

LIST OF RARE, ENDEMIC AND THREATENED PLANTS IN ROMANIA (II.)

I. MOLDOVAN, D. PÁZMÁNY, L. DRAGOȘ

Abstract:

MOLDOVAN I., PÁZMÁNY D., DRAGOȘ L., 1989. List of rare, endemic and threatened plants in Romania (II.).

Not. Bot. Hort. Agrobot., Cluj-Napoca, XVIII-XIX, 67-80. This note presents another 35 endemic species accepted by the Romanian specialists (8) consecutive to the IUCN list published earlier (13) as well as 137 rare species, the majority of them threatened. The ecologic, zoologic and phytocenotic indices are presented by IUCN Red Data Book Categories.

Key words: threatened plants, conservation

Address: Institutul Agronomic Cluj-Napoca, Disciplina de Botanică, 3400 Cluj-Napoca, str. Mănăștur 3, R.S. România.

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Recently about 630 rare, relict and endemic species are indicated as worth of attention in conservation by different Romanian authors.

In this second report we considered rare, relict, endemic and threatened species accepted by Romanian specialists (8,11,18,20).

The order of informations from the list is as follows: family, infraspecific taxa, author; IUCN Red Data Book Categories (cf. tab. 1.), Threat Code (cf. tab. 2.); Habitat Code (cf. tab. 3).

Tab. 1.

The IUCN Red Data Book Categories

Ex = extinct	R = rare	O = out of danger
E = endangered	K = insufficiently known	
V = vulnerable	nt = not threatened	

Tab. 2.

The IUCN Threat Codes

<u>Code</u>	<u>Meaning</u>	<u>Code</u>	<u>Meaning</u>
A1	= deforestation	G1	= hybridisation
A2	= aforestation	C2	= competition
A3	= pollution	C3	= predation
A4	= dam construction	C4	= disease
A5	= changes in water table level	D1	= low population
A6	= siltation	D2	= restricted range
A7	= canalisation	D3	= fire (≠ A16)
A8	= reclamation	D4	= others
A9	= urbanisation	E1	= ineffective conservation management
A10	= road/railway building	E2	= human pressure
A11	= mining	E3	= persecution (removal, chemical control)
A12	= other human activities	E4	= wars
A13	= tourism	E5	= lack of pollinators
A14	= browsing	E6	= lack of seed dispersal agents
A15	= other agricultural/forestry practices	F1-20	= others
A16	= fire		
B1	= exploitation for food		
B2	= sport		
B3	= specimen		
B4	= subsistence		
B5	= science		
B6	= trade		

Tab. 3.

Habitat Codes of Plant Communities for Conservation Purposes (E. Dahl, 1982)

<u>Code</u>	<u>Meaning</u>	<u>Code</u>	<u>Meaning</u>
1.	Salt and brackish water communities	2.4.	Isoeto-Nanojuncetea
1.1.	Zoosteretea	2.5.	Phragmitetea
1.2.	Rupietea	2.6.1.	Paspalo-Heleochoetalia
		2.6.2.	Bidentetea tripartiti
2.	Freshwater communities	3.	Sea shore communities
2.1.	Lemnetea	3.1.	Cakiletea maritima
2.2.	Potametea	3.2.	Ammophiletea
2.3.	Littorelletalia	3.3.	Corynephoretalia

