Université Cheikh Anta DIOP de Dakar (UCAD)

Seasonal abundance of major cabbage insect pests and their natural enemies in Senegal

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Programme AIRD Peers-Biobio

Introduction

- In Senegal, insect pests are a major constraint to the improvement of yield and quality of vegetable crops

- Chemical control is the main strategy developed by farmers to protect their crop -> loss of biodiversity, resistance, etc.

- Need to design **ecologically-based** pest management strategies

Lepidopteran pests of cabbage

Plutella xylostella

Lepidopteran pests of cabbage

Plutella xylostella

Helulla undalis

Chrysodeixis chalcites

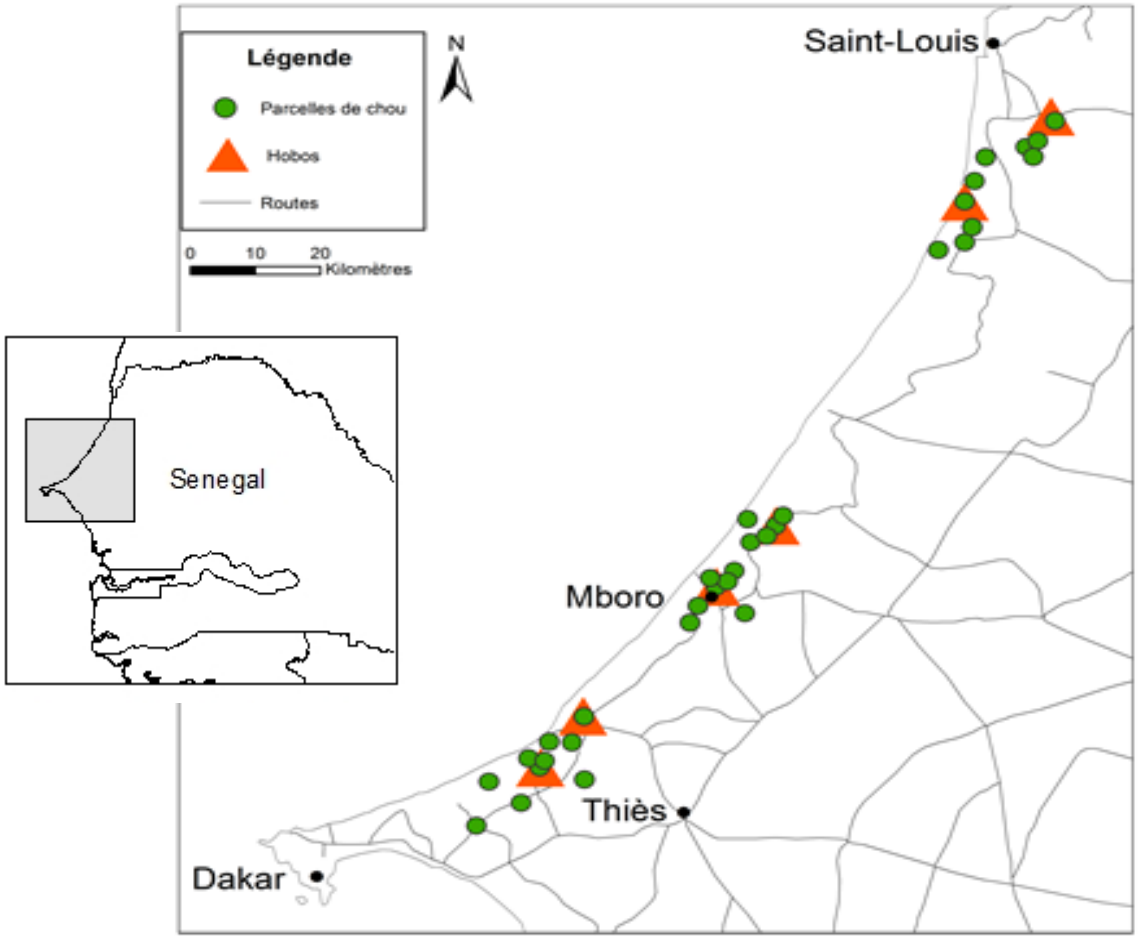
Crocidolomia binotalis

Objectives

1. Characterizing the **major insect pests of cabbage** in the main vegetable-producing area in Senegal (Niayes),

2. Evaluating the impact of **pest management practices** and **natural enemies** (especially parasitoids) on the regulation of the diamondback moth, ***Plutella xylostella*** (Lepidoptera: Plutellidae) populations.

