

NO 12

NOVEMBER 1995

## THE DIRECTOR'S REPORT

The end of another year approaches rapidly and it is hard to believe that the time to prepare the second issue of Tree Pathology News is already here. So many advances have been made and there is so much new information pertaining to the Programme that it is difficult to cover this in a brief newsletter. I will attempt to summarise some of these in this brief report.

### Pamphlets on Eucalyptus diseases

Many of you will have already seen the three colourful and informative eucalypt disease pamphlets. These cover three of the most important eucalypt diseases, viz. *Cryphonectria* canker caused by *Cryphonectria cubensis*, *Botryosphaeria* canker caused by *Botryosphaeria dothidea* and a *Coniothyrium* canker caused by a species of *Coniothyrium* that has yet to be described. The pamphlets were commissioned and financed by SAFCOL due to their concern regarding these diseases, but also as a contribution to tree health in South Africa. They focus strongly on symptoms in an attempt to aid foresters in

recognising the diseases. Ultimately we hope that they will be useful in various programmes that have been established to measure the impact and monitor the spread of these important diseases. Although SAFCOL has produced a reasonable quantity of these pamphlets for their own purposes, they have allowed the TPCP to produce 1000 of each for distribution to other members. We have and continue to distribute these at our discretion but will obviously also be happy to supply copies on request.

### The disease clinic and collection of samples

A critically important component of the TPCP is the service that it provides for disease diagnosis. Internally we refer to this component of the programme as the DISEASE CLINIC. As many of you will be aware, samples of dead and dying forest plantation trees and associated seedlings and cuttings literally "flow" into our laboratories. We are particularly proud of the quality of service that we are able to provide in this regard and are continuously refining our procedures for dealing with samples.

One of the problems that we regularly encounter is that samples often reach us with little or no background information. Samples are often also not sufficiently adequate to enable us to make accurate diagnoses of problems being experienced. We recognise the fact that writing comprehensive reports to accompany samples is unduly time consuming and in many cases not possible. We also acknowledge that some foresters are not fully versed with procedures to collect samples.



## Christmas Greetings

Staff and students associated with the TPCP  
wish you all a very joyous Christmas  
and a  
Prosperous New Year

We have recently produced an inexpensive pamphlet that provides information on methods for collecting and dispatching samples to the TPCP. This pamphlet includes a "tear off" sheet including a series of very simple questions that can be rapidly completed. Over the years we have come to realise that many questions asked in questionnaires are redundant and the information peripheral. Questions asked here are, therefore, brief and restricted to only the most critical issues - name and address, collection area, symptoms observed, etc. Once we

have completed a preliminary set of isolations we will - where necessary - undertake to obtain additional information from you.

A copy of the above mentioned pamphlet is included with this newsletter. We will also be distributing these to you during the course of our regular visits to forest plantations. Please do not hesitate to contact us if you should require additional copies. Also feel free to copy these to include with samples that you are dispatching to us.

## PLEASE REMEMBER:

**1. IT IS IMPORTANT THAT YOU COLLECT AND DISPATCH SAMPLES FROM DISEASED TREES TO US. THIS IS AN INTEGRAL PART OF OUR DISEASE MONITORING PROGRAMME. EARLY DIAGNOSIS MEANS EARLY RESOLUTION OF PROBLEMS.**

**2. SAMPLES ARE MUCH MORE IMPORTANT THAN YOU MIGHT REALISE. PATHOGENS ISOLATED ARE MAINTAINED IN CULTURE IN HIGH TECH**

**FACILITIES. THEY WILL PROVIDE FOR FUTURE COMPARISONS AND AS A SOURCE OF REFERENCE IN STUDIES TO EVALUATE CHANGES IN PATHOGEN POPULATIONS.**

**3. YOUR COLLECTIONS ARE AN IMPORTANT CONTRIBUTION TO THE LONG TERM SUSTAINABILITY OF THE SOUTH AFRICAN FORESTRY INDUSTRY.**

### Visitors to the TPCP

The TPCP continues to receive a steady flow of visitors with an interest in forest tree diseases. Visits by staff from member companies are a regular event and are much too numerous to mention here. Many scientists with a broader interest in plant pathology, microbiology and biotechnology primarily visiting other colleagues also take the time to inspect the TPCP. In addition to these visitors, and since the dispatch of the last issue

of Tree Pathology News, we have also hosted two scientist with a particular interest in the TPCP. These include Dr Eric Boa from the Commonwealth Agricultural Bureau (CAB), International Mycological Institute and Ms Gillian Allard of the CAB Institute for Biological Control. A brief account of these visits and their significance to the TPCP is provided elsewhere in this issue.

