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Biological Control of weeds in Romania

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Abstract

The most troublesome weeds in Romania, along with pathogens and arthropods from these and other weeds, are listed.

Introduction

Significant results have been obtained with biological control of weeds (Schroeder 1985).

Romania, which has an advanced agriculture, shares this problem, and strives to keep up-to-date, with control options for cultivated weeds. Mechanical (manual and mechanized), and chemical (with a wide scale of native and foreign herbicides) control have been used for many years, but we are increasingly looking to develop biological control of our major pest species. Simultaneously we are introducing integrated control in agroecosystems, using natural enemies as the most important element for management of pathogens, insect pests and weeds in cultivates situations (Perju 1981, Perju *et al.*, 1983, 1984, 1986).

A summary of the limited (but increasing) experience with biological control of weeds in Romania follows.

Major Crop Weeds and Known Natural Enemies in Romania

Major economically-important weed species in agroecosystems have been surveyed, and potential biological control agents are listed in Table 1.

Conclusions

Biological control of troublesome weeds is the first priority in integrated control systems for managing agricultural pests. Successful biological control will lead to diminishment or elimination of herbicides which pollute the environment and food.

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Table 1. Major weed species and natural enemies in Romania (Bontea Vera 1953, 1985, Ceianu and Perju 1987, Perju 1981, Perju *et al.* 1983, 1986, Salontai and Muntean 1982).

Weed species	Natural enemy species
Amaranthaceae	
Amarantus retroflexus L.	*Albugo amaranthi* (Schw.) Forst. (Peronosporales: Albuginaceae) *Peronospora amaranthi* Gäum (Phycomycetes: Peronosporaceae)
Asteraceae	
Arctium lappa L.	*Tephritis bardanae* Schmk. (Diptera: Tephritidae)
Arctium spp.	*Larinus sturnus* Schall. (Coleoptera: Curculionidae)
Carduus acanthoides L.	*Gymnaetron netum* Germ. (Coleoptera: Curculionidae) *Larinus carlinae* Oliv.
C. nutans L.	*L. jaceae* F.
Carduus spp.	*Rhinocyllus conicus* Froelich (Coleoptera: Curculionidae) *Eucosma incana* Zeller (Lepidoptera: Tortricidae) *Myopites blotei* Brad. (Diptera: Tephritidae)
Carthamus spp.	*Acanthophilus helianthi* Rossi. (Diptera: Tephritidae)
Centaurea spp.	*A. helianthi* *Chaetorellia jaceae* (Rob.) Desv. (Diptera: Tephritidae) *Metzneria neuropterella* L. (Lepidoptera: Gelechiidae) *Orellia colon* Meig.(Diptera: Tephritidae) *O. tussilaginis* Fab. *Urophora aprica* Fall. (Diptera: Tephritidae) *U. eriolepidis* Loew. *U. jacena* Her. *U. quadrifasciata* Meig. *U. solstitialis* L. *U. stylata* F.
Cirsium arvense (L.) Scopoli	*Puccinia suaveolins* Pers. (Teliomycetes: Pucciniaceae)
Cirsium spp.	*Larinus sturnus* *L. turbinatus* Gyll. *Eucosma incana* *Orellia colon* *Tephritis dilacerata* Loew. *T. heiseri* Frfld.
Leontodon spp.	*Chaetorellia loricata* Rond. *Ensina sonchi* L. (Diptera: Tephritidae)
Onopordum acanthium L.	*Orellia distans* Loew. *Tephritis postica* Loew.
Tussilago farfara L.	*Coleosporium tussilaginis* (Pers.) Lev. (Basidiomycetes: Coleosporiaceae)
Boraginaceae	
Echium rossicum Y. P. Ghuel	*Leptosphaeria dolioides* (Auersw.) Karst. (Sphaeriopsidales: Sphaeriopsidaceae)
E. vulgare Y. P.. Ghuel	*Erysiphe asperiofoliorum* Grev. (Plectomycetes: Erysiphaceae)
Brassicaceae	
Capsella bursa-pastoris (L.) Medic.	*Albugo candida* (Pers.) Kze. (Phycomycetes: Albuginaceae)
Sinapis arvensis L.	*A. candida*

Table 1. Continued.

Weed species	Natural enemy species
Raphanus raphanistrum L.	*Albugo candida*
Caryophyllaceae	
Silene alba Mill.	*Sibinia pellucens* Scop. (Coleoptera: Curculionidae) *Heliophobus reticulata* Goeze. (Lepidoptera: Noctuidae)
Stellaria media (L.) Cyr.	*Peronospora media* Gaum.
Chenopodiaceae	
Atriplex patula L.	*Peronospora forinosa* (Fr.) Fr.
Chenopodium album L.	*P. forinosa* *P. chenopodii* Schlecht.
Convolvulaceae	
Convolvulus arvensis L.	*Erysiphe convolvuli* DC. ex. St. Amans
Euphorbiaceae	
Euphorbia cyparissias L.	*Uromyces* spp. (Teliomycetes: Pucciniaceae)
E. helioscopia L.	*Sphaerotheca euphorbiae* (Cast.) Salm. (Ustilaginales: Erysiphaceae)
Geraniaceae	
Erodium cicutarium (L.) L'herit.	*Limnobius borealis* Payk. (Coleoptera: Curculionidae)
Lamiaceae	
Galeopsis tetrachit L.	*Erysiphe galeopsidia* DC *ex* Merat.
Poaceae	
Agropyron repens (L.) Beauv.	*Puccinia agropyrina* Erikss.
Avena fatua L.	*Ustilago avenae* (Pers.) Jensen (Ustilaginales: Ustilaginaceae)
Echinochloa crus-galli (L.) Beauv.	*Helminthosporium turcium* Pass. (Hyphomycetes)
Setaria italica (Poir.) Roem. & Schult.	*Ustilago crameri* Körn
Sonchus arvensis L.	*Bremyia sonchi* TK. Saw. (Phycomycetes: Peronosporaceae) *Chaetorellia loricata* Rond. *Ensina sonchi* *Tephritis crepidis* Hend.
S. oleraceus L.	*Coleosporium sonchi* (Schum.) Lév. (Basidiomycetes: Coleosporiaceae)
Polygonaceae	
Polygonum aviculare L.	*Albugo candida*
Rumex sp.	*Erysiphe polygoni* DC. ex. St. Awans *Gastrophysa viridula* Deg. (Coleoptera: Chrysomelidae)
Rubiaceae	
Galium aparinae L.	*Erysiphe galii* (Fuck.) Blum
Scrophulariaceae	
Linaria vulgaris Mill.	*Gymnaetron anthyrhini* Paykull (Coleoptera: Curculionidae)
Solanaceae	
Solanum nigrum L.	*Torula expansa* Kze. (Fungi Imperfecti: Dematiaceae)