FOUNDATION FOR REGULATIONS OF INVERTEBRATE BIOCONTROL AGENTS IN SERBIA: FIRST OVERVIEW OF DATA AND RECOMMENDATIONS

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ABSTRACT

The European and Mediterranean Plant Protection Organization (EPPO) is an international organization responsible for cooperation and harmonization in plant protection in the European and Mediterranean region. As part of Yugoslavia, Serbia was a member of the organization from 1951 until it withdrew its membership in 1992. Serbia rejoined in 2004. The EPPO's first activities on biological control agents (BCAs) took place in 1997 and the first “positive list” was drawn up in 2001. It contains a list of BCAs that can be safely used in Europe and the Mediterranean region. The standard PM 6/3 - Biocontrol agents safely used in the EPPO region is the latest document with a list of BCAs and their short biology, which does not require a complete procedure for import and release and contains three appendices: Appendix I - Commercially or officially used biological control agents, Appendix II - Classical BCAs successfully established in the EPPO region, Appendix III - List of biological control agents removed from Appendices I or II. We searched the literature and databases for species listed in Appendices I and II that have ever been detected in Serbia. Of the 112 species listed in Appendix I, 45 have been recorded in Serbia, and of the 42 species listed in Appendix II, six have been recorded in Serbia. In comparison, 38 species listed as indigenous biological control agents in Slovenia: 34 from Appendix I, two from Appendix II and two others.

1 INTRODUCTION

The European and Mediterranean Plant Protection Organization (EPPO) is an international organization responsible for cooperation and harmonization in plant protection in the European and Mediterranean region. It was founded in 1951 by 15

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countries. As part of Yugoslavia, Serbia was a member of the organization from its foundation until it withdrew its membership in 1992. Serbia rejoined in 2004.
The EPPO's first activities on biological control agents (BCAs) took place in 1997 with the establishment of the Panel for the 'Introduction of Exotic Biological Control Agents'. Over several years, panel developed standards of the PM 6 series (Orlinski, 2016) and in 2001 the standard PM 6/3 - Biocontrol agents (BCA) safely used in the EPPO region was created. It contains a list of BCAs that can be safely used in Europe and the Mediterranean region. The organism is considered safe for the EPPO region in several cases (indigenous and widespread, established and widespread, used for at least 5 years in at least 5 EPPO countries without adverse effects) for augmentative biocontrol or found at least 5 years after release without adverse effects for classical biocontrol PM, E. (2021). The latest version of the standard PM6/3 is from 2021 and contains a list of BCAs and their short biology, which does not require a full procedure for import and release and contains three appendices: Appendix I - Commercially or officially used biological control agents, Appendix II - Classical BCAs successfully established in the EPPO region, Appendix III - List of biological control agents removed from Appendices I or II.
Serbia has no regulations for invertebrate biological control agents (IBCA), while Slovenia has had them since 2006. The Slovenian regulation divides biological control agents into two groups: native and nonnative, so that only organisms from native list may be used for biological control. This approach is much stricter than that of most EPPO countries (Trdan et al., 2023). Slovenia is the closest country with a well-regulated IBCA application, so we use their approach as a basis for proposing regulation for IBCA in Serbia.

2 MATERIAL AND METHODS

We performed an extensive literature survey for species listed in EPPO Appendices I and II, that have ever been detected in Serbia. In addition we searched all available databases and compiled first list of EPPO positive biocontrol agents present in Serbia. We also analysed species lists of IBCA recorded in countries surrounding Serbia (Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, North Macedonia, Montenegro and Romania) and compile a list of species which are potentially present in Serbia, but not recorded yet.

3 RESULTS

In total we found that 51 species listed in EPPO Appendices I and II were recorded in Serbia (Tables 1 and 2). Of the 112 species listed in Appendix I, 45 have been recorded inSerbia (Table 1), and of the 42 species listed in Appendix II, six have been recorded in Serbia (Table 2). Also 13 species from Appendix I and II are present in countries close to Serbia and could be possibly present in Serbia (Table 3).

Table 1. List of invertebrate species from Appendix I recorded in Serbia (*also present in Slovenia [Pravilnik o biotičnem varstvu rastlin, 2006]).

