

Current topics in this A sampling method for nematode monitoring VitiNotes series include:

1. Nematodes in Australian vineyard soils.
2. A sampling method for nematode monitoring.

A sampling method for nematode monitoring

Nematodes, also known as eelworms, are mostly microscopic in size and have translucent, slender wormlike bodies that taper toward the head and tail. They are hard to see with the naked eye, but can be extracted from the soil using specialised techniques.

Plant-parasitic nematodes feed on plant roots and can decrease vine productivity. Therefore, it is important that nematode population pressure is assessed pre-planting, and when management inadvertently promotes the lifecycle of nematodes. For example, legume cover crops are ideal hosts for nematodes, while others can provide a biofumigant effect and deter nematodes.

The analysis of soil samples for nematodes has to be carried out in a specialist laboratory. The information below suggests general guidelines for collecting nematode samples.

Sample sizes or sampling methods for different laboratories may vary. Check with the laboratory used to see if they request a certain quantity of soil, or specify a certain collection method.

Equipment

Shovel, bucket, plastic bags, recording sheet and pen, labels or permanent felt tip marker pen.

Timing

Spring to Winter, when an active host is present.

Method

1. Sample when soil is humid but not too damp, preferably after rain or irrigation.
2. A composite soil sample of 15-20 cores should be collected from about 0.5 hectare.
3. Discard the surface soil to minimise the influence of dried topsoil, weeds and cover crop.
4. Handling soil carefully, collect three soil and root samples from the middle vines in a panel at each sampling site:
 - When sampling specifically for root-knot nematode, collect soil samples about 10cm from the vine, to a depth of depth of 30cm;
 - When sampling specifically for dagger and root lesion nematodes, collect soil samples about 10cm from the vine to a depth of 60cm (especially in the deeper sandy soils) in mid to late Spring (October and November), when vine roots are actively growing.

The increased depth of sampling compensates for the greater variation in vertical distribution of root lesion and dagger nematodes, and includes layers most populated by dagger nematodes. The best time to sample grapevine roots for root lesion nematodes is December.

Approximately 1kg of soil is necessary from each site (the laboratory may request a smaller sub-sample from this bulk sample). Each sample must contain soil and/or feeder roots.

Useful references on this and related topics include:

- Nicholas P (Ed.) (2004) Soil, irrigation and nutrition, Grape Production Series 2, SARDI, Adelaide.
- Nicholas P, Magarey PA and Wachtel M, (Eds.) (1994) Diseases and pests, Grape Production Series 1, Hyde Park Press, Adelaide (a glove box edition of this book is also available).

Both of these publications are available from Winetitles, 08 8292 0888, or visit www.winetitles.com.au.

- Quader M, Riley IT and Walker GE, (2001) Distribution pattern of root-knot nematodes (*Meloidogyne spp.*) in South Australian vineyards, Australian Plant Pathology 30, 357-60.
- Rhaman L, Somers T and Creecy H, (2000) Distribution of nematodes in vineyards and relationship of root knot nematode (*Meloidogyne spp.*) to vine growth and yield, The Australian Grapegrower and Winemaker, Annual Technical Issue 2000, p53-7.
- McKenry MV, (1992) Nematodes, in Grape Pest Management, 2nd Edition, Eds. Flaherty DL, Christensen LP, Lanini WT, Marois JJ, Philips PA and Wilson LT, University of California, Oakland, p281-93.

Integrated pest management in viticulture: Research to Practice® and Grapevine nutrition: Research to Practice® are training programs whose delivery can be fine-tuned to suit each region. They include topics on soil management issues.

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5. At each sampling point, alternate the side of the vine from which samples are collected.
6. Place each sample in a separate labeled bag and seal.
7. Store bags in a refrigerator at about 4°C until they can be sent for testing. Samples need to be assessed within two weeks, however as soon as possible after collection is preferable.
8. Check with your State Government Department of Agriculture or Primary Industries for contact details of suitable laboratories in your state or region (some contacts are provided below).
9. Check with the specific laboratory to make sure sample(s) can legally be sent.

WARNING: If you are within a Phylloxera Risk Zone (PRZ) or Phylloxera Infested Zone (PIZ) then consult the National Phylloxera Management Protocol at www.phylloxera.com.au/ before sending samples.

Further information

Product or service information is provided to inform the viticulture industry about available resources, and should not be interpreted as an endorsement.

The information in this VitiNote has been trialed by viticulturalists as part of the Cooperative Research Centre for Viticulture's On Farm Trials project. For information about On Farm Trials, visit www.crcv.com.au/viticare/trials/

State Government contacts for nematode testing laboratories

Department of Primary Industries NSW

Wagga Wagga Agricultural Institute

Pine Gully Road

Wagga Wagga NSW 2650

t: 02 6938 1957

f: 02 6938 1822

Primary Industries South Australia

Rural Solutions SA

PO Box 411

Loxton SA 5333

t: 08 8595 9125

f: 08 8595 9107

Primary Industries Victoria

Crop Health Services

DPI Knoxfield

Private Bag 15

Ferntree Gully Delivery Centre Vic 3156

t: 03 9210 9356

f: 03 9800 3521

Agriculture Western Australia

Agwest Plant Laboratories

3 Baron-Hay Court

South Perth WA 6151

t: 08 9368 3721

f: 08 9474 2658

Primary Industries and Fisheries Queensland

Grow Help Australia

PO Box 327

Cleveland Qld 4163

t: 07 3824 9526

f: 07 3286 3094

Visit the web site at www.crcv.com.au/viticare/vitinotes/

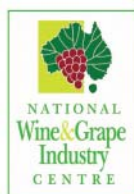
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