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Biological Control of the Noogoora Burr Complex with Naturally Occurring Fungi in Australia[1]

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The Noogoora burr (cocklebur) complex in Australia consists of 4 closely-related *Xanthium* spp. considered among the most important weeds of the temperate regions of the world. A survey of fungal diseases on *Xanthium* spp. (other than *X. spinosum*) was undertaken during the late summer months of 1990 in New South Wales and Queensland, and during April 1991 in the Northern Territory and the north of West Australia. The rust, *Puccinia xanthii*, was most prevalent and severe in south-east Queensland but it also occurred in the other States surveyed. In Queensland, leaf, petiole and stem lesions were common and adversely affected growth of plants but rarely killed them. Several soil-borne pathogens were isolated from the stems of wilting plants. Other fungi including *Phomopsis*, *Colletotrichum* and *Alternaria* spp. were isolated from various disease symptoms on *Xanthium* spp. The pathogenicity of the fungi was assessed in an attempt to evaluate their potential to be developed as mycoherbicides. Mild symptoms in the form of chlorotic flecks were observed on most of the Noogoora burr plants inoculated with *Colletotrichum* spp. *Alternaria zinniae* and the obligate parasite *P. xanthii* were the most virulent pathogens. The pathogenicity of *A. zinniae*, however, extended to several other plant species tested. The biology of *P. xanthii* and its host-pathogen relationship with Noogoora burr were studied in more detail. Interactions between pathogens on *Xanthium* spp. are being investigated in an attempt to understand the various host-pathogen relationships and as a means of controlling these weeds.

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