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THE INFLUENCE OF CROPPING MANAGEMENT SYSTEM ON DIVERSITY CONTENT AND WEED DYNAMICS IN CEREAL MIXTURES**M. Ilievski*, Dragica Spasova*, G. Vasilevski**, D. Spasov*, M. Georgievski******State University „Goce Delcev” Agricultural faculty, Stip, R. of Macedonia, www.ugd.edu.mk****University „Ss. Cyril and Methodius”, Faculty of Agricultural Sciences and Food, Skopje, R. of Macedonia, www.ukim.edu.mk***ВЛИЈАНИЕТО НА СИСТЕМОТ НА ПРОИЗВОДСТВО ВРЗ ФЛОРИСТИЧКИОТ СОСТАВ И БРОЈНОСТА НА ПЛЕВЕЛНАТА ВЕГЕТАЦИЈА ВО ЗДРУЖЕНИ ПОСЕВИ НА ЖИТАРИЦИ****М. Илиевски*, Драгица Спасова*, Г. Василевски**, Д. Спасов*, М. Ѓеорѓиевски*****Државен Универзитет „Гоце Делчев”, Земјоделски Факултет, Штип, 2000, Р. Македонија, www.ugd.edu.mk****Универзитет „Св. Кирил и Методиј”, Факултет за земјоделски науки и храна, Скопје, 1000, Р. Македонија, www.ukim.edu.mk***ABSTRACT**

The main aim of our investigations was to determine the influence of the growing system on the floral composition of the weeds, and to establish suitable agro technical methods for reaching stabile and high grain yield in conditions of conventional and organic production of mixture cereal crops.

The examinations were done two years, during of 2004/05 and 2005/06 year.

In conventional cereal mixtures production ten (10), and in organic, nine (9) weed species were determined.

Compared with conventional production, agricultural methods used in conditions of organic production of cereal mixtures were better alternative solution for decreasing weeds, without use of herbicides.

Key words: conventional, organic, production, mixed, cereals, weeds.

ИЗВАДОК

Основна цел на ова испитување беше да се утврди влијанието на системот на производство врз флористичкиот состав на плевелната вегетација и утврдување на соодветни агротехнички методи за постигнување на стабилни и високи приноси на зрно во услови на конвенционално и органско производство во здружени посеви на житарици.

Испитувања се вршени две години и тоа 2004/05 и 2005/06 година. Во конвенционалното производство на здружени посеви на житарици беа застапени десет (10), а во органското девет (9) плевелни видови.

Агромерките применети во системот на органското одгледување на житарици во здружен посев се покажаа како подобро алтернативно решение во борбата против намалувањето на плевелите од конвенционалното производство, без употреба на хербициди.

Клучни зборови: конвенционално, органско, производство, мешани, зрнести, семиња.

INTRODUCTION

From the total arable area in Republic of Macedonia (526 000 ha) in 2007, wheat were planted around 180 592 ha.

One of the chances for increasing and stabilizing the yield is mixture genotypes and their cultivation in associated crops. Until now, just a little bit has been worked on this problem in our country.

Besides other analyses, observation of the floral composition of the weeds was made in both growing systems, distinctively by variants. The main aim of our investigations was to determine the influence of the growing system on the floral composition of the weeds, and to establish suitable agro technical methods for reaching stabile and high grain yield in conditions of conventional and organic production of mixture cereal crops.

MATERIAL AND METHODS

The experiments were set on the field of Institute for Southern Crops in Strumica, R. Macedonia. The examinations were conducted for two years, 2004/05 – 2005/06. Four (4) varieties of soft winter wheat (*Triticum sp. L.*): *mila*, *improved orovcanka*, *lizinka* and *olga*, one variety rye (*Secale cereale L.*): *pelisterka*, and one variety triticale (*Triticale sp.*): *jugo TC – 11*, were used as working material. The three varieties wheat crops were mixed in three variants:

1. 105g/5m² soft wheat (*mila*) in combination with 45g/5m² rye (*pelisterka*);
2. 105g/5m² soft wheat (*improved orovcanka*) in combination with 45g/5m² triticale (*jugo TC – 11*);
3. 105g/5m² soft wheat (*lizinka + olga*) in combination with 75g/5m² from each variety.

In both years of examinations, two experiments were set, and in both experiments all three variants were represented, with that difference, that in one experiment all variants were grown in conditions of conventional production, and in the other experiment in conditions of organic production. The difference in both experiments was the use of agro technical measures. Both experiments were consisting of three repetitions, arranged by the method of the randomized block system, and the size of one parcel was 5 m². Distance between variants was 50 cm, and between repetitions 100 cm. Distance between rows in conditions of conventional production was 20 cm, and distance between rows in conditions of organic production was 10 cm. In both years of examinations before cereals, potato was planted.

