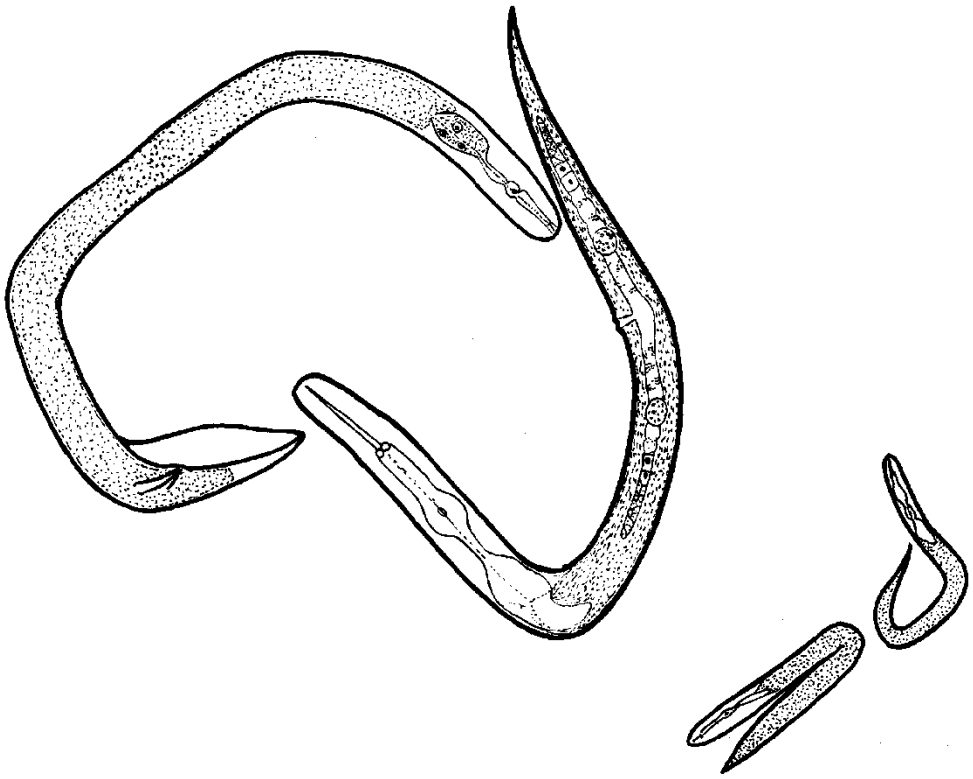
ISSN 2208-4312

AUSTRALASIAN NEMATOLOGY NEWSLETTER



Published by: **Australasian Association of Nematologists**

VOLUME 36 NO. 1 **MARCH 2025**

From the Editor

I am excited to announce some updates regarding our newsletter. Starting this year the AAN newsletter will be published biannually in March and September. Moving away from the January and July publication helps us avoid the busy end-of-year and start-of-year periods, as well as mid-year research reporting deadlines. I hope you find this change beneficial.

I encourage all members to actively participate by submitting articles on regional news, recent publications, announcements of new research projects, colleagues, visitors, students etc., research reports, conference or workshop reports, abstracts of recently submitted/accepted PhD theses, conference or workshop announcements and photos. Your contributions are vital for keeping the Australasian nematology community connected. By contributing you can share your research and achievements with a wider audience, stay updated in the latest development in the field of nematology, and foster collaboration and networking opportunities.

Contributions will be accepted at any time throughout the year so please forward articles and reports to me as they occur, with the deadline for the next issue 29 August 2025.

Thank you for your contributions to this issue. I look forward to receiving your contributions for future issues and keeping you up to date with the regional news and activities of our AAN members.

