

# NSSA Newsletter



NEMATOLOGICAL SOCIETY OF SOUTHERN AFRICA

Volume 52

April 2009

## 10 days and counting to kick-off

The Nematological Society of Southern Africa (NSSA) will be presenting its 19<sup>th</sup> symposium at the Casa do Sol Hotel & Resort in Hazyview, Mpumalanga Province, South Africa. Registration will commence on Sunday evening (17 May 2009) with conference closure scheduled for Wednesday (20 May 2009).

The conference venue is 30 minutes from the Kruger Mpumalanga International Airport at Nelspruit. Please make sure that arrival and departure schedules of those of you who will make use of airplane transport are sent to Jeannie (JeannieVB@arc.agric.za) by electronic mail. This way our organising team can make sure you are met and returned to the respective airports in time.

The symposium will be focusing on the science of Nematology, refresher lectures, latest research and the impact of nematodes on agriculture and horticulture. Interaction between the science of Nematology, related commercial activities and industries are encouraged. Networking opportunities within and between the scientific and business communities are plenty. The symposium will include paper and poster sessions. Plenary lectures, in the format of keynote presentations, by recognised authorities will precede paper sessions each day.

A day session focussed on extensive and interactive participation of researchers, representatives from chemical, biological and crop industries, producers and other interested parties concerning the role of chemical vs. biological/beneficial products in integrated management systems and expectations about classical nematicides, misuse of these products, and their impact on the food chain, etc are planned.

Internationally renowned keynote speakers, including Profs. Richard Sikora (University of Bonn, Germany) and Haddish Melakeberhan (Michigan State University, USA) have been invited to address symposium delegates on pressing topics related to nematology research. Presentations from both these speakers will focus on the management of plant-parasitic nematodes, contributing towards healthier soils for production of agricultural and horticultural crops.

Please be aware that our scientific symposium programme will be challenging due to the overwhelming response we received from delegates. We had no choice but to schedule concurrent sessions to ensure that we accommodate all presentations. It will be an excellent and unique scientific "adventure", but make no mistake that the social activities will be equally, if not more interesting and enjoyable! This include, amongst others, a sunset drive in the Kruger National Park. As we are travelling in open vehicles it can become quite cold. So please come prepared.

Also remember:

- To the ladies – bring comfortable low-heeled shoes. It will be easier to move around on the cobble stone paths.
- We will have some mosquito repellent available for our overseas visitors, but the local visitors must please bring their own.
- At the moment the weather is very unpredictable and it is quite cool in that area. We will try and advise you per e-mail on the weather nearer to the time.

For more information go to our website: [www.sanematodes.com](http://www.sanematodes.com). Looking forward to see you there!

*Jeannie van Biljon*  
Symposium Organiser

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Delegates at the 1st NSSA symposium—1973

### Editorial

It seems that the Nematology community is in flux. In this newsletter alone there is news of three new appointments at different institutions and also evidence of three of our colleagues expecting first additions to their families. Well they say a change is as good as a holiday..

Enjoy the newsletter, but allow me to leave you with this sobering thought: Did you know that roughly 12% of people ever born are alive today. Is it our job to help find ways to feed them all? Seems like it.

See you at the simposium

*Rinus Knoetze*



### President's message

Dear Members

We are counting down the days to the 17<sup>th</sup> of May 2009 when experts from over the globe will meet for our 19<sup>th</sup> NSSA Symposium! Yes, we will be proud to welcome in our midst international delegates from Brazil, Belgium, Germany, India, Iran Russia, Czech republic, the UK and USA as well a number of African countries. We are also proud to announce that more than 112 registrations have been filed at this stage, which is a record amount for our symposium. As the world economic climate is currently very unfavourable, I thank you all dearly for the enormous and loyal support in attending and participating in this symposium! Also to our sponsors, I extend sincere gratitude for their support in making this event possible and worthwhile.

