

NSSA Newsletter



NEMATOLOGICAL SOCIETY OF SOUTHERN AFRICA

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Mpumalanga to host 19th symposium of NSSA

The Nematological Society of Southern Africa (NSSA) will be presenting its 19th 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 Casa do Sol Hotel & Resort is situated in the 500 ha "Ilanga Nature and Game Reserve" with over 100 different species of indigenous bush and breeding herds of non-aggressive game peacefully roaming the reserve. On-site hiking trails, tennis courts, swimming pools as well as water recreational activities on Casa do Sol's dam, together with numerous other adventure-activity facilities nearby will ensure a memorable stay.

There are five golf courses within close proximity of the hotel and the Shangaan Cultural Village is only a short drive away. Casa do Sol is also situated near some of the jewels of creation viz. God's Window, the Blyde River Canyon and many other scenic glories of Mpumalanga. Very importantly, the world famous Kruger National Park is just a hop away.

The conference venue is 30 minutes from the Kruger Mpumalanga International Airport at Nelspruit. There are also a number of lodges, resorts, country houses and B&B's available in the vicinity.

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 on a given topic(s) will precede paper sessions each day.

A half-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.

Workshops and/or discussion groups on new or interesting topics could be arranged on request. Strong international attendance is expected.

Two internationally renowned keynote speakers, namely Profs. Richard Sikora (University of Bonn, Germany) and Haddish Melakeberhan (Michigan State University, USA) have currently been invited to address symposium delegates on pressing topics related to nematology research. Presentations from both these speakers will focus on to the management of plant-parasitic nematodes, contributing towards healthier soils for production of agricultural and horticultural crops. Topics of their particular oral contributions will be made available in the symposium programme at a later stage.

Social activities, theme dinners and a trip to the Kruger National Park are also planned. Full-day or afternoon trips during the conference will also be available for accompanying persons. One or more post-conference tours could also be arranged.

The organizing committee invites you to present one or more papers or posters on any aspect of the science of Nematology at the symposium. The committee will do its utmost to accommodate as many presentations as possible within the given time frame, but we also reserve the right to prioritise according to scientific or topical merit, particularly with regard to presented papers. Contributions should preferably be in English as this is the most common language of southern Africa and a number of delegates will be from countries beyond our borders.

For more information please download the second circular of the symposium on our website: www.sanematodes.com

Jeannie van Biljon

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Editorial

It seems that a lot has been happening in the world of Nematology these couple of months. Once again we received news from all over and this issue is full of interesting stories, ranging from nematodes in space to soil biodiversity. So read on, and enjoy.

Finally, let me leave you with the words of a Slovenian proverb: "Speak the truth, but leave immediately after"

Rinus Knoetze



Presidents message

Dear Members

I challenge anyone to argue that Nematology, particularly aspects such as research, training, awareness-raising and technology transfer about the importance of nematodes, are not progressing at a steep pace in Southern Africa at present!

This could be substantiated with a few examples. In terms of research, the progress made by the team from the University of Stellenbosch (headed by Dr Antoinette Malan) in controlling codling moth on fruit trees in the Western Cape, using entomopathogenic nematodes, is exciting and indicates their dedication towards the agricultural sector and our discipline. Identification of a new *Globodera* spp. by Rinus Knoetze (Department of Agriculture, Stellenbosch) and Dr. Antoinette Swart (Biosystematics division, ARC-PPRI) is also an exciting development. The team at the Nematology Unit of the ARC-GCI is also progressing in identifying economically viable methods to control seed-and-leaf-gall nematodes infecting *Eragrostis curvula* (Ms Suria Bekker), while novel contributions by Ms Nancy Ntidi to limited, existing knowledge about plant-parasitic nematodes associated with local weeds also resulted in a success story.

Although I felt the above-mentioned efforts earned special mentioning, research programmes and training efforts by other local nematologists also contribute substantially towards the progressive increase of valuable knowledge in terms of Nematology. The growing number of private, accredited entrepreneurs who assists in nematode counts and identification for producers, research institutions, etc. are also recognised as a valuable and important contribution towards our discipline. Finally related efforts by members of the VLI.R- and NIESA groups should be mentioned, since both these groups focus on the development of environmentally-friendly methods to manage plant-parasitic nematodes in the developing agricultural sector in Southern Africa.