### Meetings and travel

An important component of the TPCP is to maintain close contact with tree pathology issues elsewhere in the world. New diseases are appearing continuously and there is clear evidence that this is an international trend. We therefore strive to ensure representation at important congresses and also to maintain a close watch over the spread of tree pathogens internationally.

One of the new and important focuses of interest for us is to establish ties with foresters and forest pathologists in Africa. As part of this initiative, Teresa Coutinho attended a meeting of tree protection specialists in Kenya recently. This visit brought us many valuable contacts and will lead to many collaborative ventures with colleagues in Africa in the future. It has already also led to Teresa being invited to teach a course in Forest Pathology to foresters in Zambia in August. An account of this undertaking is provided elsewhere in this document.

Many of you will be aware that the World Congress of the International Union of Forestry Research Organisations has recently been held in Tampere, Finland. I had the privilege to attend this meeting and to represent the TPCP as an invited

speaker there. I was also able to link this to an invitation to present a plenary address on the relationship between fungal pathogens and conifer infesting bark beetles at a satellite meeting held in As, Norway. Both the world congress and the meeting in Norway have given rise to many excellent opportunities and contacts for the TPCP. Given the fact that I have only just returned from these meetings, I will save discussion on some of exciting (and some disturbing!) tree pathology issues for a later issue of Tree Pathology News.

Given that this is the last issue of Tree Pathology News for 1995, I must once again take the opportunity to thank our many forestry friends for support and assistance in our efforts to resolve tree disease problems. Help in providing trees for study, accommodation and advice in the plantations and many other forms of support are greatly appreciated by all of us. The successes associated with our efforts to reduce the impact of forest plantation diseases would not be possible without your support. We wish you all a very happy Christmas and 1996 and look forward to seeing you in the forests soon.

# Opening of the SAPPI FOREST BIOTECHNOLOGY BUILDING

SAPPI's generous donation together with the University's contribution allowed a state-of-the-art facility to be built as an extension of the Department of Microbiology and Biochemistry. This facility includes two laboratories, a microscope room, a walk-in growth room and six separate, environmentally-controlled glasshouses. In early 1994 plans were put into motion for the official opening of this Sappi Forest Biotechnology building. In July of that year we were delighted to be able to move into this new extension and within a relatively short space of time we were firmly ensconced. To have modern facilities at our disposal makes our research activities not only possible but a pleasure. One major advantage was that we no longer had to trek five kilometers to the University Nursery to conduct glasshouse trials. The only decisions we had to make was who was going to do what where - this was decided democratically.

Monday, the 13th of March, began with what we termed an "open" day. Approximately 200 people from industry, academic and research institutions, the government, the Foundation for Research Development and various members of staff from the UOFS were shown "live" experiments in all the laboratories of our Department. Our B.Sc. honours students were given the privilege of acting as "tour guides" - a task they thoroughly enjoyed. The members of the department have a diverse range of research interests in the fields of microbiology and biochemistry. The researchers who head these groups are considered to be world leaders in their fields. Experiments relating to the following research activities were shown: toxicity of monoterpenes, high value oil

research, lipid production by yeasts, molecular biology, endophyte research, the use of a digester for the treatment of toxic effluents, various aspects of biological pulping and tree disease research.