Rebecca Zwart

Contacts

Dr Mike Hodda, President, Australasian Association of Nematologists
CSIRO Ecosystem Science
GPO Box 1700
Canberra ACT 2601
Tel: (02) 6246 4371
Fax: (02) 6246 4000
Email: mike.hodda@csiro.au

Dr Sarah Collins, Secretary, Australasian Association of Nematologists
Department of Agriculture and Food
Locked bag 4
Bentley Delivery Centre WA 6983
Tel: (08) 9368 3333
Fax: (08) 9474 2840
Email: sarah.collins@agric.wa.gov.au

Dr Kathrine Linsell, Joint Treasurer, Australasian Association of Nematologists
SARDI Plant Health and Biosecurity
Plant Research Centre, Hartley Grove
Urrbrae SA 5064
Tel: (08) 8429 2232
Fax: (08) 8303 9393
Email: katherine.linsell@sa.gov.au

Ms Sue Pederick, Joint Treasurer, Australasian Association of Nematologists
SARDI Plant Health and Biosecurity
Plant Research Centre, Hartley Grove
Urrbrae SA 5064
Tel: (08) 8429 2214
Fax: (08) 8303 9393
Email: sue.pederick@sa.gov.au

Dr Rebecca Zwart,Editor, Australasian Nematology Newsletter
School of Agriculture and Environmental Science
University of Southern Queensland
Toowoomba QLD 4350
Tel: (07) 4631 1544
Email: rebecca.zwart@unisq.edu.au

Association News

FROM THE PRESIDENT

The site for the International Congress of Nematology 2028 was announced by the International Federation of Nematology Societies in early September last year. The site for the congress is Puerto Varas in Chile and the proposed timing is late September 2028. Xian in China was the unsuccessful candidate city.

Puerto Varas will be quite a hike for us from Australia, but I am assured that the scenery is magnificent with a lake and active snow-capped volcano cone, the people friendly, the local architecture fascinating (German-inspired), and, most importantly, there will be lots of stimulating nematology.

The next step in organizing the congress is developing a programme. A local committee will be primarily responsible for that, but in the past there has always been consultation with societies such as ours on the final form of the programme. What this means in practice is first a list of proposed session topics is decided (e.g. biosecurity, diagnostics, taxonomy, molecular methods, chemical control etc. etc.). Then session convenors are appointed, and they, in consultation with the organizing committee, invite in-person presentations and decide on offered in-person and poster presentations. So to get your favourite topic on the programme, and apply to chair a session, start thinking about it now.

I am personally a great supporter of the International Congresses. I have always found them really useful for making contacts which have been invaluable for getting specimens and finding out what is going on in other places. A lot of the nematode pests we have here may be cosmopolitan and not many indigenous (as is the case for most of our crops), and so we can learn a lot from researchers closer to the origins of the nematodes and the crops. And it can be useful to compare our free-living nematodes to those elsewhere.

Another aspect of the International Congresses of Nematology is being able to access international expertise. This is especially important as nematology expertise seems to be shrinking, noting the passing of several people who have made contributions to nematology and soil biology in Australasia elsewhere in this issue. These are all sad losses, and in at least one case, probably before time. I think this is the first Australasian Nematology Newsletter that has contained two obituaries, and it could easily have contained four. Prominent US nematologist and personal friend Diana Wall passed away last year as well (See https://www.science.org/doi/10.1126/science.adq0103). As did distinguished soil scientist, Dr Albert Rovira (See https://www.crawfordfund.org/news/passing-of-a-legend-in-soil-science/).

A main aim of AAN is responding to this loss of expertise. Supporting students is one way of encouraging renewal, and the Olga Goss Nematology Support Fund is available for that purpose. Other than lobbying, other ideas on how nematology can be better supported are always welcome.

On a positive note, the Australasian Plant Pathology Society Conference is on in Sydney at the end of May. There is no dedicated nematology workshop this time, but there should be a few papers concerning nematodes.

Mike Hodda

FROM THE TREASURERS

Membership fees for the AAN (Australasian Association of Nematologists) are $25 including GST. Membership fees are due annually 1st July through to 30th June and covers newsletter articles and information regarding nematology opportunities including specialised workshops and eligibility for bursary applications for students and early career researchers.

If you are outstanding with your fees you will be contacted shortly for the previous year.

You can no longer pay through the APPS web site when registering your membership, all now come through the AAN bank account. We have had support for many years with APPS but they are no longer able to assist with this service due to logistics.

ONLY Payment Method

ANZ
Account Name: Australasian Association of Nematologists
BSB: 012-950
Account # 5180-07506

Please include your name in the reference field so that your payment can be identified.

