



# PLANT PROTECTION NEWS

Newsletter of the Plant Protection Research Institute (PPRI), an institute in the Public Support Services Division of the Agricultural Research Council (ARC) of South Africa.

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## Launch of partnership between ARC and SANBI

A four-year inventory and conservation assessment programme (South African National Survey of Arachnida)— aimed at documenting the spider, scorpion and other arachnid fauna of South Africa and at identifying species threatened by extinction — was launched on the 4th September 2006 at the Botanical Gardens in Pretoria. This is a partnership programme between the Agricultural Research Council (ARC), and the South African National Biodiversity Institute (SANBI) and funds (1.4 mil R over 4 years) is made available for this second phase of SANSa. The event was attended by several members of the South African National Biodiversity Institute (SANBI), the Group Executive manager of ARC, Dr Mishak Molohe, and a range of other prominent members of the conservation community.

**Contact details:** Dr Ansie Dippenaar Schoeman  
DippenaarA@arc.agric.za



Drs Rami Kfir, Connal Eardley, Nico Dippenaar and Mervyn Mansell at the launch

SANSa was initiated by the Biosystematics Division of this institute in 1997. During the first phase, a database was developed to access all the data, and from 20 projects more than 40 000 specimens were collected.

During this second phase of SANSa, SANBI is providing some core funding and logistical support. SANSa is the first major project on invertebrate fauna being undertaken by SANBI since its transformation from the former NBI (National Botanical Institute). SANBI is a statutory body under the Department of Environmental Affairs and Tourism, charged with monitoring and reporting on the status of biodiversity in South Africa, with helping the South African government to meet the requirements of the international Convention on Biological Diversity, to which South Africa is a signatory, and with implementing provisions of the new *National Environmental Management: Biodiversity Act* of 2004 (NEMBA).

The ARC will continue to coordinate this second phase of SANSa. Most of the work will be undertaken at the Spider Research Centre in Pretoria, which forms part of the Biosystematics Division of ARC-PPRI. This unit is the largest centre of arachnid research in the country, having more than fifty years of experience working with arachnids. The project consists of five initiatives addressing aspects such as accessing existing data, gap analysis, surveys, identification of existing data, awareness, capacity building and compiling products such as books, CDs and scientific papers.



Dr Ansie Dippenaar (SANSa project leader), Dr S Fakir (SANBI board member), Wendy Foden (SANBI programme manager), and Dr Mishak Molohe (Group Executive ARC)

### ERRATUM:

Please note that the e-mail of Lesley Henderson in Plant Protection News no 68 was incorrectly given as HendersonL@sanbi.org. It should have read **Henderson@sanbi.org**

### Editorial Committee

Ansie Dippenaar-Schoeman (ed.)  
Hildegard Klein  
Almie van den Berg  
Ian Law  
Ian Millar  
Tanya Saayman  
Petro Marais  
Elsa van Niekerk

### General inquiries

Plant Protection Research Institute  
Private Bag X134  
Pretoria  
0121  
South Africa

e-mail: [infoppri@arc.agric.za](mailto:infoppri@arc.agric.za)

website:  
<http://www.arc-ppri.agric.za>

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## *Important collaboration between PPRI and ARC-ICT*

The collaboration between PPRI and the Information Technology developers at the ARC is paying off. The database developed by Louise Helberg & Jenny Keytel to accommodate data on all the Arachnida of Africa is the core of the SANSa project, for which funding has now been received from SANBI. Additional funding was also made available through South African Biodiversity Information Facility to digitize the specimen data of the National Collection of Arachnida.

The ARC ICT Applications team attended the first SANSa workshop on 4 September at the Botanical Gardens. They will also assist with the development of a Photo Library on the ARC website systems portal for arachnids.

The Arachnida data of the National Collection of Arachnida, collected over a period of 10 years (26 000 entries), was transferred to a new MySQL database during September. The new Nematode database is also operational and a database to accommodate the 50 000 Acari database literature module has been completed. Further modules will be developed. These databases contain crucial data of the Public Assets—the National Collections housed at PPRI.



**The team who developed the database on the Arachnida of Africa: Johann Otto, Jenny Keytel, Ansie Dippenaar-Schoeman, Annemarie Ehlers and Louise Helberg**

## *Launch of Elim Oyster Mushroom c.c.*

The local community of Elim in the Western Cape registered the Elim Oyster Mushrooms as a trading entity, established with the support and assistance of the Agricultural Research Council (ARC) and Transnet Foundation.

The project focuses on the production of oyster mushrooms and organic vegetables, supplying local trade and communities. The aim of the project was to alleviate poverty within the Overberg region, and to equip emerging farmers with the skills to run a successful business on a sustainable basis.

The ARC provided technical skills on technologies required to grow and produce quality oyster mushrooms for the formal market. Transnet Foundation provided funds for the production of structures, equipment and furniture, including a computer. This initiative is

part of a national intervention, and Elim Oyster Mushrooms will have ongoing technical support from the ARC, which has established similar projects throughout the country as part of its Sustainable Rural Livelihood drive and its support to the economic advancement of the Second Economy.

The launch, held on 28 September 2006 in Elim, was attended by such dignitaries as the Honorable Mayor Januarie of the Overberg Region, Western Cape; community leader Reverend Ludolph; CEO of Transnet Foundation, Ms Maluleka; and Group Executive of the ARC's Sustainable Rural Livelihood Division, Dr Masia. This occasion marked the entry into the country's mainstream economy of Elim Oyster Mushroom c.c. As the Mayor so aptly put it, such programmes are imperative as 80% of the business in Western Cape consists of agriculture. The mushroom project is enhancing the economical growth of Overberg.

The Oyster Mushroom Farming project was established in 2002 by the ARC. The initiative is part of Government's national intervention through poverty relief and the establishment of enterprises in the agricultural sector, where black farmers can trade and contribute to the country's mainstream economy. The initiative was first funded by the Department of Science and Technology. The initial objectives of the project were to educate the public about mushrooms, cultivate the culture of mushroom consumption and to introduce oyster mushrooms as an alternative, readily available protein in agricultural communities in South Africa.

From its inception, this project was a success. The commitment and drive shown by members of the Elim Oyster Mushroom c.c. ensured that it was producing the best quality mushrooms in the Western Cape. The initial success was short-lived, though, as the production site was devastated by a fire in December 2004, burning everything to the ground. Early 2005, Transnet Foundation called the ARC to ask where their best Oyster mushroom project was, because they heard about the project and wanted to invest in business skills and marketing. Although there was nothing left of the production site, the commitment and perseverance of the farmers was the reason Elim retained its status as the best Oyster mushroom project in the country.



**The team – ARC, Transnet and Elim Oyster Mushroom c.c.**

## *Elim Oyster Mushroom c.c. Launch (continued)*

Currently the production structure comprises 4 chambers with a carrying capacity of 550-700kg mushroom bags each, and growing. This translates to approximately R4000 worth of oyster mushrooms per six-week cycle. Production in this structure commenced in July 2006. Elim Oyster Mushrooms has sold all its produce and still receives new clients each day. Their client base includes Super Spar and Fruit & Veg in Bredasdorp, restaurants in Struisbaai, and individuals in the surrounding communities. Other partners who made this project a success are Exotic Spawn, who provide spawn at a discounted rate and provide technical advice on other production related issues.

Committed ARC staff members such as Jessica Maimela (PPRI project leader); Joseph Ledwaba (assistant trainer), Rowena Joemat (ARC coordinator in Western Cape), Dr Susan Koch (initial project leader and founder of the group) and Dr Yolisa Pakela-Jezile (programme manager), together with Transnet Foundation's Ricky Maharaj, were responsible for the success of this project. What is certain is that this is the beginning of many more successes as the ARC and Transnet Foundation partner to develop similar communities ensuring economic growth of such.

Contact: Dr Yolisa Pakela at [PakelaY@arc.agric.za](mailto:PakelaY@arc.agric.za)



**Dr Yolisa Pakela-Jezile receiving help from the mayor while preparing mushrooms**

## *New book on spiders*

A new book, *Spider Families of the World* by Rudy Jocqué and Ansie Dippenaar-Schoeman, was released on 4 September 2006 at the Botanical Gardens in Pretoria.

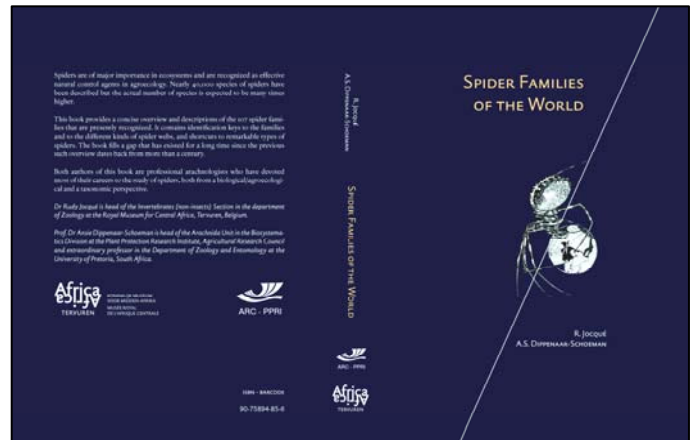
Dr Rudy Jocqué is head of the Invertebrates (non-insects) Section in the department of Zoology at the Royal Museum for Central Africa, Tervuren, Belgium.

Spiders are widely feared and much maligned, yet their natural and academic importance can not be overstated. They comprise one of the largest groups of land animals, are common and abundant wildlife in every garden and are frequently found in houses. They are important predators in all ecosystems and their intricate webs are tangible records of their complex behaviour. Only a few species are dangerous to humans. Spiders are excellent subjects for teaching the young to observe and appreciate nature. With their interesting behaviour they make ideal topics for school and expo projects.

The main objective in producing this book was to provide the reader with a complete overview of the 107 spider families of the world. The book is easy to use and contains keys to all families and shortcuts to spiders with remarkable features. For each family, general information on morphology, natural history, distribution and their taxonomic status is provided. The book is richly illustrated with line drawings and colour images. The book fills a gap that has existed for a long time, since the previous such overview dates back from more than a century.

