SELECTIVITY AND EFFICIENCY OF SOME HERBICIDES IN THE WHEAT CULTURE DEPENDING ON THE MOMENT OF APPLICATION

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Abstract

In the spring of 2021, it has been made some research on the application of some herbicides at SCDA Livada: Bizon 1l/ha, Trinity SC 2l/ha and Joystick 200g/ha, BBCH 30-32, in spring, these herbicides being recommanded to be applied in the post emergence.

The application in automn of these herbicides reduces the competition between weeds and culture plante for nutrients and water from the early stages of growth providig a better emeregence of the cereal, but because of the weather conditions in the auntumn of 2020,we have opted for the spring application of Bizon, Trinity SC and Joystick herbicides.

Key words: wheat, application stage, selectivity anf efficiency of hercides, production.

INTRODUCTION

The synthesis and launching on the market of new herbicides against weeds upon the straw cereals culture is a main concern of global reseachers and in our country, as well.

MATERIAL AND METHOD

The research was carried out on the experimental field, being done on a gleyed preluvosoil with a 5.1 pH, a 20.9% of clay content and 2.8 content of humus, the wheat culture sowed was Glosa.

The sowing was done according to the randimized blocks method, the cultivated surface being of 21 m², four types of hercides in three doses. It was used 500 l/ha in spring at the apperance of the first internod.

The experiment was monitoring the selectivity level of wheat culture and the fighting level against annual and evergreen monocots and dicotyledons weeds while applying the mentioned herbicides (Table 1).

Table 1

Herbicides applied on the wheat culture in 2021

No. Var	Herbicides	Doses l,kg/ha	Active substance
1	Untreated	-	-
2	Bizon	1	diflufenican100g/l+penoxulam15g/l+ florasulam 3,75g/l
3	Trinity SC	2	pendimetalin300g/l+diflufenican40g/l+clortoluron250g/l
4	Joystick	0.2	iodosulfuron50g/kg+florasulam20g/kg+diflufenican400g/kg

The agricultural year of 2020-2021 ended up with an average tempersature of 11^0C and a sum of rainfall of 1010.7 l/m² from September 2020 until August 2021. The absolute temperatures of -13.5^0C and -14.7^0C were registered in January and February.

The highest temperature of 35.9^0C was recorded in June 2021, when there were 11 days of high temperatures of more than 30^0C. In comparison with the previons years, spring was colder and wetter than usual. March, April and May were under the multi annual levels with 0.9^0C; 2.1^0C and respectively with 1.4^0C.

The rainfall regime was rich, registering over 1000 mm of precipitations in that year (1010.7 mm). October 2020 was very rich in precipitations with 117.1 mm (with 61.8 mm over the normal values); January and February with 46 respectively 77.2 mm of precipitations over the multi annual average, but also April and May months in which the level of rainfall exceded 100 l/ m² (107.8 in April and 111.0 in May), (Table 2).

Overall, the climatic conditions of the 2020-2021 agricultural year were favourable for the autumn and spring straw cereals.

