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Effects of two different herbicides on weed flora in soybean

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SUMMARY

This study aimed to determine weed species diversity in the soybean crop at two localities in the Republic of Serbia and assess the efficacy of bentazone and imazamox. The results demonstrate a satisfactory to high efficacy of both studied herbicides in the control of a variety of broadleaf weeds, as well as grassy weeds in the case of imazamox. Slight variationsin efficacy were observed between different weed species. No phytotoxic effects were observed, while the studied herbicides had the same efficacy as the standard formulations. Given their different modes of action, it is recommended to combine these herbicides in a tank-mix, in order to broaden the spectrum of weed control and mitigate resistance issues.

Keywords: bentazone, imazamox, broadleaf weeds, grassy weeds, efficacy, weed control.

INTRODUCTION

Soybean (*Glycine max* L.) is one of the foremost crops worldwide in terms of its total production and international trade (Tehulie et al., 2021). As a highly nutritious crop, soybean presents a major source of protein, oil and carbohydrates. The protein content in soybean is approximately 35-40%, the oil content is about 20%, while the carbohydrates make up to 35% of the total composition (El-Metwally et al., 2017). This rich nutritional profile makes soybean a top choice for human food and livestock feed (Keramati et al., 2008). Over the

past few decades, the demand for soybean products has significantly increased in Central Europe. To meet these demands, import of soybean from USA, Brazil, and Argentina has become essential. According to the recent data, the reliance on these imports continues to grow, indicating the critical role of soybean in the global trade and food security (Weber et al., 2016). Soybean has been cultivated in Serbia since the early 20th century, though the sown area has varied considerably over the years (Popović et al., 2013). In 2021, the area sown with soybean in Serbia reached 237,036 ha, producing an average yield of 2.3 t ha^{-1} and a total seed production of 540,205 t. In the previous year, despite a similar sown area, total seed production was higher (751,578 t), with an average yield of 3.2 t ha^{-1} (Statistical Yearbook of the Republic of Serbia, 2022). This fluctuation in yield highlights the challenges and potential for soybean farming in Serbia.

Weeds pose a significant challenge for soybean cultivation, as they compete for essential resources such as space, moisture, light, and nutrients. As a crop typically grown during the spring season, soybean is particularly susceptible to weed competition in the early growth stages. This competition can result in losses of approximately 40-60% of the potential yield. The impact of weeds on soybean yield depends on various factors, including: weed density, weed species, environmental conditions, and the length of the competition period (Tehulie et al., 2021). Effective weed management is crucial for maximizing the soybean yield. The critical period for weed control in soybean is between 30 and 45 days after the sowing. Maintaining a weed-free field for at least 45 days during this period is essential for achieving the highest possible yields (Abbasi et al., 2006; Pacanoski, 2019). The most common weeds in Serbian soybean fields during the early spring period are: *Amaranthus retroflexus* L., *Ambrosia artemisiifolia* L., *Abutilon theophrasti* Medik., *Chenopodium album* L., *C. hybridum* L., *Convolvulus arvensis* L., *Cirsium arvense* L., *Cynodon dactylon* (L.) Pers., *Echinochloa crus-galli* (L.) P.Beauv., *Hibiscus trionum* L., *Setaria viridis* (L.) P.Beauv., *Solanum nigrum* L. and *Xanthium strumarium* L. (Konstantinović, 2011; Dakić i sar., 2014).

The aim of this study was to determine the diversity and number of weed species present in soybean, as well as to evaluate the efficacy of the two studied herbicides with different modes of action in the control of the weed flora in soybean.

MATERIAL AND METHODS

The study was conducted in 2021 during the growing season, i.e. in May and June, on two localities in the Republic of Serbia - Despotovo and Čurug. The number of weed species in soybean was determined for every plot (25 m^2) by counting the weeds in the randomly selected marked square quadrants of 1 m^2 area per plot. Determination of weed species was done according to the literature sources Josifović (Ed.) (1970-1986) and Šarić (1991). The efficacy of two post-emergence herbicides with different modes of action was evaluated: bentazone 480 g l^{-1} SL and imazamox 40 g l^{-1} SL. The herbicides were applied using the SOLO backpack sprayer, made in Germany, with a Cambridge blue 04-F110 flat fan spray nozzle, when the

soybean had developed up to 3 leaves, while the broadleaf weeds had up to 4 leaves developed. The experiment was carried out in a randomized block system in four replicates, including the standard (the herbicide of the same formulation and with the identical amount of the same active ingredient as the tested herbicide) and the control (untreated plots), according to the EPPO standards (EPPO, 2014, 2017).

