

Control of Witchweed *Striga hermonthica* by Intercropping with *Desmodium* spp., and the Mechanism Defined as Allelopathic

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Abstract

During investigations into the control of insect damage to maize crops in subsistence farming in Kenya, which involved intercropping with repellent plants, the fodder legumes silverleaf (*Desmodium uncinatum*) and greenleaf (*D. intortum*) were also found to reduce dramatically the infestation of maize by parasitic witchweeds such as *Striga hermonthica*. This effect was confirmed by further field testing and shown to be significantly greater than that observed with other legumes, e.g., cowpea, as were the concomitant yield increases. The mechanism was investigated, and although soil shading and addition of nitrogen fertilizer showed some benefits against *S. hermonthica* infestation, a putative allelopathic mechanism for *D. uncinatum* was observed. In greenhouse studies, a highly significant reduction in *S. hermonthica* infestation was obtained when an aqueous solution, eluting from pots in which *D. uncinatum* plants were growing, was used to irrigate pots of maize planted in soil seeded with high levels of *S. hermonthica*. Growth of the parasitic weed was almost completely suppressed, whereas extensive infestation occurred with the control eluate. Laboratory investigations into the allelopathic effect of *D. uncinatum*, using samples of water-soluble chemical components exuded from cleaned roots, demonstrated that this involved a germination stimulant for *S. hermonthica* and also an inhibitor for haustorial development.