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Diamondback moth

While canola windrowing is now commencing in some areas, continuing increase in diamondback moth populations is still causing concern for canola growers in districts still several weeks from harvest. Populations have recently increased to high levels in crops in the South East (Adam Hancock, Elders). Around 400 larvae per 10 sweeps are causing significant damage to untreated canola crops around **Sherwood** (Peter Ellison, Landmark).

A number of agronomists in the Mid North and South Australian Mallee regions have made the anecdotal observation that canola crops treated with broad spectrum insecticides earlier in the season for other pests (such as green peach aphid) appear to be experiencing higher DBM infestations in spring than crops not treated earlier. In the Mid North, some early sprayed crops had 100-200 per 10 sweeps, while unsprayed crops had around 20-40 per 10 sweeps (Craig Davis). A similar trend has been observed on Fleurieu Peninsula. Of 15 paddocks monitored, approximately 50% had received early sprays, and in all instances, these crops recorded higher numbers of DBM larvae than those that had not been treated (Orville Hildebrand, FPAG). While anecdotal, these observations suggest that early removal of beneficial insects this season has resulted in a secondary increase in pest levels.

In other areas, populations have declined despite weather conditions that are generally favourable for DBM development (i.e. warm and dry). On upper Eyre Peninsula, several agronomists reported populations plummeting in late September. Some crops had high populations of ladybird beetles, which voraciously prey on DBM eggs and larvae, helping to reduce numbers. In other instances, the cause of the population decline was less obvious (Josh Hollitt, Hollitt Consulting). Infection of larvae with the naturally occurring entomopathogen, *Zoopthora radicans*, has been observed in some districts, including **Bowmans** in the Mid North, and **Lock** and other areas of upper Eyre Peninsula. Several growers on upper Eyre Peninsula who decided to continue monitoring did not need to treat.

In the Mid North, we observed around 100 larvae per 10 sweeps (all sizes) on roadside mustard weed (*Sisymbrium* sp.) near **Balaklava**, around 20 larvae per 10 sweeps in canola west of **Auburn**, and 200 larvae per 10 sweeps in an unsprayed canola trial at **Burra**, along with a variety of beneficial insects such as spiders, ladybirds, parasitic wasps and hoverflies (SARDI). In two crops near **Bowmans**, DBM populations around threshold levels declined to low levels in association with high beneficial insect activity (David Pratt, AgBiz Consulting).

Generally, we recommend holding off treating for DBM to allow the maximum opportunity for natural factors to regulate populations (beneficials, weather, rainfall, disease etc). However,

treatment decisions late in crop development are more complex than at other stages and should be based on assessment on the *trend* in the pest population – whether increasing, stable or declining. DBM populations can increase very rapidly under favourable conditions, and in these instances treatment will be necessary to prevent substantial yield loss. Consider the proximity to harvest and the withholding period of the insecticide of choice, the yield potential and the cost effectiveness of spraying (effective products are relatively expensive), and larval densities (crops may tolerate densities of 150 per 10 sweeps). All crops should continue to be frequently monitored until harvest. Consult agronomists and resellers for insecticide options, and carefully adhere to withholding periods on product labels close to harvest. More information on thresholds and management of diamondback moth: [PestFacts Issue 10, 2014](#) (pdf) and the [GRDC Diamondback moth Fact Sheet](#) (pdf).

Etiella moth degree-day model reaches 351

The SARDI [Etiella degree-day model](#) which predicts 'peak' flight activity achieved the 351 day degree accumulation for the main lentil growing districts of SA on 27th September and at **Horsham** on 6th October. The 351 day degree accumulation figure indicates peak moth flight activity and the date to start monitoring and, where moth numbers exceed threshold levels (1-2 moths per 20 sweeps), spraying lentil crops. If *Etiella* moths have been seen flying, commence sweep net monitoring lentils immediately. Monitor lentils at least once a week during podding for *Etiella* activity, taking a minimum of three groups of 20 sweeps randomly in each lentil field.

In the Mid North, sweeping of chickpea and lentil crops produced no *Etiella*. The paddocks had been sprayed two weeks before monitoring (David Pratt, AgBiz Consulting). More information on *Etiella* and use of the model: [Etiella management in lentils - SARDI](#) and [PestFacts Issue 10, 2014](#) (pdf).

Native budworm

In the South East, third to fourth instar native budworm (*Helicoverpa punctigera*) were found in faba bean crops at **Keith**, **Sherwood** and **Tintinara**. Also at **Keith**, threshold levels have been found in canola crops (Peter Ellison, Landmark). At **Berriwillock** in the Victorian Mallee a pea crop had 0-2 budworms per 10 sweeps, and in lentils 3 per 10 sweeps (Michael Clarke, Landmark). Corn earworm or cotton bollworm (*Helicoverpa armigera*) was confined caught in traps pro-actively operated by Cummins Ag on Eyre Peninsula (Nigel Myers, Cummins Ag).

Latest native budworm trapping results indicate moderate flight activity in the Mid North and the South East, and generally low in other areas. See [Budworm trapping](#) (pdf), for the latest results. More information on budworm: [Management of native budworm, DAFWA](#) (pdf) and [PestFacts Issue 10, 2014](#) (pdf).

Minimising snail contamination at harvest

Harvesting of wheat, barley and pulse crops has commenced in parts of South Australia. Due to early sowing after late summer rains this year, harvest is correspondingly early. With harvest underway, growers should be taking steps to minimise snail contamination of grain. At harvest, snails present in the crop canopy (or windrows) above cutting height can often enter the header, clogging machinery and/or leading to downgraded grain quality. Current receival standards are available at [Trading Standards 2014-15, Grain Trade Australia](#) (pdf).

