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Weeds Flora in the Crops and Implantations

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Abstract: Ecological characteristics of the weed species occurring in the crops and implantations of Mirijevo have been analyzed. In the crops and implantations there are 48 weeds species. They are characterized by different life forms, and the phytogeographical analysis shows the dominance of the Eurasian group.

Key words: Weeds, crops and implantations, phytogeografical characteristics, life forms.

Introduction

Weed flora of producing agricultural surfaces of urban environments has not been systematically studied. However, there exists great need for the research of weed flora of micro-regions, because they possess manifold scientific and practical significance. Such research studies should serve as the basis for the selection of rational measures for the reduction of the weeds. That is primarily referred to the application of herbicides, which must be based upon comprehensive knowledge of floral composition of the species of weed crops and implantations (Nestorović, 2002).

Former weed research studies have comprehended the studying of the states of weed growing and of weed vegetation of wider and narrower producing regions of Serbia (Gajić, 1980, Živanović and Šinžar, 1984, Kojić et al. 1976, 1988, 1988a, Stefanović, 1984, and others).

The aim of this work is to present the results of floral, ecological and phytogeographic research studies of the crops and implantations with weed flora in the region of Belgrade peripheral settlement Mirijevo and to, in such manner,

extend the 'network' of the researched urban entireties of Serbia up to the level where different comparative analyses are possible.

The research of weed flora has been done from April 2001 up to October 2002 in the crop fields (winter wheat, maize, sugar beet, sunflower, soybean, vegetables) and in the implantations (wine yards and fruit-gardens).

General characteristics of the investigated area

Mirijevo is Belgrade peripheral settlement in the northeastern side of the city where individual agricultural production is being applied. It belongs to wood-steppe vegetational-climatic sub-zone with one moderate dry period. Summers are much warm with average monthly temperature of the air of about 23°C. Winters are mainly moderately cold although they can be very cold or very warm. The average quantity of precipitations amounts to around 707 mm. The ground is of type *eutric cambisol*. The relief is smoothly wave-like hilly terrain on the height above sea level of 70 to 265 m (Nestorović, 2002).

Material and Methods

For the determination of collected herbal material, Flora of SR Serbia was used (Josifović 1977-1992) as well as other corresponding literature (Kojić, 1981, 1986, Kojić, Janjić, 1994). Phytogeographical appurtenance of individual floral elements is determined according to Gajić (1980). Life forms of the plants and ecological indices are presented as per Kojić et al. (1994). The research studies of seasonal dynamics of the weed communities of the crop fields and implatations has been done according to combined method of Swiss-French School (Braun-Blanquet, 1961). The size of the recording amounted to 100 m².

Results and Discussion

Weed species of the crops and implantations in micro-agro-ecological conditions of Mirijevo are by floral composition relatively rich and varied, which is in accordance with their geographical position, seraphic, hydrological and climatic specific characteristics which give the outlook to the researched region, but also under very big influence of anthropogenic factor.

At the researched region in the crops and implantations, 48 species of weeds have been ascertained, out of 42 genera and 21 families (Tab. 1). Out of the total number of the species, the class *Monocotyledones* is being represented with 7 species, while 41 species belong to the class *Dicotyledones*. The most represented families are *Asteraceae* with 9 and *Poaceae* with 7 species, while the remaining families are represented with 1 or 2 species, except for the family *Brassicaceae* and *Polygonaceae* which are being represented with 3 and 4 species. Enlarged numbers of weed species out of the families *Asteraceae* and *Poaceae* points out to the nitrification and xerothermality of the researched points and to the very big anthropogenic influence that creates out of the weed spaces very dynamic and unstable biotopes (Jovanović, 1994).

