RESEARCHES REGARDING ON THE EFFICACY AND SELECTIVITY OF HERBICIDES TO COMBAT WEEDS FROM LAVENDER ON SANDY SOILS

Milica Dima[1*], Mihaela Croitoru[1], Reta Drăghici[1], Emilia Constantinescu[2], Mariana Niculescu[2]

[1]Plants Crops Research and Development Center on SandySoils – Dabuleni, Romania,
[2]University of Craiova. Faculty of Agriculture, 19 Libertatii Street, 200583, Craiova, Romania
e-mail: milicadima@yahoo.com

Keywords: sandy soils, weed, herbicides, lavander

ABSTRACT

On the southern Oltenia psamosoils, using of fertilizers and irrigation water provides favorable conditions for cultivated plants growth and development, but equally for weeds, too.

As a result of the high degree of sandy land weeding, the chemical weed control is a technological measure that leads to an increased production.

In order to establish a strategy with a large spectrum to combat monocots and dicots weeds were studied herbicides Treflan, Mecloran, Basagran, Fusilade in different doses and combinations.

The monocotyledonous weed control, the best results were obtained by using fusilados herbicide at a dose of 2 l / ha.

Analyzing the effectiveness of the applied postemergence herbicides, postemergence I treatment with Basagran 4 l /ha, the herbicide acting systemically, translocated into the plant through the root system, had a good efficacy in combating dicotyledonous weeds.

INTRODUCTION

On the southern Oltenia psamosoils, using of fertilizers and irrigation water provides favorable conditions for cultivated plants growth and development, but equally for weeds, too.

The chemical weed controlcreates favorable conditions for full mechanization of agricultural crops, allowing to increasing the efficiency of the agrophytotechnical measures and parameters for their crop (Sarpe, N. et al., 1976).

The weed species that invade crops can be destroyed not only by manual and mechanical hoeing but also by chemically and using herbicides, too.

Herbicides are important due to their opportunities that offer destroing the damages provoked by weeds and getting high yields, too.

On psamosoils, the common weeds which raises issues are Cynodon dactylon, Sorghum halepense. As a result of the high degree of weeding on sandy soils, the chemical weed control creates a technological measure that leads to increased production.

MATERIALS AND METHODS

The experiments lead to find the herbicide to destroy a large percentage of weeds without affecting plants of lavender. As a result of the high degree of monocotyledonous and dicotyledonous weeds on sandy soils were studied the following herbicides:Treflan,Mecloran,Basagran,Fusilade in various combinations and doses.

The experimental variants are: **V1**- hoeing (Mt.1); **V2** - unhoeing (Mt.2); **V3** - Stomp (ppi) + Mecloran (post.1); **V4**-Stomp (ppi) + Basagran (post 1) + Fusilade (post.2); **V5** - Stomp (ppi) + Basagran (post 1) + Pantera (post.2)

The experiment has been placed in the field after randomized block method. In the experiment was applied the crop technology at lavander on sandy soils. The results were statistically interpreted through variance analysis method.

RESEARCH RESULTS

The results obtained on the selectivity of herbicides indicate that all tested products, which are applied to the soil surface as a film and generally have low solubility, are selective per plant (Note 1).

Table 1

Results on the selectivity of herbicides applied to the culture of lavender

Nr.crt.	Herbicides tested	Dose(l/ha)	Application period	Note EWRS
1	Mt.1-hoeing	-	-	-
2	Mt.2- unhoeing	-	-	
3	Stomp		Ppi	1
	Mecloran		postemergence I	
4	Stomp		Ppi	1
	Basagran		Postemergence I	
	Fusilade		postemergence II	
5	Stomp		Ppi	1
	Basagran		Postemergence I	
	Pantera		postemergence II	

Selectivity of herbicides applied in vegetation (Basagran, Fusilade, Mecloran) is based on either a specific enzyme system or hormonal, or some metabolites on their own, able to participate in the rapid degradation of the herbicide or binding and immobilizing (Berca, M., 1996) .

Observations and measurements made in version unhoeing reveal the presence of the following species of weeds before postemergence I treatment : 44.5% Cynodon dactylon; 32,8% Sorghum halepense; 11,8% Xanthium strumarium; 1.4% Chenopodium album

Analyzing the effectiveness of the applied postemergence herbicides, the postemergence I treatment with Basagran 4 l/ ha, the herbicide acting systemically translocated into the plant through the root system had a good efficacy in combating dicotyledonous weeds. Applying this product has reduced weeding degree of 72-78% compared to unherbicided variant, the degree of weed was 85% (note 7.70).

