

Brassica crop protection products

A guide to potential impacts on beneficials

Relative potential impact of Australian brassica industry crop protection products on beneficials and the environment

This quick reference guide is designed to assist you to choose effective crop protection products which minimise impact on beneficial insects in your crop and on the overall environment.

Always refer to the current product label and product registration documents before product application.

Note that when you apply and how you use a product may alter its' potential impact. A preplant product application may differ in impact compared to applications at later stages of the crop.

Colour Key: ■ Low Impact ■ Moderate Impact ■ High Impact

Brassica - Australian Registered actives and current permits as at December 2010				Impact on Beneficial Insects and Fungi	Total Environmental Impact	Impact on Beneficial Insects and Mites	Impact on Beneficials
Active Ingredient	Example Common Trade Name	Chemical Group	Use	Data from USA Cornell University Rating *	Data from USA Cornell University Rating *	Australian data HAL report rating	Colour Key Some known impacts
abamectin	Vertimec	6A	sucking pests	28	35	High	
acephate(970g/kg)	Orthene XTRA	1B	chewing pests	22	25		
alpha-cypermethrin	Dominex Duo	3A	chewing pests	23	27		Broad spectrum
beta-cyfluthrin	Bulldock	3A	chewing pests	47	32		Broad spectrum
bifenthrin	Talstar	3A	chewing / sucking pests	47	44		Broad spectrum
botanical oil - emulsifiable	wetter		insecticide			Derived Impact	
Btaz	Xentari WG	11C	soft option insecticide	16	13	Low	
Btk	Delfin WG	11C	soft option insecticide	16	13	Low	
buprofezin	Applaud	17A	Insecticide	28	29		
chlorantraniliprole	Coragen	28	chewing pests	9	18	Low	
chlorantraniliprole + thiomethoxam*	Durivo	28 + 4A	chewing and sucking insects	For impact see ratings for the component products			
chlorfenapyr	Secure	13A	chewing / sucking pests	36	46		Broad spectrum
chlorpyrifos	Lorsban	1B	chewing / sucking pests	25	27	Harmful	Broad spectrum
cypermethrin	Scud Elite	3A	chewing pests	28	36		Broad spectrum
deltamethrin	Decis	3A	chewing pests	22	28		
diazinon	Diazinon	1B	chewing pests	47	44		Broad spectrum
dimethoate	Rogor	1B	sucking pests	47	33		Broad spectrum
emamectin as benzoate	Proclaim	6A	soft option insecticide	8	26	Low / Moderate	
fenitrothion	Sumithion	1B	insecticide			Group 1B Derived Impact	Broad spectrum
fipronil	Regent	2C	chewing pests	68	91		
flubendiamide	Belt	28	soft option insecticide	9	19	Low / Low	
gamma-cyhalothrin	Trojan	3A	insecticide	47	44		Broad spectrum
Helicoverpa NPV	Gemstar / Vivus Gold	virus	soft option insecticide			Derived Impact	
imidacloprid*	Confidor / Senator / Nuprid	4A	insecticide	39	37	Moderate / High	Trichogramma, bugs, beetles
indoxacarb	Avatar	22A	soft option insecticide	18	31	Low / Moderate	Predatory beetles
lambda-cyhalothrin	Karate	3A	insecticide	46	44		Broad spectrum
maldison	Maldison	1B	insecticide	25	23		Parasitic wasps, beetles, bugs, lacewings
methamidophos	Monitor	1B	insecticide	25	37		Parasitic wasps, beetles, bugs, lacewings
methomyl	Lannate	1A	insecticide	25	22		Parasitic wasps, predatory beetles bugs, lacewings and spiders
mevinphos	Phosdrin	1B	insecticide	36	15		
parathion-methyl	Methyl Parathion	1B	insecticide	47	26		
permethrin	Ambush	3A	insecticide	25	29		Very toxic to all parasitic wasps, predatory beetles bugs, lacewings and spiders
phorate	Thimet	1B	insecticide	35	48		
pirimicarb	Pirimor	1A	soft option aphid pests	15	16	Low	Egg parasitic wasp (Trichogramma) hoverfly
prothiofos	Tokuthion	1B	insecticide			Group 1B Derived Impact	Broad spectrum
pymetrozine	Chess	9A	soft option aphid pests	11	20	Low	Parasitoids & Ladybirds
pyrethrins	pyrethrin insecticide	3A	insecticide	25	37		Toxic to beneficials on contact short term but not persistent.
pyriproxyfen	Admiral	7C	insecticide	5	15		Parasitoids
spinosad	Success	5A	soft option insecticide	12	14	Low / Moderate	Egg parasitic wasps
spirotetromat	Movento	23	soft option sucking pests	47	35	Safe to common vegetable predators	Low on common predators
sulphur	elemental sulphur	M2	fungicide / insecticide	87	45	Low / Low	Trichogramma
tau-fluvalinate	Mavrik Aquaflow	3A	insecticide	25	46		
thiomethoxam		4A	insecticide	Not registered as a stand alone product for brassica or lettuce			
thiodicarb	Larvin	1A	insecticide	25	23		
vegetable oil	Protec oil		insecticide			Derived Impact	
zeta-cypermethrin	Fury	3A	insecticide	23	27		
chlothral-dimethyl	Dacthal	D	herbicide			Group D Derived Impact	
clethodim	Select	A	herbicide	15	17	Low / Moderate	
clopyralid as tipa	Lontrel / cauliflower	I	herbicide	19	18		
fluzafop-P as butyl	Fusilade	A	herbicide	21	29		
metolachlor	Bouncer	K	herbicide	15	22		
oxyfluorfen	Goal	G	herbicide	36	34		
pendimethalin	Stomp / Rifle	D	herbicide	30	30		
propachlor	Ramrod	K	herbicide		moderate	Group K Derived Impact	
quizalofop-P-ethyl	Tiger	A	herbicide	16	22		
S-metolachlor	Dual Gold	K	herbicide	15	22		
sethoxydim	Poast	A	herbicide	24	21		
trifluralin	Trifluralin	D	herbicide	5	19		
azoxystrobin	Amistar	11	fungicide erradicant	33	27	Low / Low	
boscalid	Filan	7	fungicide erradicant	15	26	Low / Low	
chlorothalonil	Bravo	M5	fungicide protectant	39	37		Broad spectrum
Cu as cuprous oxide	Norshield	M1	fungicide protectant			Low / Low	
Cu as hydroxide	Kocide	M1	fungicide protectant	15	38		
Cu as oxychloride	Copper oxychloride	M1	fungicide protectant			Group M1 Derived Impact	
Cu as sulfate (tribasic)	Tri-base blue	M1	fungicide protectant	77	62		
dimethomorph+mancozeb	Acrobat	40	fungicide erradicant	24	24		Broad spectrum
fluzazinam	Shirlan	29	fungicide protectant	15	23		
iprodione	Rovral	2	fungicide protectant	20	24		
mancozeb	Mancozeb	M3	fungicide protectant	24	26	Low / Low	Predatory mites
mancozeb + metalaxyl	Ridomil Gold	4	fungicide erradicant	39	30		
metiram	Polyram	M3	fungicide erradicant	46	40	Low / Moderate	
penconazole	Topas	3	fungicide erradicant			Group 3 Derived Impact	
phosphorous acid	Agriphos	33	fungicide erradicant	5	7		
potassium bicarbonate	Armicarb, Kaligreen	28	fungicide protectant	5	8		
prochloraz as MnCl2 complex	Octave	3	fungicide erradicant	15	22		
procymidone	Procymidone	2	fungicide			Group 2 Derived Impact	
propiconazole	Propiconazole	3	fungicide erradicant	27	32		
pyraclostrobin	Cabrio	11	fungicide	25	27		
sulphur	elemental sulphur	M2	fungicide / insecticide	87	45	Low / Low	Trichogramma
tebuconazole	Folicur	3	fungicide erradicant	25	40		
thiram	Thiram	M3	fungicide protectant	15	29		
triadimenol	Bayfidan	3	fungicide			Group F Derived Impact	
zineb	Zineb	M3	fungicide	77	38		
metaldehyde+methiocarb	Metaldehyde	molluscicide	Snails & Slugs	55	33		Pellet form reduces impact