In terms of training, awareness-raising and technology transfer, these objectives are addressed via interactive platforms by various local nematologists during the past year, both on the local and international front. Training of students in Nematology in South Africa is currently addressed by the Universities of Stellenbosch, Limpopo, North-West and Pretoria. The University of the Free State is also in the process of building capacity in terms of future training of nematologists. This venture is welcomed by the NSSA fraternity and we offer them our support and wish them success with this initiative. Additionally, our respected, local taxonomists (Drs Esther van den Berg, Antoinette Swart and Mariette Marais) are continuously presenting hands-on courses to transfer knowledge to groups and individuals in order to assist people in teaching them how to distinguish between economically important plant-parasitic nematode genera and species in particular. We are grateful for their contributions in this regard, which is adding exceptional value to our discipline. It is therefore appropriate to announce that the next Nematology Short Course will be hosted during the July school holidays in 2009 at the North-West University, Potchefstroom Campus. The cost per delegate, including accommodation, meals and training material will be approximately R8 000. Potential applicants should contact Prof Alex Mc Donald at +27 18 299 6369 or at McDonaldA@arc.agric.za for further details in this regard. Only a limited number of applicants will be allowed.

Awareness-raising about nematodes, their importance, association with various crops as well as their management is currently being addressed by a range of eight articles that is currently being published in the local, popular journal *Landbouweekblad*. This initiative illustrates the devotion and commitment of NSSA members to contribute towards the commercial sector, related industries, producers and end-users in terms of nematology. The EC of the NSSA also submitted a general, informative article on nematocides for the internet website Wikipedia, since this topic has not been included in their arsenal until recently. Furthermore, a colour-printed A5 flyer has been included in symposium bags of each delegate attending the The 5th International Congress of Nematology (5INC), held during July 2008 in Brisbane (Australia). In this way the forthcoming 19th NSSA Symposium to be held from 17 to 21 May 2009 at Casa Do Sol, Hazyview was advertised internationally.

Continued on page 3

President's message (continued)

The main project in terms of technology transfer is, however, a current effort to revise and update the bulletin titled "Nematology in Southern Africa", edited by Dr Keetch and the late Prof Heyns and published during 1982. I believe that with the co-operation of each author and co-author of the various chapters, we will successfully complete this project and be proud of the final product, which will reflect all nematology-related knowledge generated since 1982.

As usual, the meetings held by local nematologists during the past year have been informative, focussed and most of all enjoyable. The 51CN resulted in presentations of a high standard including those by South African nematologists, which are elaborated on elsewhere in this newsletter. Another meeting where we interacted recently was during the past Nematology Workshop, held on 16 September 2008 in Stellenbosch as part of the Soilborne Workshop. Not only were interesting and pressing topics discussed, but delegates from other disciplines such as the Entomology Unit of the University of the Free State, Terason and Sakata Vegetetics also joined our group and added valuable inputs towards proposed integration of efforts by nematologists, entomologists, plant pathologists and breeders, etc. We were also honoured by the presence and participation of a renowned nematologist, Prof Abawi from Cornell University, USA, who is an expert on soil health. These tangible efforts elaborated on above to promote Nematology in Southern Africa illustrate the absolute commitment from members of the Executive Committee (EC) towards its members and also the commercial sector, related industries, producers and end-users.

Let us now venture into the goals of our society for the immediate future. Members of the EC is dedicated to host the 19th NSSA Symposium, that will be characterised by a scientific programme containing contributions from both local and international delegates in order to maintain the high standard of our previous meetings. At this stage two internationally recognised and respected nematologists are invited as keynote speakers. They are Professors Richard Sikora from the University of Bonn (Germany) and Haddish Melakeberhan from Michigan State University (USA). 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. The topics of their contributions will be made available in the symposium programme at a later stage. As more sponsorship are obtained, the EC will attempt to invite more keynote speakers. As with previous symposia, a number of international delegates also already indicated their interest in attending the 19th NSSA Symposium, which will ultimately expand our knowledge on various nematode-related topics that are of global interest.

