

# AUSTRALASIAN NEMATOLOGY NEWSLETTER

IAN T. RILEY  
NEMATOLOGY  
WAITE CAMPUS  
UNIVERSITY OF ADELAIDE



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## FROM THE EDITOR

Thanks to those people who have contributed articles for this edition of the newsletter. Many of these were submitted on disc (Wordperfect 5.1 format) and this has made the job of publishing the newsletter much easier and avoids typing errors.

There are now 59 members on the mailing list for ANN. The newest members are listed in this issue. Enclosed with the newsletter is a notice of subscriptions due. If you are in arrears please pay these as soon as possible.

The deadline for the next edition of ANN is June 19, 1992. So don't hang about, get to and write something, I will be happy to receive articles in advance. Articles can be sent to:

Russell Eastwood  
Victorian Institute for Dryland Agriculture  
Private Bag 260  
HORSHAM VIC 3400



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## ASSOCIATION NEWS

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It was pleasing to see that many members were able to attend the taxonomy workshop and the APPS conference held recently in Sydney. There was also a good attendance at the general meeting of AAN which was held during that week. The minutes of that meeting are reprinted here for the benefit of those who were unable to attend. I trust that those who offered to follow up some of the issues raised at the meeting will find the time to do so.

The meeting resolved that I should make a submission to Dr Jack Meagher's review of plant nematology for RIRDC on behalf of AAN, and a copy of that submission is also included for your information. Many thanks to all those who provided information on their projects at short notice. You will notice that part of our submission consisted of a paper entitled 'The importance of plant-parasitic nematodes to Australia and New Zealand agriculture'. The paper is too long to include in this newsletter but it should be published in Australasian Plant Pathology within the next six months. Hopefully these contributions by AAN will gradually help raise the profile of plant nematology in Australia and New Zealand.

### General Meeting of AAN

A general meeting of AAN was held in Sydney on October 11 during the Eighth Conference of the Australasian Plant Pathology Society. A range of issues were discussed.

#### 1. RIRDC Review

The Rural Industries Research and Development Corporation (RIRDC) has engaged Dr Jack Meagher to "review the significance of current and possible future nematode control problems in Australian agriculture and the extent and thrust of current research opportunities which might be taken up in future either by RIRDC or other research and research funding organizations in a collaborative way".

The meeting agreed that AAN should make a submission to the review and resolved that this be left in the hands of the President.

#### 2. Workshops

It was resolved that a workshop on *Pratylenchus* would be held in conjunction with the next APPS conference in July 1993. Since several projects on *Pratylenchus* had recently commenced, there was also some interest in holding an informal meeting on this nematode (perhaps in Adelaide), during the first half of 1992. Chris O'Brien agreed to arrange this informal meeting, which would then make detailed arrangements for the workshop.

3. Collaboration with other nematology societies

A letter from Dr K. Barker regarding the establishment of an International Federation of Nematological Societies was tabled and the Secretary was asked to respond on behalf of AAN.

4. Importance of nematodes and coordination of research

Following discussion on how AAN might help coordinate nematological research and create a greater awareness of the importance of nematodes amongst funding bodies, it was resolved that AAN would produce papers on three important nematode groups: root-knot, cyst and lesion nematodes. Each paper would outline the distribution and economic importance of the nematode, list the current work being done and suggest important areas for future research. It was felt that such a document could be usefully used by members to support grant applications for work on specific aspects of these nematodes.

It was agreed that the following members would coordinate preparation of the papers.

Root-knot nematodes	G. Stirling
Cyst nematodes	R. Eastwood/F. Green
Lesion nematodes	P.C. O'Brien

Papers were to be prepared by the end of March 1992, with the aim of having them published by June 1992. John Curran offered CSIRO's help with the publication of the final documents.

5. Host list update

Concern was expressed that AQIS had not updated the host list of plant-parasitic nematodes in Australia since 1986. Because he now has other responsibilities, it was understood that George Khair was no longer in a position to revise the list. It was agreed that AAN should point out to AQIS the importance of the list and request that it be revised. In the event that suitable nematological expertise was no longer available within AQIS, AAN should suggest that AQIS supply funds to allow the list to be updated by AAN members. The issue was to be followed up by G. Stirling and F. Reay.

6. National nematode collection

Concern was expressed at the state of the national nematode collection (currently located at Burnley) and various other collections in Australia. It was agreed that in the current funding situation, a single centre for the collection was unlikely to be achieved. A network arrangement in which collections had a common, computerized database (such as the mycology collections at Indooroopilly, Rydalmere and Burnley) was considered more appropriate.



