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## Book of Abstracts



### Vertebrates contribute to natural control of the millet head miner in tree-crop agroforestry systems

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The millet head miner, *Heliocheilus albipunctella* (Lepidoptera, Noctuidae), is a major constraint to millet production in sub-Saharan Africa. In the absence of any insecticide application by farmers, millet production relies on pest regulation by natural enemies [1]. However, the continued delivery of such ecosystem service is threatened by biodiversity loss due to simplification of land uses in agricultural landscapes. A better understanding of factors driving natural pest control is a major challenge for designing sustainable cropping systems [2]. The objective of the present study was to assess the association between canopy openness in traditional tree-crop agroforestry systems, richness and abundance of birds and bats, and their role in the natural regulation of the millet head miner.

Ten study sites were selected in a 50 km<sup>2</sup> area in the Peanut basin in Senegal. In each site, a couple of millet fields were selected according to canopy openness and tree species richness. Monitoring of birds and bats, pest regulation and crop damage was carried out. Nine insectivorous bird and bat species were observed and their predator status confirmed by direct observation or DNA analysis on feces. Egg infestation of panicles was greater in open fields (+25%) and negatively correlated with bird abundance ( $P = 0,034$ ). Grain losses were reduced when birds had access to panicles. Further research is needed to better understand relationships between trees, food webs and biological control.



Grey-headed sparrow (*Passer griseus*) eating a larva of the millet head miner

**Keywords:** biological control, biodiversity, birds, bats, Africa.

#### References:

1. Soti et al., 2019, Biol Control, doi.org/10.1016/j.biocontrol.2018.10.006
2. Brévault & Clouvel, 2019, Crop Prot, doi.org/10.1016/j.cropro.2018.09.003