### **Information on book:**

*Spider Families of the World*  
R. Jocqué & A.S. Dippenaar-Schoeman  
ISBN: 90-75894-85-6  
336 pp., b/w illustrations, with 32 pp. colour plates  
Price: 55



**To order:** /MRAC Leuvensesteenweg 13, 3080 Tervuren, Belgium. [publications@africanmuseum.be](mailto:publications@africanmuseum.be) / Fax: +32 2 7695511/ Tel: +32 2 769 5208

**NOW AVAILABLE**

100 Years of Fungal Biodiversity in southern Africa.  
*Studies in Mycology, No. 55*

*Edited by: Pedro W. Crous, Michael J. Wingfield, Bernard Slippers, Isabella H. Rong and Robert A. Samson*

Available from web at <http://www.cbs.knaw.nl/news/sim55index.htm>

## Retirement

### Ottilie Nesper

Ottilie Nesper retired on 31 July 2006, after having worked at PPRI for 29 years. She completed her BSc at Pretoria University in 1961, majoring in Entomology & Botany. For the next 3 years, Ottilie worked as a biology teacher, and then spent a year at the ARC- Vegetable and Ornamental Plant Institute. She moved to Australia in 1965 where she assisted her husband, Stefan Nesper, with a biological control project of *Hakea*, which is an important invasive alien plant in South Africa. After the Nesers returned home, Ottilie joined PPRI in 1977 as a part-time technician, doing *Hakea* biocontrol and parasite work for Dr D.P. Annecke. Ottilie and Stefan were transferred back to Australia for two years in 1981, and again she assisted Stefan, this time with an *Acacia* biocontrol project. Returning to South Africa, after the Nesers' second Australian stint was completed, Ottilie continued with the *Acacia* project, and then in 1984 transferred to the National Collection of Insects to continue her work on chalcid wasps. Her position became full time from 1992, and she held the post of 'senior research technician'.

Ottilie published five taxonomic publications on chalcid wasps, in collaboration with her colleague Dr Gerhard Prinsloo. We are pleased that Ottilie is currently staying on at the National Collection after her retirement, as a contract employee, so her valuable knowledge and experience of chalcid wasps

will continue to be applied for some time still.

Ottilie & Stefan love hiking and camping, and have been members of the Magaliesberg Section of the Mountain Club of South Africa since 1985. Ottilie has served on the committee of the Mountain Club for several years, especially in the conservation portfolio, addressing conservation issues in the Magaliesberg.



## Welcome to two students



### Dani Lukac

The friendly new face in the Weeds Research building at Rietondale belongs to Dani Lukac. As part of the capacity building programme run by the *Working For Water* Programme, she will be doing her PhD (supervised by prof Martin Hill from Rhodes University, formerly from PPRI), at PPRI Rietondale for roughly the next three years. Although she will be working on the

biological control of water hyacinth by the previously released mite *Orthogalumna terebrantis*, everything "arthropodal" is new to her - she did her masters (at Rhodes University) in marine biology, in which she looked at the community structure of carnivorous macrozooplankton in the Southern Ocean, with a particular focus on two chaetognaths (*Sagitta gazellae* and *Eukrohnia hamata*) and their predation impact on the zooplankton community.

We wish Dani good luck with her project, and hope she will

### Allet Honibal



Another friendly face in the Biosystematics (spiders) building belongs to Allet Honibal who is busy with her MSc degree. Her research deals with the systematics of the spider subfamily Dietinae of the family Thomisidae. She is registered at the University of Pretoria.

Allet is a keen collector and has already undertaken several trips to search for members of the group she is working on. For her Honours project she sampled more than 10 000 spiders over a two-week period at Tembe Elephant Park. She also extends a helping hand in the laboratories looking after the live spiders and building them terrariums. Allet's project will be concluded next year.

## New faces at PPRI

### Carine Riekert

We would also like to welcome Carine Riekert, Dr Rami Kfir's new assistant. Carine is no stranger to the ARC as she was stationed at ARC Central Office, Management Division, for the past 13 years where she worked for various Group Executives. She was the secretary for Dr Molohe, GE:PSS, for the last five years before resigning in 2005. A year later she returned and is now Secretary for the R&T Manager here at PPRI. Her previous knowledge of the ins and outs of the ARC makes her ideally suited to this responsible position.



Carine Riekert (left), Shantall Ramatsui (centre) Beth Grobbelaar (right)

## New Appointments at PPRI (continued)

### Shantall Ramatsui



Some very good news for PPRI was the appointment of our own Public Relations Officer - Shantall Ramatsui. After all the years without a PRO it is going to be bliss to have Shantall to help us. Prior to the ARC she was employed by Telkom SA, Daimler Chrysler and ABSA. At these companies she had opportunities to grow into public relations, customer relations management, billing and marketing. She has qualifications in marketing and customer relations management and is continuing her studies to grow within her chosen career.

Her career at the ARC started towards the end of 2003 in the office of the CFO and was later paved to Marketing and Communications as the Assistant to the Manager. In 2005, she moved to the office of the Group Executive: Business Development and International Relations where her functions were to oversee administration of Marketing and Communications, Public Relations, Government and International Relations, Business Development and Economic Services. It was during this tenure that Shantall fell in love with Public Relations and the ARC. When the opportunity came to move from Central Office to PPRI she knew that it would be a move that was a natural follow-on to continue her career in the ARC.

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### Margaret Kieser



Congratulations to Margaret Kieser, who has been appointed as the new Research Information Coordinator for PPRI. She has been employed at PPRI since 1988 and has built up an extensive knowledge of the scientific expertise at the institute. She has managed projects such as the development of a Brown Locust Early Warning System for the Department of Agriculture as well as the SADC endorsed migrant pest network (ICOSAMP), for which she is the coordinator. She has also been involved in the compilation of Quarterly Reports for the Institute and the development and reporting of Key Performance Indicators on behalf of the Institute, which has well prepared her for the challenge ahead. In her private capacity she is passionate about craft work and her colleagues can attest to the beautiful items she makes.

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### Roger Price



Dr Roger Price is the new Divisional Manager of the Insect Ecology Division, a position he has achieved after more than 20 interesting years at PPRI. He arrived in South Africa in 1983, looking for adventure in the African bush, and joined the locust research team of Dr Dick Brown. At first he studied the oviposition behaviour and population dynamics of the African migratory locust in maize and wheat fields and wrote up this work for an MSc in 1989. Following the massive plague of brown locusts in 1985-86 the research focus switched to the search for safer and more environmentally benign insecticides for locust control. His expertise was also utilised by a number of multinational insecticides companies and NGOs to evaluate insecticides and to provide training throughout southern Africa and Madagascar.

Roger specialised in the evaluation of insecticide baits and the *Metarhizium* myco-insecticide and wrote this up for his PhD in 2003. His evaluation of the environmental impact of this myco-insecticides took him to remote floodplain grassland areas in Zambia and Tanzania and he sometimes spent weeks in areas only accessible by helicopter. Non-target organisms recorded in his trial plots included Egyptian cobras, elephants and hyenas. Roger became gradually more involved in management over the past few years and now spends his time behind a computer screen.

### Isabel Rong



Congratulations to Dr Isabel Rong on her recent appointment as Divisional Manager: Plant Pathology and Microbiology.

Dr Rong was previously Senior Researcher in the Biosystematics Division of PPRI and was Manager of the National Collection of Fungi as well as of the Mycology Unit. She specializes in the biosystematics of hyphomycetous fungi, with emphasis on entomopathogenic and plant pathogenic fungi. Her prolific research output includes scientific publications, conference presentations, popular papers and study materials on beneficial fungi and plant pathogenic fungi important to agriculture. She was also involved in the preparation of a volume dedicated to the Centenary Celebration of the National Collection of Fungi, in collaboration with the *Centraal Bureau voor Schimmelcultures*.

Notably, she contributed to the CAB International, *Global Crop Protection Compendium* and received science grants for '*Bio-Insecticides: a biorational approach to insect pest management, Towards digitization of the National Collection of Fungi*' as data provider for the Global Biodiversity Information Facility (GBIF) and *SA Fungal plant pathogens database* for the Agricultural Geo-reference Information system (AGIS). She served on the Medical Research Council's *Community Work Group on Environmental Health and Toxicology*, the *South African Biodiversity Initiative's* advisory panel and on the *National Karnal Bunt Committee*.

Dr Rong was interim committee member of the African Mycological Association 2004; co-organiser of the Joint Southern African Society of Plant Pathology, African Mycological Association and the Medical Mycology in Africa Congresses in 2005. She is currently President of the African Mycological Association.

The Plant Pathology and Microbiology Division are privileged to have such an able scientist as their manager and wish Isabel every success in her new position.

# Plant Protection Research Institute Initiatives

## South African National Crop Pests Database

The South African National Crop Pests Database has been developed in the Insect Ecology Division by Almie van den Berg. The aim of the database is to provide information on major crop pests in southern Africa.

There are many species of insect and other pests which attack crops. Some can seriously limit successful production. For effective and economic management of control programmes, it is essential to know the exact identity of the causal agent of any pest problem, the nature of the damage caused, when and where the pest attacks and the basic strategy of control.

Development of a relational database has been completed and data based on the well known "Myburgh's Crop Pests in Southern Africa" series is being entered.

The database forms part of AGIS (Agricultural Geo-referenced Information System) of which the long term goal is, to co-ordinate, acquire, describe and manage all relevant data on agriculture in South Africa.

The database will include information regarding the major pests of the following crops: deciduous fruit, grapes and berries, citrus and other subtropicals, potatoes and other vegetables, field crops and pastures as well as flowers and other ornamentals.

The objective of this database is to have datasheets available for these crops with, where possible, information regarding: common name, scientific name, introduction and distribution, description, damage, when and where and photographs.

In addition, updated versions of the books "Crop pests in southern Africa" edited by AC Myburgh are now available on CD. These CD-ROMS can assist people to identify pests correctly and to understand the problems they cause, which is a prerequisite for successful control.

The following information regarding the pests of crops in southern Africa is provided:

- Preliminary identification of pest problems
- Specific descriptions of pests and damage
- How to obtain information on control
- A-Z search
- Photo gallery

The information will be of value to farmers, extension officers, horticulturists, students, researchers as well as the general public.

Contact: Almie van den Berg at [VDBergAM@arc.agric.za](mailto:VDBergAM@arc.agric.za)



### New: SAPIA Newsletter

This month features the kick-off of a new newsletter produced within this institute. SAPIA NEWS will be the mouthpiece of the Southern African Plant Invaders Atlas (SAPIA) Phase II project. Lesley Henderson of the ARC-PPRI is both the editor of the newsletter and coordinator of SAPIA. The newsletter aims to provide information about invasive alien plants in Southern Africa and to encourage members of the public to submit records of these plants to the Weeds and Invasive Plants website, [www.agis.agric.za/wip](http://www.agis.agric.za/wip).