Table 1 – Life form, floral elements, ecological indices

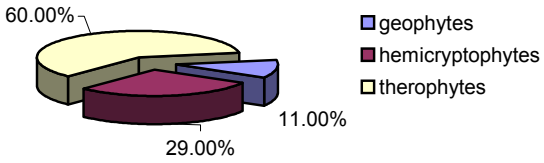
Life forms	Weed species	Floral elements	Ecological indices				
			V	K	N	S	T
	AMARANTHACEAE						
T	*Amaranthus retroflexus* L.	Adv	2	3	4	4	4
	ASTERACEAE						
T	*Ambrosia artemisiifolia* L.	Adv	2	3	3	4	4
G	*Cirsium arvense* (L.) Scop.	Subevr	3	3	4	4	4
T	*Erigeron canadensis* L.	Adv	2	3	3	4	4
T	*Galimsoga parviflora* Cav.	Adv	2	3	3	4	4
H	*Lactuca serriola* L.	Subpont-subca-sub	2	3	3	5	4
T	*Senecio vernalis* W. et R.	Subpont-ca	2	3	3	4	4
T	*Senecio vulgaris* L.	Evr	3	3	4	4	3
G	*Sonchus arvensis* L.	Evr	3	3	4	3	3
H	*Taraxacum officinale* Web.	Evr	3	3	4	4	3
	BRASSICACEAE						
T	*Capsella bursa-pastoris* (L.) Med	Kosm	2	3	3	4	3
G	*Roripa silvestris* (L.) Bess.	Subevr	4	4	3	4	4
T	*Sinapis alba* L.	Subevr	2	4	3	4	4
	BORAGINACEAE						
T	*Cerinthe minor* L.	Subse	2	4	4	4	5
H	*Symphytum officinale* L.	Subse	4	3	4	3	2
	CARYOPHYLLACEAE						
T	*Agrostemma githago* L.	Evr	2	3	3	4	3
T	*Stellaria media* (L.) Vill.	Kosm	3	3	4	3	3
	CHENOPODIACEAE						
T	*Chenopodium album* L.	Kosm	2	3	4	3	3
T	*Chenopodium hybridym* L.	Subcirk	3	4	4	4	3
	CONVOLVULACEAE						
G	*Convolvulus arvensis* L.	Kosm	2	4	3	4	3
	FABACEAE						
T	*Vicia villosa* Roth.	Subpont-subm	2	3	3	3	4
G	*Lathyrus tuberosus* L.	Subj.-sib	2	4	2	4	4
	LAMIACEAE						
T	*Lamimum amplexicaule* L.	Subpont-subm	2	3	4	3	3
T	*Stachus annua* L.	Subpont-subm	2	4	2	4	4
	MALVACEAE						
T	*Hibiscus trionum* L.	Pont-is-subm	3	3	3	4	4
	PAPAVERACEAE						
T	*Papaver rhoeas* L.	Subevr	3	4	3	3	3
	POACEAE						

Life forms	Weed species	Floral elements	Ecological indices				
			V	K	N	S	T
G	*Agropyron repens* (L.) Beauv.	Kosm	2	3	3	4	4
G	*Cynodon dactylon* (L.) Pers.	Kosm	2	3	3	4	5
T	*Digitaria ciliaris* (L.) Koeler	Adv	2	3	4	4	4
T	*Echinocloa crus-galli* (L.) Beauv.	Kosm	3	3	4	3	4
T	*Setaria verticillata* (L.) Beauv.	Kosm	2	3	4	4	5
T	*Setaria viridis* (L.) Beauv.	Subevr	2	3	4	4	4
G	*Sorghum halepense* (L.) Pers.	Kosm.	2	2	3	4	5
	POLYGONACEAE						
T	*Polygonum aviculare* L.	Kosm	3	3	4	4	3
T	*Polygonum lapathifolium* L.	Subcirk	3	3	4	3	3
H	*Rumex acetosa* L.	Evr	3	3	3	4	3
G	*Rumex acetosella* L.	Subcirk	2	1	1	5	3
	RANUNCULACEAE						
T	*Consolida regalis* S. F. Gray	Subse	2	4	3	3	4
H	*Ranunculus repens* L.	Evr	4	3	3	3	3
	RESEDACEAE						
Ht	*Reseda lutea* L.	Subse	2	4	3	4	4
	ROSAVEAE						
H	*Rubus ceasius* L.	Subj.sib	4	3	5	3	4
	RUBIACEAE						
T	*Galium mollugo* L.	Subse	3	3	3	3	3
T	*Galium verum* L.	Evr	2	4	2	3	4
	SCHOPHULARIACEAE						
T	*Veronica hederifolia* L.	Subse	3	3	4	3	3
	SOLANACEAE						
T	*Datura stramonium* L.	Kosm	3	3	4	4	4
T	*Solanum nigrum* L.	Kosm	3	3	4	4	3
	SIMARUBIACEAE						
P	*Aialanthus altissima* (M.). Sw.	Adv	3	3	4	4	2
	VIOLACEAE						
H	*Viola elatior* Fr.	Evr	4	4	2	3	4

