RESEARCHES CONCERNING THE SOWING TECHNOLOGY AT LALLEMANTIA IBERICA F. ET M.

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***Abstract*:** *The species Lallemanţia iberica of the family Lamiaceae belongs to the group of oleaginous plants, having a content of oil of 26-40%. Lallemantia oil is siccative and has a high iodine index, 162,2 – 202,9, overtaking the linseed oil for that matter. It is used in the paints and coatings industry, for impregnations in the textile industry etc. This species is new for our country. The specialized literature tells us, that this plant is not too delicate when it comes to the pedoclimatic conditions and can be cultivated in the plain regions as well as on the hills. Lallemantia has a good behaviour during dry periods of times, but the increased humidity makes the plants sensitive to the attack of cryptogamic diseases. The cultivation of this species does not imply high costs, as the machines of the current technology for cereals cultivation are to be used for the cultivation of Lallemantia as well. This paper presents the results of the researches done in the Western part of the country, on the Timis River Plain, on a cambic chernozem. The climate is moderate continental, the region being situated at the interference between the climatic sector with oceanic interferences and the climatic sector with Mediterranean interferences. After Koppen is the climate of the researched area a provincial climatic c.f.x.b. one, characterized by a temperate climate, with rainfalls all over the year but with a humidity shortcoming during the summer months. The paper presents the research results regarding the influence of the period of sowing between rows and of the row distance on the number of ramifications/plant, on the number of verticils on the main stem according to the mentioned factors, on the variation of the weight of 1000 grains (g), on the content of oil (%) and on the production of oil (kg/ha). The paper shows that by delaying the sowing in the interval 10-15 III until 10-15 IV, the yield decreases with 20%. Among the sowing distances the optimal one was the variant in which the distance was of 25 cm. The crop resulted for this sowing variant was 20% bigger than the one n which the sowing was done at 12,5 cm. An increase of the distance between rows to 50 cm is unjustifiable. The number of ramifications on plant increased as the distance between rows increased and so did the number of verticils on the main stem. The content of oil varied between 38,8% and 40,2% and the oil quantity between 309 kg/ha and 548 kg/ha.*

Key words: *oil content, quantity of protein, number of ramification, crop.*

INTRODUCTIONS

No researches have been done in our country on the field of technological particularities of the cultivation of Lallemanţia iberica F. et M.

The plant is important because of its high content of oil in the seeds, which may be of more than 40%. The oil can be used in industry, being siccative. The species is not unpretentious when it comes to the vegetation factors. It is therefore possible to use soils with different fertility potentials. Researches must be done in order to establish the cultivation technology, in order to be able cultivate it.

MATERIAL AND METHODS

The experiments done were bifactorial, with three repetitions, where the A factor represented the sowing period with two graduations – sown on March 10-15 and respectively on April 10–15 – and the B factor with two graduations represented the distance between rows, 12,5 cm, 25 cm and 50 cm.

During the vegetation period there have been done determinations regarding the degree of plant ramifications and the number of verticils on the stem, and the weight of 1000 grains, the seed yield and the content of oil were determined when harvesting.

RESULTS AND DISCUSIONS

The crop results are presented in Table 1.

Table 1

Crop results obtained on the Timis County plane according to the sowing period and to the distance between rows

A – Sowing Period	B – Distance Between Rows			A Factor Averages			
	12,5cm	25 cm	50 cm	Average yield	%	Difference	Signification
10 – 15 III	1124	1365	962	1150	100		
10-15 IV	923	1092	778	931	80	-219	0

DL 5% = 178 DL 1% = 242 DL 0,1 % =327

B Factor Averages

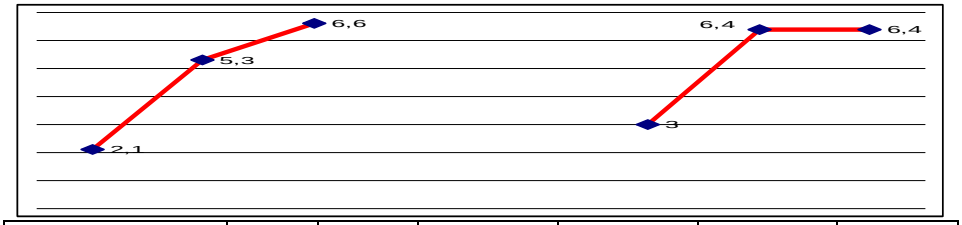
Specification	12,5cm	25 cm	50 cm
Yield kg/ha	1023	1228	870
%	100	120	85
Difference kg/ha		205	-153
Signification		XXX	00

DL 5% = 102 DL 1% = 140 DL 0,1% = 189

The results underline the importance of early sowing, between March 10 and 15. By delaying the sowing until April 10 – 15 the yield decreased with 20%, the difference being significantly negative, of 219 kg/ha.