In both years of examinations, the soil was prepared in the same way. Therefore, every autumn, plowing of the soil was done in deepness of 35 cm, than splitting of the surface followed and fertilizing. On the soil predicted for conventional production 300 kg/ha NPK fertilizer with combination 15:15:15 was used, and on the soil predicted for organic production 20 t/ha organic manure was used. After that, the soil additionally was tilled.

In the first year of the examination, planting was made on 5.11.2004, and in the second year, on 15.11.2005.

The number of the weeds was determined by the method of randomized squares.

RESULTS

From the analyses it could be seen that in conditions of conventional production of cereals in mixed crops ten (10) weed species were presented: *Papaver rhoeas*, *Veronica chederifolia*, *Stelaria media*, *Raphanus raphanistrum*, *Sinapis arvensis*, *Polygonum aviculare*, *Vicia Vilosa*, *Cirsium arvense*, *Equisetum arvense* and *Apera spica venti*. In conditions of organic production nine (9) weed species were presented: *Papaver rhoeas*, *Veronica chederifolia*, *Stelaria media*, *Raphanus raphanistrum*, *Polygonum aviculare*, *Vicia Vilosa*, *Cirsium arvense*, *Equisetum arvense* and *Apera spica venti*.

Apart the variants, the average weediness of the experiment grown in conditions of conventional production, in both years of examination is 39,77 weeds/m². Dominant were six (6) weeds: *Apera spica venti* with 6,33 weeds/m² in average, *Polygonum aviculare* with 6,25 weeds/m² in average, *Papaver rhoeas* with 6,08 weeds/m² in average, *Veronica chederifolia* with 4,67 weeds/m² in average, *Stelaria media* with 4,50 weeds/m² in average and *Cirsium arvense* with 3,42 weeds/m² in average.

Apart the variants, the average weediness of the experiment grown in conditions of organic production, in both years of examination is 16,74 weeds/m². Dominant were five (5) weeds: *Apera*

spica venti and *Polygonum aviculare* with 3,33 weeds/m² in average, *Papaver rhoeas* with 3,00 weeds/m² in average, *Stelaria media* with 2,43weeds/m² in average and *Veronica chederifolia* with 1,35 weeds/m² in average.

Comparing the average weediness in both growing systems, apart the years, climatic conditions and variants, and depend of the used agro technical measures, it could be noted that the average weediness of the experiment grown in conditions of organic production (16,74 weeds/m²) is smaller absolutely for 23,03 weeds/m² or relatively for 143,39 % from the average weediness of the experiment grown in conditions of conventional production (39,77 weeds/m²).

Table 1 – Floral composition and average number of weeds (No/m²) in conditions of conventional and organic production of mixture cereal crops during the 2004/05 and 2005/06 year.

Species of weeds	2004/05				2005/06			
	1	2	3	4	1	2	3	4
<i>Papaver rhoeas</i>	6,00	5,75	6,50	6,08	3,00	2,75	3,25	3,00
<i>Veronica chederifolia</i>	4,50	4,75	4,75	4,67	1,50	1,30	1,25	1,35
<i>Stelaria media</i>	4,75	4,25	4,50	4,50	2,75	2,75	1,80	2,43
<i>Raphanus raphanistrum</i>	2,00	1,75	2,00	1,92	0,50	0,50	0,25	0,42
<i>Sinapis arvensis</i>	2,15	2,15	2,25	2,18	/	/	/	/
<i>Polygonum aviculare</i>	6,00	6,25	6,50	6,25	3,50	3,25	3,25	3,33
<i>Vicia vilasa</i>	3,25	3,00	2,75	3,00	1,50	1,25	1,15	1,30
<i>Cirsium arvense</i>	3,50	3,25	3,50	3,42	1,25	0,75	1,00	1,00
<i>Equisetum arvense</i>	1,50	1,00	1,75	1,42	0,50	0,50	0,75	0,58
<i>Apera spica venti</i>	6,50	6,25	6,25	6,33	3,50	3,25	3,25	3,33
Total weeds/m²	40,15	38,40	40,75	40,77	23,03	21,75	21,25	21,74