Another innovative and exciting venture that will take place during the 19th Symposium will be a structured workshop where researchers, members of the relevant chemical, biological and crop industries as well as invited producers will interact and share knowledge and opinions on managing plant-parasitic nematodes in a sustainable way under local conditions. The emphasis of topics to be discussed during this workshop will be on the role of chemical nematicides used in integrated management systems to reduce plant-parasitic nematode numbers effectively. Our Lead Sponsor for this forthcoming symposium is Bayer Crop Science, who proposed the above-mentioned workshop to add value to the agricultural sector by integrating views of all concerned parties in such discussions. I, therefore, urge you to attend this symposium since it promises to be a unique experience that will be beneficial for us nematologists and subsequently our discipline. While we express our gratitude towards sponsors who have already contributed or indicated that they will contribute towards our 19th Symposium, the EC invite other potential sponsors to become involved and assist us in hosting another worthwhile symposium during 2009. Please contact any member of the EC in this regard.

With these informative extracts about the current status of our society-related inputs in Nematology in Southern Africa, I greet you!

*Dr Driekie Fourie
President*

We need your help!

The Rhone-Poulenc trophy is awarded bi-annually for excellence in the field of Nematology. Since this trophy is now sponsored by Bayer, we have decided to change the name. We would like to refer to it as "The [insert name] trophy sponsored by Bayer". We thought it would be a good idea to honour one of our past great Nematologists by naming the trophy after him/her. We are inviting suggestions for the new name of this trophy. Please send your suggestions to Rinus Knoetze (RinusK@nda.agric.za). The proposed names will be discussed at the next general meeting.



EC

Nematode genome provides insight

A recent article in ScienceDaily (Sep. 22, 2008) reports that scientists at the Max Planck Institute for Developmental Biology, together with American colleagues, have decoded the genome of *Pristionchus pacificus*, thereby gaining insight into the evolution of parasitism.

In their work, which has recently been published in Nature Genetics, the scientists have shown that the genome of the nematode consists of a surprisingly large number of genes, some of which have unexpected functions. These include a number of genes that are helpful in breaking down harmful substances and for survival in a strange habitat. *Pristionchus* species have carved out a very particular habitat for themselves: they live together with May beetles, dung beetles and potato beetles in order to feast on the bacteria and fungi that develop on the carcasses of these beetles after they have died. The nematodes therefore use the beetles as a mobile habitat that offers them shelter and food. It thus provides the clue to understanding the complex interactions between host and parasite. When they move from the land to the beetle, the nematodes' habitat changes dramatically. The nematodes have to protect themselves against toxic substances in their host, for example. The methods they employ to cope with the condi-

tions in the beetle are worthy of closer attention, as this life form can possibly be regarded as the precursor to real parasites. At least, this is what researchers have suspected for a long time.

The sequencing of the genome of *Pristionchus pacificus* has now confirmed this suspicion: the genome, consisting of around 170 megabases, contains more than 23,500 protein-coding genes. By comparison, the model organism of *Caenorhabditis elegans* and the human parasite *Brugia malayi* only have about 20,000 or 12,000 protein-coding genes, respectively. The *Pristionchus* genome also has a number of genes that are not known in *Caenorhabditis elegans*, although they have been found in plant parasites. Genes for cellulases - enzymes that are required to break down the cell walls of plants and microorganisms - have aroused particular interest among scientists. The scientists will now test how *Pristionchus* has adapted to its specific habitat by using the sequence data, hopefully giving them a new insight into the evolution of parasitism.

Rinus Knoetze

“...A NUMBER OF GENES ARE HELPFUL IN BREAKING DOWN HARMFUL SUBSTANCES...”

Tiny worms reveal large secrets

According to the magazine *Popular Mechanics* (September 2008, p.19), researchers this year announced they had invented a microscopic operating table for tiny, unsegmented roundworms, called nematodes. What could researchers learn from creatures that can be as small as 0,3 mm?

The operating table traps individual nematodes and severs their nerves with laser pulses to study how their nervous systems repair themselves. The research could lead to treatments for human nerve damage. It turns out nematodes are great lab specimens – they have nearly as many genes as humans, and their organs parallel ours. Rats may be biologically closer, but logistically, it's hard to beat tiny, fast-reproducing worms.

Five things you can do with nematodes:

1. Fly them into space. Nematodes are used to test the biological effects of spaceflight,

such as genetic damage that can be caused by exposure to cosmic radiation.

2. Fight insects. Some nematodes can kill crop pests by entering insects' bodies and killing them with bacteria. Worm offspring eat the host before moving on.

3. Cure disease. Recent testing suggests that more than 65% of human disease genes have equivalents in the genome of the *Caenorhabditis elegans* nematode.

4. Argue for ET life. Nematodes were the sole survivors of the space shuttle *Columbia* crash, supporting the theory that life could migrate between planets on meteors.