SAPIA NEWS No. 1 of October 2006 features the launch of the SAPIA Phase II project, new and revised legislation and emerging invaders—specifically pompom weed, *Campuloclinium macrocephalum*, yellow bells (*Tecoma stans*) and pickerel weed (*Pontederia cordata*).

### New: SANSA Newsletter

The first electronic newsletter of the South African National Survey of Arachnida has been distributed. Ansie Dippenaar-Schoeman of ARC-PPRI is both the editor of the newsletter and coordinator of SANSA. The aim of the letter is to keep everybody updated on the arachnid activities in South Africa. This fully electronic newsletter will be distributed to all interested persons free of charge. This newsletter will be produced every three months. In the first letter the background and present status of SANSA is discussed. Interested person can contact Ansie Dippenaar-Schoeman at [DippenaarA@arc.agric.za](mailto:DippenaarA@arc.agric.za) or download it from the SANSA website at [www.arc-ppri.agric.za](http://www.arc-ppri.agric.za) (see SANSA).



## Refereed publications

CHARLESTON, D.S.; GOLS, R.; HORDIJK, K.A.; KFIR, A.R.; DICKE, M. & VET, L.E.M. 2006. Impact of botanical pesticides derived from *Melia azedarach* and *Azadirachta indica* plants on the emission of volatiles that attract parasitoids of the diamondback moth to cabbage plants. *Journal of Chemical Ecology* 32: 325-449.

CHARLESTON, D.S.; KFIR, A.R.; DICKE, M. & VET, L.E.M. 2006. Impact of botanical extracts derived from *Melia azedarach* and *Azadirachta indica* on populations of *Plutella xylostella* and its natural enemies: A field test of laboratory findings. *Biological Control* 39: 105-114.

CROUS, P.W.; RONG, I.H.; WOOD, A.R.; LEE, S.; GLEN, H.; BOTHA, W.; SLIPPERS, B.; DE BEER, W.Z.; WINGFIELD, M.J. & HAWK-SWORTH, D.L. 2006. How many species of fungi are there at the tip of Africa? *Studies in Mycology* 55: 13-33.

HADDAD, C.R. & DIPPENAAR-SCHOEMAN, A.S. 2006. Spiders (Araneae) inhabiting abandoned mounds of the snouted harvester termite *Trinervitermes trinervoides* (Sjostedt) (Isoptera: Termitidae: Nasutitermitinae) in the Free State, South Africa. *Navorsing van die Bloemfonteinse Museum* 22(1): 1-15.

JANSE VAN RENSBURG, J.C.; LAMPRECHT, S.C.; GROENEWALD, J.Z.; CASTLEBURY, L.A. & CROUS, P.W. 2006. Characterisation of *Phomopsis* spp. Associated with die-back of rooibos (*Aspalathus linearis*). *Studies in Mycology* 55: 65-74.

JONES, G.E.; WOSSLER, T.C.; ALLSOPP, M.H. & HEPBURN, H.R. 2006. The effect of holding conditions on *Apis mellifera capensis* virgin queen mandibular gland signal and queen acceptance by workers. *Journal of Chemical Ecology* 32: 1767-1180.

LAMPRECHT, S.C.; MARASAS, W.F.O.; HARDY, M.B. & CALITZ, F.J. 2006. Effect of crop rotation on crown rot and the incidence of *Fusarium pseudograminearum* in wheat in the Western Cape, South Africa. *Australasian Plant Pathology* 35: 419-426.

MELLET, M.E.; SCHOEMAN, A.S. & DIPPENAAR-SCHOEMAN, A.S. 2006. Effect of *Bt*-cotton cultivation on spider (Arachnida: Araneae) populations near Marble Hall, Mpumalanga, South Africa. *African Plant Protection* 12: 40-50.

WOOD, A.R. & GINNS, J. 2006. A new dieback disease of *Acacia cyclops* in South Africa caused by *Pseudogarrbasidium acaciicola* sp.nov. *Canadian Journal of Botany* 84: 750-758.

WOOD, A.R. 2006. Preliminary host specificity testing of *Endophyllum osteospermi* (Uredinales, Pucciniaceae), a biological control agent against *Chrysanthemoides monilifera* ssp. *monilifera*. *Biocontrol Science And Technology* 16: 495-507.

ZANNOU, I.D.; DE MORAES, G.J.; UECKERMANN, E.A.; OLIVEIRA, A.R.; YANINEK, J.S.; HANNA, R. 2006. Phytoseiid mites of the genus *Neoseiulus* Huges (Acari: Phytoseiidae) from sub-Saharan Africa. *International Journal of Acarology* 32(3): 241-276.

## Other publications and reports

ALLSOPP, M.H. 2006. Are honeybees important in canola production?. *Kanola-fokus Newsletter*.

DIPPENAAR-SCHOEMAN, A.S. 2006. The South African National Survey of Arachnida. Newsletter no 1 pp 1-10

VAN DEN BERG, E.; MURUKESAN, V.K.; BUCKLEY, N.H.; TIEDT, L.R.; JOSEKUTTY, P.C. & DE WAELE, D. 2006. *Radopholus similis* associated with the giant swamp taro on the island of Yap. Abstracts of the 17<sup>th</sup> Symposium of Nematology. *African Plant Protection* 12: 39.

VAN DEN BERG, E.; MEKETE, T. & TIEDT, L.R. 2006. Plant-parasitic nematodes in Ethiopia. Abstracts of the 17<sup>th</sup> Symposium of Nematology. *African Plant Protection* 12: 38-39.

VAN DEN BERG, A.M., 2006. Pests on *Mangifera indica*. Report for Directorate: Plant Health.

VON MALTITZ, E.F.; KIRSTEN, J.F.; MALEBANA, P.S.; BELMAIN, S.R.; MEYER, A.N.; CHIMIMBA, C.T. & BASTOS, A.D.S. 2006. Sustainable rodent control for subsistence farmers in South Africa. In: Proceedings of the 3rd International Conference on Rodent Biology and Management: 106.

## Courses

### Introductory molecular phylogeny course held at the Biosystematics Division

A three-day introductory molecular phylogeny course was presented by Riana Jacobs-Venter at Vrededuis from 26-28 July 2006. Eight persons from the Biosystematics Division attended the course, which covered the basic principles of eukaryotic cell structure and function, molecular markers, recombinant DNA techniques, evolutionary changes and phylogenetics.

Riana explained the different aspects of nucleic acid and gene structure, the polymerase chain reaction (PCR), gel electrophoresis, DNA sequencing and the applications for various markers. The phylogenetics section included background on mutations, interpretation of phylogenetic trees and the different methods of phylogenetic analysis.

The attendees all agreed that the course was most successful, and brought them up to date with modern molecular techniques that are now widely applied in biosystematics research.

Contact: Riana Jacobs-Venter at JacobsR@arc.agric.za.



Attendees of the molecular phylogeny course

## Courses (continued)

### Practical course for UNISA students

The yearly practical courses for 3rd year UNISA students presented by PPRI as part of the Applied Zoology Course took place on 6 and 7 July this year.

**Insect pests:** This part of the course was presented by **Almie van den Berg** (Insect Ecology) and dealt with agricultural insect pests and their parasitoids, as well as integrated pest management principles and alternative control methods such as botanical pesticides.

**Mite pests:** The most important plant-feeding mite groups and the damage they cause as well as how to collect, mount and identify them was presented by **Charnie Craemer** of the Biosystematics Division.



UNISA students in action

## Sustainable Rural Livelihoods Conference

The 1st Sustainable Rural Livelihoods Conference hosted by the ARC took place from 4-6 July 2006 at the ARC-CO in Hatfield. After a plenary session entitled "Unleashing the potential of the 2nd economy farmer through research and development", four concurrent sessions were held on Indigenous Knowledge Systems, Sustainable Environmental Management, Technology Transfer and Capacity Building and Cooperatives and Commercialization Systems. Contributions from PPRI included the following:

BLOEM, J. Biological nitrogen fixation in resource poor agriculture (paper).

BLOEM, J. Potential use of soil microorganisms as indicators of soil quality and sustainability (paper).

HABIG, J.H.; RIEDEL, K-H.J.; VAN WYK, P.S.; JANSEN VAN RENSBURG, P.J. Functional and structural diversity of soil microbial communities during different stadia of take-all disease of wheat, and in soils subjected to crop rotation (paper).

KIRSTEN, F.; VON MALTITZ, E. & MALEBANA, P. How appraisal reveals the unexpected: rodents identified as post-harvest and health constraints in rural communities (paper).

KOCH, S.; KASDORF, K. & MAVHUNGA, M. Role of plant diseases in sustainable crop production with special reference to small-scale rural farming sector of SA (paper).

LUNDALL-MAGNUSSON, E. Participatory research (paper). MALEBANA, P., KIRSTEN, F., VON MALTITZ, E. & KOCH, S. Grain storage pests, and their management as a post-harvest constraint of small-scale farmers in the Limpopo Province and Lusikisiki district, Eastern Cape (paper).

SEREDA, B. Pesticide research and technology transfer for a malaria-endemic area of KwaZulu-Natal (poster).

VAN DEN BERG, A.M. & DIPPENAAR-SCHOEMAN, A.S. Spiders – the farmer's best friend (poster).

VON MALTITZ, E.; MALEBANA, P. & KIRSTEN, F. Appraise before Investing (paper).

## Media

### Radio talks and TV presentations

During the period July– October 2006 a total of 14 radio talks were broadcast on research done at PPRI.

- **Emile von Maltiz** gave two talks on "Integrated control of the diamondback moth" on RSG.
- **Dr Ansie Dippenaar-Schoeman** continued with her weekly live broadcasts that are transmitted every Tuesday on *Radio Laeveld*. A total of 9 talks were broadcast during this period.
- Ansie also gave two talks on the launch of the South African National Survey of Arachnida (RSG: Monitor and Radio Pretoria).
- **Dr Esther van den Berg** talked about Nematodes on Radio Laeveld (5 September)

### Other Media exposure

- An very interesting article on Biodiversity appeared in *Quest* June 2006, which referred to research done at PPRI.
- The launch of the partnership between ARC and SANBI resulted in several media articles. Articles appeared in *Beeld* (4 September) "Wat's jou naam lieve spinnekop?" and *Pretoria News* (6 September) "Spiders are special, says top scientist". Similar articles also appeared in the *Burger*.



## Congress contributions

ALLSOPP, M.H. 2006. (paper) Beekeeping in South Africa: more about the bees than the beekeepers. Conference of the National Beekeepers Association of New Zealand..

ALLSOPP, M.H. 2006. (paper) The Capensis Problem: a New Zealand perspective. Conference of the National Beekeepers Association of New Zealand.

