OBSERVATIONS ON BIODIVERSITY FLORA AND BIOLOGICAL CONTROL AGENTS OF NATURAL GRASSLAND WEED

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The observations were made in year 2008 in natural pastures invaded bt Lepidium draba L. – the result of irrational grazing of livestock respectively cows and sheep, from the department of Iassy and department of Vaslui, nort-east of Romania. The pasture flora from the studied plots has 117 species of vascular plants, belonging to 84 genera and 24 families. The most common invasive species are: Lepidium draba, Euphorbia cyparissias, Verbascum phlomoides, Xanthium italicum, etc, wich decrease dramatically the productivity of the ecosystems. Lepidium draba displaces valuable pasture forage species and reduces native biodiversity. In Romania of the most promising biological control agents, the Ceutorhynchus cardariae, the Psylliodes wrasei, and the Aceria drabae. The observations regarding the biological control agents of species Lepidium draba L. is based on visual examination of plants. In the department of Vaslui and Iassy, percent attack of inflorescences by Aceria drabae were contained between 5-35,7% of Vaslui and 14,7-47,5% of Iassy.

***Key words**: loristic biodiversity, invasive weeds, natural pasture, biological control*

In Romania, praticole ecosystems are of particular importance in the agrarian economy being the main source of food for the livestock sector. As of the almost 15 thousand hectares of farmland, about 33% is occupied by pastures and natural meadows and pastures with the largest area, approximately 3.3 thousand ha (22.8%).

Following unreasonable or improper exploitation central area of pastures of Moldova, it was found that a number of plants with low quality forage, or have the ability to synthesize certain substances toxic to animals, have increased in the very large and become weeds - problem (eg .: *Lepidium Draba*, *Euphorbia cyparissias, Artemisia sp*., *Achillea sp*., *Linaria vulgaris*, etc.), decreasing dramatically the productivity of these ecosystems.

Lepidium Draba L., a species originating in Europe, has become a problem plant in many agroecosisteme in our country, including praticole in many ecosystems, especially those operated by grazing. It is also an invasive plant

becoming more aggressive, occupying land area growing in North America (U.S. and Canada), but on other continents.

In this context, in recent years, growing efforts by specialists in research facilities and higher education worldwide are targeted to search for ways of effectively limiting the plant.

MATERIAL AND METHOD

Observations were made in 2008, the two groups:

The first lot located near Iasi - Miroslava (47 ° 10'N, 27 ° 27'E) is invaded by *Lepidium Draba.* This land is grazed by cattle farmers in the village nearby and is in an advanced stage of suprapăşunare.

The second is experimental grazing sheep and is located near the town of Barlad - Perieni (48 ° 16'N, 27 ° 38'E) at about 100 km south of Iasi.

Experimental fields have a total area of approximately 5000 sqm in 6 areas that are isolated experimental 16 x 22 m each, separated by an area of 2 m, respectively 4 m. Within each experimental area were delineate 3 versions namely : a blank version of uncultivated land, a variant of field work surface (harrowing), a version with ground surface and supraânsămânţat worked with mixtures of plants with high forage value. Following plants were sown fodder *Dactilis glomerata, Festuca valesiaca Lolium perennial Onobrichis viciifolia, Medicago sativa.*

Location of the experimental areas, variations in work and areas of observation was made in a random fashion. On each of the 3 variants were separated by picketing, observation areas (4 areas) of 3x3 m, a total of 72 versions. In each group (observation area) of 3 x 3 m, it was a lot smaller, a sub-group central 0.5 x 0.5 m, in which all plants were *recorded Lepidium Draba*. Within each sub-batch central 0.5 x 0.5 m, 10 plants were *analyzed Lepidium Draba*, the following were recorded for each plant part: phenological stage, the number of shoots per plant, their height and any trace of attack.