After a light lunch Prof. Bernard Prior, Head of Department, welcomed the guests to the Open Day. This was followed by the official opening of the new facility which began with a series of presentations. Prof. Mike Wingfield began the ball rolling with an introduction to the TPCP. Prof. F. Retief (Rector: UOFS) followed with a welcoming address. Minister Stella Sigcau (Minister of Public Enterprises) in a thought-provoking presentation stressed the importance of collaboration between industries and tertiary institutions. Prof. Trevor Britz gave an entertaining lecture on the "blooming microbes". This was followed by a presentation by Mr. André Vlok (Executive Director: Technical of SAPPI). The final lecture was by Dr. Linda Kohn from the University of Toronto. She used the analogy that a plant pathologist was a detective. This is so true - there is nothing as exciting as being faced with a perplexing disease situation. Solving the "crime" is the most exciting part! Midway through these proceedings the Odeion String Quartet gave a wonderful rendition of classical music despite arriving without the correct score. The opening drew to a conclusion with a tree planting ceremony. An indigenous *Combretum* (river willow) was planted by Mr. André Vlok in the SAPPI courtyard. This event was followed by an entertaining evening where a delicious buffet was served. Mr. H.

Verster, executive director of the UOFS Foundation, handed a sculpture entitled "The helping hand" to SAPPI in appreciation of their support.



Prof. Mike Wingfield in front of the Sappi Forest Biotechnology Building

The central theme throughout these presentations was that forestry is essential for the South African economy. The TPCP's role in attempting to prevent large scale losses due to disease plays a crucial role in maintaining healthy commercial forests. As many of the presenters pointed out in their lectures, the success of any programme is dependent on the people involved that leads them. In this respect, the TPCP is comprised of a tremendously

enthusiastic group of scientists, students and staff. Every moment of working together and dealing with tree disease problems is an enjoyable challenge.

## DID YOU KNOW?

**THAT STAFF AND STUDENTS ATTACHED TO THE TPCP HAVE LOGGED UP IN EXCESS OF 200 PERSON DAYS IN SOUTH AFRICAN PLANTATIONS EVERY YEAR SINCE THE INCEPTION OF THE PROGRAMME**

## TPCP HOST TO PLANT PATHOLOGIST FROM COMMONWEALTH AGRICULTURAL BUREAU

Dr Eric Boa is a plant pathologist with the Commonwealth Agricultural Bureau. He has a special interest in diseases of trees in third World situations. Much of his research and extension work is funded by the Overseas Development Administration (ODA) and is focused on resolving problems experienced by small scale farmers in rural situations. In this regard, we have a great deal to learn from Eric and it was a special privilege to have him visit the TPCP this year.

Eric Boa's visit to Bloemfontein was all too brief. A couple of days to be precise. During this time we conducted discussions on projects of mutual interest and considered various opportunities for extending our collaboration. He presented a lecture on diseases of Neem and Clove with which he has been involved and shared with us his experiences in working in rural and often very difficult situations. He also joined us for a visit to Zululand where he was a guest of Mondi and presented a lecture to staff of this company. During his time in Zululand he inspected *Coniothyrium* canker, some of our field trials including various of the *Cryphonectria* canker inoculation trials and also visited with tree growers attached to the Inkulunathi programme.

## African regional coordinator of the Conifer Aphid project visits Bloemfontein

Gill Allard is a forest entomologist with the Commonwealth Agricultural Bureau (CAB). One of the Research Institutes falling under CAB is the International Institute of Biological Control and Gill is the African regional coordinator of the Conifer Aphid project. She has her office in Nairobi, Kenya, but travels extensively in 12 countries in East, Central and Southern Africa. Over the past few years she had made tremendous progress in transferring the technology of biological control of insect pests to African foresters. She regularly runs training courses for foresters on the identification of pests and their possible means of biocontrol.

Gill spent one lively day with us. The morning was spent discussing possible collaborative efforts between the IIBC and the TPCP. We have a lot to offer the rest of Africa, especially in the form of training of foresters in basic tree pathology and also by offering postgraduate degrees in this important field. The afternoon was spent in a round table discussion which was both entertaining and educational. The success IIBC has achieved with the biocontrol of insects in Africa is phenomenal. The one example where South Africa had an input was in the biocontrol of *Eucalyptus* borer with a parasitoid. The parasitoid has been released in Zambia, Malawi and Tanzania and is reducing the populations of the borer.