The weather conditions during the experiment were favourable for the effective action of the studied herbicides.

The obtained results were summarized and analysed at the University of Novi Sad, Faculty of Agriculture, Department of Environmental and Plant Protection by utilizing the MS Excel and Statistica 10, based on the mean value of 4 plots for each treatment, i.e. the control.

The efficacy evaluation of the studied herbicides was carried out as follows: poor efficacy (efficacy < 75%), satisfactory efficacy (efficacy 75-90%), and high efficacy (efficacy > 90%). The phytotoxicity was evaluated visually, on a scale from 0 to 100%, at the time of the efficacy evaluation, whereby 0% represents no visual symptoms of phytotoxicity, and 100% is the complete deterioration of plants.

Bentazone was applied at rates 3.0, 4.0 (efficacy) and 8.0 l ha^{-1} (phytotoxicity evaluation), while the standard was applied at the rate 4.0 l ha^{-1}. Imazamox was applied at rates 1.0, 1.2 (efficacy) and 2.4 l ha^{-1} (phytotoxicity evaluation), while the standard was applied at the rate 1.2 l ha^{-1}. The general data regarding the field sites and the experiment are presented in Table 1.

Table 1. The general data regarding the field sites and the experiment
Tabela 1. Osnovni podaci o poljskom ogledu

Locality **Lokalitet**	**Despotovo** **Despotovo**	**Čurug** **Čurug**
Coordinates	45°25'25.12"N 19°31'51.11"E	45°28'19"N 19°57'5"E
Crop variety	Sava	Valjevka
Soil type	chernozem	chernozem
Soil pH	7.5	7.3
Humus content	3.1	3.3
Fertilization	150 kg/Mg of urea	150 kg of NPK (16:16:16)
Sowing time	26.04.2021.	27.04.2021.
Date of application	16.05.2021.	15.05.2021.
Temperature atmoa* [C°]	16.79	16.26
Wind velocity atmoa [m/s]	0	0
Cloud cover atmoa [%]	0	0
Precipitation atmoa [mm]	0	0
Humidity atmoa [%]	89.6	81.9
Amount of water used [l/ha]	300	300
First assessment	30.05.2021.	29.05.2021.
Second assessment	13.06.2021.	12.06.2021.

*atmoa – at the moment of application

RESULTS AND DISCUSSION

The efficacy of Bentazone 480 g l^{-1} SL at the Despotovo field site. Bentazone is a selective, contact (foliar) herbicide from the chemical group of benzothiadiazinones. Bentazone is used for post-emergence control of annual broadleaf weeds. Its mode of action involves inhibiting photosynthesis in susceptible plants. It targets the photosystem II (PSII) pathway, blocking the electron transport chain in chloroplasts. This disruption halts photosynthesis, leading to weed death (Tim prireñivača, 2022).

Before the application the presence of eight weed species was observed, with the mean value of their occurrence for all the observed plots expressed as the number of plants per m^2 being as follows: *A. retroflexus* (6.25-6.75), *A. artemisiifolia* (5.75-6.00), *C. album* (5.0-5.25), *C. hybridum* (4.75-5.25), *C. arvensis* (6.50-7.50), *Datura stramonium* L. (5.75-6.50), *X. strumarium* (6.00-6.25) and *S. nigrum* (6.00-7.00). The results of Bentazone 480 g l^{-1} SL efficacy are shown in Table 2.

