

Dieback disease of bitoubush - biological control opportunities

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Bitoubush (*Chrysanthemoides monilifera* subsp. *rotundata*) and boneseed (subsp. *monilifera*) are invasive weeds of coastal sand dunes in eastern Australia. Bitoubush is present along 60% of the coastal zone in New South Wales and it is the dominant vegetation on >20% of the coastline. In many places it eliminates the original flora. Naturally occurring diseases (leaf lesions and/or dieback of stems and branches) are relatively common. The most prevalent dieback symptom was a sunken stem necrosis extending 10-60 cm down the stem with a clearly defined interface between necrotic and healthy tissue. Forty-eight sites were surveyed along the NSW coast between spring 1992 and autumn 1994. At each site dieback lesions, leaf lesions and symptomless tissue were sampled at random. Isolations from over 600 samples yielded 2535 fungal isolates from 55 genera but the majority of species occurred infrequently. The genera *Stemphylium*, *Phomopsis*, *Fusarium*, *Alternaria*, *Phoma* and *Botryosphaeria* were the most frequent fungi isolated from the common dieback symptom. No single species was exclusively associated with a particular symptom and all six of the most frequently isolated species were also associated with symptomless tissue. Representative isolates are being screened for pathogenicity.

Host specificity tests in centres of diversity: the case of sicklepod (*Senna obtusifolia*)

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The species *Senna obtusifolia* (L.) Irwin & Barneby belongs to the section *Chamaefitula* ser. *Trigonelloideae* of the genus *Senna*, and is native to the Neotropics. It has a wide geographical distribution in tropical regions in America, Asia and Africa. South America has many centres of distribution of this species, where it co-occurs with seven closely related wild species of the genus *Senna*. Host-specificity tests developed as part of the biological control programme against *S. obtusifolia* with the fungus *Alternaria cassiae* in Brazil include many wild species belonging to the Leguminosae - Caesalpinoidea, as well as crop and weedy species of the same subfamily. The results showed that infection symptoms by *A. cassiae* were observed in six related plant species of the genera *Cassia* and *Senna*. However, in none of these species were the symptoms severe enough to kill the plant. Three wild species that are close relatives and co-occur with *Senna obtusifolia* in Brazil (*S. mucronifera*, *S. leiophylla* and *S. pentagonia*) have not been tested yet. Five species of *Crotalaria*, three of *Stylobium*, *Canavalia ensiformis* and *Cajanus cajan*, belonging to the Leguminosae - Papilionoideae, were slightly susceptible to the pathogen. Plants of economic importance, such as *Glycine max* (soybean), *Phaseolus vulgaris* (common bean) and *Lens esculenta* (pea), which belong to the Papilionoideae, were immune to *A. cassiae*. Twenty non-Leguminosae genera were also immune to the fungus. Other greenhouse and field tests must be conducted to assure the safe use of *A. cassiae* as a bioherbicide.