 2004–2005, ESALQ University of São Paulo, Brazil.
(4) V. Girolami et al. Padua University and AGREA Agenzia Regionale per le Erogazioni in Agricoltura 2006, Italy.
(5) Rebelles et al. 2005, EPAMIG-CTSM/EcoCentro, Brazil.
(6) G. Angeli et al. 2006, Instituto Tecnico Agrario Michele, Italy.
(7) Beers et al. 2006, Washington State University, USA.
(8) Warmers et al. 2006, GAB Biotechnologie, Germany.
(9) Sharma et al. 2005, DuPont Southeast Asia Field Experimental Station, Gujarat, India.
(10) Newman et al. Horticultural Research Hawkes' Bay 2006, New Zealand.
(11) Beuschel et al. 2006, GAB Biotechnologie, France.
(12) Giffard et al. 2006, TESTAPI, France.
(13) Schur et al. 2005–2006, GAB Biotechnologie, Spain.
(14) Sinderman et al. 2005, Wildlife International Laboratory, USA.
(15) Szinicz et al. 2006, GAB Biotechnologie, Germany.

Figure 7

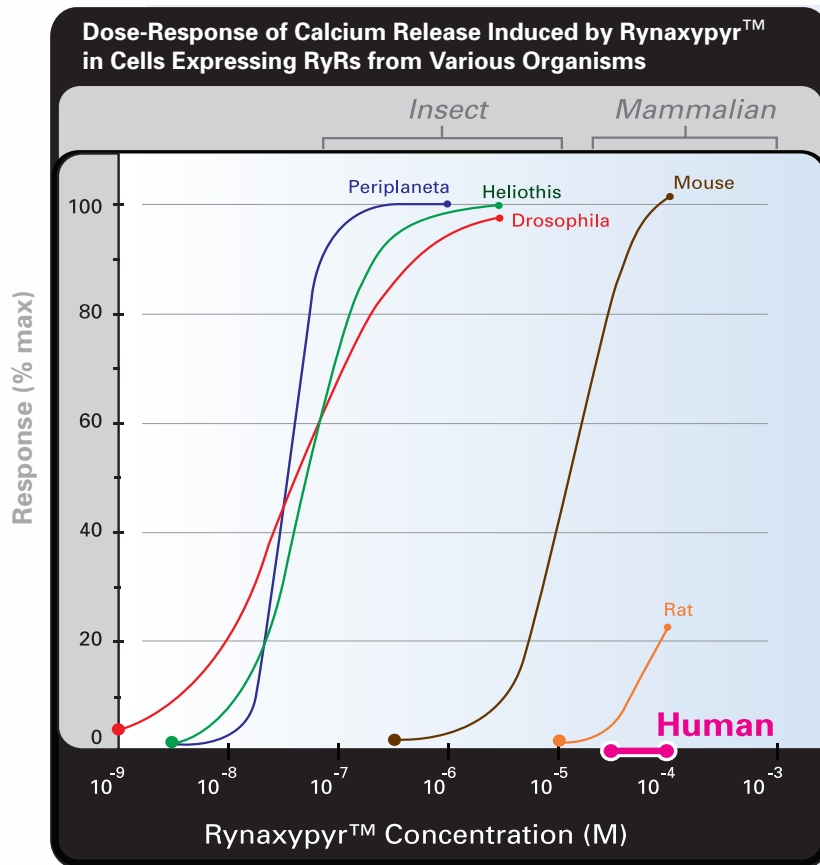
Strong Resistance Management Tool

Rynaxypyr™ is in a new chemical class with a new mode of action [Group 28, Insecticide Resistance Action Committee (IRAC)]. In over 4,000 development trials around the world and numerous laboratory experiments in 18 countries, no evidence has been found of cross-resistance between Rynaxypyr™ and existing insecticides. These results show that Rynaxypyr™ will control insect populations that have developed resistance to other insecticides, thus creating a fit for Rynaxypyr™ as a rotational partner in Insect Resistance Management (IRM) programs. DuPont supports strategies recommended by IRAC to minimize the selection of resistance genes and delay the development of resistance. Refer to product labels for specific IRM guidelines.

