SELECTIVITY AND EFFICIENCY OF DIFFERENT HERBICIDES FOR WEED CONTROL IN PEA CULTURES UNDER THE CONDITIONS EXISTING IN ARDS LIVADA

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Abstract

The present paper presents results obtained in the pea culture from 2019.

In order to achieve an effective control of the monocotyledonous and dicotyledonous weeds from the pea crop in this experience the selectivity, the effectiveness of the herbicide treatments and the influence of the herbicide treatments on the germination were pursued.

Key words: pea, herbicide selectivity, herbicide efficacy, germination

INTRODUCTION

The pea is a crop with a short vegetation period, which is a very good precursor plant for hairy cereals.

The cultivation of peas sown in frequent rows and in the early spring, is enriched with a large number of weed species, which consequently reduces the production by 30-50%, diminishes its quality and hinders the harvesting work. On the other hand, considers that in the control of weeds from this culture has a contribution the competition of well-developed pea plants at the expense of infestation with species such as Echinochloa, Setaria, Cirsium, Amaranthus etc, which invade the culture towards the maturity phase (Ciobanu, 2003).

MATERIAL AND METHOD

The experimental field was located at Agricultural Research and Development Station (ARDS) Livada, Satu-Mare county on a stagnogleized preluvosol with a pH of 5.19, a clay content of 20.9% and a humus content of 2.82.

The experiments were located according to the Latin rectangle method, 12 variants in three repetitions, the plot area being 21 m².

The variety Magistra Liv was sown in the last decade of March, registering after the pre-emergent treatments in 30 days an amount of 22.9 mm / m².

The variants in which the selectivity and efficacy of herbicides were tested in pea culture were:

Table 1

Herbicides applied to pea crop 2019

No. Var	Herbicides	Dose l,kg/ha	Active substance
1	Untreated	-	-
2	Dual Gold 960EC	1,5	S – metolachlor 960g/l
3	Dual Gold 960EC	2	S – metolachlor 960g/l
4	Pendigan 330 EC	5	pendimethalin 330g/l
5	Corum + Gramin 5EC	1,2+1	(bentazone 480g/l + imazamox22,4g/l)+quizalofop- P-ethyl 50g/l
6	Pulsar 40 + Gramin 5EC	1,2+1	imazamox 40g/l + quizalofop- P-etil 50g/l
7	Pulsar 40	1,2	imazamox 40g/l
8	Pendigan 330 EC+ Pulsar 40	3,5+1,2	pendimethalin 330g/l + imazamox 40g/l
9	Stomp Aqua + Pulsar40	3+1,2	pendimethalin 455g/l + imazamox 40g/l
10	Stomp Aqua + Butoxone M 40	3+2	pendimethalin 455g/l + MCPB – Na 400g/l
11	Stomp Aqua + Butoxone M 40	3+2,5	pendimethalin 455g/l + MCPB – Na 400g/l
12	Dual Gold 960EC + DMA Extra 600SL	1,5+0,2	S – metolachlor 960g/l + acid 2,4D of dimethylamine salt 600g/l

The age of herbicide application was pre-emergence, pre-emergence + post-emergence and post-emergence.

For herbicide administration the equipment used was Plot Sprayer PSGF 4.3, teejet nozzle type, 0.2 nozzle size, and the displacement speed was 6 km / h.

The norm of solution used was 500 l / ha, the administration being done for all variants at the same working pressure, ie 2 bars.

During the vegetation period, after making the treatments, observations were made regarding the degree of selectivity and effectiveness on the weeds.

The selectivity of the tested herbicides was noted following visual observations after the EWRS scale (grades 1 to 9; 1 = selective, 9 = phytotoxic), and the assessment of herbicide effectiveness was made by counting the weeds by species in each plot per 1 m².

The processing of the experimental results was done by analyzing the variance to determine the influence of the treatments on the production.

RESULTS AND DISCUSSION

The results obtained regarding the selectivity of the herbicide treatments were found that in each treated variant very good selectivity was obtained, the EWRS score being 1 for each variant (Table 2).

Analyzing the efficacy of herbicides it is found that the best weed control was performed on the variants treated with herbicides: Stomp Aqua 3l / ha applied in pre-emergence associated with the herbicide Pulsar 40 1.2l / ha applied in post-emergence, Pendigan 330 EC 3.5l / ha plus Pulsar 40 1.2l / ha and Dual Gold 960 EC 1.5l / ha applied in pre-emergence associated with DMA Extra 600 SL applied early post-emergence (when pea is in the sting phase, BBCH 11) (Table 2).

In the variants in which we applied two treatments, pre-emergence associated with a post-emergent treatment obtained better efficacy than in the variants where we applied a single treatment regardless of the time of application.

