INFLUENCE OF SOWING DENSITY ON RICE YIELD DEPENDING ON THE CULTIVATED GENOTYPE

CERCETĂRI PRIVIND INFLUENȚA DENSITĂȚII LA SEMĂNAT ASUPRA PRODUCȚIEI DE OREZ ÎN FUNCȚIE DE GENOTIPUL CULTIVAT

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Abstract: *The paper presents the results obtained at NARDI Fundulea, Rice Experimental Center Chirnogi during 2003-2005. To establish the sowing density, a bifactorial experiment 6 x 7 type was performed. Six sowing densities, with values between 500 germinable grains/m2 and 100 g.g./m2 and an ecart of 200 g.g./m2 were tested. Besides density, seven genotypes were studied, as follows: Polizesti 28, Elida, Dunarea, Zefir, Magic, F40 and F42. The results show the superiority of 700 g.g./m2 density for the genotypes F40 and Magic and of 800 g.g./m2 for the other genotypes*

Rezumat: *În lucrarea de față se prezintă rezultatele obținute la I.N.C.D.A. Fundulea, C.E.O. Chirnogi ,în perioada 2003-2005. Pentru stabilirea densității la semănat s-a amplasat o experiență bifactorială de tipul 6x7 .S-au studiat 6 densități la semănat , cu valori cuprinse intre 500 g.g./m^2 şi 1000 g.g./m^2 , cu un ecart de 100 g.g./m^2 . Alături de densitate s-au studiat şi şapte genotipuri după cum urmează : Polizesti 28, Elida, Dunarea, Zefir, Magic, F40, F42. Rezultatele obținute arată superioritetea densității de 700 g.g./m^2 pentru genotipul F40 şi Magic , şi de 800 g.g./m^2 pentru celelalte genoti-puri.*

Key words: rice crop, intermittent submersion, density, technology, genotype, sowing time, rice system, benefit, yield cost
Cuvinte cheie: orezări , submersie intermitentă, densitate, tehnologie, genotip , epocă de semănat, sistem orizicol, profit, cost de producție.

INTODUCTION

In order to re-enhance the rice crop in Romania, crop declined after '90s, it is necessary to improve the crop management, one of the most important chain being the sowing density.

MATERIAL AND METHOD

The experiment aim was to determine the optimum sowing density depending on genotype and climatic conditions during agricultural year. The costs were also calculated and the thrifts due to the most adequate sowing density were determined.

Six densities and seven genotypes were tested in a bifactorial experiment with the following factors and graduations:

A factor – Density

A_1 – 500 g.g./m2
A_2 – 600 g.g./m2
A_3 – 700 g.g./m2
A_4 – 800 g.g./m2
A_5 – 900 g.g./m2
A_6 – 1000 g.g./m2

B factor – Genotype

B_1 – Polizesti 28
B_2 – Elida
B_3 – Dunarea
B_4 – Zefir
B_5 – Magic
B_6 – F40
B_7 – F42

The experiment was fertilized with N40P80K40 in autumn and N80K40 during vegetation at tilling and boot stages.

RESULTS AND DISCUSSION

The obtained results were processed for each year and as average during 2003-2005.

The result synthesis regarding the sowing density and genotype during 2003-2005 is presented in figure1 and table 1.