Table 2. Efficacy of bentazone 480 g l^{-1} SL at the Despotovo field site
Tabela 2. Efikasnost bentazona 480 g l^{-1} SL na lokalitetu Despotovo

Weed species **Korovska vrsta**	**Control** **Kontrola**	**Bentazone 480 g l^{-1} SL 3.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 3.0 l ha^{-1}**		**Bentazone 480 g l^{-1} SL 4.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 4.0 l ha^{-1}**		**Standard 480 g l^{-1} SL 4.0 l ha^{-1}** **Standard 480 g l^{-1} SL 4.0 l ha^{-1}**	
	No.m^{-2*}	No.m^{-2}	Eff.*	No.m^{-2}	Eff.	No.m^{-2}	Eff.
First assessment							
Amaranthus retroflexus	7.25	0.25	96.55	0.00	100.00	0.00	100.00
Ambrosia artemisiifolia	6.75	1.50	77.78	1.00	85.19	1.25	81.48
Chenopodium album	6.00	0.00	100.00	0.00	100.00	0.00	100.00
Chenopodium hybridum	6.50	0.25	96.15	0.00	100.00	0.00	100.00
Convolvulus arvensis	8.00	4.00	50.00	3.50	56.25	3.75	53.13
Datura stramonium	7.75	0.00	100.00	0.00	100.00	0.00	100.00
Xanthium strumarium	7.00	0.25	96.43	0.00	100.00	0.00	100.00
Solanum nigrum	8.25	0.50	93.94	0.00	100.00	0.00	100.00
Second assessment							
Amaranthus retroflexus	9.00	0.50	94.44	0.00	100.00	0.25	97.22
Ambrosia artemisiifolia	8.50	2.00	76.47	1.50	82.35	1.75	79.41
Chenopodium album	8.25	0.25	96.97	0.00	100.00	0.00	100.00
Chenopodium hybridum	7.75	0.50	93.55	0.25	96.77	0.00	100.00
Convolvulus arvensis	9.00	4.75	47.22	4.25	52.78	4.00	55.56
Datura stramonium	9.25	0.50	94.59	0.00	100.00	0.25	97.30
Xanthium strumarium	8.00	0.50	93.75	0.00	100.00	0.00	100.00
Solanum nigrum	9.25	0.75	91.89	0.00	100.00	0.25	97.30

*No.m^{-2} – number per m^2; Eff. – efficacy

Bentazone 480 g l^{-1} SL applied at rates 3.0 and 4.0 l ha^{-1} had a high to satisfactory efficacy in the control of *A. artemisiifolia*, poor efficacy in case of *C. arvensis*, and high efficacy in the control of the remaining six weed species.

Efficacy of Bentazone 480 g l^{-1} SL at the Čurug field site. The presence of seven weed species was observed prior to the application, with the mean value of their occurrence for all the observed plots expressed as the number of plants per m^2 being as follows: *A. artemisiifolia* (4.00-4.75), *Polygonum lapathifolium* L. (4.75-5.25), *A. retroflexus* (4.50-5.75), *D. stramonium* (5.00-6.75), *C. album* (5.25-6.00), *Sinapis arvensis* L. (4.50-4.75), *X. strumarium* (5.00-5.25). The results of bentazone 480 g l^{-1} SL efficacy are shown in Table 3.

Table 3. Efficacy of Bentazone 480 g l^{-1} SL at the Čurug field site
Tabela 3. Efikasnost bentazona 480 g l^{-1} SL na lokalitetu Čurug

Weed species **Korovska vrsta**	**Control** **Kontrola**	**Bentazone 480 g l^{-1} SL 3.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 3.0 l ha^{-1}**		**Bentazone 480 g l^{-1} SL 4.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 4.0 l ha^{-1}**		**Standard 480 g l^{-1} SL 4.0 l ha^{-1}** **Standard 480 g l^{-1} SL 4.0 l ha^{-1}**	
	No.m^{-2*}	No.m^{-2}	Eff.*	No.m^{-2}	Eff.	No.m^{-2}	Eff.
First assessment							
Ambrosia artemisiifolia	6.50	1.50	76.92	1.00	84.62	0.75	88.46
Polygonum lapathifolium	6.25	0.25	96.00	0.00	100.00	0.00	100.00
Amaranthus retroflexus	7.75	0.00	100.00	0.00	100.00	0.00	100.00
Datura stramonium	6.25	0.25	96.00	0.00	100.00	0.00	100.00
Chenopodium album	7.00	0.00	100.00	0.00	100.00	0.00	100.00
Sinapis arvensis	5.25	0.25	95.24	0.00	100.00	0.00	100.00
Xanthium strumarium	6.50	0.50	92.31	0.00	100.00	0.25	96.15
Second assessment							
Ambrosia artemisiifolia	8.50	2.00	76.47	1.25	85.29	1.00	88.24
Polygonum lapathifolium	7.75	0.50	93.55	0.00	100.00	0.25	96.77
Amaranthus retroflexus	9.00	0.25	97.22	0.00	100.00	0.00	100.00
Datura stramonium	7.25	0.50	93.10	0.00	100.00	0.25	96.55
Chenopodium album	9.25	0.25	97.30	0.00	100.00	0.00	100.00
Sinapis arvensis	7.00	0.50	92.86	0.25	96.43	0.00	100.00
Xanthium strumarium	8.50	0.75	91.18	0.00	100.00	0.25	97.06

