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INVESTIGATIONS ON BIOLOGICAL CONTROL  
OF WEEDS IN ROMANIA

T.PERJU and A.SALONTAI

Abstract

PERJU, T., A.SALONTAI, 1989, Investigations on biological control of weeds in Romania. Not. Bot. Hort. Agrobot. Cluj-Napoca, XVIII-XIX, 81-84. Conducted and systematic investigations on the biological control of weeds were not carried out both in this country and within the Agronomy Institute of Cluj-Napoca, namely by the Department of Entomology (T.PERJU 3-6). In 1985-1987, as a results of investigations led by the authors, there were traced down the troublesome weeds in the main agroecosystems as well as the carriers and phytophagous insects contributing spontaneously to the reduction of weed thickness in the crops and to reducing their spreading ability.

Index words: Biological control troublesome weeds, pathogens agents, phytophagous insects.

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A great many number of references account for the outstanding results world-wide already obtained in the biological control of weeds (8).

Romania, a land of an advanced socialist agriculture, is also confronted with this topical problem of weed control by any possible means in all lands under crop. Starting with the mechanic - manual and mechanized - control associated with the chemical one, and by using a large scale of herbicides - indigenous and from abroad - we have constantly been directing towards the biological control.

Alongside with the introduction the concept of an integrated agroecosystems protection in our agriculture, the research workers set increasingly hopes on biological control of pathogens, pests and weeds in cultivated soils.

The few attempts in approaching this very attractive but delicate research field of biological weed control and to put it into

practice in Romania by using pathogens and phytophagous organisms may be summarized as follows:

1. Recurrent classifying of weeds in cultivated lands and identifying the problem-species to be controlled.

The following problem-species of weeds were identified within the major agroecosystems: Agropyron repens (L.) P.B., Amaranthus retroflexus L., Atriplex patula L., Chenopodium album L., Cirsium arvense (L.) SCOP., Convolvulus arvensis L., Echinochloa crus-galli (L.) P.B., Galeopsis tetrahit L., Galinsoga parviflora CAV., Galium aparine L., Polygonum aviculare L., Rumex sp., Stellaria pumila (POIR.) SCHULT., Solanum nigrum L., Sonchus arvensis L., Sonchus oleraceus L. (7).

2. Identifying of pathogens on some problem-species of weeds.

The following pathogens species were identified on the main problem-species of weeds: Puccinia suaveolens PERS./Cirsium arvense (L.) SCOP.; Albugo candida (PERS.) KUNZ./Sinapis arvensis L., Capsella bursa-pastoris (L.) MEDIK. and Raphanus raphanistrum L.; Albugo bliti BIV.BERN.) and Peronospora polygoni DC./Amaranthus retroflexus L. and Polygonum aviculare L.; Peronospora minor (CASP.) GÄUM./Atriplex patula L. and Chenopodium album L.; Peronospora chenopodii SCHLECHT./Chenopodium album L.; Peronospora media GÄUM./Stellaria media (L.) VILL.; Uromyces sp./Euphorbia cyparissias L.; Sphaerotheca euphorbiae (CAST.) SALM./Euphorbia helioscopia L.; Erysiphe convolvuli DC.:ST.AMANAS/Convolvulus arvensis L.; Leptosphaeria dolichoides (AUERSW.) KARST./Echium russicum J.P.GMEL.; Erysiphe asperifolium OPER./Echium vulgare L.; Torula expansa KUNZ./Solanum nigrum L.; Ustilago avenae (PERS.) JENSEN/Avena fatua L.; Erysiphe galii (PUCK.) BLUM/Galium aparine L.; Erysiphe polygoni DC.:ST.AMANAS/Rumex sp., Puccinia agropyrina ERIKSS./Agropyron repens (L.) P.B.; Helminthosporium turcicum PASS./Echinochloa crus-galli (L.) P.B.; Cladosporium tussilaginis PERS.) LEV./Tussilago farfara L.; Bremia sonchis C.SAW./Sonchus arvensis L. (1, 2).

3. Identifying of phytophagous insects on some problem-species of weeds.

Starting from the seminiphagous insects, priority was conferred to weed species of the family Compositae (Cirsium sp., Carduus sp.,

Onopordon sp., Sonchus sp., Centaurea sp.), Leguminosae (Cytisus sp., Lathyrus sp., Vicia sp.), Umbelliferae (Heracleum sp., Seseli sp.) and others.

