

RESEARCH CONCERNING THE IMPACT OF SOWING PERIOD ON WHITE LUPIN (*LUPINUS ALBUS* L.) CULTIVATED FOR GRAINS IN THE WESTERN ROMANIA HILL AREA

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Abstract: Research concerned three genotypes of white lupin (*Lupinus albus* L.) from three countries: the Romanian white lupin cultivar Medi, the Serbian source De Voivodina, and the Turkish source De Turcia. The type of soil on which was carried the research was a brown podzolic, with a low acid reaction (pH 5.90 in Ap, poorly supplied with humus, phosphorus, and potassium, with a base saturation degree of $V\% = 78\%$ and with medium fine texture in the first 49 cm. The Medi white lupin cultivar was noted among the white lupin cultivars, whose average yield over the three periods of sowing was 2640 kg/ha. The De Voivodina source had a close yield, the difference compared to the Medi white lupin cultivar lacking significance. The lowest yield was in the De Turcia source, i.e. only 1840 kg/ha. Among sowing periods, we noticed, with practically equal yields, the variants sowed between March 20 and 25 and between April 10 and 15. Crops in the field amplitude within the range investigated was 1950 kg / ha in variant sown at the end of May last decade, the origin is Turkey and 2840 kg / ha in planted variant of March last decade the variety Medi. This magnitude of about 1000 kg / ha in variants with extreme values highlights the practical importance of links taken year study that the optimum genotype cultivated and sown in habitat conditions that have made inquiries.

Keywords: genotypes of white lupin, sowing periods

INTRODUCTION

Research carried out in Australia and in some Western-European countries concerning the production of white lupin with no alkaloids, with a high content of protein and fats in the grains led to a wide use of white lupin not only as a fodder and as flour in bakery and in bread making in mixture with 5% with wheat flour, or to produce protein, oil, margarine, etc.

Moderate thermal requirements of the species, good resistance to drought, and relatively low soil requirements make white lupin an attractive plant for acid soil and low potential hill areas.

MATERIAL AND METHOD

The trials were bi-factorial, with three replications, in which Factor A was represented by the genotype, with three graduations – a_1 – the Romanian white lupin cultivar Medi, a_2 – the De Voivodina source, a_3 – the De Turcia source – and Factor B was represented by the sowing time, with three graduations – b_1 – March 20-25, b_2 – April 10-15, b_3 – April 25-30. Wheat was the pre-emergent crop.

During vegetation, we made biometric measurements concerning the plant height (cm), the number of ramifications per plant, the number of flowers per plant, and the number of pods per plant. Calculating yield data was done according to the land trial setting.

RESULTS AND DISCUSSIONS

Table 1 shows yield results depending on genotype and on sowing time.

In the studied field, grain yield was within 1660 kg/ha in the De Turcia source, in the

third decade of March (sowing period), and 2840 kg/ha in the Medi white lupin cultivar, sowed between March 20 and 25.

On the average for the three sowing periods, the yield was sensibly equal in the Medi white lupin cultivar (2640 kg/ha) and in the De Voivodina source (2570 kg/ha). The De Turcia source, less adapted to the area, ranked 30% below the yield of the Medi white lupin cultivar, i.e. 780 kg/ha.

Table 1.

White lupin yields depending on genotype and on sowing time

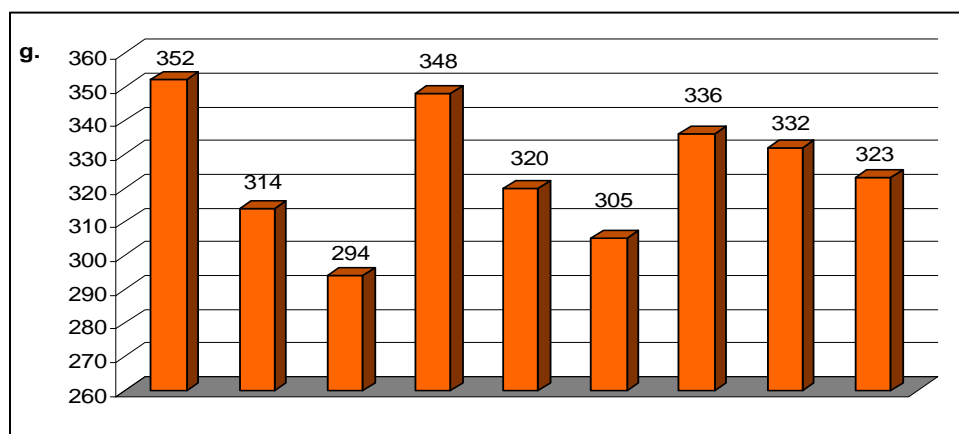
Genotype	Sowing time			Averages of the Factor A			
	E ₁ March 20-25	E ₂ April 10-15	E ₃ May 25-30	Yield (kg/ha)	%	Difference (kg/ha)	Significance
Medi	2840	2670	2420	2640	100		
De Voivodina	2730	2540	2440	2570	97	-70	
De Turcia	1660	1990	1950	1860	70	-780	0

DL 5% = 583 kg/ha, DL 1% = 803 kg/ha, DL 0.1% = 1,106 kg/ha

Averages of the Factor B

Specification	March 20-25	April 10-15	April 25-30
Yield (kg/ha)	2410	2400	2270
%	100	99	94
Difference (kg/ha)		10	-140
Significance			

DL 5% = 336 kg/ha, DL 1% = 464 kg/ha, DL 0.1% = 638 kg/ha



1000 grains	352	314	294	348	320	305	336	332	323
Sowing time	March 20-25	April 10-15	May 25-30	March 20-25	April 10-15	May 25-30	March 20-25	April 10-15	May 25-30
Genotype	Medi			De Voivodina			De Turcia		
\bar{X}	320			324			330		
%	100			101			103		

Figure 1. Variation of the volume of 1000 grains depending on genotype and on sowing time

As for the sowing time, results point out practically equal yields between the sowing time March 20-25 and April 10-15. Delaying sowing until the last decade of April diminished the yield with 140 kg/ha.

Figure 1 shows the evolution of the volume of 1000 grains, which means that the highest value was in the Medi white lupin cultivar, sowed earlier, in March.

CONCLUSIONS

1. Among genotypes, we noticed the Medi white lupin cultivar which yielded 2840 kg/ha in the variant sowed between March 20 and 25.

2. On the average for the three sowing times, the yields were practically equal in the Medi white lupin cultivar and in the source De Voivodina.

3. The optimal sowing interval is between March 20 and April 15.

BIBLIOGRAPHY

1. BÎLTEANU GH., - Fitotehnie, București, Ed. Ceres, vol. I, 1998.
2. BÎLTEANU GH., - Fitotehnie, Iași, Ed. Ion Ionescu de la Brad, vol. I, 2003.
3. BORCEAN I, DAVID GH., BORCEAN A., - Tehnici de cultură și protecție a cerealelor și leguminaselor, Timișoara, Ed. de Vest, 2006.
4. DAVID GH., PÎRȘAN P., IMBREA FL., - Tehnologia plantelor de câmp - Cereale, leguminoase pentru boabe și plante tehnice, Timișoara, Ed. Eurobit, 2006.
5. MUNTEAN L.S., BORCEAN I., AXINTE M., ROMAN GH., - Fitotehnie, Iași, Ed. Ion Ionescu de la Brad, 2003.
6. MUNTEAN L.S., - Contribuții la studiul biologiei și agrotehnicii lupinului alb, Teză de doctorat, Cluj, 1971.