It was resolved that AAN request Standing Committee of Agriculture to vary its decision that the national nematode collection would reside at Burnley, and that a network arrangement be established in its place. F. Reay offered to follow up this matter.

(G.R. Stirling)

### **Submission from the Australasian Association of Nematologists on the Status of Plant Nematology in Australia**

The Australasian Association of Nematologists (AAN) was established in 1989 with the aim of fostering the development of plant nematology in Australia, New Zealand and neighbouring countries. Currently, AAN has 59 members and more than 90% of the nematologists in Australia have joined the Association. Since the views of AAN should be taken into account in any review of plant nematology in Australia, we submit the following for consideration:

- a. A paper entitled "The importance of plant parasitic nematodes to Australia and New Zealand agriculture".

This paper reviews all the important nematode problems in Australia and New Zealand, discusses several potentially serious new nematode problems and provides estimates of losses caused by nematodes in Australia. The paper was written by some of our members on behalf of AAN and has been submitted for publication in Australasian Plant Pathology. I would therefore be grateful if the authors were acknowledged when citing their material.

- b. A table detailing the human resources in plant nematology in Australia, a table categorising those human resources, and a list of funding bodies supporting nematological research in Australia.

In addition, we would like to make the following general points:

1. The amount of money being spent on plant nematology in Australia is insignificant (approx. \$2.3 million/annum) compared with the estimated losses caused by nematodes (more than \$300 million/annum).
2. There are less than 15 tenured scientists working on plant nematode problems in Australia, a figure which compares most unfavourably with the number in other developed countries with a comparable agriculture. Since several of these scientists are plant breeders, molecular biologists or plant pathologists and several of the nematologists are due to retire in the next few years, the amount of plant nematological expertise available in Australia is soon likely to fall below the critical mass needed to sustain viable research, advisory and educational programs in plant nematology.

3. More than two-thirds of the plant nematological work in Australia is being done by non-tenured scientists and technicians, and post-graduate students. The fact that this figure is so high suggests that many industry funding bodies believe that nematodes are important. However, if this nematological expertise is to be retained within Australia, some of these people, particularly those with post-graduate training in plant nematology, must have greater job security.
4. Nematological research in Australia is fragmented and there are only two nematology groups of any size. The University of Adelaide/South Australian Department of Agriculture/CSIRO group in Adelaide contains approximately 26 scientists, technicians and students, while the Queensland Department of Primary Industries/University of Queensland group has a further 18 people. Although these two groups contain two-thirds of the people working on plant nematodes in Australia, their long-term future is not secure because the groups are based respectively around only three and two "permanent" nematology positions.
5. Our survey of human resources in nematology highlights the lack of research being done with nematodes on horticultural crops. Approximately \$350 000/annum is being spent on nematode problems that are costing the horticultural and vegetable industries at least \$80 million/annum. Many crops which experience heavy losses from nematodes (eg. citrus, bananas, stonefruit, strawberries, tomatoes, carrots, lettuce, cucurbits) are being completely ignored. Other important crops which are being neglected include sugarcane, pastures, ornamentals and turf.
6. The development of plant nematology in Australia is being hindered by its lack of representation in the tertiary education system. Post-graduate training is the life-blood of specialist disciplines but there is now only one plant nematologist in the Australian university system. Also, most tertiary institutions include little plant nematology in their agriculture, plant pathology, pest management and crop protection courses and they need to be encouraged to use the nematological expertise that exists in other research organisations.
7. The nematode management strategies of the future will involve the use of cultural methods, crop rotation, resistance and biological control. To implement these strategies, which all aim to maintain nematode populations at densities below threshold levels, farmers will have to make management decisions which are based on nematode population assessments. They will therefore become increasingly reliant on the use of nematode diagnostic services and will require more help from professionals with an understanding of nematodes. Unfortunately, the amount of nematological expertise available to farmers is declining rather than increasing.
8. The need to develop immediate solutions to important industry problems has meant that most nematologists in Australia have had to develop relatively applied research programs. Nematologists have lacked the backing of a research group able to take a more fundamental approach to some of these problems, in the hope of developing novel solutions. This situation has been exacerbated in recent years by CSIRO's



decision to reduce its minimal commitment to plant nematology. Potentially useful new control strategies are likely to arise from studies of the physiology, biochemistry and molecular biology of nematodes but little of this type of work is being done in Australia. Nematode-host interactions, the mode of action of resistance genes, the role of pharyngeal secretions in syncytial induction and hormonal control of moulting are just some of the basic research areas worth pursuing.