Table 2

Selectivity and effectiveness of herbicide treatments in pea crop 2019

No. Var	Herbicides	Dose l,kg/ha	Application time	Selectivity EWRS notes	Effectiveness %
1	Untreated	-	-	-	0
2	Dual Gold 960EC	1,5	preem	1	10
3	Dual Gold 960EC	2	preem	1	15
4	Pendigan 330 EC	5	preem	1	15
5	Corum + Gramin 5EC	1,2+1	post	1	25
6	Pulsar 40 + Gramin 5EC	1,2+1	post	1	32
7	Pulsar 40	1,2	post	1	10
8	Pendigan 330 EC+ Pulsar 40	3,5+1,2	preem+post	1	35
9	Stomp Aqua + Pulsar40	3+1,2	preem+post	1	47
10	Stomp Aqua + Butoxone M 40	3+2	preem+post	1	30
11	Stomp Aqua + Butoxone M 40	3+2,5	preem+post	1	32
12	Dual Gold 960EC + DMA Extra 600SL	1,5+0,2	preem+ early post	1	35

The results regarding the influence of herbicide treatments on pea production indicate that the best variants are the variants in which the herbicides were applied: Pulsar 40 1,2l / ha + Gramin 5 EC 1l / ha, Stomp Aqua 3l / ha + Pulsar 40 1.2l / ha, Stomp Aqua 3l / ha + Butoxone M 40 2.5l / ha and Dual Gold 960 EC 1.5l / ha + DMA Extra 600 SL1l / ha, variants in which the production increase was very positive . From our experience we have come to the conclusion that all herbicide variants have increased production of statistically assured production, with the exception of the

variant treated with Pulsar 40 1,2l / ha applied in postemergence, which is due to the infestation of the crop until the time of treatment with monocotyledons and dicotyledons and especially with monocots (Table 3).

Table 3

The influence of herbicide treatments on pea production 2019

No. Var	Herbicides	Dose l,kg/ha	Application time	Production q/ha	Difference +/- to Mt.	Significance
1	Untreated	-	-	4,3	-	-
2	Dual Gold 960EC	1,5	preem	8,3	4,0	x
3	Dual Gold 960EC	2	preem	7,7	3,4	x
4	Pendigan 330 EC	5	preem	9,7	5,4	xx
5	Corum + Gramin 5EC	1,2+1	post	9,3	5,0	xx
6	Pulsar 40 + Gramin 5EC	1,2+1	post	11,4	7,1	xxx
7	Pulsar 40	1,2	post	5,8	1,5	-
8	Pendigan 330 EC+ Pulsar 40	3,5+1,2	preem+post	9,5	5,2	xx
9	Stomp Aqua + Pulsar40	3+1,2	preem+post	10,4	6,1	xxx
10	Stomp Aqua + Butoxone M 40	3+2	preem+post	10,0	5,7	xx
11	Stomp Aqua + Butoxone M 40	3+2,5	preem+post	11,0	6,7	xxx
12	Dual Gold 960EC + DMA Extra 600SL	1,5+0,2	preem+ early post	10,8	6,5	xxx

DL 5% = 3,17 q/ha 1% = 4,31 q/ha 0,1% = 5,85 q/ha

We also studied the influence of herbicide treatments on pea germination, and then it can be concluded that for each herbicide treatment the germination was equally sensitive (Table 4).

Table 4

The influence of herbicide treatments on germination in pea culture 2019

No. Var	Herbicides	Dose l,kg/ha	Application time	Germination %
1	Untreated	-	-	87,6
2	Dual Gold 960EC	1,5	preem	84,3
3	Dual Gold 960EC	2	preem	79,0
4	Pendigan 330 EC	5	preem	84,3
5	Corum + Gramin 5EC	1,2+1	post	83,3
6	Pulsar 40 + Gramin 5EC	1,2+1	post	81,0
7	Pulsar 40	1,2	post	82,3
8	Pendigan 330 EC+ Pulsar 40	3,5+1,2	preem+post	86,6
9	Stomp Aqua + Pulsar40	3+1,2	preem+post	82,0
10	Stomp Aqua + Butoxone M 40	3+2	preem+post	82,0
11	Stomp Aqua + Butoxone M 40	3+2,5	preem+post	80,0
12	Dual Gold 960EC + DMA Extra 600SL	1,5+0,2	preem+early post	83,3

CONCLUSIONS

The researches were carried out in the year 2019 in the pea culture.

The experiments were located in Satu-Mare county at the Agricultural Development Research Station Livada on a stagnogleized preluvosol with a pH of 5.19, a clay content of 20.9% and a humus content of 2.82.

The herbicides applied to the crop of peas showed a very good selectivity for each variant.

The most effective herbicides were Stomp Aqua 3l / ha applied in pre-emergence associated with the herbicide Pulsar 40 1.2l / ha applied in post-emergence, Pendigan 330 EC 3.5l / ha plus Pulsar 40 1.2 1.2 / ha and Dual Gold 960 EC 1 , 5 l / ha applied in pre-emergence associated with DMA Extra 600 SL applied early post-emergence (when the pea is in the thorn phase, BBCH 11).

Treatments only on the vegetation of a single herbicide ensure a reduced control, due to the monocotile species, partially controlled by the Pulsar 40 herbicide.

It can be concluded that statistically assured production increases were obtained in each herbicidal variant, except in the variant treated with Pulsar 40 1,2l / ha, where the production increase was not statistically insured.

The herbicides tested did not have a negative influence on germination.

The production obtained at Netratat shows that no increase of production can be obtained in pea culture without combating weeds.

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