FAVORABLE TOXICOLOGICAL PROFILE

Rynaxypyr™ showed very low toxicity to mammals in all acute, subchronic and chronic animal studies performed, allowing the establishment of short Re-Entry (REIs) and Pre-Harvest Intervals (PHIs) to fit cultural needs while minimizing Personal Protective Equipment (PPE) requirements. Always refer to product labels for REI, PHI and PPE requirements for specific countries and crops.

The basis for this remarkable selectivity is a structural difference between insect and mammalian ryanodine receptors (RyRs). Rynaxypyr™ is highly effective in activating insect RyRs, but not mammalian RyRs. This results in insect RyRs being 400–3,000 times more sensitive to Rynaxypyr™ as compared to mammalian RyRs (see Fig. 8).



No response was observed in the human cell line IMR32 treated with Rynaxypyr™.

Source: DuPont Stine-Haskell Research Center – Delaware, USA.

Figure 8

This exceptional toxicological profile has been verified in all tests required by regulatory agencies.

Toxicological Profile

Representative Test	Result
Acute oral toxicity, rat LD ₅₀	> 5,000 mg/kg
Acute dermal toxicity, rat LD ₅₀	> 5,000 mg/kg
Sub-acute and subchronic toxicity (mouse, rat, dog)	No adverse effects
Inhalation, rat LC ₅₀	> 5.1 mg/L
Dermal irritation	Not irritant
Eye irritation	slight, clearing in 72 hours

Representative Test	Result
Dermal sensitization	Not a sensitizer
Mutagenicity	Not mutagenic
Carcinogenicity	Not carcinogenic
Neurotoxicity	Not neurotoxic
Immunotoxicity	Not immunotoxic
Developmental toxicity	No adverse effects
Reproductive toxicity	No adverse effects

LOW IMPACT ON THE ENVIRONMENT

Studies show that Rynaxypr™ has low impact on the environment when applied according to label recommendations.

The rate of degradation of Rynaxypr™ in the environment varies depending on soil and water conditions. High temperature, alkaline pH and ultraviolet light enhance degradation, producing non-toxic degradation products. The sequestration of Rynaxypr™ in the soil matrix, its low water solubility, and its non-volatility indicate low potential for movement toward surface or ground water.

Eco-Toxicological Profile

Rynaxypr™ has low impact on non-target organisms such as birds, fish, mammals, earthworms, micro-organisms, algae and other plants, and many non-target arthropods. Rynaxypr™ has minimal potential for bio-accumulation and bio-magnification in animals. Some aquatic invertebrates, such as Daphnia, are sensitive to Rynaxypr™. However, studies show selectivity of Rynaxypr™ to estuarine invertebrates.

Species	Result
Bobwhite quail	LD ₅₀ > 2,250 mg/kg body weight LC ₅₀ > 5,620 ppm in diet
Mallard duck	LC ₅₀ > 5,620 ppm in diet
Rainbow trout	LC ₅₀ > 13.8 mg/L (solubility limit)
Bluegill	LC ₅₀ > 15.7 mg/L (solubility limit)
Catfish	LC ₅₀ > 13.4 mg/L (solubility limit)
Sheepshead minnow	LC ₅₀ > 12.0 mg/L (solubility limit)
Mysid shrimp	LC ₅₀ = 1.15 mg/L
Crayfish	LC ₅₀ > 1.42 mg/L (solubility limit)
Algal inhibition test:	
<i>Selenastrum capricornutum</i>	EC ₅₀ > 2.0 mg/L (solubility limit)
Aquatic plant:	
<i>Lemna gibba</i>	EC ₅₀ > 2.0 mg/L (solubility limit) NOEC > 2.0 mg/L (solubility limit)
Honey bee	
Acute oral	LD ₅₀ > 104 µg/bee
Acute contact	LD ₅₀ > 4 µg/bee (solubility limit)
Wasp parasitoid:	
<i>Aphidius rhopalosiphi</i>	LR ₅₀ > 750 g/ha
Phytoseid mite:	
<i>Typhlodromus pyri</i>	LR ₅₀ > 750 g/ha
Earthworm	
Acute	LC ₅₀ > 1,000 mg/kg soil
Reproductive	NOEC > 350 mg/kg soil
Soil microorganism	NOEC > 0.7 mg/kg soil
Sewage sludge	NOEC > 100 mg/L