5. Study evolution. Nematode eggs make tropical ants swell and discolour to resemble berries. Birds eat the ants; other ants forage on the bird's waste and get infected.

Hans Hugo



SA Nematologists well represented at 5icn

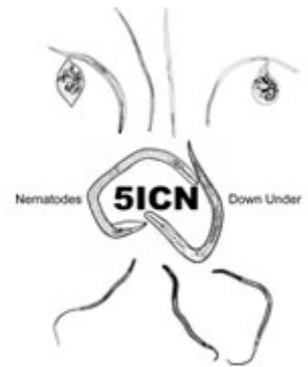
This congress was attended by 20 South Africans including: Dr. Antionette Swart (ARC-Plant Protection Institute), Dr. Louwrens Tiedt (North-West University, Potchefstroom), Mr. MC Pretorius (Citrus Research International), Dr. Mieke Daneel, Mr Candy Khosa, Ms Grace Tefu (ARC-Institute for Tropical and Subtropical Crops), Dr. Shaun Berry (South African Sugarcane Research Institute), Dr. Greg Burger, Ms. Elise Bunting, Anelia Steyn, Mr Alan Campbell (Illovo Sugar), Ms. Suria Bekker, Nancy Ntidi, Sonia Steenkamp, Dr. Driekie Fourie and Mr Lucas Ngobeni (ARC-Grain Crops Institute), Ms Jeanne de Waal, Dr. Antoinette Malan (University of Stellenbosch).

The objectives for this congress were to make contact with other researchers to foster collaboration and to obtain the latest information in terms of Nematology research, training and technology transfer. Thirty Nematology-related topics were covered during four to five concurrent sessions per day. Topics of interest to the South Africans were epidemiology, molecular diagnostics, global comparative nematode management, parasitism in nematode, biological control, physiology, new technologies and chemicals for nematode control, resistance breeding against plant-parasitic nematodes, entomophilics, communication and extension and food webs. The following six South Africans were invited to present papers: Shaun Berry, Rinus Knoetze, Mieke Daneel, Sonia Steenkamp, MC Preto-

rius and Nancy Ntidi. Posters were presented by 10 South Africans: Louwrens Tiedt, Suria Bekker, Jeanne de Waal, Antoinette Malan, Driekie Fourie, Lucas Ngobeni, Shaun Berry, Candy Khosa, Grace Tefu and Mieke Daneel.

Topics of particular interest to local agriculture included the potential of gene silencing to transfer broad-spectrum resistance to root-knot nematodes in a range of crops, ecology and biodiversity of soil nematodes in sustainable soil conservation in terms of no-till vs conventional systems. Other nematode management strategies included crop rotation or cover crops, biofumigation, organic amendments, biological control, disinfection of planting material, weeding to avoid build-up of plant-parasitic nematodes in cropping systems, solarisation and nematicide seed treatment. Other general topics of interest discussed during the meeting included nematology training, raising awareness particularly in resource-poor areas, funding for nematology research, training, technology transfer and molecular techniques that included the monitoring of nematode communities in the soil (Real-Time PCR, sequencing), identification of economically important plant-parasitic nematodes for diagnostic, quarantine and regulatory purposes and genome mapping of economically important plant-parasitic nematodes for the purpose of gene silencing.

Sonia Steenkamp



“..MAKE CONTACT WITH OTHER RESEARCHERS TO FOSTER COLLABORATION AND TO OBTAIN THE LATEST INFORMATION”

SBDIG focuses on Soil Health

The Soilborne Plant Diseases Unit of the ARC's Plant Protection Research Institute hosted the 18th interdisciplinary symposium on soilborne plant diseases on 17 and 18 September 2007 at the Vredenburg Research Centre of the ARC-PPRI in Stellenbosch. The topic for this year's symposium was *Soil Health and Soilborne Plant Diseases*. Participants represented a wide range of disciplines such as agronomy, entomology, horticulture, microbiology, nematology, plant pathology and soil science. The keynote address was delivered by Prof George Abawi from Cornell University, USA. Prof. Abawi introduced delegates to the Cornell Soil Health Assessment protocol and elaborated on the connections between soil health and root health.

