COMPARATIVE CHICKPEA CULTIVARS AND PROVENANCE CROPS IN THE SOIL AND CLIMATE CONDITIONS OF THE LOW MUREŞ PLAIN

CULTURI COMPARATIVE CU SOIURI ŞI PROVENIENŢE DE NĂUT ÎN CONDIŢIILE PEDOCLIMATICE DIN CÂMPIA JOASĂ A MUREŞULUI

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Abstract: *Research carried out between 2004 and 2006 in the low Mureş Plain, in Variaş, pointed out the possibility of obtaining chickpea yields of over 4000 kg/ha. Among the studied chickpea cultivars, to note the Cicero 1 chickpea cultivar, whose yield was above 4300 kg/ha. The number of ramifications in the studied chickpea cultivars varied within low limits, i.e. between 3 and 4. The number of pods per plant varied within broad limits, i.e. between 24 and 25, as did the number of beans per pod, i.e. between 30 and 60.*

Rezumat: *Cercetările desfăşurate în perioada 2004-2006, în Câmpia joasă a Mureşului, teritoriul Variaş, au evidenţiat posibilitatea obţinerii la năut a unor recolte de peste 4000 kg/ha.*
Dintre soiurile studiate s-a remarcat soiul Cicero 1, la care recolta a depăşit 4300 kg/ha.
Numărul de ramificaţii la soiurile luate în studiu a variat în limite mici, între 3 şi 4. Numărul de păstăi/plantă a variat în limite largi, între 24 şi 25. La fel şi numărul de boabe/plantă a variat în limite largi, cuprins între 30 şi 60.

***Key words*:** *chickpea, comparative cultivar crops*
Cuvinte cheie: *năut, culturi comparative cu soiuri*

INTRODUCTION

Chickpea is a crop of the future due to the trend of aridisation of the climate and to the increasing legume requirements. At present, the area cultivated with chickpea diminished a lot; chickpea is cultivated on small areas, and is less known in the reference area.

The present paper presents results concerning the behaviour of the chickpea cultivars Cicero 1, Larosa, Principe, and a Spain provenance, cultivated on a typical chernozem. After harvesting, we made biometrical measurements concerning the number of ramifications per plant, the number of pods per plant, and the number of beans per pod.

MATERIAL AND METHOD

The chickpea cultivars we studied were Cicero 1, Larosa, Principe, and a Spain provenance.

The trials were organised after the strand method with three replications.

Winter wheat was the pre-emergent plant. Fertilisation was done evenly with $N_{60}P_{60}K_{40}$. Sowing was done at a row distance of 50 cm with a sowing density of 40 g.g./m^2.

Weed control was done by applying the herbicides Pivot 0.6 l/ha + Leopard 1.75 l/ha.

During vegetation, we made two mechanical weeding and a manual correction weeding per rows.

We made measurements concerning the number of ramifications per plant, the number of pods per plant, and the number of beans per pod.

RESULTS AND DISCUSSION

Yield results obtained during the trial cycle are presented in Tables 1, 2, and 3, and synthesis results are presented in Table 4.

Table 1 shows that in the year 2004, a year favourable to chickpea, the highest yield obtained was in the Cicero 1 chickpea cultivar, i.e. over 4900 kg/ha. We should also note the fact that the yield of the chickpea cultivar Principle and of the Spain provenance was above 4000 kg/ha.

The results of the second trial year range the yields of the studied chickpea cultivars within 2393 kg/ha in the Larosa chickpea cultivar and 4032 kg/ha in the Cicero 1 chickpea cultivar. We should also note the fact that in the second trial year, the only chickpea cultivar in which the yield was over 4000 kg/ha was Cicero 1.

Table 3 presents the results of the year 2006, a year in which the studied biological materials ranged between 3221 kg/ha (the Spain provenance) and 4153 kg/ha (the Cicero 1 chickpea cultivar). That year too, the only chickpea cultivar whose yield was above 4000 kg/ha was Cicero 1.

Table 1

Crop results of the Variaş territory in the year 2004

Variety	Crop kg/ha	%	Difference kg/ha	Significance
Cicero 1	4914	100	-	
Larosa	3249	66	-1665	000
Principe	4361	89	-553	00
Prov. Spania	4025	82	-889	000

DL 5% = 253 kg/ha; DL 1% = 383 kg/ha; DL 0.1% = 615 kg/ha

Table 2

Crop results of the Variaş territory in the year 2005

Variety	Crop kg/ha	%	Difference kg/ha	Significance
Cicero 1	4032	100	-	
Larosa	2939	73	-1093	000
Principe	3145	78	-887	000
Prov. Spania	3448	86	-587	000

DL 5% = 147 kg/ha; DL 1% = 200 kg/ha; DL 0.1% = 269 kg/ha

Table 3

Crop results of the Variaş territory in the year 2006

Variety	Crop kg/ha	%	Difference kg/ha	Significance
Cicero 1	4153	100	-	
Larosa	3536	85	-617	000
Principe	3782	91	-371	000
Prov. Spania	3221	78	-932	000

DL 5% = 147 kg/ha; DL 1% = 201 kg/ha; DL 0.1% = 270 kg/ha

Synthesis results are presented in Table 4.

Note the high level of the yields obtained in all the studied biological materials.

The highest yield was in the Cicero 1 chickpea cultivar (4366 kg/ha), which justifies its maintenance in cultivation in the studied area. The Principe chickpea cultivar also had good results: on the average for the three years, its yield was over 3700 kg/ha.