ALLSOPP, M.H. 2006. (paper) Pollinizers, placement and other honeybee pollination questions in deciduous fruit orchards in the Western Cape. Honey Bee / Pollination Research Workshop. Ruakara Research Centre. New Zealand.

BELMAIN, S.R. *et al.*, including KIRSTEN, J.F.; VON MALTITZ, E.F. & MALEBANA, P.S. 2006. (paper) Prevention of sanitary risks linked to rodents at the rural/peri-urban interface in southeastern Africa: Overview and outcomes of the RatZooMan project. 3rd International Conference on Rodent Biology and Management. NIPP Vietnam & CAS China. Vietnam.

CRAEMER, C. 2006. (paper) Morphology of eriophyoid mites as elucidated by scanning electron microscopy: trivial pursuit or valuable systematic contribution? 12th International Congress of Acarology, Amsterdam, The Netherlands.

GAREEB, M. 2006. (paper) Investigation into the mortality of potted *Chromolaena odorata* plants in South Africa. 7th International Workshop on Biological Control and Management of *Chromolaena odorata* and *Mikania micrantha*. National Pingtung University of Science and Technology. Taiwan.

GROUT, T.G. & UECKERMANN, E.A. 2006. (paper) Managing mites on citrus in Africa. 12<sup>th</sup> International Acarology Congress, Amsterdam, The Netherlands, 21-26 August.

GREEN, E.D.; TURNER, M.L.; UECKERMANN, E.A. 2006 (paper). The micromorphology of the deutonymph of a *Sennertia* species from the acarinarium of the carpenter bee *Xylocopa flavorufa*. 12<sup>th</sup> International Acarology Congress, Amsterdam, The Netherlands, 21-26 August.

GREEN, E.D.; TURNER, M.L.; UECKERMANN, E.A. 2006 (paper). The micromorphology of the *Dinogamasus* mite and the abdominal pouch of the host carpenter bee *Xylocopa caffra*. 12<sup>th</sup> International Acarology Congress, Amsterdam, The Netherlands, 21-26 August.

KHOZA, T.T.; DIPPENAAR, S.M. & DIPPENAAR-SCHOEMAN, A.S. 2006. (paper) The abundance and species richness of the spiders (Araneae: Arachnida) associated with an *Acacia karoo* / *Rhus pyroides* riverine thicket, a northern slope granite outcrop and an *Aloe marlothii* thicket on shail outcrop in the Polokwane Nature. 6th Congress of the Southern African Society for Systematic Biology, Kruger National Park.

LEIERS, H., *et al.*, including KIRSTEN J.F., VON MALTITZ E.F. & MALEBANA P.S. 2006. (paper) Rodent ecology across rural, peri-urban and urban habitats: Results from the RatZooMan project in southeastern Africa. 3rd International Conference on Rodent Biology and Management, Vietnam.

MODIBA, M.A.; DIPPENAAR, S. & DIPPENAAR-SCHOEMAN, A.S. 2006. (paper) The abundance and species richness of the spiders (Araneae: Arachnida) associated with *Acacia tortillis*, open savanna, *A. rehmanniana* woodland and the Polokwane Plateau False Grassland in the Polokwane Nature Reserve, Limpopo Province. 6th Congress of the Southern African Society for Systematic Biology, Kruger National Park.

NOACH-PIENAAR, L.A.; WOSSLER, T.C. & ALLSOPP, M.H. 2006. (poster) Are parasitic Cape honeybee workers, *Apis mellifera capensis*, winning the pheromone contest? XV International Congress of the International Union for the Study of Social Insects. USA.

VON MALTITZ, J.F.; KIRSTEN, J.F.; MALEBANA, P.S.; BELMAIN, S.R.; MEYER, A.N.; CHIMIMBA, C.T. & BASTOS, A.D.S. 2006. (paper) Sustainable rodent control for subsistence farmers in South Africa. 3rd International Conference on Rodent Biology and Management, Vietnam.

WOSSLER, T.C.; JONES, G.E.; ALLSOPP, M.H. & HEPBURN, H.R. 2006. (paper) Differential acceptance of virgin queens by workers is pheromone dependent. XV International Congress of the International Union for the Study of Social Insects. USA.

## Talks at other meetings

ALLSOPP, M.H. 2006. Basics on Bees. Oesbestuurseminaar. CPA.

ALLSOPP, M.H. 2006. Honeybees and Pollination. Annual Fieldman Association Meeting.

ANDERSON, C. 2006. Wonderwêreld van die spinnekop. (Lesings by drie skole).

DIPPENAAR-SCHOEMAN, A.S. 2006. Arachnida. Lecture to first year B.Ed. Biology students. University of Pretoria.

DIPPENAAR-SCHOEMAN, A.S. 2006. Why are spiders more clever than trees? Launch of third phase of SANSA, Botanical Gardens.

DIPPENAAR-SCHOEMAN, A.S. 2006. The South African National Survey. Presentation at the first Workshop of SANSA.

MARAIS, M. 2006. Introduction to nematodes and their role in crop production. Training of the participating farmers in the Protein and Legumes for Limpopo Project. ARC.

URBAN, R.P. 2006. Insects and education, preservation and collections. Lecture to first year B.ed. Biology students. University of Pretoria.

VAN DEN BERG, A. 2006. Spiders. (Two lectures at schools).

WOOD, A.R. 2006. Biological control of alien weeds in the Agulhas and Overberg region. Alien clearing field day. CapeNature, Landcare, Agulhas Biodiversity Initiative.

## First SANSA workshop

A total of 42 people attended the first workshop of the South African National Survey of Arachnida that was hosted at the South African Biodiversity Institute in Pretoria on 4 September. The participants included stakeholders, arachnologists and end users such as the conservation agencies of the provinces. Feedback on the role of SANBI in the new Biodiversity Act was provided, as well as the first phase of SANSA. The work plan of the second phase partly funded by NORAD was discussed and important feedback was received from the participants. The SANSA database forms a very important part of the project and important inputs were made by the ARC-IT developers.

Contact: Ansie Dippenaar-Schoeman at  
DippenaarA@arc.agric.za

## *Symposium of the Soilborne Plant Diseases Interest Group of South Africa*

The Soilborne Plant Diseases Unit of the Agricultural Research Council's Plant Protection Research Institute hosted the 16<sup>th</sup> interdisciplinary symposium on soilborne plant diseases on 20 and 21 September 2006 at the Vredenburg Research Centre of the ARC-PPRI in Stellenbosch. The topic for this year's symposium was *Micronutrients and Soilborne Plant Diseases*. The event was attended by 61 representatives of Research Councils, National and Provincial Departments of Agriculture, private companies and universities. Participants represented a wide range of disciplines such as agronomy, botany, entomology, horticulture, microbiology, nematology, plant pathology, plant physiology and soil science. Dr Mart Farina of Omnia Fertilizer delivered the keynote address.

### **The following aspects were introduced and discussed:**

- Micronutrient problems of field crops in Southern Africa.
- Soil factors affecting micronutrient availability with special emphasis on molybdenum.
- Functions of micronutrients in plant production.
- Mycorrhizal fungi and micronutrients.
- The role of micronutrients in soilborne diseases of maize and sorghum.
- The role of micronutrients in soilborne diseases in the Northern Cape province.
- Nutrient management strategies under nematode infestations.
- The impact of silicon in crop and soil health.
- Effect of silicon on a sugarcane community in KwaZulu-Natal.
- Efficacy of water-soluble silicon against plant diseases with emphasis on Phytophthora root rot of avocado.

### **Conclusions reached by the delegates to this symposium can be summarized as follows:**

1. Interactions between micronutrients and soilborne plant diseases exist and there is a need to establish more precisely what micronutrient problems are likely to be encountered in southern Africa and their role in the incidence and severity of soilborne plant diseases.
2. Problems are often encountered in separating disease symptoms, particularly virus diseases from those of nutritional deficiencies and excesses. An important contributory factor in this regard is the dearth of colour images in articles and books dealing with micronutrients. Since conceptualization of written descriptions is often difficult, it would be useful if the ensemble of field-derived colour images used in this symposium were to be expanded. This would benefit the region as a whole from both a plant disease and soil fertility perspective.
3. Micronutrient withdrawals by the major field crops appear to comfortably exceed anthropogenic inputs, but this remains to be properly quantified.
4. Numerous soil properties influence the plant-availability of micronutrients. While soil pH can be considered the "master variable" regulating micronutrient activity in soils – the availability of all micronutrients other than Mo being decreased by pH elevation – it is noteworthy that in the acidic, highly weathered soils so widespread in southern Africa, there are absolute deficiencies of elements such as Zn.
5. The use of plant tissue analysis in conjunction with soil testing provides a powerful analytical tool for positively identifying micronutrient problems.
6. The most widespread micronutrient problem in southern Africa is Zn deficiency. The introduction of zincated fertilizers has alleviated this problem in South Africa and Zimbabwe, but it remains a common problem in Zambia, Malawi, Tanzania and Madagascar. In all probability, it also occurs commonly in Mozambique and Angola.
7. There are appreciable differences both within and across plant species with respect to the manner in which micronutrient deficiencies and toxicities present themselves. This can be confusing particularly where differences exist within species.
5. Although micronutrients are required in low concentrations they serve a vital role in fine-tuning plant metabolic responses. The fact that they are required in such low concentrations makes it very easy for micronutrients to skirt on the border of being deficient or toxic. Application of small doses of micronutrients is relatively uncomplicated and in the majority of cases will yield gratifying noticeable results in particular with soilborne plant diseases.
6. Although copper, zinc, iron, manganese, boron and molybdenum are the most important micronutrients, lesser known elements such as cobalt, chlorine and nickel have in some cases been shown to have a beneficial effect on plant growth. Ongoing research may in future elucidate some of the obscurities with certain of the "micro" microelements such as nickel and others.
7. The importance of micronutrients in suppression of soilborne plant diseases cannot be ignored. Although there are only a few diseases that can be controlled by the application of fertilizers, many can be alleviated by the proper application and management of plant nutrient elements. The eventual effectiveness of the manipulation of soil nutrient status also depends on the other components of the integrated disease management system in use.
8. It is evident that mycorrhizal fungi can enhance the plants ability to access and take up nutrients which impact on plant growth and health. Cognizance must also be taken of the interactions of mycorrhizal fungi with other soil microorganisms which could assist in the uptake of micronutrients. This aspect warrants further research.
9. Determining fertilizer uptake efficiency can greatly assist in the most appropriate use of fertilizers to reduce damage caused by nematode infestations.
10. Silicon applications can contribute significantly to reduce damage from a range of plant diseases. Whether the defensive mechanism of silicon is active, passive or both, there appears to be a correlation between the resistance of some plant species against fungal infection and the concentration of accumulated silicon in the tissue of these plants. Further research is, however, needed before general conclusions can be drawn about the effect of silicon on the individual components of host plant resistance.
11. Changes in soil induced by silicon carriers when brought into the field are very likely to influence the nematode community by reducing the number of nematodes in the soil. However, accumulation of silicon in the root epidermis could select for nematode species with long stylets or nematodes that feed deeper in the root tissues. This could favour the long-term build-up of a more pathogenic community in such silicon rich environments.
15. The manipulation of micronutrients can be an important component of integrated management strategies against soilborne plant diseases. The adage that a healthy plant is a more resistant plant still remains valid. Information on the use of micronutrients in managing soilborne plant diseases in South Africa is currently very limited and should be addressed in future research.
16. The importance of a multidisciplinary approach to research on soilborne plant diseases was again emphasized. Not only scientists, but decision makers and particularly funders must take cognizance.



