Upper North Farming Systems

Pest Management Guideline

Millipedes

The black portuguese millipede is a common sight in stubble retained systems
Photo: © Nick Monaghan, lifeunseen.com

Key Facts

- The black Portuguese Millipede has become a pest in stubble retained systems in recent years.
- The presence of millipedes does not mean damage is occurring. Damage to crops is rare in low rainfall environments.
- If control is required, options are limited, with no chemicals registered for millipedes in South Australia. Windrow burning may reduce millipede populations and methods to improve emergence can offset any damage caused.

Stubble retention provides the potential for millipedes to be a more significant pest than in the past because it reduces disruption to millipedes and other invertebrate species.

There has been little research conducted on millipedes in cropping situations and most reports of damage have been in medium or high rainfall regions.

BLACK PORTUGUESE MILLIPEDE

The Black Portuguese Millipede (*Ommatoiulus moreletii*) is the most common exotic millipede in Australia, though there are another seven exotic species on mainland Australia and native millipedes are widespread in small numbers. Native to Europe, the Black Portuguese Millipede can be identified by its smooth, cylindrical body. Adults grow to 30-45 millimetres in length, consisting of up to 50 segments.

The millipedes mate and lay eggs in autumn, hatching after one week. Juvenile insects grow to 15mm in their first year, reaching full maturity after two years. Millipedes are detritivores, meaning they consume decomposing plant materials, but some have been found to feed on green plants. They are most active during autumn and spring, while sheltering in cool moist spots in summer.

They are most commonly found where annual rainfall is more than 300mm and winter temperatures are between 0 and 15 degrees Celsius. Activity appears to peak at temperatures between 17 and 21°C and humidity of 95 per cent.

MILLIPEDES IN GRAIN CROPPING

Millipedes are a recent pest of grain cropping, thought to have increased in abundance in line with an increase in stubble retention, with stubble providing a suitable food source and shelter in summer.

Project Information

This management guideline has been developed for the Upper North Farming Systems Group (UNFS) as part of the Maintaining Profitable Farming Systems with Retained Stubble Initiative, funded by the Grains Research and Development Corporation (GRDC).

The Stubble Initiative involves farming systems groups in Victoria, South Australia and southern and central New South Wales, collaborating with research organisations and agribusiness, to address challenges associated with stubble retention.

The GRDC, on behalf of growers and the Australian Government, is investing $17.5 million in the initiative that has been instigated by the GRDC Southern Regional Panel and the four Regional Cropping Solutions Networks that support the panel.

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While there are regular reports of the presence of millipedes, crop damage is rare. Most incidents of crop damage have been related to:

- High stubble loads, greater than 5t/ha.
- A depletion of the high stubble levels, when the abundant food source has caused an increase in millipede populations which then require a new food source as the stubble is depleted.
- Young canola plants.
- Heavy soils.

Small scale University of Melbourne trials found millipedes caused preferential damage to lupins, lucerne and canola, however, this has not been confirmed under field conditions.

MONITORING

Millipedes are difficult to monitor as they are often active at night. There are a range of options for monitoring for millipedes as shown in Table 1.

There are no economic thresholds for millipedes, so the main objective of monitoring is to compare to previous monitoring results to identify an increase in abundance, and to look for signs of damage.

Millipede damage presents as chewed leaves with holes in them, like slug damage. When damage is caused by millipedes it is usually obvious as the pests are present in high numbers.

TABLE 1: Millipede monitoring methods. Source: adapted from Macfayden & Nash (2015)

Method	Description	Pros	Cons
Pitfall traps	A tube buried with top flush with the surface, filled with water and detergent, checked after 7 days.	Collects large numbers of night active pests.	Cannot quantify density, Labour intensive.
Soil samples	Use a shovel to collect a standard amount of soil at each site then place on a tray and sort.	Can quantify density.	Labour intensive.
Collect and sort litter	Collect the litter with a spade then sort through.	Cheap and easy.	Difficult once crop closes over.
Direct observation	Observe the plants and surface at a set number of locations.	Cheap, quick and easy .	May miss night active pests. Need to search many sites.
Plant observation	Inspect plants for damage.	Cheap, quick and easy, measures actual damage rather than just abundance.	Damage may be incorrectly attributed to millipedes. Often too late – the damage has already been done.

MILLIPEDE CONTROL

There are no chemical treatments registered for millipede control and SARDI studies in 2015 found no reduction in millipede abundance 21 days after chemical treatment, however, it is possible this finding was influenced by the pitfall traps used for measurement.

While there are no replicated trials on millipede control, anecdotal indications are that windrow burning decreases millipede numbers.

As millipedes are an emergence pest, strategies that increase emergence, such as higher seeding rate, can mitigate any potential for yield loss.

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