Study area (Niayes)



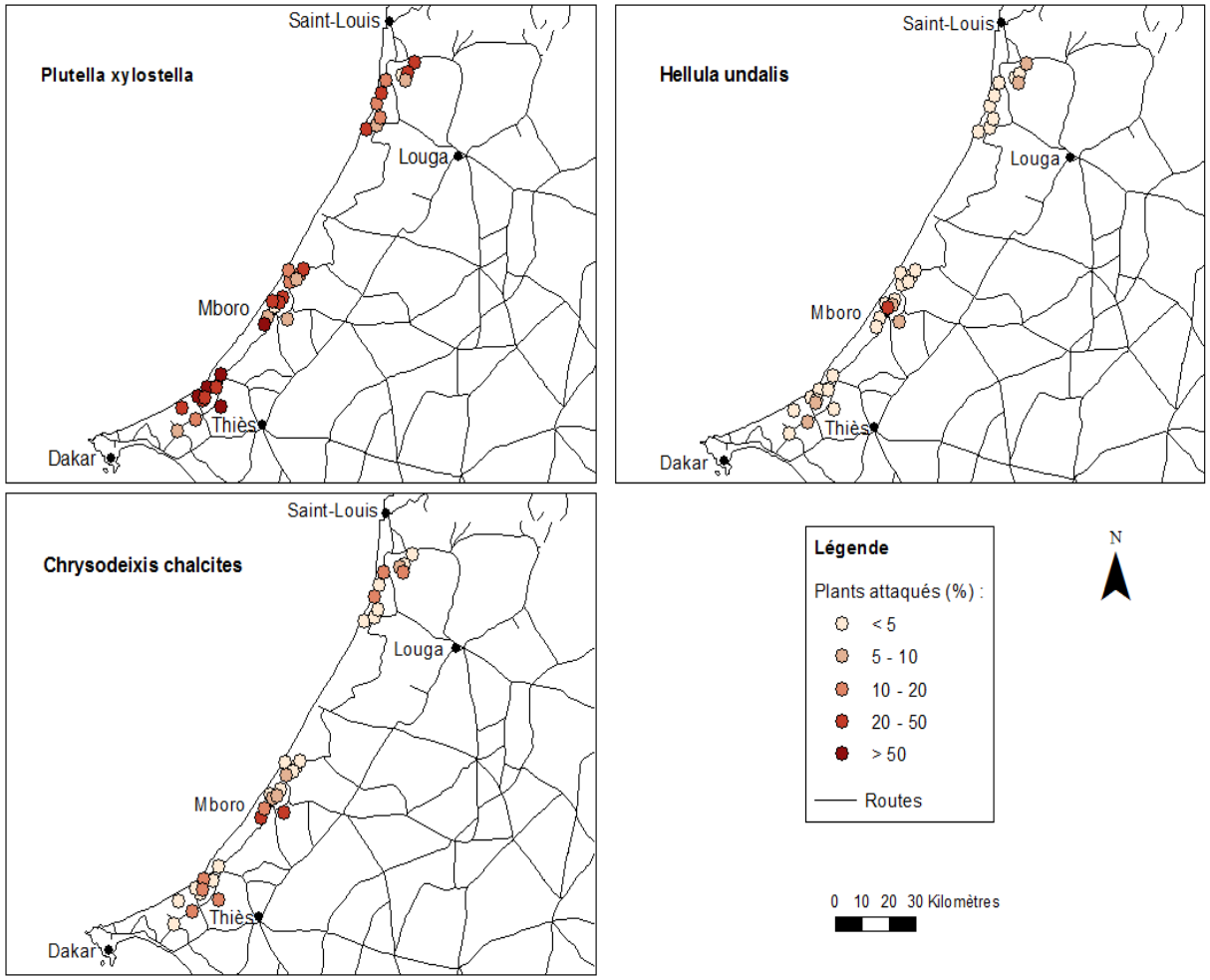
- 32 focal fields

Monitoring

- From October 2012 to January 2013 (hot dry season), from transplanting to harvest,
- 24 plants per field were observed every three weeks: plant diameter, nb of major lepidopteran pests,
