



An introduction to Integrated Pest Management





Drivers for IPM

Internationally IPM is being legislated and adopted

The European Union (2009) legislated for sustainable use of pesticides

Canada and the US have legislated for IPM adoption goals

Drivers

- securing food production
- robust and reliable production systems
- community concerns – environmental and human health





IPM: Reduce reliance on insecticides

- Insecticide resistance
- Pest and secondary pest outbreaks
- Off target impacts (natural enemies, human, environment)
- Consumer demand



A framework for IPM

	IPM in practice
Know the signals	Paddock histories and weather data inform predictions of pest pressure risk
	Pest trapping and forecasts of outbreaks inform decisions risk
Informed decisions	An appropriate monitoring schedule underpins informed decisions risk
	Economic thresholds guide control decisions
Know the pest	Pest ID is fundamental to correctly targeting management tactics
	A knowledge of pest biology and ecology provide an understanding of how the pest, crop and management tactics interact risk
	An area Wide Management approach within your region may be critical for some pest species.

A framework for IPM

	IPM in practice
Cultural control	Cultural practices can suppress and/or disrupt pest populations (stubble management, rotations) risk
	Resistant varieties reduce the susceptibility of the crop
Biological control (Natural regulation)	Beneficials make a valuable contribution to reducing pest abundance
	Biopesticides (NPVs, metarhizium) have minimal off-target impacts.
Strategic pesticide choices	Use pesticides strategically and with beneficials / non-target insects in mind
	Diversify control options to manage the risk of resistance developing risk



IPM example

Caterpillars in *mid vegetative* soybeans
7.5/m in 0.75 m rows

- Identify the caterpillar
- Crop stage - implications
- Monitoring – regular – why?
- Action Threshold?



10/m²

6/m² – no yield loss up to 6/m²
– significant loss for > 6/m²



IPM example

Caterpillars in *mid vegetative* soybeans
7.5/m in 0.75 m rows



10/m²

- We don't need to kill every heli
- Adopt 'Go-Soft Early' IPM strategy
- Use biopesticides unless high numbers
- For helis use NPV (if loopers - use Bt)
- Biopesticides – coverage & time of day critical
- Add amino feed & buffering agent (LI700)



'Best bet' IPM strategy for summer pulses

Pre-plant and in-crop	<p>Paddock selection</p> <ul style="list-style-type: none"> Avoid paddocks in close proximity to other pest hosts (e.g. parthenium weed hosts thrips that transmit tobacco streak virus to mungbeans, or cucurbit and cotton crops hosts silverleaf white fly that can move into soybeans). Avoid paddocks previously planted to crops that host soil-borne pests such as cutworms. Avoid sequential mungbean and soybean plantings to avoid a build up of key pests (e.g. podsucking bugs and whitefly) <p>Best practice agronomy – more vigorous crops are more tolerant of pests and are better able to compensate for damage. For example, podsucking bug thresholds are higher in higher yielding crops and stressed soybeans are more attractive to soybean moth.</p>
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	Seedling	Vegetative	Budding/Flowering/Podset	Pod Fill/Ripening
Aphids (soybean and cowpea)		<p>Higher risk of soybean aphid in cool summers</p> <ul style="list-style-type: none"> Monitor aphids closely and regularly Only spray if >250 aphids per plant (<i>Note: If seen on main stem, aphids are well above threshold</i>) Avoid disruptive sprays that kill aphid predators, especially ladybirds, hover fly larvae and lacewings Pirimicarb (PER 13451 valid till 31 Mar 2016) is the preferred IPM option 	<p>Populations are often increasing by these crop stages.</p> <ul style="list-style-type: none"> Monitor closely to see if populations are declining or increasing 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, aphids are well above threshold</i>). Uncontrolled above threshold populations will result in very uneven pod maturity and significant yield loss Part the crop canopy to detect early cowpea infestations. No thresholds for cowpea aphids. Best bet - spray if more than 25% of plants have heavy infestations on pods and stems. Pirimicarb is the preferred IPM option for both species 	
Bean fly	<p>Spasmodic but potentially severe threat in mungbeans in coastal regions</p> <ul style="list-style-type: none"> Scout regularly to detect the first signs of seedling deaths Threshold is 1 larva per plant Band spray over seedlings to avoid spraying the bare inter-row 			



The aims of the workshop

- Introduce and discuss an IPM approach
- To provide practical examples of how you can implement IPM
- To get you thinking



Topics

Risk assessment

Monitoring

Thresholds

Management and/or control decisions

- Specifically recent pest issues - stemfly, whitefly and ????

