

'Best Bet' IPM strategy

Summer pulse pests

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| Pre-plant | <ul style="list-style-type: none"> • Avoid paddocks in close proximity to other pest hosts (e.g. thrips moving from parthenium that transmit tobacco streak virus to mungbeans, or silverleaf whitefly moving from cucurbit and cotton crops into soybeans). • Avoid paddocks previously planted to crops hosting soil-borne pests such as cutworms or nematodes, and observe recommended plant back periods. • Avoid sequential mungbean and soybean plantings to avoid a build-up of key pests including podsucking bugs and whitefly. |
| Seedling | <ul style="list-style-type: none"> • Scout regularly to detect helicoverpa larvae before they become too big (>12 mm) to control effectively with NPV. High temperatures cause helicoverpa larvae to reach a damaging size more quickly. Threshold is 3 larvae/m². Soybeans are at greater risk than mungbeans. • Scout regularly for bean fly to detect the first signs of seedling deaths (potentially severe threat in mungbeans in coastal regions). Threshold is 1 larva per plant. Band spray over seedlings to avoid spraying the bare inter-row. • Report seedling deaths in soybeans. Could be soybean stemfly, which has been reported recently in coastal regions. |
| In-crop | <ul style="list-style-type: none"> • More vigorous crops are more tolerant of pest attack and are better able to compensate for damage. For example, podsucking bug thresholds are higher in higher yielding crops. Stressed soybeans are more attractive to soybean moth |

| | Vegetative | Budding/Flowering/Podset | Pod Fill/Ripening |
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| Helicoverpa | <p>Key objective to not to disrupt beneficial insects attacking helicoverpa and other key pests (including aphids and whitefly)</p> <ul style="list-style-type: none"> • Scout regularly to detect larvae before they exceed 12 mm so as to control effectively with biopesticides • Monitor key beneficials including <i>Microplitis</i> and predatory bugs • Threshold (vegetative) set at 6 larvae/m² for soybeans and 4/m² for mungbeans. From budding onwards, threshold typically ranges from 1.4-2.0/m² (depending on crop value and control costs) • Preferred IPM option is a NPV biopesticide (VivusMax or Gemstar). Coverage is critical. Apply early morning or in the evening if mornings are cool (<15 deg C.) • Chlorantraniliprole (Altacor) is an IPM option from budding onwards, especially in mungbeans. It has no to little impact on most beneficials and is not toxic to human operators. Coverage is critical as Altacor is an ingestion-active product. Target small larvae before they enter pods. | | |
| Loopers | <p>Far less damaging than helicoverpa as they don't attack terminals, auxiliary buds, or pods. Up to 33% defoliation can be tolerated with no yield loss in the vegetative stage, and up to 16% defoliation in the podset and podfill stages</p> <ul style="list-style-type: none"> • Preferred IPM option is a Bt-based biopesticide such as Dipel. • Coverage is critical. Apply early morning or in the evening | | |
| Aphids Soybean aphid (all season); soybean and cowpea aphids (budding onwards) | <p>Key objective is not to disrupt beneficial insects. Greater risk of soybean aphid attack in cool summers.</p> <ul style="list-style-type: none"> • Monitor aphids closely to see if populations are declining or increasing. Part the crop canopy to detect early cowpea infestations. • Look for beneficials that are aphid indicators, especially ladybirds • Avoid disruptive sprays that kill aphid predators, especially ladybirds, hover fly larvae and lacewings • For soybean aphids (SA), spray if >250 per plant (<i>Note: If aphids are seen on main stem, populations are above threshold</i>). Make a decision to spray by flowering/podset as high populations will result in very uneven pod maturity and significant yield loss • No thresholds are available for cowpea aphids. Best guess is to spray if a significant number of plants (25%) have heavy aphid infestations on the pods and stems. Pirimicarb (PER 13451 valid till 31 Mar 2016) is the preferred IPM option for both species | | |

| | Vegetative | Budding/Flowering/Podset | Pod Fill/Ripening |
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| Silverleaf whitefly (soybeans only) | <p>Key objective is not to disrupt beneficial insects attacking SLW, in particular parasitic wasps such as <i>Eretmocerus hayati</i>. Greater risk of attack in hot summers.</p> <ul style="list-style-type: none"> • Monitor parasitism. Parasitised nymphs are creamy opaque or black (unparasitised are clear pale yellow). • Use selective pesticides or delay hard insecticides against other pests for as long as possible (e.g. don't spray podsucking bugs until early podfill) • No thresholds are set. Populations >15 nymphs per cm² of leaf had a noticeable impact on yield in field trials. • No pesticides registered. Spirotetramat is under permit 13850 till 30 June 2015. It is most effective when populations are low. Temporary maximum residue limits set are for Australia consumption only. Check with overseas buyers before spraying beans likely to be exported • Keep water up to infested crops as well-watered crops are more tolerant of SLW <p>Note that unless mass immigration occurs from earlier maturing hosts, SLW numbers should decline as podfill progresses</p> | | |
| Mirids and podsucking bugs (PSB) | | <p>Mirids are not an issue in soybeans unless populations exceed 6/m²</p> <ul style="list-style-type: none"> • Scout regularly to pick start of budding when crops become susceptible to attack • The mirid threshold in mungbeans is very low (typically 0.5/m²), but is based on sustained mirid activity over 28 days • If mirids are low, consider delaying the first mirid spray slightly. Delays of up to 7 days won't compromise yield, may negate the need for a second mirid spray, and coincide with a heli spray. <p>Consider using a low rate dimethoate (250mL/ha) plus a 0.5% salt adjuvant to minimise the impact on beneficial insects attacking helioverpa and other pests.</p> | <p>Podsucking bugs don't cause economic damage until podfill</p> <ul style="list-style-type: none"> • Scout regularly and thoroughly as bug nymphs can be very clumped • Know the difference between predatory bug and pest PSB adults, and their nymphs • No selective pesticides are available for PSB, so don't spray before podfill and risk flaring other pests • PSB thresholds are higher in high-yielding crops • As pod fill progresses, the damage potential of PSB populations increases as PSB nymphs increase in size <p>PSB can downgrade seed quality right up to harvest maturity. Above threshold populations should be controlled well before pod maturity is reached</p> |
| Bean podborer (mungbeans only) | | <p>Major pest in coastal/sub coastal mungbeans</p> <ul style="list-style-type: none"> • Scout regularly to pick start of budding when crops become susceptible to attack. Look for moths flying in the crop, small larvae in flowers, and webbed flowers. Larvae will move from flowers to attack the pods. • Note that mungbeans are indeterminate hence the overlap of flowering and podfill • Best recently registered IPM insecticide option is chlorantraniliprole (Altacor) • Provisional thresholds are 6 larvae/m² found in flowers, or 1 larva/m² sampled with a beatsheet | |
| Sporadic pests Grass blue butterfly (GBB) and Etiella | <p>GBB can cause damage similar to helioverpa, lopping of axillary buds and terminals. Scout crops carefully as the slug-like larvae are well camouflaged. Preferred IPM option is a Bt-based biopesticide such as Dipel.</p> | | <p>Etiella is a sporadic pest – more in dry years</p> <ul style="list-style-type: none"> • No effective pesticide options • Populations usually below the threshold of 30-40 larvae/ m², so no spray benefit. • Most infestations are not detected until larvae are inside the pods, where they cannot be controlled. |