INSECTA		
Coleoptera		
species	**family**	**reference**
*Adalia bipunctata**	Coccinellidae	Damjanović, 2024
*Chilocorus bipustulatus**	Coccinellidae	Graora et al., 2009
*Coccinella septempunctata**	Coccinellidae	Damjanović, 2024
*Exochomus quadripustulatus**	Coccinellidae	Graora et al., 2012
*Propylea quatuordecimpunctata**	Coccinellidae	Jovičić et al., 2020
Rodolia cardinalis (Novius cardinalis)	Coccinellidae	Gerber and Schaffner, 2016
Scymnus rubromaculatus	Coccinellidae	Damjanović, 2024
Stethorus punctillum	Coccinellidae	Milenković, 1992
Diptera		
species	family	reference
*Aphidoletes aphidimyza**	Cecidomyiidae	Simova-Tošić et al., 2000
*Episyrphus balteatus**	Syrphidae	Janković et al., 2019
*Eupeodes corolla **	Syrphidae	Janković et al., 2019
*Sphaerophoria rueppellii**	Syrphidae	Van Steenis, 2015
Hemiptera		
species	family	reference
*Anthocoris nemoralis**	Anthocoridae	Jerinić-Prodanović and Protić, 2013
*Anthocoris nemorum**	Anthocoridae	Jerinić-Prodanović and Protić, 2013
*Macrolophus pygmaeus**	Miridae	Protić, 2011
Orius laevigatus	Anthocoridae	Protić, 2011
*Orius majuscules **	Anthocoridae	Protić, 2011
*Picromerus bidens**	Pentatomidae	Protić, 2011
Podisus maculiventris	Pentatomidae	Gerber and Schaffner, 2016
Hymenoptera		
species	family	reference
Anagrus atomus	Mymaridae	Donev, 1998
*Anastatus bifasciatus**	Eupelmidae	Boucek, 1977
Aphelinus abdominalis	Aphelinidae	Boucek, 1977

*Aphidius ervi**	Braconidae	Tomanović et al., 2021
*Aphidius matricariae**	Braconidae	Tomanović et al., 2021
Bracon hebetor	Braconidae	Žikić et al., 2012
Coccophagus lycimnia	Aphelinidae	Graora et al., 2012
Coccophagus scutellaris	Aphelinidae	Dervišević et al., 2023
*Diglyphus isaea**	Eulophidae	Boucek, 1977
Encarsia citrine	Aphelinidae	Graora et al., 1994 ; Graora et al., 2009
*Encarsia formosa **	Aphelinidae	Drobnjaković et al., 2016
Ephedrus cerasicola	Braconidae	Tomanović et al., 2021
Leptomastix epona	Encyrtidae	Boucek, 1977
Opius pallipes	Braconidae	Žikić et al., 2013
*Praon volucre**	Braconidae	Tomanović et al., 2021
*Trichogramma brassicae**	Trichogrammatidae	Ivezić et al., 2018
Trichogramma cacoeciae	Trichogrammatidae	Mihajlović, 2008
Trichogramma evanescens	Trichogrammatidae	Ivezić et al., 2021
Neuroptera		
species	family	reference
*Chrysoperla carnea**	Chrysopidae	Graora et al., 2009
*Micromus angulatus**	Hemerobiidae	Devetak et al., 2023
ARACHNIDA		
Acarina		
species	family	reference
*Amblyseius andersoni**	Phytoseiidae	Stojnić et al., 2014
*Amblyseius barkeri**	Phytoseiidae	Szabó et al., 2018
*Neoseiulus californicus**	Phytoseiidae	Stojnić et al., 2002
*Neoseiulus cucumeris**	Phytoseiidae	Szabó et al., 2018
Phytoseiulus persimilis	Phytoseiidae	Stojnić et al., 2002
*Typhlodromus pyri**	Phytoseiidae	Szabó et al., 2018

Table 2. List of invertebrate species from Appendix II recorded in Serbia (*also present in Slovenia [Pravilnik o biotičnem varstvu rastlin, 2006]).

INSECTA		
Coleoptera		
species	family	reference
*Adalia bipunctata**	Coccinelidae	Damjanović, 2024
Rodolia cardinalis (Novius cardinalis)	Coccinelidae	Gerber and Schaffner, 2016
Hymenoptera		
Aphelinus mali	Aphelinidae	Petrović-Obradović, 2022
Aphytis proclia	Aphelinidae	Graora et al., 1994; Graora et al., 2009
Encarsia berlesei	Aphelinidae	Graora et al., 1994; Graora et al., 2009
Encarsia perniciosi	Aphelinidae	Graora et al., 1994; Graora et al., 2009
Neodryinus typhlocybae	Drynidae	Milosavljević et al., 2017

Table 3. List of invertebrate species from List of biocontrol agents safely used in EPPO region, present in surrounding countries, potentially present in Serbia.