I need to remind you about a few important issues that are related to our forthcoming symposium and society, which include nominations for the Bayer CropScience Trophy (previously Rhône-Poulenc Trophy), applications for the 2009 George Martin Scholarship, the 2009 Nematology Short Course and updating of the Keetch & Heyns (1982) book . More details about these issues will be presented in this newsletter. Please attend to these matters as requested.

Finally, be aware that our scientific symposium programme will be challenging due to the overwhelming response our Chairperson Ms Jeannie van Biljon received from delegates to participate. We had no choice but to schedule concurrent sessions to ensure that we accommodate all presentations. It will be an excellent and unique scientific "adventure", but make no mistake that the social activities will be equally, if not more interesting and enjoyable! Please make sure that arrival and departure schedules of those of you who will make use of airplane transport are sent to Jeannie (JeannieVB@arc.agric.za) by electronic mail. This way our Organising Team can make sure you are met and returned to the respective airports in time.

Since this is the last message I will convey to you as President through this medium, I want to express my gratitude towards every member or individual who made the past two years for me possible. It was an immense opportunity, privilege and honour to lead NSSA members through serving them. I know I write this also on behalf of the other EC members.

Looking forward to meet each and every delegate who will attend our 19<sup>th</sup> NSSA Symposium in little less than 30 days.

*Dr Driekie Fourie*

*President*

## New Arrivals at SASRI



SASRI has recently employed two bright young researchers to complement our research staff. Uvendra Pillay joined us in November 2008. She has a BSc in Biological Sciences from the University of KwaZulu Natal and will be working on the use of entomopathogenic nematodes to control various insect pests of sugarcane. Prabashnie Naidoo joined us in February 2009. She is busy writing up her

MSc in Plant Pathology from the University of KwaZulu Natal and will be working on the biological, chemical and physical control of plant parasitic nematodes of sugarcane. We wish them everything of the best and hope they get 'hooked' on nematodes as much as the rest of us...

Shaun Berry

Nominations for the **Bayer CropScience Trophy** (previously Rhône-Poulenc Trophy) are awaited by our Secretary/Treasurer Mr MC Pretorius (mc@cri.co.za) before or on 15 May 2009. This award was not presented during the 18<sup>th</sup> Symposium (2007) symposium. The main criterium for a person to qualify for this award is that he/she should have made a substantial/significant contribution to further the science of Nematology (research, training, etc.), particularly during the past two years (2008/09). Please respond to this request and get the nominations rolling in before or on 15 May 2009.

## Antarctic nematode produces "antifreeze"

Two Brigham Young University researchers who just returned from Antarctica are reporting a hardy worm that withstands its cold climate by cranking out antifreeze. And when its notoriously dry home runs out of water, it just dries itself out and goes into suspended animation until liquid water brings it back to life. Identifying the genes the worm uses to kick in its antifreeze system can be useful information - similar genes found in other Antarctic organisms are currently being used to engineer frost-resistant crops.

Previous research co-authored by BYU's Byron Adams, associate professor of molecular biology showed that another species of nematode plays a large role in the amount of carbon cycled through the soil, a process that is one of the essential building blocks of life on Earth. At the same time, fluctuations in temperature are diminishing the worm's population. That's the kind of climate change impact that researchers want to better understand so they can predict what will happen next.

Adams and his Ph.D. student Bishwo Adhikari are taking that one step further with their analysis of the genes of their latest subject, a species of nematode that lives in wetter areas of Antarctica's interior. They found that the

nematode creates a protein that probably prevents the ice from forming sharp crystals or coats them so they don't puncture anything. The new paper also reports the genes that the worm uses to put its life on "pause" when ground water dries up.