In the weed flora of the researched crops and implantations the presence was ascertained of 3 life forms: therophytes (27), hemicryptophytes (13) and geophytes (5). Percentage participation of each life form is being represented with biological spectrum (Fig. 1). In the weed flora, high participation of therophytes is percept with 27 species or 60%, which brings to the connection with unstableness of the weed points where the man with his activities disturbs the development of the weeds lasting for several years. By intensive agro-technical measures, intensive base and additional treatment of the arable land as well as with the measures for the attendance of the crops, perennial weeds are reduced and eliminated very efficiently by the method of exhausting so that the

participation of geophytes is 11% and hemicryptophytes – 29% in the biological spectrum. In addition, both openness and favorable thermal and illuminating regime of the point in question contribute to the development of therophytes (Diklić, 1984).

Figure 1. – Biological spectrum



The analysis of ecological indices for humidity points to the fact that all dry states dominate, while humid and temporarily flooded states take up very small percentage for the given region. The states of the researched region are neutral up to weakly alkaline reactions. At the weed colonies nitrification is being distinctively present but not in big quantities, which is confirmed by the predominance of the plants from transitional group from mesotrophic-to-eutrophic ones (Tab. 2). Weed colonies of the researched region are situated in the domain of moderately continental climate, which had conditioned the enlarged quantities of mesothermal herbal species (42.22%). Favorable illuminating and thermal regime of the colony brought to the predominant presence of the transitional group mesotherm-to-thermophile plants, although big participating part of this group in the weed flora can point also to the influence of the warm climate from the south.

Table 2 – Participation of species of certain values of ecological indices

Ecological indices	Values of ecological indices										Mean of ecological indices
	1		2		3		4		5		
	No. of species Br. vrsta	%	No. of species Br. vrsta	%	No. of species Br. vrsta	%	No. of species Br. vrsta	%	No. of species Br. vrsta	%	
V	0	-	24	53,33	16	35,56	5	11,11	0	-	2,58
K	1	2,22	1	2,22	32	71,11	11	24,44	0	-	3,18
N	1	2,22	4	8,88	20	44,44	19	42,22	1	2,22	3,33
S	0	-	0	-	16	35,56	27	60,00	2	4,44	3,69
T	0	-	1	2,22	19	42,22	22	48,89	3	6,67	3,60

The spectrum of area types (Tab. 3), i.e. the analysis of floral elements and their presence in the crops and implantations speaks of predominant participation of the species of wide areas. The most numerous one is

Circumpolar-Cosmopolitan group with 14 species and Euro-Asian group with 15 species. With considerably smaller presence are the herbal types from Pontic-Central Asian group (6), adventives species (5), and Middle-European group (5). Such variety of floral elements is the consequence various influences on the floral composition of this region.