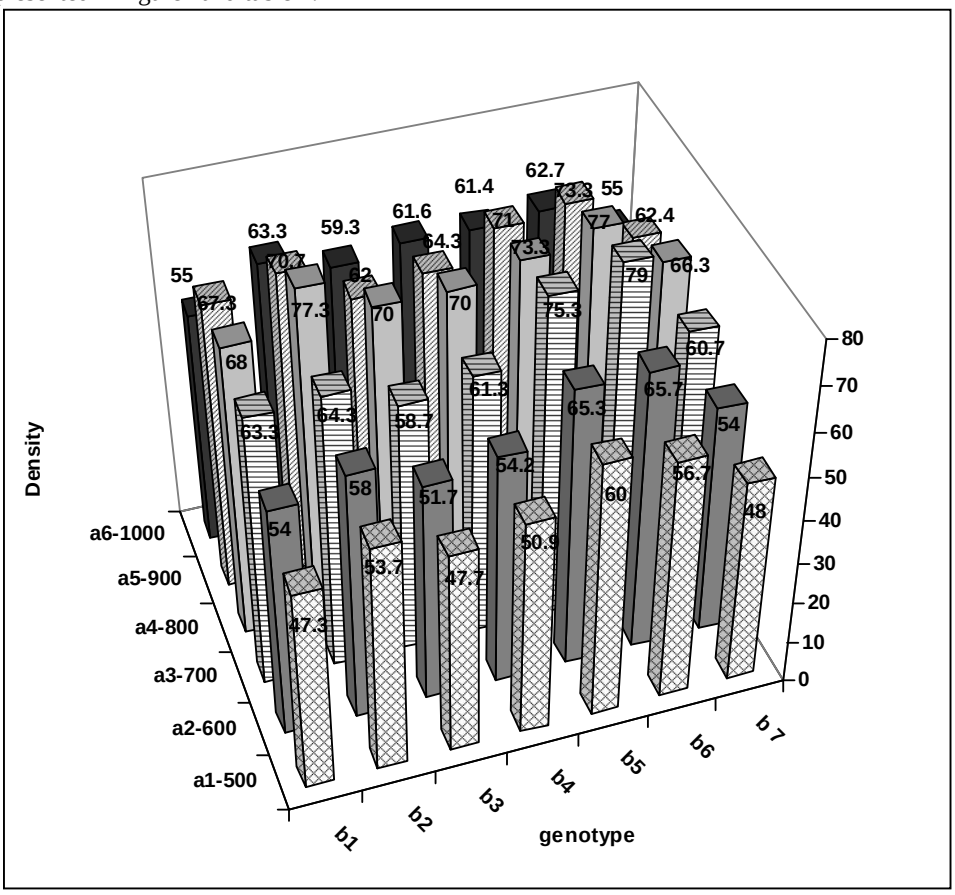

Figure 1. Result synthesis regarding the sowing density and genotype in rice during 2003-2005

Table 1

Result synthesis regarding the sowing density and genotype in rice during 2003-2005

Variant	b1 Polizeşti 28	b2 Elida	b3 Dunărea	b4 Zefir	b5 Magic	b6 F40	b7 F42	Average
a1- 500 g.g./m²	47.3	53.7	47.7	50.9	60.0	56.7	48.0	52.0
a2- 600 g.g./m²	54.0	58.0	51.7	54.2	65.3	65.7	54.0	57.6
a3- 700 g.g./m²	63.3	64.3	58.7	61.3	75.3	79.0	60.7	66.1
a4- 800 g.g./m²	68.0	77.3	70.0	70.0	73.3	77.0	66.3	71.7
a5- 900 g.g./m²	67.3	70.7	62.0	64.3	71.0	73.3	62.4	67.3
a6- 1000 g.g./m²	55.0	63.3	59.3	61.6	61.4	62.7	55.0	59.8
AVERAGE	59.2	64.6	58.2	60.4	67.7	69.1	57.7	62.4

LSD value	Dl 5 %	Dl 1 %	Dl 0.1 %
For comparison between sowing density variants	2.47	3.41	4.65
For comparison between genotypes	3.14	4.11	5.56
For comparison between genotypes at the same sowing density	4.28	6.01	8.02
For comparison between density at the same genotype	3.70	5.71	7.19

One can ascertain the superiority of 700 g.g./m^2 density at genotypes F40 and Magic, with achieved yields of 79q/ha and 75.3 q/ha respectively. At the other genotypes, the highest yields were achieved at a density of 800 g.g./m^2.

As regards the economical results, figures 2 and 3 present the result synthesis regarding the influence of sowing density on yield cost and gross benefit. The highest values of gross benefit were registered by genotypes F40 and Magic at the density of 700 g.g./m^2 .