INSECTA		
Diptera		
species	family	contry/reference
Feltiella acarisuga	Cecidomyiidae	Bosnia and Herzegovina - Simova-Tošić et al., 2007 Slovenia - Trdan et al., 2023
Hymenoptera		
species	family	contry/reference
Aprostocetus hagenowii	Eulophidae	Croatia - Noyes, 2019
Comperiella bifasciata	Encyrtidae	Hungary, Montenegro - Noyes, 2019
Ooencyrtus kuvanae	Encyrtidae	Bosnia and Herzegovina, Croatia, North Macedonia - Boucek, 1977
Trichogramma dendrolimi	Trichogrammatidae	Hungary, Romania - Polaszek, 2009
Trichogramma pintoi	Trichogrammatidae	Bulgaria, Romania - Polaszek, 2009
Trichopria drosophilae	Diapriidae	Slovenia - Trdan et al., 2023
Trissolcus basalis	Scelionidae	Slovenia - Trdan et al., 2023
NEMATODA		
species	family	contry/reference

Heterorhabditis bacteriophora	Heterorhabditidae	Bosnia and Herzegovina - Grujić et al., 2021 Slovenia - Trdan et al., 2023
Steinernema carpocapsae	Steinernematidae	Slovenia - Trdan et al., 2023
Steinernema feltiae	Steinernematidae	Croatia - Majić et al., 2018 Slovenia - Trdan et al., 2023
Steinernema kraussei	Steinernematidae	Slovenia - Trdan et al., 2023

4 DISCUSSION

Some countries in the EPPO organization have regulations for invertebrate biocontrol agents that sometimes do not match those of other participating countries, or they have no regulations at all (Mason et al., 2017). Despite some regulations, there is no directive proposed by the European Commission to regulate IBCA that would force countries to adopt regulations in this area. This situation leaves a gap between the regulations of different countries, making regulations pointless due to the mobility of IBCAs. Some invasive IBCAs can cross national borders from a country with no or less stringent regulations to a country with regulations, as in the case of the release of *Harmonia axyridis* in France in the 1990s (Mason et al., 2017). For this reason, regulations should be harmonized across all regions to allow efficient introduction of biocontrol agents, especially for highly invasive pests (Mason et al., 2017). The global cost of damage caused by invasive pest species is estimated at over US$ 70 billion per year (Bradshaw et al., 2016). Unfortunately, many invasive species go unnoticed upon introduction and remain undetected until their populations are well established and causing significant damage to crops and other cultures. Once established, it is often difficult to control these species effectively. Due to raising concerns about use of chemical insecticides (because of health and environmental risks) (Ansari et al. 2014) as well as increasing resistance of pest species to various chemical treatments (Siddiqui et al. 2023), an integrated pest management using biological control agents is increasingly being adopted and has the potential to effectively manage pest species.

Current study is a part of collective effort of several researchers from western Balkans to harmonize IBCA regulations across the region. Although, there were no systematic research efforts to determine field presence and distribution of invertebrate species from EPPO Appendices I and II in Serbia, provided lists should be used as a foundation for official legislative of Serbian government.

There are two more steps which will considerably improve the IBCA regulative in Republic of Serbia, beside the document based on this study. First, there is a need for governmental founded project which will evaluate field presence and distribution of IBCAs in Serbia, and a lists should be updated according to results. Furthermore, the project should also identify the genetic variability of most important IBCAs because there could be different control potential in different strains of BCA.

The second step is to introduce pre-emptive biological control in official legislative. The pre–emptive biological control is a novel approach which represents a potentially more effective way of pest control, where natural enemies can be selected, assessed and

ready for release when the pest species arrive (Gonzalo et al. 2023). For example, a fall army worm, *Spodoptera frugiperda* (Lepidoptera, Noctuidae), is a major polyphagous pest native to tropical Americas and spread throughout the world, but still not reported from Serbia. In Europe, it is detected in Cyprus, Greece, Portugal, Spain and Turkey (www.eppo.int). In the region where this species is present it can cause up to 50% of yield loss of maize, and is also a serious economic threat to the production of over 80 different crops (Bakry and Abdel–Bakry, 2023). Several different agents from the genera *Trichogramma* and *Telenomus* are effective in biological control (Jin et al., 2021, Colmenarez et al. 2022). On the EPPO list Biological control agents safely used in the EPPO region (PM6/3(5)), the genus *Trichogramma* is represented by 6 species, while *Telenomus* is still absent. Of these species, two are reported to parasitize the egg masses of *Spodoptera* (*T. evanescens* and *T. dendrolimi*). Currently, only *T. evanescens* is recorded in Serbia, however, we suspect that *T. dendrolimi* is also present, as it has been reported from neighboring countries (Hungary, Bulgaria, Romania) (Noyes, 2019). According to current predictions (Gilioli et al. 2023), transient populations of *Spodoptera frugiperda* could make local damage to maize production in Serbia. *Trichogramma evanescens* could be a prospective candidate for pre–emptive biological control of *S. frugiperda* in Serbia. However, thorough field surveys, screening and assessment in laboratory conditions are needed in order to establish its potential.