The monocotyledonous weed control, the best results were obtained by using Fusilade herbicide at a dose of 2 l / ha.

Scoring EWRS performed before harvest highlights shows the lowest degree of weed (note 2.16) by herbicide Stomp dose of 4 l /ha applied ppi + Basagran dose of 2l /ha applied postemergence I + Fusilade dose of 2 l /ha applied postemergence II.

The results on herbicides efficacy, gravimetrically determined at the harvesting of lavender culture, compared to unhoed witness II herbicided variant with Stomp 4l/ha applied ppi + Basagran 2l/ha applied postemergence I + Fusilade 2 l/ha applied postemergence II. At this herbicide variant, the weight of weed was 8.6% compared to the unherbicided witness, recording 3491 kg / ha weeds.

According to the weight of weed per groups it is noticed for unherbicided and unhoed variant a quantity of 1717.5 kg / ha annual monocotyledonous (49.2%) 800kg/ha perennial monocotyledonous(22.9%), 973.5kg/ha annual dicotyledonous (27.9%).

Table 2

Efficacy of herbicides to combat weeds from lavender

Nr. crt.	Herbicides tested	Dose (l/ha)	Application period	Eficacy (note EWRS)		
				The day before treatment postI	The day before treatment.postII	Before harvest
1.	Mt.1- hoeing	-	-	1	1,66	1,85
2.	Mt.2-unhoeing	-	-	6,85	7,70	9,0
3.	Stomp	4	Ppi	3,66	3,16	6,16
	Mecloran	2	postemergence I			
4.	Stomp	24	Ppi	2,16	1,66	2,16
	Basagran	2	Postemergence I			
	Fusilade	2	postemergence II			
5.	Stomp	4	Ppi	3,33	3,16	4,0
	Basagran	2	Postemergence I			
	Pantera	2	postemergence II			

Table 3

Efficacy of herbicides for weed crop of lavender (Gravimetric fall at the end of the growing season)

Nr. crt.	Herbicides tested	Dose (l/ha)	Application period	Weight weeds			Total weight	
				Annual monocotyledonous (kg/ha)	Perrenial monocotyledonous (kg/ha)	Annual dicotyledonous (kg/ha)	(kg/ha)	(%)
1.	Mt.1-hoeing	-	-	173,5	42	55,5	271	7,7
2.	Mt.2-unhoeing	-	-	1717,5	800	973,5	3491	100
3.	Stomp	4	Ppi	790	825	485	2100	60,0
	Mecloran	2	postemergence I					
4.	Stomp	4	Ppi	125	71,5	103,5	300	8,6
	Basagran	2	Postemergence I					
	Fusilade	2	postemergence II					
5.	Stomp	4	Ppi	105	477	923	1505	43,1
	Basagran	2	Postemergence I					
	Pantera	2	postemergence II					

CONCLUSIONS

All tested herbicides at lavender showed the plant selectivity (note 1).

The postemergence I herbicides with Basagran (2l /ha) had a good efficacy for dicotyledonous weed, reducingweed degree compared to unherbicided variant.

The lowest degree of weeding at harvesting under the influence of herbicides (8,6%) compared to unherbicided witness was recorded by herbiciding the culture of lavender with Stomp 4l /ha appliedppi + Basagran 2l /ha applied postemergence I + Fusilade 2l /ha applied postemergence II.

BIBLIOGRAPHY

1. **Berca,M.,**1996- *Combaterea buruienilor din culturile agricole*, Editura Fermierul
2. **Păun, E. and colab**., 1986- *Tehnologia de cultivare a lavandei*. Tratat de plante medicinale și aromatice cultivate, Vol.I, Ed. Academiei RSR
3. **Racz, G. and colab**., 1972- *Lavanda*. Plante medicinale și aromatice, Ed. Ceres.
4. **Şarpe,N**., 1987- *Combaterea integrată a buruienilor din culturile agricole*, Editura Ceres, Bucureşti
5. ***, 2014-*Tehnologia de cultură la lavandă*.Tehnologia de cultivare a cerealelor, plantelor tehnice, plantelor furajere şi plantelor medicinale pe solurile nisipoase. Editura Sitech, Craiova, ISBN 978-606-11-4265-1.