9. One particular area of concern amongst nematologists is the lack of attention which is now being given to nematode taxonomy. At a time when better taxonomic services are required because of the importance of quarantine and the increasing use of resistance and crop rotation as management practices, the amount of taxonomic expertise in Australia is at an all time low. The presence and state of care of many important taxonomic collections is haphazard and some of those housed in state departments of agriculture are falling into disrepair because their maintenance is considered low priority.

Members of the AAN recognize that, at a time of economic restraint and government funding cutbacks, it will be difficult to maintain present levels of state funding for plant nematology. The importance of industry funding bodies has therefore never been greater. We believe that nematodes are an important factor limiting the production of most crops and that the lack of requests to some research corporations for funds to work on nematological problems simply reflects the fact that there are very few nematologists available to prepare research proposals and supervise the work.

Because nematological research in Australia is so dependent on industry funding bodies, research corporations will have to accept some responsibility for ensuring that viable research programs in plant nematology are maintained. In addition to funding specific projects that fall within their own sphere of interest, we believe that the research corporations must also work together to ensure:

- that nematode problems of national importance, particularly those of a multi-industry nature, are being adequately addressed
- that one or two major centres for nematological research are developed in Australia
- that some funding is directed towards fundamental research on nematodes and into nematode taxonomy

The work done over the last 20 years by the University of Adelaide, South Australian and Victorian Departments of Agriculture, CSIRO and various industry funding bodies in developing sustainable strategies for controlling cereal cyst nematode provides a good example of the progress that can be achieved with adequate resources. Unfortunately, no other nematode problem in Australia is receiving anywhere near this level of attention.

HUMAN RESOURCES IN PLANT NEMATOLOGY, AUSTRALIA, OCTOBER 1991

Research topic	Tenured Staff		Staff on Temporary Grants		
	Scientist	Technical	Scientist	Technical	Student
<u>Field crops</u>					
Cereal cyst nematode	3.6	-	2.0	4.6	3.0
<i>Pratylenchus</i> /cereals	0.6	0.5	2.2	2.0	2.3
<i>Anguina</i> /pastures	2.0	0.1	1.7	5.6	-
Nematodes/lucerne	0.2	-	1.0	-	-
<i>Meloidogyne</i> /tobacco	0.5	-	-	1.5	-
<i>Ditylenchus</i> /grain legumes	0.1	-	1.0	1.0	-
<i>Paralongidorus</i> /rice	0.2	0.2	-	0.2	-
Nematodes/sugarcane	0.6	-	-	-	-
Potato cyst nematode	0.2	-	-	2.0	0.2
Nematodes/pastures	0.5	-	-	-	0.2
TOTAL	8.5	0.8	7.9	16.9	5.7
<u>Horticultural crops</u>					
<i>Pratylenchus</i> /apple	0.1	0.5	-	0.1	-
<i>Meloidogyne</i> /pineapple	0.1	0.4	-	0.1	-
<i>Meloidogyne</i> /grapes	0.4	-	-	-	-
Biocontrol of <i>Meloidogyne</i>	0.6	-	3.0	1.0	2.0
Nematicides	0.5	-	-	1.0	-
TOTAL	1.7	0.9	3.0	2.2	2.0
<u>General</u>					
Physiology/Biochemistry	0.8	-	0.5	-	1.0
Ecology	0.2	-	-	-	-
Taxonomy	1.8	0.6	1.0	1.5	-
Teaching	0.5	1.0	-	-	-
Diagnosis	1.3	1.4	-	-	-
TOTAL	4.6	3.0	1.5	1.5	1.0
GRAND TOTAL	14.8	4.7	12.4	20.6	8.7



CATEGORIZATION OF HUMAN RESOURCES IN PLANT NEMATODOLOGY,  
AUSTRALIA, OCTOBER 1991

Category	No. of people working in field	% of total	\$ value (x 1000)* per annum	% of total
<u>Crop</u>				
Field crops	39.8	65	1471	63
Horticultural Crops	9.8	16	355	15
General	11.6	19	491	21
<u>Nematode</u>				
<i>Heterodera &amp; Globodera</i>	15.6	25	570	25
<i>Meloidogyne</i>	9.6	16	346	15
<i>Anguina</i>	9.4	16	359	15
<i>Pratylenchus</i>	8.3	14	269	12
<u>Tenure</u>				
Tenured	19.5	32	1029	44
Non-tenured	41.7	68	1288	56
TOTAL	61.2		2317	

\*\$ value calculated using \$60 000 for tenured scientist, \$40 000 for non-tenured scientist, \$30 000 for technician, \$20 000 for student.