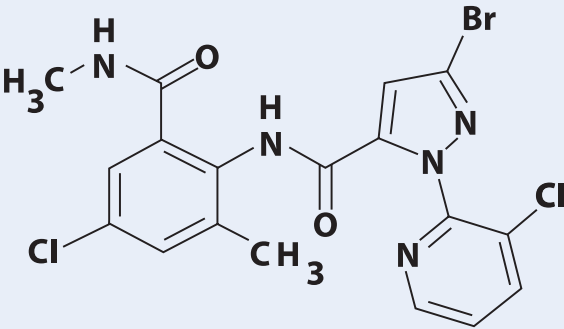
FORMULATIONS

Rynaxypyr™ formulations have been developed and optimized for superior crop protection and improved handling properties (ease of mixing, re-suspension and tank clean-out). These formulations show excellent crop selectivity and compatibility with commonly used tank-mix partners. These formulations have proven to be chemically stable in the spray tank over a wide range of conditions and temperatures (4-40° C), pH (5-7-9) and time (up to 72 hours).

Altacor™	350 g ai/kg water-dispersible granules
Coragen™	200 g ai/L suspension concentrate
Ferterra™	0.4 g ai/kg granules
Prevathon™	51.5 g ai/L suspension concentrate

Registered formulations of Rynaxypyr™ may vary by country.

PHYSICAL AND CHEMICAL PROPERTIES

ISO Common Name	Chlorantraniliprole
Trade Name (Technical)	Rynaxypyr™
Chemical Name (CAS)	3-bromo- <i>N</i> -[4-chloro-2-methyl-6-[(methylamino)carbonyl]phenyl]-1-(3-chloro-2-pyridinyl)-1H-pyrazole-5-carboxamide
Experimental Code	DPX-E2Y45
Chemical Class	Anthranilic diamide
CAS Registry Number	500008-45-7
Structural Formula	
Empirical Formula	C ₁₈ H ₁₄ BrCl ₂ N ₅ O ₂
Molecular Weight	483.15 g/mole
Physical Form	Fine crystalline powder
Melting Point	208–210°C (P)*; 200–202°C (T)*
Color	Off-white (P)*; Brown (T)*
Odor	None
Relative Density	1.51 g/mL at 20°C
Solubility in Water	1.0 mg/L at 20°C
Vapor Pressure	6.3 x 10 ⁻¹² Pa at 20°C
Volatility	Not volatile
Henry's Law Constant (20°C)	3.2 x 10 ⁻⁹ Pa-M ³ /mole
Octanol/Water Partition Coefficient (20°C, LogP _{ow} pH 7)	2.86
Dissociation Constant (pKa) (20°C)	10.88

* P (pure active ingredient); T (technical grade active ingredient).
All other values were generated with the pure active ingredient.

INSECTS CONTROLLED

The following is a representative list of insect species against which Rynaxypyr™ has demonstrated effective control. Refer to product labels for specific pest insects controlled and appropriate directions for use.