This particular species' unique genetic response to its environment means it is likely going to flourish as Antarctica gets wetter, Adams says, while other nematode species diminish. That's how this molecular-level research ties back into predicting how the composition and distribution of soil species will change in response to climate change. "Understanding how the soil functions independent of plants allows us a baseline that we can later add plants to," Adams explained. "These are rudimentary first steps - the long-term goal is to be able to extend our findings to more complex ecosystems, particularly managed ecosystems. Growers want to know how climate change is going to affect their ability to grow crops. Right now we don't really know. Understanding how this works in a simple ecosystem is the first step in being able to make those predictions."

Source: *Brigham Young University*

"...ABLE TO  
EXTEND OUR  
FINDINGS TO  
MORE COMPLEX  
ECOSYSTEMS..."

### Nematology is alive and well at the US

Our team at the University of Stellenbosch have made us very proud.

Dr Antoinette Malan was awarded the Researcher of the Year by the Deciduous Fruit Producer's Trust -Research. The award is presented each year to the researcher who presents the best results and who is actively involved in their technology transfer programme.

Jeanne de Waal achieved her MScAgric in Entomology *cum laude* during December 2008. The title of her MSc was "Entomopathogenic nematodes (Rhabditida: Steinernematidae and Heterorhabditidae) for the control of codling moth, *Cydia pomonella* (L.) under South African conditions". Jeanne will go on working with entomopathogenic nematodes doing her PhD on their application technology, a much neglected side of the commercial use of these nematodes as bio-cides.

To both these ladies Well done! We are proud of you.

Tiarin Ferreira and Nomakholwa Stokwe (both MSc students) continue their excellent work on the biological control of banded fruit weevil and mealybug respectively.

Three new students have registered this year viz. Caro Kapp, Niel Kruger en Rinus Knoetze. Caro Kapp has registered as a Honours student but is spending a portion of her time on a project: "The role of nematodes and their use as bioindicators in soil health under local conditions". This will form her MSc degree in Nematology for which she will register in 2010

Niel Kruger will be registering for a Master's degree in the second semester of the year. His project will be focused on the effect of a biofumigation cover crop on the wild type nematode population in vineyards. His project will be supervised by Dr. Malan (US), Dr. P. Addison (US) and Dr. J. Fourie (LNR).

*Jeanne de Waal*

"...AWARDED  
RESEARCHER  
OF THE  
YEAR..."

Updating of the Keetch & Heyns (1982) book is underway and should we dare to say "on schedule?" Although we all have busy schedules, you are reminded that your updated chapter(s) should reach the respective editors of the book (Prof. Alex Mc Donald, Prof. Dirk De Waele, Dr. Robin Jones, Dr. Vaughan Spaul or Dr. Driekie Fourie) by 31 April 2009. Funds for the graphic design and printing of this updated version have been made available by the internationally funded V.L.I.R.-project who is lead by Proffs. Dirk De Waele (Belgium Promotor) and Alex Mc Donald (South African Promotor). Please contact Dr. Driekie Fourie (FourieHD@arc.agric.za) or Prof Mc Donald should you have any enquiries in this regard

## nemlab

As usual this is our busy time and this year has been no different. This is heartening and must be a sign that agriculture in the Western Cape is healthy!

The ongoing involvement in the Soil Health Programme of the Deciduous Fruit Industry has been very interesting and together with Hans Hugo we have put forward a number of research projects. Sheila Storey has two projects in the programme. Given the interest from the

fruit industry towards soil health in general we are particularly excited about the project concerning the use of nematodes as bioindicators of soil health. We have appointed a student, Caro Kapp to do this project as part of a Masters degree. This research project will be a co-operation between Nemlab and the University of Stellenbosch.

*Sheila Storey*



### ARC Infruitec-Nietvoorbij takes on Crico's

April 2009 saw ARC Infruitec-Nietvoorbij kicking off with three new projects on ring nematode (*Criconemoides xenoplax*). Two of the projects are aimed at gathering basic knowledge of this nematode's biology. Although this nematode is widespread in stone fruit orchards and vineyards in South Africa, very little is known about its biology. The third project will be looking at the host status of different rootstocks. Hans Hugo is also a co-worker on a big multi-disciplinary project researching the effect of cover crops in vineyards. This project entails looking at the biological, chemical and physical soil aspects and, amongst other factors, diseases and pests. There are indeed some exciting years ahead for nematology in vineyards and fruit orchards.

