



Diamondback Moth (DBM) Insecticide Resistance Management (IRM) Strategy Western Australia

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Consult product labels and/or permits for registrations for specific vegetable brassica crops and application information.
This strategy is part of integrated pest management (IPM) for vegetable brassica crops — cauliflower, broccoli, cabbage and Brussels sprouts.

Crop stage	Window 1: 1 July–31 Dec	Window 2: 1 Jan–30 June
Seedling treatment	Group 28 + Group 4A ¹ Durivo [®] WHP 42 ² AI: chlorantraniliprole + thiamethoxam	A shorter window is recommended due to longevity of product
Early	Group 11 Bt's AI: Bacillus thuringiensis	WHP not required
Mid to late	Group 5 Success [™] Neo WHP 3 AI: spinetoram	Group 6 e.g. Proclaim [®] , Warlock [®] WHP 3 AI: emamectin benzoate
	Group 28 Belt [®] AI: flubendiamide WHP 3 ² Coragen [®] AI: chlorantraniliprole WHP 7 ²	Group 22A e.g. Avatar [®] , Spymaster AI: indoxacarb WHP 7 ²
	Group 13 Secure [®] AI: chlorfenapyr WHP 7	Group 2B e.g. Regent [®] , Albatross [®] WHP 7 AI: fipronil
Late	Group 3A Synthetic pyrethroids (SP's) AI: alpha-cypermethrin, beta-cypermethrin, cypermethrin, zeta-cypermethrin WHP 1 AI: deltamethrin, esfenvalerate, gamma-cyhalothrin, WHP 2 AI: lambda-cyhalothrin, permethrin, tau-fluvalinate ³ WHP 2	
	Group 1B Organophosphates (OP's) AI: trichlorfon WHP 2 AI: maldison ⁴ , acephate ⁵ WHP 3 ⁵ AI: chlorpyrifos WHP 5	AI: prothiofos ⁶ WHP 7 AI: diazinon WHP 14

WHP = withholding period in days. AI = active ingredient

¹ Durivo[®] contains active ingredients from Group 28 and Group 4A. Do not apply Belt[®] or Coragen[®] in Durivo[®] treated crops.

² Durivo[®], Belt[®], Coragen[®] and Avatar[®] have different WHP for leafy brassicas and other vegetable brassica crops.

³ Tau-fluvalinate is only registered for cauliflowers. ⁴ Maldison is registered for cabbage and cauliflower only. ⁵ WHP for acephate on broccoli is 14 days. ⁶ Prothiofos is not registered for cauliflower.

Diamondback moth (DBM) in vegetable brassicas Insecticide Resistance Management (IRM) Strategy for Western Australia

This strategy is part of an integrated pest management (IPM) approach for DBM in vegetable brassica crops — cauliflower, broccoli, cabbage and Brussels sprouts.

CropLife Australia Insecticide Resistance Management Guidelines

1. To help prevent the development of resistance to any one specific active ingredient through exposure of consecutive DBM generations follow a “window” approach. Multiple successive applications of a specific active ingredient are acceptable if they are used to treat a single pest generation. Incorporate IPM techniques into the overall pest management program and monitor populations for loss of field efficacy.
2. Always read and follow product labels. Some products place a limit on the number of times they can be applied per crop (see table below) and when they can be applied.
3. Monitor crops regularly and only apply insecticide when the pest threshold is reached.
4. Be aware of insecticide mode of actions used in the nursery phase of the crop and ensure a one generation break exists before re-use of that same mode of action in the field phase of the crop.
5. Ensure spray rig is properly calibrated and achieving good coverage with appropriate sized spray droplets.
6. Time the application to the most susceptible life stage of the target pest, in the case of DBM this is small larvae.
7. To encourage beneficial insects, use *Bacillus thuringiensis* (Bt) sprays and avoid broad spectrum sprays, particularly early to mid-crop cycle.
8. Be cautious of using tank mixes where both active ingredients control DBM as this strategy is generally not considered best practice for resistance management.
9. DO NOT re-treat a spray failure with a product from the same chemical group.
10. Practise good crop hygiene to reduce DBM pressure — plant clean seedlings and incorporate crop residue as soon as practical after harvest.

For more information refer to the crop life website www.croplife.org.au

Window 1

Group 28 insecticides

Use the window approach to avoid exposing more than one generation of DBM to Group 28 insecticides. The total exposure period of all Group 28 should not exceed 50% of the crop cycle.

Durivo® (AI: **chlorantraniliprole** - Group 28 and AI: **thiamethoxam** - Group 4).

Do not make more than one application per crop.

Belt® (AI: **flubendiamide**) - Group 28.

A maximum of three applications may be applied per crop, within a time period of not less than 14 days. Generally, spray intervals of 7–14 days are suitable.

Coragen® (AI: **chlorantraniliprole**) - Group 28.

A maximum of three applications are to be applied per crop. No more than two consecutive sprays per crop, with a minimum spray interval of seven days.

Group 5 - Success™ Neo (AI: **spinetoram**)

Do not make more than four applications to any crop in any one season. Apply repeat applications at 7–14 day intervals.

Group 13 - Secure® (AI: **chlorfenapyr**)

Apply a maximum of two sprays per crop, seven days apart. Applications vary for Brussels sprouts, see label for details.

[Consult product labels and/or permits for registrations for specific vegetable brassica crops and application information](#)

Window 2

Group 6 - e.g. **Proclaim**® (AI: **emamectin benzoate**)

Do not apply more than four times per crop. Where more than one crop is grown do not make more than four applications in any one year.

Group 22A - e.g. **Avatar**® (AI: **indoxacarb**)

For best results, it is recommended that up to three applications be made sequentially as thresholds dictate. A maximum of four applications can be made to any one crop. Do not re-treat within seven days.

Group 2B - e.g. **Regent**® (AI: **fipronil**)

Limit the number of applications to no more than four per year, preferably applied within an eight week period.

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This strategy suggests best practice insecticide use by growers and is regularly updated in consultation with growers and CropLife Australia.

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