Delegates that attended the 16<sup>th</sup> interdisciplinary symposium on soilborne plant diseases at Vredenburg



Speakers at the symposium were: Front row, from left, Dr Mieke Daneel (ARC-Institute for Tropical and Subtropical Crops), Dr Rami Kfir (Research and Technology Manager, ARC- Plant Protection Research Institute), Dr S.C. Lamprecht (organiser, ARC-Plant Protection Research Institute), Dr Mart Farina (Omnia Fertilizer), Dr Joanne Dames (Rhodes University), Back row, from left, Dr Patrice Cadet (UMR Biologie et Gestion des Populations, France), Mr Theo Bekker (University of Pretoria), Prof. Neal Mc Laren (University of the Free State), Dr Shaun Berry (South African Sugarcane Research Institute), Dr A. Swanepoel (Department of Agriculture: Northern Cape), Mr Guy Thibaud (KZN Department of Agriculture and Environmental Affairs) and Dr Alex Valentine (Cape Peninsula University of Technology).

## News from the Divisions

### Biosystematics Division

#### *PPRI: an International Bee Taxonomy Training Centre*

Ms Rofela Combey, from the Entomology Department at University of Cape Coast in Ghana, is doing her PhD at the Biosystematics Division in Pretoria under the supervision of Dr Connal Eardley for a 10-month period. She will become the first ever West African bee taxonomist. Afterwards, Rofela will return to Ghana to teach taxonomy at the University, and will begin to document the bee fauna of Ghana. Most importantly, she will be her Department's bee taxonomist for their project involving bee biodiversity, pollination and behaviour.

Interest in this endeavour began when Dr Eardley gave a course on bee identification at the University of Cape Coast in December 2003, and the University's Entomology Department began taking a keen interest in bees. Today, they have several projects on rearing stingless (mopane) bees, pollination of crops and indigenous plants, conservation, bee biodiversity in forests and adjacent farm-lands, and documenting indigenous knowledge. They were recently given a farm of 20 ha for their apiary, and have sustainable funding from an international agency. Rofela will play a key role in these projects.



Rofela Combey

#### *Student from Kenya visits Mite Unit*

Ms Faith Jebet Toroitich of ICIPE in Nairobi, Kenya, a PhD student, visited Dr Eddie Ueckermann of the Mite Unit at Rietondale Research Station from 26 June-15 July. She wanted to learn more about spider mites (Tetranychidae).

This will form part of an International Project on tomato pests, which Dr. Ueckermann will also be part of.



Dr Eddie Ueckermann and Faith Toroitich

#### *PhD student from Iran visits Mite Unit*

Ms Katy Kheradmand is a PhD student of the Tarbiat Modares University, Iran, and is visiting Plant Protection Research Institute from 1 September until 30 October to further her studies in Acarology.

After her visit at PPRI she will visit Wits University from the 1st of November.



Eddie and Katy Kheradmand

#### *Bee collecting in the Northern Cape Province*

Dr Connal Eardley and his PhD student Rofela Combey went to the Northern Cape to collect bees during August 2006. After recent good rains, the area was ablaze with flowers. The highlight of the trip was a collecting visit to the Richtersveld National Park.

PPRI has a project registered with SANParks to document their bee fauna. The Northern Cape is a centre of biodiversity for several bee groups, and is therefore, in a global context, an extremely interesting area for bee taxonomy. The bees that occur in this area are closely adapted to the local unique flora, and are vital pollinators that play a key role in the ecosystem. There are many endemic species of bees in the Northern Cape, and some of them are very rare. A couple of hundred bee specimens were collected during the trip, representing mostly endemic species, many of which are new additions to SANC. The material includes rare species, and at least one new species.

Contact: Connal Eardley at EardleyC@arc.agric.za



Good area to collect pollinators

## Biosystematics Division (continued)

### Insect collecting trip to Limpopo and Mpumalanga

Elme Breytenbach and Michael Stiller undertook a 10-day trip to collect insects, but especially looking for the rare leafhopper genus *Drakensbergena* that occurs on *Festuca* grasses in high altitude grasslands.

The trip started in the Soutpansberg near Louis Trichardt, and from there they travelled via Haenertsburg to the Wolkberg Nature Reserve along the Ori Baragwanath Pass to the Legalemetse Nature Reserve. Every site was vacuumed for insects. Cattle dung was in abundance and several dung beetles were collected, especially some beautiful metallic green ones. At a property that lies against the slopes of the Drakensberg escarpment overlooking the lowveld towards Hoedspruit and Kruger National Park, they were able to collect many minute fruit chafer larvae in the compost heaps that turned out to be the species *Hyselogenia geotropina*, a stunning black fruit chafer with golden markings on the pronotum and elytra. With a light trap they collected numerous beetles, especially peanut beetles, with carabid and toktokkie beetles running around in the open. At Kampersrus on the road to Orpen gate, a light trap trapped hundreds of insects. The Bavaria Fruit estates turned out to be the best spot to collect cetonid beetles, which visited the fermenting fruit peels piled on top of the compost heaps. At Mariepskop Radio Masts they did some more serious sampling and found the special leafhoppers. With the help of a chopper from Hoedspruit Air Force, they were flown to a very high location south of Mariepskop where they found some more of the rare leafhopper bugs.

The trip continued to Graskop, Pilgrims Rest, to Mount Sheba, then on to Mauchsberg. *En route* they visited Kasper's Nek and tried to collect material from buffalo dung. However, they were almost collected themselves by a charging buffalo. A very big buffalo bull broke through a gate on the far side, snapping the wires like elastic bands, and charged them. Luckily they were able to close the electrified gate, with a very agitated buffalo snorting centimetres away.

The last part of the trip was done on the Steelpoort and Roosenekal roads before travelling down the Steenkampsberg pass on the way to Pretoria. A very successful trip with over 3000 specimens collected at nearly 40 sampling sites.

Contact: Elme Breytenbach at BreytenbachE@arc.agric.za



Micheal Stiller collecting leafhoppers

### Mite specialists attend International Congress in the Netherlands

Dr Eddie Ueckermann and Charnie Craemer of the Biosystematic Division: Acarology Unit attended the 12th International Congress of Acarology in Amsterdam, Netherlands, 20-26 August 2006. The Congress was attended by ca. 400 acarologists from 60 countries contributing to more than 300 oral and 150 poster presentations. Charnie was fully funded by the Technical Centre for Agricultural and Rural Cooperation (CTA) while Eddie received funding from DST. Between them they presented five talks on mites. What struck them during this congress was that the mite taxonomists are dwindling at an alarming rate. As correct identifications form the basis for every project, a real need exists for their type of expertise.

Contact: Charnie Craemer at CraemerC@arc.agric.za

### Nematological Research in the farming communities in Venda

A nematological survey of mixed agricultural gardens in three rural villages in Vhembe, Limpopo Province, was conducted by the Nematology Section from 7 – 11 May 2006. The purpose was to establish the incidence of plant parasitic nematodes in these gardens, thereby establishing the impact that nematodes have on the yield of the different crops. The survey was part of the SRL-funded project: Legumes and Proteins for Resource Poor Farmers in Limpopo Province.

Nematodes were collected by means of soil samples taken with an Edelman soil auger. Each soil sample consisted of three sub samples taken as representative as possible of a specific crop. Depending on the number of crops planted, one to six samples were taken per garden. A total of 93 samples were collected in agricultural soils, as well as four samples in natural veld in the Elim-area. The following crops were sampled: Banana, chickpea, chinese spinach, cowpea, dry beans, guava, maize (Agricol, Obatamba, White Obatamba, Pannar 67 and Kalahari), mango, marogo, mungbean, onion, peanut, pumpkin, soya bean, traditional cowpea, and traditional Venda sugarbeans.

Seventeen plant-parasitic nematode species, belonging to eight genera and three orders, were identified in the agricultural gardens of Dididi, Tshikudini and Tshiulungoma. The incidence of free-living nematodes in the agricultural soils of these villages was high (96% - 100%), but the numbers in the samples were sometimes very low (i.e., 5 free-living nematodes in the guava sample). These nematodes play an important role in soil fertility and agricultural productivity. As they are killed easily by relatively low doses of chemicals, free-living nematodes are also useful organisms for bio-monitoring studies of a range of environmental perturbations, and of pollution. The nematode genera with the highest incidence and highest population densities in the three villages were *Rotylenchulus*, *Pratylenchus* (lesion nematodes), *Meloidogyne* (rootknot nematodes) and *Helicotylenchus* (spiral nematodes). *Rotylenchulus parvus*, the sole representative of its genus, is not regarded as a serious agricultural pest (Keetch, 1982). The lesion, rootknot and spiral nematodes are, however, of great economical importance and they occur in sufficiently high numbers to warrant their control.

Training and feedback on the results of the survey were conducted at Dididi, Tshikudini and Tshiulungoma on 26 – 28 September. The use of chicken and cattle manure, nematode resistant

## Biosystematics Division (continued)

plants, bio-fumigation with *Brassica* spp. and the very conservative use of chemical nematicides were envisioned to lower the population numbers of plant parasitic nematodes to less harmful levels. The farmers were also made aware of the natural enemies of plant parasitic nematodes, which include predators and parasites that are abundant in healthy soil. To preserve this benefit, farmers have to be aware that the excessive use of agro-chemicals such as pesticides, herbicides and fertilizers will deplete the natural populations of these natural enemies (Ferraz & Brown, 2002). The incorporation of organic matter into the soil can greatly improve the presence and survival of these beneficial organisms, which provide a cost-free control of plant parasitic nematodes.

