

Use of cover crops as weed management tools in sugarcane fallow

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Summary In the Wet Tropics, new cost effective weed management strategies in sugarcane must be developed to reduce the reliance of herbicides and comply with the 60% reduction in pesticide pollutant loads under the ReefPlan program.

Two replicated trials investigating the weedicide potential of several cover crops and blends that could be used in sugarcane fallows were implemented in fallow blocks at Meringa, Queensland.

Trials were designed as split plots with three replicates. Five treatments were compared: *Vigna unguiculata* (L.) Walp cultivar Ebony, *Dolichos lablab* L. cultivar Rongai, a blend of *V. unguiculata* and *D. lablab* (50/50), a blend of *V. unguiculata*, *D. lablab* and *Canavalia ensiformis* (L.) DC. (40/40/20) and a blend of *V. unguiculata*, *D. lablab* and *Echinochloa esculenta* (A. Braun) H. Scholz variety Shirohie (40/40/20). Each treatment was tested at two sowing rates (green manure rate/twice green manure rate) and managed with and without herbicide control.

Cover crop and weed coverages were calculated (using photographic assessment) every second weed and dry biomass and nitrogen available for the following crop were measured after the cover crop was sprayed out.

Results show that the best cover crops to reduce weed coverage were either *V. unguiculata* alone or mixed 50% with *D. lablab*. Adding *C. ensiformis* or *E. esculenta* to the mix did not significantly improve the ground coverage. The high sowing rate tended to increase the speed of legume establishment and ground coverage and slightly decrease the amount of weeds (no significant differences). Managing weeds (with herbicide) was unnecessary and even slightly decreased the legume biomass. The amount of available nitrogen provided by the leading treatments was around 140 kg N ha⁻¹.

Keywords Cover crop, lablab, cowpea, sugarcane, green manure.