Meanwhile the viticulturists at our institute discovered that nematodes can be a factor in their trials and have inundated our diagnostic service with samples in October and February. The high number of samples tested our capacity to the full, but it did keep us occupied inside the laboratory when outside

temperatures skyrocketed and "only mad dogs and Englishmen went out in the midday sun".

Talking of October – Hans Hugo accompanied two entomologists to the Lower Orange River (far west, way beyond Augrabies) to some table grape farms. Hans sampled for ring nematodes while the entomologists were involved in fruit fly/SIT work. We were very fortunate with the weather in that it was "cold" that week with the temperature going above 30°C on only two days, and the evenings cool enough to sample the local sheep shanks for supper. Who says work is not a pleasure?

On the personal front, widow Dawn Smith became a very happy Mrs. Hinds when she married Gerald in October.

*Hans Hugo*

"...PROJECTS  
AIMED AT  
GATHERING  
BASIC  
KNOWLEDGE  
ABOUT  
BIOLOGY..."

South African nematologists who would like to join the **European Society of Nematologists** must please contact the local representative, Hans Hugo, at [hugoh@arc.agric.za](mailto:hugoh@arc.agric.za) or telephone 021 809 3468. The membership fee is €20 per year and can be paid for two years (2009/10) or four years (up to 2012).

### News from the Overberg

Nemconsult has started the year with a very good season and hopefully will continue receiving samples throughout this year. A definite raised awareness of nematodes and the damage they cause is noticed amongst fruit growers in the Overberg district.

Our lab assistant, Anneke Tobias, will be attending the short course in Nematology at the University of North West, starting in June. Unfortunately, Caroline won't be attending the 19th NSSA symposium, but this is for a greater good since she is expecting baby Mouton in October 2009. Probably a boy! Hopefully, Caroline and Anneke will be attending the 20th NSSA symposium in 2011

*Caroline Mouton*



### ARC-Grain Crops Institute

Nancy Ntidi started the year 2009 on a high note by attending a course in Bioinformatics and Molecular Techniques in Egypt during January. She made valuable contacts with scientists from the USA and Egypt during this course. Prof. Dirk de Waele, the promoter of the internationally funded VL.I.R. project visited the GCI during the first week of February to discuss progress and future funding. Prof. Alex McDonald is the local Promoter of this project. Personnel of Syngenta, both local and international visited GCI to participate in a meeting with personnel of the Nematology Unit. During their visit Dr. Driekie Fourie gave an oral presentation about the current status of plant-parasitic nematodes associated with maize in South Africa. This research was partially sponsored by Syngenta and future col-

laboration in terms of future research projects was discussed. In terms of post-graduate studies, Suria Bekker finalised her MSc study under the guidance of Driekie (Supervisor) and Alex (Co-Supervisor), while Sonia Steenkamp finalised her PhD study under the supervision of Alex (Promoter) and Dirk de Waele (Co-Promoter). The title of Suria's MSc was "Assessment of the identity, distribution and control options for seed- and leaf-gall nematodes in grass in South Africa", while that of Sonia's PhD was "Host plant resistance as a management tool for *Ditylenchus africanus* (Nematoda: Tylenchida) on groundnut (*Arachis hypogaea*)".

