pathogens. In a limited field trial it gave a much better result than a commercial fungicide even though it was used at a quarter of the dose of the commercial fungicide. The results have been patented and a product is under development.

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Invasive and weedy species can be used as a source of antifungal compounds to control plant fungal pathogens

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In a systematic screening of the antibacterial and antifungal activity of extracts of leaves of 350 tree species, we have found that many have excellent antifungal activities with minimum inhibitory concentrations values as low as 20 μg/ml. Some of these extracts may be commercially useful. The difficulties in establishing large numbers of trees limited the early exploitation of these results. Obtaining large quantities of invasive species should however not be a problem. One possible reason why invasive and weedy species are so successful is that they may be able to withstand infections more readily than other species. We therefore started investigating invasive species and have found substantial activities against *Penicillium janthinellum*, *Penicillium expansum*, *Aspergillus niger*, *Aspergillus parasiticus*, *Colletotrichum gloeosporioides*, *Fusarium oxysporum*, *Trichoderma harzianum*, *Phytophthora nicotiana*, *Pythium ultimum* and *Rhizoctonia solani*. Here we report on results obtained with *Cestrum laevigatum* (flowers and leaves), *Nicotiana glauca* (flowers, leaves and seeds), *Solanum mauritianum* (fruits and leaves), *Lantana camara* (fruits, flowers and leaves), *Datura stramonium* (seeds), *Ricinus communis* (leaves) and *Campuloclinium macrocephalum* (leaves and flowers). The extracts from *C. laevigatum* and *L. camara* leaves were the most active with MIC values of 0.08 mg/ml against *C. gloeosporioides* and *F. oxysporum*, respectively. The extract from 1 g of *C. laevigatum* could be diluted to 1660 ml and still inhibit the growth of *C. gloeosporioides*. The acetone extracts of leaves had a higher activity than fruit or flowers in all cases. The antifungal compounds were also evaluated qualitatively by bioautography. Some extracts had up to five different antifungal compounds based on R_f values. The same compound may be responsible for the antifungal activity of several species based on the R_f values. Several antifungal compounds have also been isolated from some of these species already.

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The movers and the shakers: Invasive Alien Plant dispersal interactions with disturbances

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We consider how *movers* (Invasive Alien Plant (IAP) vectors) that disperse seeds in creeps and jumps at different spatial and temporal scales, and *shakers* (natural and man-made disruptions of established natural vegetation), synergistically provide opportunities for the transported propagules to establish in the most vulnerable parts of South African ecosystems. In addition to being shaken, ecosystems are now increasingly being "stirred" by accelerating fragmentation, transformation, pollution and shifts in temperature and rainfall seasonality. We predict that these will accelerate the spread of IAPs. Are we faced with all-out warfare or do we need to accept a new world order? Awareness of the processes and their synergistic interaction should be used to guide management actions, particularly for linear corridors such as road, rail and powerline servitudes.

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Using stable water isotopes to determine the depth of water used by different sizes of savanna trees

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Savanna ecosystems are characterized by the co-existence of two different life forms — trees and grasses. How these two very different life forms coexist, without one dominating the other, and what mechanisms determine the proportions of each, has been a central question in savanna ecology (Scholes and Archer, 1997). Walter (1971) first proposed the idea that trees and grasses exploit different rooting niches with grasses using superficial soil layers and trees using deeper layers. This model for co-existence does not, however, take into account the establishment and juvenile stages of tree growth prior to maturity as it is in these stages of tree growth that there may well be competition with grasses. Using stable hydrogen and oxygen isotope ratios of the xylem water compared with borehole and rain water for the same month we look at three different size classes of trees to gain a better understanding of the water source for these size classes.

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