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Introduction

Crops are known to be frequently attacked by a large diversity of **aphid species**. Beneficial species are a solution to regulate such pests. The number of most abundant aphidophagous predator species in agrosystems is low. Among Coccinellidae, the **Multicolored Asian ladybeetle *Harmonia axyridis*** (Pallas) (Coleoptera: Coccinellidae) was introduced into Western Europe in the late 1990s to control aphid populations. This exotic and **invasive** species is known to be a **voracious predator** of native aphidophages.

We describe the **trohic relationships** around *H. axyridis* existing between the community of aphids and their natural predators species in agroecosystems in Belgium. **Quantitative food webs** were set up from data collected in 2010 and 2011 in four agronomical important crops (broad bean, corn, potato and wheat).

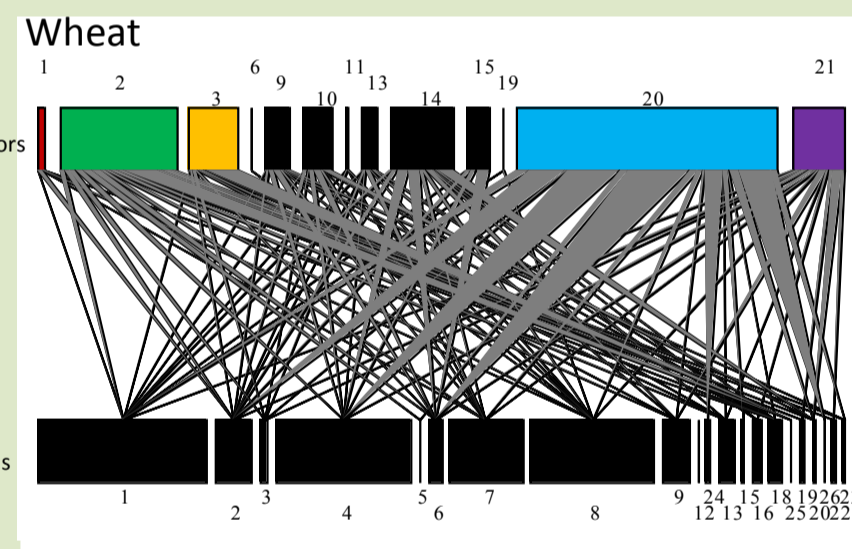
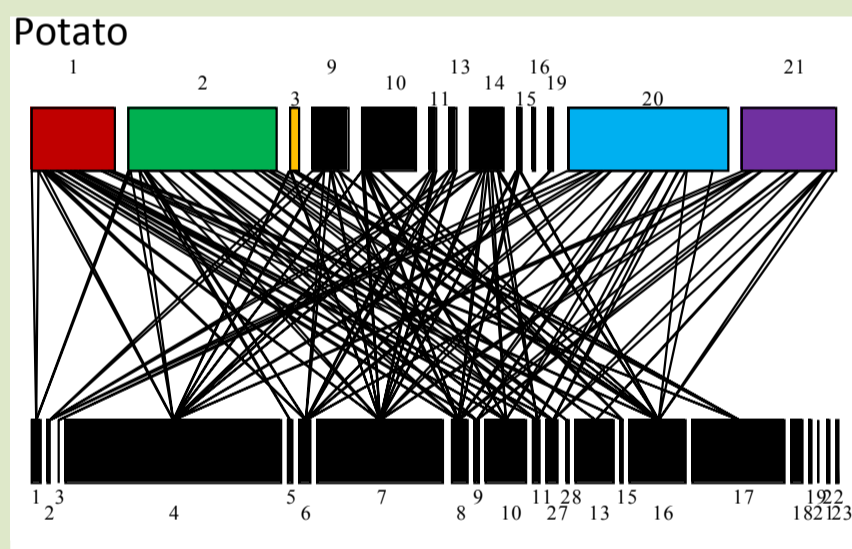
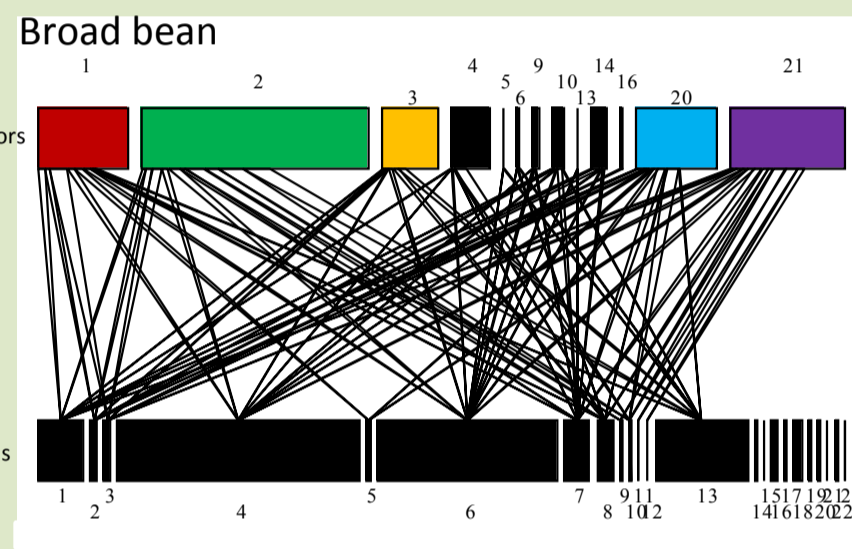
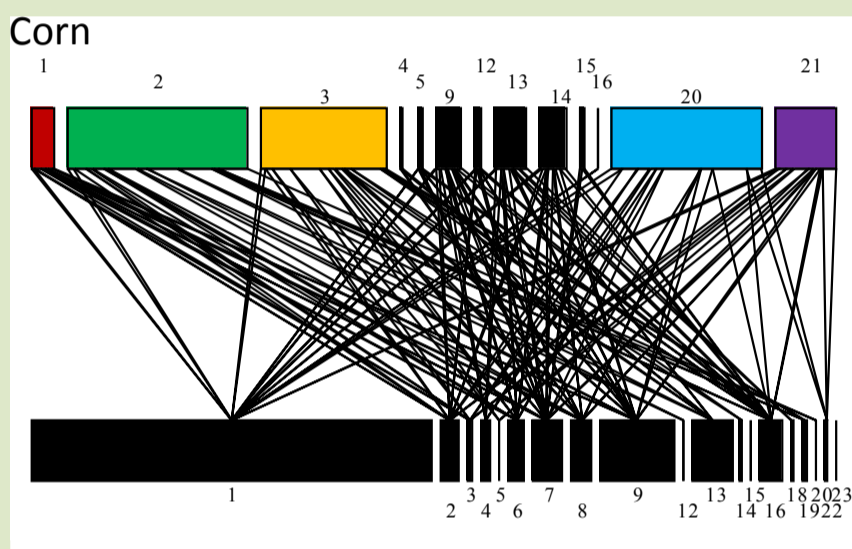
Material and Methods

