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# OILSEEDS NEWS

## BENEFICIALS CAN BEAT BELLIGERANT BUGS

**MONITOR, MONITOR, MONITOR:** Hugh Brier shows participants how to monitor beneficial and pest insects in a soybean crop with a beat sheet. Beat sheets and magnifiers were given to each workshop participant.
Photo: Felicity Pritchard.

Cheaper, more toxic, broad-spectrum chemicals can do more harm than good in controlling insect pests of soybeans and actually exacerbate pest problems.

This was one of the learnings from an integrated pest management (IPM) training workshop held in Griffith last week, following listening to soybean insect 'guru', Hugh Brier.

Kingaroy-based Brier is a senior entomologist with the Queensland Department of Primary Industries and Fisheries, and has an extensive knowledge of what are considered 'hard' and 'soft' options for managing insect pests in soys, adzuki and mung beans.

The workshop covered crop growth stages, integrated pest management philosophy, insect identification, monitoring, thresholds and insecticide options, and was followed by some crop monitoring at David and Paul Bellato's Coleambally property.

Dr Brier said that in Queensland, previous insecticide resistance in corn earworm, *Helicoverpa amigera,* and the lack of options to control whitefly had more-or-less forced growers to adopt IPM. In the Riverina, he believed that spider mite (two-spotted mite) may be the driving force for IPM adoption.

"My aim is to get people enthused and active, and become local champions for IPM," he said.

**FINER DETAIL:** Hay soybean grower, Nick Maynard, with NSW DPI entomologist Joanne Holloway take a close-up view of insect life through the microscope. Photo: Felicity Pritchard.

Dr Brier demonstrated the importance of beneficial insects in keeping populations of insect pests low by acting as parasites or predators of pests, and said that native insects play a far greater role than most people probably realise.

Dr Brier said the first IPM strategy for soybeans is to "go soft early".

"Use only biopesticides before flowering. Reserve the new 'soft' pesticides for 'helis' (ie *Helicoverpa*) at podding. Also, delay for as long as possible the spray for pod-sucking bugs (such as green vegetable bugs) until early pod-fill – even if they are there already".

By using only the more selective biopesticides early in the crop's life, the beneficial insect populations can build up quickly, and keep the number of pests in the crop at a manageable level. The more toxic, broad-spectrum insecticides not only kill pests, but can kill many beneficial species whih otherwise help keep pest levels low. Often this leads to a 'flare-up' of red spider mite, also known as two-spotted mite, attacking soybean crops in the Riverina and northern Victoria.

"They are the classic secondary pest. A soybean crop close to a maize crop is much more at risk, and hot, dry weather makes it worse. Unlike with other species, crops are at risk from mites until maturity," he said.

However, Dr Brier said that growers had limited IPM option to control pod-sucking insects later in the season, which can severely reduce soybean grain quality if it is used for making products like tofu and soy milk.

"We have a problem with implementing IPM strategies in soybeans during pod-fill, as there is only effective registered option," he said. This chemical s broad-spectrum and will take out many beneficial insects as well as the pests.

Dr Brier explained to participants the importance of close monitoring of soybean crops and basing spray decisions on economic thresholds for the maximum economic yield and best quality grain.

An economic threshold is considered a break-even point where the anticipated cost of damage by the insect population is equal to the cost of control.

"Spraying is only recommended when insect numbers exceed the economic threshold for yields. Just how far above the threshold a pest population is before you take action is an individual judgement, based on how confident you are in your monitoring and the cost of control.

You may prefer to wear more damage if you're into IPM and want to foster your 'beneficials'. It's so important to continually monitor your population. If none of your grubs are getting big, then obviously they're being taken out (by beneficial species)".

Dr Brier pointed out that soybeans have many reserve pods. Early damage can be compensated for more than the yield thresholds suggest, as the crop sets far more pods than what gets through to harvest.

“Each ‘heli’ can eat more than 100 buds, flowers and small pods. They’re not called budworm for nothing,” he said.

He said that crops in the vegetative phase can tolerate defoliation of one-third of their leaf area without any yield loss, or as much as 40 per cent when factoring in the cost of controlling the insects; but this drops back to 15 to 20 per cent during flowering and podding.

The actual percentage of defoliation can be deceiving to the naked eye, and may look far worse than it actually is, he said.

However, the thresholds for preventing damage to grain quality are actually lower than economic thresholds, to avoid further reduction in quality.

“Unlike the economic thresholds for yield, you can lose a lot of money if you stray over the threshold for quality. Therefore take action before you reach the threshold for quality,” said Dr Brier.

He said that lower yielding crops could not handle as a high a density of pod-sucking insects as bigger crops, as the percentage of grain damages would be higher.

Dr Brier demonstrated a computer simulation model which showed how to work out whether or not to spray a crop for insects for damage to grain quality.

Agronomists attending the workshop said that Dr Brier’s knowledge and the information he shared was a real highlight of the day, and learnt a great deal of the importance of beneficial insects in controlling insect pest populations.

They said that they will now consider economic thresholds before recommending spraying, check crops for beneficial insects and identify species, use softer chemicals in the early stages of crop

growth and check out all the options. They also said they will now record what's in the paddock and use the 'beat sheet' provided to all participants.

The workshop was funded by the Oilseeds Industry Development Officer and the Better Oilseeds-Better Soybeans projects of the Australian Oilseeds federation and Grains Research and Development Corporation, as well as the National Invertebrate Pest Initiative of the GRDC; and Bayer Crop Science. It was also generously supported by the time and efforts of Felicity Pritchard, Irrigated Cropping Forum, Trevor Bray, Pulse Australia, and Luke Gaynor, Kieran O'Keeffe, Sandra McDougall and Joanne Hollaway of NSW DPI as well as the key presenter, Hugh Brier.

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