*No.m^{-2} – number per m^2; Eff. – efficacy

Bentazone 480 g l^{-1} SL applied at rates 3.0 and 4.0 l ha^{-1} had satisfactory efficacy in the control of *A. artemisiifolia*, while the efficacy in the control of the six remaining weed species was high.

At both field sites the studied herbicide had the same efficacy as the standard and phytotoxicity was not observed.

The results obtained from the both field sites are similar to those published by Dykun et al. (2020), which confirmed a high to satisfactory control of broadleaf weeds, with the exception of *E. crus-galli* in case of which they observed poor efficacy. However, it must be noted that the

authors tested bentazone 480 g l^{-1} at the application rate of 2.5 l ha^{-1}, which is lower than the least effective dose (3.0 l ha^{-1}) tested in this study. A high to satisfactory efficacy of bentazone towards broadleaf weeds was also confirmed by Song et al. (2020) in two consecutive years.

The efficacy of imazamox 40 g l^{-1} SL at the Despotovo field site. Imazamox is a herbicide from the chemical group of imidazolinones. It is a selective, foliar, and systemic herbicide, absorbed by both foliage and roots of the target plants. Imazamox is widely used for the control of a broad spectrum of annual and perennial broadleaf and grassy weeds. The mode of action of imazamox is the inhibition of the enzyme acetolactate synthase (ALS), which is crucial for the synthesis of essential branched-chain amino acids like valine, leucine and isoleucine. This disruption leads to the cessation of protein synthesis and cell growth, ultimately causing weeds to die (Tim priređivača, 2022).

Before the application the presence of twelve weed species was observed, with the mean value of their occurrence for all the observed plots expressed as the number of the plants per m^2 being as follows: *A. retroflexus* (5.25-6.25), *A. artemisiifolia* (5.25-5.75), *C. album* (4.75-5.25), *C. hybridum* (4.25-4.75), *C. arvensis* (6.75-7.25), *D. stramonium* (4.75-6.00), *X. strumarium* (5.25-6.25), *S. nigrum* (5.75-7.00), *Setaria glauca* (4.25-5.25), *Sorghum halepense* (5.00-5.75), *C. dactylon* (5.50-6.25) and *E. crus-galli* (4.00-4.50). The results of the first and second assessment of Imazamox 40 g l^{-1} SL efficacy are shown in Table 4.

Table 4. Efficacy of Imazamox 40 g l^{-1} SL at the Despotovo field site
Tabela 4. Efikasnost imazamoksa 40 g l^{-1} SL na lokalitetu Despotovo

Weed species **Korovska vrsta**	**Control** **Kontrola**	**Bentazone 480 g l^{-1} SL 3.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 3.0 l ha^{-1}**		**Bentazone 480 g l^{-1} SL 4.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 4.0 l ha^{-1}**		**Standard 480 g l^{-1} SL 4.0 l ha^{-1}** **Standard 480 g l^{-1} SL 4.0 l ha^{-1}**	
	No.m^{-2}*	No.m^{-2}	Eff.*	No.m^{-2}	Eff.	No.m^{-2}	Eff.
First assessment							
Amaranthus retroflexus	7.25	0.50	93.10	0.25	96.55	0.00	100.00
Ambrosia artemisiifolia	6.75	1.25	81.48	0.50	92.59	0.25	96.30
Chenopodium album	6.00	0.00	100.00	0.00	100.00	0.00	100.00
Chenopodium hybridum	6.50	0.00	100.00	0.00	100.00	0.00	100.00
Convolvulus arvensis	8.00	2.00	75.00	1.00	87.50	1.25	84.38
Datura stramonium	7.75	0.00	100.00	0.00	100.00	0.00	100.00
Xanthium strumarium	7.00	0.25	96.43	0.00	100.00	0.00	100.00
Solanum nigrum	8.25	0.00	100.00	0.00	100.00	0.00	100.00
Setaria glauca	6.25	0.00	100.00	0.00	100.00	0.00	100.00
Sorghum halepense	7.75	0.75	90.32	0.25	96.77	0.50	93.55
Cynodon dactylon	7.75	4.75	38.71	4.00	48.39	4.25	45.16
Echinochloa crus-galli	5.00	0.00	100.00	0.00	100.00	0.00	100.00
Second assessment							
Amaranthus retroflexus	9.00	0.75	91.67	0.50	94.44	0.25	97.22
Ambrosia artemisiifolia	8.50	1.50	82.35	0.75	91.18	0.50	94.12
Chenopodium album	8.25	0.00	100.00	0.00	100.00	0.00	100.00

