



## NZ Forage Systems Fact Sheet

# Lucerne - pests and diseases

### Key Points

1. Lucerne stands need to be carefully monitored.
2. Lucerne is susceptible to a range of pests and diseases (aphids, nematodes, weevils, *Phytophthora* root rot, *Verticillium* and *Fusarium* wilt) which can decrease the life of a stand. Fortunately many of the cultivars currently available show considerable resistance.
3. Crown rot is widespread and can be minimized by avoiding grazing or harvesting when soils are wet.
4. Selection of cultivars that offer resistance to pests and diseases is the best strategy.



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### Monitoring lucerne stands

Lucerne is susceptible to a range of fungal diseases, viruses and pests so regular monitoring must occur from sowing for the life of the stand. Aphids, nematodes, weevils, caterpillars, *Phytophthora* root rot, *Verticillium* or *Fusarium* wilt and crown rot can all reduce the life of a stand but most modern cultivars have at least some resistance to these challenges.

### Aphids

- Aphids can severely damage a stand by sucking the sap causing yellowing and a decrease in growth.
- Blue green aphids feed on the growing tips.
- Spotted alfalfa aphid feed low on the plant and move upwards as they reproduce.
- Spraying with an insecticide is necessary for yield protection when infestations are high. A range of selective aphicides (e.g. Pirimor 50) are available but selection of resistant cultivars is the best approach.

### Stem nematodes

- Stem nematodes are microscopic roundworms and are impossible to see. Signs of nematode damage are patches of stunted plants with swollen and brittle stems with thickened nodes. Infected crowns are swollen, discoloured and spongy and produce few stems. A small percentage of affected plants may have one or more stems that are completely white. Large infestations can reduce spring production and may kill susceptible lucerne cultivars. Selection of resistant cultivars is the best control method.

### Weevils

- **Sitona weevil** adults are brown, up to 5 mm long and have three cream stripes along the thorax. The larvae of the Sitona weevil grow to 7mm in length and are milky-white in colour and eat the roots and nodules of lucerne while adults eat the leaves. When a few weevils present, the only sign is an occasional U-shaped notch in the margin of a leaf. In moderate infestations, leaves have many notches giving them a scalloped appearance. In heavy infestations, the leaves can be completely eaten leaving just the veins. There is only one generation per year and chemicals can control adults.

- **White-fringed weevils** are 10-13 mm long, slate-grey with a distinctive white strip on each side of the wing covers. Larvae are cream coloured and cause damage as they feed on lucerne roots. Plants show signs of stress by becoming yellow or stunted and wilting. Seedlings and drought or graze-stressed crops are most affected. Control is difficult as the damaging larvae remain in the soil.

### **Verticillium wilt**

- *Verticillium* wilt can reduce yields by up to half by the second year and can severely shorten stand life.
- Early signs include V-shaped yellowing on leaflet tips, sometimes with leaflets rolling along their length. The disease progresses until all leaves are dead on a stem. Initially, only some stems of a plant are affected. The disease slowly invades the crown and the plant dies over a period of months.
- Root tissue of infected plants is frequently brown.
- Resistant cultivars are the best means of dealing with *Verticillium* wilt.

### **Fusarium wilt**

- *Fusarium* wilt is a vascular disease that causes gradual stand thinning.
- Initially, plants wilt and but recover overnight. As the disease progresses, leaves turn yellow then become very pale, often with a reddish tint only on one side of a plant. After several months the entire plant dies.
- To diagnose *Fusarium*, cut through a section of the root — the outer ring of the root is initially streaked a characteristic reddish brown or brick red colour. As the disease progresses the discolouration encircles the root and the plant dies.
- *Fusarium* wilt persists in the soil for several years, the only practical control is the use of resistant cultivars.

### **Crown rot**

- Crown rot is caused by a range of fungi and is widespread in New Zealand.
- It is best identified in the field by cutting down the crown with a sharp knife. The rotten area is shown as a V pattern from the crown down into to the tap root of the plant.
- Crown rot often causes plants to develop asymmetrically due to the death of buds on one side of the crown.
- Crown rot can be minimised by avoiding grazing or harvesting when soils are wet and maintaining adequate soil nutrient levels (especially potassium).

### **Phytophthora root rot**

- *Phytophthora* root rot can kill seedlings and established plants in wet or poorly drained soils.
- The infected plants wilt and the foliage, especially the lower leaves, turns yellow to reddish brown.
- Regrowth of affected plants is often slow. In severe cases, the tap-root may rot off at the depth of soil water saturation, often 100-200 mm below ground level.
- Plants may die suddenly or linger on with reduced root mass and growth rate.
- Often *Phytophthora* root rot is not discovered until the soil dries and apparently healthy plants begin wilting because their rotten tap-roots are unable to supply adequate water.
- Resistant cultivars have been developed. Avoiding water logged soils also provides protection.