TREE HEALTH IN THE INTERNATIONAL YEAR OF PLANT HEALTH: WHAT WE CAN LEARN FROM THE SARS COV-2 PANDEMIC

Mike Wingfield

WEBINAR
Forest Invasive Species: The next global pandemic?
July 29th, 2020, 10am CET

http://www.up.ac.za

Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria
www.fabinet.up.ac.za
INTRODUCTORY THOUGHTS
OBSERVATIONS FROM THE CORONA VIRUS PANDEMIC AND SOME LESSONS LEARNED
WE WERE WARNED!!
“The key point is that the world is not nearly as prepared for a massive epidemic as it needs to be”

Bill Gates

The Next Epidemic — Lessons from Ebola

Bill Gates

Perhaps the only good news from the tragic Ebola epidemic in Guinea, Sierra Leone, and Liberia is that it may serve as a wake-up call: we must prepare for future epidemics of diseases that may spread more effectively than Ebola. There is a significant chance that an epidemic that spreads through the air, rather than requiring direct contact, could occur. The North Atlantic Treaty Organization (NATO) has a mobile unit that is ready to deploy quickly. Although the system is not perfect, NATO countries participate in joint exercises in which they work out logistics such as how fuel and food will be provided, what language they will speak, and what
NOVEL PATHOGENS - ACCIDENTAL INTRODUCTIONS AND HOST SHIFTS
PINE WILT: *Bursaphelenchus xylophilus*
Diseases that are associated with ambrosia and bark beetles comprise some of the most significant problems that have emerged in trees in the last century. They are caused by fungi in the Ophiostomatales, Microascales, and Hypocreales, and have vectors in the Scolytinae (ambrosia and bark beetles) and Platypodinae ambrosia beetles) subfamilies of the Curculionidae (Coleoptera) (102,144). Some of these problems, such as Dutch elm disease (1), have extreme impacts:

In a recent book, Taleb (155) developed Black Swan Theory (BST). Unlike the “black swan” to which Mill referred (68), BST focuses on unexpected events of large magnitude and consequence (155). Taleb (155) recognized such events in diverse fields including finance, history, science, and technology. He suggests black swan events:

(i) have extreme impacts:

(ii) are unpredictable:

(iii) have significant after-effects:

(iv) often have a major influence on the future.
UNDERSTANDING PATHWAYS OF INTRODUCTION AND THE IMPORTANCE OF ACCURATE DIAGNOSES
Coronavirus COVID-19 Global Cases by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University.

Total Confirmed: 3,813

Confirmed Cases by Country/Region/Sovereignty:
- 14,991 Iran
- 9,407 Spain
- 8,236 Korea, South
- 6,672 Germany
- 5,397 France
- 2,813 US
- 2,200 Switzerland
- 1,554 United Kingdom

Total Deaths: 69
- 42 deaths: Washington US
- 6 deaths: California US
- 6 deaths: New York US
- 5 deaths: Florida US
- 2 deaths: Louisiana US
- 6 deaths: California US
- 2 recovered: Illinois US
- 1 recovered: Arizona US
- 1 recovered: Massachusetts US
- 1 recovered: Washington US
Since 1980, 70% of new pathogen introductions were likely via live plant trade

Santini et al. (2013), New Phytologist
QUARANTINE IS DIFFICULT, IMPORTANT AND IT CAN WORK!!
INNOVATION AND TECHNOLOGY ARE CRUCIALLY IMPORTANT DRIVERS
Ion Torrent PGM as Tool for Fungal Community Analysis: A Case Study of Endophytes in *Eucalyptus grandis* Reveals High Taxonomic Diversity

Martin Kemler1*, Jeff Garnas2, Michael J. Wingfield1, Marieka Gryzenhout3, Kerry-Anne Pillay1, Bernard Slippers1

December 2013
ENGAGEMENT WITH GOVERNMENTS TO PROMOTE EVIDENCE-BASED POLICY IS CRUCIALLY IMPORTANT
Perspectives on Five Years as IUFRO President

Mike Wingfield

29th June 2020
THERE ARE NO SILVER BULLETS OR MAGIC CURES
A new wilt and die-back disease of *Acacia mangium* associated with *Ceratocystis manginecans* and *C. acaciivora* sp. nov. in Indonesia

M. Tarigan a,c, J. Roux a,b, M. Van Wyk b, B. Tjahjono c, M.J. Wingfield a
MILESTONE IN BIOLOGICAL CONTROL

This plaque commemorates the discovery of an egg parasite of the Australian eucalyptus snout-beetle, Gonipterus scutellatus Gyll, by Dr F.G.C. Tooke, a South African entomologist, in 1926, at Penola, South Australia. The snout-beetle, accidentally introduced from Australia into South Africa early this century, became widespread and caused immense damage to gum trees. The introduction of the parasite, Anaphoidea nitens Girault, brought about a remarkable biological control of the eucalyptus snout-beetle in South Africa. The first release of the parasite in this Province was made at this site in November 1926 by Mr G. Hepburn.

More information regarding current tree health research in South Africa including that relating to this monument can be found at:

www.fabinet.up.ac.za

© Morne Booi-Liewes

© Carlos Rodas
COLLABORATION, COMMUNICATION BETWEEN SCIENTISTS CANNOT BE OVER ESTIMATED
Planted forest health: The need for a global strategy

M. J. Wingfield, E. G. Brockerhoff, B. D. Wingfield, B. Slippers
FABI RESEARCH NETWORKS
COLLABORATE!! GLOBAL PROBLEMS REQUIRE GLOBAL SOLUTIONS!!

Credit: JH Nagel, L Bezuidenhout, J Queffelec
FINALLY!!
It takes a wise man to learn from his mistakes, but an even wiser man to learn from others.

Zen proverb
“KEEPING TREES HEALTHY”