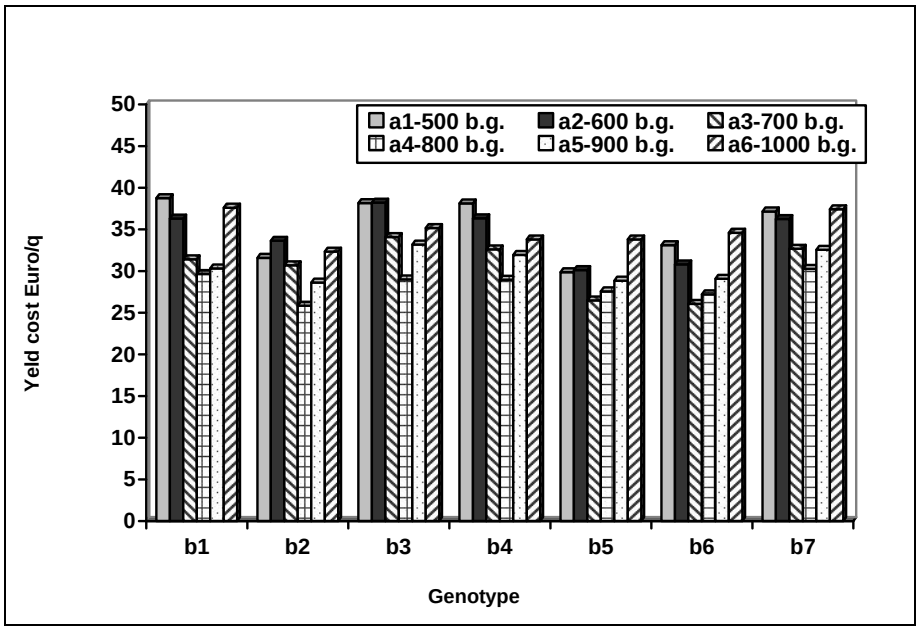

Figure 2. Result syntethis regardind the influence of sowing density on yeld cost rice during 2003-2005

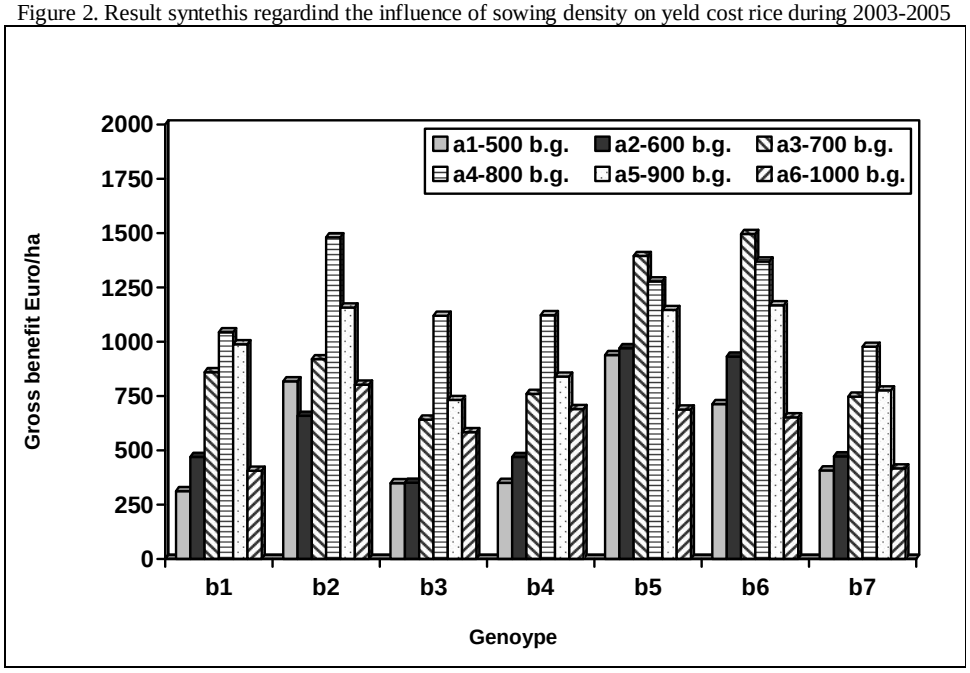

Fig. 3 Result synthesis regarding the influence of sowing density on gross benefit in rice during 2003-2005

CONCLUSIONS

Based on results, the following conclusions are presented. The most favourable yield costs and gross benefit value for genotypes F40 and Magic are obtained at a density of 700 g.g./m2. Thus, the yield costs were 26.1 EURO/q at F40 genotype and 26.5 EURO/q at Magic one.

The gross benefit obtained by genotypes F40 and Magic at a density of 700 g.g./m2 had values of 1496 EURO/ha and 1394.7 EURO/ha respectively.

LITERATURE

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