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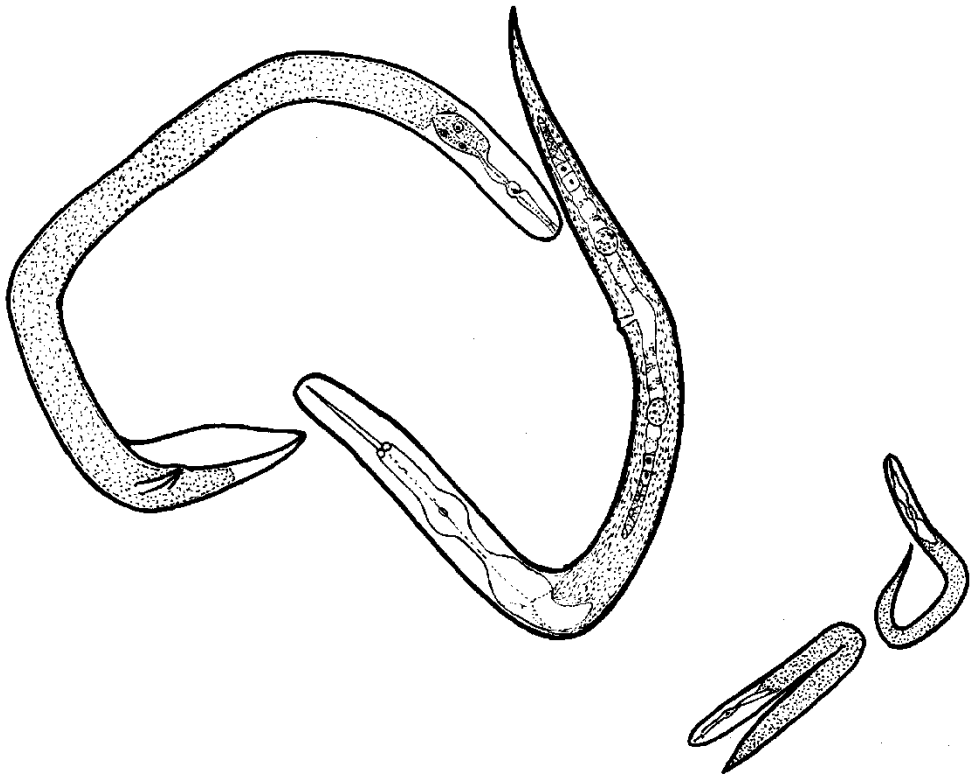
AUSTRALASIAN NEMATOLOGY NEWSLETTER



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From the Editor

Thank you to all those who made contributions to this newsletter.

January Issue
The deadline for the January issue will be late December. I will notify you a month in advance so please have your material ready once again.

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Association News

FROM THE PRESIDENT

Writing this section of the newsletter every 6 months offers the opportunity to comment on the state of affairs in nematology in Australasia and hopefully give some insight into the bigger picture of what is going on or where things might be headed. I am never sure what people are likely to get out of it—or indeed if anyone reads it—but hopefully it is an opportunity to take a slightly wider and longer-term view than the immediate pressing issue which seem to occupy so much of the time of most of the (non-retired) nematologists I know. So hopefully people find this useful at least sometimes.

It is unashamedly my view. Hopefully 35 years has given some insight into both nematodes and the human systems put in place to study, diagnose, manage, or regulate them. But, just as the nematodes have never failed in all that time to continue to turn up new and unexpected behaviour, so I am sure there are many parts of the study of nematodes that I have yet to work out. So if you think some of the content below is not quite correct—or even wildly inaccurate—then write something for the next newsletter in 6 months or so. Kerrie Davies, the editor will be most appreciative and helpful in including it in the next newsletter.

Internationally, the society and city to host the next International Congress of Nematology in 2020 has been selected. The European Society of Nematologists will be hosting the event in the city of Antibes in the south of France. This bid was chosen in the first ballot over bids from the Brazilian Society of Nematologists (Goiania, a city in the center of Brazil 230 km from the capital Brasilia) and the Chinese Society of Nematologists (Beijing). Pierre Abad, whom many will know either by reputation or from meeting at the last Nematology dinner at APPS, is the convenor of the organizing committee. Antibes will obviously be a hardship case to visit. For a figurative taste of what the city and venue may be like, see the IFNS web site: http://www.ifns.org/index.asp . For the real taste of French food and wine one will have to go, and take up Pierre's offer from Fremantle of a return hosting of a nematology dinner.

On a practical level, the programme is yet to be developed, so anyone wishing to have particular topics or subject areas on the programme should make it known to me soon. As with the last International Congress of Nematology, AAN will expect to have funding available to support students to attend. The exact amount will depend on interest rates and other applications to the fund between now and 2020.

