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“Reconcile land system changes  
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## Performance of *Trichogramma* spp. on *Spodoptera frugiperda* (J.E. Smith) (Lepidoptera: Noctuidae) eggs at laboratory

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### Abstract

The fall armyworm (FAW), *Spodoptera frugiperda* (Smith), is a significant pest threatening crops like maize across Africa. Globally, measures to combat *S. frugiperda* have predominantly relied on chemical interventions, yet the effectiveness of such methods is waning due to the development of pesticide resistance, necessitating sustainable pest management alternatives. The genus *Trichogramma* has gained widespread recognition for its application in managing Lepidopteran pests across various crops. This study evaluates the efficacy of five *Trichogramma* species as biological control agents against FAW egg under laboratory conditions. Freshly collected eggs of the FAW, obtained from a laboratory rearing at the JKI, were exposed to adults of the various *Trichogramma* species. The number of parasitized eggs on filter paper (10 per replicate) were counted as soon as they turned black as indication of successful parasitism. The number of adult *Trichogramma* that hatched from a single FAW egg was also determined. Results showed that the parasitism rate was 86.7 % for *Trichogramma achaeae*, 73.3 % for *T. bourarachae*, 73.3 % for *T. dendrolimi*, 73.3 % for *T. nerudai* and 76.7 % for a species originally collected from Tunisia (*T. spp* (Tunisia)), respectively. The number of adult *Trichogramma* emerging from a single FAW egg was found to be 2.6 wasps for *T. achaeae*, 2.6 wasps for *T. bourarachae*, 2.6 wasps for *T. dendrolimi*, 2.2 wasps for *T. nerudai* and 2.5 wasps for *T. spp* (Tunisia). The study also included an experiment in which different number of eggs of FAW were exposed to adults of two *Trichogramma* species. Results here showed that the parasitism was 59.0 % for *T. bourarachae* and 97.6 % for *T. spp* (Tunisia) on average. In another experiment in which two-day-old eggs of FAW were exposed to adults of *Trichogramma* spp, the observed parasitism was 56.7 % for *T. bourarachae* and 100 % for *T. spp* (Tunisia). In general, the results indicated that all tested *Trichogramma* species were able to successfully parasitize the FAW eggs. Their potential use in integrated pest management programmes to control FAW infestation should be further investigated.

**Keywords:** Biological control, IPM, parasitism, *Spodoptera frugiperda*, *Trichogramma* spp