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 KEETCH, D.P. 1982. Nematode pests of pineapple. In: *Nematology in southern Africa* (Eds. D.P. Keetch & J. Heyns). Science Bulletin No. 400, Department of Agriculture and Fisheries, Republic of South Africa. Pp 19 – 29.

Contact: Dr Antoinette Swart at SwartA@arc.afric.za



The garden of Mrs Sarah Nekubve with Mr. Colbert Marangamidza, Tshikudini



The garden of Mr. And Mrs. Thomas Rasifudi with Mrs. Salphina Magidi, Tshilungoma

## Mycologist visits Herbaria in Europe

Dr Elna van der Linde of the Mycology Unit went on an overseas visit for the period 2 – 22 July 2006 as part of post-doctoral studies made possible by a grant from DST. These studies will result in various publications as well as better understanding of certain aspects including phylogenetic placement of South African and southern African *Claviceps* species.

The main focus of the visit was to examine specimens, copy data, have discussions regarding future collaboration, discuss the possibility of exchange of specimens not in PREM, as well as the maintenance and pest control in those herbariums. Information regarding PREM and PPRI databases was handed to their Directors, as well as contact details of our researchers & website address and details of the ARC.

During the first week of the visit, the mycological herbarium of Belgium, situated in the National Botanical Gardens in Meise, Brussels, was visited. It contains about 115 000 specimens, of which 20 000 are from Africa and 366 from South Africa. These specimens were originally deposited in this collection by some well-known researchers, some of whom have worked at the National Collection of Fungi, PPRI (PREM) including Duthie, Brusse and Pole-Evans. Some others have contributed greatly to our collections e.g. Rabenhorst, Rump, Talbot, etc.

A one-day trip from Brussels to the Netherlands was undertaken to visit the mycological herbarium of the *Centraal bureau voor Schimmelcultures* (CBS) situated in Utrecht, the Netherlands, to meet with Prof Pedro Crous, formerly of the University of Stellenbosch.



Elna working in Kew Herbarium

During the following week, she worked at the mycological herbarium situated in the Kew Botanical Gardens, London, which contains more than 700 000 specimens from all over the world. More than 300 *Claviceps* specimens, several from Africa, are contained there and needed to be examined.

During the last few days, Elna visited the mycological herbarium of the International Mycological Institute (IMI) containing about 380 000 specimens, including almost 200 *Claviceps* specimens.

Contact: Elna van der Linde at VDLindeE@arc.agric.za



Drs Pedro Crous and Elna van der Linde in Utrecht

## Insect Ecology Division

### A Wasp Counterattack to Save Pine Trees

The discovery in 1994 in the Cape Peninsula of the exotic woodwasp *Sirex notilia*, a pest which devastated pine plantations in New Zealand, Australia and several countries in South America, represented a major challenge to the South African forest industry. At that time, researchers introduced three biological control agents of *Sirex* into the Western Cape: a parasitic nematode from Australia, *Bedingia siridicola*; a parasitic wasp, *Ibalia leucospoides* from Uruguay, and the wasp *Megarhyssa nortoni*, from North America. Biological control was so successful that today it is difficult to find trees killed by *Sirex* in the Western Cape.

However, the woodwasp has now invaded the summer rainfall region of Eastern Cape and KZN, where about 2 million trees are infested.

Following the success with the *Ibalia* wasps in the western Cape, PPRI was contracted to supply *Ibalia* parasitoids to KwaZulu-Natal. *Sirex*-killed pine trees were felled and kept in insect-proof cages at Stellenbosch where emerging parasitoids were captured. These parasitoids were released in KZN in batches of about 10 wasps at six kilometer intervals in plantations infested with *Sirex*. Logs infested with the parasitoid in the laboratory were also distributed in KZN in August 2006. It is hoped that it will be possible to bring the parasitoids into synchrony with their hosts in the summer rainfall region.

Contact: Dr Geoff Tribe,  
TribeG@arc.agric.za



*Sirex notilia* laying its eggs along with tree killing agents

### Bee Specialist visits New Zealand

In July 2006, Mike Allsopp of the Insect Ecology Division in Stellenbosch travelled to New Zealand to attend the New Zealand National Beekeeper's Association Conference in Hamilton. He delivered two papers regarding beekeeping in South Africa and the Capensis problem, and attended the New Zealand Honeybee Pollination Forum where he spoke about "Pollinizers, placement and other honeybee pollination questions in deciduous fruit orchards in the Western Cape". In addition, he met with representatives of commercial beekeeping in New Zealand and research collaborators from Australia. Valuable contacts, insights and information were gained during his visit.

Contact: Mike Allsopp at AllsoppM@arc.agric.za



Deciduous fruit orchards in the Western Cape

## Plant Pathology and Microbiology Division

### Field trip to collect root nodules

**Francina Phalane**, a DST-funded student in the Beneficial Microorganisms Unit, visited the Eastern and Western Cape during 31 August - 9 September 2006 with students of the Department of Botany, University of Johannesburg, under the leadership of Prof. Ben-Erik van Wyk. The main aim of this field trip was to collect root nodules from species of the indigenous legume genus *Lebeckia*. *Lebeckia* plants are shrubby or herbaceous bushes with distinctive pea-like yellow flowers.

Francina isolated rhizobia from these plants, and is testing the strains for nodulation and nitrogen fixation on other legumes such as cowpea. Later their DNA will be extracted and selected protein and nodulation genes sequenced to identify the isolated rhizobia. Francina has already discovered that *Lebeckia* is nodulated by several genera of root nodule bacteria. She enjoyed this trip and learned a lot about different legumes and other plants at the beautiful botanical gardens and nature reserves visited.

Contact: Francina Phalane at PhalaneF@arc.agric.za



*Lebeckia cytisoides*

## Weeds Research Division

### *Madeira vine (Anredera cordifolia), a new emerging weed in South Africa*

*Anredera cordifolia* is a fast growing, perennial creeper of South American origin. Its attractive, succulent, heart-shaped leaves and fragrant, creamy white flowers made it very popular as a garden ornamental in South Africa. However, with its aggressive, smothering, and vining nature and effective dispersal methods - primarily via rhizomes and aerial tubers - it was only a matter of time before it escaped from cultivation. Madeira vine is already a major pest in Australia, New Zealand, South Africa, Hawai'i and other Pacific Islands. In South Africa, it has a wide range and distribution, especially in the Western Cape, where it is threatening the indigenous forests along the Garden Route.

The Conservation of Agricultural Resources Act (Act 43 of 1983) lists Madeira vine as a category 1 plant, meaning that it is prohibited on any land in South Africa and must be controlled, or eradicated where possible. Manual and chemical control efforts are far from satisfactory and therefore alternative control methods, such as biological control, are being investigated.

Opportunistic surveys by Dr. Stefan Naser in South America yielded at least three species of destructive leaf-feeding beetles and two moth

species. Of these, a flea beetle, (tentatively identified as *cf. Phenrica* sp. 2), is being tested at the quarantine facilities at Rietondale, while a second one, the chrysomelid beetle *Plectonycha correntina*, was reared and investigated on our behalf at the USDA-ARS field laboratory in Buenos Aires, Argentina.

Adults and larvae of *cf. Phenrica* sp. 2 and *P. correntina* feed extensively on the leaves and are capable of defoliating Madeira vine infestations, impacting on the photosynthetic ability of the plant. Host specificity results indicated that both potential candidates have equally narrow host ranges that include only plant species from the families Bacellaceae (to which the target weed belongs) and the closely related Portulacaceae. Although preliminary observations seem to indicate that *P. correntina* is more damaging than *cf. Phenrica* sp. 2, these two species were collected in different climatic regions and are expected to fill their own specific niche within climatically diverse regions in South Africa. Adults of both species are very mobile and should be able to escape predation; the larvae, on the other hand, are more at risk. This is probably why larvae of *P. correntina* are covered by a gelatinous substance that camouflages them. Research into the host specificity and impact of both agents is ongoing.

Contact: Liamè van der Westhuizen at e-mail VDWesthuizenL@arc.agric.za for more details.



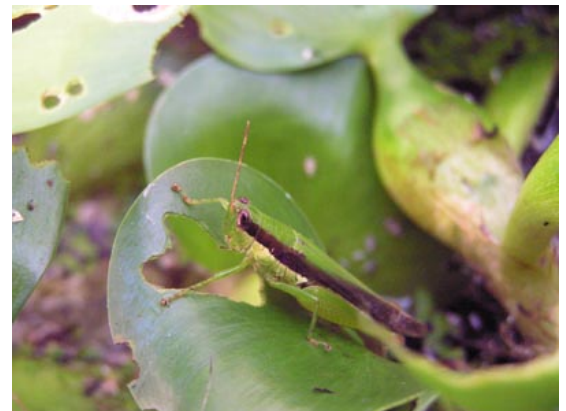
A blanket of Madeira vine smothering indigenous vegetation (left). Two potential biocontrol agents under investigation: *cf. Phenrica* sp. 2 (below, left) and *Plectonycha correntina* (below, right)



### *Pre-release efficacy testing of a potential agent for water hyacinth biocontrol in South Africa*

The water hyacinth grasshopper, *Cornops aquaticum*, the most promising candidate biocontrol agent for water hyacinth in South Africa, is currently awaiting permission from the relevant authorities before it may be released from quarantine. Angela Bownes is making use of this waiting period to carry out pre-release efficacy testing in the quarantine facility at Rietondale to determine the impact of the grasshopper on the target weed. The impact studies will investigate the effect of *C. aquaticum* on the reproductive potential, growth rates and competitive performance of water hyacinth.

Pre-release efficacy testing in addition to host-specificity trials have become an important part of agent screening prior to release. Weed biocontrol practitioners world-wide are now performing these kinds of studies. The data generated from these trials will be particularly useful close to home, in that the Department of Environmental Affairs and Tourism (DEAT) – one of the two departments from whom permission for release needs to be obtained – have recently indicated that they now require information on the impact of the



Adult *Cornops aquaticum*

candidate agent on the target weed before they will consider granting permission for them to be released.

Continue on next page



## Weeds Research Division (continued)

This study will also provide Angela with the unique advantage of testing the accuracy of the predictions once the grasshoppers are released onto water hyacinth infestations in South Africa.

