

## **CERATOCYSTIS AND OPHIOSTOMA: INTERNATIONAL BOUNDARIES AND TRADE ISSUES**

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Ophiostomatoid fungi include a relatively large number of the worlds most important and damaging plant pathogens. Taxonomic treatments, particularly during the last two decades, have shown that they reside in two completely different orders of fungi. These differences are also strongly reflected in their biology and in the threat that they pose to new environments. Species of *Ophiostoma* are most typically vectored by bark beetles that infest trees. They include the causal agents of Dutch Elm disease (*O. ulmi* and *O. novo-ulmi*), black-stain root disease (*Leptographium wageneri*) and Takamaka disease (*L. calophylli*). Numerous *Ceratocystis* species are also causal agents of serious tree diseases, of which most are casually vectored by nitidulid beetles and flies, and only a small number are associated with bark beetles. These fungi include the causal agent of oak wilt (*C. fagacearum*), canker stain disease of *Platanus* (*C. platani*), *Ceratocystis* wilt of black wattle (*C. albifundus*), various pathogens currently treated as *C. fimbriata* species complex for which names have not yet been applied. Various *Ceratocystis* species are also serious pathogens of agronomic crops such as sweet potato (*C. fimbriata sensu stricto*) and a wide range of root crops including groundnuts and carrots (*Thielaviopsis elegans*). The association of *Ophiostoma* species and some *Ceratocystis* species or their asexual states with bark beetles has resulted in numerous cases of introductions to new environments and in a number of devastating disease problems. The fact that many *Ceratocystis* species not associated with bark beetles produce fruity aromas to attract their vectors has clearly also facilitated their spread to and within new environments. Those that are soil-borne pathogens have most certainly moved around the world through trade in root crops. Many Ophiostomatoid fungi are clearly, therefore, pathogens of substantial quarantine concern that are well suited to movement across national boundaries. Their importance as pathogens of global concern is likely to increase in the future.