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Host Specificity Studies of the Pathogen *Mycovellosiella lantanae* var. *lantanae* for the Biological Control of *Lantana camara* in South Africa

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Lantana camara L. is a poisonous, bushy shrub from South and Central America which has invaded many of the moist, warm sub-tropical parts of South Africa. It rapidly reinvades disturbed areas or areas cleared of other weeds. An isolate (C386) of a leaf pathogen, *Mycovellosiella lantanae* var. *lantanae*, which causes extensive defoliation of the plant, was collected in Florida, USA, and subsequently inoculated in quarantine onto South African biotypes of *L. camara* and a number of closely-related species, i.e. *Clerodendrum glabrum*, *Duranta repens*, *Lantana rugosa*, *Lippia javanica*, *Lippia rehmannii*, *Lippia scaberrima*, *Phylla nodiflora*, *Stachytarpheta* sp., *Verbena bousariensis*, and *Verbena brasiliensis*, to determine its host specificity. None of the potential alternate hosts showed any symptoms of infection and no signs of hyphal growth were observed. Inoculation of *L. camara* with the same isolate caused chlorotic, grey lesions (20-60 per leaf), and necrosis of flower buds and stalks, as well as defoliation of some plants after three weeks. This indicates a very restricted host range, making this pathogen a promising control candidate which should reduce the vigour and reproductive potential of the plant.

Host Specificity of *Algarobius bottimeri* and *Algarobius prosopis* in Australia

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The mesquite bruchids (*Algarobius bottimeri* and *Algarobius prosopis*) were tested for host specificity as biological control agents of mesquite, *Prosopis* spp., in Australia, following their release in South Africa. In multiple-choice tests in which test-plant pods and mesquite pods were placed close together, both *A. bottimeri* and *A. prosopis* oviposited heavily on pods of most non-mesquite test plants as well as on mesquite pods. Both bruchids developed through to adults in low numbers in seeds of *Acacia aneura, Petalostylis labicheoides, Neptunia gracilis,* and *Arachis hypogaea* with much longer development times than in mesquite seeds. *Algarobius prosopis* also developed in

Caesalpinia decapetala. No development occurred in the remaining test-plant pods. When tested in a large cage in which pods of *A. aneura, P. labicheoides, N. gracilis, C. decapetala*, and *A. hypogaea* were placed 1.5 metres from mesquite pods, females of both bruchids oviposited only on the mesquite pods. These experimental results indicate that *A. bottimeri* and *A. prosopis* females oviposit on non-host pods in very close proximity to mesquite pods but not on non-host pods separated from mesquite pods. Such close proximity in the field could only occur if there was physical overlap between mesquite plants and non-target plants. Mesquite infestations do not occur in areas where the native *C. decapetala* grows or the introduced *A. hypogaea* is grown, but do occur in areas where *A. aneura, P. labicheoides*, and *N. gracilis* are endemic. It is possible that such overlaps occur or will occur in the future. Indehiscent mesquite pods retain their seeds long after pods drop. Pods of *A. aneura* and *P. labicheoides* shed their seeds at maturity. *Neptunia gracilis* retains its seeds in pods on the plant for some time before it releases seeds. A small proportion of *A. aneura* and *N. gracilis* pods may retain some seeds after falling to the ground. Were occasional physical overlap to occur, actual intermingling of *A. aneura, N. gracilis*, or *P. labicheoides* pods retaining seeds with mesquite pods would be a rare event and oviposition on no-target pods even rarer. *Algarobius bottimeri* and *A. prosopis* females oviposit in cracks in mesquite pods in preference to the smooth surface of mesquite pods lacking cracks. The chance of mistaken oviposition on smooth naked non-target seeds is low. The pod oviposition habits of the bruchids combined with the different fates of pods and seeds of mesquite and of *A. aneura, P. labicheoides*, and *N. gracilis* minimise the possibility of accidental non-target oviposition in the field. *Algarobius bottimeri* and *A. prosopis* pose no threat to *A. aneura, N. gracilis,* or *P. labicheoides* and are specific to *Prosopis* and safe to release in Australia. Approval for their release was sought and granted. Both species have been released.

Exploring the Host Range of *Fusarium tumidum*, a Candidate Bioherbicide for Gorse and Broom in New Zealand

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Gorse (*Ulex europaeus*) and broom (*Cytisus scoparius*), both members of the Fabaceae, are important weeds that reduce the productivity of pastures and plantation forests in New Zealand. At Landcare Research, work continues towards developing the fungus *Fusarium tumidum*, which occurs naturally in New Zealand, as a bioherbicide against these weeds. While a bioherbicide capable of affecting both gorse and broom would be commercially attractive, especially to agriculturalists and the forestry industry, it is important to determine whether other plants likely to come into contact with the prototype bioherbicide in the field could also be susceptible to the fungus. Key plants of inter-