3.4.	Agropyron-Rumicion crispi	12.2.	Juncetea trifidi
3.5.1.	Crithmo-Limonietea	12.2.1.	Loiseleurio-Vaccinion s.l.
3.5.2.	Crithmo-Staticetea	12.2.2.	Caricetalia curvulae
3.6.	Salicornietea	12.3.	Elyno-Seslerietalia
3.7.	Asteretea tripolii incl. Juncetea maritimi	12.4.1.	Nardeto-Caricion bigelowii
3.8.	Bolboschoenetea incl. Spartinetea	12.4.2.	Nardion
		12.4.3.	Caricion ferrugineae incl. Primulion inbricatae
4.	Spring communities	12.5.	Salicetea herbaceae
4.1.	Cratoneurion commutati	12.5.1.	Salicetalia herbaceae
4.2.	Cardamineto-Montion	12.5.2.	Arabidetalia caeruleae
		12.5.3.	Luzulion arcticae
5.	Wet communities	12.6.	Alchemillo-Campanuletalia tridentatae
5.1.	Oxycoco-Sphagnetea	13.	Weed communities
5.2.	Scheuchzerietalia palustris	13.1.	Plantaginetea majoris
5.3.1.	Caricetalia fuscae	13.2.	Secalietea
5.3.2.	Tofieldetalia	13.3.	Chenopodietea
6.	Communities on shallow soils or sands drying up in summer	13.4.	Artemisietea s.l.
6.1.	Thero-Brachypodietea	14.	Meadow communities, man-made
6.2.	Sedo-Sclerantetea	14.1.	Molinietalia
		14.2.	Arrhenateretalia
7.	Violetea calaminariae	15.	Nardo-Callunetea
8.	Asplenietea rupestris	15.1.	Nardetalia
		15.2.	Calluno-Ulicetea
9.	Steppe communities	16.	Jarals or matorrals of the mediterranean lowlands
9.1.	Festuco-Brometea	16.1.	Garrigues
9.1.1.	Festucetalia vallesiaca	16.2.	Cisto-Lavanduletea
9.1.2.	Brometalia erecti		
9.1.2.1.	Xerobromion	17.	Shrub and grass-rich communities in the mediterranean reg.
9.1.2.2.	Mesobromion		
9.2.	Brachypodio-Brometea	18.	Forest margin and hedgerow communities
10.	Desert and steppe communities in Anatolia	18.1.	Trifolio-Geranietea
11.	Thlaspietea rotundifoliae	18.2.	Prunetalia spinosae
12.	Arctic-alpine communities	19.	Epilobietea angustifoliae
12.1.	High-arctic fellfields		

- 20. Forest communities
 - 20.1. Vaccinio-Picetea
 - 20.1.1. Cladonio-Vaccinietales
 - 20.1.1.1. Phyllocladon-Vaccinica
 - 20.1.1.2. Rhododendro-Vaccinica
 - 20.1.1.3. Cladonio-Pineion
 - 20.1.1.4. Ledo-Pinion s.l.
 - 20.1.1.5. Dicrano-Pinion
 - 20.1.2. Dicrano-Pinetalia silvatica
 - 20.1.3. Vaccinic-Picetalia
 - 20.2. Betulo-Adenostyletea
 - 20.3. Erico-Pinetea,
 - 20.4. Temperate forests, predominantly deciduous
 - 20.4.1. Quercetea robori-petraeae
 - 20.4.2. Quercu-Fagetea
 - 20.4.2.1. Fagetalia silvatica
 - 20.4.2.2. Quercetalia pubescens
- 20.4.3. Salicetea purpureae
- 20.4.4. Alnetea glutinosae
- 20.5. Mediterranean forests
 - 20.5.1. Quercetea ilicis
 - 20.5.1.1. Pistacio-Rhamnetalia alterni
 - 20.5.1.2. Quercetalia ilicis
 - 20.5.2. Populetea albae
 - 20.5.3. Deciduous, broadleaved montane forests sometimes with conifers
 - 20.5.3.1. Quercu-Pinetalia orientalis
 - 20.5.3.2. Quercu-Cedretalia libani
 - 20.5.3.3. Rhododendro-Fagetalia orientalis
 - 20.5.4. High-altitude conifer forests
 - 20.5.4.1. Pino-Juniperetalia
 - 20.5.4.2. Pino-Picetalia orientalis

ENDEMIC TAXA

GYMNOSPERMATOPHYTES

PINACEAE

- Pinus nigra* Arnold. ssp. *banatica* (Borbás) Novák - R; B4, D1; 20.4.2.2.

ANGIOSPERMATOPHYTES

BORAGINACEAE

- Eritrichium nanum* (L.) Schrader ex Gaudin ssp. *jankae* (Simonkai) Jáv. - R; D1, D2; 12.3.

CAMPANULACEAE

- Edraianthus kitzibelii* A. DC. - R; B4; 12.3.

CARYOPHYLLACEAE

- Dianthus giganteus* D'urv. ssp. *banaticus* (Heuffel) Tutin - V; A4, A14; 20.4.2.2.