Before the International Congress comes the local meeting. The next official meeting is the APPS meeting in Brisbane in late September next year. As with the international congress, there will be funding available to assist students in nematology to attend. See the announcement elsewhere in this newsletter.

Up until Auckland in 2013 and Fremantle in 2015, nematologists have always run a workshop associated with APPS. These have varied from hands-on look-at-real-nematodes in the laboratory sessions to seminar presentations. Some have had a single theme, while others have been more general information sessions on a range of topics as decided by the presenters. The feedback that I have received has always been that these workshops were useful to learn about nematodes and what others were doing. The feedback was that they were also useful in making or strengthening connections between Australasian nematologists. This is why they have always been supported by AAN.

The negative about the last few nematology workshops was that they were all mostly organized by yours truly. Despite pleas for someone else to fill the gap while I have been busy with other things for the last few years, no-one has stepped forward and so we have not had a nematology workshop in 2013 and 2015. Apart from the lack of an alternative when I have had other more pressing concerns, the other issue is that different people organizing the workshop will bring different perspectives than mine, which I think is a good thing. So here's a challenge. Come up with a topic that is of particular general concern to Australasian nematologists, and we can have a workshop about it. Having organized a few before, I will help with the organization. Otherwise, you will get my ideas again.

The main topic I was considering at the moment was something around variability and species in nematodes. This is relevant to issues like trade in ginger (an issue for Queensland, the site of the workshop), and resistance breeding in wheat (another big issue in southern Queensland). It is also quite a major issue in systematics generally at the moment as molecular techniques are throwing up all sorts of conundrums regarding what are and are not species. It is also a way to talk about a whole lot of developments overseas, and even look at a few real nematodes.

Any better ideas? (If so remember that the meeting is in September 2017, so we will need some time to organise beforehand, and any suggestions will need to come this calendar year.)

The above discussion is a good segue into the other issue facing AAN, which is succession in the executive. As Kerrie Davies is planning to retire—really retire not just stop being on paid staff—and Katherine Linsell is likely to have other priorities for the next few years, this is going to leave a substantial hole in the group of people who run AAN. So this is a first call for anyone or several people to step forward and make a difference (and it should look good on your CV, too). Formal application not required, just let me know.

I am looking forward to a flood of suggestions on people and topics for the next nematology workshop, and people who would like to be on the Executive of AAN.

Mike Hodda

Regional News

NEWS FROM NEW ZEALAND

University of Otago

Dr Farman Ali and Prof. David Wharton have a new publication in PLoS ONE (2016, vol.11, issue 5) on ice-active substances from infective juveniles of freeze tolerant *Steinernema feltiae* nematodes. These nematodes can withstand intracellular ice formation. They investigated recrystallization inhibition, thermal hysteresis and ice nucleation activities in the infective juveniles. Both the splat cooling assay and optical recrystallometry indicate ice active substances that inhibit recrystallization in the nematode extract are present. The substance is relatively heat stable and largely retains the recrystallization inhibition activity after heating. No thermal hysteresis activity was detected but the extract had a typical hexagonal crystal shape when grown from a single seed crystal and weak ice nucleation activity. An ice active substance is present in a low concentration, which may be involved in the freezing survival of this species by inhibiting ice recrystallization.

Under the 'Talented Young Scientist Program', Dr Ali has recently moved to The Institute of Plant Protection and Agro-products Safety, Anhui Academy of Agricultural Sciences, Hefei, China for a one year post-doc. He is working in Prof. Rende Qi's lab.

Farman Ali

NEWS FROM QUEENSLAND

University of Southern Queensland

We welcomed Dr Rebecca Zwart to our Crop Nematology team in early 2016. Rebecca completed her PhD (at the University of Queensland) on the genetics of root-lesion nematode resistance in wheat, while based at the Leslie Research Facility (Queensland Department of Agriculture and Fisheries). For the past 11.5 years she has worked overseas and has held various positions investigating the genetics and nature of inheritance of genes conferring host resistance to various pathogens of wheat in Australia, Belgium and India. Rebecca presented a review of genetics of root-lesion nematode resistance in wheat at the recent 4th International Conference on Plant Genomics held in Brisbane (July14-15). Also in July, Dr Mahendar Thudi, Scientist (Chickpea Genomics), visiting from ICRISAT (India) gave a presentation at USQ titled “Reaping the benefits of advances in genomics and sequencing technologies for chickpea improvement”. We are looking forward to gaining insights into the genetics of resistance to root-lesion nematode resistance in chickpea through collaboration with ICRISAT.

