

Reducing the impact of mice at critical times of the year

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Key words

Mouse plague, monitor stubbles, baiting, residual food

GRDC code

CSP1806-017RTX - Improved surveillance and management options for mice in crops

CSP1804-012RTX - Determining the effectiveness of zinc phosphide rodenticide bait

Take home message

- There is 3 weeks difference between a few mice and a big problem
- Reduce background or residual food to give mice the best chance of finding the bait
- Understand what is happening in your paddocks at critical times of the year for mice and be prepared to bait
- Monitor the effectiveness of your baiting activities.

Mice have been in high numbers in cropping and grazing systems since the start of spring 2020. Northern NSW and parts of southern Queensland have been particularly heavily impacted by the outbreak. Damage has been high in some areas with total losses of some summer crops reported, and loss and contamination of grain and fodder storages.

Mouse numbers are currently highly variable with reports of high numbers through some parts of the northern cropping zone. However, mouse activity has diminished in some areas with the onset of winter and the associated cessation of breeding. This is not cause for complacency, with the likelihood of an average or better than average winter crop, conditions will be favourable for mouse breeding in early spring.

Understanding the level of overwinter survival is critical to reduce mouse damage in the spring of 2021 and ongoing impacts in the summer and autumn of 2022.

Monitoring crops through winter will be critically important to understand mouse numbers. This knowledge will inform baiting activities to minimise damage in winter crops as they ripen in the spring and in the preparation for sowing summer crops in the northern part of the cropping zone and irrigated summer crops in the south.

Stubbles have potential to hide the signs of mouse activity. Walking multiple, 100 metre long by 1 metre wide transects to count active burrows is the best way to get an average estimate of active burrows per 100 square metres. Burrows per 100 square metres can then be multiplied to give burrows per hectare. Rules of thumb can then be applied to estimate of the number of mice per hectare.

Understanding the number of mice per hectare in combination with the rate of reproduction is important to understand the potential for population increase. Many grain producers would assume that they don't have a significant problem if they had 200 mice per hectare but if 100 of those mice give birth to six offspring every 3 weeks, 200 mice become a big problem very quickly.

These dramatic rates of increase, mean that understanding the number of mice in paddocks at the start of the breeding season in early spring as winter crops mature, and in the lead up to sowing, is vital to reducing the potential for damage at these critical times of the year.

In the lead up to sowing, management of residual food is important to improve the chance of effective bait application. Zinc phosphide bait (ZnP) is spread at 1 kilogram per hectare or 22,000 grains per hectare, which equates to three grains per square metre. Pre- and post-harvest grain losses result in significant supply of food for mice. Anecdotal reports of one tonne per hectare loss are not uncommon, resulting in 2,200 grains per square metre. If this residual food is present when bait is spread, it can be difficult for mice to find the bait, and the overall uptake of the bait could be reduced.

Through the stubble phase it is important to reduce the amount of residual food to enhance bait detection and uptake. Spraying out germinations reduces food and conserves soil moisture. If livestock are part of the farming system, use sheep to graze stubbles.

The results of recent laboratory studies undertaken by CSIRO in response to farmers concerns about the effectiveness of ZnP have led to the approval of an emergency permit for the manufacture, supply and use of ZnP bait with a mixing rate of 50 g ZnP/kg of bait. Field trials of this new formulation of bait undertaken in cropping systems near Parkes in central NSW have resulted in promising outcomes of the efficacy of the new bait formulation.

Monitoring stubbles and crops to understand mouse populations and timely action to control mice at critical stages of the stubble and the developing crop are critical to minimising the impact of mice.

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