During the session on soil health initiatives in South Africa, Dr. N.C. Cook from the Deciduous fruit producers trust outlined a strategy for soil health management in South African

orchards. Mr. J.F. Pienaar from Woolworths explained the retailer's involvement in soil health as part of the Woolworths' Good Business Journey. Some case studies were also presented. They included informative talks by tomato producers ZZ2 and Mr. Junior Herholdt from Philadelphia about their common-sense approach to biological farming.

Several talks about the effect of soil health on soilborne plant diseases were presented, including the effects of soil compaction on citrus root health, the effect of biological soil amendments in apple replant disease and the effect of different soil cultivation practices on grapevine soils. As usual the talks resulted in lively discussions and participation by all delegates were encouraged.

Rinus Knoetze



Nematology discussion group at SBDIG

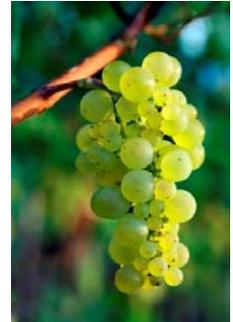
Despite the rain a very successful Soilborne Diseases Interest Group symposium was held on 17-18 September 2008 at ARC-PPRI, Stellenbosch. Twenty-three people indicated that they wanted to attend the preceding Nematode Discussion Group on the Tuesday afternoon. This made the nematology discussion group the largest of the three discussion groups. An interesting aspect was the number of non-nematologists that attended the discussion. It was also nice to see "old" nematologists such as Caroline Mouton and her new assistant Anneke Tobias attending.

Some interesting topics came up for discussion, notably an appeal for a wider approach to the term "multidisciplinary" and to include insects, mites, fungi, protozoa and bacteria. This topic was introduced by Prof. Schalk Louw from the University of the Free

State. As many nematologists have some entomology background, it is surprising how easily we forget about all the "good" insects in the soil and their contribution towards a healthy soil. Niel Kruger from Terason asked a question about SAR (Systemic Acquired Plant Resistance) which opened a very interesting discussion on the role of salicylic acid in the plant defensive process.

On the Tuesday (16 Sept) morning before the SBDIG symposium, the Deciduous Fruit Producers' Trust and Prof. George Abawi (Cornell University, USA) presented a workshop on soil health. Prof. Abawi is also known for his work on *Pratylenchus penetrans* on apple during the 1970's and as an "apple nematologist" it was a great pleasure to meet him.

Hans Hugo



Quarantine measures monitored by DoA

At the Department of Agriculture it's business as usual. Lené Martins was married since our last newsletter and is now Lené van der Walt. She is now busy writing up her thesis for her Masters degree in Plant Pathology at the University of Stellenbosch. Moses Lesufi has obtained his masters at the Northwest University. He studied the occurrence of *Aphelenchoides arachidis* on groundnuts in South Africa. Moses has since been transferred to the Limpopo Department of Agriculture and will not be practicing Nematology exclusively anymore.

Rinus and Lené has also both been trained in the identification of certain nematode groups by Dr. Esther van Berg. Rinus concentrated on the Pratylenchidae and Lené studied the Spi-

erals. The Nematology section are still involved in a countrywide survey for the presence of potato cyst nematodes in South Africa. Monitoring of quarantined plots in the Sandveld and Ceres areas are also been keeping them busy.

The following nematodes has been intercepted recently in imported plant material: *Helicotylenchus dihystera* in peat from the Netherlands; *Telotylenchus* sp. from Costa Rica; *Aphelenchoides blastophorus* on *Lilium* bulbs from the Netherlands and *Pratylenchus zeae* on Hazelnuts from Argentina.

Rinus Knoetze

"...NEMATODES
HAVE BEEN
INTERCEPTED IN
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Nemlab news

We had a very busy first half of the year but the long, cold and very wet Cape winter has definitely made itself felt in the lab. No-one wants to take samples under these conditions!

Sheila attended the 5th International Nematology Congress in Australia. It was a very rewarding experience. Of special note was the bond between all the South African delegates. We certainly made our presence one of note!

There is a definite marked interest in alternative methods for the biological control of

plant-parasitic nematodes. As a result we have run a number of glasshouse trials this year. We continue to be involved in registration trials of many different products.

The ongoing involvement in the Soil Health Programme of the Deciduous Fruit Industry has been very interesting. We presented two research proposals and now await the outcome. As usual the issue is one of funding.

The Nemlab Team

nemlab

Nematology unit doing valuable taxonomic work

The Nematology Unit, of the Biosystematics Division, Rietondale Campus, ARC-PPRI are involved in a number of taxonomic projects and diagnostics.

