

Corn Hybrids Production and its Components along the Chiscani/SE Romania Area Behavior Study

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Abstract *The paper presents the results of the study conducted in the Chiscani area, county Brăila, in the conditions of the agricultural year 2018-2019, regarding the production and the productivity elements recorded in two maize hybrids (P0023 and P9911). A production experience has been set up with two variants v1 - hybrid P0023 and v2 - hybrid P991, in two repetitions. Following analysis results obtained for the two maize hybrids, it can be said that the hybrid P9911 was superior both the experience medium and the hybrid P0023, which recommends its introduction into culture at SC NELGOR AGROSERV SRL, com. Chiscani, Brăila county.*

Keywords *corn, hybrid, production, productivity elements*

JEL Classification

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Introduction

Maize (*Zea mays* L) is one of the most valuable cultivated plants, due to its productivity very high and the multiple uses of its products in human nutrition, animal husbandry and in industry.

The success of corn cultivation and obtaining large yields is conditioned by the choice of maize hybrids in relation to farm specialization and geographical position, respectively the level of insurance of vegetation factors (Rusu Teodor, et al., 2006).

The effectiveness of the technological measures applied in plant production depends, first of all, on the quality of the biological material used - the variety or hybrid. For this reason, the problem biological material is particularly important for the phytotechnical field and also remains very current for the conditions in Romania (Muntean L.S., 2001).

Material and Working Method

It was established at SC NELGOR AGROSERV SRL, Chiscani commune, Brăila county a cultivation experience, in which two maize hybrids were studied for appreciation behavior in culture, in terms of productivity, in the climatic conditions offered by the agricultural year 2018-2019, in order to recommend the introduction in culture of the best performer. Variants of the experiment were: v1 - hybrid P0023 and v2 - hybrid P9911. For each variant they were insured two repetitions. The average of the experience was taken as a witness. The total area of the experiment was 20 ha, each plot with an area of 5 ha.

The biological material included in the study consisted of two commercial corn hybrids of the company.

Pioneer (P0023 and P9911). semi-late, belonging to the Aquamax group, and belonging to the FAO groups 400 and 410, respectively, are characterized by superior productivity.

Regarding the climatic conditions recorded during the study, in terms of quantity precipitation and the average monthly temperature are shown in Table no. no. 1. Analyzing the data registered in the agricultural year 2018-2019, respectively during the vegetation period of maize, compared to the requirements of this species for these factors, it is found that for the period January-April (172.8 mm) the

requirements of corn (over 100 mm) were met and for the May period (185.8 mm) there was a deficit of at least 64.2 mm compared to the required amount corn crop for this period (over 250 mm). For the period January-August recorded a total amount of 358.6 mm, which covers the minimum water requirement (350 mm) for corn cultivation. Precipitation was unevenly distributed over time.

Table no. no. 1 Climatic conditions recorded during the vegetation period of maize

Perioada	Perioada						
	X-III	IV	V	VI	VII	VIII	IX
Precipitații (mm)							
normala	183,0	35	48,0	62,0	46,0	39,0	32
2018-2019	137,8	30	26,6	103,9	25,5	29,8	0,6
Temperatura medie (°C)							
normala	3,25	11,2	16,7	20,9	22,9	22,1	17,3
2018-2019	5,30	10,9	17,7	23,8	23,0	23,8	18,5

The applied crop technology consisted of: corn precursor plant; autumn plowing; tillage with the cultivator; application of NPK 15-15-15 complex fertilizers; sowing on 17.04.2019, with a density of 76,000 germinating grains / ha; herbicide with Principal Plus + Trend 90 adjuvant; irrigated with a rate of 280 m² / ha. Harvesting was done mechanized. At harvest samples of 10 cobs were taken from each plot for each variant, for determination productivity elements (number of rows per cob, number of grains per row, number of grains on cobs, the mass of cobs, the mass of grains on a cob, the mass of 1000 grains, yield) and grain moisture.

Results and Discussions

Bellow Table no. no. 2 presents the data obtained after determining the main elements of corn productivity.