Looking forward to your continued support and the camaraderie the Nematology group brings.

Katherine Linsell and Sue Pederick (Joint Treasurers AAN)

Project Report

NORTHERN AUSTRALIAN NEMATODE BIOSECURITY INITIATIVE: CURRENT AND FUTURE IMPACTS OF PLANT-PARASITIC NEMATODES

Professor Maxine Piggott, Professor Stephen Xu, and Dr. Jady Li, Charles Darwin University (CDU)

Northern Australia holds substantial agricultural potential due to its fertile soils, abundant water resources, and tropical climate. The region supports a variety of horticultural crops, such as mangoes, melons, and Asian vegetables, while also expanding into emerging industries like cotton, hemp, and legumes. However, plant-parasitic nematodes (PPNs) pose a significant biosecurity threat to these developing sectors, potentially limiting crop productivity in key industries.

The project, "Understanding Current and Future Impacts of Plant-Parasitic Nematodes in Northern Australia," seeks to mitigate these biosecurity risks by investigating the distribution and assessing the biosecurity threats posed by PPNs across key agricultural regions in northern Australia. Led by the team at Charles Darwin University (CDU), including Professor Maxine Piggott, Professor Stephen Xu, and Dr. Jady Li, the project is funded by the Northern Australia Biosecurity Strategy (NABS), Biosecurity Plant and Science Services Division, Department of Agriculture, Fisheries and Forestry, Australian Government.

In 2024, a total of 162 soil and plant root samples were collected from 46 sites across the Northern Territory (NT), Western Australia (WA), and Queensland (QLD). Samples were analyzed mainly based on morphological diagnostic techniques, revealing 14 genera of PPNs: *Meloidogyne* spp. (root-knot), *Rotylenchulus* spp. (reniform), *Pratylenchus* spp. (root-lesion), *Radopholus* spp. (burrowing), *Helicotylenchus* spp. (spiral), *Rotylenchus* spp. (spiral), *Scutellonema* spp. (spiral), *Paralongidorus* spp. (needle), *Xiphinema* spp. (dagger), *Tylenchorhynchus* spp. (stunt), *Macroposthonia* spp. (ring), *Paratrichodorus* spp. (stubby-root), *Paratylenchus* spp. (pin), and *Hemicycliophora* sp. (sheath). Notably, *Paratylenchus* (pin nematode) and *Hemicycliophora* (sheath nematode) represent new records for the Northern Territory.

In addition to fieldwork, the project has prioritized capacity building for nematode surveillance and diagnostics. To date, four factsheets, 12 presentations, and six laboratory training sessions on nematode introduction, sampling, and identification have been delivered to growers, biosecurity officers, and agricultural consultants across NT, WA, and QLD. These initiatives have significantly enhanced local surveillance capabilities and supported sustainable agricultural practices across the region.

Furthermore, a CDU Master's student, has recently completed a research project focused on whether environmental DNA (eDNA) sampling can be used to detect root-knot nematode from soil samples. The results from pot trails suggest eDNA may be a promising method and further development and optimisation will be carried out on eDNA methods this year.

Looking ahead, the project team will collaborate with key stakeholders to publish a booklet and a literature review on the current and future biosecurity risks posed by PPNs in northern Australia. Preliminary findings have already been presented at project meetings, and the final review will incorporate the most recent survey data, offering an up-to-date resource for both researchers and industry practitioners. This work will provide a clear understanding of the distribution, and risks associated with plant-parasitic nematodes, informing the development of targeted management strategies and strengthening biosecurity efforts in the region.

Acknowledgments

We acknowledge the valuable contributions of our partners, including the Northern Australia Quarantine Strategy (NAQS), CSIRO, Northern Territory Department of Industry, Tourism and Trade (NT DITT), Queensland Department of Agriculture and Fisheries (QDAF), and Western Australia Department of Primary Industries and Regional Development (WA DPIRD), Sugar Research Australia (SRA) and Northern Territory Farmers Association (NTFA). Sincere appreciation is extended to all contributors and stakeholders for their ongoing commitment to strengthening biosecurity in northern Australia.