Chenopodium hybridum	7.75	0.25	96.77	0.00	100.00	0.00	100.00
Convolvulus arvensis	9.00	2.25	75.00	1.25	86.11	1.50	83.33
Datura stramonium	9.25	0.00	100.00	0.00	100.00	0.00	100.00
Xanthium strumarium	8.00	0.50	93.75	0.00	100.00	0.00	100.00
Solanum nigrum	9.25	0.25	97.30	0.00	100.00	0.00	100.00
Setaria glauca	7.75	0.25	96.77	0.00	100.00	0.00	100.00
Sorghum halepense	11.00	1.00	90.91	0.50	95.45	0.75	93.18
Cynodon dactylon	10.25	5.50	46.34	4.25	58.54	4.75	53.66
Echinochloa crus-galli	6.25	0.00	100.00	0.00	100.00	0.00	100.00

*No.m^{-2} – number per m^2; Eff. – efficacy

Imazamox 40 g l^{-1} applied at rates of 1.0 and 1.2 l ha^{-1} had a high to satisfactory efficacy in the control of *A. artemisiifolia*, satisfactory efficacy in case of *C. arvensis*, poor efficacy towards *C. dactylon* and high efficacy in the control of the nine remaining weed species.

The efficacy of Imazamox 40 g l^{-1} SL at the Čurug field site. The presence of eleven weed species was observed prior to the application, with the mean value of their occurrence for all the observed plots expressed as the number of the plants m^{-2} being as follows: *A. artemisiifolia* (4.25-4.75), *P. lapathifolium* (4.75-5.25), *A. retroflexus* (5.50-6.25), *D. stramonium* (5.00-5.50), *C. album* (5.25-6.00), *S. arvensis* (4.50-5.00), *X. strumarium* (5.00-5.75), *S. viridis* (4.00-5.00), *S. glauca* (4.00-5.00), *E. crus-galli* (4.00-5.00) and *Digitaria sanguinalis* (4.50-5.75). Imazamox 40 g l^{-1} applied at rates of 1.0 and 1.2 l ha^{-1} had a high to satisfactory efficacy in the control of *A. artemisiifolia* and high efficacy in the control of the ten remaining weed species.

At both field sites the studied herbicide had the same efficacy as the standard and phytotoxicity was not observed.

Table 5. Efficacy of Imazamox 40 g l^{-1} SL at the Čurug field site
Tabela 5. Efikasnost imazamoksa 40 g l^{-1} SL na lokalitetu Čurug

Weed species **Korovska vrsta**	**Control** **Kontrola**	**Bentazone 480 g l^{-1} SL 3.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 3.0 l ha^{-1}**		**Bentazone 480 g l^{-1} SL 4.0 l ha^{-1}** **Bentazon 480 g l^{-1} SL 4.0 l ha^{-1}**		**Standard 480 g l^{-1} SL 4.0 l ha^{-1}** **Standard 480 g l^{-1} SL 4.0 l ha^{-1}**	
	No.m^{-2*}	No.m^{-2}	Eff.*	No.m^{-2}	Eff.	No.m^{-2}	Eff.
First assessment							
Ambrosia artemisiifolia	6.50	1.50	76.92	0.50	92.31	0.25	96.15
Polygonum lapathifolium	6.25	0.25	96.00	0.00	100.00	0.00	100.00
Amaranthus retroflexus	7.75	0.00	100.00	0.00	100.00	0.00	100.00
Datura stramonium	6.25	0.00	100.00	0.00	100.00	0.00	100.00
Chenopodium album	7.00	0.00	100.00	0.00	100.00	0.00	100.00
Sinapis arvensis	5.25	0.25	95.24	0.00	100.00	0.00	100.00
Xanthium strumarium	6.50	0.25	96.15	0.00	100.00	0.00	100.00
Setaria viridis	5.00	0.00	100.00	0.00	100.00	0.00	100.00
Setaria glauca	5.25	0.00	100.00	0.00	100.00	0.00	100.00
Echinochloa crus-galli	6.00	0.00	100.00	0.00	100.00	0.00	100.00
Digitaria sanguinalis	7.25	0.00	100.00	0.00	100.00	0.00	100.00