Table 2

Meteorological data in Livada weather station in the 2020-2021 year

Specification		IX	X	XI	XII	I	II	III	IV	V	VI	VII	VIII	Total per agricultural year.
Temperature ^{0}C	Decade I	17.6	15.2	7.4	4.5	2.9	4.8	2.7	6.4	12.6	17.1	22.3	21.3	
	Decade II	18.9	10.5	5.7	3.8	-3.6	-2.6	4.0	8.5	15.3	20.6	24.9	21.0	
	Decade III	15.5	10.7	0.1	5.2	2.8	5.0	4.8	10.4	15.2	25.2	23.1	17.3	
	Absolute minimum	3.6	3.5	-6.2	-8.4	**-13.5**	**-14.7**	-5.6	-1.4	3.0	5.2	13.6	9.1	
	Absolute maximum	30.4	26.0	17.1	15.1	10.9	17.4	16.8	22.7	29.3	35.9	34.8	33.8	
	No of days with $T^0 \geq 30^0$C	3	0	0	0	0	0	0	0	0	11	19	8	**41**
	No of days with $T^0 \leq -10^0$C	0	0	0	0	3	2	0	0	0	0			**5**
	Monthly average	17.3	12.1	4.4	4.5	0.7	2.4	3.8	8.4	14.4	21.0	23.4	19.9	
	Normal average	15.4	9.8	4.8	0.1	-2.2	0.1	4.7	10.5	15.8	19.0	20.5	19.9	
	Normal ± difference	1.9	2.3	-0.4	4.4	-1.5	2.3	-0.9	-2.1	-1.4	2.0	2.9	0	
Rainfall mm	Decade I	20.4	45.2	5.6	2.4	50.3	78.8	2.6	64.4	22.8	1.1	39.2	22.4	355.2
	Decade II	0	43.2	4.8	18.7	16.4	41.0	25.1	23.5	74.2	7.6	32.5	10.0	297.0
	Decade III	79.7	28.7	6.0	64.8	27.0	0	5.9	19.9	14.0	35.1	10.7	66.7	358.5
	Total monthly	100.1	117.1	16.4	85.9	93.7	119.8	33.6	107.8	111	43.8	82.4	99.1	**1010.7**
	Multiannual average	65.0	55.3	55.6	60.0	47.7	42.6	46.7	48.9	76.8	93.3	81.8	74.6	748.3
	Normal ± difference	35.1	61.8	-39.2	25.9	46.0	77.2	-13.1	58.9	34.2	-49.5	0.6	24.5	

RESULTS AND DISCUSSION

During the vegetation period, after the herbicidal treatment, there were done some observations concerning the level of selectivity and efficiency upon the weeds from the wheat culture.

The selectivity of the tested herbicides in what concerns the wheat culture was marked according to the visual observations after the EWRS scale(from 1 la 9 grades; 1= selective, 9=phytotoxic), (Table 3).

The appreciation of the herbicides efficiency was done numbering the weed species per m² in each version.

Joystik herbicide 200g/ha which was used in spring assures a 100% efficiency, and the application of Bizon herbicide 1l/ha and TrinitySC 2l/ha have an efficiency of 99% respectively 98% in comparison with the untreated part, (Table 3).

Table 3

Selectivity and efficiency of herbicide trearments on the wheat culture in 2021

No. Var	Herbicides	Doses l,kg/ha	Period of application	Selectivity EWRS grades	Efficiency %
1	Untreated	-	-	-	-
2	Bizon	1	Post	1	99
3	Trinity SC	2	Post	1	98
4	Joystick	0.2	post	1	100

Untreated Treated

Fig. 1 Image from the experimental field SCDA Livada in 2021

The production while analyzing the alternatives shows a positive influence of Joystick herbicide with 0.2 kg/ha surplus extra production to the untreated culture of 5.33q/ha. Bizon 1l/ha and Trinity SC 2l/ha give an increase production but these increases are not ensured statistically, (Table 4).

Table 4

The influence of the hercides treatment upon the wheat culture in 2021

No. Var.	Herbicides	Doses l, kg/ha	Period of application	Production q/ha	Difference +/- towardes Mt	Significance
1	Untreated	-	-	66.28	-	-
2	Bizon	1	Post	68.00	1.71	-
3	Trinity SC	2	Post	69.90	3.62	-
4	Joystick	0.2	post	71.62	5.33	x

LSD 5% = 4.99 q/ha LSD 1% = 7.55 q/ha LSD 0.1% = 12.13 q/ha

CONCLUSIONS

In the experiment that was carried out at SCDA in Livada, while in post emergence using Bizon 1l/ha, Trinity SC 2l/ha and Joystick 200g/ha herbicides, these are recommended to be used in autumn because they have shown a very good selectivity and efficiency of the autumn wheat culture.

The best herbicide in tackling the weeds from the wheat culture was Joystick 200g/ha herbicide, this version gave a 100% efficiency.

The best result in what concerns the wheat production was obtained V4, a version that was treated with the Joystick herbicide, but the others such as Bizon and Trinity gave good results: 1.71 q/ha respectively 3.62 q/ha, these increase productions not being statistically ensured.

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