

NEMATODE TESTING? WHAT IS THERE, AND WHY DO IT?

NEMATODES

Why are they important

Nematodes are microscopic worms that can cause severe damage to many crops in agriculture and horticulture. There are many different economic important species of nematodes but the most important are the Root Knot Nematodes, which are a pest of fruit, vegetable, ornamental, field and pasture crops, Cyst Nematodes, and Root lesion nematodes. These nematodes are known to cause severe losses to the industry, it is estimated at \$300 million per annum in Australia.

GOING IN BLIND

What's in my soil?

Many growers on the NAP have indicated that some of the practices used to reduce nematode are not working. This has led to growers experiencing severe failures in nematode control, or converting to off label measures to try and control the pest. Most growers do not test for nematodes before treating their soil, so often are treating their system blind. They have no idea how many nematodes or species of nematodes, and are unable to target their controls effectively.

HOW TO SAMPLE YOUR SOIL

1. An auger is useful for taking many sub-samples (cores) while reducing the total amount of soil collected.
2. A spade can be used, but remove the soil with your hand from along the vertical edge of the blade, spades are useful for collecting roots and associated, relatively undisturbed soil.
3. Clean your tools before sampling a separate plot or field.
4. Nematodes are most abundant within the root zone and, for shallow-rooted crops, samples can be taken to a depth of about 20 cm. A depth of 40 cm or more, may be needed in deep-rooted crops.
5. In established crops, sample in the row from the root zone, near the plant stems or inside the dripline, collecting both soil and roots
6. An area up to 1 ha, at least 50 sub-samples should be taken. A minimum of 35 sub-samples should be taken.
7. Sub-samples should be collected in a bucket or bag and mixed while walking up and down the field. Collecting a sub-sample at regular intervals along a "W" or "zig-zag pattern" are

TESTING

Soil and plant

Soil and/or plant samples can be tested for nematodes. The living nematodes are extracted from the samples over a period of up to seven days. The plant parasitic nematodes are then counted using a microscope, and the results are sent to the grower. Some nematodes occur mainly in the soil around roots, while others occur both in the soil and on or inside roots, so it is best to test both soil and roots. These tests indicate the species and give a count of the total free-living (or saprophytic) nematodes. These nematodes do not damage plants but are important in nutrient recycling and in interactions with other soil animals; some growers want an estimate of their numbers as an indication of overall soil health

TESTING

Predicta B DNA

Predicta B is a soil based test that identifies which soil borne pathogens present a risk to your soil. This test has been applied with field samples taken by the HortEx Alliance. The method is very accurate at determining the number of Nematodes there are per gram of soil, and the species. This test was developed for the broad acre industry, but is now being tested in the Horticulture industry on the Northern Adelaide Plains.

WHO NEEDS TESTING

You do

Testing for nematodes is needed to diagnose nematode-related problems, and is also useful before planting to help decide whether resistant varieties or rootstocks, soil fumigation or treatment with a nematicide may be beneficial. If you know your levels you can treat accordingly and this will save you money on input costs and targeting the right application to the nematode problem you may have.

Soil sampling in Virginia, South Australia



Sampling with a trowel near the plant stems to collect both soil and roots.



Plastic bags and bucket all ready to subsample a capsicum group.
Photos Dr S Coventry