Table no. no.2 Elements of maize productivity

Hibridul	nr.rânduri /știulete	nr.boabe /rând	nr.boabe /știulete	masă știuletelui (g)	masa boabelor/știulete (g)	MMB (g)
P0023	14,40	39,2	574,0	176	148	264,00
P9911	16,90	36,8	618,8	205	173	279,00
Media (mt.)	15,65	38,0	596,4	190	160	271,50

Notes

Hibridul nr.rânduri= /știulete

Hybrid no. rows /cob

nr.boabe= /rând

no.grain /row

nr.boabe= /știulete

no.grain /cob

Masă= știuletelui (g)

cob mass (g)

Masa= boabelor/știulete (g)

grain mass / cob (g)

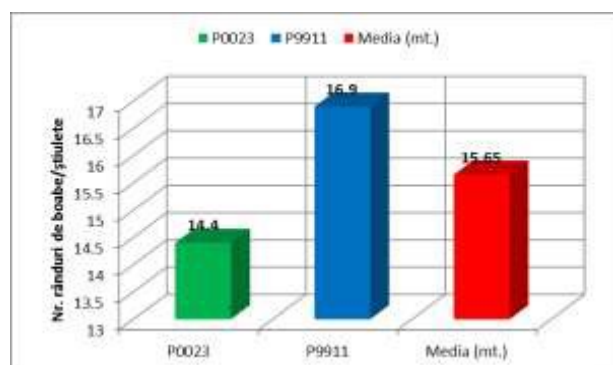


Figure no. 1 Number of grains / cobs

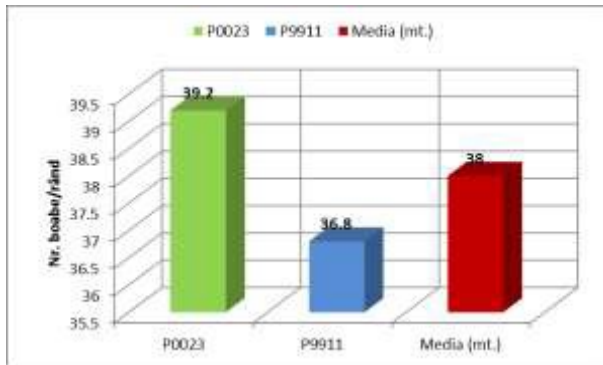


Figure no.2 Number of grains / row

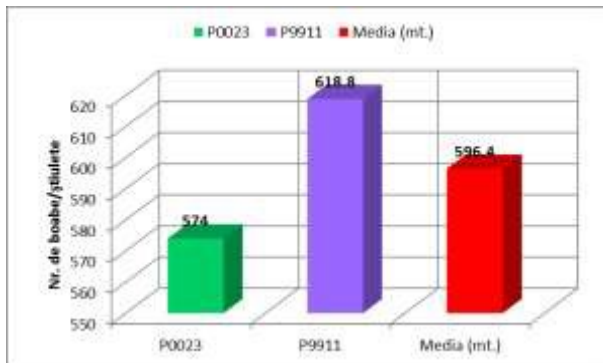


Figure no.3 Number of grains / cobs

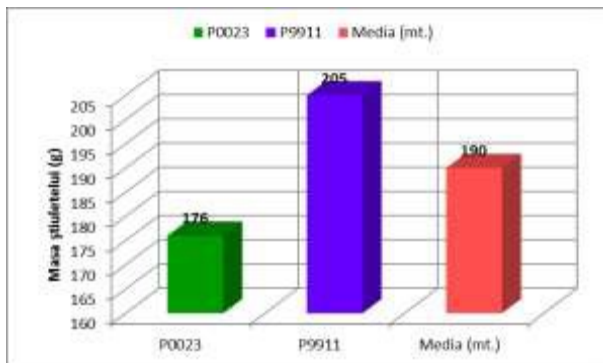


Figure no.4 Cob mass

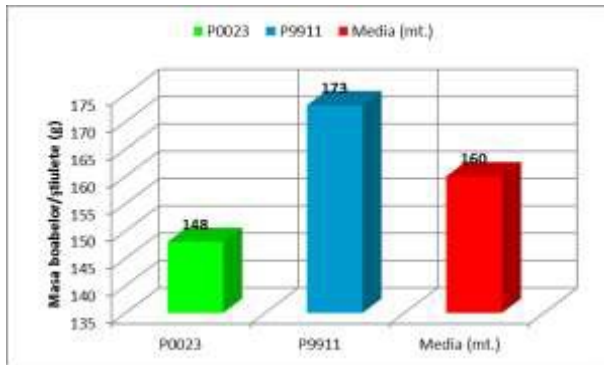


Figure no.5 Grain mass / cobs

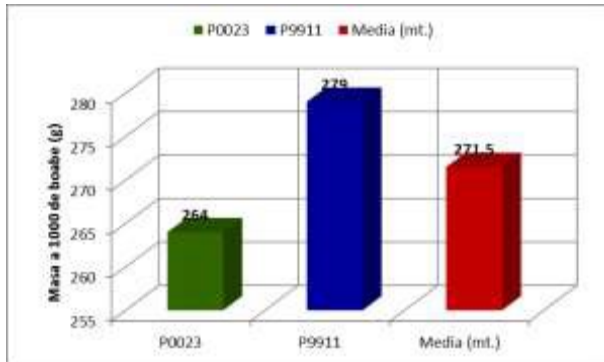


Figure no.6 Mass to 1000 grains

From the analysis of the data listed in Table no. 2 and the graphical representations above, it is possible observed that the P9911 hybrid had higher values than both the experiment average and the hybrid P0023, at the following parameters: number of grains per row, number of grains per cob, mass cob, the mass of grains on a cob, the mass of 1000 grains - MMB. In the case of the number of rows of berries on cobs, the hybrid P0023 recorded a higher value than the hybrid P9911.