Sonia Steenkamp



The 2009 Nematology Short Course will be presented at the North-West University (Potchefstroom Campus) from 22 June to the 3<sup>rd</sup> of July 2009. A registration form for this course is also included in this newsletter. Please contact Prof. Alex McDonald at +27 18 299 6369/McDonaldA@arc.agric.za) for further details in this regard. Only a limited number of applicants will be allowed

### Another new appointment at DoA

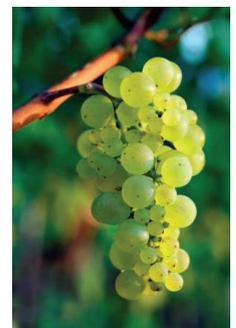
The DoA nematode diagnostic laboratory in Pretoria will soon be up and running again. We have appointed a new official, Andiswa Mbontsi, to take on our Nematology duties in Pretoria. Andiswa hails from the Eastern Cape and did her pre-graduate training in Entomology. She is already hard at work, doing intensive training and equipping the new lab to start receiving samples in the near future. We wish her a successful new career.

The Nematology section in Stellenbosch is still involved in a countrywide survey for the presence of potato cyst nematodes in South Africa. To this date, 47 plots from 32 farms, representing a total of approximately 600 hectares are placed under quarantine because of the

presence of *G. rostochiensis*. A number of plots in the Sandveld have been tested after 8 years of quarantine regulations. No viable cysts of *G. rostochiensis* were found in the samples from the Sandveld. Quarantine regulations on these farms has subsequently been lifted.

Later in the year the stork will be very busy in Stellenbosch. Both Rinus and Lené will be having a first addition to their families in the coming months.

Rinus Knoetze



### Gene clue to longevity uncovered in nematodes

BBC news reports that research on nematodes (published in Nature) has uncovered a gene linked to the unusual effect that severe calorie restriction markedly extends lifespan. In the future, the find could lead to drugs that mimic the consequences of calorie restriction but negate the need for severe fasting regimes. The consequences for humans of cutting calorie intake by about 60% while maintaining levels of vital nutrients are still unclear, although this extreme diet has a number of followers.

A study using *Caenorhabditis elegans* revealed that a gene called *pha-4* played a key role. The team found worms that had their *pha-4* genes removed showed no enhanced longevity while on the restricted diet. But they discovered that the opposite experiment - over-expressing levels of *pha-4* in the worms - increased longevity when on the restricted diet.

Although the study was carried out on nematodes, the finding could also be important for other species. Mammals, including humans, possess genes that are highly similar to the *pha-4* gene. These genes play a key role in development, and then in later life in the regulation of glucagon, a hormone that has a major role in maintaining glucose levels in blood - especially during fasting. Scientists believe the life-increasing effect of dietary restriction may be linked to boosting chances of survival through times of food scarcity.

Scientists now plan to look at the gene in other species. Should the longevity link also apply to humans, it could open the door to the development of drugs that mimic the effects of calorie restriction while allowing people to maintain their normal diet.

“...DEVELOPMENT OF DRUGS THAT MIMIC THE EFFECTS OF CALORIE RESTRICTION...”

Applications for the 2009 **George Martin Scholarship** should reach our Secretary/Treasurer Mr MC Pretorius (mc@cri.co.za) before or on 15 May 2009. Prerequisites for receiving this award are that such a person should be active in Nematology research and also present a paper/poster contribution during the 20<sup>th</sup> NSSA Symposium, which will be hosted during 2011. An application form can be found on [www.sanematodes.com](http://www.sanematodes.com).

### News from ARC—ITSC



We, at Nelspruit, are doing well. Grace, previously a student was finally appointed and is now working full time for the ARC-ITSC. She as well as Candy as still busy with their studies for a PhD and going strong. Candy has identified two bionematicides with great potential and will do bioassays on these two. Very exciting! Willem has entered for an MTech study and will screen spinach, carrots and green peppers cultivars for resistance. Grace is working on organic amendments and after repeatedly seeing the effect of permaculture will look more closely on the effect of some of the macro nutrients on nematode control and plant vigour.

And myself, I am trying to keep everyone busy. We are still busy looking for the perfect nematocide and while we will never find that one, we have tested a few nice products that seem to have potential to be part of an IPM program. Of course at the moment we are all extremely busy trying to get all our presentations in order for the symposium.