The species description of a new *Globodera* sp. from the Sandveld is underway and is a joint study between Antoinette Swart, Rinus Knoetze (DoA, Stellenbosch) and Colin Fleming (AFBINI, Ireland). Because of their workloads, progress is slow, but they are enduring and hope to finish it by the end of the year.

Mariette Marais also reports that her paper dealing with the *Helicotylenchus* found in an indigenous forest at Mount Sabyinyo in the Volcanoes National Park in northern in Rwanda is completed and submitted for publication. *Helicotylenchus californicus*, *H. dihystrera*, *H. nitens* *H. variocaudatus* and an undescribed species were found. *H. californicus* and *H. nitens* are new records for Rwanda and this is the first report of *H. nitens* outside its type locality in Cameroon.

Antoinette represented the Nematology Unit at the 5th International Congress of Nematol-

ogy. She presented a talk, she and Mariette was co-authors of a poster by Louwrens Tiedt and Esther was co-author of a paper by Sergei Subbotin.

The Unit did identifications for Danny Coyne (IITA, Uganda), Driekie Fourie (ARC-IGG), Directorate Plant Health (DoA) and many farmers, institutes and nurseries. They were also involved with *Beddingia siricidicola* – work for FABI, University of Pretoria.

Esther van den Berg is still working three mornings a week at Rietondale and is as valuable as ever, both as teacher and taxonomist. Rinus Knoetze and Lené van der Walt came for training in the identification of the Pratylenchidae and Hoplolaimidae and Esther, Mariette and Naomi were the keen teachers of the two very dedicated students.

Antoinette Swart; Mariette Marais

“...*HELICOTYLENCHUS* FOUND IN AN INDIGENOUS FOREST IN.... RWANDA...”

Taxonomists being applied

In February of this year, Antoinette Swart and Mariette Marais from the Nematology Unit, Biosystematics Division, ARC-PPRI continued their yearly survey of the vegetable gardens of the subsistence farmers around Thohoyandou.

Despite the heat they managed to take 220 samples of 12 different crops, including interesting plants such as indigenous maize, okra, Venda sugarcane and bambara groundnut. One of the most amazing counts of plant parasitic nematodes in a crop plant was made in cowpea roots in Lambani: *M. javanica* presented by 21 881jī, 85♀ and 92♂♂ together with 10 018 *Pratylenchus brachyurus*, all in 20 g roots. Needless to say, no cowpea harvest was made in this garden. They again found, presumably because of the drought, that lesion nematodes were often concentrated in very high numbers in plant roots while the corresponding soil populations of the same nematode were extremely low.

Their second season of a field trial was con-

ducted in KwaZulu-Natal. It is a multidisciplinary venture and includes the studying of the effects of alternative winter crops, bio-control products, chemical biocides, soil disturbance and soil cover on no-till maize yields, soilborne diseases of maize (fungi and nematodes) and microbial diversity and activity. Some very interesting results were obtained, which were topped by a very worrying build up of *Pratylenchus brachyurus* and *P. zaei* population numbers in some of the treatments. It also seemed that the cover/rotation crops (black oats, canola, crambe and wheat) supported the highest population numbers of lesion nematodes during the winter months.

The Nematology Unit was also involved in an All Grow Farmer's Day and Marketing Conference where both Mariette and Antoinette presented talks.

Antoinette Swart, Mariette Marais



ARC-IIC advises SADC cotton producers

A project was initiated to disseminate knowledge of the integrated management of cotton pests, diseases and nematodes to subsistence cotton farmers in the South African Development Community (SADC) region. The study was aimed at (i) determining the extent of knowledge regarding cotton diseases, nematodes and insects in each country, (ii) identifying the existing practices of pest (diseases and insects) and nematode management practices, (iii) identifying the constraints and opportunities and (iv) recommending the way forward.

Serious constraints, such as inadequate infrastructure, the lack of working vehicles, the language barrier, extension officers from the NGO's with little or no knowledge of cotton pests and diseases, the inability of government extension officers to reach the majority of the farmers, and the vast number of subsistence cotton farmers, were identified.

The first target country was Malawi where cotton is grown as a cash crop by a large number of subsistence farmers. One cotton company deals with approximately 75,000 subsistence cotton farmers. The average size of the farmlands is small (0,6 ha), similar to that in other parts of Africa. The most prominent cotton buying company currently operating in Malawi has an extremely efficient operation in place from the field services manager down to the buyers. The buyer interacts with the farmers on a daily basis, thus sustaining the personal relationship with the farmers.

