

INSECTICIDE EXCLUSION WITH CARBOFURAN DEMONSTRATES THE
EFFECTIVENESS OF *HETEROPSYLLA SPINULOSA* AS A BIOLOGICAL CONTROL
AGENT FOR *MIMOSA INVISA* IN NORTH QUEENSLAND

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Seed production, growing tip elongation and growth rate were compared between an insect-infested and insect free clump of giant sensitive plant, *Mimosa invisa*, at Mena Creek in north Queensland. Carbofuran applied at 45 kg a.i./ha effectively excluded establishment of *Heteropsylla spinulosa*. *H. spinulosa* reduced seed production by 80% (average number of seeds per pod no insects 60: insects 12), growing tip elongation by 77% (average stem length between the first and second fully expanded leaves no insects 1.65 cm: insects 0.38 cm), and the growth rate of tips by 50% (stem elongation from tagged tips measured after a 12 week period no insects 1.5 m: insects 0.7 m).

Insect exclusion clearly demonstrated the impact of *H.spinulosa* on *M.invisa* in north Queensland pasture infestations and supported other data collected over four years. Field exclusion experiments are an under-rated post-release technique for quantitatively evaluating the effect of introduced biological control agents. This technique readily segregates the impact of the insect control agent(s) from other variables affecting weed growth such as climate and nutrition.

THE SIGNIFICANCE OF AMARANTHS AS WEEDS OF CROPS IN TASMANIA

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A survey of DPIF staff, growers, vegetable processors and agricultural consultants provided information on amaranth occurrence in Tasmania. These groups see Powell's amaranth, *Amaranthus powellii*, as the major amaranth weed problem, with redroot amaranth, *A. retroflexus*, as a minor problem. The most serious occurrence of Powell's amaranth was in green bean and summer brassica crops grown on Tasmania's north-west coast. In Southern Tasmania, Powell's amaranth was reported as a minor problem. The north-east and central regions of Tasmania did not have any major problems with amaranth but recognised it as a potential weed problem. The main form of amaranth seed transmission in the north-west of the state was thought to be via harvesting equipment and other farm machinery. A number of strategies, including inter-farm hygiene are being considered by the DPIF to control Powell's amaranth in green bean and summer brassica crops.