Contact: Angela Bownes at BownesA@arc.agric.za



*Cornops aquaticum* is a highly destructive feeder

### Killing two birds with one stone?

A potential biocontrol agent for yellow bells (*Tecoma stans*) as well as cat's claw creeper (*Macfadyena unguis-cati*)

A recent survey and collection trip to southern USA yielded a moth species, *Clydonopteron pomponius*, that develops on the seeds of two closely related invasive species in the family Bignoniaceae, yellow bells (*Tecoma stans*) and cat's claw creeper (*Macfadyena unguis-cati*).

In South Africa, both plant species are regarded as emerging invaders and have been earmarked for bio-control. Yellow bells forms thickets in disturbed areas, along water courses and roads, in open urban spaces and on rocky outcrops. Cat's claw creeper is a climber, invading natural forest, plantations, woodlands, orchards and open urban spaces. Both species are planted as ornamentals across South Africa, producing thousands of papery, winged seeds, with cat's claw creeper also able to reproduce vegetatively through underground tubers which are formed at nodes wherever runners touch the soil.

*Clydonopteron pomponius* females lay their eggs on the seeds in the mature, split-open capsules of both plant species. The larvae initially feed inside the seeds and then move from one seed to the next as they mature. Two to three larvae are able to destroy all the seeds in a capsule of yellow bells, but six to seven are needed for a capsule of cat's claw creeper. While feeding, the larvae use silken threads to spin together the empty seeds along with uneaten seeds. This ensures that even the undamaged seeds are unlikely to disperse. The larvae eventually pupate in loosely woven cocoons in between the seeds. The moth's life-cycle lasts about 50 days.

Currently *C. pomponius* is subject to host specificity testing, the outcome of which will determine whether it is suitable for release in South Africa.

Contact: Hester Williams at WilliamsH@arc.agric.za.



A potential biocontrol agent is being investigated that will attack the seeds of both yellow bells (top) and cat's claw creeper (bottom)

### The Agulhas Biodiversity Initiative

The Agulhas Biodiversity Initiative (ABI) has the goal of improving the biodiversity conservation and sustainable livelihoods in the greater Agulhas Plain (Hermanus to Cape Infanta). It is a cooperative venture between government agencies (such as SANParks, CapeNature, and LandCare (DoA-WC)), local municipalities and land owners, and is a complimentary Global Environmental Fund (GEF) initiative in support of Cape Action for People and the Environment (C.A.P.E.).

Alan Wood, Judy Moore and Fiona Impson, researchers in the Weeds Research Division, have initiated a project under the auspices of the Conservation Working Group of ABI to monitor over the long term the combined impact of all three biocontrol agents available against *Acacia cyclops* (rooikrans). These agents are the flower-bud gall midge *Dasineura dielsi*, the seed feeding weevil *Melanterius servulus*, and the die-back fungus *Pseudogregarbasidium acaciicola*. Two monitoring sites have been established, one each in the Agulhas National Park, and De Hoop Nature Reserve. When the project was initiated the flower-bud gall midge was already established at both sites. Subsequently the die-back fungus was introduced during February 2006, and the seed feeding weevil during September/October 2006.

It is anticipated that not only will this monitoring provide valuable research information, but will also serve as demonstration plots to the ABI stakeholders and therefore act as a catalyst for the adoption of biocontrol in the region. Stakeholders were therefore invited to the release of the seed feed-

## Weeds Division (continued)



ing weevil at the Agulhas National Park site (28 Sep. 2006), during which opportunity the impact and implementation of biocontrol was discussed by all present.

In addition, Farmer's Days on weed control organised by ABI have been attended by Alan Wood and Pauline McConney (the Western Cape biocontrol implementation officer of the *Working for Water* Programme), where the various agents available have been demonstrated and implementation discussed.

Dr Alan Wood can be contacted at [WoodA@arc.agric.za](mailto:WoodA@arc.agric.za)

Flowerbud galls on rooikrans, caused by the midge *Dasineura dielsi*.

### Prediction of safety and effectiveness of *Longitarsus bethae*, a candidate biocontrol agent for the noxious weed *Lantana camara*

In an attempt to improve selection of effective weed biocontrol agents prior to release, David Simelane recently carried out carefully designed experiments to investigate whether or not the root-feeding flea beetle *Longitarsus bethae*, a candidate biological control agent for the noxious weed lantana (*Lantana camara*), would be safe, would establish by virtue of having the ability to cope with important ecological conditions in the release areas, and could inflict significant damage on the target weed.

Host-specificity studies in the laboratory indicated that *L. bethae* was adequately host-specific to be released against lantana in South Africa (i.e. the biocontrol agent will attack the target weed without harmful side-effects on non-target plant species).

Measurements were made of the effects of different larval population densities on leaf density, stem length, stem diameter, and below- and above-ground biomass accumulation of lantana plants. These studies demonstrated that larval populations developing from initial egg densities greater than 200 per plant could inflict sufficient damage upon the roots to reduce plant growth vigour.

The abiotic factors that were likely to influence the beetle's reproductive performance and survival in the new range included soil characteristics (moisture content, texture, surface structure, levels of organic matter and presence of leaf litter) and climatic conditions (photoperiod, temperature and humidity). Development of the flea beetle was better in soil with a high clay content, surface cracks, little organic matter, moderate moisture and covered with leaf-litter. High atmospheric humidity (>85% RH) and cool temperatures (17°C) were shown to be most favourable to development of the flea beetle. Climatic conditions in the summer rainfall regions of South Africa, where the target weed is a problem, are anticipated to be well within the range that the insect can tolerate.

During studies where the flea beetle had to share its host plant with large numbers of another well-established agent (the tingid bug *Teleonemia scrupulosa*), fewer eggs were laid by *L. bethae* and fewer larvae survived. Predation on the pupae of *L. bethae* increased as the numbers of ground-dwelling carabid beetles increased, particularly in leaf litter-covered treatments. Some varieties of lantana inhibited oviposition by *L. bethae*, and larval survival differed significantly among the varieties.

After identifying factors in isolation that affected *L. bethae*, a multi-factorial trial was carried out to examine how the various factors act in unison. Here, the effects of some of the ecological factors that were apparently important in isolation were moderated when they operated in unison with other factors. In these studies, soil moisture and clay content had the most substantial effect on survival of the immature stages of *L. bethae*, while the presence of *T. scrupulosa*, and the type of lantana variety serving as a host, had minimal influence. Based on these trials, a survival-prediction equation was also derived,

resulting in identification of three geographic regions that are likely to be suitable, marginally-suitable or unsuitable for *L. bethae* in South Africa.

It was concluded that there was strong justification for releasing this biocontrol agent into this country.

By predicting the likely efficacy of a biocontrol agent before releasing it, it might be possible to reduce the number of control organisms released against the weed, thereby reducing the risk of non-target effects. The knowledge gained from this investigation will also assist in the selection of release sites that are most likely to suit *L. bethae*, and thus ensure that mass-reared beetles are utilized most efficiently for biological control of the target weed.

Contact: Dr David Simelane at [SimelaneD@arc.agric.za](mailto:SimelaneD@arc.agric.za).



The life cycle of the root-feeding flea beetle *Longitarsus bethae* on its host plant *Lantana camara*. Clockwise, from top: adults, eggs, larvae and pupae

## *Pesticide Science Division*

### *Good Laboratory Practice (GLP) compliance status becomes a prospect for the Pesticide Analytical Laboratory*

The Quality Assurance (QA) manager of the Division of Pesticide Science has implemented and is monitoring an internationally accepted quality assurance programme: Good Laboratory Practice (GLP) which is based on the prescribed documented guidelines by the Organization for Economic Co-operation and Development (OECD). The South African National Accreditation System (SANAS) provides formal recognition of competence of a facility within an organization which has successfully applied OECD Principles of GLP to the non-clinical safety testing of test items contained in amongst others: pesticide products, food additives, feed additives and industrial chemicals. GLP is a quality system concerned with the organizational process and the conditions under which non-clinical health and environmental safety studies are planned, performed, monitored, recorded, archived and reported. Studies covered by GLP include work conducted in the laboratory and greenhouses and in the field.

Although South African legislation does not yet require regulatory studies to be conducted in accordance with the Principles of GLP, organizations in SA voluntarily enter SANAS's GLP Programme, often to meet international client demand. This demand is rapidly becoming the norm, should one want to compete nationally and/or internationally for contracts. The client also uses accreditation in South Africa as a measure of competence of the service provider. Accreditation ensures that the government, consumers and the public can be confident of the competence of the services and results offered by testing laboratories. A competent and reliable service contributes directly to business efficiency and to the international competitiveness of the South African industry.

South Africa is in desperate need of more Pesticide Analytical Laboratories with GLP compliant status. So far only four laboratories (not all pesticide residue laboratories) in South Africa are GLP compliant and clients must sometimes send pesticide residue work overseas to obtain results from a GLP compliant Laboratory. In addition to this, the Registrar of Act 36 of 1947 also prefers residue studies to be done by a GLP compliant Laboratory.

The Pesticide Analytical Laboratory at PPRI is very well suited to meet this need and the Quality Assurance system-Good Laboratory Practice (GLP) has now been restricted to only the Pesticide Analytical Laboratory.

Consequently, several corrective actions have been taken:

- Records of qualification, training, experience and job description for every staff member were compiled and are being maintained.
  - All applicable instruments were calibrated by a SANAS accredited metrology laboratory.
  - A lot of infra-structure maintenance was done in the laboratory to ensure optimum operational ability and functionality.
  - An infra-structure maintenance system with responsibilities and designated individuals was established.
- To solve the severe capacity problem, two new Senior Technicians were appointed.
  - A management structure was set up.
  - Crucial instrumentation (GC-ECD/NPD and GC-MS) were purchased and installed with the ability for the Pesticide Analytical Laboratory to compete with the outside world in terms of reliability- i.e. timely results, detection limits, confirmation of pesticides and quality of chromatography.
  - A GLP workshop was presented by SANAS to all staff of the Pesticide Laboratory.
  - Standard Operating Procedures (SOP) were compiled for new instruments and others were revised.
  - Method validation was implemented based mainly on the "Guidelines for the validation and verification of Chemical Test Methods" by the National Association of Testing Authorities (NATA) in Australia and Eurachem – "The fitness for Purpose of Analytical Methods".

The prospect exists for the Pesticide Analytical Laboratory to gain Good Laboratory Practice (GLP) compliance status. The Laboratory can benefit tremendously and all indications are that many contracts can be expected once this goal is achieved. To this end considerable progress has been made and the QA Manager will endeavor to use every opportunity available to make the GLP compliant status a reality.

Contact: Christa Smit at SmitC@arc.agric.za.