RESULTS AND DISCUSSIONS

Biodiversity Flora

Flower meadows in studied stationary include a total of 117 species of vascular plants, belonging to 84 genera and 24 families of plants. We note, therefore, a very low floristic biodiversity of these grasslands, which are due to human impact quite heavily in the region. The two were identified fitocenoze stationary [7, 8], more or less representative plant associations belonging to 4, placed in 3 alliances, 3 orders and 3 classes of vegetation, as follows:

Class MOLINIO-ARRHENATHERETEA R. Tx. 1937

I. Ord. Potentillo-Polygonetalia R. Tx. 1947

1. Association pratensis Poëtum Rav., Căzăceanu et Turenschi ex Rav. et Mititelu 1958

2. Agropyretum Association Rorippo austriacae-repentis (Timar 1947) R.Tx. PUCCINELLIO-1950 Class II SALICORNIETEA Topa 1939. Ord Scorzonero-Juncetalia gerardii Vicherek 1973. Scorzonero-Juncion gerardii (Wendelberger 1943) Vicherek 1973.

3. Association Astero tripolii-Juncetum gerardii Smārde 1953 Class ARTEMISIETEA VULGARIS Lohmeyer et al. ex von Rochow 1951 III. Ord Agropyretalia repentis Oberd. et al. 1967. Convolvulo arvensis - Agropyrion repentis Gorsic 1966

4. Agropyretum Association Cardario-repentis T. Müller et Gorsic 1966.

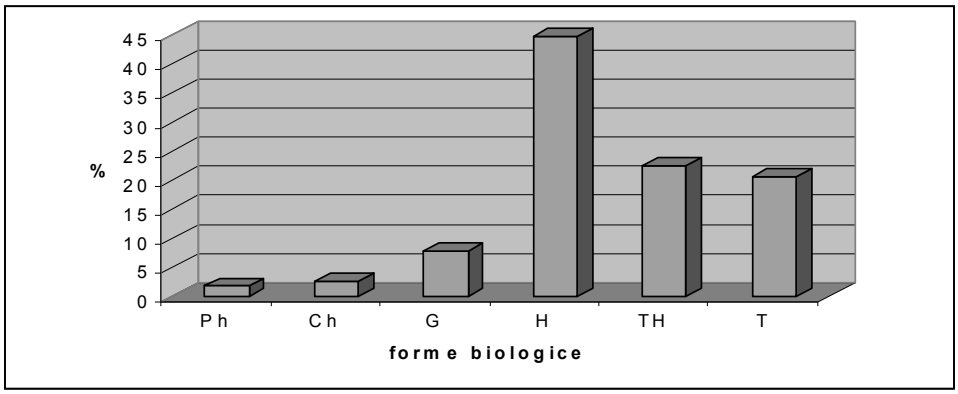

Figure 1 **Biological spectrum of vascular flora**

Analyzing *fig. 1*, indicates that the structure investigated grasslands prevail, hemicriptofite species. However a significant proportion of over 20% of the flora of the meadows, is the species hemiterofite, 20% of species are terofite, reflecting the high degree of human impact on the structure of these grasslands.

Most species are identified Eurasian component *fig. 2*). Against this general background Eurasian infiltrates in lower proportions, elements of European, Black Sea, Mediterranean circumpolare but also cosmopolitan and adventitious elements (invasive). From an environmental perspective, the analysis of *figure 3* that separates these grassland flora is a general (under) heliofil, mezotermofil, xeromezofil, neutrophilia and moderate nitrofil.

We can say that the vegetation of the two stationary, which are located on the meadow land, belongs to the category of vegetation Azon, as represented by mesophilic grassland (and sometimes slightly halophile).Anthropomorphic pressure exerted on these grasslands for meadow leading to their degradation in some areas and the installation of belonging fitocenoze ruderal vegetation. Largely, however, the two stationary. Grassland vegetation looks heterogeneous, mosaic, because zoo-anthropogenic impact pronounced in the two regions (grazing aggressive in previous years, carrying out construction in the neighborhood for stationary-Miroslava.