Table 3 – Areatype spectrum

Group	**No. of species**	**%**	**Floristic element**	**No. of species**	**%**
Euroasian	15	33,33	Euroasian	8	17,77
			Subeuroasian	5	11,11
			Sub-South-Siberian	2	4,44
Middle - European	5	11,11	Sub-Middle-European	5	11,11
Circumholartic-Cosmopolitan	14	31,11	Sub- Circumholartic	3	6,66
			Cosmopolitan	11	24,44
Pontic-Centralasian	6	13,33	Sub-Pontic-Centralasian	2	4,44
			Sub-Pontic-Sub-Mediterranean	3	6,66
			Pontic-East-Sub- Mediterranean	1	2,22
Adventive	5	11,11			

In the wheat crop, 16 weed species have been ascertained. In the biological spectrum, therophytes are predominant with 44%, while geophytes are represented with 31% and hemicryptophytes with 25%. In seasonal dynamics of the weed community of winter wheat – 4 aspects are clearly identified (Tab. 4).

Table 4. - The seasonal dynamics in the wheat

Weeds species Korovske vrste	Aspect Aspekt			
	autumn jesenji	early spring ranoprolećni	summer letnji	stubble strništa
Agrostemma githago L.	-	IV	V	-
Chenopodium album L.	-	-	IV	IV
Cirsium arvense (L.) Scop.	-	V	V	V
Consolida regalis S. F. Gray	-	-	IV	-
Convolvulus arvensis L.	-	-	-	IV
Cynodon dactylon (L.) Pers.	-	-	IV	-
Galium mollugo L.	-	-	IV	-
Galium verum L.	-	IV	IV	IV
Lathyrus pratensis L	-	IV	IV	IV
Lathyrus tuberosus L	-	V	V	IV
Papaver rhoeas L.	-	IV	V	V
Polygonum aviculare L.	-	V	IV	-
Ranunculus repens L.	IV	IV	IV	-
Stellaria media (L.) Vill.	-	-	IV	V
Rubus caesius L.	IV	IV	-	-
Veronica hederifolia L.	-	IV	IV	-

Vicia villosa Roth.				

In the maize crop, the presence is ascertained of 14 weed species. Weed species of the maize crops possess therophytic character. In the biological spectrum, therophytes participate with 64%, geophytes with 29% and hemicryptophytes with 7%. The seasonal dynamics of the weed community of the maize crop is represented by spring, summer and autumn aspect (Tab. 5).

Table 5. - The seasonal dynamics in the maize

Weeds species	Aspect		
	spring	summer	autumn
Agropyron repens (L.) Beauv.	-	IV	IV
Amaranthus retroflexus L.	-	V	V
Ambrosia artemisiifolia L.	-	V	V
Chenopodium album L.	IV	IV	IV
Cirsium arvense (L.) Scop.	V	V	V
Convolvulus arvensis L.	IV	V	V
Cynodon dactylon (L.) Pers.	IV	V	V
Digitaria ciliaris (Retz.) Koeler	-	IV	IV
Hibiscus trionum L.	-	IV	-
Echinochloa crus-galli (L.) Beauv.	-	V	V
Rubus caesius L.	-	IV	IV
Polygonum aviculare L.	-	IV	IV
Setaria viridis (L.) P. B.	-	IV	IV
Solanum nigrum L.	-	V	V
Sorghum halepense			

Weed species of the crops of sugar beet differ as per their floral compositions in smaller measure from the weed species of the maize crops. In the crop of sugar beet, 10 weed species have been ascertained. In the biological spectrum of the ascertained species, the therophytes participate with 88% and geophytes with 12%. In the seasonal dynamics of the weed community of sugar beet crop, three aspects are clearly distinctive – spring, summer and autumn aspect (Tab. 6).

