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# Impact of agroecological practices on carabid communities

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## Introduction

- Agricultural transition is needed
- Agroecological practices rely on ecological functioning of agrosystems
- Ground beetles (*Carabidae*) are good bioindicators (many species, various ecological requirements, community composition sensitive to practices,...)
- Carabids bring biocontrol services (feed on animal pests and weeds)

What are carabid communities' characteristics when agroecological practices (agroforestry associated with conservation agriculture) are implemented?

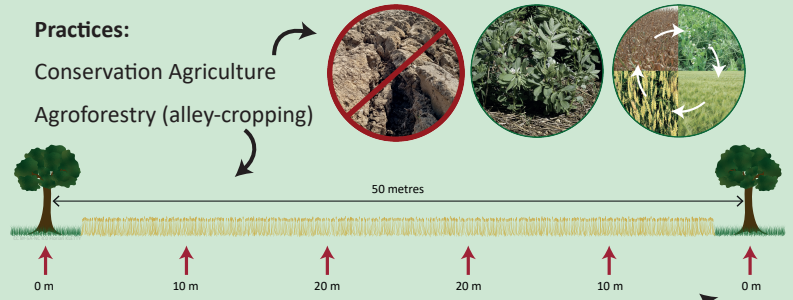
How distance to trees affect them?

## Methods

Practices:

Conservation Agriculture

Agroforestry (alley-cropping)



Study: 2 years, 3 fields, 5 transect/field/year, 6 pitfalls/transect

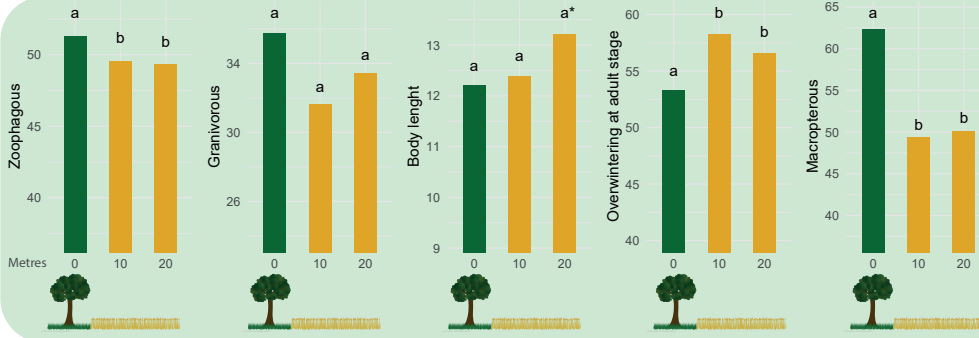
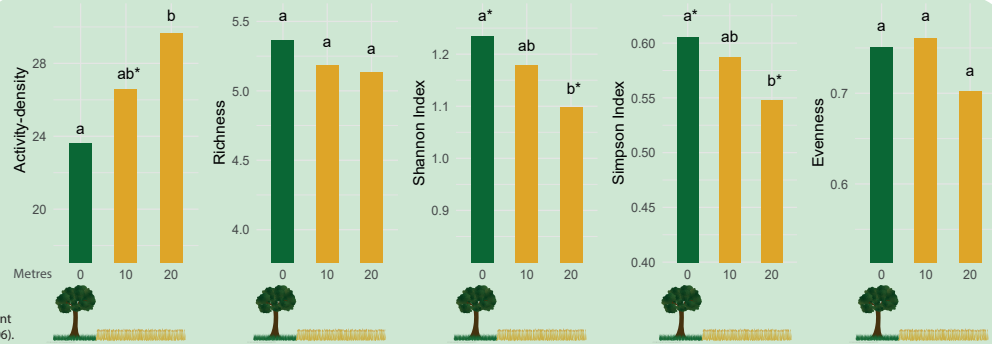
## Results

4425 individuals, 41 species

Higer activity-density in crop alleys

Higer diversity in tree rows

Barplots: mean values of each trap. Different letters indicate significant differences. \* indicates differences at the limit of the significance (0.04 < p < 0.06). Warning: statistical analyses take into account the variability between fields/years while bar plots represent mean data for all traps.



- Carabids are more zoophagous in tree rows than crop alleys
- Most part overwinter at adult stage, but in fewer proportion in tree rows
- More ground beetles are able to fly in tree rows than in crop alleys

Communities mainly influenced by crop type even in tree rows

## Discussion

In comparison with Boinot *et al.* (2019; Mediterranean climate, conventional agriculture, without insecticides):

- we also found higher ground beetles activity-density in crop alleys and no differences in species richness
- we had opposite results for functional traits (at least body length and overwintering stage)

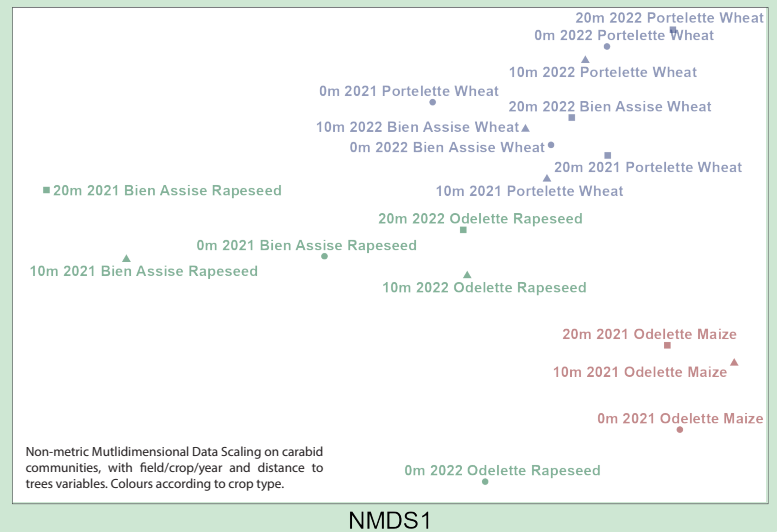
➤ Influence of conservation agriculture?

Remaining questions:

- Link with pests and weeds?
- Comparison with arable control?
- Spatio-temporal variations?
- What about other predators of pests?

## Conclusion

- High diversity in tree rows ➤ Resilience and adaptability potential of carabid communities
- High abundance in crops ➤ High biocontrol potential
- Unexpected functional traits response could be linked to Conservation Agriculture



Forthcoming publication:

Ground beetles in agroforestry system show functional traits and abundance differences according to distance to trees