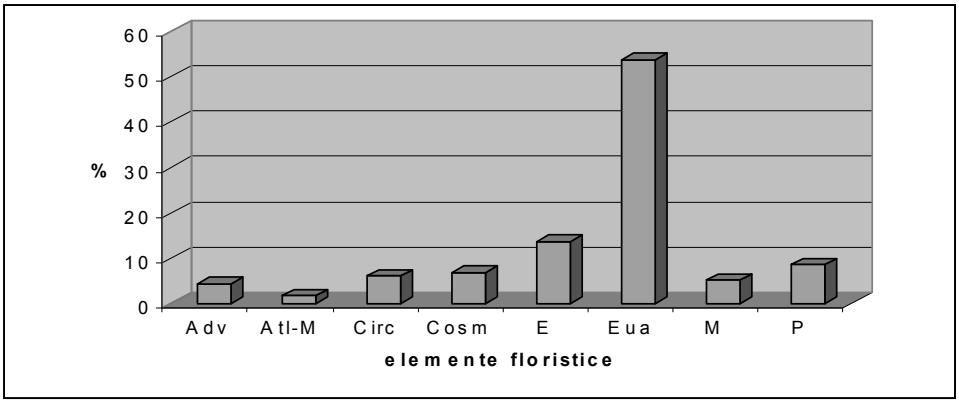

Figure 2 **The spectrum of flora elements**

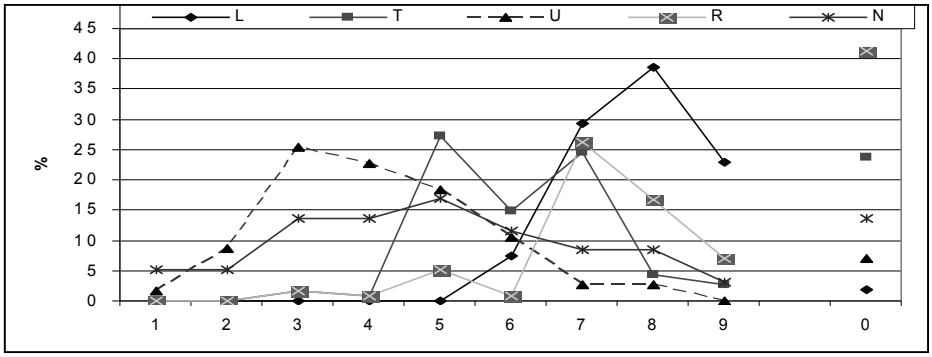

Figure 3 **Ecological spectrum of vascular flora - preferences to: Light (L), temperature (T), soil moisture (U), soil reaction (R), soil nitrogen supply (N) (1, 2, 3 ... 9 -- scales ecological factors as scale Ellenberg (1974) 0-ecological tolerance range)**

Monitoring general entomophauna was done by the method of collecting entomological samples with fillets, with a limited number of Lawn (30 Lawn / sample). After conducting field observations and their identification in the laboratory, we found that species belonging to 8 orders of insects: Coleoptera, Heteroptera, Homoptera, Hymenoptera, Orthoptera, Diptera, Lepidoptera, Colembolla, and an order of mites ord. Acar.

Of these, important for *Lepidium Draba* L., is curculionidul, Ceutorhynchus assimilis Paykull, which attacks the larval stage of plant roots, the roots forming gale, and the adults feed on plant aerial organs, especially leaves. Other species, consume the larval stages, organs that are at ground level (Baris semistriata Boheman, Ceutorhynchus cardariae Korotyaev, Psylliodes wrasei Leonardi and Arnold), and more, destroy the larval or adult stages of various organs of the plant air (leaves, stem, flowers), either by direct consumption or by generating gale, with walls that feed. In conclusion, as potential agents against this plant, with a high rate in their destruction, are *Ceutorhynchus cardariae* Korotyaev, *Psylliodes wrasei* Leonardi and Arnold, and Acer (*Eriophyes*) *Draba* Nal [1, 2, 3].