Table 6. - The seasonal dynamics in the sugar beet

Weeds species	Aspect		
	spring	summer	autumn
Agropyron repens (L.) Beauv.	-	IV	IV
Amaranthus retroflexus L.	-	IV	V

Ambrosia artemisiifolia L.	-	V	V
Chenopodium album L.	IV	IV	IV
Chenopodium hybridum L.	-	IV	IV
Convolvulus arvensis L.	-	IV	V
Datura stramonium L.	-	IV	-
Hibiscus trionum L.	IV	IV	-
Setaria viridis (L.) P. B.	-	V	V
Sinapis alba L.	IV	IV	-
Solanum nigrum L	-	IV	IV

In the sunflower crop, 10 weed species have been ascertained. As per the floral composition of the weed, the crops of sunflower are similar with the remaining widely arranged crops. In the biological spectrum, the therophytes are dominating with 90%, while geophytes are represented by 10%. Three aspects (Tab. 7) make the seasonal dynamics of the weed community.

Table 7. - The seasonal dynamics in the sunflower

Weeds species	Aspect		
	spring	summer	autumn
Agropyron repens (L.) Beauv.	-	IV	IV
Amaranthus retroflexus L.	-	IV	V
Ambrosia artemisiifolia L.	-	V	V
Cirsium arvense (L.) Scop	V	V	V
Digitaria ciliaris (Retz.) Koeler	-	IV	IV
Echinochloa crus-galli (L.) Beauv.	-	V	V
Polygonum aviculare L.	V	V	-
Polygonum lapathifolium L.	IV	IV	-
Setaria viridis (L.) P.B.	-	IV	IV
Sinapis alba L.	IV	IV	-
Solanum nigrum L.	IV	V	V

The weed flora of the soybean crop has 10 species. In the biological spectrum, the therophytes are predominant with 70%, while geophytes participate with 30%. The seasonal dynamics of the weed community is made of three aspects (Tab. 8).

Table 8. - The seasonal dynamics in the soyabean

Weeds species Korovske vrste	Aspect Aspekt		
	spring prolećni	summer letnji	autumn jesenji
Agropyron repens (L.) Beauv.	-	IV	IV
Amaranthus retroflexus L.	-	IV	IV
Ambrosia artemisiifolia L.	-	V	V
Chenopodium album L.	V	V	V
Cirsium arvense (L.) Scop.	V	V	V
Convolvulus arvensis L.	-	IV	IV
Cynodon dactylon (L.) Pers.	-	IV	IV

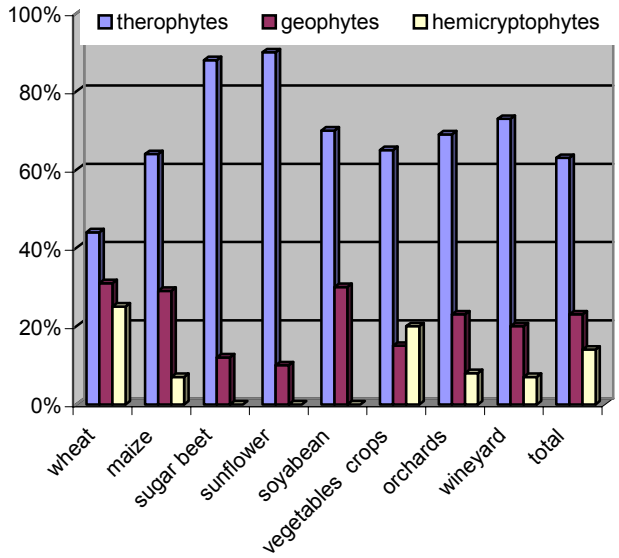
Echinochloa crus-galli (L.) Beauv.	-	IV	IV
Hibiscus trionum L.	-	IV	-
Setaria viridis (L.) P. B.	-	V	V
Solanum nigrum L.	-	IV	IV

The state of weed growing as well as the floral structure of the weed species of vegetable crops (potato, peas, beans, onion and garlic, cabbage, savoy cabbage, cauliflower, tomato, pepper, carrot, parsley, celery) of the researched ground is similar to the weed species of widely arranged implantations. In the vegetable crops, the following weed crops are ascertained:

Agropyron repens (L.) Beauv.
Amaranthus retroflexus L.
Ambrosia artemisiifolia L.
Capsella bursa-pastoris (L.) Med.
Chenopodium album L.
Chenopodium hybridum L.
Convolvulus arvensis L.
Cynodon dactylon (L.) Pers.
Cirsium arvense (L.) Scop.
Datura stramonium L.
Digitaria ciliaris (Retz.) Koeler
Echinochloa crus-galli (L.) Beauv.
Erigeron canadensis L.
Galinsoga parviflora Cav.
Hibiscus trionum L.
Lamium amplexicaule L.
Polygonum aviculare L.
Polygonum lapathifolium L.
Reseda lutea L.
Roripa silvestris (L.) Bean.
Rubus caesius L.
Rumex acetosa L.
Senecio vernalis W. et R.
Senecio vulgaris L.
Setaria verticillata (L.) P. B.
Setaria viridis (L.) P. B.
Sinapis alba L.
Solanum nigrum L.
Sonchus arvensis L.
Sorghum halepense (L.) Pers.
Stachys annua L.
Stellaria media (L.) Vill.
Symphytum officinale L.
Taraxacum officinale Webb.
Veronica hederifolia L.
Viola elatior Fr.

In the biological spectrum, the therophytes are predominant with 65% while hemicryptophytes and geophytes are represented with 20% respectively 15% (Fig. 2).

Figure 2. - Biological spectrum of the weed flora in the crops and implantations



The seasonal dynamics of the weed communities of vegetable crops could not be taken into consideration because it is very slightly presented. It is the consequence of the time for sowing respectively the time of plantation, the method of cultivation and the length of vegetational period of vegetable crops.

In the researched region in fruit-gardens (apple, pear, nut, peach, apricot, plum, cherry, sour cherry) the presence has been ascertained of 13 weed species. In the biological spectrum of the ascertained species, the most represented ones are the therophytes with 69% while geophytes participate with 23% and hemicryptophytes with 8% (Fig. 2). In the zone of the lines of fruit trees which is very slightly being cultivated or not at all, the participation of therophytes is reduced (25%), while the domination of geophytes (70%) is perceived. However, in the zone of in-between space lines, which is being intensively cultivated, the therophytes are dominating (60%) while the participation of geophytes in this space is with 20%.

The weed community of fruit-garden is very dynamic and during the vegetational period three aspects are clearly distinctive there – spring, summer and autumn aspect (Tab. 9).

Table 9. - The seasonal dynamics in the orchards

Weeds species	Aspect					
	spring		summer		autumn	
	row	inter row	row	inter row	row	inter row

Agropyron repens (L.) Beauv.	-	-	I	III	I	III
Amaranthus retroflexus L.	-	-	I	IV	I	IV
Ambrosia artemisiifolia L.	-	-	II	V	II	V
Chenopodium album L.	III	IV	III	III	III	IV
Cynodon dactylon (L.) Pers.	-	-	II	-	II	-
Cirsium arvense (L.) Scop.	IV	IV	IV	IV	IV	IV
Echinochloa crus-galli (L.) Beauv.	-	-	V	IV	V	IV
Erigeron canadensis L.	-	-	I	-	I	-
Senecio vulgaris L.	IV	II	IV	II	-	-
Setaria viridis (L.) P. B.	III	III	IV	III	IV	III
Solanum nigrum L.	II	II	II	II	-	-
Sorghum halepense (L.) Pers.	'	-	II	-	II	-
Stellaria media (L.) Vill.	III	III	III	III	III	III
Taraxacum officinale Webb.	I	II	I	II	I	II

Weed species of wine yard as per their floral structure are situated in the middle between weed species of the field implantations and fruit-gardens. In the wine yards there is bigger presence of therophytes than in fruit-gardens but it is considerably smaller than in field implantations. The participation of geophytes in wine yards is smaller than in fruit-gardens and it is bigger than in field implantations (Fig. 2). In the wine yards of the researched region, the presence of 15 weed species is ascertained. In the biological spectrum of the ascertained species, the therophytes are dominating with 73%, the participation of geophytes is 20% and of hemicryptophytes is 7%. In the wine yards in the zone of the lines of vine, the domination of geophytes is distinctive (60%) while in the zone of in-between space the domination of therophytes (70%) is present.