## DAEDALUS: ... FORCED WOOD

A CENTURY ago, engineers and carpenters could buy huge, cheap baulks of timber from the virgin forests of the world: kauri pine, yellow pine, teak and so on. Nowadays the virgin forests are largely despoiled, and wood from cultivated forests comes in smaller, more expensive chunks. Daedalus now has the answer. He is inventing factory forestry.

The most useful part of a tree, he says is its trunk. The roots at the base provide it with a solution of mineral salts; the leaf-bearing branches provide it with photosynthesized glucose and remove excess water by transpiration. Given these simple services, the trunk will grow for ever. DREADCO engineers are therefore sawing young trees down, cutting off their branches, and sealing the stump ends to a hydraulic supply system. The

base of each trunk is pressurized with mineral solution, the branch terminals are alternately sucked to extract water and pressurized with glucose solution (this mimics the diurnal variation of sap flow in a living tree). When the technique has been perfected, the trunk should grow as well as if it were still planted.

Indeed, it should grow much better. The hydraulic pressures and flow rates at DREADCO's command are much higher than anything found in nature. No longer limited by the photosynthetic capacity of its leaves and the intermittent supply of sunlight, the trunk will grow with amazing speed. The ultimate limit may be set by its need to dispose of metabolic heat. It could reach full natural size, and even more, in a matter of months.

# FOREST PATHOLOGY IN CHINA - A BRIEF REVIEW

The history of forest pathology in China can be divided into three stages. Very little development took place during the first period, that is between the years 1917 and 1953. Only a few specialists were trained, and teaching forest pathology relied on information obtained from other countries. The second period, 1954 to 1978, saw the development of forestry facilities and the establishment of research on diseases, specifically nursery diseases. The last period, from 1979 to the present represents the greatest development. Research on a wide variety of forestry problems is taking place including, for example, breeding for resistance, disease forecasting, etc.

Forestry diseases in China cause greater economic losses than insects and fire. The focal points of research since 1988 have

included a number of diseases and these are summarised in Table 1. Taxonomic studies, particularly on four genera, namely *Fusarium*, *Phyllachora*, *Coleosporium* and *Lophodermium*, is another research focus. New diseases and pathogens are continuously being discovered and identified. These include, for example, poplar canker (*Botryodiplodia populea*), *Picea asperata* rust (*Peridermium gansuense*) and Chinese fir dieback (*Metasequoia glyptostroboides*). Breeding *Pinus elliottii* for resistance against leaf spot has made considerably progress in recent years. Research on the biocontrol of nursery diseases is also conducted. Some success has been achieved, for example, with a biotype of *Gliocladium virens* that possesses antibiotics to reduce *Rhizoctonia solani* infections.

Table 1 A list of some important tree diseases in China

HOST	PATHOGEN	LOCATION
<i>Pinus</i> spp.	<i>Lophodermium maximum</i>	North East China
	<i>Coleosporium pulsatillae</i>	North East China
	<i>Lecanosticta acicola</i>	Eastern and Southern China
	<i>Bursaphelenchus xylophilus</i>	Eastern China
	<i>Sphaeropsis sapinea</i>	Eastern and Southern China
	<i>Cercospora pini-densiflorae</i>	Central and Southern China
<i>Larix gmelinii</i>	<i>Mycosphaerella larici-leptolipis</i>	North East China
<i>Populus</i> spp.	<i>Populus pseudo-simonii</i>	North, NE and NW China
	<i>Marssonia brunnea</i>	North, NE and NW China
	<i>Dothiorella gregaria</i>	North, NE and NW China
	<i>Dothchiza populea</i>	North, NE and NW China
	<i>Boryosphaeria ribis</i>	North, NE and NW China
	<i>Erwinia</i> sp.	North, NE and NW China
	<i>Botryodiplodia populea</i>	North, NE and NW China
	<i>Glomerella cingulata</i>	Central and Southern China
<i>Cunninghamia lanceolata</i>	<i>Metasequoia glyptostroboides</i>	Central and Southern China
<i>Picea asperata</i>	<i>Thekopsora areolata</i>	Southern and Western China
	<i>Peridermium gansuense</i>	Gansu province
<i>Paulownia</i> spp.	Witches' broom	Central and Northern China

Deadalus want to install a second root pump at the 'top' of the tree. This should abolish its vertical taper and cause it to grow into a usefully uniform cylinder. Insulated from seasonal variations, the cylinder will expand smoothly and perfectly, without the weakening flaws, ring structure and grain of natural wood. Where grain is wanted (as in walnut veneers for furniture and dashboards), artificial 'seasons' could be imposed on the pumping regime: perhaps much faster than the natural ones, or with a more complex cycle.