- 3089 larvae and nymphs were reared at the lab to evaluate the rate of parasitism,
- Cultural practices, including insecticide spraying, were recorded.

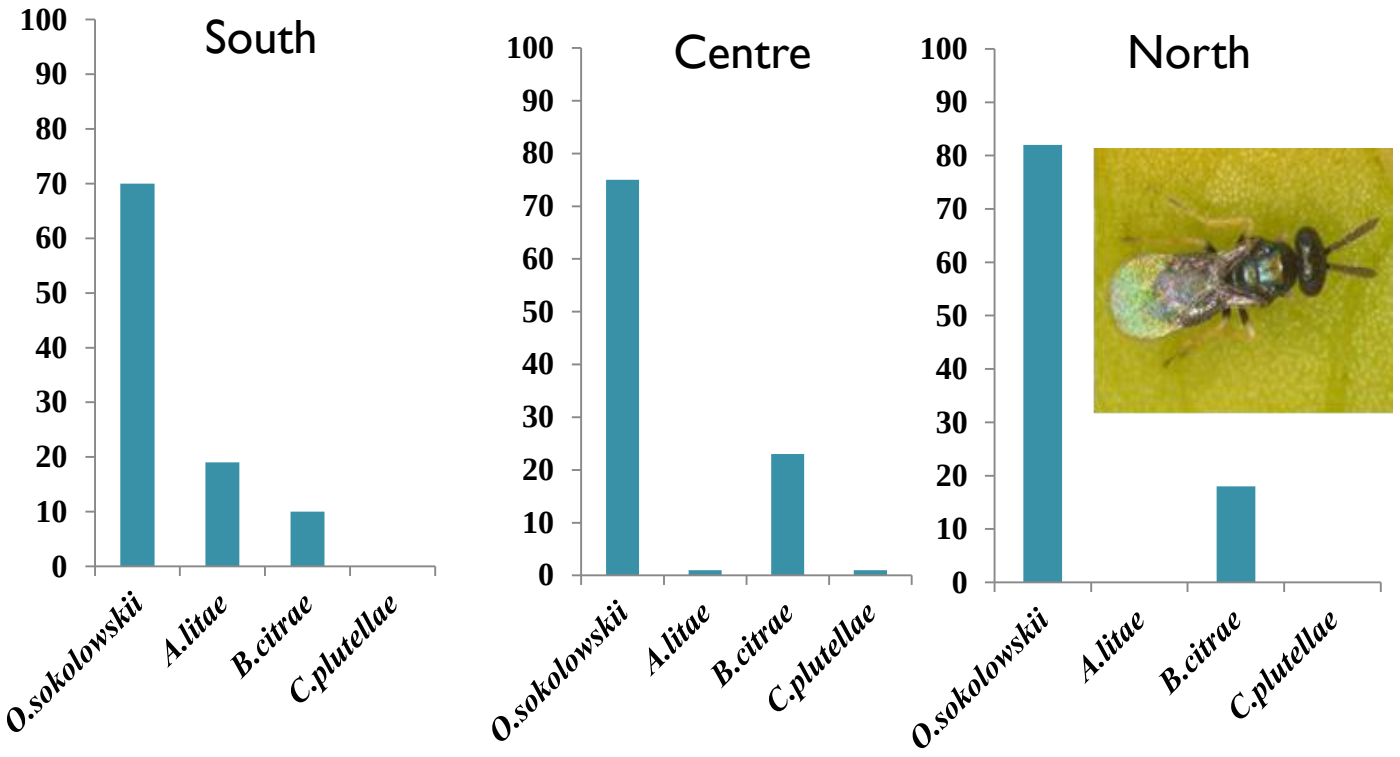
Pests and infestation

- *P. xylostella* was by far the major pest of cabbage during this season, especially in the South of Niayes.