- Predator species sampling from 2010 to 2011
- Observation period: March to September
- Crops: wheat, broad bean, corn and potato
- Sampling method: yellow traps, each week
- Determination and counting of aphidophagous species (adults) and aphid species



Yellow trap

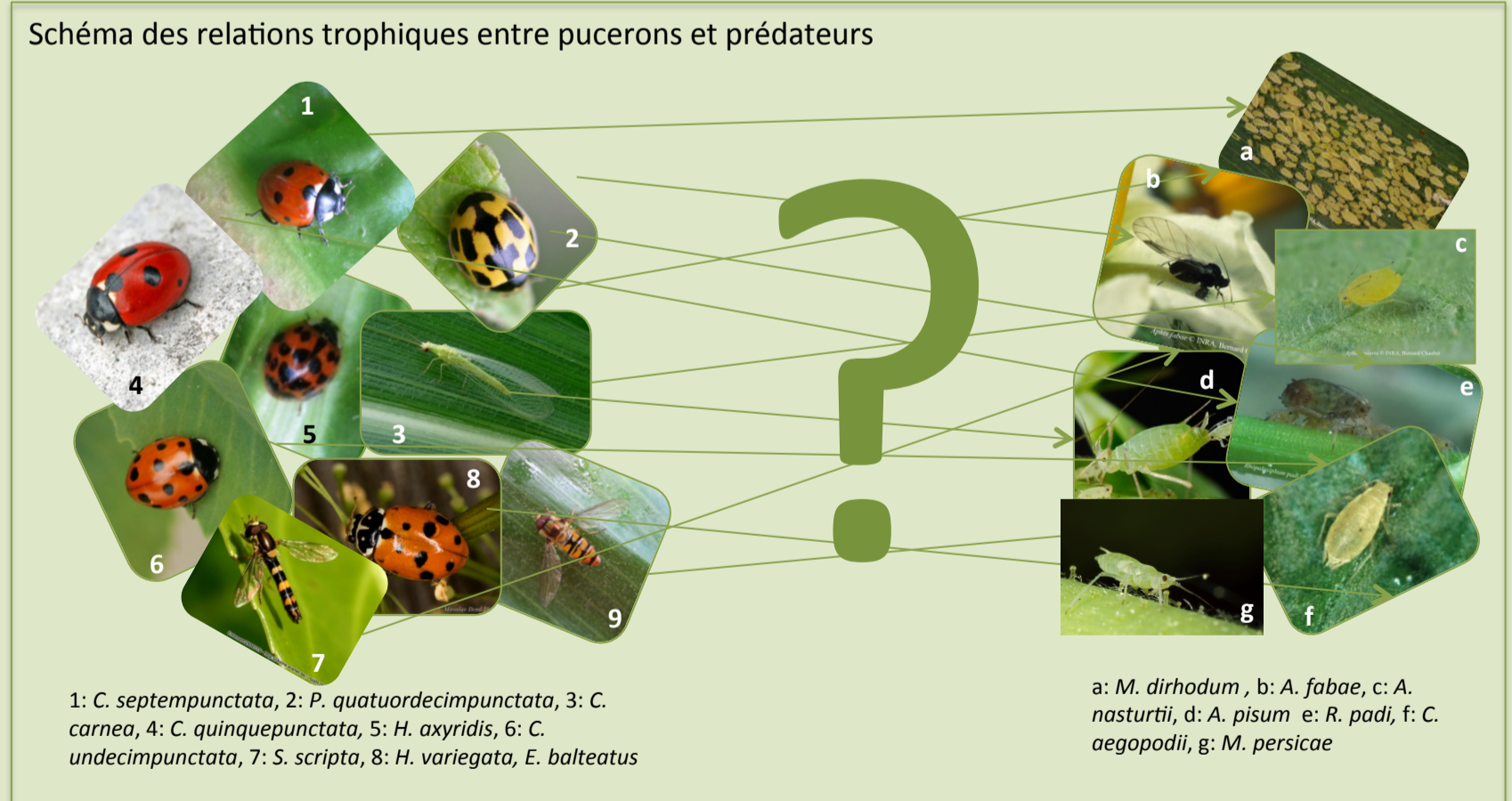
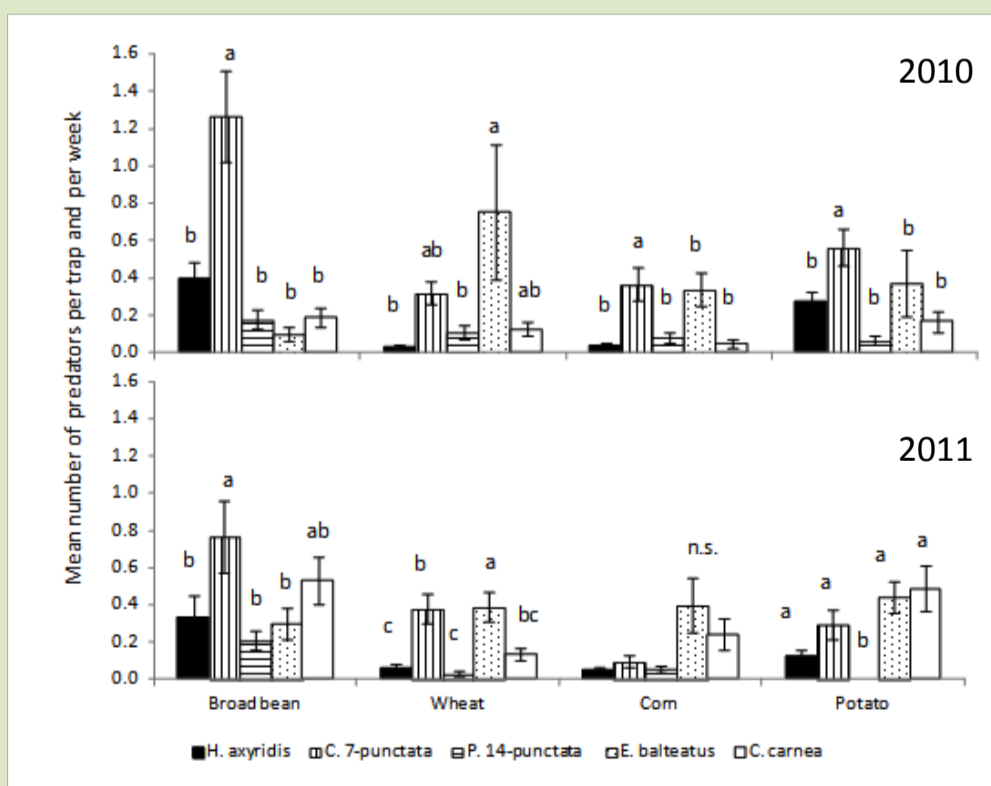
Results



