Factors Affecting the Biological Control of *Leucaena leucocephala* in South Africa

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Abstract

Leucaena leucocephala (Lam.) de Wit (Fabaceae) is a typical 'conflict' species that has become naturalized in several tropical, subtropical and warm temperate countries worldwide, following deliberate introductions for agroforestry. In South Africa, the plant constitutes an 'emerging weed' that is considered to be in the early stages of invasion. Several features, notably the plant's ability to produce excessive numbers of seeds all year round, have facilitated the invasion of forest margins, riparian zones and other disturbed areas. Deliberate biological control efforts have been confined to South Africa, where a seed-feeding beetle, *Acanthoscelides macrophthalmus* (Schaeffer) (Chrysomelidae: Bruchinae), was tested and released to restrict the plant's spread, without negating its benefits. However, the program has been opportunistic and low key with little evaluation of progress. This contribution thus examines some of the factors that could influence the program's outcome namely: (i) whether dehisced seeds escape 'predation' by the beetle; (ii) whether the beetle is able to inflict significant and consistent damage in the field; and (iii) whether the beetle's immature stages are susceptible to native predators and parasitoids. Results so far have indicated that: loose seeds are less attractive than canopy-held seeds in pods; beetle damage is consistent but variable and; native natural enemies inflict appreciable levels of mortality. The implications of these factors for the biological control of *L. leucocephala* are discussed.