Table no. 3 shows the data on grain production and yield, recorded for the two hybrids studied compared to the average experience. At maturity, the yields were determined likely in both hybrids studied. Thus, the average maize production was 8650 kg / ha.

Above average yield was recorded for hybrid P9911 (9500 kg / ha), with an increase of production of 850 kg compared to the average experience and 1700 kg compared to the hybrid P0023 (7800 kg / ha) (Figure no.7).

In terms of grain yield, the P9911 Hybrid (84.39%) is superior hybrid P0023 (84.10%) and mean experience (84.24%), (Figure no. 8).

Table no.3 Maize production , Chiscani area, 2019

Hibridul	Umiditatea (%)	Producția (Kg/ha)	Producția STAS (kg/ha)	Randamentul (%)
P0023	14	7800	7800	84,10
P9911	14	9500	9500	84,39
Media (mt.)	14	8650	8650	84,24

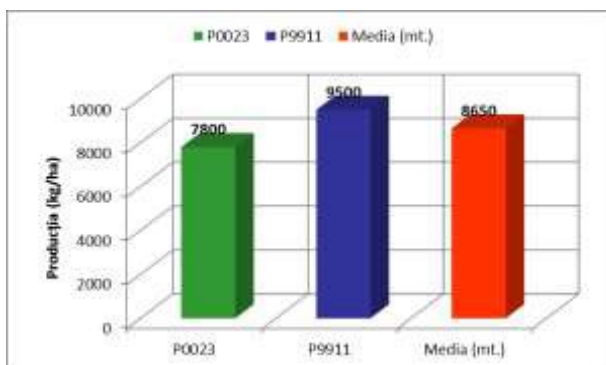


Figure no.7 Grain production

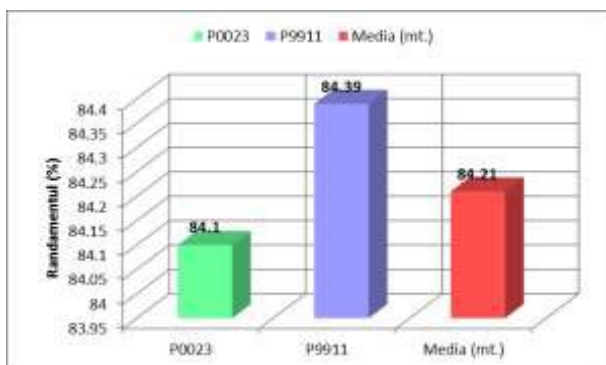


Figure no. 8 Yield**Conclusions**

From the results obtained from the study conducted on the evaluation of the behavior of two maize hybrids, in terms of production and the elements that determine it, grown under the conditions agricultural year 2018-2019, in the Chiscani area, Brăila county, allow the formulation of the following conclusions:

Hybrid P9911 recorded higher values than hybrid P0023 in number of grains per row, number of grains per cob, mass of cob, mass of grains per cob, MMB, exception making the number of rows on the cobs, as well as in terms of grain production and grain yield;

The Pioneer P9911 hybrid has adapted better to the climate and soil conditions present in the area. study;

Based on the results obtained, it can be stated that of the two hybrids studied, the hybrid P9911 can be introduced in culture at SME NELGOR AGROSERV, Chiscani, Braila county.

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References

- [1] Bîlteanu Gheorghe, Fitotehnie vol I, Ceres Publishing House, Bucharest, 2003;
 - [2] L. S., Muntean et al., 2001, Phytotechnics, "Ion Ionescu de la Brad" Publishing House, Iași;
 - [3] Rusu Teodor, I. Manases, Ileana Bogdan, 2006, Research on the behavior of hybrids of Pioneer corn in different conditions pedoclimate from Cluj county, Agriculture - Science and technology, no.1-2, [57-58];
 - [4] Ovidiu Adrian Ceclan, 2010, The study of field behavior and suitability for silage of some corn hybrids in SCDA – TURDA conditions, doctoral thesis summary, USAMV, Timișoara;
 - [5] <https://www.agro.basf.ro>
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[6] <https://www.corteva.ro>

[7] <https://www.agrimedia.ro/>