The current system used by the cotton company operating in Malawi is effective, but lacks IPM. It has become apparent from the IPM strategies in other African countries that the typical subsistence farmer in a developing country lacks fundamental knowledge of pest management and the agronomy that pertains to the crop, and is resource poor, averse to risks and conservative. Insect pests are the production constraint most recognised by farmers, although some farmers are familiar with the disease symptoms and some are even aware of the symptoms of root-knot nematode damage on the roots.

After the situation in Malawi was analysed, it became clear that knowledge can only be disseminated to the farmers through one of the existing cotton companies. Their extension

structure in the field should be provided with all the necessary knowledge relevant to pests, diseases and nematodes. This knowledge can then be disseminated to the farmers.

The first training session was held in Malawi. This training workshop was attended by 44 employees of Cargill, one of the cotton companies operating in Malawi. The trainees included Cargill's field services manager, regional development officers, assistant regional development officers and marketing officers. These people provide all the technical support on cotton production to 75000 small-scale cotton farmers in the Salima-Balaka- and Shire-cotton production areas. During this training workshop they received training on cotton pests, diseases and nematodes. They were also trained in basic plant protection and safety aspects for cotton production. Structured by Cargill, they will now disseminate this knowledge to the 75 000 small-scale cotton farmers from whom Cargill contractually buys its cotton. All trainees received the necessary material in the lectures, photo guides and CD's.

Cargill's management was asked to select 10 successful and 10 not so successful farmers in each of the three areas. These farmers will receive training like all others, but will be carefully monitored and their cotton yield of 2007/2008, compared to that of the previous year. This will enable the ARC to measure the impact of the training and technology transfer on the SADC small-scale cotton farmer. The report back was very positive and the company has requested a follow-up visit.

A training session in Chipata, Zambia followed, where 30 people were trained.

What we have realised as scientists is that subjects like plant pathology and nematology, where learners have to understand and accept the microscopic size of the pathogens, might be a bit abstract to comprehend and familiarize themselves with and that a serious need exists in adult education for a concept on how to approach this.

Jeannie van Biljon



“.....TYPICAL
SUBSISTENCE
FARMER IN A
DEVELOPING
COUNTRY LACKS
FUNDAMENTAL
KNOWLEDGE
OF PEST
MANAGEMENT..”



Students excel at US

Currently, a total of 21 under-graduate students are enrolled in the Nematology Semester Course at the University of Stellenbosch. The post graduate students in Nematology for 2008 are Jeanne de Waal, Tiarin Ferreira and Nomakholwa Stokwe.

Jeanne is working on the biological control of codling moth using entomopathogenic nematodes. She has conducted several laboratory and field experiments with very promising results. She will be graduating (MScAgric) at the end of the year and will enrol as a PhD student working on the practical techniques involved in the application of entomopathogenic nematodes in a commercial setup in 2009. Jeanne was awarded a student sponsorship to attend the International Nematology Congress in Brisbane by the organizers of the Congress. She was also awarded the best student presentation during the Research Day of the Department of Conservation Ecology and Entomology.

Tiarin is working on the control of the banded fruit weevil in apples and pears. Her work is especially challenging as she first of all had to rear her weevils artificially in high numbers to do her laboratory tests with nematodes. She already managed to rear enough weevil larvae to test 14 isolates of entomopathogenic nematodes and present a poster of her work at the International Congress of Entomology, 6-12 July, 2008, Durban.

Nomakholwa is working on mealybugs and their control with entomopathogenic nematodes. She had initial problems with the rearing of *Pseudococcus viburni* but currently she has enough mealybugs to do her laboratory test and has already tested 16 different nematode isolates. She is also in the process of doing the morphometrics and morphological description of a new South African species of *Steinernema*.

Antoinette Malan



News from ARC-ITSC

Dear friends,

Time for a few words from Nelspruit. I cannot even say a sunny and warm Nelspruit since we have the strangest weather. However, it still stays a beautiful area.

Three of us, Grace, Candy and myself, had the opportunity to go to the International Nematology Symposium in Australia and it was a wonderful experience. The quality of papers and posters was good and many of the papers were really interesting. It was nice to see all these new and not so new nematologists from all over the world. It is always a change to meet friends. We tried to make some contacts and hopefully some cooperation will come out of this.