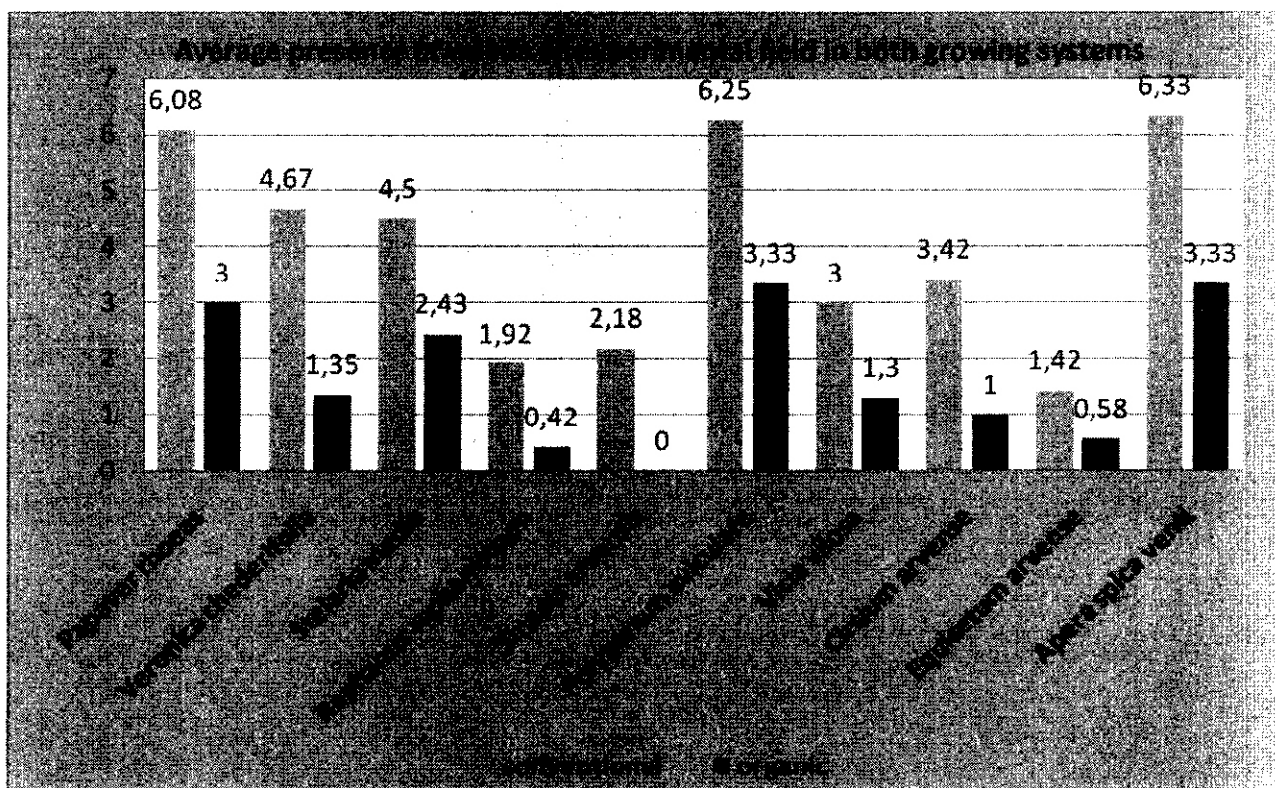


Figure 1. Average presence of weeds on experimental field in both growing systems