A factory forest will be a compact, efficient sort of place, It will need copious water, and glucose from some cheap source such as sugar beet. Densely packed vertically or horizontally, and fed from a web of piping, its tree trunks will grow almost visibly until they reach full size, and can be replaced by fresh saplings. Cheap and perfect factory timber will bring back the golden age of timber engineering, and take the pressure off the threatened forests of today.

David Jones

Taken from *Nature* Vol 373, 12 January 1995, page 108

## WORKSHOP at the KENYAN FOREST RESEARCH INSTITUTE

- Teresa Coutinho reports

At the end of April, I attended a workshop at the Kenya Forest Research Institute (KEFRI) near Nairobi. The purpose of the workshop was to formulate ideas on the structure and role of an African Forest Pest Network which would operate in East, Central and Southern Africa. One representative each from South Africa (Frikkie Kirsten), Malawi, Uganda, Ethiopia, Sudan, Tanzania and Kenya attended the workshop. Representatives from Mozambique, Zimbabwe, Rwanda and Zambia were invited but unfortunately did not attend. Observers from international organizations such as IIBC, FAO and CIDA

were also present. The workshop was opened by the Kenyan Minister of Research and a special welcome was made to the South African delegates. It felt great to be finally accepted as part of Africa.

I have attended a number of workshops in the past few years and have found that in order to keep the participants focused on the objectives is often very difficult. The facilitators of this workshop were impressive and after five days, eight hours a day, a structure for the operation and function of the Network was set up. Some of the functions would include training courses for foresters, a newsletter, etc. All that is still required is funding ..... I am still waiting for the Proceedings - so watch this space and I'll keep you informed.....



Delegates at the African Pest Network Workshop in Nairobi. The Kenyan Minister of Research is the third person left, front row. Gill Allard is second right also in the front row

## A CHINESE FOREST

## PATHOLOGIST

## IN SOUTH AFRICA

During October 1994, Prof. G. Zhao joined the team of the TPCP as a visiting scientist for a two year period. His visit is partially supported by the Foundation for Research Development and partially from funding made possible by the Mondi endowed professorship. Many forestry colleagues

in South Africa have already had the opportunity to meet Zhao who has accompanied the team on numerous field trips.

Prof. Zhao's visit to South Africa has numerous advantages for the TPCP. He has a special interest on diseases of pines and poplars and is working with various of these while in this country. The rusts of poplars that also have stages that attack pines are amongst his interests and he has already brought substantial knowledge to our group in this regard. Perhaps the most important aspect of Zhao's visit, at least from our perspective, is his interest in forging ties between forest pathology programmes in China and our own. Although our forestry situations are very different, there are also some important similarities such as in the interest in intensive *Eucalyptus* propagation. Knowledge of diseases of pines in our respective countries will also be of great value to both groups.

# Now for a Look at..

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## Abstracts of Congress Papers

### VARIATION IN VIRULENCE OF SOUTH AFRICAN ISOLATES OF *PHYTOPHTHORA CINNAMOMI*

*Phytophthora cinnamomi* is well-known pathogen of *Eucalyptus* spp. in many parts of the world including those planted at high altitudes in South Africa. The Australian *P. cinnamomi* population is believed to be introduced and exhibits no variation in virulence on *Eucalyptus marginata*. To determine whether this is also true for the South African *P. cinnamomi* population, pathogenicity trials were conducted at Piet Retief and Pietermaritzburg. Thirty isolates representing both A1 and A2 mating types originating from many parts of South Africa were used in artificial inoculations on 3-yr-old *Eucalyptus smithii* trees. Results showed that *P. cinnamomi* isolates differed significantly in virulence in both trials. Furthermore, isolates were more virulent in the warmer Piet Retief than in the colder Pietermaritzburg area. The average lesion lengths of the A1 isolates did not differ significantly from those of the A2 isolates. The A2 isolates, however, exhibited more variation in virulence than the A1 isolates. Variation in virulence amongst both the A1 and A2 isolates was greater in isolates from disturbed areas eastern Cape. The considerable variation in virulence within *P. cinnamomi* isolates is consistent with a previous hypothesis that *P. cinnamomi* is indigenous to South Africa.