Estimate attack by *Acer Draba* (% review of inflorescence) was made for all plants of Lepidium Draba having contested inflorescences, from within the central 0.5 batch x0, 5m and two random chosen from within the working version of 3x3m [4.5, 6]. Thus the two stationary Vaslui and Iasi (Fig. 4), the variant with terennelucrat (V 1), the percentage of contested inflorescences of Acer drabae had values between 14,7-22,5% in Vaslui and between 24 .2-33, 4% in Iasi.

The working version with ground surface (harrowing) (V2), the percentage of contested inflorescences of Acer drabae had values between 11,2-35,7% in value and 22.1 - 47.5% in Iaşi.

On the ground worked supraânsămânţat version (V3), the percentage of contested inflorescences of Acer drabae had values between 5-22,4% 15-33,3% respectively in Iasi.

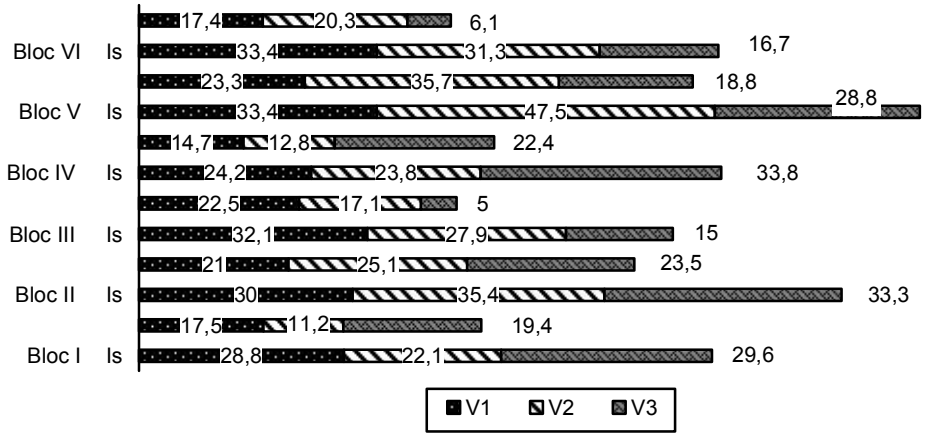

Figure 4 **Estimated attack of *Acer Draba* (% of inflorescence) in the research V 1 - uncultivated land, V 2 - field work surface, V 3 - field work and double sow**

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CONCLUSIONS

Floristic biodiversity in staţionarele studied include a total of 117 species of vascular plants, belonging to the 84 genera and 24 families of plants, plant associations belonging to 4, placed in 3 alliances, 3 orders and 3 classes of vegetation. In addition to high forage value species (*Poa pratensis, Agrostis stolonifera, Dactylis glomerata, Festuca pratensis, Lolium perenne, Lotus corniculatus, Trifolium repens, Trifolium pratense,* etc..) Meet and many species of weeds (*Cirsium arvensis, Cirsium vulgare, Convolvulus arvensis, Erigeron annuus, Onopordum acanthium, Eryngium campestre, Torilis arvensis,* etc..) or worthless

forage species (*Artemisia austriaca, Carex paper, Cichorium intybus, Rumex obtusifolius, Urtica dioica, Bupleurum tenuissimum* etc..) and some species are toxic (*Euphorbia nicaeensis, Ranunculus sardous*, etc.).

Lepidium Draba L., a species originating in Europe, has become a problem in many agroecosisteme plant in our country, including praticole in many ecosystems, especially those operated by grazing. It is also an invasive plant becoming more aggressive, occupying land area growing.

As potential agents to combat this plant species have been identified: *Ceutorhynchus cardariae* Korotyaev, *Psylliodes wrasei* Leonardi and Arnold, and *Acer (Eriophyes) Draba* Nal. Thus the two stationary Vaslui and Iasi, the percentage of contested inflorescences of Acer drabae had values between 5-35,7% in Vaslui and between 14,7-47,5% in Iasi.

Anthropomorphic pressure exerted on these pastures the meadow leading to their degradation in some areas and the installation of belonging fitocenoze ruderal vegetation.

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