

Natural Enemies of the Fall Armyworm (*Spodoptera frugiperda*, Smith) and Comparing Neem Aqueous Extracts against Its Larvae in Gurage Zone, Central Ethiopia

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Abstract : *Spodoptera frugiperda* is an invasive insect pest that infests and feeds various crops, particularly affecting maize yields. However, nature has its own way of maintaining balance, and in this case, natural enemies play a crucial role in regulating the population of *S. frugiperda*. Locally available and easily prepared botanical sources, bio-pesticides, are also important. The objectives of the study were to investigate the natural enemies of *S. frugiperda* in the Gurage zone and to compare Neem aqueous extracts against its larvae in central Ethiopia. *S. frugiperda* larvae and egg masses were collected randomly from smallholder maize farms infested with pests between June and August 2023. Our findings revealed the existence of diverse types of parasitoids, predators, and entomopathogenic fungi associated with *S. frugiperda*. Notably, we documented three species of parasitoids, namely *Exorista xanthaspis* and *Tachina* spp. (Diptera: Tachinidae) and *Charops annulipes* (Hymenoptera: Ichneumonidae). All three species of parasitoids were recorded from Ethiopia for the first time. The overall parasitism rate was 5.3%, with individual rates ranging from 1.3 to 4%. Additionally, we identified ten species of predator insects from four different orders, including Hemiptera, Dermaptera, Coleoptera, and Mantodea, in the maize farms infested with *S. frugiperda*. Aqueous extract of Neem seed and leaf powder and green leaf exhibited similar mortality rates of *S. frugiperda* larvae at 72 hours even though there was a significant difference at 24 and 48 hours of the test. For effective management of *S. frugiperda* further research is necessary to fully exploit the potential of these natural enemies and additionally to use botanical source pesticides like *Azadirachta indica*.

Keywords : bio-pesticide, natural enemy, parasitoids, predators, Tachinid flies

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