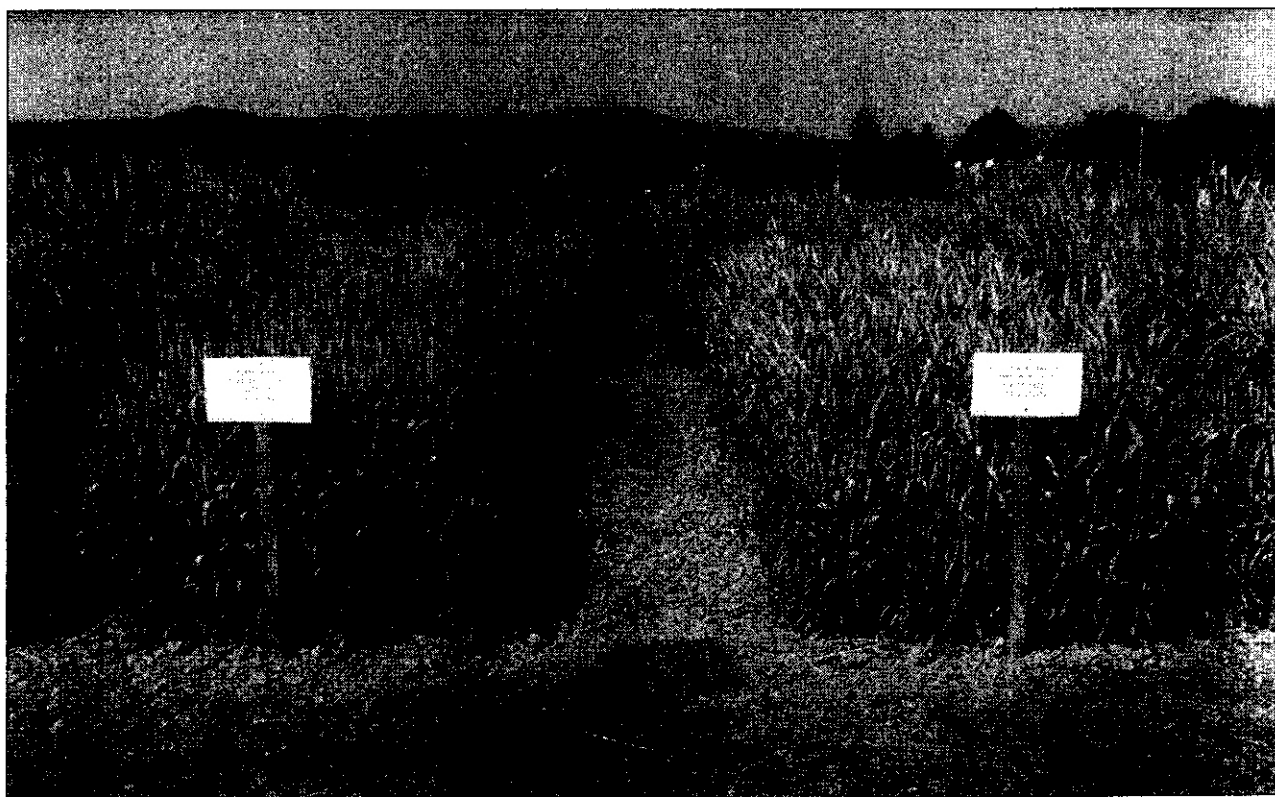


Figure 2. Mixture cereal crops in conditions of conventional and organic production

CONCLUSIONS

From the results the following conclusions could be made:

1. In conditions of conventional production of cereals in mixed crops ten (10) weed species were presented, and in conditions of organic production nine (9) weed species were presented;
2. Apart the variants, the average weediness of the experiment grown in conditions of conventional production, in both years of examination is 39,77 weeds/m²;
3. Apart the variants, the average weediness of the experiment grown in conditions of organic production, in both years of examination is 16,74 weeds/m²;
4. The differences that appear in average weediness in both growing systems, are a result of use of different agrotechnical measures, although the soil and climatic characteristics and the variants are same;
5. The agricultural measures used in conditions of organic production of cereal mixtures were better alternative solution for decreasing weeds, than those used in conventional production.

LITERATURE

1. Biberdžik M., Barak S., Stoševik Katerina Nikolic (2005): Pleveli vo pčenica i nivno suzbivanje so primena na neкои herbicidi. I Congress for plant protection "Environmental concern and food safety", p.137-140, Ohrid 8.XI-02.XII 2005.
2. Vasilevski G. (2004): Zmesti i klubenesti kulturi (Univerzitetski učebnik). Univerzitet "Sv. Kiril i Metodij", Skopje, Fakultet za zemjodelski nauki i hrana, Skopje.
3. Državen zavod za statistika na Republika Makedonija (2008): Poljodelstvo, ovostarstvo i lozarstvo, 2007. Statistički pregledi: Zemjodelstvo. Maj 2008. Skopje. <http://www.stat.gov.mk>
4. Eveline Stilma, Struik, P., Korevaar, H., Vosman, B. (2006): Weed diversity in semi-natural agro-ecosystems. In collaboration with SUSVAR COST action 860, working group 4: Plant-plant interactions. 12-15 September 2006, p.15-15, Rothamsted, UK. www.cost860.dk
5. Nikolov, P., Baeva Ganka, Milanova Senka, Nakova Ralitsa, Cavdarov, L., Velichkov, B., Balcev, B., Maneva Svetla (2005): Weed diversity assessment in different regions in Bulgaria. Ist Congress of plant protection „Environmental concern and food safety”, p.161-164, Ohrid 28.XI-2.XII 2005.
6. Ulla M.E. Didon (2006): Is it possible to influence competition by increased diversity in barley? In collaboration with SUSVAR COST action 860, working group 4: Plant-plant interactions. 12-15 September 2006, p.15-15, Rothamsted, UK. www.cost860.dk
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