Seasonal dynamics of the weed community of wine yard is very similar to the seasonal dynamics of weed communities of fruit-gardens. In the seasonal dynamics spring, summer and autumn aspect are clearly identified (Tab. 10).

Table 10. - The seasonal dynamics in the wineyard

Weeds species	Aspect					
	spring		summer		autumn	
	row	inter row	row	inter row	row	inter row
Agropyron repens (L.) Beauv.	-	-	I	III	I	III
Amaranthus retroflexus L.	-	-	II	IV	II	IV
Ambrosia artemisiifolia L.	-	-	II	V	II	V
Capsella bursa-pastoris (L.) Med.	I	I	I	I	I	I
Cerinthe minor L.	I	I	I	II	I	II
Chenopodium album L.	III	IV	III	IV	III	IV
Convolvulus arvensis L.	IV	III	IV	III	IV	III
Cynodon dactylon (L.) Pers.	-	-	II	-	II	-
Digitaria ciliaris (Retz.) Koeler	IV	-	IV	-	IV	-
Echinochloa crus-galli (L.) Beauv.	-	-	V	IV	IV	IV
Erigeron canadensis L.	-	-	II	-	II	-
Lamium amplexicaule L.	III	III	-	-	-	-
Setaria viridis (L.) P. B.	III	III	IV	III	IV	III
Solanum nigrum L.	-	III	II	III	-	-
Sorghum halepense (L.) Pers.	-	-	III	-	III	-
Stellaria media (L.) Vill.	II	III	IV	III	IV	III
Taraxacum officinale Webb.	II	II	II	II	II	II

In this work the protection measures could not be systematically comprehended, which are being performed in the aim of reducing of the weeds, because in Mirijevo individual production is applied.

Conclusion

By the help of taxonomic analysis of the weed, flora of the crops and implantations of Mirijevo the presence of 48 species of vascular plants from the 42 genera and 21 families has been ascertained.

The analysis of the presence of the life forms of the plants - presents therophytic - hemicryptophytic character of the weed flora. In the biological spectrum, the therophytes are represented by 60%, geophytes by 11% and hemicryptophytes with 29%.

The analysis of ecological indices for 5 basic ecological factors confirms the predominance of the plants which prefer sub-mesophytic and sub-xerophitic states, mainly of neutral up to weakly alkaline reaction, medium rich with mineral material, and predominantly half-open up to open character, and mesophile up to thermophile in the aspect of temperature regime.

By phytogeographical analysis of the weed flora of the crops and implantations of Mirijevo, the presence of 10 different floral elements has been ascertained, grouped up into 5-area group.

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KOROVSKA FLORA USEVA I ZASADA

-originalni naučni rada-

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Rezime

Taksonomskom analizom korovske flore useva i zasada Mirijeva utvrđeno je prisustvo 48 vrsta vaskularnih biljaka iz 42 rodova i 21 familija.

Analiza zastupljenosti životnih formi biljaka pokazuje terofitsko–hemikriptofitski karakter flore. U biološkom spektru terofite su zastupljene sa 60%, geofite sa 11%, a hemikriptofite sa 29%.

Analiza ekoloških indeksa za 5 osnovnih ekoloških faktora potvrđuje dominantnost biljaka koje preferiraju submezofitna i subkserofitna staništa, uglavnom neutralne do slabo alkalne reakcije, srednje bogata mineralnim materijama, pretežno poluotvorenog do otvorenog karaktera, a mezofilna do termofilna u pogledu temperaturnog režima.

Fitogeografskom analizom korovske flore useva i zasada Mirijeva utvrđeno je prisustvo 10 različitih flornih elemenata, grupisanih u 5 areal grupa.