Teresa and a few of the participants who attended the training course



### RIBOSOMAL DNA COMPARISONS OF *CRYPTHONECTRIA CUBENSIS*, *CRYPTHONECTRIA PARASITICA* AND *ENDOTHIA EUGENIAE*

*Cryphonectria cubensis* causes a serious canker disease of *Eucalyptus* species in many tropical areas of the world and resembles *Cryphonectria parasitica* that causes Chestnut blight. The fungus was originally known as *Diaporthe cubensis* but was reduced to synonymy with *C. cubensis* in 1980. *Endothia eugeniae*, a fungus similar to *C. cubensis*, is associated with die-back of clove also a member of Myrtaceae. Morphological, isozyme and pathogenicity studies support the hypothesis that *E. eugeniae* and *C. cubensis* are synonyms. The aim of this study was to determine the phylogenetic relationship between *E. eugeniae*, *C. parasitica* and *C. cubensis* using DNA sequence data. The internal transcribed spacer regions, ITS1 and 2, as well as the conserved 5.8S gene of the ribosomal DNA operon were sequenced in both directions. Sequences were aligned using CLUSTAL and the phylogenetic relationships determined using PAUP. Analysis of these preliminary data showed no obvious relatedness between *C. cubensis*, *E. eugeniae* and *C. parasitica*. It also suggested that *C. parasitica* might be more closely related to *E. eugeniae* than *C. cubensis*.

### FIRST REPORT OF DOUBLE- STRANDED RNA (DSRNA) FROM SOUTH AFRICAN ISOLATED OF *SPHAEROPSIS SAPINEA*

*Sphaeropsis sapinea* is an opportunistic pathogen of various *Pinus* spp. This fungus has a severe impact on the forestry industry and management of losses is difficult. Some isolates of *S. sapinea* display characteristics such as

Turn to page 9 for the account of Teresa and Martin's visit to Zambia.

reduced virulence, reduced growth rates, lack of pigmentation, altered colony morphology and suppressed conidiation. These characteristics have previously been linked to hypovirulence and the presence of dsRNA in fungi such as *Cryphonectria parasitica*. To ascertain whether the same phenomenon occurs in *S. sapinea*, potentially hypovirulent, as well as, virulent strains of *S. sapinea* from different regions in South Africa, were screened for the presence of dsRNA. dsRNA was isolated by using a technique involving a phenol extraction of the nucleic acid and subsequent purification of the dsRNA with cellulose chromatography. One species of dsRNA was obtained from two slow-growing isolates. The resulting dsRNA molecules are approximately four kb pairs in size. Establishing a cause and effect relationship between the dsRNA and hypovirulence in *S. sapinea* will necessitate pathogenicity tests, curing of supposedly hypovirulent isolates and conversion of virulent strains to hypovirulence by infection with dsRNA.

## PATHOGENICITY OF A NEW SPECIES OF CERATOCYSTIS ON ACACIA MEARNsii

A *Ceratocystis* sp. has recently been isolated from diseased *Acacia mearnsii* De Wild. with symptoms of die-back and gummosis in South Africa. Although tentatively identified as *Ceratocystis fimbriata* Ell. & Halst., morphological comparisons supported by molecular studies showed that this fungus is distinct from authentic *C. fimbriata* isolates. The fungus from *A. mearnsii* in South Africa has thus been described as new. This *Ceratocystis* sp. produces both self-fertile and self-sterile colonies in the single spore progeny where the former are characterised by the presence of perithecia. Virulence of these self-fertile and self-sterile isolates was compared on stems of young *A. mearnsii* seedling (6mo. old). Self-sterile isolates were found to be non-pathogenic whereas self-sterile isolates possessed a high degree of virulence. Susceptibility to the fungus was also tested on 14 different *A. mearnsii* families in a field trial. Stem inoculations of these trees showed that all of the 14 *A. mearnsii* families were susceptible. Considerable variation in tolerance was, however, observed between individual trees. We thus believe that potential exists to breed for trees that are able to tolerate infection by this pathogen.