Candy and Grace are busy collecting enough data for their PhD and it is nice to see the results they get with some of the bionematicides on the one hand and organic amendments on the other hands.

Willem and I are keeping ourselves busy testing products that are friendly and others that are not so friendly to determine nematicidal

effectivity. A never ending story! However, some of these products have a huge impact on plant growth and/or soil structure and that makes it a new playing field. Take into account high fertilizer prices, a shortage of some of the fertilizers, the need for soil conservation and there is a lot of scope for some of these products.

I also have the privilege to go the Kenya for the international banana symposium from 5-10th October in Mombasa. Since banana is the staple food in Eastern and Western Africa, it is an important crop and there will be about 500 delegates.

We lost one of our colleagues, Charmaine, but Grace has filled the gap and everything is running smoothly.

Greeting from the nematology family in Nelspruit.

Mieke Daneel

“...BANANA IS
THE STAPLE
FOOD IN
EASTERN AND
WESTERN
AFRICA ...”

News from ARC-Grain Crops Institute, Potchefstroom

Some people at ARC-GCI became globe-trotters during 2008. Driekie Fourie was invited by Syngenta to attend the Syngenta Seed Care Corn Production Conference from 18 to 20 February 2008 in Tucson, Arizona, USA. Nematology research on maize, particularly in the southern parts of the USA is expanding since plant-parasitic nematodes are a major threat to crop production. At the conference Driekie made an oral presentation titled 'Evaluation of abamectin seed treatment for reducing root-knot nematode populations in various crops, particularly maize'.

From 13 to 18 July 2008 Driekie, Suria Bekker, Sonia Steenkamp, Nancy Ntidi and Lucas Ngobeni attended and participated in the 5th International Congress of Nematology, which was held in Brisbane, Australia. Nancy and Sonia were invited to present papers and Driekie, Suria and Lucas presented posters involving the following topics: "Plant-parasitic nematodes associated with weeds in developing agriculture, with special reference to root-knot nematodes" (Nancy), "First report of groundnut genotypes resistant to the groundnut pod nematode *Ditylenchus africanus*" (Sonia), "Introgressing root-knot nematode resistance into local maize genotypes" (Driekie), "Host plant resistance for management of root-knot nematodes in maize" (Lucas) and "Seed- and leaf-gall nematode infection of

Eragrostis spp. grasses in South Africa and evaluation of a management strategy" (Suria). Important contacts were made with national and international congress delegates to foster possible collaboration with and contract work for various national and international companies and individuals.

Back to the home front, our much respected Research Assistant Erna Venter resigned to become a full-time mother for seven-month old Anré. Erna will surely be missed by all of us.

In terms of post-graduate studies, Nancy successfully obtained her MSc qualification and was also promoted to researcher. The title of her MSc was "The association between plant-parasitic nematodes and weeds in developing agriculture with special reference to root-knot nematodes". Suria will be submitting her MSc dissertation and Sonia her PhD thesis in November 2008. The title of Suria's MSc is "Assessment of the identity, distribution and control options for seed- and leaf-gall nematodes in grass in South Africa" and that of Sonia's PhD is "Host plant resistance as a management tool for *Ditylenchus africanus* (Nematoda: Tylenchida) on groundnut (*Arachis hypogaea*)".

Sonia Steenkamp

"..NEMATOLOGY RESEARCH IN THE USA IS EXPANDING SINCE PLANTPARASITIC NEMATODES IS A MAJOR THREAT TO CROP PRODUCTION"

New kid on the block

Since Caroline Mouton has moved to Caledon (Western Cape) in 2006, she has established a nematode diagnostic laboratory called Nemconsult and does routine nematode analysis for producers.

Nemconsult also receives a large amount of samples of which all nematodes (including free-living nematodes) are classified up to genus level. Special interest is paid to the specific feeding habits of these nematodes together with other soil organisms in order to

have a better understanding of the status of the soil foodweb.

In April 2008, Anneke Tobias was appointed as a lab assistant at Nemconsult and does all soil and plant extractions for nematodes. She has recently qualified for the George Martin Memorial Scholarship and will making use of the opportunity to attend the short course in Nematology at the University of North West in 2009.

Caroline Mouton





NEMATOLOGICAL SOCIETY OF SOUTHERN AFRICA

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.

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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.

We're on the Web: www.sanematodes.com



Kaperjolle in PE