



PRESS RELEASE

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A global strategy needed for forest health and biosecurity

Forests worldwide are continually under threat from introduced insects and pathogens. This is despite the best biosecurity efforts. Without a concerted global effort to understand and control invasive pests, this problem is expected to worsen as international trade increases.

“Keeping invasive pests out of forests should be a top priority for all countries,” according to Prof Mike Wingfield, Director of the Forestry and Agricultural Biotechnology Institute (FABI) at the University of Pretoria and the lead author of a paper¹ that appears in the journal *Science* today that considers the need for a global strategy to keep planted forests healthy.

Prof Mike Wingfield and his co-authors, Profs Brenda Wingfield and Bernard Slippers from FABI, are part of the world leading Tree Protection Cooperative Programme and DST NRF Centre of Excellence in Tree Health Biotechnology that deals with these issues. For this paper they have partnered with Dr Eckehard Brockerhoff, Principal Scientist at Scion in New Zealand to consider options that might improve our ability to protect world forests from invasive pests and pathogens.

“Planted forests such as those of *Eucalyptus* and *Pinus* have been successful partly because the trees have been separated from their natural pests. The downside is that they are also vulnerable if these pests accidentally arrive or if trees encounter new pests for which they have no resistance,” they say.

“Keeping forests secure relies on an integrated approach to quarantine, treatment of imported goods, and monitoring insect traps and trees around ports and other high risk sites. But global biosecurity is only as strong as the weakest link. Many countries don’t have the resources to put biosecurity measures in place for plants and plant products. Once a pest becomes established, it can be impossible to eradicate, and the pest can use the new country as a stepping stone for further invasions.”

“Even for countries such as New Zealand that are considered world leaders in biosecurity, it is not possible to exclude all forest pests and pathogens forever. For countries such as South Africa that share borders with many other countries with variable biosecurity measures and capacities, this task becomes virtually impossible.”

“For example, pitch canker disease, caused by the pathogen *Fusarium circinatum*, is one of the worst diseases of pines. It has already invaded eight countries including South Africa, and at least some of these invasions could have been prevented through better awareness and regulation of plant movements.”²

“The only way we can realistically deal with tree pests will be through global collaboration - sharing experience and research findings. While bodies like the International Union of Forest Research Organisations (IUFRO) help to facilitate collaboration, there is no single body or funding structure to support a global strategy for dealing with pests in planted forests.”

The paper is timely because the World Forestry Congress of the Food and Agriculture Organisation of the United Nations is focussing on forest health and sustainability when it meets in September in Durban. This is one of the most important international gatherings of forestry researchers and tree health and resilience will be amongst the key topics discussed.

Forests are natural resources of global significance. They regulate climate, store carbon, prevent erosion and improve water and air quality and at least one in six people relies on forests for food and their livelihood. In South Africa, the planted forestry industry and downstream processing contributes around R45 billion a year to the economy and is the one of the largest export earners.

A crucial component in preparing for future pest invasions is not just recognising that there is a problem but also investing in research and innovation. Scientists at FABI and overseas are using techniques such as introducing natural predators (or biological control), knowledge of tree genetics and an improved understanding of forest ecosystems to develop non-chemical methods to control existing pests and to preparing for future threats.

“We have excellent opportunities to prevent the arrival of forest pests and diseases, to respond to incursions of potential threats, and to manage those that do become established. But single country strategies will not be sufficient because the threats to both planted and indigenous forests are increasing worldwide,” Prof Wingfield said.

With increasing globalisation and international trade it is important for South Africa, as is true for all countries, to maintain strong international networks to address the biosecurity challenge collectively. And importantly to establish science partnerships to assist countries that may not have the resources or expertise to implement biosecurity measures. FABI at the University of Pretoria hosts the single largest team of scientists working on tree health problems in the world. Through their strong partnership with government and industry in South Africa, this remarkable team is well positioned to lead efforts to keep forests healthy locally, and globally.

Paper and other details

¹ Wingfield MJ, Brouckhoff EG, Wingfield BD, Slippers B (2015). Planted forest health: The need for a global strategy. *Science* 349: 832-836. DOI: 10.1126/science.aac6674

² See Fig. 2 of the paper for the spread of pitch canker.



About the Forestry and Agricultural Biotechnology Institute

FABI, the Forestry and Agricultural Biotechnology Institute, at the University of Pretoria, is a post-graduate research institute that was established in 1997. This was based on a recognition that the future of forestry and agriculture in South Africa will strongly depend on the incorporation of new and emerging technologies in order to ensure the long-term security of these industries. Major opportunities for forestry and agriculture have emerged in recent times, from the applications of biotechnology and bioinformatics, amongst many others. FABI scientists undertake goal-directed research, in partnership with major players in the forestry and agricultural sectors in South Africa. In so doing, the Institute promotes both human capital and industrial development in the country.

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