Roslyn Reen and Rebecca Zwart attended the annual Chickpea Innovation Lab meeting at Ege University in Izmir, Turkey in June 2016. The Chickpea Innovation Lab is an international

consortium of projects focused on the improvement of traits for climate resilience and food security, with partners in the US, Ethiopia, India, Turkey, Morocco, Canada and Australia. The Australian component of the project, funded by GRDC, is being led by Dr Jens Berger and the nematode research is headed by Professor John Thompson, USQ. John's team are screening new collections of wild chickpea accessions from Turkey to identify new sources of resistance to root-lesion nematodes to be introgressed into adapted chickpea varieties.

Kirsty Owen

NEWS FROM SOUTH AUSTRALIA

The University of Adelaide

Kerrie Davies and 'Fred' Bartholomaeus continued to battle with the taxonomy of nematodes from fig fruits in eastern Australia, concentrating on those from trees of the *Malvanthera* group. 'Fred' has made good progress, and they are completing a paper describing one new species of *Schistonchus* s.s., three of *Ficophagus* (nematodes which all look alike – arrrrgghh! A taxonomist's nightmare), and a morphospecies. Kerrie heads to Florida in early August to work with Robin Giblin-Davis on *Ficophagus* species from Central American figs of the *Pharmacosycea* and *Americana* groups. Back in Adelaide, 'Fred' will be drawing and measuring new species of *Fergusobia*.

Having reached a fairly significant age milestone, Kerrie is seriously 'winding up' her nematological work. It should take about three years to finalise the projects she is currently working on, and then it will be time to do something other than science.

Kerrie Davies

NEWS FROM VICTORIA

Horsham

Grant spent two weeks at Eskisehir, Turkey as a volunteer teacher as part of the 5th International Soilborne Disease Workshop organised by CIMMYT. The workshop was attended by 30 young pathologists from north Africa, west and central Asia and the Middle East. The students were enthusiastic about gaining skills to better equip them to support their industries in the management of important soil borne diseases of wheat. It was a politically interesting time to be

in Turkey with a failed military coup occurring during the middle of his time there. This did not detract from a refreshing opportunity to engage with a young and enthusiastic group of scientists.

The nematology program at Horsham is half way through its season, with a great start to the season. Rainfall has been average to above average and we have struggled to get into paddocks for spraying trials. A total of 29 field trials were sown in the Wimmera and Mallee investigating root lesion (*Pratylenchus neglectus* and *P. thornei*) and cereal cyst nematode. This is a reduction on last year's trials as a number of setup trials did not multiply nematodes and so did not progress into 2016. This year's program was similar to previous years with wheat, barley, canola, chickpea, lentil, faba bean and field pea trials sown.

Josh is currently working with Katherine Linsell and Marg Evans in South Australia to organise a field tour of the Southern region trials. This tour will showcase all the current work occurring in nematology field trials in the southern region along with crown rot and some foliar diseases.

Joshua Fanning and Grant Hollaway

Research and Comment

Friction in agricultural research

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Tony Rathjen and I often talked about the direction of agricultural research in Australia in recent years and we were planning to write an article for the Crop Science Society newsletter. Time passed and we just didn't get around to it. I hope Tony would be pleased that I've finally written something.

After retiring from SARDI, in 2006 I started doing statistical analyses and reports for a fertiliser company's Australian field research program and from 2009 until this year, I was contracted by the University of Adelaide to manage the company's field testing program.

I was struck by the contrast between this sort of privately funded work and the agricultural research outputs of government Departments as they existed for most of the 20th century, work which was freely available for the benefit of the agricultural community. The need for totally independent government funded research bodies was brought home strongly to me in the 90s when government agronomists and soil scientists received threatening letters from lawyers after plain speaking about product efficacy. Without the State's legal system behind them they may have ended up in serious trouble.

The best example of what can happen in this regard is that of Doug Edmeades, an iconoclastic former New Zealand Government soil scientist who appeared on a TV program "Fair Go" and presented the view that a widely advertised and sold seaweed product, Maxicrop, was not effective. Doug spent more than a year in court over the program, the longest civil case in NZ history and he was finally cleared of any offence. Doug wrote a book about his experience "Science Friction" and it is well worth reading if you can find a copy. Since then Doug has taken up the cause of evidence-based scientific research in the modern era and some of his written comments are worthy of note:

"Confidence in science and its products - technology - began to be questioned. Science, while not the cause, was seen as part of the 'problem'...This led to the philosophical movement called post-modernism which sets aside evidence as the authority and asserts that 'truth' is what you believe...Importantly in this setting, all opinions were to be given equal authority; irrespective of where the evidence lay." From a paper presented at the 26th Annual Conference of the Grasslands Society of NSW.

From an article “Is the commercial model appropriate for science?” - “Science in NZ has been commercialised. This commenced in 1990 with the formation of Crown Research Institutes. These are companies owned by the State and governed and operated as commercial entities. They are required to undertake ‘public good’ research and pay dividends and profits. I concluded, based on the values and requirements of science that it was, of all the potential governance and management models available, the worst model. The “Not For Profit” organisational model was recommended.”