## DIE-BACK OF EUCALYPTUS SPP IN SOUTH AFRICA ASSOCIATED WITH COLLETOTRICHUM GLOEOSPORIOIDES

Die-back of several *Eucalyptus* species was observed during a survey of diseases in the most important forestry areas of South Africa. This disease was often associated with environmental stress such as drought, frost and hot winds. *Botryosphaeria dothidea*, which is a well-known causal agent of die-back in *Eucalyptus*, was consistently isolated from symptomatic tissues. However, *Colletotrichum gloeosporioides* was in some cases isolated from die-back symptoms together with *B. dothidea*. Artificial inoculations of *E. grandis* trees representing a single clone, with *B. dothidea* and *C. gloeosporioides* resulted in lesion development in both cases. Although *C. gloeosporioides* occurred less frequently, it resulted in larger lesions than those associated with *B. dothidea* inoculations. This is the first record of *C. gloeosporioides* infecting *Eucalyptus* spp. in South Africa.

## DIFFERENCES IN FUNGAL ENDOPHYTE POPULATION IN EUCALYPTUS SPECIES FROM DIFFERENT AREAS AND IN DIFFERENT SEASONS

*Botryosphaeria dothidea* is well recognised as a serious pathogen of woody plants, including various species of *Eucalyptus*. *B. dothidea* has however been reported as natural endophyte of *Eucalyptus nitens* (England, Australia and South Africa), *Eucalyptus grandis* (South Africa) and *Quercus petraea* (Austria). The aim of this study was to determine whether geographical distribution of *E. grandis* influences the population of endophytes and specifically *B. dothidea*. The influence of season on the endophytic populations in both *E. grandis* and *E. nitens* from the same geographical location, was also considered. Fungal endophytic assemblages were found to differ considerably in *E. grandis* from different areas. Seasonal changes also had a marked influence on the occurrence of these fungi, with *B. dothidea* being more prevalent during summer in both *E. nitens* and *E. grandis*.

## DID YOU KNOW?

THE TPCP HAS FORMALLY BEEN ACTIVE FOR ALMOST SIX YEARS. IN THIS TIME THE PROGRAMME HAS HAD MANY SUCCESSES IN DEALING WITH TREE DISEASE PROBLEMS AND HAS ATTRACTED A GREAT DEAL OF INTERNATIONAL ATTENTION AND RECOGNITION.