	Second assessment						
Ambrosia artemisiifolia	8.50	2.00	76.47	0.75	91.18	0.50	94.12
Polygonum lapathifolium	7.75	0.50	93.55	0.00	100.00	0.00	100.00
Amaranthus retroflexus	9.00	0.00	100.00	0.00	100.00	0.00	100.00
Datura stramonium	7.25	0.00	100.00	0.00	100.00	0.00	100.00
Chenopodium album	9.25	0.00	100.00	0.00	100.00	0.00	100.00
Sinapis arvensis	7.00	0.50	92.86	0.00	100.00	0.00	100.00
Xanthium strumarium	8.50	0.75	91.18	0.25	97.06	0.00	100.00
Setaria viridis	6.50	0.00	100.00	0.00	100.00	0.00	100.00
Setaria glauca	7.00	0.00	100.00	0.00	100.00	0.00	100.00
Echinochloa crus-galli	7.75	0.00	100.00	0.00	100.00	0.00	100.00
Digitaria sanguinalis	9.00	0.25	97.22	0.00	100.00	0.00	100.00

*No.m^{-2} – number per m^2; Eff. – efficacy

Results obtained from both localities are similar to those published by Dykun et al. (2020), which confirmed a high to satisfactory level of control of broadleaf weeds, with the exception of *E. crus-galli* in case of which they observed poor efficacy. However, it must be noted that the authors tested Imazamox 40 g l^{-1} at the application rate of 1.0 l ha^{-1}, which is the least effective dose tested in this study. The high to satisfactory efficacy of imazamox towards broadleaf and grassy weeds was also confirmed by Song et al. (2020).

CONCLUSION

Bentazone 480 g l^{-1} SL applied at rates of 3.0 and 4.0 l ha^{-1} at both field sites had a high to satisfactory level of efficacy in the control of *A. artemisiifolia*, poor efficacy in the case of *C. arvensis*, and high efficacy in the control of the remaining broadleaf weeds. Imazamox 40 g l^{-1} applied in rates of 1.0 and 1.2 l ha^{-1} at both field sites had a high to satisfactory level of efficacy in the control of *A. artemisiifolia*, satisfactory efficacy in case of *C. arvensis*, poor efficacy towards *C. dactylon*, and high efficacy in the control of the remaining broadleaf and grassy weeds. Both herbicides had the same level of efficacy as the standards, while phytotoxicity was not observed. Since the two herbicides show high efficacy in the control of a different spectrum of weeds, it is recommended to use them in a tank-mix, in order to achieve high efficacy for a broader spectrum of weeds, which would also be in accordance with the anti-resistance strategy, as they have different modes of action.

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Efekat dva različita herbicida na korovsku floru u soji

REZIME

Cilj istraživanja je bio da se utvrdi prisutna korovska flora u usevu soje na dva lokaliteta u Republici Srbiji i proceni efikasnost bentazona i imazamoksa. Rezultati su pokazali visoku do zadovoljavajuću efikasnost oba herbicida u suzbijanju širokolisnih korova, kao i travnih korova kod imazamoksa, sa blagim varijacijama u efikasnosti primećenim kod određenih korvskih vrsta. Fitotoksični efekti nisu zabeleženi, dok su proučavani herbicidi pokazali istu efikasnost kao herbicidi korišćeni kao standardi. Preporučeno je kombinovanje bentazona i imazamoksa u tank-miksu kako bi se proširio spektar delovanja i smanjila pojava rezistentnosti, imajući u vidu različite mehanizme delovanja ova dva herbicida.

Ključne reči: bentazon, imazamoks, širokolisni korovi, travni korovi, efikasnost, suzbijanje korova.