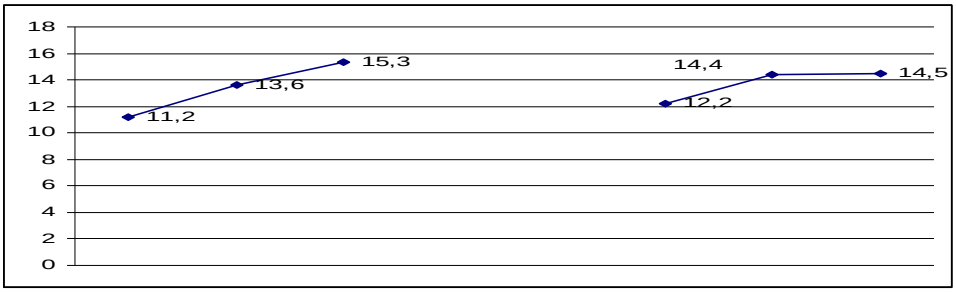
Among the sowing distances we noticed the variant of sowing at a distance of 25 cm. In this case the yield increased with 20% as compared to the variant of sowing at a distance of 12,5 cm. An increase of the distance between rows to 50 cm is not justifiable, as the yield decreases with 15% as compared to the reference variant.

The number of ramifications/plant (figure 1) and the number of verticils/plant (figure 2) were favourably influenced by the increase of the distance between rows when sowing.



Dist. between rows cm	12,5	25	50	12,5	25	50
Sowing period	10-15 III			10-15 IV		
$\bar{X}$	2,1	5,3	6,6	3,0	6,4	6,4
S^2	0,89	1,01	2,04	1,0	0,64	1,04
S	0,94	1,0	1,43	1,0	0,80	1,08
Sx	0,09	0,10	0,14	0,10	0,08	0,11
Sx%	44,76	18,87	21,67	33,33	12,50	16,88

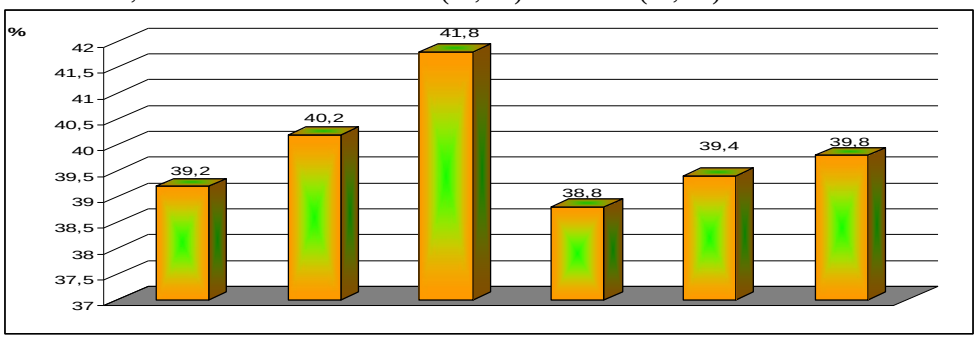
Figure 1. The variation of the number of main ramifications/plant according to the sowing period and to the distance between rows determine on the Timis County plane



Dist. between rows cm	12,5	25	50	12,5	25	50
Sowing period	10-15 III			10-15 IV		
$\bar{X}$	11,2	13,60	15,30	12,20	14,40	14,5
S^2	5,16	0,44	1,41	1,96	1,64	1,05
S	2,27	0,66	1,19	1,40	1,28	1,02
Sx	0,23	0,07	0,12	0,14	0,13	0,10
Sx%	20,27	4,85	7,78	11,48	8,89	7,50

Figure 2. The variation of the number of verticils per stem according to the sowing period and to the distance between rows determine on the Timis County plane

Fig. 3 shows the variation of the content of oil which reached the highest values for the variants sown in the period March 10 – 15 and for the variants in which the sowing was done on rows, with a row distance of 25 cm (40,2%) and 50 cm (41,8%).



	10 – 15 III			10 – 15 IV		
	12,5 cm	25 cm	50 cm	12,5 cm	25 cm	50 cm
Content of oil %	39,2	40,2	41,8	38,8	39,4	39,8
Difference		1,0	2,6	-0,4	0,2	0,6
Average content/sowing period	40,4			39,3		

Figure 3. Content of oil stem according to the sowing period and to the distance between rows determine on the Timis County plane

The quantity of oil calculated according to the yield and the content of oil are given in Table 2. For the researched area, the obtained values were between 358 kg/ha and 548 kg/ha, the highest quantity being obtained for the variant sown early (March 10 - 15) and for a distance between rows of 25 cm.

Table 2.

The Quantity of oil according to the sowing period and to the distance between rows determined on Timis River Plain

A – Period of sowing	B – Distance between rows			A Factor averages			
	12,5cm	25 cm	50 cm	Quantity of protein kg/ha	%	Difference Kg/ha	Signifi cation
10 – 15 III	440	548	402	463	100		
10-15 IV	358	430	309	366	79	-97	0

DL 5% = 74 DL 1% = 104 DL 0,1 % =146

B Factor averages

Specification	12,5cm	25 cm	50 cm
Quantity of oil kg/ha	399	489	355
%	100	122	88
Difference kg/ha		90	-44
Signification		XXX	0

DL 5% = 42 DL 1% =60 DL 0,1% = 84

CONCLUSIONS

The results obtained on Timis River Plain regarding the influence of the sowing period and of the distance between rows underline the followings:

- The sowing period in the researched area was 10-15 III. A delayed sowing till 10-15 IV reduced the yield with 20%.
- The optimal distance between rows is 25 cm. In this variant the yield is 20% bigger than the one obtained when sowing at a distance of 12,5 cm. An increase of distance up to 50 cm is not justifiable.

The highest oil content is of 41,6% and the highest quantity of oil is of 548 kg/ha, both obtained for the variant in which the sowing was done in March 10-15 and at a row distance of 25 cm.

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