Crop(s)	**Sorghum, maize, summer & winter grain legumes**
Insect(s)	**Heliothis/Cotton bollworm/Native budworm (*Helicoverpa* spp.)**

Guidelines

1. To help prevent the development of resistance to any specific active ingredient (see table below), observe the following instructions:
    a. Use in accordance with the current IRMS for your region.
    b. Apply a specific active ingredient using a "window" approach to avoid exposure of consecutive insect pest generations to the same mode of action. Multiple successive applications of a specific active ingredient are acceptable if they are used to treat a single pest generation.
    c. Following a 'window' of a specific mode of action product, rotate to a 'window' of applications of effective insecticides with a different mode of action.
    d. The total exposure period of any one mode of action 'active window' applied throughout the crop cycle (from seedling to harvest) should not exceed 50% of the crop cycle.
    e. Incorporate IPM techniques into the overall pest management program.
    f. Monitor insect 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. Ensure spray equipment is properly calibrated and achieving good coverage with appropriately sized spray droplets.
5. Time the application to the most susceptible life stage of the target pest.
6. To encourage beneficial insects, use *Bacillus thuringiensis* (Bt) or NPV sprays and avoid broad spectrum insecticides where possible, particularly early to mid-crop cycle.
7. Be cautious of using insecticide tank-mixes where both active ingredients control *Helicoverpa* spp. as this strategy is generally not considered best practice for resistance management. Refer to document IRAC International Insecticide Mixture Statement for more information on this subject.
8. **Do not** re-treat a spray failure with a product from the same chemical group.
9. Practice effective pupae busting as soon as practicable after harvest.

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10. The Modes of Action (Groups) and registered insecticides for control of Heliothis/Cotton bollworm/Native budworm (*Helicoverpa* spp.) are listed below:

MoA Group*	Chemical subgroup	Active ingredient	No. applications permitted per crop per season	Crops
1A	Carbamates	methomyl (eg. Lannate® L), thiodicarb (eg. Larvin®)	not specified	All cereal grains, oilseed, pulses
3A	Pyrethroids	synthetic pyrethroids (various – eg. Dominex® Duo, Karate® Zeon, Sumi-alpha® Flex, Trojan®)	not specified	All cereal grains, oilseed, pulses
5	Spinosyns	spinetoram (Success® Neo)	2	All pulses
5 + 18	Spinosyns + diacylhydrazines	spinetoram + methoxyfenozide (Intrepid Edge®)	Chickpeas: 1	Chickpeas
			Mung beans: 2	Mung beans
6	Avermectins	emamectin benzoate (eg. Affirm®)	2	All pulses
6 + 4A	Avermectins + neonicotinoids	emamectin benzoate + acetamiprid (Skope®)	2	Summer & winter pulses except field peas and lupins
11A	*Bacillus thuringiensis*	*Bacillus thuringiensis* (eg. Dipel®)	not specified	All cereal grains, oilseed, pulses
22A	Oxadiazines	indoxacarb (eg. Steward® EC)	1	chickpea, faba bean, mung bean, soybean, azuki bean
28	Diamides	chlorantraniliprole (eg. Vantacor®)	2	All pulses
31	Nucleopolyhedrovirus	NPV of H.zea or H.armigera – (eg. Gemstar®, Vivus® Max)	no limit but avoid season long use of low rates	All cereal grains, oilseed, pulses
UNM	Paraffinic spray oils	paraffinic oil (eg. Parachute®)	2 alone or in combination with NPV's	All pulses, oilseeds

** Refer: CropLife Australia Expert Committee on Insecticide Resistance Mode of Action Classification for Insecticides.*

[¥]Refer: Registered product label

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Notes

1. For more information refer to the IPM Guidelines H. *armigera* RMS for Australian grains: https://ipmguidelinesforgrains.com.au/ipm-information/resistance-management-strategies/#heli
2. Consider the impact on beneficial insects. Consult the Cesar Australia beneficial insects table: https://cesaraustralia.com/resources/beneficials-toxicity-table/
3. NSW DPI resistance monitoring updates: https://www.dpi.nsw.gov.au/biosecurity/plant/insect-pests-and-plant-diseases/fall-armyworm/chemical-management-options

Notes regarding the application of insecticides:

To ensure the most effective control of the pest:

a) Product labels should at all times be carefully read and adhered to;
b) Full recommended rates of registered insecticides should always be used; and
c) Ensure good coverage of the target area to maximise contact.