

COMBATING CLOVER ROOT WEEVIL

Having a high proportion of clover in your pasture increases overall pasture quality and nitrogen fixation. There are a number of threats to clover including shading by grass, over grazing, low soil fertility, clover flea and nematode. This Fact Sheet covers another threat to clover persistence and growth - the Clover Root Weevil (CRW).

WHAT HAPPENS TO MY CLOVER?

You see notches on the clover but the real problem is underground.

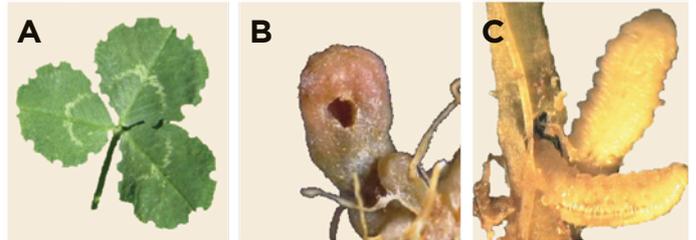
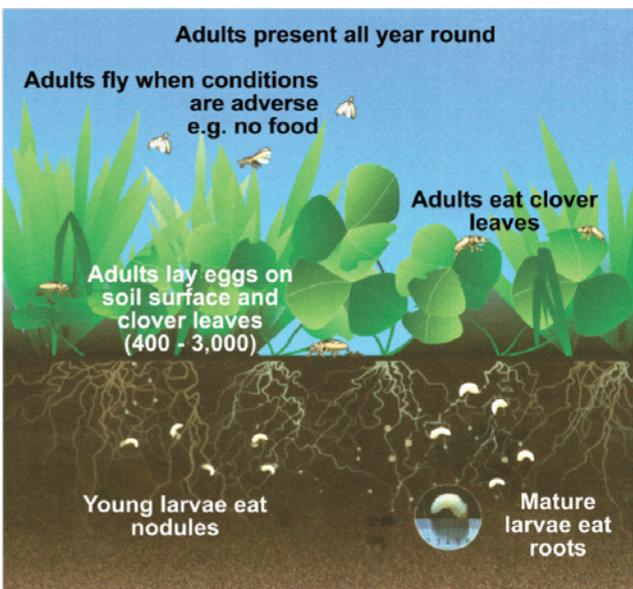


Photo A: U-shaped notches point to the presence of clover root weevil.

Photo B: Larvae are found on the surface to 70mm deep. Young larvae feed on the nodules.

Photo C: Mature larvae feed on the roots.

Understanding Clover Root Weevil

- Prefer medium to high rainfall areas.
- Prefer white clover but will feed on leaves of other clovers.
- Larvae feed on clover stolons, roots and nodules so reduces clover's ability to fix nitrogen.
- Adults can fly. They live in the soil surface and climb clover plants to feed. They produce 'U' shaped notches on the leaves.
- Development from egg to fully-grown larvae takes about eight weeks.
- Eggs can survive in baled hay.
- Highest population is in spring and autumn, especially following wet summers.
- Research shows some white clover species or cultivars may be more tolerant to attack (e.g. Kopu II).
- Can totally wipe-out clover.



Adult CRW are what you are most likely to see as they are above ground. Larvae have a bright white body with a brown head capsule.

“Only skeleton of clover remained” says farmer

Bruce and Sally McGregor were one of the first Hawke’s Bay farmers to spot CRW on their farm, 30km inland from Napier.

“In one bad patch only skeletons of the clover plant remained. Outside the area we saw notching damage” says Bruce.

Less obvious but very damaging to production is the destruction of clover nodules underground by larvae.

“We saw very peaky growth patterns in the pasture, yellowing leaves and obvious pasture growth in urine patches.”

“We have increased nitrogen (N) applications to sustain grass and clover but the sums don’t always stack up in our beef and sheep situation.”

The McGregor’s have altered their fertiliser spend since the CRW arrived. “We cut phosphate back from 50 to 30 units and spent the extra money on N.”

“We need more information on using N efficiently on sheep and beef pastures affected by the weevil.”

“Some farmers in the area have had to apply N just to help stop reversion to undesirable pasture species.”

As well as running a bull beef unit at Patoka, Bruce is a farm consultant.

WHAT CAN YOU DO?

‘Notches’ in the clover means you have CRW. Seek advice on management.

Avoid sowing clover in spring. Put pasture into a spring crop (maize or brassica) and sow permanent pasture in autumn to improve clover establishment in weevil-affected areas. Do not attempt to re-establish clover into CRW infested pastures by drilling or over-sowing clover seed. Adult CRW prefer clover seedlings.

All white clover cultivars are susceptible to CRW, but strong vigorous white clovers will tolerate damage better. If sowing white clover, choose the variety that is most appropriate for your area, soil type and production system.

Red clover is less preferred by CRW than white clover so it is strongly recommended that red clover be included in any pasture mix. The creeping varieties are best. A mix of red clover and chicory provides a good option for fattening lambs. Other perennial legumes that are not susceptible to CRW are birdsfoot trefoil, lotus major and lucerne. Subterranean clover is also an option. **For further info on legumes visit the B+LNZ website and search on ‘legumes’.**

Give your white clover the best chance by:

- Avoiding over grazing (i.e. 1000kg DM or 2cm) especially when very dry
- Keeping grass cover less than 2500kg DM/ha (around 10cm) so grass doesn’t smother clovers
- Cautious use of herbicides to control thistles as herbicides can be harmful to clover

Fertiliser recommendations

As the weevil reduces clover’s ability to fix N, you may need to apply N to maintain both grass and clover production.

Farmers have found that applying N in small doses (10-20 units N/ha) helps boost clover without encouraging grasses to over-dominate and shade clover. Graze before grasses shade clover.

Additional phosphate based fertiliser, lime and any other soil-additives will not rejuvenate clover in presence of CRW.

WHAT BIOCONTROL IS IN PLACE?

In 2006 AgResearch imported a biological control agent, *Microctonus aethiopoidea* (Irish wasp), into New Zealand. Releases began in the North Island and then into the South Island as the weevil spread there. CRW is now throughout the South Island but the Irish wasp has also established in many areas and is successfully suppressing populations (see www.agresearch.co.nz/crw for the latest map on its known locations).

AgResearch has been releasing the parasitoid to augment its natural spread. In the southern South Island large populations of CRW have devastated clover and a major parasitoid release programme has been undertaken in the area facilitated by Beef + Lamb New Zealand. However, in this region it may take 2-4 years for the parasitoid to reduce weevil populations and allow clover to recover.

WHY IS THIS RESEARCH IMPORTANT TO FARMERS?

Research has shown that increasing the legume content of pasture from 10% to 45% can double lamb growth rates. Therefore, early identification means farmers can alter management to optimise production.

Waikato farmer: “We had great clover after a wet summer in 2001. But next winter we saw the pasture yellowing and knew something was wrong. Despite clover being there it wasn’t fixing N.”

MORE INFORMATION

Beef + Lamb New Zealand would like to acknowledge the contribution from AgResearch in producing this factsheet. For further information freephone Beef + Lamb New Zealand on 0800 BEEFLAMB (0800 233 352) or email enquiries@beeflambnz.com or visit www.beeflambnz.com

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This factsheet was redeveloped from R&D Brief 109 in January 2014.