Porina

It is approaching that time of year again when porina (*Wiseana spp.*) larvae start burrowing down into the soil and commence their nightly forays to feed on pasture. So, how do you know you have a problem and are they at a level you should be concerned about?

The adult moth lays its eggs (up to 2600) on pasture during late spring through to autumn, and after hatching, the caterpillars take refuge in the leaf base. As they grow bigger they start to burrow down into the soil and emerge at night to feed on pasture leaves (they tend not to eat the roots). Porina can and do live through drought periods. It is in the winter and early spring period when the large caterpillars do their greatest damage. Consequently it is the autumn period when porina infestations of pasture need to be assessed in order to make informed management decisions. Porina damage is evidenced by areas of bare soil with small mounds of soil resembling worm castings. However, waiting until you see significant pasture damage may be waiting too late to make it economically viable to control.

The decision to intervene and control an insect pest outbreak often requires an economic threshold before any action is taken. That is, weighing up the costs of lost production versus the cost of employing some control measures. An interesting fact is that if you find two Porina per spade sit, they have the potential to consume as much pasture as 70% of one standard stock unit over the autumn to spring period. Unfortunately there are few economic thresholds developed for pasture pests so action thresholds have been developed.

Action thresholds identify the pest density at which pasture quality and yield are significantly reduced. In the case of porina, the action threshold is a range between 20 – 40 holes/m^2 (20 – 40 Porina/m^2) depending on the state of the pasture being assessed. If the pastures are newly established, showing poor growth or the autumn conditions are drier than average, then the lower threshold should be used. Conversely, an older pasture (>4 years) that is well-fertilised and with an adequate sward density on heavier soils, can withstand a heavier attack, and a higher threshold can be used.

<u>Monitoring</u>:
During the autumn (April/May), when the porina caterpillars are big enough (15 – 25 mm) so as to allow you to see their burrows but not big enough to be causing significant pasture damage, soil sampling can be used to determine the extent of infestation. The warmer the weather the faster the caterpillar grow. A couple of relatively simple methods can be used to determine if the level of infestation is worth the time, money and effort to control porina:

Method 1:
Place a 32 x 32 mm board on an area of pasture suspected of infestation and leave it there for a couple of days. (One of these boards equates to 0.1m^2.) After 2 days the

porina holes under the board can be counted and consequently the area of the board coverage can be used to calculate the number of holes/m^2. Depending on the state of the pasture, the action threshold is between 20 – 40 holes/m^2.

Method 2:
Alternatively a 200mm x 200mm hole can be dug to spade depth (a "spade spit") and the number of caterpillars counted. The threshold of 2 caterpillars (or 25/ m^2) indicates a requirement to instigate some control measures.

Control:
Chemical: There are a number of insecticides available on the market, most of which must be under the control of an approved handler due – in large part – to their toxicity. Many are organophosphates which kill through contact or ingestion while others, such as the substituted benzoyl phenyl ureas, interfere with chitin development and therefore prevent moulting in the caterpillar. If using a substituted benzoyl phenyl urea, the earlier in the life-cycle it is used the more effective it is, as the caterpillars moult more frequently when they are smaller. These later chemicals (eg. Dimilin) are most effective when caterpillars average 25mm in length and are generally the most cost effective ($30 - $40/ha applied). The more expensive organophosphates are very effective in late winter when the caterpillars are almost ready to pupate (they may be up to 70 mm in length at this stage).

Cultural: Some sources suggest mob stocking at 150-300 stock units/ha during the late spring (period following egg-laying) to mid-summer (just before burrowing commences). This will result in removal of eggs laid on the eaten pasture, and damage to eggs through the high stocking intensity. This raises an issue, however, that while the porina population may be reduced, the high stocking intensity may cause physical damage to the pastures and soils, subsequently reducing pasture productivity.

The use of irrigation and nitrogen fertiliser is more a remedy after the fact to aid pastures in a quicker recovery from damage. Ideally the problem should have been identified earlier and control measures employed to avert the scenario of severe pasture damage.

Some recent research has shown that porina larvae were slightly deterred from eating perennial ryegrass with the AR37 novel endophyte and that larval survival was reduced by AR37.

Biological: While there are a number of viral pathogens, parasitic and predatory insects which kill porina larvae, they seem to have relatively little impact in terms of reducing the amount of pasture damage done.

Integrated Pest Management (IPM): This is a system well recognised and used by the horticultural industry but which requires much more research for the agricultural industry. Essentially it employs a combination of available pest control strategies with intent to reduce the level of agro-chemicals used. The basis for determining what control measures to use relies heavily on a good

understanding of the pest life-cycles, and the environmental impacts and farm management practices which affect them.

When all is said and done, the key to all of this is planning ahead and anticipating the issues so that monitoring of the extent of the problem and control measures (if needed) can be put in place at the most effective time. As said earlier, waiting to see if there is a problem may be waiting too long before an effective control strategy can be employed.