FUNDING BODIES SUPPORTING NEMATOLOGICAL RESEARCH IN  
AUSTRALIA

	No. of projects
Grains Research and Development Corporation (and various state committees)	12
Rural Industries Research and Development Corporation	4
Tobacco Research and Development Corporation	2
Meat Research Corporation	2
Cattle Compensation Fund	1
Wool Corporation	1
Dairy Research Corporation	1
Horticultural Research and Development Corporation	1
Australian Biological Resources Study	1
Land and Water Resources Research and Development Corporation	1
Victorian Potato Industry	
Industrial Research and Development Board	

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## NEW MEMBERS

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Mr Terry Bertozzi  
SA Department of Agriculture  
Field Crops Pathology Group  
Waite Agricultural Research Institute  
PMB  
GLEN OSMOND SA 5064

Anguina spp.

Telephone: (08) 3722400  
Facsimile: (08) 3790871

Ms Suzanne Charwat  
Waite Agricultural Research Institute  
Private Bag 7  
GLEN OSMOND SA 5064

Survival mechanisms -  
plant parasitic nematodes

Telephone: (08) 3722238  
Facsimile: (08) 3794095

Mr Peter Georgaras  
SA Department of Agriculture  
Northfield Research Laboratories  
GPO Box 1671  
ADELAIDE SA 5001

Nematode pathogens of lucerne

Telephone: (08) 2668333  
Facsimile: (08) 2614688

Mr Tony Pattison  
University of Sydney  
1A Watson Research Centre  
P O Box 219  
NARRABRI NSW 2390

Pratylenchus thornei in wheat

Telephone: (067) 921588



Ms Sharyn P Taylor  
Department of Agriculture  
Field Crops Pathology Group  
Waite Agricultural Research Institute  
PMB 1  
GLEN OSMOND SA 5064

*Pratylenchus* sp. Cereals.  
Grain legumes

Dr Vivien A Vanstone  
Department of Plant Science  
Waite Institute  
Private Mail Bag 1  
GLEN OSMOND SA 5064

*Pratylenchus neglectus/thornei*.  
Nematode-fungus interactions.  
Wheat/legumes/crop rotations.

Telephone: (08) 3722456  
Facsimile: (08) 3799138

Mr Malcolm Wachtel  
SA Department of Agriculture  
Loxton Research Centre  
P O Box 411  
LOXTON SA 5333

Nematode problems in  
horticultural crops.  
Biocontrol - rootknot.  
Chemical control

Telephone: (08) 847315  
Facsimile: (085) 846354

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## CURRENT RESEARCH

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### Search for Potato Cyst Nematode in New South Wales

After the detection of potato cyst nematode (PCN) in Victoria, in late January 1991, a search for it was mounted in New South Wales.

A specific grant funded laboratory processing of samples from approximately 100 properties in nine districts of NSW. Samples were taken by NSW Agricultural Inspectors.

#### Sampling procedure

The sampling procedure involved taking probes of approximately 60 g using a 3 x 3 metre grid over an area of 100m<sup>2</sup>; giving a sample of 1000 g. This procedure should in theory detect a lens as small as 9m<sup>2</sup> and a density of cysts within a lens as low as 1.7 cysts per 100 g and its overall sensitivity (Wood *et al* 1983) should be near that of plant sampling on a 10 row by 10 m grid.

Sampling was highly targeted, selecting for areas cropped most frequently to potato in the last six years. One third of areas tested had been cropped to potato continuously for at least the past 6 years and all had at least two potato crops in the past six years. Sampling was from Mid April to mid June, just before to just after harvest, when detection surety is increased because of the rise in cyst density due to growing a crop (5 to 10 times under New Zealand conditions, Wood *et al.*, 1983).

On seed tuber producing farms, where potato crops are grown in a mandatory one year in five rotation, samples of 1000 g were taken from sites of accumulation of debris from grading. Growth of volunteer potato plants on these sites further increases chances of detection.

On several occasions samples were taken from debris under graders in packing plants repacking potatoes from interstate.

#### Extraction procedure

The 1000 g samples were dried at 40°C until they reached air dry moisture content.

The Fenwick can procedure (Southey, 1986) was used to extract cysts. It was found that 1000 g could be processed conveniently in one wash through the can. Float was filtered, dried and examined with a stereoscope microscope at 12x magnification.

Two methods of examining the float were used. The first involved spreading the float in thin layers on paper sheets and searching the entire fraction for cysts. This proved



very slow and became impractical particularly for those soils with large amounts of plant debris. Samples taken under graders contained very large amounts of plant debris, examining them by this method was very time consuming.

In the second method only the strip of float collected at the top of the filter paper was examined. One field of view, width 15 mm, was examined for the presence of cysts.