Left: Zucchini roots damage; Right: RKN damage on pawpaw

Capacity building for nematode surveillance and diagnostics

Abstract

ROOT KNOT NEMATODES (MELOIDOGYNE SPP.) (NEMATODA: TYLENCHIDA, MELOIDOGYNIDAE).

Zengqi Zhao[1], Kerrie Davies[2], Farhat Shah[3], Chris Mercer[4], Lee T. Aalders[5] & Nigel Bell[5]

[1]Manaaki Whenua – Landcare Research, Private Bag 92170, Auckland Mail Centre, Auckland 1142, New Zealand
[2]School of Agriculture, Food and Wine, University of Adelaide, Waite Campus, PMB 1, Glen Osmond, SA 5064, Australia
[3]Plant & Food Research Limited, Private Bag 4704, Christchurch, New Zealand 8140
[4]572 Featherston St, Palmerston North
[5]AgResearch, Private Bag 3123, Ruakura Research Centre, Hamilton 3240, New Zealand

Root-knot nematodes (RKNs) (Meloidogyne Goeldi, 1887) are plant endoparasites that induce galls on roots and cause severe economic damage to a wide range of plants worldwide. They were first recorded from New Zealand by Kirk in 1908. However, they are a difficult group taxonomically and the identification and distribution of RKN in New Zealand is not well documented. Correct identification of RKN to species level is an important component of crop and pasture management, especially for developing resistant varieties and effective crop rotations. It is also important for international trade and biosecurity. The present study was conducted with the objective of identifying the RKN species in New Zealand, summarising the work done, and indicating the areas where future research is needed. Nematodes were isolated from cultivated fields, pastures and orchards. Seven RKN species were characterised using both morphological and molecular approaches. PCR-based molecular analyses confirmed the presence in New Zealand of some highly polyphagous apomictic RKN species. Analyses using sequences of SSU, ITS and LSU allowed consistent discrimination between Meloidogyne fallax, M. hapla, M. minor, M. naasi, and M. trifoliophila, and also distinguished them from M. incognita, M. javanica, and M. hapla. In contrast, they did not separate M. incognita, M. javanica, and M. hapla, respectively. A properly designed survey, using additional sequences in a molecular study, is now needed to clarify whether other RKN species are present in New Zealand, possibly on indigenous plant species. This study also confirmed that M. hapla infects kiwifruit in New Zealand.

Read the full monograph at: https://www.landcareresearch.co.nz/publications/fauna-of-new-zealand-series/ or https://doi.org/10.7931/J2/FNZ.83

In memoriam

VALE VIVIEN ALICE VANSTONE

Vivien Vanstone with carrot cultures in DAFWA lab

Dr Vivien Vanstone, nematologist, mentor and friend to people from many parts of Australia, died in Victoria in August 2024, after a long illness. Vivien was born to parents who farmed near Bordertown in South Australia, growing up with a love of the outdoors and agriculture, and a deep understanding of the needs and concerns of the farming community. An only child, she loved taking care of the animals, with a particular soft spot for cats.

Vivien did her undergraduate years at The University of Adelaide, majoring in Zoology and gaining her B.Sc. in 1985. In 1986, she studied bird pollination of acacias with Professor David Paton, leading to First Class Honours and the publication of her first paper. From North Terrace, Vivien moved to the Waite Agricultural Research Institute, where she joined wheat breeder Tony Rathjen and his team, and started her 30-year career with nematodes. For her PhD, she was co-supervised by nematologist John Fisher. She began exploring the cause of poor performance of wheat in areas of South Australia. Vivien looked for pathogens associated with wheat root damage in the Murray Mallee Region over the 1987-1989 growing seasons. She assessed what fungal species occurred with *Pratylenchus neglectus*, and related that to the appearance and severity of symptoms on the roots. She supplemented her field experiments with inoculation tests in the glasshouse and laboratory. This work taught her nematological skills and established the research interests that she followed for her whole career. She was awarded her PhD in 1991 and continued to work with Tony as a postdoctoral fellow.

