

STUDIES REGARDING THE INFLUENCE OF SEADLING AGE, PLANTING TIME AND CULTURE DENSITY ON THE OBTAINED PRODUCTION OF SAVORY (*OCIMUM BASILICUM* L.)

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INTRODUCTION

The organic culture of aromatic and spicy species represents for our country a future activity. Breeding and improving culture technologies have an important role in increasing positive characteristics and obtaining a new one. The aim is to decrease the influence of unfavorable factors. The organic agriculture represents an alternative for conventional agriculture. There are no chemical syntheses used for obtained and processing production. The value of the "bio" products has a low volume, but the annual increase is up to 20-22%.

MATERIAL AND METHODS

All our studies were made on DARIA variety, developed and patented of VRDS Bacau.

The individual factors were: three variants for density, three variants for planting time and two variants for seedling age at planting time.

RESULTS AND DISCUSSIONS

The individual influence of studied factors

The influence of seedling age on obtained production to savory culture

The seedling age has an important influence on obtained production. The quality and the quantity are strongly influenced if we use a too young or too old seedling.

We can observe in (table 1, fig. 1) the results from a one factorial experience where we studied production and four different seedling ages at the planting time, during three experimental years.

Analyzing variation for obtained production, show us the production differences between seedling age comes for characteristics not from errors, demonstrated by report value $F(s_v^2/s_e^2)$ calculated as 17.79 %, comparing $F_{theoretical} = 9.78$ degree of confidence 99%

Regarding the registered production value for our four different seedling age we observed a variation between 14.8 t/ha when the seedling age at the planting time was 40 days and 9.2 t/ha at 30 days age. The average was 12.1 t/ha.

Comparing the average and our experimental results we obtained in V3 at 40 days age seedling a very significant production spore. When we used a 35 days seedling age we registered a distinct significant spore production (1.6/t/ha). In case of 45 and 30 days seedling age we registered negative differences – very significant in V1 (-2,9 t/ha) and significant in V4 (-1,2 t/ha).

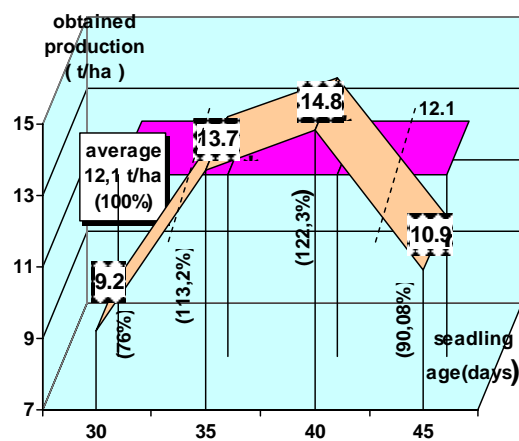


Figure 1. The age seedling influence on savory production –Daria variety (Result synthesis and years average 2007- 2009)

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Experimental variant	Seedling age (days)	The obtained production		Difference against x (t/ha)	Difference signification
		(t/ha)	% toward x		
1	30	9,2	76,00	- 2,9	000
2	35	13,7	113,20	+1,6	**
3	40	14,8	122,30	+2,7	***
4	45	10,9	90,08	-1,2	0
Σ		48,6	-	-	
x		12,1	100	-	
DL 5% = 1.01 t/ha; DL 1% = 1.5 t/ha; DL 0.1% = 2.4 t/ha					

The influence of time planting on savory production

The influence of time planting has a major impact on savory obtained production (table 2, fig. 2)

Table 2. The influence of time planting on savory production 2007-2009

Experimental variant	Time planting	Obtained production		Difference toward x (t/ha)	Difference signification
		t/ha	% toward x		
1.	May 5	12,6	92,2	-1,1	0
2.	May 10	13,8	105,3	+0,7	-
3.	May 15	15,4	117,5	+2,3	***
4.	May 20	10,9	83,2	-2,2	000
Σ		52,7	-	-	-
x		13,1	100	-	-
DL 5% = 1.01 t/ha; DL 1% = 1.5 t/ha; DL 0.1% = 2.1 t/ha					

Analyzing variation for our obtained production show us with 99% probability time planting is responsible for our experimental differences. $F_{\text{calculate}}=11.09^{**}$, and $F_{\text{theoretical}}=5.94$.