Tests of a sample containing cysts of *Heterodera trifolii* suggested that the two methods were comparable in numbers of cysts detected. With the second method a sample can then be examined in 10 minutes compared to 50 minutes with the paper sheet method.

## Results

District	Number of samples processed
Hunter	11
Metropolitan Area	8
Illawarra	14
Northern Tablelands	8
Central Tablelands	8
Southern Tablelands	23
Central Western Slopes	5
South West Slopes	3
Riverina	31
TOTAL	111

The samples have all tested negative for PCN. Varied numbers of *Heterodera sp.* cysts (mostly *H. trifolii*) were found in about 30% of samples.

It is interesting that up to 50 cysts of *H. trifolii* in 1000 g of sample were found in 'under grader' samples taken from packhouses. The potential for spread of cysts in soil carried on tubers is demonstrated.

One cyst considered to be one of a *Globodera sp.* was found in a sample from the Griffith area. The fenestral length is 37  $\mu\text{m}$ , fenestral width 34  $\mu\text{m}$ , anus to margin of fenestra 27  $\mu\text{m}$ , Granek's ratio 0.7, cuticle between anus and fenestra almost smooth. The wall is thin, punctuations arranged in rows are plain and the surface pattern is fine and lace-like. These features place it close to *G. tabacum* (Lownsbery and Lownsbery, 1954 Mulvey and Stone, 1976). More plant and soil samples have been taken to attempt to collect more cysts for further identification.

## References

Southey, J.F. (ed.) (1986). Laboratory Methods for Work with Plant and Soil Nematodes. Ministry for Agriculture, Fisheries and Food, London.

Wood, F.H., Foot, M.A., Dale, P.S. and Barber, C.J. (1983). Relative efficiency of plant sampling and soil sampling in detecting the presence of low potato cyst nematode infestations. New Zealand Journal of Experimental Agriculture 11: 271-273.

(Angelene C. Smith and Rod McLeod, NSW Agriculture, Biological and Chemical Research Institute, Rydalmere).

### **Biological Control or a New Toxic Affiliate for the Earcockle Nematode.**

The earcockle nematode (*Anguina tritici*) in wheat is related to the seed-gall nematode (*Anguina funesta*) in Annual Ryegrass Toxicity (ARGT). Earcockle was a problem earlier this century in Australia and other wheat growing countries. With the improvement in seed cleaning and crop rotations it has virtually disappeared in Australia. The only recent records in Australia have been in the northern wheatbelt of WA. The northern extent of ARGT in WA just overlaps with the current distribution of *Anguina tritici*.

With the appearance of new associations of *Anguina* and *Clavibacter* in NSW and SA (ANN July 1991), the obvious question is what will happen when the ARGT bacterium and *Anguina tritici* cohabit the same field. Will such coincidence result in novel biological control of the nematode or a toxin problem in wheat?

For preliminary answers to these questions, wheat was grown in pots and inoculated with earcockles and various numbers of bacterially colonized *Anguina funesta* galls from ryegrass. Earcockle production was markedly reduced by bacterial inoculation and almost eliminated at the highest level of inoculum. Low numbers of earcockles were colonized by the bacterium and toxin was produced.

It is difficult to judge what balance between the organisms would develop in the field. It is unlikely to result in a new animal or human health problem as the earcockles are normally too small to be harvested by modern headers. However, the findings do indicate that the ARGT bacterium may yet find new nematode vectors and new plant hosts.

(Ian Riley, Research Officer, WA Department of Agriculture)



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## REGIONAL NEWS

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### News from Victoria

#### Biological control of Fullers Rose Weevil (FRW) in citrus with entomophagous nematodes and fungi.

Increased export to countries such as Japan is essential to the long term viability of the Australian citrus industry, now faced with an oversupply problem and low prices for processing fruit.

Japan is the world's largest food importer and is a potentially lucrative market for Australian citrus fruit. Trial shipments of Australian valencias have been exported to Japan in 1989/90 but more than a third of the containers of fruit required methyl bromide fumigation on arrival in Japan due to the presence of the quarantine pest, FRW.

Sticky or insecticidal trunk bands to limit movements of FRW adults into the canopy of citrus trees have good potential, but may need to be supplemented by other control methods.

This project which forms the basis of a Ph.D. study by Megan Edwards, Sunraysia Horticultural Centre, aims to investigate the potential of using a range of entomophagous nematodes and fungi to control various stages of the FRW life cycle. One such nematode, *Heterorhabditis heliothidis*, is commercially available to control vine weevils on grapevines in the nursery. The project will lead to the development of an integrated pest management system in FRW in Australian citrus orchards. Once the techniques have been determined the programme will be expanded to develop biocontrol methods for weevil pests of other horticultural crops.