Working with Tony, Vivien became an excellent collaborator and honed her skills as a communicator, developing close ties with members of the farming community. Tony gave Vivien much of the responsibility for running research programs, preparing grant applications and informally supervising students, and she 'seized' such opportunities, learnt from them, and became the energetic, thoughtful and effective professional person we remember with great affection. While in South Australia, she published papers (often with Sharyn Taylor, and also with Julie Nicol; illustrating her collaborative approach to research) on the effects on yield of both *Pratylenchus neglectus* and *P. thornei*, and on their host ranges. Much of Vivien's work with broadacre cereal crops was designed to help farmers manage the nematological problems they were faced with, and included examination of the effectiveness of rotations, use of fertilisers, weeds as hosts of pest nematodes, and testing varieties for resistance and tolerance. This work greatly improved our knowledge of the impacts of these nematodes in broadacre agriculture.

In 2002, Vivien made her move to Perth and DAFWA to take up the position of Senior Nematologist. In Western Australia, she continued to unravel the impacts of root lesion nematodes through the large WA grainbelt. She expanded her nematological interests to include potato cyst nematode, *Heterodera avenae*, *Meloidogyne fallax*, and nematodes of vineyards and backyard vegetable patches. In a world first, she led the work that resulted in the declaration of eradication of *Globodera rostochiensis* from WA in 2010, following its original detection in Perth between 1986-1989. Becoming aware that there were species of *Pratylenchus* in WA other than *neglectus* and *thornei*, with Mike Hodda and Jackie Nobbs she described the new species *P. quasitereoides.* In WA, Vivien had a small but dedicated team, who all worked tirelessly. She continued her collaborative work, as can be seen from the number of papers she published with staff from SARDI and AgVIC.

Throughout Vivien's career, her largest contributions were often to the relationships she built, starting with researchers at the Waite Research Institute, which then expanded to include the small but vibrant group of nematology researchers working across Australia before broadening across the international community. As a mentor and supervisor to early career researchers and students, she provided strong guidance and instilled a sense of dedication and the attention to detail that marked her work. She was an editor extraordinaire, and the advice on one paper sent to her for review was so extensive and beneficial she was invited to contribute as an author. This example was one of many where she worked behind the scenes to bring research projects to a successful outcome or papers to completion, always providing advice and input willingly and without expectation of recognition. Above all, her larger-than-life personality, sharp mind and ability to bring everyone along with her, shone through.

Vivien was always down to earth, carrying her love of agriculture developed from her family farm in Bordertown, South Australia. She was diagnosed with multiple sclerosis early in her time in WA. For many years, she did not let this disease affect her life and carried on living to the best of her abilities. Eventually, she became too ill to continue working and retired to the family farm. There she met her partner, Wayne Raybone, and they shared happy years until her death.

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Ian Riley, Sharyn Taylor and Kerrie Davies

ian.riley@adelaide.edu.au
STaylor@phau.com.au
kerrie.davies@adelaide.edu.au

REMEMBERING VIVIEN

Vivien and Michelle in 2003

Vivien: my Boss, my friend.

I had the privilege of working with Vivien Vanstone for four years in our little lab. with a garden in the window.

Vivien attracted people; she was curious, friendly, and loud in a good way.

She loved talking to people and loved her cat, Jasmine – apologies to the dog people but Jasmine must get a mention as she and Vivien came as a package.

Working for Vivien meant being busy and having fun - we were always doing something involving nematodes or going somewhere to talk about them… For us it was *Pratylencus neglectus* and, as it seems now, these were the "simpler" times – we now know the Prats story is more complex; thanks to the work done by Vivien and Sara Collins in Western Australia and by many other dedicated nematologists.

We went to many field days to promote the nematode research work for the University of Adelaide and GRDC. We talked to growers and the general public to try to answer their nematode questions and discuss the problems they saw in the paddock, not necessarily involving nematodes. Vivien's farming background meant she could talk about anything agriculture related which farmers appreciated.

At one field day at Paskeville, on the Yorke Peninsula, Vivien and I set up a stand in a marquee to promote the wonderful world of nematode research. We had microscopes set up with live nematodes so that people could see what Vivien was talking about when she mentioned Prats. Most people would just have a quick look not really reacting or even appreciating the miracle of the microscope which enabled them to see the nematodes.