The variation regarding obtained production, average in three experimental years was between 15.4 t/ha and 10.9 t/ha and the experimental average was 13.1 t/ha. In case of V3 – planting time 15 May we obtained a very significant spore.

The production was higher 17.5% than average. Regarding the other two planting time May 5 and May 20 the production differences comparing average were negative, significant in case of V1 and very significant in V4.

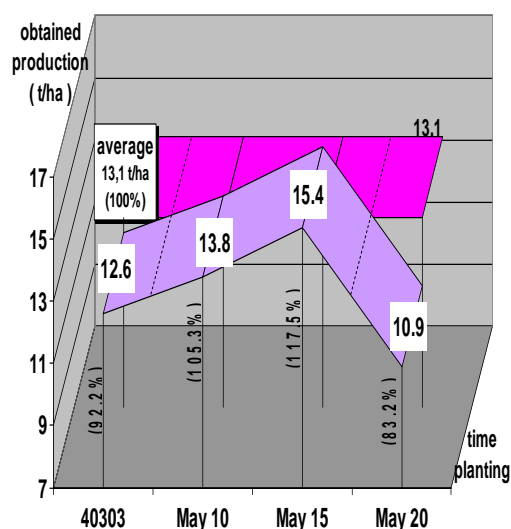


Figure 2. Obtained result synthesis at savory – year average 2007- 2009

Density influence on savory production regarding Daria -savory variety

The distance between plants is a determining factor for area of nutrition, light regime and efficient land use. The distance provide mechanization care directly and a better management culture generally. The obtained experimental results in this series of experiments in 2007-2009 are presented in table 3 and illustrated graphically in fig. 3.

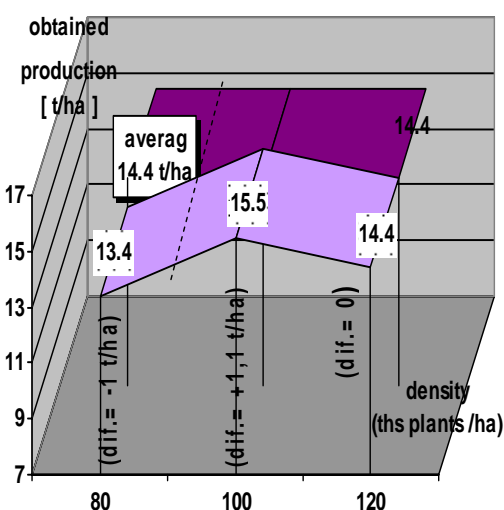


Figure 3. Density influence on savory production regarding Daria -savory variety- years average 2007- 2009

Table 3. Density influence on savory production years average 2007- 2009

Experimental variant	Density (thb plants/ha	Obtained production		Difference toward x(t/ha	Difference signification
		t/ha	% toward x		
1	80	13	93,05	-1,0	-
2	100	15,5	107,6	+1,1	**
3	120	14,4	100	-	-
4	Σ	43,3	-	-	-
x		14,4	100	-	-

DL 5% = 0,75 t/; DL 1% = 0,95 t/ha;DL 0,1% =1,9 t/ha

The production results distinct significant were obtained at 100.000 plants/ha density - (V2) while results were negative at 80.000 plants/ha, the production difference was distinct significant, too (V1).

The Fisher test show us the production is distinct significant influenced by the distance between plants on row: $F_{\text{calculate}} = 15,31$ toward $F_{\text{theoretical}} = 6,94$.

