

MASTER CLASSES IN NEMATODOLOGY, SOIL BIOLOGY AND SOIL HEALTH

A series of Master Classes are being held in 2022 and 2023 to cater for people who would like to learn more about the fascinating biological world beneath our feet. All soil organisms are covered but nematodes are the focus because in addition to being important pests, they play a major role in maintaining the health of our soils. Classes for 2023 are now being organised, so if you would like to attend a class or help arrange one in a particular city or region, please contact Dr. Graham Stirling (see below).

The following classes were held in 2022 and feedback indicated that they were well received by participants. If there is sufficient interest, they could be run again in 2023 at the same or other locations.

Topic	Location	Content	No. days
Identification and quantification of plant-parasitic nematodes for diagnostic purposes	Univ. Sydney	Soil sampling procedures; nematode extraction and quantification; key nematode pests; morphological identification of commonly occurring plant-parasitic nematodes to genus level; damage thresholds; interpretation of results from diagnostic samples; nematode biosecurity	3
Nematode pests of turfgrass	Univ. Melbourne	Southern sting nematode and other nematode pests of turfgrass, their distribution, symptoms produced and damage thresholds. Biosecurity tactics to reduce the spread of sting nematode. Nematode monitoring procedures. Management options to reduce damage caused by plant-parasitic nematodes.	1
Improving the health of vegetable-growing soils and reducing losses from nematode pests	Univ. Melbourne	Root-knot nematode and other important nematode pests; monitoring nematode populations; nematicides; integrated nematode management; tactics to augment the soil biological community, enhance nematode-suppressive services and improve soil health; biosecurity issues relevant to the vegetable industry.	1
Nematodes: an important component of the soil biological community	Univ. Melbourne	Key members of the soil biological community; ecosystem services provided by the soil biota; beneficial and detrimental plant and soil nematodes; key nematode pests and their management; free-living nematodes and their role in mineralising nutrients and enhancing disease suppressive services; nematodes as indicators of soil health.	1
The soil biological community and its role in improving the health of agricultural soils	Univ. Queensland	Constituents of the soil food web; key functions of soil organisms; assessing a soil's biological status; the impact of management on the soil biology; improving the health of agricultural soils	1
Natural enemies of nematodes: their ecology and role as biological control agents	Univ. Queensland	Nematode-trapping fungi; fungal parasites of nematode eggs; <i>Pasteuria</i> , a parasitic bacterium; predatory nematodes; predatory microarthropods; methods to enhance the suppressive services provided by naturally occurring soil organisms; biological products for nematode control.	2
Morphological and molecular identification of plant-parasitic and free-living nematodes	Univ. Queensland	Identification of commonly occurring plant parasites to genus and species level using morphological and molecular methods; identification of free-living nematodes by trophic group (bacterivores; fungivores, omnivores and predators) and to taxonomic levels suitable for ecological studies; nematode community analysis as a means of assessing the biological status of a soil.	4

Classes could also be organised to cater for groups with other interests. The following are some examples of possible topics: Nematode pests of particular crops (e.g. grain crops, sugarcane, perennial horticulture); Integrated nematode management; Nematicides; Biosecurity issues associated with nematodes; Basic nematology for agricultural consultants.

Potential participants

The classes aim to address the needs of undergraduate and postgraduate students in agricultural and biological sciences; consultants who provide professional advice in various areas of agriculture; graduates who may wish to undertake postgraduate training in nematology; professional staff who would like to improve their nematological knowledge; and farm managers and turfgrass superintendents who want to learn how to reduce losses caused by nematodes or improve the biological health of their soil.

Instructors

The classes will be conducted by Dr Graham Stirling and Dr Marcelle Stirling, two professionals who established their own research and diagnostics company (Biological Crop Protection) in 1995. Graham has more than 50 years' experience as a nematologist/plant pathologist/soil biologist, and has worked on a variety of crops, including wheat, rice, lucerne, clover and other pasture species, sugarcane, grapes, stone-fruit, apples, citrus, pineapples, bananas, papaya, turf, ginger, tomato, capsicum, potato and sweetpotato. He has produced more than 140 peer-reviewed research papers, numerous extension publications and two books: *Biological Control of Plant-Parasitic Nematodes* and *Soil health, Soil biology, Soilborne diseases and Sustainable agriculture, A guide*. His wife Marcelle operated a nematode diagnostic service for 25 years and is one of the few people in Australia with the taxonomic skills needed to identify free-living nematodes. A local nematologist or a professional with specific areas of expertise will contribute to some of the classes.

Proposed locations

The plan is to run the classes in capital cities or major regional centres throughout Australia. The locations chosen will depend on suitable laboratory or classroom facilities being available. However, the intention is to choose locations where there is local demand for a particular class, as this will minimise travel and accommodation costs for participants.

Timetable

There is some flexibility regarding the dates of each class. As most classes will be held at university venues, they are likely to be held in semester breaks (i.e. February, June/July, September, and November). If there is sufficient demand, some of classes could be run consecutively to minimise travel and accommodation costs for participants.

Number of participants

Classes will be limited to a maximum of 20 participants, as this will ensure that each person gets an appropriate level of attention during the laboratory sessions. Classes will only be held if there are at least ten enrolments.

Costs

There will be no fee for the classes. Graham and Marcelle Stirling are providing the classes as a philanthropic venture, in the hope that they will stimulate interest in an important group of soil organisms that have largely been ignored by the tertiary education sector in Australia.

Classes in 2023

If you would like to attend or help arrange a class in 2023, please contact Graham Stirling

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