Description du sujet.
Objectifs.

Méthode.

Résultats.

Conclusions.

Mots clés.

Crop management and soil macrofauna diversity in the Highlands of Madagascar
Description of the subject.
Objectives.

Method.

Results.

versus

Conclusions.

Keywords.

1. INTRODUCTION

2. MATÉRIEL ET MÉTHODES

2.1. Caractérisation des sites d'études

Figure 1

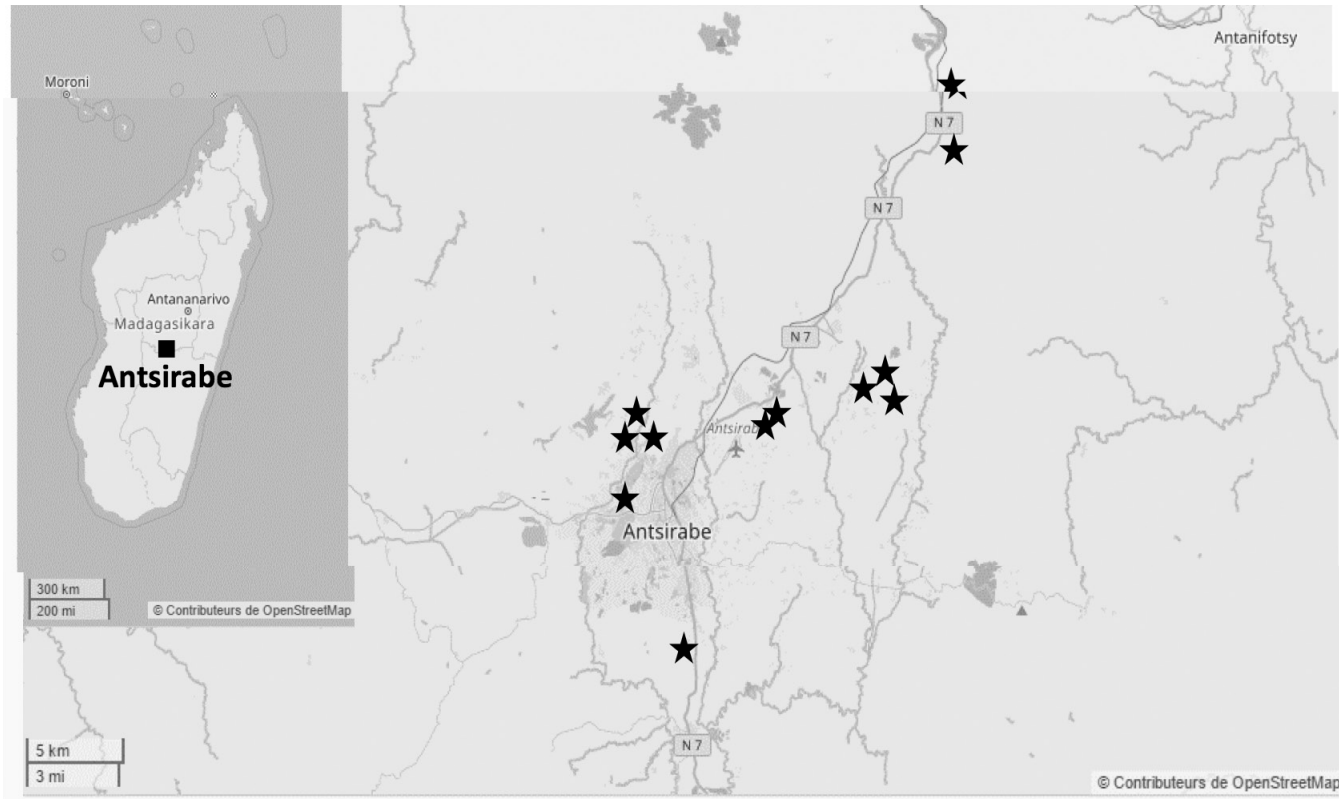

Figure 1. *Map presenting the location of the twelve farms studied in Antsirabe area*

tanety

tanety

2.2. Caractérisation des pratiques agricoles des exploitations et des sites expérimentaux

tableau 1

Tableau 1. *The five cropping systems compared and their main characteristics*

Mode de gestion des cultures	Description	Travail du sol	Apport de fumier	Espèces plantées	Intrants chimiques
				Pennisetum purpureum	
				Brachiaria	
				Crotalaria grahamiana	

permanent tilled forage crops with high manure inputs

annual crops under tillage with low manure inputs *annual crops under tillage with high manure inputs*

permanent pastures without tillage without manure

crops under conservation agriculture without tillage or permanent mulch cover with medium manure inputs