* Note that these ratings are for foliar application not as seedling drench

* The higher the figure the higher the impact

Derived Impact
This indicates the assumed impact based on the chemical or product group.

The benefits and impacts of a product within an IPM program must be considered in your individual crop situation and growing environment.

Explanatory Notes

What do the rating figures mean?
These are not to indicate the scale and level of impact but provide a comparison (relative measure) between the different chemicals or product group.

Note: some ratings of moderate impact chemicals may appear high but this will be due to the range of beneficials and fungi affected.

Impact on Beneficial Insects and Fungi
(Cornell University data) is based on test results exposing seven beneficial insects and three beneficial fungi test species to the above products (details appear in the reference listed below).

Impact on Beneficial Insects
Australian Data is based on test results exposing a range of beneficial insects and mites to a range of products (details appear in the reference).

Total Environmental Impact
(Cornell University data) This score represents the overall effect of each pesticide on; the applicator, picker, consumer, groundwater, aquatic life, bird, bee, beneficial insect and fungi.

These figures are shown to provide guidance as to the environmental impact of these chemicals.

The Environmental Impact Quotient (EIQ)
The formula for determining the EIQ value of individual pesticides is listed below and is the average of farm worker, consumer, and ecological components (see reference 1).

$$EIQ = \frac{[(DT \cdot 5) + (DT \cdot P)] + [(C \cdot (S+P)/2) \cdot SY] + (L) + [(F \cdot R) + (D \cdot (S+P)/2) \cdot 3] + (Z \cdot P \cdot 3) + (B \cdot P \cdot 5)]}{3}$$

DT = dermal toxicity,
C = chronic toxicity,
SY = systemicity, F = fish toxicity
L = leaching potential
R = surface loss potential
D = bird toxicity
S = soil half-life
Z = bee toxicity
B = beneficial arthropod toxicity
P = plant surface half-life

Environmental impact is determined by the underlying impact of the product adjusted according to product formulation and the application rate.

References

1. A Method to Measure the Environmental Impact of Pesticides - <http://nysipm.cornell.edu/publications/eiq/> J. Kovach*, C. Petzoldt, J. Degni**, and J. Tette, IPM Program, Cornell University, New York State Agricultural Experiment Station Geneva, New York 14456.
*current address: Dept. Entomology, Ohio Agricultural Research and Development Center, 1680 Madison Ave., Wooster, OH 44691-4096
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3. Pesticide Effects on Beneficial Insects and Mites in Vegetables (HAL Project Number VG606087) Unpublished at the time of printing. P. Home, P. Cole and A. Cutler, IPM Technologies Pty Ltd. http://www.horticulture.com.au/reports/search_final_reports.asp?src= (Type in project code 6087 to do a search and then open the document).
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