What natural enemies are associated with the fall armyworm *Spodoptera frugiperda* Smith in Burkina Faso?

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1 Introduction

❑ The **fall armyworm** *Spodoptera frugiperda* Smith has recently **invaded sub-Saharan African** countries where it causes **significant losses** to farmers since 2016.

❑ The adverse **effects of chemical insecticides** on human health, environment and living organisms make **biological control** a **alternative** to control this pest.

❑ In this study, we aimed to identify **natural enemies** that control this pest in Burkina Faso.

2 Methods

Sampling sites

♦ Collection of fall armyworm eggs, larvae and predatory arthropods from infested maize fields.

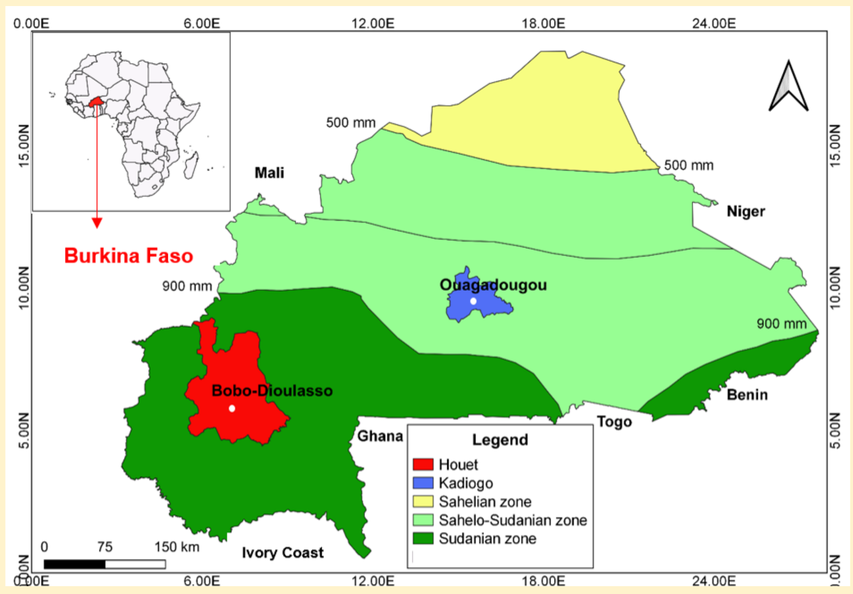


Fig. 1. Sampling locations in Houet (11°20'N, 4°15'W) and Kadiogo (12°20'N, 1°30'W) provinces (Burkina Faso).

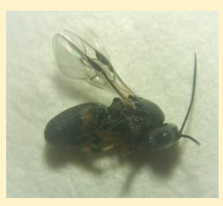
Laboratory rearing and identification of natural enemies

▪ Rearing of insects with fresh maize leaves (fall armyworm) or fall armyworm eggs and larvae (natural enemies);
▪ Checking of emerged parasitoids from fall armyworm eggs and larvae;
▪ Identification of natural enemies using identification keys and databases of GBIF and CABI.

3 Results

♦ Parasitoids (05)

Chelonus bifoveolatus sucking the hemolymph from larva



Adult of *C. bifoveolatus*

Coccygidium luteum

Drino sp.

Unidentified Diptera

Unidentified pupae of gregarious larval endoparasitoid

Fig. 2. Parasitoids of fall armyworm.

♦ Entomopathogens (02)

Nematode emerged from host on maize leaf

Infective juveniles of mermithid

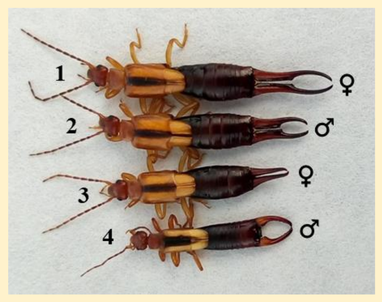
Momified fall armyworm larvae on maize

Larvae killed by the isolated fungus in the laboratory

Fig. 3. Entomopathogenic nematode and fungus

♦ Predators (11)

Eggs and larvae attacked by earwigs



1-2: *Forficula senegalensis*, 3-4: *Diaperasticus erythrocephalus*

Larvae attacked by ants

Cheilomenes sulphurea eating larvae

Calleida sp. eating larva

Rhynocoris sp. eating larva

Mantis eating larva

Carabidae eating larva

Pentatomid eating larva

Spider on a maize plant

Fig. 4. : Predators of fall armyworm

4 Conclusion

• Several natural enemies have widened their niche by adapting to fall armyworm as a new host or prey.

• To harness the control potential of natural enemies against the fall armyworm (conservation biological control), one must:

❖ Increase plant and floral biodiversity with border plants and refuge plants attract and preserve these natural enemies.

❖ Preserve these natural enemies through the rational use of selective insecticides that effectively control the fall armyworm.

❖ Train farmers on the recognition and preservation of natural enemies and on the implementation of cultural practices that favour their action.

Acknowledgements

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