- Minuartia graminifolia* (Ard.) Jáv. - E; A4; 8.

COMPOSITAE

- Anthemis carpatica* Willd. ssp. *pyrethriiformis* (Schur) Beldie - O; E1; 12.3.
- Carduus kernerii* Simonkai ssp. *lobulatiformis* (Csűrös et E. Nyár.) Soó - O; E1; 12.3.
- Centaurea phrygia* L. ssp. *raraensis* (Prodan) Dostal - R; D1, D2; 12.2.2.
- Centaurea phrygia* L. ssp. *retezatensis* (Prodan) Dostal - R; D1, D2; 12.3.
- Centaurea tricocephala* Bieb. ex Willd. ssp. *simonkaiana* (Hayek) Dostal - V; D2; 18.1.
- Jurinea mollis* (L.) Reichenb. ssp. *transsilvanica* (Sprengel) Hayek - R; A14; 9.2.

CRUCIFERAE

- Aubrietia intermedia* Heldr. ex Orph. ex Boiss. ssp. *falcata* Ciocirlian - R; D1, D2; 11.
- Barbarea lepuznica* E. Nyár. - V; A4, D1, D2; 4.2.
- Cochlearia borzeana* (Coman et E. Nyár.) - R; D1, D2; 4.1.
- Hesperis matronalis* L. ssp. *moniliformis* (Schur) Borza - V; D1; 20.2.
- Thlaspi dacicum* Heuffel ssp. *banaticum* (Uechtr.) Jáv. - R; D1; 11.
- Thlaspi pawlowskii* Dvoráková - R, K; 14.2.

DIPSACACEAE

- Cephalaria uralensis* (Murray) Romer et Schultes ssp. *multifida* (Roman) Roman et Beldie - V; A4, A14; 9.1.1.
- Scabiosa pseudobanatica* (Schur) Chrték - R, K, nt; 12.3.

GRAMINEAE

- Festuca nitida* Kit. ssp. *flaccida* (Schur) Markgr.-Dannenb. - nt; D1; 12.3.
- Festuca versicolor* Tausch ssp. *dominii* Krajina - R; A14; 12.3.
- Koeleria macrantha* (Ledeb.) Schultes ssp. *transsilvanica* (Schur) A. Nyár. - nt; D1; 12.3.
- Poa laxa* Haenke ssp. *pruinosa* E. Nyár. - R; D1; 12.2.
- Stipa crassiculmis* P. Smirnov ssp. *heterotricha* Dihoru et Roman - V; A13, A15; 9.1.1.

LEGUMINOSAE

- Onobrychis montana* DC. ssp. *transsilvanica* (Simonkai) Jáv. - nt; D1; 12.3.

LILIACEAE

Frythronium dens-canis L. ssp. *niveum* (Baumg.) Buia et Făun
R; A15; 20.4.2.

PLUMBAGINACEAE

Armeria maritima (Miller) Willd. ssp. *barcensis* (Simonkai) P.
Silva - E; A15; 12.4.1.

PRIMULACEAE

Primula auricula L. ssp. *serratifolia* (Recht) Jáv. -
E; B4; 12.3.

RANUNCULACEAE

Aquilegia nigricans Baumg. ssp. *subcarpatha* (Borbás) Borb.
R; D1; 19.

ROSACEAE

Alchemilla dolichotoma Pláček. - nt; D1; 12.4.2.

Sorbus borbasii Jáv. - R; D1, D2; 20.4.2.2.

Sorbus dacica Borbás - R, nt; 20.4.2.2.

RUBIACEAE

Asperula carpatica Morariu - R; D1; 12.3.

UMBELLIFERAE

Peucedanum rochelianum Heuffel - R; A14; 14.1.

ZANNICHELLIACEAE

Zannichellia prodanii I. Șerbănescu - R; A5; 2.2.

NON-ENDEMIC TAXA

PTERIDOPHYTA

AZOLLACEAE

Azolla caroliniana Willd. - R; A5; 2.1.

Azolla filiculoides Lam. - R; D1, D2; 2.1.

LYCOPODIACEAE

Lycopodium inundatum L. - R; A5; 5.1.