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6 LITERATURE

Ansari, M., Moraiet, M., Ahmad, S. (2014). Insecticides: *Impact on the Environment and Human Health*. In: Malik, A., Grohmann, E., Akhtar, R. (eds) *Environmental Deterioration and Human Health*. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-7890-0_6

Avila, G.A., Seehausen, M.L., Lesieur, V., Chhagan, A., Caron, V., Down, R.E., Audsley N., Collatz, J., Bukovinszki, T., Sabbatini Peverieri, G., Tanner, R., Maggini, R., Milonas, P., McGee, C.F., Horrocks, K., Herz, A., Lemanski, K., Anfora, G., Batistič, L., … Barratt, B.I.P. (2023). Guidelines and framework to assess the feasibility of starting pre-emptive risk assessment of classical biological control agents, *Biological Control*, Volume 187, 105387,https://doi.org/10.1016/j.biocontrol.2023.105387.

BAkry, M.M.S. and Abdel-Baky, N.F., (2023). Population density ofthe fall armyworm, *Spodoptera frugiperda* (Smith) (Lepidoptera: Noctuidae) and its response to some ecological phenomena in maize crop, Egypt. *Brazilian Journal of Biology*, vol. 83, pp. e271354. https://doi.org/10.1590/1519-6984.271354

Boucek, Z. (1977). A faunistic review of the Yugoslavian Chalcidoidea (Parasitic Hymenoptera). *Acta Entomologica Jugoslavica* 13(Supplement)

Bradshaw, C., Leroy, B., Bellard, C., Roiz, D. Albert, C., Fournier, A., Barbet – Massin, M., Salles, J.M., Simard, F., & Courchamp, F.,(2016). Massive yet grossly underestimated global costs of invasive insects. *Nat Commun* 7, 12986. https://doi.org/10.1038/ncomms12986

Colmenarez, Y. C., Babendreier, D., Ferrer Wurst, F. R., Vásquez-Freytez, C. L., & de Freitas Bueno, A. (2022). The use of Telenomus remus (Nixon, 1937)(Hymenoptera: Scelionidae) in

the management of *Spodoptera* spp.: potential, challenges and major benefits. *CABI Agriculture and Bioscience*, *3*(1), 5. https://doi.org/10.1186/s43170-021-00071-6

Dervišević, M., Stojanović, A., & Graora, D. (2023). Bionomy of *Coccus pseudomagnoliarum* (Kuwana)(Hemiptera: Coccidae), a new species in the fauna of Serbia. *Pesticidi i fitomedicina = Pesticides and Phytomedicine*, *38*(2), 55-63. https://doi.org/10.2298/PIF2302055D

Devetak, D., Jakšić, P., Nahirnić, A., Janžekovič, F., Klenovšek, T., Podlesnik, J., & Klokočovnik, V. (2023). Contribution to the knowledge of Neuropterida (Raphidioptera, Neuroptera) of Serbia collected in the period 2015-2016. *Acta entomologica slovenica*, *31*(1), 77-100.

Donev, A.D. (1998). Distributional data about the species of genus Anagrus Haliday (Hymenoptera, Mymaridae) in the Balkan peninsula with description of a new species. *Acta Zoologica Bulgarica* 50(1):71-78

Drobnjaković, T., Marčić, D., Prijović, M., Perić, P., Milenković, S., & Bošković, J. (2016). Life history traits and population growth of *Encarsia formosa* Gahan (Hymenoptera: Aphelinidae) local population from Serbia. *Entomologia Generalis*, *35*, 281-295.

Editor [Damjanović J.] (2014-2024) Alciphron – data base about insects in Serbia (Coccinelidae), Habiprot https://alciphron.habiprot.org.rs [last visit 22/05/2024]

Gerber, E., & Schaffner, U. (Eds.). (2016). *Review of invertebrate biological control agents introduced into Europe*. CABI.