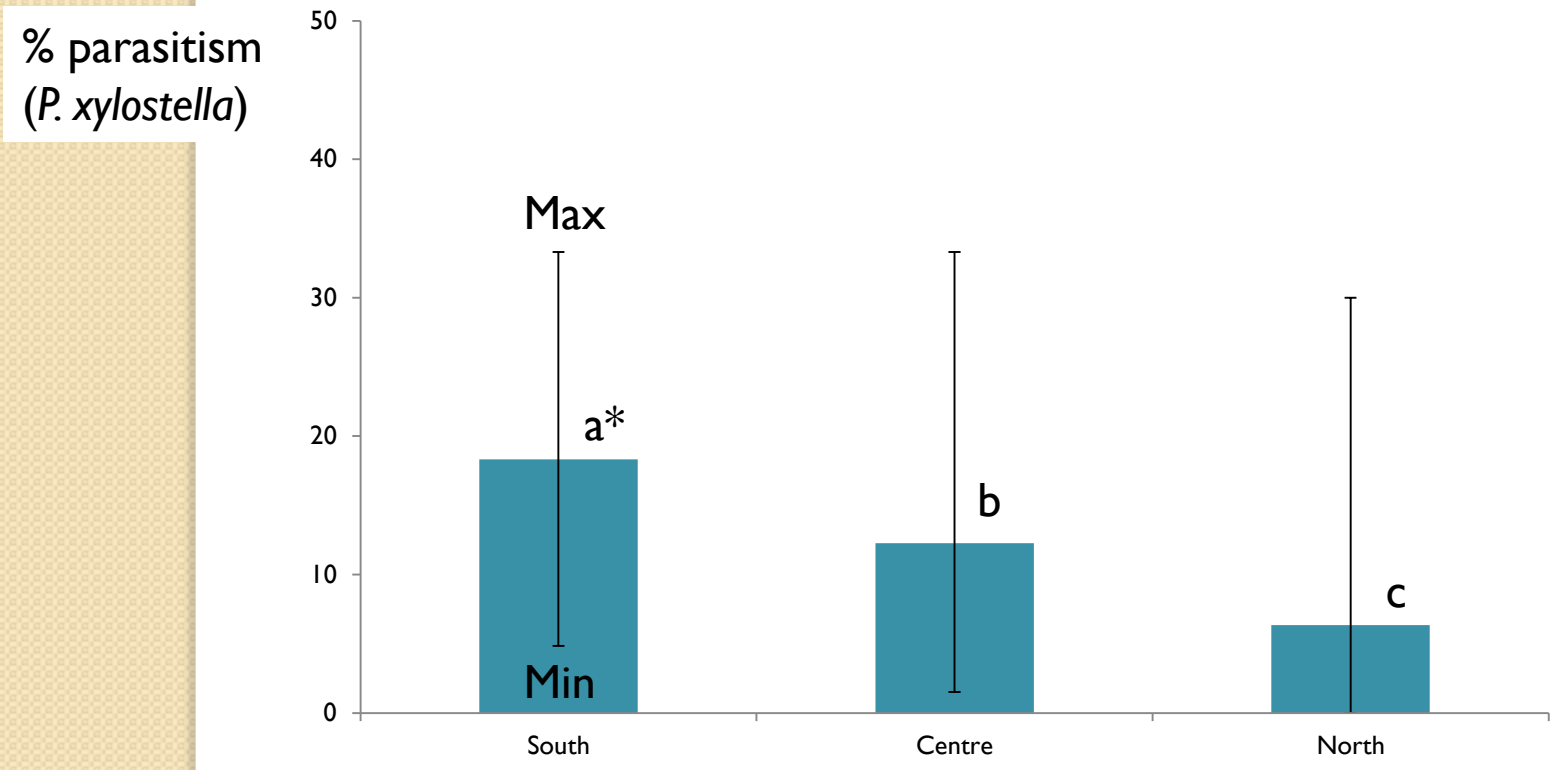
Parasitoids and parasitism

- Parasitoids were mainly represented by *Oomyzus sokolowskii* (Hymen., Eulophidae).



