

COMPARATIVE RESEARCH ON USEFUL ENTOMOFAUNA FROM VEGETABLE CROPS

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Abstract

Observations were effectuated in different vegetable cultures (tomatoes, green peppers, eggplants etc.) from solariums or fields and in different conditions of application of the chemical treatments for pest control. The material was collected during the year 2009 by using land traps of Barber type. The collected material was brought to the lab and then it was classified. The collected entomofauna mainly belongs to the following species: *Coccinella septempunctata* L., *Chrysopa* spp., *Halyzia 14-guttata* L., *Syrphus* spp., *Aphidius* spp., *Nabis* spp., *Adonia variegata* Goeze, *Adalia bipunctata* L., *Orius* spp., *Zicrona coerulea* L., *Helophilus lineatus* F., *Encarsia formosa* Gahan, *Paracodrus apterogynus* Hal.

Key words: solanaceous vegetables, parasites, predators

One of the negative effects of intensive use of pesticides against pests is the high toxicity they exhibit for the useful entomofauna represented by parasites and pest predators.

The repeated treatments with organic-chlorinated products, organic-phosphoric or carbamic products determined the disorder of the natural biological balance. Many useful species were destroyed or reduced as number of individuals whereas the pests continued to multiply excessively either due to the lack of natural enemies or the emergence of species resistant to different categories of pesticides by causing significant damages to the vegetable cultures. A single example in this respect is edifying: Colorado potato beetle (*Leptinotarsa decemlineata* Say.) which was fought at first by the repeated use of organic-chlorinated products, especially those of DDT and HCH type. Having high toxicity and long term remanence, they determined a superior mortality of pest. But at the same time, they had a negative influence on some species of predators such as: *Nabis rugosus* L., *Perillus bioculatus* F., *Zicrona coerulea* L., *Arma custos* L., *Picromerus bidens* L., *Calosoma sycophanta* L., *Chrysopa vulgaris* Sch., etc, and parasites like *Meigenia mutabilis* Fall. and *Megaselia rufipes* Mg. (Manolache C. et al., 1969, Talmaciu M., 2003, Talmaciu M. et al 2004)). In this paper, we carried out a study regarding the useful species, parasites and predators, signaled in certain vegetable cultures.

MATERIAL AND METHOD

Observations were made on the vegetable cultures from the area of Vaslui County.

To collect the material, we used soil traps of Barber type and we periodically shook plants, from June to August, inclusively, in 2009 and 2010. The collected material was brought to the lab and we identified the useful species by means of determination devices, tables and the Internet.

RESULTS AND DISCUSSIONS

In 2009 we identified a number of 17 predatory or parasite species for the main pests from the solanaceae (tab. 1).

Among the useful species we may mention: *Chrysopa* spp., predator for *Trialeurodes vaporariorum* Westw. species and *Encarsia formosa* Gahan, a parasite of the same species.

The entomophagi of the species *Macrosiphum solani* Kittel are represented by the parasite species *Aphidius matricariae* Hal. And the pests *Chrysopa* spp., *Halyzia 14-guttata* L., *Helophilus lineatus* F., *Syrphus* spp.

As predators of the species *Leptinotarsa decemlineata* Say., specified in literature, we identified the species: *Zicrona coerulea* L., *Perillus bioculatus* F., *Calosoma sycophanta* L., *Nabis rugosus* L., and as parasite species we identified *Megaselia rufipes* Mg. and *Hexamermis* spp.

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Table 1

Species of useful insects collected through the shaking of plants and from the soil traps of Barber type from the solanaceae cultures in 2009 (green peppers, eggplants, tomatoes)