# *anxious moments + interesting food*

## *our visit to zambia*

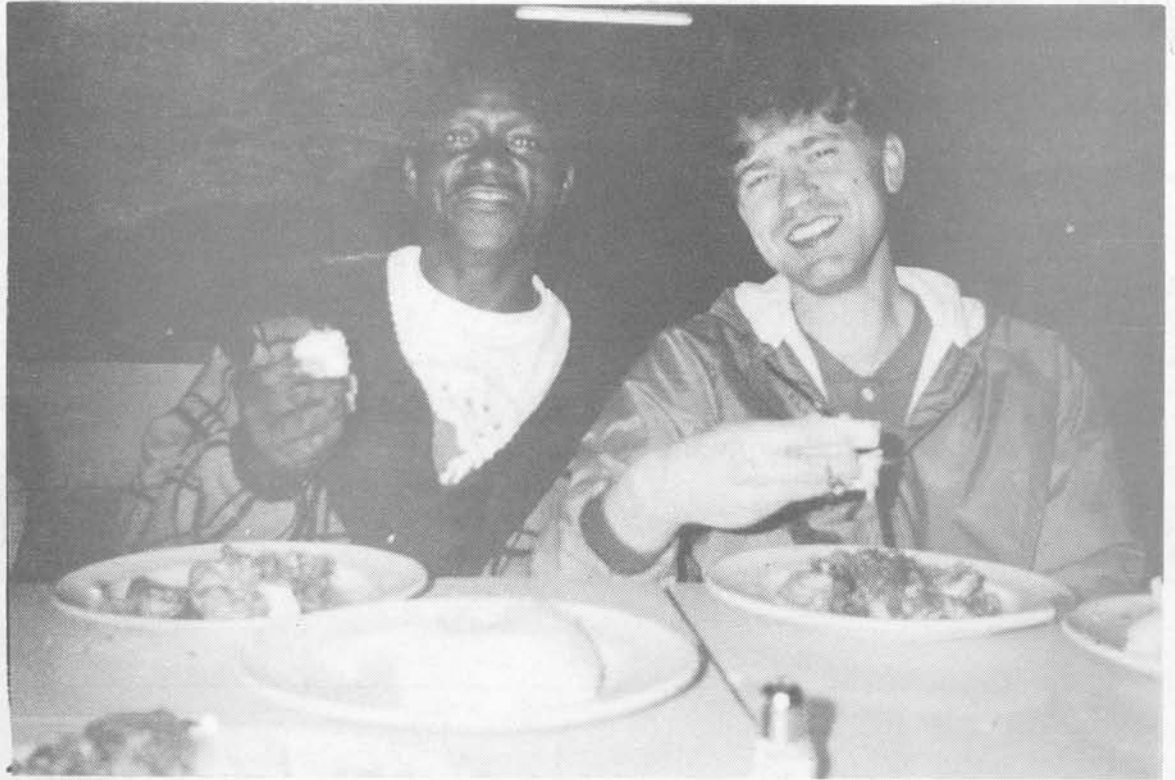
*teresa coutinho  
on an exciting visit to  
zambia*

*I was invited to Zambia by the International Institute of Biological Control to give a week long training course in tree pathology to 11 Zambian foresters. Martin Coetzee, one of our honours students, accompanied me. His father works for SAA and he is given a free air ticket once a year to go anywhere in the world - and he chose Zambia?!*

*The one condition however was that he had to go on standby which on occasion caused some rather exciting moments. We flew via Livingston and Lusaka to Ndola where we were to discover that Martin's luggage had been misplaced... It was located eventually.*

*The course was held at the Kitwe Forestry College which is in a rather remote area of Zambia. The first week of the course had*

*been devoted to forest entomology and a fellow South African, Frikkie Kirsten, and Gill Allard from IIBC, were responsible for the training in this discipline. I can honestly say that I thoroughly enjoyed teaching these enthusiastic foresters and came back to South Africa wishing that my 2nd year nursing students had half as much enthusiasm. The morning sessions were devoted to*



*Martin and John Munyonga (a Zambian forester) enjoying a meal of "zeema"*

*lectures and discussions, and the afternoons to field work. One of the foresters made my day by commenting that "we had opened his eyes" to disease situations as he had previously thought browning of tree tops (due to *Sphaeropsis sapinea*) was perfectly normal. Our stay was exciting to say the least. Accommodation was basic, food was, shall we say interesting - pap, fish heads and tails for seven days made us long for some home cooking....*



**THE RESEARCH TEAM OF  
THE TREE PATHOLOGY  
COOPERATIVE PROGRAMME**

The research team of the Tree Pathology Cooperative Programme is varied. It includes full time staff of the University of the Orange Free State (Prof M.J. Wingfield, Director and Mondl Professor, Dr. B. Wingfield, Dr W.J. Swart and Dr T. Costinako), colleagues and students attached to other organisations such as the ICFR, technical assistants funded by the University or through membership fees and post graduate students who are mainly funded by the FRD. Staff from various Departments in the University obviously provide advice and support where this is required.

**IMPORTANT : PLEASE READ THIS**

*In order for us to coordinate our services to you please help us by using the following contact address:*

*Tree Pathology Cooperative Programme  
For attention Prof M.J. Wingfield  
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----- CUT -----

**TPCP MAILING LIST**

If you would like to be included on the TPCP mailing list or have recently changed your address please supply the following information:

New member of mailing list

Change of address

Name: \_\_\_\_\_

Postal address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Tel.: \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_