POLYPODIACEAE

Asplenium adianthum-nigrum L. ssp. *onopteris* (L.) Heuff. -
R; D1; 8.

Cheilanthes marantae (L.) Domin - R; D1; 8.

Woodsia ilvensis (L.) R. Br. - R; D1.

ANGIOSPERMATOPHYTA

AQUIFOLIACEAE

Ilex aquifolium L. - R; D1; 20.4.2.1.

BETULACEAE

Betula nana L. - R; B4, D1; 20.1.

BORAGINACEAE

Lappula barbata (Bieb.) Gürke - R; A14; 9.1.1.

Lappula marginata (Bieb.) Gürke - R; A15; 13.2.

Myosotis variabilis Angelis - R; A14; 14.1.

Nonea pallens Petrov - R; D1, D2; 9.1.1.

Onosma tauricum Pall. - R; D1, D2; 9.1.1.

CAPRIFOLIACEAE

Linnaea borealis L. - R; D1, D2; 20.1.3.

CARYOPHYLLACEAE

Cerastium carinthiacum Vest - R; D1, D2; 11.

Dianthus kitaibelii Janka ssp. *simonkaianus* (Peterfi) Tutin -
R; D1, D2; 8.

Dianthus pinifolius Sibth. et Sm. ssp. *serbicus* Wettst. -
R; D1, D2; 9.1.1.

Herniaria hirsuta L. - R; D1; 9.1.2.

Lychnis viscaria L. ssp. *atropurpurea* (Griseb.) Chater -
R; B4; 20.4.1.

Minuartia graminifolia (Ard.) Jáv. - R; D2; 8.

Minuartia hirsuta (Bieb.) Hand.-Mazz. ssp. *falcata* (Griseb.)
Mattf. - R; D1, D2; 8.

Minuartia laricifolia (L.) Schinz. et Thell. ssp. *kitaibelii*
(Nym.) Mattf. - R; D1, D2; 8.

Minuartia viscosa (Schreb.) Schinz. et Thell. - R; D1, D2; 9.1.

Sagina apetala Ard. - R; D1, D2; 6.2.

Silene compacta Fisch. - R; D1, D2; 9.1.

Silene multiflora (W. et K.) Pers. - R; A14; 9.1.

Silene rupestris L. - R; D1, D2; 11.

Silene supina Bieb. - R; D1, D2; 9.1.1.

Spergula morisonii Boreau - R; D1, D2; 9.1.2.

CHENOPODIACEAE

Hablitzia tamnoides Bieb. - R; D1; 13.3.
Halocnemum strobilaceum (Pall.) Bieb. - R; E2; 3.1.
Krascheninnikovia ceratoides (L.) Guldenst. - R; D1, D2; 9.1.
Petrosimonia oppositifolia (Pall.) Litv. - R; E2; 3.6.

COMPOSITAE

Achillea cartilaginea Ledeb. - R; A1; 20.4.2.
Achillea depressa Janka - R; D1, D2; 9.1.
Artemisia lerceana Weber - R; D1, D2; 9.1.
Centaurea ruthenica Lam. - R; A14; 9.1.
Centaurea sadleriana Janka - R; D1, D2; 9.1.1.
Cirsium acarna (L.) Mnch. - R; A15; 13.3.
Crepis mollis (Jacq.) Aschers ssp. succisaefolia (All.) Jáv. - R; A14; 14.2.
Doronicum orientale Hoffm. - R; A1; 20.4.2.2.
Echinops microcephalus Sibth. et Sm. - R; D1, D2; 9.1.1.
Jurinea stoechadifolia (Bieb.) DC. - R; D1, D2; 9.1.1.
Lactuca sonchifolia Panč. - R; A15; 13.4.
Senecio cacaliaster Lam. - R; D1, D2; 20.4.2.2.
Senecio grandidentatus Ledeb. - R; D1, D2; 9.1.1.
Taraxacum obliquum (Fr.) Dahlst. - R; D1, D2; 9.1.
Tragopogon balcanicus Velen. - R; D1, D2; 9.1.1.

CONVOLVULACEAE

Convolvulus elegantissimus Mill. - R; D1, D2; 9.1.1.