Pennisetum purpureum

2.3. Prélèvement et caractérisation de la macrofaune

Tropical Soil Biology and Fertility

Tableau 1

Brachiaria

Crotalaria

grahamiana

figure 2

2.4. Analyse des données

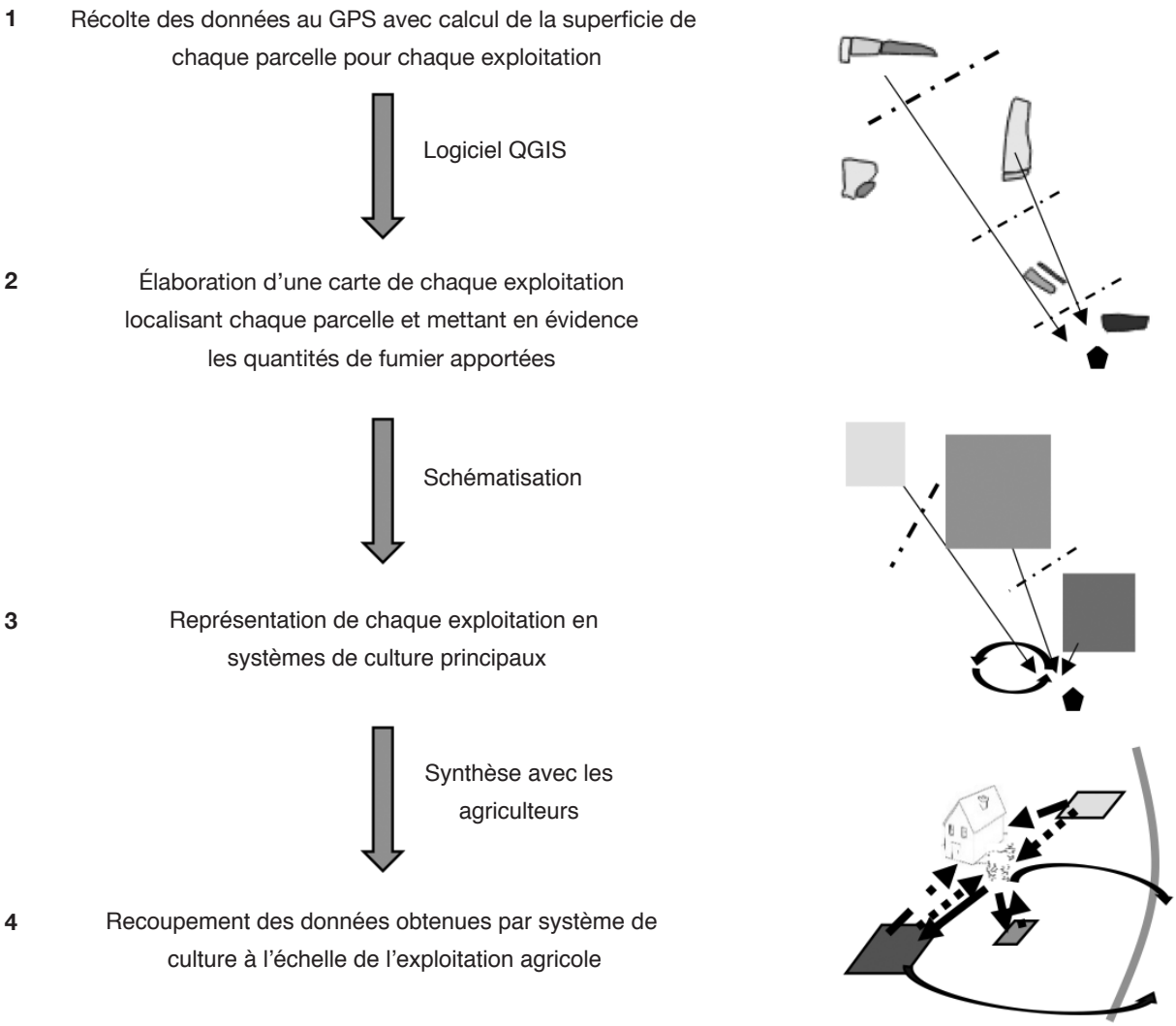

Figure 2.

