

Management of cotton mealybug (CMB, *Phenacoccus solenopsis*)

In-crop recommendations:

- Upon first detection, mark infested plants/spots.
- Monitor regularly for CMB and **key beneficials - lacewings, ladybird beetles (e.g. *Cryptolaemus*, 3-banded), *Aenasius parasitoid***.
- Beneficial insects are highly effective in keeping CMB populations in check; chemical insecticides should be used for CMB control only in very specific circumstances (see below) and as a last resort if beneficials are absent or at very low densities (early in the season or due to spraying for other insect pests) and there is a growing risk of CMB infestation/damage.
- **CMB infestation carries a significant risk of plant death in the seedling and early squaring stages** when the cotton plant is highly susceptible and before the seasonal build-up of beneficial insects occurs. In such circumstances chemical intervention may be required (see Table A below for options).
- **Good coverage is critical** for effective control of CMB with chemical insecticides; depending on plant size, higher **water volumes, up to 250-300 L/ha**, will increase efficacy of any rate.
- For ground-rig spray application, the use of **droppers** (3 nozzles per row of cotton) in conjunction with Turbo Twinjets (TTJ60-110) is **highly recommended**.
- **Sequential application 14 days apart may be required** to achieve a satisfactory level of CMB control with some insecticides; refer to the product label for directions. For management advice in specific situations or circumstances, contact the Cottoninfo team.

(A): From flowering to 4 weeks from first defoliation

Infestation Characteristics	Spatial distribution	Other pests nearing or at threshold	Management option
Individual plants and/or small groups of plants – infested plants may be stunted but NOT SEVERELY AFFECTED	Isolated/scattered <u>throughout field</u> (crop)	Yes - mirids	<ul style="list-style-type: none"> • Aim to control mirids without flaring CMB; sulfoxaflor (Transform) has efficacy (40-60% control) on CMB. Efficacy may be rate dependent; addition of Pulse penetrant @ 1% (v/v) may enhance efficacy. • Increasing water volume to 250-300 L/ha will increase efficacy of any rate.
		Yes - SLW	<ul style="list-style-type: none"> • Spirotetramat (Movento) (+ 3-5% oil v/v) is effective on CMB and has efficacy on SLW. • Buprofezin (Applaud) has suppressive effects on CMB (stops population growth) and is available for use under permit (PER83180). It also has activity on SLW.
		No	<ul style="list-style-type: none"> • Continue monitoring; Conserve beneficials. • Sequential applications of crop oils (Biopest, Canopy) @ 5% v/v can suppress CMB
	Confined to one or more clearly identifiable <u>sections</u> of field (crop)	Yes – mirids, SLW	<ul style="list-style-type: none"> • Manually remove and destroy infested plants where possible, avoid spreading to other parts of the field. • Continue monitoring; Conserve beneficials. • Sequential applications of crop oils (Biopest, Canopy) @ 5% v/v can suppress CMB. • Sulfoxaflor and [spirotetramat + 5% oil v/v] options as above for spot or whole field treatment.
		No	<ul style="list-style-type: none"> • Manually remove and destroy infested plants where possible; avoid spreading to other parts of the field. • Continue monitoring. • Sequential applications of crop oils (Biopest, Canopy) @ 5% v/v can suppress CMB.
			Yes - mirids

Infestation hotspots with dead or dying plants	Isolated/scattered <u>throughout</u> field (crop)		<p>rate dependent; addition of Pulse penetrant @ 1% (v/v) may enhance efficacy.</p> <ul style="list-style-type: none"> Increasing water volume to 250-300 L/ha will increase efficacy of any rate.
		Yes - SLW	<ul style="list-style-type: none"> Spirotetramat (+ 5% oil v/v) is effective on CMB and has efficacy on SLW; Buprofezin has a suppressive effect on CMB (stops population growth). It also has activity on SLW.
	No	<ul style="list-style-type: none"> If one or more key beneficials are present – CONSERVE; continue monitoring. Crop oils (Biopest, Canopy) @ 5% v/v are non-disruptive; sequential applications can suppress MB. If beneficials are absent or in very low numbers, the recommended option for whole field is spirotetramat + 5% oil; sulfoxaflor + Pulse penetrant may also provide reasonable to good control. Buprofezin can be used but will provide only partial or suppressive control; aim to conserve and build beneficial numbers. 	
	Confined to one or more clearly identifiable <u>sections</u> of field (crop)	Yes – mirids, SLW	<ul style="list-style-type: none"> If key beneficials are present, minimise mirid and SLW sprays on infested section of field where possible; conserve beneficials and continue monitoring. If mirid/SLW spraying is required, use sulfoxaflor or spirotetramat options, as above.
	No	<ul style="list-style-type: none"> If key beneficials are present, minimise other pest sprays on infested section of field where possible; conserve beneficials and continue monitoring. If key beneficials are absent or in very low numbers, spirotetramat + 5% oil (v/v) is the recommended option. sulfoxaflor + Pulse penetrant may also provide reasonable to good control. 	