No. crt.	Name of pest	Order/Family	Parasite/ Predator	Order/Family	Literature where it was specified
1.	<i>Agriotes</i> spp.	<i>Coleoptera/Elateridae</i>	<i>Paracodrus apterogynus</i> Hal. - parasite	<i>Hymenoptera/Proctotrupidae</i>	Perju T. et al., 1983
2.	<i>Trialeurodes vaporariorum</i> Westw.	<i>Homoptera/Aleurodidae</i>	<i>Encarsia formosa</i> Gahan - parasite	<i>Hymenoptera/Aphelinidae</i>	Dolneanu Ecaterina and Manolache C., 1969 Mihăilescu S., 1974
			<i>Chrysopa</i> spp.-predator	<i>Neuroptera/Chrysopidae</i>	Soraner F., 1956
3.	<i>Macrosiphum solani</i> Kittel	<i>Homoptera/Aphididae</i>	<i>Aphidius matricariae</i> Hal. - parasite	<i>Hymenoptera/Aphidiidae</i>	Cîndea E. et al., 1985
			<i>Chrysopa</i> spp. - predator	<i>Neuroptera/Chrysopidae</i>	
			<i>Halyzia 14-guttata</i> L.- predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Helophilus lineatus</i> F.- predator	<i>Diptera/Syrphidae</i>	
			<i>Syrphus</i> spp.-predator	<i>Diptera/Syrphidae</i>	
4.	<i>Leptinotarsa decemlineata</i> Say.	<i>Coleoptera/Chrysomelidae</i>	<i>Zicrona coerulea</i> L. - predator	<i>Heteroptera/Pentatomidae</i>	Manolache C. et al., 1969 Vasilev V.P., 1973
			<i>Perillus bioculatus</i> F. - predator	<i>Heteroptera/Pentatomidae</i>	
			<i>Calosoma sycophanta</i> L. - predator	<i>Coleoptera/Carabidae</i>	
			<i>Nabis rugosus</i> L. - predator	<i>Heteroptera/Nabidae</i>	
			<i>Megaselia rufipes</i> Mg. - parasite	<i>Diptera/Phoridae</i>	
			<i>Hexamermis</i> spp. - parasite	<i>Nematoda/Mermithidae</i>	
5.	<i>Myzodes persicae</i> Sulz.	<i>Homoptera/Aphididae</i>	<i>Chrysopa</i> spp. - predator	<i>Neuroptera/Chrysopidae</i>	Cîndea E., 1984 Săvescu A., 1982
			<i>Adonia variegata</i> Goeze - predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Coccinella septempunctata</i> L. - predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Adalia bipunctata</i> L. - predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Halyzia 14-guttata</i> L.- predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Aphidius matricariae</i> Hal. - parasite	<i>Hymenoptera/Aphidiidae</i>	
			<i>Syrphus</i> spp.-predator	<i>Diptera/Syrphidae</i>	
			<i>Propylaea quatordecimpunctata</i> L. predator	<i>Coleoptera/Coccinellidae</i>	
6.	<i>Thrips tabaci</i> Lind.	<i>Thysanoptera/Thripidae</i>	<i>Aphidius</i> spp. - parasite	<i>Hymenoptera/Aphidiidae</i>	Cialikov H., 1974
			<i>Orius</i> spp. - predator	<i>Heteroptera/Anthocoridae</i>	
			<i>Nabis pferoides</i> Rem. - predator	<i>Heteroptera/Nabidae</i>	
			<i>Chrysopa</i> spp. - predator	<i>Neuroptera/Chrysopidae</i>	

Table 2

Species of useful insects collected through the shaking of plants and from the soil traps of Barber type from the solanaceae cultures in 2010 (green peppers, eggplants, tomatoes)