Snail management at harvest involves: (i) minimising the intake of snails into the header, (ii) maximising the separation of snails and grain within the header, and (iii) cleaning harvested grain. There is usually a trade-off between snail removal from grain and grain wastage. Reducing snail intake is more achievable early in the harvest season as fewer snails have

moved into the crop canopy. This movement is dependent on moisture events that will trigger snail movement down the canopy, as indicated by observations using cameras to monitor snail behaviour. Snails are more easily dislodged from plants when they have not “fixed” themselves higher in the canopy. Harvest techniques include:

- **Harvesting snail infested crops first** where possible before all snails have moved into the canopy. Early harvesting after moisture has triggered snail movement down plants can help reduce snail intake without excessive grain moisture absorption.
- **Windrowing** cereal crops can dislodge some round snails. However, snails tend to invade windrows of crops cut green and left to dry (e.g. canola, pulses).
- **Dislodger bars** attached to the header knock a proportion of round snails from standing crops. These are often most effective in early harvested or windrowed crops. The design should be adjusted for different crop types and conditions to maximise snail removal while minimising grain losses. Travelling at right angles to the direction of crop lean where possible can further reduce losses.
- **Stripper fronts** can significantly reduce snail intake in cereal crops relative to standard open front machines. They also allow faster harvest speeds and will smash some snails as they enter the header. Raising the cutting height is a cheaper but less effective option. Both methods leave more standing straw but this may be removed with a second pass.
- **Sieves and mesh screens** should be set up correctly to maximise snail and grain separation within the header. Sheet metal (punch-hole and expanded mesh) sieves are usually more effective than louvre sieves in removing snails but have a lower cleaning throughput, therefore harvest speed may need to be reduced to avoid overloading and grain losses. Where large numbers of snails are entering the harvester consider the use of a couple of loose chains securely attached to the top of the sieve to limit snails gumming up the sieve.
- **Post harvest grain cleaning** is the last opportunity for snail removal. A combination of systems is usually required to meet receival standards without excessive grain losses. Post harvest rolling and crushing of snails is effective for all hard grains (except canola) at the optimal moisture content. An inclined belt separator is needed to remove small conical snails from canola.

Summer management is a key part of a year round approach to effectively manage snail populations. Control summer weeds to remove refuges before undertaking other cultural control methods. Bashing stubble on hot days (> 35°C) will dehydrate and kill some snails. Burning in autumn can achieve high snail mortality but this should be balanced against the risk of erosion. Burning only chaff rows reduces the risk of erosion and snails are attracted to moisture under these windrows. Instead of spreading chaff and straw at harvest, consider burning these once Autumn conditions allow as part of a snail control program. Baiting before egg lay in late summer/early autumn is critical. For more information on integrated snail management: [Snail Management Fact Sheet, GRDC](#) (pdf), [Bash 'em, burn 'em, bait 'em](#) (pdf) and [PestFacts Issue 1, 2014](#) (pdf).

Green peach aphid resistance update

Testing of green peach aphid (*Myzus persicae*) has indicated widespread resistance to synthetic pyrethroids, organophosphates (OPs) and carbimates in all 45 populations collected from SA, Victoria and NSW and tested. Latest South Australian results of resistance testing (GPA) carried out by Dr Siobhan de Little and Anthony van Rooyen, **cesar** are available at [GPA Resistance Maps, cesar](#). More information: [Latest on GPA resistance, cesar](#)

Although testing has shown resistance to OPs in all populations, some control success using OPs to control GPA has been reported. In other cases this chemical group has failed to result in control. This highlights the complexity of the resistance mechanism in GPA to OPs. Applying a test strip spray in an infested crop to determine the efficacy of OPs is recommended.

Resources

- ❖ **Insect diagnostics:** SARDI Entomology offers an insect diagnostic service for PestFacts subscribers. Please send at least two intact specimens in a non-crushable container along with host food, collection details, description of crop damage and contact details, to: NIPI diagnostics SARDI Entomology Unit GPO Box 397, Adelaide SA 5001.
 - ❖ **PestFacts map** is a new interactive service available on the SARDI website at www.sardi.sa.gov.au/pestfacts-map. The map allows users to search and view all historical pest reports across South Australia and Western Victoria. Search by crop, pest or beneficial invertebrate, and time period of interest. The map will be updated with each issue to include new reports.
 - ❖ **'Best Bet' IPM strategies** for major pests of grains crops are available in easy-to-use tables, downloadable from the [IPM workshops website](#).
 - ❖ **IPM guidelines for grains:** The new national [IPM guidelines for grains website](#) provides a comprehensive collection of tools and strategies to manage pests in grain cropping systems across Australia.
- [Previous issues of PestFacts](#) • • [PestFacts map](#) • [Images of insects and damage](#) • [I SPY manual](#) • [Crop mites: back pocket guide](#) • [Crop weevils: back pocket guide](#) •

PestFacts is a FREE service providing updates throughout the growing season on an "as-needed" basis of the latest information on invertebrate pests in broad acre crops in South Australia and western Victoria. It is supported by GRDC's National Invertebrate Pest Initiative (NIPI). All information is sent by email to subscribers. Please email a coordinator to be placed on the circulation list. Your support and feedback are essential to the success of PestFacts.

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