(B) Mealybug (CMB) management options: 0 - 4 weeks from first defoliation

Infestation Characteristics	Spatial distribution	Time to 1 st defoliation	Management option
Individual plants and/or small groups of plants – infested plants may be stunted but NOT SEVERELY AFFECTED	Isolated/scattered <u>throughout</u> field (crop)	3 - 4 wks	<p>In the absence of other pests (eg. SLW), no intervention required:</p> <ul style="list-style-type: none"> Allow beneficials to build and control CMB. Prior to crop harvest, destroy all non-crop vegetation that may harbour CMB (head, tail drains, sides) to minimise CMB survival and carry-over to next crop. Practice excellent field/farm hygiene and crop residue management. <p><u>If spraying for SLW is necessary:</u></p> <ul style="list-style-type: none"> Pyriproxifen (Admiral) is very effective on SLW, soft on beneficials and will not flare (no efficacy on) CMB. Buprofezin has suppressive effect on CMB (stops population growth). It also has activity on SLW. High water volumes >150 L/ha will increase efficacy of both products. <p>DO NOT USE BROAD SPECTRUM PRODUCTS FOR SLW KNOCKDOWN</p>

	Confined to one or more clearly identifiable <u>sections</u> of field (crop)	0 – 2 wks	As above. In the absence of other pests (eg. SLW), no intervention required; <ul style="list-style-type: none"> Manually remove and destroy infested plants where possible.
Infestation hotspots with dead or dying plants	Scattered throughout OR confined to one or more clearly identifiable sections of field (crop)	3 - 4 wks	This situation is the result of failure to detect and manage CMB early, and/or disruption of beneficials. In the absence of other pests (eg. SLW), intervention is not recommended. <ul style="list-style-type: none"> Allow beneficials to build and control CMB. Prior to crop harvest, destroy all non-crop vegetation (head ditch, tail drains, sides) that may harbour CMB to minimise CMB survival and carry-over to the next crop. Practice excellent field/farm hygiene and crop residue management. <p><u>If spraying for SLW is necessary:</u></p> <ul style="list-style-type: none"> Pyriproxifen (Admiral) is very effective on SLW, soft on beneficials and will not flare (no efficacy on) CMB. Buprofezin has a suppressive effect on CMB (stops population growth). It also has activity on SLW. High water volumes >150 L/ha will increase efficacy of both products. <p>DO NOT USE BROAD SPECTRUM PRODUCTS FOR SLW KNOCKDOWN</p>
		0 – 2 wks	This situation is the result of failure to detect and manage CMB early, and/or disruption of beneficials: <ul style="list-style-type: none"> Intervention with chemicals is not recommended. Allow beneficials to build and control CMB. Prior to crop harvest, destroy all non-crop vegetation that may harbour CMB bordering the crop (head, tail drains, sides) to minimise CMB survival and carry-over to the next crop. Practice excellent field/farm hygiene and crop residue management.

End-of-season recommendations for a CMB infested crop:

- At harvest, leave picking of the crop or infested sections for last.
- If possible lift picker heads above CMB host spots or infested sections.
- After harvest, destroy crop residue thoroughly and root cut to a depth of 10 cm or more to minimise the survival of plant material in the soil that can harbour CMB; escapes when root cutting are common when volunteers occur just outside of the plant row or when equipment is set up poorly.
- Consider pupae busting if you are planning on growing cotton again in the same or neighbouring field within 1-2 years.
- Everyone entering the farm should practice Come Clean Go Clean principles - brush down clothing after entering a field with mealybugs and ensure farm equipment is cleaned down after entering fields with mealybugs.
- If you have a contractor coming on to the property, inspect the machinery at the gate! Provide contractors with wash down facilities that they can use before and after completing work on the property.
- Make sure your Come Clean Go Clean requirements are communicated to workers, contractors and other people visiting the farm.