No. crt.	Name of pest	Order/Family	Parasite/ Predator	Order/Family	Literature where it was specified
1.	<i>Agriotes</i> spp.	<i>Coleoptera/Elateridae</i>	<i>Paracodrus apterogynus</i> Hal. - parasite	<i>Hymenoptera/Proctotrupidae</i>	Perju T. et al., 1983
2.	<i>Trialeurodes vaporariorum</i> Westw.	<i>Homoptera/Aleurodidae</i>	<i>Encarsia formosa</i> Gahan - parasite	<i>Hymenoptera/Aphelinidae</i>	Dobreanu Ecaterina and Manolache C., 1969 Mihăilescu S., 1974
			<i>Chrysopa</i> spp. - predator	<i>Neuroptera/Chrysopidae</i>	Soraner F., 1956
3.	<i>Macrosiphum solani</i> Kittel	<i>Homoptera/Aphididae</i>	<i>Aphidius matricariae</i> Hal. - parasite	<i>Hymenoptera/Aphidiidae</i>	Cîndea E. et al., 1985
			<i>Coccinella septempunctata</i> L. - predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Adalia bipunctata</i> L. - predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Helophilus lineatus</i> F. - predator	<i>Diptera/Syrphidae</i>	
			<i>Syrphus</i> spp. - predator	<i>Diptera/Syrphidae</i>	
4.	<i>Leptinotarsa decemlineata</i> Say.	<i>Coleoptera/Chrysomelidae</i>	<i>Zicrona coerulea</i> L. - predator	<i>Heteroptera/Pentatomidae</i>	Manolache C. et al., 1969 Vasiliev V.P., 1973
			<i>Nabis rugosus</i> L. - predator	<i>Heteroptera/Nabidae</i>	
			<i>Arma custos</i> L. - predator	<i>Heteroptera/Pentatomidae</i>	
			<i>Picromerus bidens</i> L. - predator	<i>Heteroptera/Pentatomidae</i>	
			<i>Meigenia mutabilis</i> Fall. - parasite	<i>Diptera/Tachinidae</i>	
5.	<i>Myzodes persicae</i> Sulz.	<i>Homoptera/Aphididae</i>	<i>Adonia variegata</i> Goeze - predator	<i>Coleoptera/Coccinellidae</i>	Săvescu A. et al., 1982
			<i>Coccinella septempunctata</i> L. - predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Halyzia 14-guttata</i> L. - predator	<i>Coleoptera/Coccinellidae</i>	
			<i>Aphidius matricariae</i> Hal. - parasite	<i>Hymenoptera/Aphidiidae</i>	
			<i>Syrphus</i> spp. - predator	<i>Diptera/Syrphidae</i>	
6.	<i>Thrips tabaci</i> Lind.	<i>Thysanoptera/Thripidae</i>	<i>Aphidius</i> spp. - parasite	<i>Hymenoptera/Aphidiidae</i>	Cialikov H., 1974
			<i>Syrphus</i> spp. - predator	<i>Diptera/Syrphidae</i>	
			<i>Orius</i> spp. - predator	<i>Heteroptera/Anthocoridae</i>	
			<i>Nabis pheroides</i> Rem. predator	<i>Heteroptera/Nabidae</i>	
			<i>Chrysopa</i> spp. - predator	<i>Neuroptera/Chrysopidae</i>	

Among the parasites and predators of the species *Myzodes persicae* Sulz., we identified the species *Chrysopa* spp., *Adonia variegata* Goeze, *Coccinella septempunctata* L., *Adalia bipunctata* L., *Halyzia 14-guttata* L., *Syrphus* spp. și *Propylaea quatordecimpunctata* L. as predatory species, and among parasites we identified the species *Aphidius matricariae* Hal.

Among the entomophagi specified in the specialized literature, for the species *Thrips tabaci* Lind. we identified *Orius* spp., *Nabis pheroides* Rem. and *Chrysopa* spp. as predatory species, and as parasite the species *Aphidius* spp.

Among the useful species we may mention *Encarsia formosa* Gahan, a parasite of the species *Trialeurodes vaporariorum* Westw. and *Chrysopa* spp., a predator of the same species.

As predators of the species *Macrosiphum solani* Kittel, we enumerate the species *Coccinella septempunctata* L., *Adalia bipunctata* L., *Helophilus lineatus* F. and *Syrphus* spp., and *Aphidius matricariae* Hal. as a parasite.

Among the entomophagi of the species *Leptinotarsa decemlineata* Say., we identified the predators *Zicrona coerulea* L., *Nabis rugosus* L., *Arma custos* L., *Picromerus bidens* L. and the parasite *Meigenia mutabilis* Fall.

As predators of the species *Myzodes persicae* Sulz., we may mention the species *Adonia variegata* Goeze, *Coccinella septempunctata* L., *Halyzia 14-guttata* L., *Syrphus* spp., and *Aphidius matricariae* Hal. as a parasite species.

For the species *Thrips tabaci* Lind., the useful entomofauna is represented by predators

Syrphus spp., *Orius* spp., *Nabis pheroides* Rem., *Chrysopa* spp. and the parasite *Aphidius* spp.

CONCLUSIONS

In 2009 we identified 17 species of predatory and parasite species belonging to different orders and families. Among predators we may mention the species *Chrysopa* spp., *Syrphus* spp., *Coccinella septempunctata* L., *Zicrona coerulea* L., *Perillus bioculatus* F., *Calosoma sycophanta* L., *Adalia bipunctata* L.. In terms of more important parasites, we mention *Aphidius* spp., *Encarsia formosa* Gahan, and *Megaselia rufipes* Mg.

In 2010 we identified 17 species of predatory and parasite species belonging to different orders and families. Among predators we may mention the species *Chrysopa* spp., *Syrphus* spp., *Nabis rugosus* spp., *Arma custos* L., *Picromerus bidens* L., *Adonia variegata* Goeze, *Orius* spp.. In terms of more important parasites, we enumerate the species *Encarsia formosa* Gahan, *Aphidius* spp. and *Meigenia mutabilis* Fall.

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