

Collaborating Within Africa: Searching For Forest Pathogens

Knowledge of forest/tree fungi on the African continent is very limited, particularly those of indigenous African tree species. In the earlier part of the previous Century, up to around 1960, some research was conducted into diseases of plantation tree species, but during the course of the last 40 years very few publications relating to this field has appeared from Africa, particularly countries north of South Africa. Information concerning macro-fungi has been more consistently published in several excellent publications, but there remains a tremendous shortage of information pertaining to tree related fungi from Africa. We need only attend any international congress to note the lack of information from Africa in phylogenetic trees and other studies.

The TPCP "field" laboratory, Mombasa, Kenya with the ocean in the background.

TPCP students surveying Eucalyptus and Acacia mearnsii in Njombe, Tanzania with Aza Mbagi and foresters of the Tanganyika Wattle Co.

Borders do not restrict pathogens and pests of plants and trees. Examples of apparently introduced tree pathogens in South Africa abound. The same is almost certainly true for other African countries. It would for example be easy for a pathogen introduced into South Africa to spread to Malawi via Zimbabwe, or for those introduced into Kenya to spread to its neighbouring countries and eventually into South Africa. In recent years there have, therefore, been a number of attempts to improve communication between African researchers and to share information and experiences pertaining to tree diseases and pathogens.

A luxury camp with roof, tents in the background, microscope and refrigerator. No need to take out our awning against the rain.

Taking time out on lake Malawi.

The exchange of knowledge and information between African countries is a crucial component for the successful management of plant health issues on the continent. African forest researchers have long realized this. In 1994 there was an attempt to enhance the flow of information between African countries by the establishment of an African Forest Pest Network. For various reasons, this network was not as active as had been anticipated. In December 2004, representatives of the countries originally involved in the establishment of the network met in Zomba, Malawi to re-vitalize this network. The meeting was co-ordinated and funded by the Forestry Research Institute of Malawi (FRIM), FAO and the USDA. This, very successful meeting, resulted in the renaming of the network, which will now be known as the Forest Invasive species network for Africa (FISNA). The aim of the network will be to coordinate the collation and dissemination of information relating to forest invasive species in Sub-Saharan Africa for sustainable forest management and conservation of biodiversity on the continent. Each country in Sub-Saharan Africa will have a representative to help in the maintenance of an active webpage and the sharing of information. In the interim, members of the original initiating countries are acting as executive committee. For South Africa, Dr. Jolanda Roux of the Tree Protection Co-operative Programme (TPCP) at the University of Pretoria has assumed this interim responsibility.

After a long day's work...some insect repellent and a soft spot on the sand.

Collecting material from *Pterocarpus angolensis* in Malawi. From R.t.L. Will Sagona of Forestry Research Institute Malawi, Draginja Pavlic (Msc student, TPCP), Hardus Hatting (Research Technician, TPCP) and Jolanda Roux (TPCP).

The TPCP is widely acknowledged as a world leader in tree health research. It comprises the single largest group of researchers working

on tree health problems at any one site. As part of the TPCP's programme to manage tree health issues in South Africa the Programme has initiated a number of activities that include other African countries involved in plantation forestry. The group has many students from countries such as Ethiopia, Cameroon, Uganda, Zimbabwe and Tanzania to name some. Members of the TPCP research team have also undertaken trips to Zimbabwe, Mozambique, Malawi, Tanzania, Kenya and Zambia to establish collaborative research ventures with forestry companies and research organisations to establish closer contact and better exchange of information on the continent.

TPCP members, plantation manager, research officer and district forester after collecting *Chrysosporthe* in Malawi.

A reliable off-road vehicle for survey trips can sometimes be rather important…

In order to maximize the outputs from visits to other African countries it was decided that research trips north of South Africa should be done via road. Travelling by road has allowed the team to observe more trees and diseases, be more independent in their travel arrangements and importantly has allowed the team to involve students who consequently have gained substantial practical experience. With funding obtained from THRIP and the NRF, a reliable off-road vehicle was purchased and kitted out to allow the researchers to conduct microbiological research en route. For example, it was important to have an auxiliary battery so that a stereomicroscope could be powered for field isolations from diseased material. An additional fuel tank and water tank was also added, as well as a fridge/freezer to allow the group to take sufficient food with them and keep critical samples cool. To date four survey trips have been undertaken by members of the TPCP. The first was a two-week trip to Mozambique to "test" the system and survey Southern Mozambique for *Chrysosporthe* and other pathogens of *Eucalyptus* and *Syzygium* spp. The second excursion was a five-week trip all the way to Kenya and back via Malawi, Tanzania and Zambia. Two further trips have since been undertaken to Malawi, Tanzania, Zambia, Zimbabwe and Mozambique.

Surveying a pine nursery for diseases in Zimbabwe.

A field day in

Zimbabwe. These started with indoor presentations by TPCP staff and was followed by field visits to different sites with health problems.

Research surveys to foreign countries are typically physically taxing and interspersed with long hours on the road to get from one country to another. Accommodation consists of two 2-person tents to allow the group to camp and use research funds more efficiently. It also allows for a greater amount of flexibility in the travel arrangements. Fortunately helpful forestry companies such as Tanganyika Wattle Co., Kilombero Valley Teak Co. and researchers such as Dr. Pia Barklund in Nairobi have provided welcome relief from sleeping on the ground by providing wonderful accommodation with hot water, beds and sometimes also food. An average day would typically begin with meetings with researchers, foresters and farmers and then fieldwork, or directly with fieldwork. This would end at around 16:00 or 17:00 when possible, to allow for sufficient day light time to return to camp and begin with isolations from the day's samples, further processing of primary isolations from previous day's samples and to prepare food. On such field excursions, the group will work from Monday to Friday and take the weekends off to visit some of the wonderful places in the countries visited. In addition, weekends have typically provided time to wash clothes and relax a bit, in between the continual monitoring of the samples collected.

The researchers from the TPCP group involved in field surveys typically try to spend as much time as possible with foresters in the field. This allows the team to learn from the experiences of people in the field but also for the research team to share some of their knowledge of disease and pest problems. Surveys into Africa have included work on both native and exotic tree species. A number of more formal presentations and field days have been presented. These trips have allowed the group to forge new friendships, to build collaborative research efforts and to collect hundreds of fungal isolates important to several of our research outputs. Many new reports of diseases and pathogens have resulted from these first trips and we hope we will be able to continue these collaborations seeking to promote tree health in future.

A disease stop during a field day in Zimbabwe. We learn as much as we teach.

The end of a field day in Zimbabwe. All trees are not diseased, providing great hope for the future of plantation forestry in Africa.

Without funding TPCP survey trips into Africa would not have been possible. Funding has thus been obtained from a number of institutions including the British Society for Plant Pathology (BSPP), the National Research Foundation (NRF), THRIP initiative of the South African Department of Trade and Industry, TPCP and FABI. Many people from the countries visited on these survey trips have provided invaluable assistance. Our sincere thanks must thus go to Mr. & Mrs. Aza Mbagwa and Chris Bekker of TWC, Ryno Martyn of KVTC, Linus Mwangi of Kefri, Benson Kanyi of TBP, Dr. Pia Barklund of ICRAF, Gereld Meke and Will Sagona of Forestry Research Institute Malawi (FRIM), Mrs. Catherine Nguvulu of Forestry Research Institute of Zambia, George Theart of Border Timbers in Zimbabwe, Pedro Swanepoel and Jan van der Sijde of Komatiland Forests and the Mozambique Forestry Research Institute.

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