One person stands out from this Paskeville Field Day … A girl came up to the microscope while Vivien talked to the people accompanying her, explaining what we do and why nematode research is important to farmers. Meanwhile, the girl took one look down the microscope, screamed at the top of her lungs and ran out of the tent. The girl's friends ran after the poor girl to see what had happened. Vivien was frozen displaying a mix of shock and insult: how could anyone hate nematodes so much to react like that? We were nervous for the rest of the day, but thankfully it did not happen again.

The other memory of this day was the patience and kindness Vivien displayed when answering one particular question which came up over and over again, mostly from the backyard gardeners: "My tomato plants are not growing very well and they have these lumps on the roots…. What are they and how can I get rid of them?". Each time Vivien explained that there was nothing they could do about the nematodes causing the problem, just try to grow tomatoes in pots and maybe plant some African marigolds. Of course, she went into much more detail but some nematodes are just too hard to control. They just lurk in our soils.

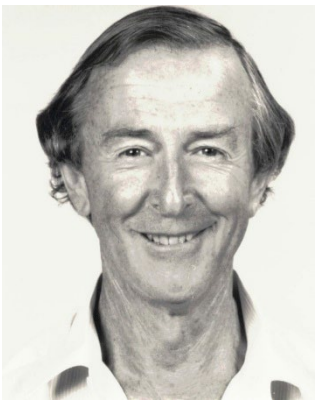
Vivien taught me to love nematodes - I will always be grateful for that.

Thank you, Vivien.

Michelle Russ, SARDI

In memoriam

VALE GORDON GRANDISON



Dr. Gordon Stuart Grandison, former nematologist at DSIR and MAF, New Zealand, died in Auckland in August 2024. He was in his 92nd year, having been born in August 1932 in Opotiki in the eastern Bay of Plenty on NZ's North Island. Gordon was proud that he came from Scottish, Italian and English stock. As a boy, Gordon was most influenced by his father who encouraged him to be curious and to discover how things worked. He enjoyed pulling things apart and putting them together again.

Gordon was a foundation pupil at the newly opened Avondale College, the year World War II ended. He did well at school, and became a prefect. At the College, he was influenced by the Headmaster, Mr. Titheridge, whom he greatly respected.

From school, Gordon went to Auckland University, graduating with a B.Sc. in 1953. His first professional job was with the Colonial Sugar Refining Co. (1954-1959), as a plant pathologist based in Fiji and working on sugar cane. During his career, Gordon spent a total of more than 16 years working overseas, mainly in the Pacific Island countries where he carried out UNDP/FAO consultancies on plant-protection for a wide range of tropical crops. He carried out surveys of plant-parasitic nematodes of economic crops for the Cook Is. and American Samoa. He also held various South Pacific Commission consultancies assisting small growers with improved quality and yield through use of simple plant-protection methods.

In New Zealand, Gordon became a plant-protection scientist for NZ Quarantine (now MAF) and also for crop protection in New Zealand (DSIR, now Horticultural Research). He carried out extensive field research on the control of pests and diseases of various crops, including kiwi fruit, apple, carrot, berry crops, floriculture, and pasture plants with the aim of improving quality of produce. Early in his career, this was generally involved the use of synthetic chemicals. Later he explored novel methods such as the use of mycorrhizas, crop rotations, use of chitin and collagenase as soil enhancers, and the botanical pesticide derived from the neem tree (Azadirachta indica).

In the 1960s, while working at DSIR as a Plant Pathologist, Gordon was influenced by Dr. Frank Newhook and decided to specialise in the study of nematodes, then causing serious problems for New Zealand agriculture. In 1964, Gordon discovered that stem nematode (*Ditylenchus dipsaci*) was causing decline of red and white clovers in pastures and significant losses for sheep production and NZ dairying. He also found that, in the anhydrobiotic state, the nematodes could survive in plant matter associated with clover seeds. He showed that commercial seed cleaning removed all the nematodes, thus breaking the disease cycle.

