



Controlling *Pythium* and Associated Pests in Ginger

The issue

The disease *Pythium* Soft Rot and a wingless soil insect called symphylids threaten the viability of the Australian ginger industry. There are 49 ginger growers in Australia producing 8,000 tonnes with a farm gate value of about \$16 million, concentrated in South-East Queensland between the Sunshine Coast and Bundaberg.

Pythium Soft Rot

Cause

Pythium Soft Rot is caused by the fungus *Pythium myriotylum*. It is the more serious of two soil borne agents and was first identified by ginger growers in the 2007/08 growing season. Some producers reported total crop losses in some blocks in that season.

Symptoms

The first sign of *Pythium* results in yellowing patches of ginger plants. Stems drop quickly as the soft rot invades stem and rhizome at and below ground level.

Source of the disease and spread

Soil: Research by the Department of Employment, Economic Development and Innovation (DEEDI) shows that *Pythium myriotylum* is spread in contaminated soil and water, which has clear implications for the movement of machinery between blocks and the need for hygiene in machinery, implements and footwear.

Water: Surface water draining across fields during heavy rainfall events can spread the pathogen and contaminate water supplies used for irrigation.

Seed: Infected rhizomes and sections of the rhizome used for planting material (i.e. 'seed') can also spread the disease. Therefore strategies to control the spread of *Pythium* Soft Rot must rely on containment and strict hygiene to prevent cross contamination between blocks and farms.

How to control *Pythium* Soft Rot

Chemical treatments have been trialled but are not effective in controlling the fungus in the field. Once a paddock is infected, the best control option is to fallow and use rotation crops such as oats, sorghum, corn, lab lab, brassicas and grass mixes.

Preventative measures

- clean seed
- select sites with good water run-off and water infiltration rates, or improve with drainage techniques
- better organic matter management,
- strict attention to hygiene - machinery, implements and footwear



Symphylids

Cause

Symphylids are wingless soil insects which feed on root tips of the ginger plant and impair the plant's ability to absorb nutrients, seriously restricting plant growth and development. Damage caused by symphylids to ginger roots is also suspected to facilitate entry of *Pythium* into the plant.

How do I know if I have symphylids?

Plants appear stunted and may show signs of nutrient deficiency, however when the plants are pulled from the ground the root system will lack many fine feeder roots and have a 'witches broom' appearance where the root tips have been damaged by symphylids.

Source of the pest and spread

Symphylids prefer soils with an open structure as they are unable to burrow. They are primarily spread in contaminated soil but will only establish when the soils are conducive for their establishment (i.e open, high organic matter with susceptible plants present).

How to control symphylids

Trials have shown that symphylids can be successfully controlled with chemicals, which can increase yields by up to 17%. This was achieved by using pre-plant applications of Regent, Confidor Guard and Talstar, followed by at least two more sprays leading up to early harvest. This also reduced the amount of infection by *Pythium*.

Blocks with a history of symphylids should be fallowed and treated at the bedding up stage.

The soil should be finely cultivated prior to bedding up, to create adequate soil-seed contact. Soils that are too crumbly and open also favour symphylid movement. If necessary roll beds to ensure soil-seed contact, as it is critical for seed vigour and germination.

Preventative measures

- chemical control
- summer fallows, autumn bare fallows
- chemical treatments prior to planting

For more information

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- Jann Bonsall, Ginger Growers Association, Phone: (07) 5458 4402
- RIRDC publication 11/128: "Controlling *Pythium* and Associated Pests in Ginger" available from the RIRDC website www.rirdc.gov.au or by phoning 1300 634 313

Pythium soft rot in ginger



Symphylid



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