Gilioli, G., Sperandio, G., Simonetto, A., Ciampitti, M., & Gervasio, P. (2023). Assessing the risk of establishment and transient populations of *Spodoptera frugiperda* in Europe. *Journal of Pest Science*, *96*(4), 1523-1537. https://doi.org/10.1007/s10340-022-01517-0

Graora, D., Mihajović, Lj. & Stojnić, B. (1994). Prirodni neprijatelji štitastih vaši (Homoptera: Diaspididae) na jabuci. *Zaštita bilja danas i sutra* Beograd 361-371

Graora, D., Spasić, R., & Mihajlović, L. (2012). Bionomy of spruce bud scale, Physokermespiceae (Schrank)(Hemiptera: Coccidae) in the Belgrade area, Serbia. *Archives of Biological Sciences*, *64*(1), 337-343. https://doi.org/10.2298/ABS1201337G

Graora, D., Spasić, R., & Vučetić, A. (2009). Parazitoidi i predatori štitastih vašiju iz familije Diaspididae u nekim voćnjacima u Srbiji (Parasitoids and predators of armored scales on fruit trees in Serbia). *Pesticidi i fitomedicina*, *24*, 295-301.

Grujić, N., Graora, D., Nježić, B., Bosančić, B., & Tarasco, E. (2021). Virulence of Entomopathogenic Nematodes To Three Soft Scale Insect Species. *Redia: Giornale di Zoologia*, 104 http://dx.doi.org/10.19263/REDIA-104.21.22

Ivezić, A., Rugman-Jones, P. F., & Trudić, B. (2021). Rapid molecular identification of *Trichogramma* (Hymenoptera: Trichogrammatidae) parasitizing the eggs of the European corn borer, *Ostrinia nubilalis* (Lepidoptera: Crambidae) in Serbia. *Egyptian Journal of Biological Pest Control*, *31*, 1-8. https://doi.org/10.1186/s41938-021-00414-5

Ivezić, A., Rugman-Jones, P., Stouthamer, R., & Ignjatović-Ćupina, A. (2018). Molecular identification of *Trichogramma* egg parasitoids of *Ostrinia nubilalis* in northeastern Serbia. *Archives of Biological Sciences*, *70*(3), 425-432. https://doi.org/10.2298/ABS171103002I

Janković, M., Nedeljković, Z., Milovac, Ž., & Vujić, A. (2019). Diversity and structure of hoverfly (Diptera: Syrphidae) communities in agricultural areas in Vojvodina Province (Serbia) a case study on *Brassica napus* L. *Journal of the Entomological Research Society*, *21*(2), 129-144. https://doi.org/10.2298/ABS171103002I

Jerinić-Prodanović, D., & Protić, L. (2013). True bugs (Hemiptera, Heteroptera) as psyllid predators (Hemiptera, Psylloidea). *ZooKeys*, (319), 169. https://doi.org/10.3897/zookeys.319.4316

Jin, T., Lin, Y., Ma, G., Liu, J., Hao, Z., Han, S., & Peng, Z. (2021). Biocontrol potential of *Trichogramma* species against *Spodoptera frugiperda* and their field efficacy in maize. *Crop Protection*, *150*, 105790. https://doi.org/10.1016/j.cropro.2021.105790

Jovičić, I., Radonjić, A., Kljajić, P., Andrić, G., Golić, M. P., & Petrović-Obradović, O. (2020). *Harmonia axyridis* (Coleoptera: Coccinellidae) in Serbia: its presence on aphid-infested plants and co-occurrence with native aphidophagous coccinellids. *Pesticides and Phytomedicine/Pesticidi i fitomedicina*, *35*(3), 145-159. https://doi.org/10.2298//PIF2003145J

Majić, I., Sarajlić, A., Lakatos, T., Tóth, T., Raspudić, E., Zebec, V., Šarić, G., Kovačić, M., & Laznik, Ž. (2018). First report of entomopathogenic nematode *Steinernema feltiae* (Rhabditida:

Steinernematidae) from Croatia. *Helminthologia*,55(3) 256-260. https://doi.org/10.2478/helm-2018-0024

Mason, P. G., Everatt, M. J., Loomans, A. J. M., &Collatz, J. (2017). Harmonizing the regulation of invertebrate biological control agents in the EPPO region: using the NAPPO region as a model. *EPPO Bulletin*, *47*(1), 79-90. https://doi.org/10.1111/epp.12355

Mihajlović, L. (2008). Šumarska entomologija. *Beograd: Šumarski fakultet*.