Parasitoids and parasitism

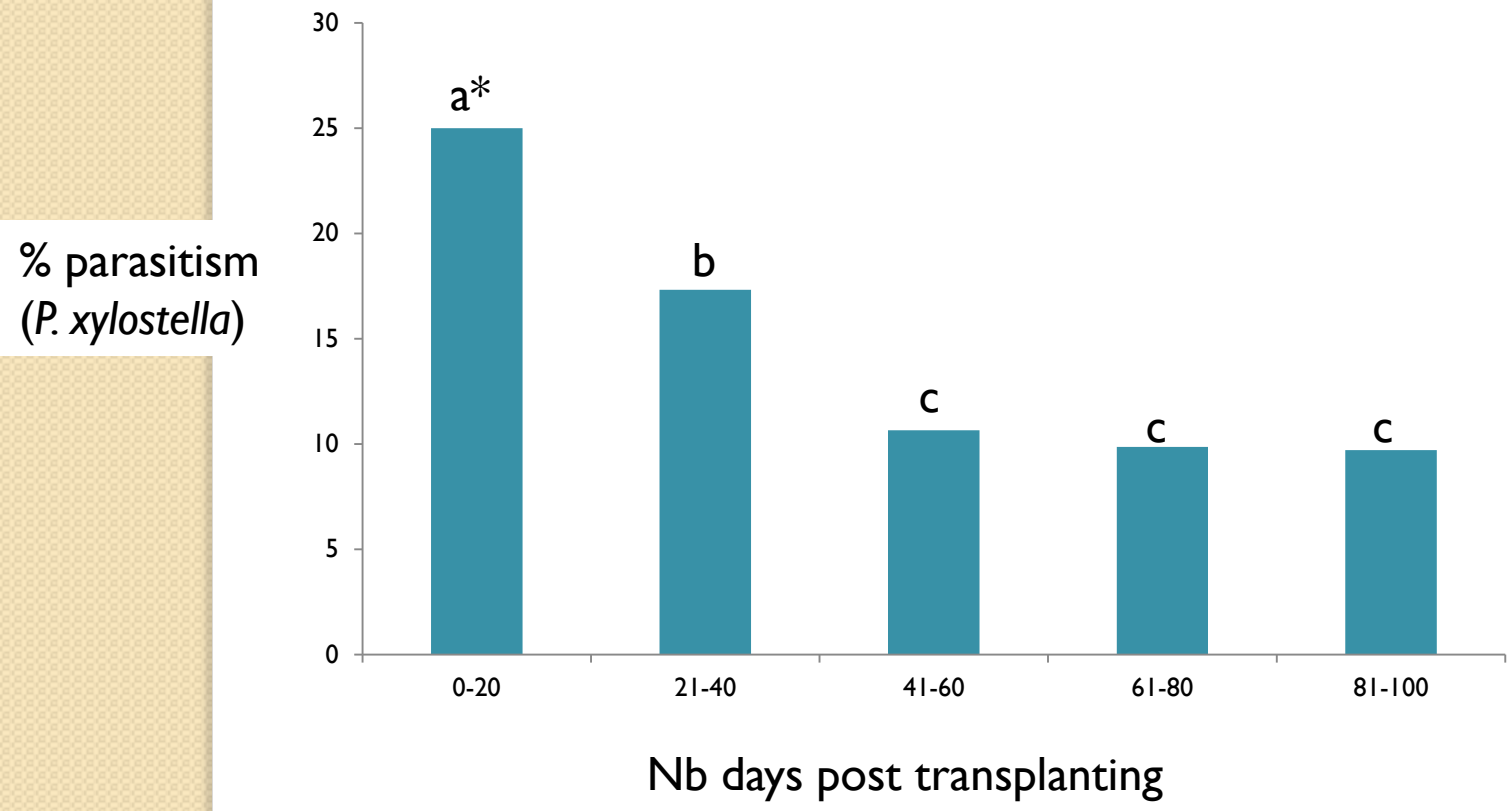
- The percentage of parasitized larvae varied from 0 to 33% according to fields (n=3090).