### *Stored Grain Research Unit analysing phosphine quality*

The success of any fumigation operation depends largely on the gas-tightness of the space to be fumigated. The gas must be retained for a minimum period of time to be effective against insects. This would be a 5- to 7-day exposure at an effective concentration of phosphine to control most insect pests and their developmental stages. An early fall in the phosphine concentration generally results in fumigation failure because the surviving insects are able to rapidly rebuild their population in the absence of residual toxicant. Frequent exposures to sub-lethal levels of phosphine could also lead to the selection of resistant insects.

The Stored Grain and Oilseed Unit (SGO) is responsible for evaluating registered aluminium phosphide fumigation products in South Africa to ensure that all the products comply with the registration requirements. The Grain Silo Industry (GSI) regularly and randomly selects samples from the five distributors in South Africa. The SGO Unit then conducts qualitative and quantitative analyses on these samples to determine the phosphine yield, gas purity for each pellet/tablet/sachets as well as determine the mean weight and hardness of the pellets/tablets/sachets per sample.



**Weighing the sub sample**

## *Pesticide Science Division (continued)*

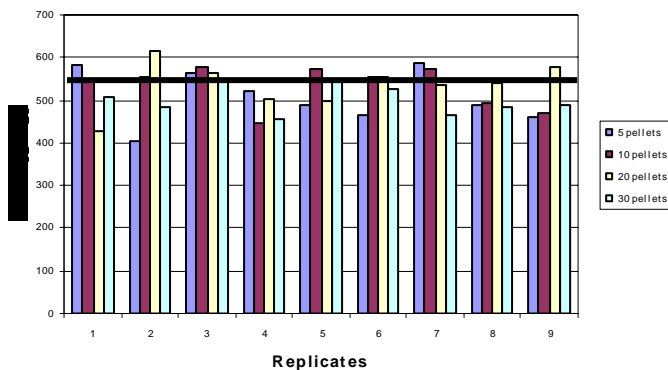
SGO conducted a number of qualitative phosphine analyses using the method developed by United Phosphorus (India). Usually one pellet (0.20g) per evaluation is used to determine the amount of gas released by the pellet, but huge variances in gas release have been experienced between replicates. The method has been modified to crush 4-5 pellets from which a sub-sample is taken to be analysed. From results, a variation of 90 – 180g/kg always occurs between replicates. PPRI decided to look at sample size in an attempt to minimise the variance between replicates.

Once again the procedure from United Phosphorus Ltd, India, was used. Four different sample sizes of pellets were tested, namely, 5, 10, 20, and 30, and in each category, pellets were crushed together. For instance, 5 pellets were taken from the phosphine canister, crushed together in a mortar and pestle. Then a sub-sample of 0.22 g was taken of the crushed pellets, placed in an open silicon capsule and dropped into the reaction flask. The time from opening the sealed container until the sample is placed in the reaction flask was measured with a stopwatch. The remaining crushed pellets were then transferred into another canister for disposal and the mortar and pestle wiped clean with dry laboratory paper. This sample size was replicated nine times i.e. nine times crushing five pellets together and taking a sub-sample of 0.22g from each crushed sample. The same "method" was followed for the remaining categories of 10, 20, and 30 pellet sample size. The time measured for crushing 5 pellets up to 30 pellets never exceeded the permitted time period of 90 seconds. The analyses were carried out at controlled temperature and humidity (20 °C ± 5° C and 50 % RH ± 5% RH) and the reaction temperature was constantly kept at 60 ° C.

Contact: Tanya Saayman at SaaymanT@arc.agric.za.



**Phosphine gas reacting with Potassium permanganate (KMnO<sub>4</sub>) solution**



**Fig 1. reflects the variance between the replicates. Using the statistical method "ANOVA", no significant difference was found to occur between the sample sizes. Further trials with phosphine products from another distributor are planned to determine if variance between replicates of sample sizes will remain insignificant**

### *Grain drying huts for safer food*

The building of drying huts was necessitated by the increase in post-harvest losses as well as in mycotoxin-producing fungi during storage. These problems became clear during an assessment of storage and drying methods in the Eastern Cape as part of a Sustainable Rural Livelihood project in 2004.

The farmers and communities in these areas were not separating the damaged and undamaged maize cobs before the drying period, which in turn led to an increase in insect pest and fungal infestation. Farmers use galvanized metal tanks for post-drying storage and can effectively control insect pests with phosphine fumigation. The drying period was identified as the most critical prerequisite for preventing or minimizing insect and fungal damage.

Four drying huts or cribs were constructed at different villages, two in Lusikisiki and two at Qunu. For moisture determination, maize samples were taken from the cribs three times a year, using maize stored in metal tanks as the control. Between the three sampling periods, there was a difference of 1.5% moisture between the control and experimental samples. Although the moisture content decreased towards the end of the post-storage period, it was still high enough for fungal growth in drying cribs and metal tanks.

It was concluded that the drying cribs failed to give the desired results in lowering the moisture content and thereby reducing fungal growth. Therefore, existing drying cribs need to be re-designed for the coastal regions.

The project was introduced this year to Limpopo Province to repeat the Eastern Cape tests. In the Limpopo Province, maize was stacked in the crib with a hole in the centre to create a chimney effect for improved ventilation. To date only one sample was taken and the moisture content is already within the required range of 10 to 12 %. This is a marked improvement on the method used in the Eastern Cape. Fungal infestation is still to be analyzed.

Contact: Frikkie Kirsten at KirstenF@arc.agric.za.



**Drying huts used in the Limpopo Province to dry maize on the cob**

## *Pesticide Science Division (continued)*

### *PPRI attends meeting on pesticide specifications in Switzerland*

From 6 - 17 June 2006, Dr Eric Sandmann attended the United Nations FAO/WHO 5<sup>th</sup> Joint Meeting on Pesticide Specifications (JMPS) and the 50<sup>th</sup> CIPAC (Collaborative International Pesticides Analytical Council Ltd) meeting held at the UN WHO head office in Geneva, Switzerland. There he presented specifications on the pesticide permethrin. He was also invited and appointed as Assistant Secretary to CIPAC.

A background explanation of all the meetings is briefly given below.

The UN Food and Agriculture Organization (FAO)/World Health Organization (WHO) Joint Meeting on Pesticide Specifications (JMPS) meets in Closed Meetings for a four-day conference once a year, usually in the Northern Hemisphere. The JMPS met from the Wednesday to the Saturday. The Panel of Experts is composed of about 25 scientists, mainly belonging to national pesticide registration authorities, who collectively possess expert knowledge of the development of specifications. The Meeting includes interviews with representatives of those companies that proposed specifications, where clarification on possible open points in the draft specifications of their compound(s) is sought.

Experts appointed by FAO are drawn from the Panel on Pesticide Specifications, Registration Requirements, Application Standards and Prior Informed Consent. Experts appointed by WHO are drawn from the WHO Panel of Experts on Vector Biology and Control, together with a representative of the WHO/PCS (Pesticide Chemical Safety). In addition, industry experts may also be invited. The primary function of the JMPS is to produce recommendations to FAO and/or WHO on the adoption, extension, modification, or withdrawal of specifications. FAO and WHO pesticide specifications are developed with the basic objective of promoting, as far as is practicable, the manufacture, distribution, and use of pesticides that meet basic quality requirements.

#### **CIPAC (Collaborative International Pesticides Analytical Council Ltd) and AOAC International**

After a day's break on the Sunday (CIPAC Excursion), the **Joint CIPAC/FAO/WHO Open Meeting** took place on the Monday, which is open to all who wish to attend. The **Joint Open Meeting** deals with all topics of common interest to all three organizations, such as official liaisons, reports from country activities, ongoing programmes, and more, and is chaired in turn by a representative of the FAO, WHO and CIPAC, respectively.

The **CIPAC Symposium** took place during the whole of Tuesday, involving both presentations and posters on a variety of analytical and other aspects of pesticide chemistry. For the following 2 days, the **CIPAC technical council (TC)** mainly dealt with the presentation and discussion of collaborative tests carried out recently and with the possible adoption of new methods as CIPAC methods. The **CIPAC TC** is open to all who wish to attend, with some minor exceptions. The CIPAC Meeting concluded with **two Management Meetings** (typically attended by 25 people, which includes the Members and Officers) for half a day on Friday.

The United Nations FAO and WHO, as well as CIPAC unanimously supported the South African JMPS/CIPAC Meetings for June 2007 to be held at Umhlanga Rocks, near Durban, South Africa.

Wherever practicable, the test methods cited in FAO/WHO

specifications should have been evaluated by international-laboratory trials under the auspices of CIPAC. CIPAC and AOAC International (formerly the Association of Official Analytical Chemists) publish methods of analysis that have been accepted after collaborative testing (which may include peer verification). CIPAC also tests and publishes methods for the determination of physical properties.

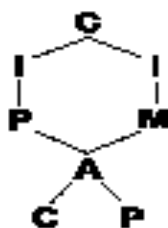
#### **Participation by the Pesticide Industry**

The analytical methods which are collaboratively tested by CIPAC and the round robin test itself are from industry, as well as the data on which the FAO and WHO specifications are based. Pesticide manufacturers are strongly encouraged to submit draft specifications and the supporting data to the JMPS for evaluation.

Copies of current FAO specifications may be accessed at:  
<http://www.fao.org/ag/agp/agpp/pesticid/>  
<http://www.who.int/ctd/whopes>

The CIPAC website is <http://www.cipac.org>

Contact: Dr Eric Sandmann at SandmannE@arc.agric.za



## *PPRI OHS (Occupational Health and Safety)*

**Congratulations to the representatives and secundi from Cedara, Stellenbosch and Pretoria who attended and received their Certificates of Competence at the Safety, Health and Environment (SHE) training. It was a 2-day course held from 27-28 June 2006.**

**Trainer: Mr Anthony Sibanyoni from DEKRA Norisko Industrial SA.**



### **Participants:**

**Rietondale: Liamé van der Westhuizen, Kenneth Segole, Phillip Ratau and Dirk Ochse**

**Stellenbosch: Keith Appollis, Samson Booysen, Christiaan Fransman and Almarie van den Heever**

**Cedara: Lynette Khumalo**

**Roodeplaat: Phaniel Malebana, Josiah Ringane and Josef Ledwaba**

**Coordinator: Elmé Breytenbach**

## *Spring Day 2006*

The three campuses in Pretoria did some "team building" at Rietondale on September 1st. It was a lovely summer's day and thanks are due to Ida and Christo, with their teams, for the food.

Special thanks to Emile von Maltitz who took some "loveling care" with the boerewors. Everyone had great fun with the different "team building" efforts, as can be seen from the pictures.

