

DISTRIBUTION OF SILVERLEAF NIGHTSHADE (*SOLANUM ELAEGNIFOLIUM*) IN THE SHEEP/WHEAT BELT OF NEW SOUTH WALES

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Silverleaf nightshade (*Solanum elaeagnifolium*) is a major perennial weed of New South Wales, Victoria and South Australia. It competes with summer crops and pastures and can reduce winter crop production by soil nutrient and moisture depletion during seedbed preparation. All parts of the plant, particularly the fruits are toxic to grazing livestock. Silverleaf nightshade is difficult to eradicate due to its extensive root system. A survey conducted in 1977 showed there was 20,000 ha of land infested with silverleaf nightshade in New South Wales.

In spring 1992 a survey of the sheep/wheat belt of New South Wales was conducted to ascertain the distribution and density of infestation of silverleaf nightshade. The survey was done on a local government area basis using NSW Agriculture's district agronomists. The results showed a total of 139,000 hectares of land was infested with the weed (16,000 ha dense infestation). This is nearly a seven fold increase in the area infested since 1977.

HOST SPECIFICITY OF THE BRUCHID *MIMOSESTES ULKEI*, AS A BIOLOGICAL CONTROL AGENT FOR *PARKINSONIA ACULEATA* IN AUSTRALIA

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In host specificity tests, the North American seed beetle *Mimosestes ulkei* was found to be a host specific biocontrol agent for the woody weed *Parkinsonia aculeata*.

M. ulkei was imported from Arizona, USA for host specificity testing in quarantine. Multiple choice oviposition tests were carried out on pods of a range of legumes and on seeds of a range of non-legumes. Forty-nine plant species were tested, with *P. aculeata* controls. Egg and larval development on test pods was studied.

Oviposition occurred on pods of 19 legume test species. Many more eggs were laid on *P. aculeata* pods than on the test species' pods. First instar larvae penetrated the seed coats of 11 test species, but either retreated from the seed or made very short tunnels and died *in situ* without further development. Some pods had barriers preventing larvae from reaching seeds. Seeds attacked by larvae had mechanisms that discouraged feeding or actively killed larvae so that none were able to develop to become adults. Adults developed only in *P. aculeata* seeds.

Failure of *M. ulkei* to develop in any test plant seeds showed that it is specific to *P. aculeata* and safe to release in Australia. The Australian Quarantine and Inspection Service has approved *M. ulkei* for field release.