Protocol elaborated at the farm level for cropping systems characterization and studied plot selection.

The square color represents the manure input quantity: the darker it is, higher is the manure quantity with the height being proportional to the real area

Tableau 3

Tableau 3

3. RÉSULTATS

3.1. Densité de la macrofaune par ordre taxonomique et par profondeur de sol

Tableau 2

Tableau 3

Tableau 2.
Taxonomic groups identified around Antsirabe city during the 2014-2015 cropping period.

Phylum	Classe	Ordre	Super-famille, famille	Espèce ou nom commun	Groupe fonctionnel[1]
				Dichogaster affinis *Dichogaster bolaui* *Dichogaster saliens*	
				Pontoscolex corethrurus	
				Kynotus parvus	
				Amynthas *Amynthas affinis* *Amynthas corticis* *Amynthas minimus*	
				Drawida barweli	

Tableau 2 (suite).
Taxonomic groups identified around Antsirabe city during the 2014-2015 cropping period.

Phylum	Classe	Ordre	Super-famille, famille	Espèce ou nom commun	Groupe fonctionnel[1]
				Metabrachinus connectoides	
				Polycleus	
				Celidota parvula	
				Euryomia argentea	
				Heteroconus paradoxus	
				Heteronychus plebeius	
				Hexodon unicolor	
				Gonocephalum	
				Paramorphochelus cornutus	
				Enaria melanictera	
				Hoplochelus marginalis	
				Apicencya waterloti	
				Triodontus nitidulus	
				Serica	
				Euborelia stati	
				Camponotus	
				Monomorium	
				Nylanderia	
				Paraparatrechina	
				Tetramorium	
				Locusta migratoria	
				Gryllotalpa	

according to Ratnadass et al., 2013.

Tableau 3.

Mean densities (animals·m^{-2}) at three depths of the different orders of soil macrofauna for the five cropping systems.

	Cultures annuelles											
	ACMF				**LAMF**				**LAEF**			
Quantités de fumier	**5 t·ha^{-1}**				**4,07 t·ha^{-1} ± 1,74**				**14,06 t·ha^{-1} ± 6,69**			
Horizon (cm)	**0-10**	**10-20**	**20-30**	**0-30**	**0-10**	**10-20**	**20-30**	**0-30**	**0-10**	**10-20**	**20-30**	**0-30**
Total	**183,91^{a}**	**102^{ab}**	**58,74^{ab}**	**344,65^{ab}**	**96,27^{bc}**	**70,93^{b}**	**48^{ab}**	**215,2^{bc}**	**69,59^{b}**	**55,08^{b}**	**33,01^{b}**	**157,68^{c}**

crops under conservation agriculture without tillage or permanent mulch cover and with medium manure inputs

annual crops under tillage with low manure inputs

annual crops under tillage with high manure inputs

effect of the five treatments by line for the 15 groups and by column for the three depths

the means with the same letter are not significantly different at 5% (Mann-Whitney's test)

Tableau 3 (suite).

Mean densities (animals·m^{-2}) at three depths of the different orders of soil macrofauna for the five cropping systems.