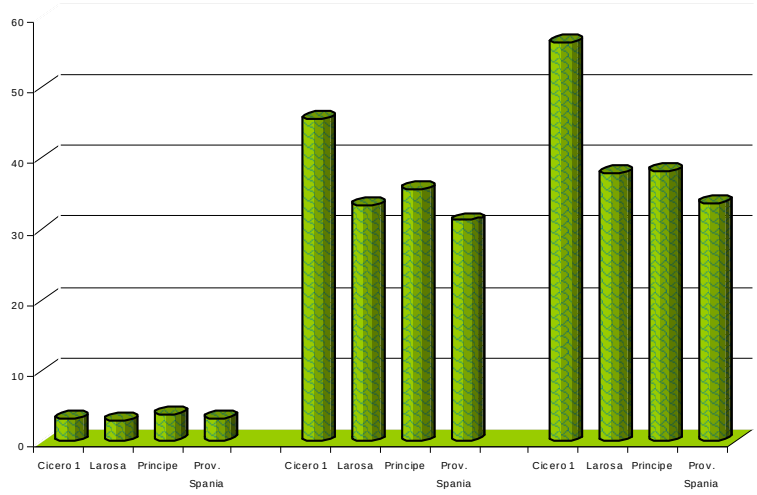
The Spain provenance, with an average yield of 3500 kg/ha and the Larosa chickpea cultivar, with an average yield over 3200 kg/ha can complete the list of the chickpea cultivars whose cultivation may be extended in the territory between the Bega and Mureş rivers.

Table 4

Synthesis of crop results during the experimental cycle 2004-2006 in the Variaş territory

Variety	Crop kg/ha	%	Difference kg/ha	Significance
Cicero 1	4366	100	-	
Larosa	3241	74	-1125	000
Principe	3763	86	-603	00
Prov. Spania	3565	82	-801	000

DL 5% = 417 kg/ha; DL 1% = 568 kg/ha; DL 0.1% = 764 kg/ha



	3,25	2,94	3,86	3,16
%	100	90	118	97
Dif.		-0,31	0,67	-0,09

Number of ramification

45,69	33,47	35,73	31,27
100	73	78	68
	-12,2	-9,96	-14,4

Number of pods/plant

56,54	37,99	38,25	33,66
100	67	68	59
	-18,5	-18,2	-22,8

Number of beans/plant

CONCLUSIONS

High constant yields obtained during a trial cycle whose years had important fluctuations from the point of view of their thermal and precipitation regimes allow us to recommend that in the studied area chickpea becomes the main legume cultivated for its beans.

Its good drought resistance, low soil requirements, morphological and biological

features of this crop, and low loss mechanised harvesting are important elements ranging chickpea before other legumes (beans, peas, soy) traditional in the studied area.

LITERATURE

1. BÎLTEANU, GH., 2003, *Fitotehnie- Cereale şi leguminoase pentru boabe,* Vol. I., Bucureşti, Ed. Ceres
2. BORCEAN I., DAVID GH., BORCEAN, A, 2006, *„Tehnici de cultură şi protecţie a cerealelor şi leguminoaselor”*, Timişoara, Ed. de Vest
3. BORCEAN, I., GOIAN, M., BORCEAN, A., 2001- *„Cultura şi protecţia plantelor de câmp”*, Timişoara, Ed. De Vest
4. DAVID GH., PAUL PÎRŞAN, FL. IMBREA, 2006 – *„Tehnologia plantelor de câmp – Cereale, leguminoase pentru boabe şi plante tehnice”*, Ed. Eurobit, Timişoara
5. FEHER ECATERINA, BORCEAN, I.,2003- *“Fitotehnie”*, Partea I, Craiova, Editura Universitaria
6. IOAN BORCEAN, ADRIAN BORCEAN, 2004- *„Cultura şi protecţia integrată a cerealelor, leguminoaselor şi plantelor tehnice”*, Editura de Vest, Timişoara
7. IOAN BORCEAN, ADRIAN BORCEAN, 2003 – *„Cultura şi protecţia plantelor leguminoase cultivate pentru boabe*”, Editura de Vest, Timişoara
8. MUNTEAN, L.S., BORCEAN, I., AXINTE, M., ROMAN, GH., 2003, *Fitotehnie,* Iaşi, Ed. Ion Ionescu de la Brad
9. OANCEA, I., *Tratat de tehnologii agricole*, Bucureşti, Ed. Ceres, 1998.
10. ROMAN, GH.,V., V., ION, LENUŢA IULIANA EPURE, 2006, *Fitotehnie- Cereale şi leguminoase pentru boabe*, Bucureşti, Ed. Ceres,
11. SIMONA NIŢĂ, 2006 , *-„Tehnologia culturilor de câmp”,* Ed. Eurobit,
12. STURZU RODICA ŞI COLAB., 2005, *Creşterea cantitativă şi calitativă a producţiei de năut la SCDA Teleorman*, Bucureşti, Cereale şi plante tehnice, nr. 4., Ed. Agris –Redacţia revistelor agricole
13. STURZU RODICA ŞI COLAB., 2005., *Argumente în favoarea cultivării năutului,* Bucureşti, Cereale şi plante tehnice, nr. 3., Ed. Agris –Redacţia revistelor agricole
14. TRIFU MAGDALENA CAROLINA, 2007, - *„ Contribuţii la elaborarea tehnologiei de cultivare a năutului în teritoriul dintre râurile Timiş - Mureş*”, Teză de Doctorat, Fac. Agricultură