*Mieke Daneel*

### NUWE DIAGNOSTIKUS BY DIE DIAGNOSTIESE SENTRUM VAN CRI

Wilma Bester is in Laura Huisman se pos in Nelspruit aangestel vanaf 2 Januarie 2009. Sy is gebore in Bloemfontein maar het op 'n jong ouderdom na die Wes Kaap verhuis. Sy het haar skoolloopbaan begin en afgesluit in Bellville en is daarna Universiteit Stellenbosch toe. Sy behaal die graad B.Sc.Agric in 2003 met hoofvakke Plantpatologie en Genetika. In 2006 behaal sy haar M.Sc.Agric graad in Plantpatologie met die tesis getiteld "Characterisation and management of trunk disease-causing pathogens on table grapevines" behaal. In 2006 word sy by die Departement Plantpatologie (US) aangestel as konsultant by die siektekliniek. Haar werk het die prosessering van verskeie gewasse met siektesimp-tome, asook die identifikasie van swamme en bakterieë wat hierdie plantsiektes veroorsaak ingesluit. In 2008 aanvaar sy 'n pos as navorser by die LNR se plantbesker-

mingseenheid en werk op drie projekte, naamlik die biologiese beheer van *Parthenium*, *Paraserianthus* en *Cestrum* spesies. Aan die einde van Desember 2008 is sy na Nelspruit waar sy die diagnostikus en bestuurders pos van die diagnostiese sentrum by CRI aanvaar het. Sitrus kwekerye, asook kommersiële sitrus produsente, stuur op 'n gereelde basis grond- en wortelmonsters vir ontleding. Hierdie monsters word dan getoets vir *Phytophthora* en *Tylenchulus semipenetrans* besmetting. Verskeie ander dienste word ook deur die diagnostiese sentrum verskaf. Wilma gaan in Junie die kort kursus by Potchefstroom Universiteit bywoon. Ons wens Wilma sterkte toe met haar nuwe uitdagings en wil haar ook welkom heet in die nematologie omgewing.

MC Pretorius



We're on the web!

Please visit our website ([www.sanematodes.com](http://www.sanematodes.com)) for info about symposia, newsletters, Nematology in Southern Africa and access to a variety of nematology resources

"...

SUBSTANTIALLY  
LOWER IN THE  
PREVIOUS  
YEAR..."

#### More GM maize being planted locally

Planting of genetically modified maize in South Africa has increased dramatically, The Star newspaper reported on 6 May. In an interview with Monsanto products manager, Kobus Steenekamp, it was mentioned that 74% of white maize and 67% of yellow maize planted in the Delmas, Nigel and Leandra areas of Mpumalanga was GM. While unable to give comparative figures he said they had been "substantially" lower in the previous year.

He told farmers in Delmas that the market for GM-free maize was dwindling. Only

750000 tons of GM-free maize was required at present, relatively similar to last year's numbers. He also told farmers that they stood to benefit from other new products being developed. One of them was YieldGard, which would eliminate the possibility of stalk borer resistance. The second product was maize that would utilize nitrogen better. Also in the pipeline was drought-tolerant maize.

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The Nematological Society of Southern Africa (NSSA) is dedicated to advance the science of Nematology in Southern Africa in both its fundamental and applied aspects. To serve this purpose the Society acts as an agency for the exchange of information, holds regular symposia and promotes and extends knowledge in all phases of the subjects. The NSSA brings together scientists, researchers and like-minded individuals from Africa who dedicate themselves to the study of nematodes.

Nematodes (also called eelworms or roundworms) are the most abundant multicellular animals on earth. The focus of the NSSA is on plant-parasitic nematodes, but people from all fields of Nematology are welcomed.

The society also organises a short course at the University of North West, sponsored by the VLIR-project. The George Martin memorial scholarship is awarded annually. The purpose of the scholarship is to promote Nematology in Southern Africa by assisting successful candidates to attend a recognized course in Nematology.