The main phytophagous insects identified on some problem-weeds are presented as follows: Gastrophysa viridula DEG./Rumex sp.; Gymnetron antyrrhini PAYK./Linaria vulgaris MILL.; Gymnetron netum GERM. and Larinus carlinae OLIV./Carduus acanthoides L.; Larinus jaceae F./Carduus nutans L.; Larinus sturnus SCHALL./Cirsium sp. and Arctium sp.; Larinus turbinatus GYLL./Cirsium sp.; Limobius borealis PAYK./Erodium cicutarium (L.) L'HERIT.; Rhynocillus conicus FALL./Carduus sp.; Sibinia pellucens SCOP.BEDEL/Silene alba MILL.; Metzneria neuropterella L./Centaurea sp.; Eucosoma incana ZELL./Cirsium sp. and Carduus sp.; Heliophobus reticulata GOEZE./Silene alba MILL.; Acanthophilus helianthi ROSSI./Carthamus sp. and Centaurea sp.; Chaetorelia jaceae ROB.DESV./Centaurea sp.; Chaetorelia loricata ROND./Centaurea scabiosa; Ensina sonchi L./Sonchus arvensis L. and Leontodon sp.; Myopites blotei BRAD./Carduus sp.; Orelia colon MEIG./Cirsium sp. and Centaurea sp.; Orelia distans LOEW./Onopordon acanthium L.; Orelia tussilaginis FAB./Centaurea sp.; Tephritis bardanae SCHRNK./Arctium lapa L.; Tephritis crepidis HEND./Sonchus arvensis L.; Tephritis dilacerata LOEW./Cirsium sp.; Tephritis heisleri FRFLD./Cirsium sp.; Tephritis postica LOEW./Onopordon acanthium L.; Urophora aprica FALL., U. erirolepidis LOEW., U. jaceae HER., U. quadrifasciata MEIG., U. solstitialis L., U. stylata F./ Centaurea sp. (3-6).

The biological control of problem-weeds has to be established as the prevailing method in the integrated agricultural protection system reducing thus until the total remove of herbicides known as being detrimental for the environment and for foodstuffs as well.

Rezumat

PERJU, T., A.SALONTAI, 1989, Cercetări privind combaterea biologică a buruienilor în România. Not. Bot. Hort. Agrobot. Cluj-Napoca, XVIII-XIX, 81-84. Cercetări organizate și sistematice pe această temă în țara noastră nu au fost întreprinse; câteva investigații totuși au fost inițiate în cadrul Institutului agronomic din Cluj-Napoca, la disciplina de Entomologie (3-6). În perioada anilor 1985-1987, ca urmare a cercetărilor întreprinse de autori, au fost stabilite speciile de buruieni-problemă din principalele agroecosisteme, precum și agenții patogeni și insectele fitofage care contribuie în mod spontan la reducerea semnificativă a capacității de înmulțire a lor.

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### SÉMINIPHAGES SE DÉVELOPPANT DANS LES INFLORESCENCES DES ESPÈCES DE CENTAUREA (ASTERACEAE)

T. PERJU et I. MOLDOVAN

#### Abstract

PERJU, T., I. MOLDOVAN, 1989, Seminifagous insects growing on inflorescences of Centaurea species (Asteraceae). (In French). Not. Bot. Hort. Agrobot. Cluj-Napoca, XVIII-XIX, 85-90. A study was performed on the entomofauna growing on inflorescences of 14 Centaurea species, the most common found in the Romanian flora. Eleven species of Thephritidae-diptera were evidenced their larvae feeding on sprouting Centaurea flowers and seeds. Some species of Thephritidae-diptera as: Chaetorelia jacea, Urophora jaceana, U. quadri-fasciata, strongly infesting various Centaurea species, problem weeds of some natural or cultivated ecosystems, become phytophagous and have a most significant share in the biological control of those weeds.

Key words: Centaurea, seminiphagous species.

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#### Introduction

La flore de notre pays (de Roumanie) est riche en des espèces de Centaurea, dont l'étude monographique par I. PRODAN (7) date de 1939. L'ouvrage Flora de la R.S.R., vol. IX. mentionne 69 espèces et un grand nombre de hybrides.

Le complexe d'organismes phytophages se nourrissant et se développant sur diverses espèces de Centaurea — certaines d'entre elles constituant des mauvaises herbes-problèmes pour les prairies naturelles (Centaurea jacea, C. nigrescens etc.) — fait l'objet d'amples recherches (8), en vue de détecter les agents biologiques de lutte contre ces mauvaises herbes.

Parmi les organismes phytophages ayant un rôle significatif dans la réduction de la capacité multiplication des espèces de

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