Legend for predator species:
■ : *H. axyridis* ■ : *C. 7-punctata* ■ : *P. 14-punctata* ■ : *E. balteatus* ■ : *C. carnea*

Code	Predator species
Coccinellidae	
1	<i>Harmonia axyridis</i> Pallas
2	<i>Coccinella septempunctata</i> L.
3	<i>Propylea quatuordecimpunctata</i> L.
4	<i>Coccinella undecimpunctata</i> L.
5	<i>Coccinella quinquepunctata</i> L.
6	<i>Hippodamia variegata</i> Goeze
7	<i>Hippodamia undecimnotata</i> Schneider
Syrphidae	
8	<i>Metasyrphus nitens</i> Zetterstedt
9	<i>Metasyrphus corollae</i> Fabricius
10	<i>Metasyrphus latifasciatus</i> Macquart
11	<i>Metasyrphus luniger</i> Meigen
12	<i>Parasyrphus macularis</i> Zetterstedt
13	<i>Sphaerophoria menthastri</i> L.
14	<i>Sphaerophoria scripta</i> L.
15	<i>Scaeva pyrastris</i> L.
16	<i>Melanostoma mellinum</i> L.
17	<i>Syrphus ribesii</i> L.
18	<i>Platycheirus clypeatus</i> Meigen
19	<i>Syrphus vitripennis</i> Meigen
20	<i>Episyrphus balteatus</i> De Geer
Chrysopidae	
21	<i>Chrysoperla carnea</i> Stephens

Code	Aphid species
1	<i>Metopolophium dirhodum</i> Walker
2	<i>Sitobion avenae</i> Fabricius
3	<i>Sitobion fragariae</i> Walker
4	<i>Aphis fabae</i> Scopoli
5	<i>Megoura viciae</i> Buckton
6	<i>Acyrtosiphon pisum</i> Harris
7	<i>Myzus persicae</i> Sulzer
8	<i>Rhopalosiphum padi</i> L.
9	<i>Rhopalosiphum maidis</i> Fitch
10	<i>Aphis craccivora</i> Koch
11	<i>Rhopalosiphum insertum</i> Walker
12	<i>Hyperomyzus lactucae</i> L.
13	<i>Cavariella aegopodii</i> Scopoli
14	<i>Cavariella pastinacea</i> L.
15	<i>Macrosiphum rosae</i> L.
16	<i>Macrosiphum euphorbiae</i> Thomas
17	<i>Aulacorthum solani</i> Kaltenbach
18	<i>Cinara</i> sp.
19	<i>Tetraneura</i> sp.
20	<i>Metopolophium festucae</i> Theobald
21	<i>Brevicoryne brassicae</i> L.
22	<i>Phorodon humuli</i> Schrank
23	<i>Phyllaphis fagi</i> L.
24	<i>Nasonovia ribisnigri</i> Mosley
25	<i>Saracallis kahawaluokalani</i> Kirkaldy
26	<i>Schizaphis graminum</i> Rondani
27	<i>Aphis nasturtii</i> Kaltenbach
28	<i>Capitophorus horni</i> Börner



Conclusion

A total of **21 predator species** was recorded in this study and 11 species were common to the four crops. The aphid community was composed of **28 species** among which 16 species were observed in the four crops. The community of aphidophagous species around *H. axyridis* seems to be similar in the different studied crops despite the higher density of the alien species in broad bean and potato. Predator diversity varied between crops but five species were always more abundant in agroecosystems: *H. axyridis*, *C. septempunctata*, *P. quatuordecimpunctata*, *C. carnea* and *E. balteatus*. Connectance varied from 0,22 in broad bean to 0,36 in wheat. Finally, food webs highlight that both communities of aphid and predator species are well diversified and well connected.