INSECTS CONTROLLED				
Order	Family	Scientific Name	Common Name	
Coleoptera	Chrysomelidae	<i>Leptinotarsa decemlineata</i>	Colorado potato beetle	
	Curculionidae	<i>Lissorhoptrus oryzophilus</i>	rice water weevil	
		<i>Listronotus maculicollis</i>	annual bluegrass weevil	
		<i>Oryzophagus oryzae</i>	rice water weevil	
		<i>Sphenophorus spp.</i>	billbug	
	Scarabaeidae	<i>Ataenius spretulus</i>	black turfgrass ataenius	
		<i>Aphodius spp.</i>	scarab beetles	
		<i>Cotinis nitida</i>	green June beetle	
		<i>Cyclocephala spp.</i>	masked chafers	
		<i>Exomala orientalis</i>	oriental beetle grub	
<i>Maladera castanea</i>		Asiatic garden beetle		
<i>Phyllophaga spp.</i>		June beetles		
<i>Popillia japonica</i>		Japanese beetle		
Diptera	Agromyzidae	<i>Chromatomyia horticola</i>	garden pea leafminer	
		<i>Liriomyza spp.</i>	leafminers	
Hemiptera	Alexyrodidae	<i>Bemisia spp.</i>	whitefly	
		<i>Trialeurodes abutiloneus</i>	bandedwing whitefly	
Isoptera	Cicadellidae	<i>Typhlocyba pomaria</i>	white apple leafhopper	
	Rhinotermitidae	<i>Heterotermes tenuis</i>	sugar cane termite	
Isoptera	Termitidae	<i>Microtermes obesi</i>	sugar cane termite	
		<i>Odontotermes obesus</i>	sugar cane termite	
Lepidoptera	Arctiidae	<i>Estigmene acrea</i>	saltmarsh caterpillar	
	Crambidae	<i>Achyra rantalis</i>	garden webworm	
		<i>Desmia funeralis</i>	grape leaf folder	
		<i>Ostrinia nubilalis</i>	European corn borer	
	Gelechiidae	<i>Anarsia lineatella</i>	peach twig borer	
		<i>Keiferia lycopersicella</i>	tomato pinworm	
		<i>Phthorimaea operculella</i>	potato tuberworm	
		<i>Tuta absoluta</i>	S. American tomato pinworm	
	Geometridae	<i>Operophtera brumata</i>	winter moth	
	Gracilaridae	<i>Phyllocnistis citrella</i>	citrus leafminer	
		<i>Lithocolletis ringoniella</i>	apple leafminer	
		<i>Phyllonorycter blancardella</i>	spotted tentiform leafminer	
	Lyonetidae	<i>Leucoptera spp.</i> (ie: <i>malifoliella</i> , <i>coffeella</i>)		coffee leafminer/ pear leaf blister moth
	Noctuidae	<i>Agrotis ipsilon</i>	black cutworm	
		<i>Alabama argillacea</i>	cotton leafworm	
		<i>Amphipyra pyramidoides</i>	humped green fruitworm	
		<i>Anticarsia gemmatilis</i>	velvetbean caterpillar	
<i>Autographa gamma</i>		common silver Y moth		
<i>Barathra brassicae</i>		cabbage armyworm		
<i>Earias spp.</i> (ie: <i>huegeliana</i> , <i>insulana</i> , <i>vitella</i>)		rough, spiny, northern rough bollworm		
<i>Helicoverpa spp.</i> (ie: <i>armigera</i> , <i>punctigera</i> , <i>zea</i>)		bollworms/budworms/fruitworms		
<i>Heliothis virescens</i>		tobacco budworm		
<i>Lithophane antennata</i>		green fruitworm		
<i>Mamestra brassicae</i>	cabbage moth			

INSECTS CONTROLLED (cont.)