It was after this work, on nematodes of pastures, that Gordon decided to undertake work for his Ph. D. At that time, he could have undertaken work at Riverside in California, or at Adelaide in South Australia. By then he was married, with three young children, and he chose to travel to Adelaide because it was closer to New Zealand and therefore easier to move the family. This was in 1968. In Adelaide he worked in the laboratories within CSIRO, where Alan Bird worked, but he was actually supervised by Professor Harry Wallace of the Dept. of Plant Pathology, across the road at the Waite Agricultural Research Institute of the University of Adelaide. Gordon worked on population ecology of *Pratylenchus thornei* and *Meloidogyne javanica*, a project completed in 1971. This work led to publication of his paper on the distribution of

Pratylenchus in strawberry fields (published 1975). On return to New Zealand, Gordon worked at DSIR in Nelson and then Auckland until retirement.

Towards the end of his career, Gordon spent a decade advising the Pacific Island Trade and Investment Commission (formerly SPTC) and assisting them to answer trade enquiries from Pacific Island countries. He carried out various market research projects and submitted reports on: New Zealand spices; Fiji mangoes; taro imports into NZ; exporting beef from Vanuatu to NZ; post-harvest quality of fresh produce from Pacific Island countries; guidance for Pacific Island producers exporting fruit and vegetables to NZ; and market potential of Fijian breadfruit.

Following his retirement from DSIR in 1992, Gordon went to Germany for 6 months to further his interest in Neem, at Geisen and Munster Universities. On return to New Zealand, he continued working with nematodes, consulting at Auckland and Northland bowling greens and doing contract work for chemical companies.

For a year, Gordon trained Chris Mercer as a nematologist to work in Palmerston North. Gordon had post-graduate teaching qualifications and was an effective teacher; tolerant, generous and friendly. He had a way of breaking down barriers and could make a stranger quickly laugh, being larger than life and with a very positive, humorous outlook. Chris remembered that he was always welcome at the bowling clubs and farms they visited. Gordon's CV and publications confirm that he was also a gifted researcher. He published more than 20 papers in professional journals, three chapters in technical books, and prepared 13 pest data sheets on a range of nematode pests of economically important crops of the Pacific Island countries.

With a viticulturist friend, Gordon grew red table grapes in glass houses at Kumeu. They sold the fruit to greengrocers and at the Parnell Markets. According to Gordon's former colleague Peter Buchanan, they were the largest table grapes he ever saw. Eventually, Gordon retired to his hobby of gardening and horticulture at his and his wife's (Rachel) large garden at Waiheke Island. This he continued into his old age.

Gordon was married to Rachel for 64 years and they had four children, James, Kate, Prudence and Sarah. He was grandfather to Nicholas, Tyler, Evangeline and Lily. While they will all be missing him, they can be very proud of Gordon and of his contributions to New Zealand and Pacific Islands agriculture.

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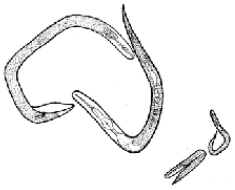
Norman Lodge, Chris Mercer, Trevor Crosby and Kerrie Davies

norman.lodge@xtra.co.nz
chrismercer@inspire.net.nz
trevorcrosby@actrix.co.nz
kerrie.davies@adelaide.edu.au

Save the date!



Australasian Association of Nematologists

We are excited to announce a special dinner event exclusively for AAN members at the upcoming APPS Conference in Sydney. Join us for an evening of networking, delicious food, and engaging conversations with fellow nematologists.

Please mark your calendars for:

Date: Monday, 26th May 2025

Time: Evening (exact time to be confirmed)

Location: Venue details to follow

There will be no nematology workshop at the APPS conference this year, however we would like to reach out to invite enthusiastic AAN members to propose and run a nematology-themed workshop at the next ASDS Conference. Start thinking of ideas.

AAN Executive Committee

Nematology Conferences

25TH AUSTRALASIAN PLANT PATHOLOGY SOCIETY CONFERENCE

Date: 26-28th May 2025
Venue: ICC, Sydney
Website: https://www.apps2025.org/

Early bird registration deadline 4 April 2025

64TH ANNUAL SON CONFERENCE

Date: 13-17th July 2025
Venue: Victoria, British Columbia
Website: https://nematologists.org/event-6017643

36TH SYMPOSIUM OF THE EUROPEAN SOCIETY OF NEMATOLOGISTS

Date: 1-5th June 2026
Venue: "Egmond aan Zee", the Netherlands
Website: https://www.esn-online.org/symposium-2024