To date an extensive literature survey citing 170 references has been completed. Local populations of FRW have been collected and reared in the laboratory on fresh citrus leaves. The insects laid eggs on waxed paper which were collected and subjected to the nematode *Heterorhabditis heliothidis* and the fungus *Beauveria bassiana*. The egg masses were stored at 85% relative humidity and 25°C and the egg mortality was calculated. The nematodes had no effect on egg mortality which was to be expected. Nematodes are more likely to be effective against late instar larvae. The fungus increased egg mortality but these trials need to be repeated with other strains of fungus to increase effectiveness.

Special weevil diet has been imported from the USA but the expected mortality rate on this diet is 99%. Other insect diets will be tested to develop a technique for rearing FRW from eggs to adults in the laboratory.

*Beauveria bassiana*, important entomopathogenic fungus, has been isolated from local populations of FRW adults. This fungus is maintained at the Sunraysia Horticultural Centre and has been included in the National Collection of Fungi held at IPS Burnley.

Several other fungi and bacteria have been isolated including *Scopulariopsis brevicaulis* which has potential as an insect pathogen.

A Galleria moth culture has been established at Sunraysia Horticultural Centre to test for the presence of entomopathogenic nematodes in local horticultural soils.

A trip was undertaken to Canberra where contact was made with Dr John Curren and Dr Richard Milner (CSIRO Division of Entomology). Dr Curren has made any of 300 strains of entomopathogenic nematodes available for screening against FRW. Testing will begin in the new year. Dr Miller has 600 strains of the insect pathogenic fungus *Metarhizium anisopliae* which may be tested.

Techniques have been introduced and developed for maintaining weevils in the laboratory. Screening fungi against eggs, screening nematodes against larvae, screening fungi against adults, isolating local strains of insect pathogenic fungi and nematodes and testing for host suitability.

(Megan Edwards, Sunraysia Horticultural Centre)



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## GENERAL ARTICLES

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### A Submission from the Australian Association of Nematologists for Consideration by the Standing Committee on Agriculture

#### National Collection of Plant-Parasitic Nematodes.

##### Recommendations:

1. That a previous decision that the National Collection of plant-parasitic nematodes be housed at the Victorian Plant Research Institute, Burnley be rescinded.
2. That the National Collection of plant-parasitic nematodes consist of two components: i) Taxonomically and nationally significant material which will be integrated with the national collection of helminths and be housed at either the Queensland or South Australian museums. ii) Working collections of nematodes that are housed where they can be adequately curated and stored, but which are catalogued on a data-base that is accessible to workers in other institutions.

##### Background:

1. The Australasian Association of Nematologists (AAN) is the professional body representing plant nematologists in Australia, New Zealand and neighbouring countries. Currently, AAN has 59 members and more than 90% of the nematologists in Australia have joined the Association.
2. AAN is concerned about the state of Australia's collections of plant-parasitic nematodes. Fauna collections are a valuable resource which are being neglected. In 1984, B.J. Richardson stated that 21% of type specimens of fauna groups entered into the ABRS zoological catalogue at that time had been lost. It is a sorry reflection on the status of fauna collections that specimens are still being lost today, due to either inadequate storage or lack of curation.
3. AAN considers that it is important to have a National Collection of plant-parasitic nematodes and that ideally it should be held by organizations with a statutory obligation to house such material and maintain it in good condition. Recent history suggests that nematode collections held by CSIRO, State Departments of Agriculture and Universities are at risk because priorities can change so that funds for maintenance of collections are no longer available.
4. Several years ago, SCA designated certain centres for housing National collections of fungi, bacteria, viruses and nematodes. The nematode collection was to have been held in Melbourne, but the loss of a nematology position at Burnley has meant that the Victorian Department of Agriculture has had insufficient nematological resources to implement that decision.