CRUCIFERAE

Alyssum pulvinare Vel. - R; D1; 9.1.1.
Alyssum stribrnyi Vel. - R; D1; 9.1.1.
Cardamine enneaphyllos (L.) Cr. - R; D1, D2; 20.4.2.2.
Cardamine glauca Spreng. - R; D1, D2; 12.2.
Cardamine quinquefolia (Bieb.) Schmalh. - R; D1, D2; 20.4.2.
Conringia austriaca (Jacq.) Sweet - R; D1; 13.1.
Goronopus didymus (L.) Sm. - R; D1; 13.1.
Erucastrum nasturtiifolium (Poir.) Schultz - R; D1; 13.1.
Schivereckia podolica (Bess.) Andrz. - R; D1, D2; 8.

CYPERACEAE

Carex bicolor Bell. - R; A5, D1, D2; 5.3.1.

DROSERACEAE

Drosera anglica Huds. - R; A15; 5.1.
Droseraxobovata Mert. et Koch - R; D1, D2; 5.2.

ELATINACEAE

Elatine ambigua Wigth. - R; C2; 2.2.
Elatine triandra Schkuhr - R; A5; 14.1.

EUPHORBIACEAE

Euphorbia dulcis L. - R; D1; 20.4.2.
Euphorbia humifusa Willd. - R; A15; 13.2.
Euphorbia leptocaula Boiss. - R; D1; 6.2.
Euphorbia segetalis L. - R; A15, D1; 13.3.
Euphorbia taurinensis All. - R; D1; 9.1.1.

GERANIACEAE

Geranium sibiricum L. - R; D1; 13.4., 20.4.3.

GRAMINEAE

Aristella bromoides (L.) Bertol. - R; D1, D2; 20.4.2.2.
Gastridium ventricosum (Gouan) Sch. et Th. - R; A14; 9.1.1.
Hordeum bulbosum Torn. - R; A15; 13.2.
Hordeum nodosum L. - R; A15; 3.7.

HYPERICACEAE

Hypericum rumeliacum Boiss. - R; D2; 9.1.
Hypericum umbellatum Kern. - R; D1; 20.4.2.

LABIATAE

Ajuga pseudochia Schostenko - R; A15; 13.2.
Calamintha exigua (Sibth. et Sm.) Hay. - R; A15; 9.1.1.
Dracocephalum thymiflorum L. - R; D1, D2; 20.4.2.
Salvia ringens Sibth. et Sm. - R; D1, D2; 20.4.2.2.
Satureja kitaibelii Wierzb. - R; D1, D2; 9.1.
Scutellaria columnae All. - R; D1, D2; 20.4.2.
Teucrium botrys L. - R; D1; 8.

LEGUMINOSAE

Astragalus corniculatus Bieb. - R; A14, D2; 9.1.1.
Astragalus spruneri Boiss. - R; A14, D2; 9.1.1.
Astragalus subuliformis DC. - R; D1; 9.1.
Coronilla coronata L. - R; D1, D2; 20.4.2.2.

- Coronilla vaginalis* Lam. - R; D1; 20.3.
Hedysarum grandiflorum Pall. - R; D1, D2; 9.1.1.
Lathyrus setifolius L. - R; D1; 9.1.
Trifolium michelianum Savi - R; A14, D1; 14.1.
Trifolium subterraneum L. - R; A15; 9.1.
Trifolium suffocatum L. - R; A14, D1; 9.1.
Vicia tenuifolia Roth ssp. *stenophylla* Velen. - R; D1; 9.1.

LILIACEAE

- Bulbocodium versicolor* (Ker-Gawl.) Spreng. - R; A14; 14.2., 20.4.2.
Colchicum arenarium W. et K. - R; A15; 6.1.
Cyperus hamulosus Bieb. - R; A5; 2.4.
Eleocharis parvula (Raem. et Schult.) Link. - R; A5, D1, D2; 2.5.
Fimbristylis dichotoma (L.) Vahl. - R; A5; 2.5.
Gagea fistulosa (Ram.) Ker-Gawl. - R; A14; 12.4.2.
Iris arenaria W. et K. - R; A15; 9.1.1., 20.4.2.
Tofieldia calyculata (L.) Wahlbg. - R; A1, A15; 5.3.2.
Tulipa hungarica Borb. - R; D1, D2; 9.1.1.