Order	Family	Scientific Name	Common Name	
Lepidoptera (cont.)	Noctuidae (cont.)	<i>Orthosia hibisci</i>	green fruitworm	
		<i>Phalaenoides glycinae</i>	grape vine moth	
		<i>Phytometra acuta</i>	tomato semi-looper	
		<i>Pseudoplusia includens</i>	soybean looper	
		<i>Spodoptera</i> spp. (ie: <i>exigua</i> , <i>frugiperda</i> , <i>littoralis</i>)	beet armyworm, fall armyworm, Egyptian cotton leafworm	
		<i>Trichoplusia ni</i>	cabbage looper	
	Pieridae	<i>Pieris</i> spp. (ie: <i>brassica</i> , <i>rapae</i>)	large white, imported cabbageworm	
	Plutellidae	<i>Plutella xylostella</i>	diamondback moth	
	Pyralidae	<i>Amyelois transitella</i>	navel orangeworm	
		<i>Chilo</i> spp. (ie: <i>infuscatellus</i> , <i>polychrysus</i> , <i>suppressalis</i>)	sugar cane/rice stem borers	
		<i>Cnaphalocrocis medinalis</i>	rice leafroller	
		<i>Crambus</i> spp.	sod webworm	
		<i>Crocidolomia binotalis</i>	cabbage cluster caterpillar	
		<i>Diaphania</i> spp. (ie: <i>hyalinata</i> , <i>nitidalis</i>)	melonworm, pickleworm	
		<i>Diatraea saccharalis</i>	Brazilian sugar cane borer	
		<i>Elasmopalpus lignosellus</i>	lesser stalk borer	
		<i>Evergestis rimosalis</i>	cross-stripped cabbageworm	
		<i>Hedylepta indicata</i>	soybean leaffolder	
		<i>Hellula</i> spp. (ie: <i>hydralis</i> , <i>undalis</i>)	cabbage centre grub, cabbage webworm	
		<i>Leucinodes orbonalis</i>	eggplant shoot and fruit borer	
		<i>Maruca</i> spp.	pod borer	
		<i>Neoleucinodes elegantalis</i>	tomato small borer	
		<i>Scirpophaga</i> spp.	sugar cane/rice stem borer	
		<i>Sesamia</i> spp. (ie: <i>inferens</i> , <i>nonagrioides</i>)	pink stem borer/corn stalk borer	
	Sphingidae	<i>Manduca</i> spp. (ie: <i>quinquemaculata</i> , <i>sexta</i>)	tomato/tobacco hornworm	
	Tortricidae	<i>Adoxophyes orana</i>	summer fruit tortrix	
		<i>Argyrotaenia</i> spp. (ie: <i>pulchellana</i> , <i>velutinana</i>)	grape tortrix, redbanded leafroller	
		<i>Bonagota cranaodes</i>	Brazilian apple leafroller	
		<i>Carposina</i> spp. (ie: <i>niponensis</i> , <i>sasaki</i>)	peach fruit borer, peach fruit moth	
		<i>Choristoneura rosaceana</i>	obliquebanded leafroller	
		<i>Cryptophlebia leucotreta</i>	false codling moth	
		<i>Cydia pomonella</i>	codling moth	
		<i>Ecdytophaga aurantiana</i>	citrus borer	
		<i>Endopiza vitana</i>	grape berry moth	
		<i>Epiphyas postvittana</i>	light brown apple moth	
		<i>Eupoecilia ambiguella</i>	European grape berry moth	
		<i>Grapholita molesta</i>	oriental fruit moth	
		<i>Lobesia botrana</i>	European grapevine moth	
		<i>Pandemis</i> spp. (ie: <i>cerasana</i> , <i>heparana</i> , <i>limitata</i> , <i>pyrusana</i>)	barred fruit tree tortrix, apple brown tortrix, three-lined leafroller, apple pandemis	
		<i>Platynota</i> spp. (ie: <i>idaeusalis</i> , <i>stultana</i>)	tufted apple bud moth, omnivorous leafroller	
		Zygaenidae	<i>Harrisina</i> spp. (ie: <i>americana</i> , <i>brillians</i>)	grapeleaf/western grapeleaf skeletonizer



DuPont™
RYNAXYPYR™
insect control



The miracles of science™

Registration is pending in the U.S. and other major agricultural markets.

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