5. There are four well-curated plant nematode collections in Australia. The Queensland Department of Primary Industries (QDPI) collection has been transferred to the Queensland Museum and funds from RIRDC are being used to catalogue the material, repair slides and generate a computerized database. It is anticipated that the collection will be transformed into a useful collection by June 1992. The Victorian Department of Agriculture collection at Burnley is also being refurbished in the same way and will be catalogued on a data-base. The University of Adelaide (Waite Agricultural Research Institute) nematode collection and the New South Wales Agriculture and Fisheries collection at Rydalmere are both in relatively good condition because they are being curated by Mrs F. Reay, and Mr R. McLeod, respectively, who both have expertise in nematode taxonomy.
6. The Queensland Museum, with the support of the Australian Society for Parasitology is currently developing a national database (Australian Society for Parasitology Information on Collections (ASPIC)) to cover all helminth collections in the country. Since most of this material is held by the Queensland and South Australian museums it is expected that future growth of helminth collections will be at these two institutions.
7. It is logical to link the national collections of plant and animal nematodes into one database (ASPIC). This has already been done with the QDPI collection at the Queensland Museum. Mrs Reay has indicated a willingness to make a similar arrangement with the South Australian Museum with regard to the University of Adelaide collection.
8. In cases where institutions wish to retain a working collection, it is important to safeguard those collections. Provided they are adequately catalogued and the database is readily accessible, alternative arrangements can easily be made when a curator leaves or the institutions' priorities change.

#### **ASPIC - Australian Society for Parasitology Information on Collections**

Four years ago (Cannon 1988) I made a plea for researchers dealing with a diverse fauna to consider donating their collections to a suitable Museum. In that account I detailed the collections acquired by the Queensland Museum and expressed hopes for the future growth of collections.

Two significant events have taken place since then.

Firstly the Australian Society for Parasitology has generously sponsored efforts by the South Australian and Queensland Museum to computerise collection records of all parasitic worms held in Australian institutions. We are, therefore, working to produce ASPIC (Australian Society for Parasitology Information on Collections) - a national database of the parasitic worms.



Secondly, Dr Colbran who, though retired, I'm sure is known to most members of the Australasian Association of Nematologists approached me about depositing the large and significant plant parasitic nematode collection from the Queensland Department of Primary Industries. With the help of Graham Stirling and with a generous donation from RIRDC, this collection is now being accessioned and restored within the Queensland Museum.

A dichotomy exists in the scientific community which seems to separate those researching free-living and plant parasitic nematodes from those studying animal parasitic nematodes. This is unhelpful and unhealthy - there is much to be gained by bridging the gap.

Though a small step, at the Queensland Museum we are building ASPIC and including the plant parasitic nematodes. To ensure the best possible quality of collection and preparation and data inclusion, Francis Reay from the university of Adelaide was recently invited to Brisbane. She was able to advise on restoration procedures and also provided valuable taxonomic advice. Also assisting in the project is Dr Wim Wouts of Auckland. He has agreed to undertake the highly skilled task of remounting selected type material.

By 1992 the plant parasitic nematodes from Queensland D.P.I. will be fully accessioned and incorporated into ASPIC. The building of ASPIC will continue, however, as many collections still need incorporation.

The animal parasitic worms are well targeted (Sewell & Cannon, 1991), but perhaps there are other collections out there suitable or appropriate for inclusion in the national database.

Cannon, L.R.G. 1988. Museums and Collections. Australian Nematology Newsletter 7:7-10

Sewell, K.B. & Cannon, L.R.G. 1991. Worms in ASPIC. Proc. & Abst. Aust. Soc. for Parasitology Annual Conference p 119.

(Lester Cannon, Queensland Museum, Brisbane)

### **International Federation of Nematology Societies (IFNS)**

In September 1991, I received an Ad Hoc Committee Report from The Society of Nematologists (SON) (see below) with a letter inviting AAN to join the International Federation of Nematology Societies (IFNS). The objectives of AAN would not preclude participation in the IFNS. However, before committing ourselves, we would like to consider other members' opinions. I have been assured that external funding, rather than individual societies, would cover significant costs of such a network.

Please read and think about the report and let me know within the next few weeks if you have any strong opinions either way.

(Julie Stanton, Plant Pathology Branch QDPI, Meiers Road, Indooroopilly Q 4068)

### Ad Hoc Committee Report

July 1, 1991

Excerpts from Feasibility Study on proposed "International Federation of Nematology Societies" (IFNS).

This summary includes key issues from the extensive responses of our Ad Hoc Committee on a possible "Federation of Nematology Societies". Six of our nine committee members strongly support the concept of such a federation. The remaining three members have serious reservations, and one committee member proposed that we delay this study until the need for such an umbrella organisation is clearly evident. Included here are key related positive and negative points as well as a proposed deliberate committee-study schedule. Some general goals and other suggested facets of such a Federation also are included. Finally, a more complete list of Nematological Societies and a committee roster are attached.

#### 1. IFNS - Key Proposed Goals:

- Fund-raising management for promotion of scientific exchanges.
- Foster communication/collaboration among nematologists.
- Promote contacts with non/plant nematological organisations.
- Promote nematology in developing and developed countries.
- Facilitate international Nematological Congresses.
- Establish/maintain International Directory of Nematologists.