	Cultures pérennes							
	PP0F				**CFEF**			
Quantités de fumier	**0 t·ha^{-1}**				**13,65 t·ha^{-1} ± 10,43**			
Horizon (cm)	**0-10**	**10-20**	**20-30**	**0-30**	**0-10**	**10-20**	**20-30**	**0-30**
Total	**122,67^{ac}**	**64,8^{ab}**	**40,8^{ab}**	**228,27^{bc}**	**154,4^{ac}**	**158,67^{a}**	**84,8^{a}**	**397,87^{a}**

permanent pastures without tillage and without manure

permanent tilled forage crops with high manure inputs

effect of the five treatments

by line for the 15 groups and by column for the three depths

the means with the same letter are not significantly different at 5% (Mann-Whitney's test)

3.2. Densité de la macrofaune par groupe fonctionnel sur 0-30 cm

Figure 3

Figure 3

4. DISCUSSION

4.1. Effets des pratiques culturales sur la diversité et l'abondance globale de la macrofaune

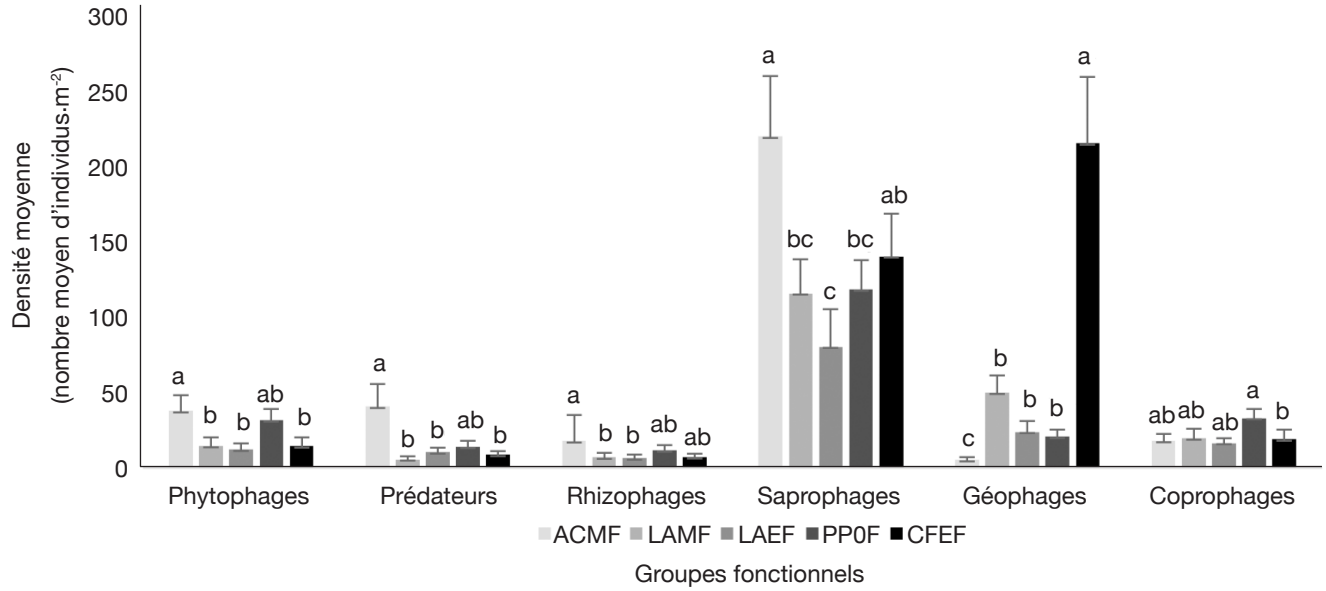

Figure 3.

Soil macrofauna mean densities (animals·m^{-2}, 0-30 cm) of the different functional groups for the five cropping systems.

the means with the same letter are not significantly different at 5% (Fisher's test and Mann-Whtiney's test)
crops under conservation agriculture
without tillage or permanent mulch cover and with medium manure inputs
annual crops under tillage with low manure inputs
annual crops under tillage with high manure inputs
permanent pastures
without tillage and without manure
permanent tilled forage crops
with high manure inputs.

4.2. Effets des pratiques culturales sur les groupes fonctionnels de la macrofaune

5. CONCLUSIONS

Remerciements

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Insectes Coléoptères Melolonthidae

Insectes Coléoptères Melolonthidae

Insectes Coléoptères Hopliidae

Insectes Coléoptères Hopliidae

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Terre Malgache **26**

Cah. Agric **22**

Opusc. Zool **41**

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Cah. Agric **11**

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