

AGROBIONT SPIDERS IN SOYBEAN CROPS IN ARGENTINA

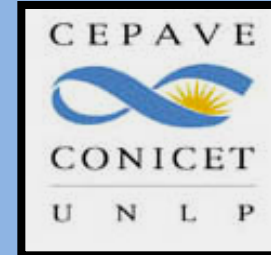
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Soybean (*Glycine max* Merrill) is one of the most important crops in Argentina. In the last decade, a few changes have occurred within the technological systems available to produce soybean including the incorporation of transgenic cultivars tolerant to glyphosate (1996) and zero tillage cropping systems. Associated with these transformations, current changes were also observed, e.g., colonization habit and abundance of defoliation pests, the bug complex and predators as well as the emergence of new pests. Accordingly, actions were initiated to reduce the level of damage, optimizing final yields and minimizing environmental degradation. Pest monitoring and studies of beneficial arthropod communities have shown a high abundance of spiders in these agroecosystems which play an important role as pest predators. This high dominance of spiders in the agroecosystem has been named the “Agrobiont” species. These agrobiontic species have not been studied in Argentina in soybean crops. We propose to describe the main families and species of spiders in this crop. An extensive literature review was done to search for studies involving spiders on soybean in Argentina and it was found that some work was carried out in Buenos Aires, Entre Ríos and Santa Fe. Also, during summer and autumn (January and April 2010), two main samplings were carried out in five soybean A8000 (RR) plots at the Agricultural Experimental Station of INTA Reconquista (29°11' S-59°52' W), Santa Fe, Argentina. The sampling design method involved two linear transects in each of the plots, where 10 pitfalls traps were placed separated by about 10m from each other, to capture ground spiders; and likewise, was aspirated through the G-Vac (Garden-vacuum) to capture spiders in the herbaceous layer. 2885 spiders, representing 21 families and 138 species/morfospecies were collected. The percentages of the dominant species from herbaceous samples were: 31,32% *Paracleocnemis* sp. (Philodromidae), 16,50% *Ocrepeira* sp. (Araneidae) and 11,48% *Oxyopes salticus* (Oxyopidae). However, the ground species were 81,58% *Allocosa* sp. (Lycosidae), 3,58% *Goeldis* sp. (Titanoecidae) and 3,51% *Jollas* sp. (Salticidae). Comparing these results with those from other provinces showed six families (Araneidae, Lycosidae, Oxyopidae, Philodromidae, Theridiidae and Thomisidae) in common, excluding only Titanoecidae previously found. These differences were probably due to the sampling methods used as well as to environmental conditions that may vary depending on the locations. The current data will be useful for future research work to develop and improve management strategies for biological pest control.



AGROBIONT SPIDERS IN SOYBEAN CROP IN ARGENTINA

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INTRODUCTION

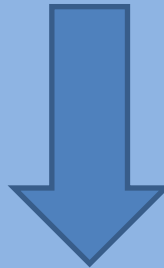
Soybean (*Glycine max* Merrill) is one of the most important crops in Argentina.

In the last decade, a few changes have occurred within the technological systems available to produce soybean including the incorporation of transgenic cultivars tolerant to glifosato (1996) and zero tillage cropping systems



These transformations have generated changes such as:

- colonization habit and abundance of the defoliator pest
- bugs complex and the predators as well as the emergency of new pests.



Accordingly, actions were initiated to reduce the level of damage, optimizing final yields and minimizing the environmental degradation

Actions:

- Monitoring of pest and beneficial arthropod
- Evidenced a high abundance of spiders in crop soybean which plays an important role as pest predator.



high dominance of spiders in agroecosystem,
Luczak (1975) has called them as

“Agrobiont” species

Agrobiont species: species which invariably dominate spider communities in crop fields (Luczak, 1975; Blick et al., 2000; Samu & Szinetar, 2002; Schmidt, M. & Tscharntke, T. 2005).

Studies in Argentina:

Minervino, E. 1996. Estudio biológico y ecobiológico de arañas depredadoras de plagas de soja. Tesis de Ph.D., Universidad Nacional de La Plata, Buenos Aires, Argentina.

Weyland, F. 2005. Efecto de prácticas de conservación de suelos sobre la diversidad de artrópodos en lotes de soja. Facultad de Ciencias Exactas y Naturales. Universidad Nacional de Buenos Aires. Buenos Aires, Argentina. 54 p.

Benamú Pino, M.A. 2010. Composición y estructura de la comunidad de arañas en el sistema de cultivo de soja transgénica. Tesis de Ph.D., Universidad Nacional de La Plata, Buenos Aires, Argentina.

María Florencia Argañarás. 2009. Efecto de la Heterogeneidad del hábitat sobre la diversidad y fenología de arañas (Arachnida, Araneae), asociadas a un cultivo de soja (*Glycine max*) en la Provincia de Tucumán, Argentina. Maestría en Entomología Aplicada. Universidad Nacional de La Rioja.