#### 2. Positive Points for IFNS:

- Great potential for fund raising/structure to support nematology.
  - Symposia
  - Short courses/workshops
  - International Congresses
  - Newsletters
  - General promotion of Nematology
- Need for IFNS will increase as nematological activities grow.
- PR needs/opportunities.
- Advisory to nematological societies.
- First two International Nematology Congresses were successful.
- Should enable graduate students to participate in International Congresses.
- Could sponsor periodic joint meetings of two or more Nematology Societies.



### 3. Negative Points Concerning Proposed Federation:

- Can continue to hold International Nematology Congresses through present consortium.
- There is little need for a Federation; benefits likely would not justify extensive work required.
- Current economic situation and down-sizing of many research units provide undesirable climate for initiating a Federation.
- Would be premature to consider Federation structure and names unless support of all societies is achieved through a survey.
- International society could cause some resentment if it usurps authority and role(s) of supporting societies.
- Nematology as a discipline probably is too small for an International Federation.
- A rigid Federation with narrowly focused officers would cause problems.

### 4. Proposed Schedule of Feasibility Study - IFNC:

- Review/uptake at Baltimore SON meetings (July 1991)
- Defining real need for International Nematological organisation (input from other nematological societies).
- If above (1 & 2) are positive, design a possible structure for "IFNS".
- Submit proposal to 1992 SON meetings for review/improvement.
- If still positive response, secure further input/approval, if possible, from significant number of Nematological Societies.

### IFNS - Ad Hoc Committee (SON):

- |                                 |                             |
|---------------------------------|-----------------------------|
| • Dr John Potter, Canada        | • Dr M R Siddiqi, England   |
| • Dr Brain Kerry, England       | • Dr Jorge Pinochet, Spain  |
| • Dr Charles E Taylor, Scotland | • Dr Silamar Ferraz, Brazil |
| • Dr John M Webster, Canada     | • Dr Ken Barker, USA, Chair |
| • Dr John H O'Bannon, USA       |                             |

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### Partial List of Professional Societies for Nematologists

Academiae Scientiarum Slovacae  
Afro-Asian Society of Nematologists  
American Phytopathological Society  
Asociacion Peruana de Fitopatologia  
Association of Applied Biologists, Nematology Section  
Australian Nematologists (informal)  
Bioved Research Society  
Dutch Circle of Nematologists  
Columbian Society of Nematologists ?  
European Society of Nematologists  
Finland Society of Nematologists  
Helminthological Society of India

Nematological Society of India  
Nematological Society of Southern Africa (NSSA)  
Netherlands Society of Nematologists  
New Zealand Society of Nematologists  
Organisation of Tropical American Nematologists  
Pakistan Society of Nematologists  
Polish Academy of Science Nematology Group  
Scottish Nematologists (informal)  
Sociedad Argentina de Nematologia  
Sociedade Brasileira de Nematologia  
Sociedad Chilena de Nematologia  
Societa Italiana di Nematologia

Helminthological Society of Washington  
Japanese Nematology Society (section of the Society  
of Applied Entomology & Zoology)  
Kung v. Nematologen (Netherlands)  
London School of Tropical Medicine, Department of  
Helminthology  
Mediterranean Society of Nematologists  
Mexican Nematologists' Society

Society of Chinese Parasitologists  
Society of Nematologists  
Society of Nordic Agricultural Research Workers,  
Working Group of Nematologists  
Society of Parasitologists (Bulgaria)  
Taiwan Society of Nematologists  
The Academy of Science of the USSR  
V.I. Lenin All Union Academy of Agricultural Sciences

## Mechanised Soil Sampling

I received from Grant Baldwin, Incitec Ltd., Adelaide some information on the 'Pro samp soil sampler'. This is a mechanised soil sampling machine mounted on a 4 wheel drive all terrain vehicle. Grant says the machine was developed in the UK to sample soils for heavy metal distribution from sewer sludge fertiliser applications, it could be particularly useful in nematology and soil microbiology sampling and for better soil analysis sampling. If you are interested I have some literature on this machine or alternatively you could contact Grant Baldwin directly.

(editor)



Pro-Samp Soil Sampler





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 North America, 845 North Park Avenue, Tucson, Arizona 85719, USA. Tel: 800/528-4841 602/621-7897 Fax: 602/621-3816  
 Asia, PO Box 11872, 50760 Kuala Lumpur, Malaysia. Tel: (03) 255 2922 Telex: 28031 MA CABI Fax: (03) 255 1888

## Biological Control of Plant Parasitic Nematodes

*G R Stirling, Plant Pathology Branch,  
 Queensland Department of Primary Industries, Australia.*

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