Pre-release studies on *Lixus aemulus*, a new biocontrol agent on *Chromolaena odorata*: biology, host range and impact

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Stem-attacking insects are an important element in attempts to suppress *Chromolaena odorata* (Asteraceae) using biological control. In the quarantine laboratory, adults of the stem-borer *Lixus aemulus* (Coleoptera: Curculionidae) feed on the young leaves of *C. odorata*. Between one and about eight eggs are laid per stem, just above the nodes. The larvae hatch after a week and tunnel inside the stem, feeding mainly on the pith. Pupation takes place in a chamber inside the stem, and in summer the adult progeny emerge three to four months after oviposition. Average adult lifespan is between three and six months with a maximum of one year. Results from no-choice tests indicate that although *L. aemulus* adults can feed on a wide range of asteraceous species, oviposition and larval development is largely confined to members of the tribe Eupatorieae, with preference for plants with young, non-woody, upright stems containing pith and having a minimum diameter of about 3 mm. Plant species from which adult progeny were obtained in the no-choice tests (five South African weeds of American origin and one indigenous weed) were used in single-choice tests with *C. odorata*. In these tests, *Ageratum conyzoides* was the only species that approached *C. odorata* in terms of adult feeding and oviposition. Because *L. aemulus* was collected from a different biotype of *C. odorata* to that invasive in southern Africa, multi-choice tests were set up to determine adult preference for different *C. odorata* biotypes, but no strong patterns emerged. Results from damage trials conducted in the laboratory indicate that *L. aemulus* larval development markedly decreases stem growth rate, often causes die-back and dramatically suppresses achene production. Pre-release studies therefore suggest that *L. aemulus* is host specific and a potentially damaging agent. Permission for its release in South Africa is pending.