“At its essence, science is a tool, a process, a set of implicit rules that can be applied to phenomena in the pursuit of understanding and ultimately discovering a truth. The process requires a commitment to the values of objectivity, impartiality and honesty.”

From a paper delivered to the 2011 NZIAHS Conference at Lincoln University – “The current flow of information from science to the farmer is full of pseudo-science infomercials and mumbo-jumbo.”

From Doug’s web site – “In 2005 MoRST (NZ) released a discussion document regarding New Zealand's science system. It was predicated on the basis that "the system is not broken but faces immediate challenges." In this paper I questioned that premise, asserting that "New Zealand science is caught in a management warp: the philosophies and theories upon which the current science system has been developed create an environment which is the antithesis of that required for an open, healthy, vigorous and productive science sector."

In the 1980s, another ideology - economic rationalism - became popular in Europe and the USA and inevitably of course, in Canberra. One aspect of the Australian interpretation of the philosophy was that agricultural research did not have a community benefit deserving of government support as did health, education or law enforcement, and as a consequence agricultural research was not entitled to the sort of financial support that the “essential” industries enjoyed. This ignored the spectacular community benefits which have flowed from State-supported agricultural research over the past 100 years. The idea promoted was that if farmers needed research support, they should pay for it themselves – a commercial model, similar in principle to the NZ idea. Since then it has often crossed my mind that in terms of survival priority, the need for food security comes before almost everything else.

Economic rationalism quickly diffused into CSIRO and State bureaucracies in the early 90’s. I remember sitting in the office of a friend in CSIRO and learning in amazement about the cuts and lay-offs taking place in the organisation. Another friend, a soil scientist in the NSW Department of Agriculture, described his Department’s agricultural research situation in 2001 as one of “gradual decomposition”.

Another visible result of economic rationalism has been the decline of the SA State agricultural research budget over the past 25 years. Between 1990 and 2006 I kept thinking each year that things couldn’t get any worse. What appeared to make the downward slide of State funded research less noticeable was the appearance and expansion of GRDC in the 1990’s. As State funding was withdrawn, alternative funding from GRDC and SAGIT became more available and there was a large increase in research projects and associated scientific and technical staff supported by funding bodies.

Understandably, funding bodies will not contribute to administrative staff salaries or infrastructure which they see as Government responsibilities and have maintained this position since their inception. In SA, the State still supports these functions and the salaries of some research leaders but it now has a minimalist approach to agricultural research support.

As an example, a fundamental aspect of correctly interpreting scientific data is statistical analysis. Data analysis is in itself a complex science and requires expertise in the whole field from experimental design to analysis. Without this expertise, some of the experimental data presented to farmers is not much better than anecdotal, with or without replication and LSDs. The brilliant statistical group in SARDI was one of the first casualties of tightening budgets in the 90's. In my experience, even well credentialled scientists have got result interpretation wrong in the absence of expert statisticians.

GRDC produces a wealth of quality research and extension material and one can't help but be impressed by the very professional approach it has taken to draw the attention of farmers to research results. But GRDC and other funding bodies still support mostly short term projects, employing and terminating researchers as projects come and go. The funding body system hasn't replaced the stable State support structure that produced the thought leaders and independent thinkers who changed the face of agriculture in the last half of the 20th century. A problem with GRDC is that it is very hard for anyone in the research system to criticise it. While the careers of researchers and technical staff depends so much on funding and on impressing GRDC's powerful committees and bureaucrats they do not see themselves as being in a position to criticise the system.

The future of agricultural research is in the hands of young scientists who need long term support and the opportunity to think, without the constant pressure of worrying about where their next project will be. I remember one of SARDI's iconic leaders telling us some 15 years ago that the days of working in one or two jobs over a lifetime were over and that we had to get used to it. I kept asking myself "Why?" It seems to me that until society, politicians, bureaucrats and funding bodies see the agricultural scientist as the key to a successful agricultural industry, and give them the dignity, support and priority they deserve, we are going to continue to make progress backwards.

Bob Holloway

APPS MEETING SEPTEMBER 2017

Please register your interest in attending the 21st Biennial APPS conference to be held in Brisbane at the official website: www.sciplant2017.com.au

We have combined forces with the Plant Biosecurity CRC to present a joint conference with the theme “Science Protecting Plant Health”.

The “Call for Workshops” is now open on the website, so if you are interested in running a Nematology workshop associated with the conference please follow the instructions on the site.

The call for abstracts will open on 1st October 2016 and early bird registration will commence on 1st November 2016. Abstract will be a maximum of 300 words (excluding title and author details).

Please join the APPS Facebook event page for the latest updates regarding the 21st Biennial APPS conference.

You can follow our conference Twitter account @sciplant17 or see the retweets at APPS twitter