*GLM Logistic regression

Parasitoids and parasitism

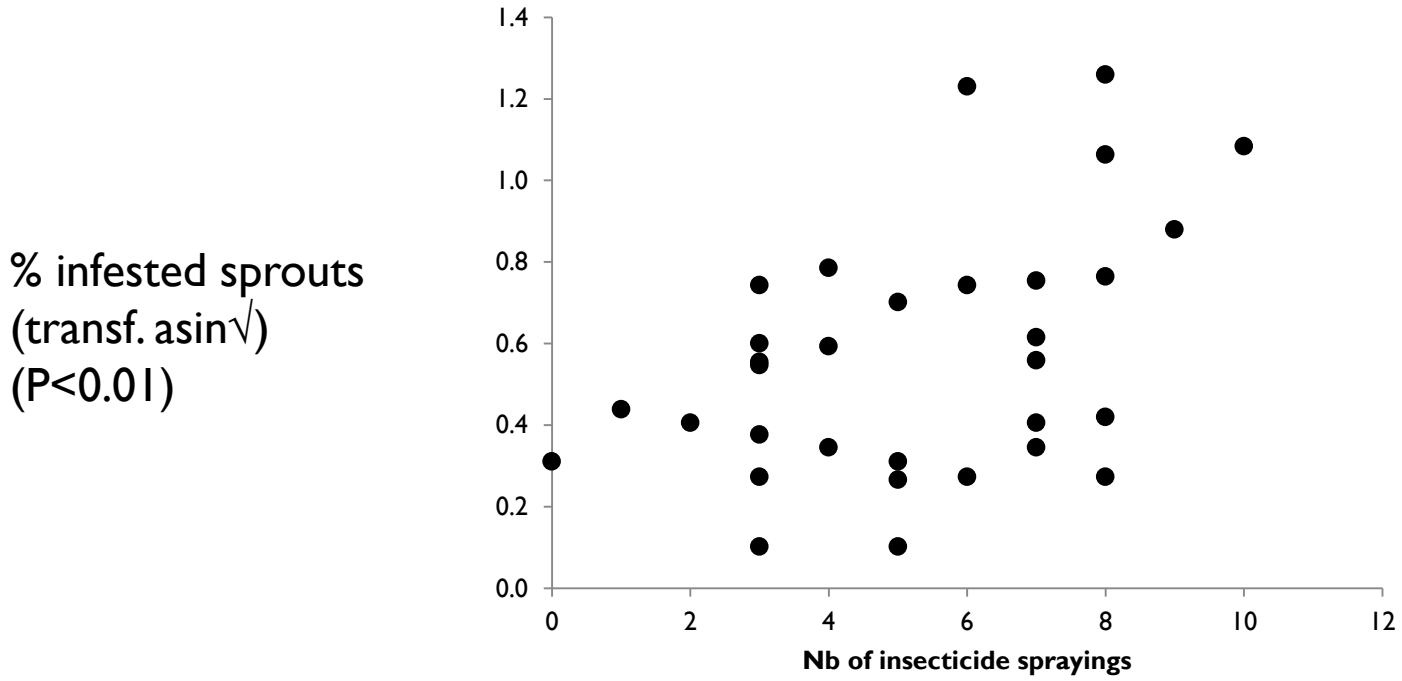
- The percentage of parasitized larvae decreased with time…



*GLM Logistic regression

Insecticide and resistance

- A positive correlation between the percentage of infested sprouts and the number of insecticide treatments performed was observed, suggesting low efficiency of treatment and putative insecticide resistance in populations of the diamondback moth.



Conclusion et Perspectives

- *Plutella xylostella* is the major pest for cabbage in Senegal
- Biological control could be an alternative to insecticide use, provided …
- This study, to continue with a new range of variables including landscape, should contribute to improve management practices of insect pests towards an "ecologically-based" intensification of agricultural production systems.

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