The combination influence of studied factors and those interactions on harvest

The influence age seedling x density.

Analyzing table 4, we can observe: in organic agricultural system, savory reach the best production when we planted seedling 40 days age at 100.000 plant/ha density. The obtained average was 14.6 t/ha fresh/green plant.



Photo 1. Savory plant

Table 4. Influence of interaction between age seedling and plant density on savory production- y ears average 2007- 2009

No	Specification		Obtained production		Difference towards x (t/ha	Difference signification
	Seedling age(days)	Density (thb plants/ha	t/ha	%toward x		
1	30	80	13,4	91,78	-1,2	0
2	35	80	14,7	100,68	+0,1	-
3	40	80	15,3	104,79	+0,7	-
4	45	80	14,2	97,26	-0,6	-
5	30	100	15,0	102,7	+0,4	-
6	35	100	15,6	106,8	+1,0	-
7	40	100	16,8	115,06	+2,2	***
8	45	100	15,2	104,10	+0,6	-
9	30	120	13,8	94,52	-0,8	-
10	35	120	14,2	97,26	-0,4	-
11	40	120	14,0	95,89	-0,6	-
12	45	120	13,8	94,52	-0,8	-
x			14,6	100	-	

DL 5% = 1,05 t/ha; DL 1% = 1,50 t/ha; DL 0,1% = 2,0 t/ha

Table 5. The influence seedling age x time planting on Daria variety and effect on production (t/ha)

No.	Specification		Obtained production		Difference towards x (t/ha	Difference signification
	Seedling age (days)	Time planting	t/ha	%toward x		
1	30	5	12,6	86,3	-2,0	00
2	35	5	12,8	87,67	-1,8	00
3	40	5	14,5	99,3	-0,1	-
4	45	5	13,9	95,2	-0,7	-
5	30	10	13,0	89,04	-1,6	00
6	35	10	13,2	90,4	-1,4	0
7	40	10	13,9	95,2	-0,7	-
8	45	10	13,8	94,5	-0,8	-
9	30	15	15,4	105,47	+0,8	-
10	35	15	15,6	106,84	+1,0	-
11	40	15	16,9	115,75	+2,3	***
12	45	15	15,7	107,53	+1,1	-
13	30	20	15,6	106,84	+1,0	-
14	35	20	15,2	104,10	+0,6	-
15	40	20	15,8	108,21	+1,2	*
16	45	20	15,5	106,16	+0,9	-
x			14,6	100		

DL 5% = 1,05 t/ha; DL 1% = 1,50 t/ha; DL 0,1% = 2,1 t/ha

The influence seedling age x time planting.

Regarding combinative influence presented in table 5 the best production results were obtained when we planted 40 days seedling age in May 15 planting time.

In that case the production was 2.3 t/ha bigger than average – very significant results. We obtained as well significant production when we planted 40 days seedling age in May 20 – The difference towards average was significant.

CONCLUSIONS

Savory culture in organic agricultural system obtained:

- the best production when the density was 100.000 plants/ha, the seedling age was 40 days
- the best production when the date of planting was May 15.
- the average of production was 15.5 t/ha, comparing 13.4 t/ha at 80.000 plants/ha and 14.4 t/ha at 120.000 plants/ha.

ABSTRACT

Spicy and aromatic plants constitute a significant natural wealth of our country, their importance being given by their social and economic value, and also by their therapeutic and alimentary role.

Food and therapeutic value of spices is determined by great complexity and diversity in biochemical compounds.

Despite the huge development of industry of flavors, dyes, etc, plant products are especially popular due mainly lack of toxicity over a long-term use.

Worldwide, spicy and aromatic plants enjoy growing attention and are the subject of physicochemical, agro biological and pharmacological extensive research.

The organic version with the best results was the one obtained when we planted seedling of 40 days, in decade May 10 to 15, ensuring the planting density of 100.000 plants/ha.

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