NAJADACEAE

- Najas graminea* Delile - R; A5, D1, D2; 2.2.

OROBANCHACEAE

- Orobanche aegyptiaca* Pers. - R; A15; 13.2.

PLUMBAGINACEAE

- Plumbago europaea* L. - R; D1, D2; 9.1.1.

POLYGALACEAE

- Polygala sibirica* L. - R; D1, D2; 9.1.1.
Polygala supina Schreb. ssp. *hospita* (Heuff.) Mc. Neill - R; D1, D2; 9.1.1.

POLYGONACEAE

- Rumex tuberosus* L. - R; A14; 9.1.1.

POTAMOGETONACEAE

- Potamogeton alpinus* Balb. - R; A5; 2.2.

PRIMULACEAE

- Glaux maritima* L. - R; A5; 3.7.
Trientalis europaea L. - R; D1, D2; 14.1.

PAEONIACEAE

- Paeonia daurica* Andrews - R; B3, D1; 14.1.
Paeonia mascula (L.) Mill. - E; B3, D1, D2; 20.4.2.2.
Paeonia tenuifolia L. - E; A15, B3; 9.1.1.

RANUNCULACEAE

- Ranunculus circinatus* Sibth. - V; A5; 2.2.
Ranunculus muricatus L. - R; D1; 2.6.2.
Ranunculus ophioglossifolius Vill. - R; A5; 14.1.

ROSACEAE

- Pyrus nivalis* Jacq. - R; A1, D1; 20.4.2.

RUBIACEAE

- Galium constrictum* Chaub. - R; D1, D2; 14.1.

RUTACEAE

- Haplophyllum patavinum* (L.) G. Don - R; D1, D2; 9.1.1.

SAXIFRAGACEAE

- Saxifraga hirculus* L. - R; D1, D2; 5.3.1.

SCROPHULARIACEAE

- Linaria alpina* (L.) Mill. - R; D1, D2; 11.
Verbascum pulverulentum Vill. - R; A14; 9.1.

SOLANACEAE

- Hyoscyamus albus* L. - R; A15; 13.3.
Solanum retroflexum Dun. - R; D1, D2; 6.2.

THYMELAEACEAE

- Daphne laureola* L. - R; A1; 20.4.2.

UMBELLIFERAE

- Bupleurum apiculatum* Friv. - R; A14; 9.1.2.
Bupleurum asperuloides Heldr. - R; D1, D2; 9.1.2.
Cachrys alpina Bieb. - R; D1, D2; 9.1.
Opopanax chironium (L.) Koch ssp. *bulgaricum* Velen. - R; D1; 20.4.1.
Palimbia rediviva (Pall.) Thell. - R; D1, D2; 3.7.
Prangos carinata Gris. - R; D1, D2; 9.1.1.
Scandix australis L. - R; D1, D2; 13.4.

URTICACEAE

Parietaria lusitanica L. ssp. serbica (Panč.) P. V. Ball - R; D1, D2; 8.

VALERIANACEAE

Valerianella turgida (Stev.) Betcke - R; A14; 9.1.

VIOLACEAE

Viola epipsila Ldb. - R; A15, D1; 5.1.

ZYGOPHYLLACEAE

Nitraria schoberi L. - R; D1, D2; 3.6.

Rezumat

MOLDOVAN I., PÁZMÁNY D., DRAGOȘ L., 1989. Lista speciilor de plante rare, endemice și periclitate din România (II.) (în engleză). Not. Bot. Hort. Agrobot., Cluj-Napoca, XVIII-XIX, 67-80.

În această notă sînt prezentate, în continuarea listei IUCN publicată anterior (13), încă 35 de specii endemice acceptate de specialiștii români (8) și alte 137 de specii rare, în majoritate periclitate. Indicatorii ecologici, zoologici și fitocenotici sînt cei din IUCN Red Data Book Categories.

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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.

Address: Institutul Agronomic, Disciplina de Entomologie,
3400 Cluj-Napoca, Str. Mănăstur 3, R.S.România.

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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

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