Introduction and spread of invasive mites and insects in Serbia and Montenegro

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INTRODUCTION

Legislative and regulatory measures concerning plant protection in Serbia have been established since 1898. According to the Law of plant protection (1998) and related legislation, they include eradication, containment campaigns, surveys, risk assessments, and scientific investigations on the life history and behaviour of harmful organisms. Invasive and alien mites and insects, some of which are of economic importance in agronomy, horticulture and forestry (Milošević, 1980), have been studied in the former Yugoslavia, and in Serbia and Montenegro, for more than 70 years.

MATERIAL AND METHODS

The investigation of invasive and alien mites and insects was based mainly on pests of agriculture, forestry and ornamental plants. In order to obtain correct diagnoses, standard acarological and entomological methods were applied. Scientific names of mites follow the Petanović (2004), and scientific names of insects follow Jacobs & Renner (1988), Alford (1991) and Petrović-Obradović (1992).

RESULTS AND DISCUSSION

The following 17 alien species of mite were found in Serbia or the former Yugoslavia during the period 1979–2004: Eriophyidae – *Aceria byersi*, *A. caliberberis*, *A. ligustri*, *Aculops gleditsiae*, *Antocoptes transitionalis*, *Cecidophyopsis hendersoni*, *Coptophylla lamimani*, *Cosetacus camelliae, Epitrimerus cupressi*, *Eriophyes emarginatae*, *Paraphytoptus chrysanthemi* and *Vasates quadripedes*; Phytoptidae – *Phytoptus hedericola*; Tetranychidae – *Eotetranychus weldoni*; Tenuipalpidae – *Brevipalpus obovatus* and *Tenuipalpus pacificus*; Tarsonemidae – *Polyphagotarsonemus latus*.

More than 60% of the alien mite species were recorded for the first time during the last 15 years. Fourteen species were associated with ornamental plants, two species were found on vegetables and one species on fruit. Six species could become of great importance in glasshouses; e.g. *Brevipalpus obovatus* and *Polyphagotarsonemus latus* could be harmful to protected ornamentals. Five species could become of great importance in green urban areas; *Aceria ligustri* could cause severe damage and dieback on privet (*Ligustrum*) hedges.

Most of alien and invasive mites originated from Central and North America.

The following 53 invasive and alien insect pests were found in Serbia and Montenegro, most from 1950 onwards: Hemiptera (Heteroptera) – *Corythucha ciliata*, *Metcalfa pruinosa* and *Stictocephala bisonia*; Hemiptera (Homoptera) – *Adelges laricis*, *Aphis forbesii*, *Chaetosiphon fragaefolii*, *Cinara cedri*, *C. curvipes*, *Myzus varians*, *Diuraphis noxia*, *Dreyfusia nordmannianae*, *Eriosoma lanigerum*, *Gilletteella cooleyi*, *Icerya purchasii*, *Pineus strobi*, *Pseudaulacaspis pentagona*, *Quadraspidiotus perniciosus*, *Scaphoideus titanus*, *Trialeurodes vaporariorum* and *Viteus vitifolii*; Thysanoptera – *Frankliniella occidentalis*; Coleoptera – *Acanthoscelides obtectus*, *Diabrotica virgifera virgifera Glischrochilus quadrisignatus, Lasioderma serricorne*, *Latheticus oryzae*, *Leptinotarsa decimlineata*, *Lyctus brunneus*, *Neoclytus acuminatus*, *Oryzaephilus surinamensis* and *Tenebrioides mauritanicus*; Lepidoptera – *Antherea yamamai*, *Anagasta kuehniella*, *Cacoecimorpha pronubana*, *Cameraria ohridella*, *Coleophora laricella*, *Cydia molesta*, *Epichoristodes acerbella*, *Hyphantria cunea*, *Parectopa robiniella*, *Phyllocnistis citrella*, *Phyllonorycter robiniella*, *P. leucographella* and *Sitotroga cerealella*; Diptera – *Aedes albopictus*, *Ceratitis capitata*, *Chymomyza amoena*, *Dasyneura gleditchiae*, *Liriomyza trifolii* and *L. huidobrensis*; Hymenoptera – *Bruchophagus sophorae*, *Megastigmus spermotrophus* and *Monomorium faraonis*.

The majority of alien insect species were pests of ornamentals (34%), fruit (25%) and stored products (13%). The rest were associated with grapevine (4%), cereals (6%), vegetables (6%), forestry (6%), wood (4%) and human health (4%). First records for more than one third of the important species occurred during the past 16 years. The most important pests were: the lachnid *C. curvipes*, the thrips *F. occidentalis*, the planthopper *M. pruinosa*, the leaf beetle *D. virgifera virgifera* and the leaf miner *L. huidobrensis* (all important plant pests), plus the leafhopper *S. titanus* and the mosquito *A. albopictus* (potential vectors of plant and human pathogens, respectively).

Of the alien insect pests, about one third were of American origin; one fifth originated from China, Korea, Japan and from elsewhere in South East Asia.

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