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ECOLOGY, BEHAVIOR AND BIONOMICS

La Comunidad de Arañas del Cultivo de Soja en la Provincia de Santa Fe, Argentina
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SPIDERS OF SOYBEAN CROPS IN SANTA FE PROVINCE, ARGENTINA: INFLUENCE OF SURROUNDING SPOT VEGETATION ON LOT COLONIZATION

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(With 2 figures)

These agrobiont species have not been studied in Argentina in soybean crops, therefore we propose to describe the main families and species of spiders in this crop.

METHODS



Sampling Methods:

During summer and autumn (January and April 2010), two main samples were carry out in five plots with soybean A8000 (RR) at the Agricultural Experimental Station of INTA Reconquista (29 11' S-59 52' W), Santa Fe (Argentina).

Sampling:

two linear transects for each plots.

10 pitfalls traps were placed separated 10 m from each other for ground layer.

10 aspirated through the G-Vac (Garden-vaccum) to capture spiders of the herbaceous layer.

to capture ground spiders



capture spiders of the
herbaceous layer



Analysis data: Percentage (%) of dominant species.

RESULTS

It was collected 2885 spiders, representing 21 families and 138 species/morfospecies. The % of the dominant species for layer:

Dominant species			
%	Herbaceous	Ground	%
31,32	<i>Paracleocnemis sp.</i> (Philodromidae)	<i>Allocosa sp.</i> (Lycosidae)	81,58
16,50	<i>Ocrepeira sp.</i> (Araneidae)	<i>Goeldia sp.</i> (Titanoecidae)	3,58
11,48	<i>Oxyopes salticus</i> (Oxyopidae)	<i>Jollas sp.</i> (Salticidae)	3,51



Table 1. Abundance total spiders in soybean crops for layer herbaceous and ground.

ABUNDANCIA	Herbaceous	%	Ground	%
Anyphaenidae	19	1.38	3	0.20
Araneidae	227	16.50	21	1.39
Clubionidae	0	0.00	1	0.07
Corinnidae	1	0.07	13	0.86
Dictynidae	24	1.74	9	0.60
Gnaphosidae	2	0.15	9	0.60
Hahniidae	0	0.00	1	0.07
Linyphiidae	19	1.38	21	1.39
Lycosidae	16	1.16	1231	81.58
Miturgidae	94	6.83	5	0.33
Nephilidae	6	0.44	1	0.07
Oxyopidae	158	11.48	16	1.06
Philodromidae	431	31.32	39	2.58
Pisauridae	143	10.39	0	0.00
Prodidomidae		0.00	1	0.07
Salticidae	38	2.76	53	3.51
Tetragnathidae	60	4.36	7	0.46
Theridiidae	30	2.18	18	1.19
Theridiosomatidae	4	0.29	0	0.00
Thomisidae	102	7.41	6	0.40
Titanoecidae	2	0.15	54	3.58
	1376	100.00	1509	100.00



DISCUSSION AND CONCLUSIONS

Families Spiders	Minervino	Liljesthröm	Benamú	Beltramo	Weyland	Argañarás	Almada
Amphinectidae					X		
Araneidae	X	X	X	X	X	X	X
Anyphaenidae	X	X	X	X		X	X
Clubionidae						X	x
Corinidae	X	X	X		X	X	X
Ctenidae			X		X		
Dictynidae						X	X
Dipluridae						X	
Gnaphosidae			X		X	X	X
Hahniidae			X		X	X	x
Linyphiidae			X		X	X	X
Lycosidae	X	X	X	X	X	X	X
Mimetidae						X	
Miturgidae						X	X
Nephilidae							X
Oxyopidae	X	X	X	X	X	X	X
Philodromidae	X	X	X	X	X	X	X
Pisauridae			X			X	X
Salticidae	X	X	X	X		X	X
Prodidomidae							X
Scytodidae					X		
Sparassidae					X		
Tetragnathidae			X		X	X	X
Theridiidae	X	X	X	X	X	X	X
Thomisidae	X	X	X	X	X	X	X
Theridiosomathidae						X	X
Titanoecidae			X		X		X
Zodariidae					X		

- Comparing with the other studies from different provinces six families were found previously in all of them as well as in this work, except Nephiliidae and Prodidomidae.

- These differences were probably due to the sampling methods as well as environmental conditions that may vary depending of the locations

Conclusions

❖ *Paracleocnemis* sp (Philodromidae), *Ocrepeira* sp. (Araneidae), *Oxyopes salticus* (Oxyopidae), *Allocosa* sp. (Lycosidae), *Goeldia* sp.(Titanoecidae) and *Jollas* sp. (Salticidae) are species agrobiont the crop soybean for province Santa Fe, Argentina.

❖ Two new families: Nephiliidae and Prodidomidae were found in the soybean crop, increasing spiders records for Argentina.

❖ The current data will be useful for future research work to be developed to improve management strategies for biological pest control.

❖ It is the first contribution on the composition of agrobiont spiders on soybeans for Argentina.