Milenković, S. (1994). Bioecology of the strawberry aphid, Chaetosiphon fragaefolii Cockerell (Homoptera: Aphididae). *Review of Research Work at the Faculty of Agriculture, Belgrade*, *39*(1), 21-27.

Noyes, J.S. 2019. Universal Chalcidoidea Database. World Wide Web electronic publication. http://www.nhm.ac.uk/chalcidoids

Orlinski, A. D. (2016). Work of the EPPO/IOBC Panel on biological control agents. *EPPO Bulletin*, *46*(2), 243-248. https://doi.org/10.1111/epp.12309

Petrović-Obradović, O. (2022). Biljne vaši (Hemiptera: Aphididae) - štetočine jabuke. Biljni lekar / Plant doctor, 50 (6): 542-552.

PM, E. (2021). 6/3 (5) Biological control agents safely used in the EPPO region. EPPO standard–safe use of biological control. *EPPO Bull*, *1*, 452-454. https://doi.org/10.1111/epp.12801

Polaszek, A. (2009). Species Diversity and Host Associations of *Trichogramma* in Eurasia. In: Consoli, F., Parra, J., Zucchi, R. (eds) Egg Parasitoids in Agroecosystems with Emphasis on *Trichogramma* . Progress in Biological Control, vol 9. Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-9110-0_9

Pravilnik o biotičnem varstvu rastlin (2006) Uradni list RS, št. 45/2006

Siddiqui, J.A., Fan, R., Naz, H., Bamisile, B.S., Hafeez, M., Ghani, M.I., Wei, Y., Xu, Y., & Chen, X. (2023). Insights into insecticide resistance mechanisms in invasive species: Challenges and control strategies. Front. Physiol. 13:1112278. https://doi.org/10.3389/fphys.2022.1112278

Simova–Tošić, D., Skuhravá, M., & Skuhravý, V. (2000). Gall midges (Diptera: Cecidomyiidae) of Serbia. *Acta entomologica. serbica*, *5*(1/2), 47-93.

Simova-Tošić, D., Skuhravá, M., & Skuhravý, V. (2007). Gall midges (Diptera: Cecidomyiidae) of Bosnia and Hercegovina. *Acta Societatis Zoologicae Bohemicae*, 71(1), 27-43.

Stojnić, B., Mladenović, K., Marić, I., & Marčić, D. (2014). Species complexes of predatory mites and spider mites (Acari: Phytoseiidae, Tetranychidae) on cultivated and wild apple trees in Serbia. *International Journal of Acarology*, *40*(7), 485–492. https://doi.org/10.1080/01647954.2014.956671

Stojnić, B., Panou, H., Papadoulis, G., Petanović, R., & Emmanouel, N. (2002). The present knowledge and new records of phytoseiid and tydeid mites (Acari: Phytoseiidae, Tydeidae) for the fauna of Serbia and Montenegro. *Acta entomologica serbica*, *7*(1-2), 111-117.

Szabó, Á.,Török, G., & Pénzes, B. (2018). The occurrence of predatory mites in the vineyards of Vojvodina, Serbia. *Növényvédelem*, *54*(2), 59-65.

Tomanović, Ž., Žikić, V., & Petrović, A. (2021) Fauna parazitoidnih osa (Hymenoptera, Braconidae, Aphidiinae) Srbije. SANU, Beograd.

Trdan, S., Laznik, Ž., & Bohinc, T. (2023). Native natural enemies of plant pests in Slovenia with an emphasis on species suitable for mass rearing. *Journal of insect science*, *23*(5), 3. https://doi.org/10.1093/jisesa/iead015

Van Steenis, J. (2015). New data on the hoverflies (Diptera: Syrphidae) of Serbia and Montenegro. *Acta entomologica serbica*, *20*, 67-98. DOI: 10.5281/zenodo.45394

Žikić, V., Stanković, S. S., & Ilić, M. (2012). Checklist of the genus *Bracon* (Hymenoptera: Braconidae) in Serbia. *Biologica Nyssana*, *3*(1), 21-29.

Žikić, V., van Achterberg, K., Tomanović, Ž.,Ilić-Milošević, M., & Rakhshani, E. (2013). Contributions to the Opiinae (Hymenoptera: Braconidae) of Serbia and Montenegro. *Acta Entomologica Serbica*, *18*(1/2), 177-186