

PRODUCTIVITY STUDY OF SORGHUM VULGARE HYBRIDS IN INAND, BIHOR COUNTY

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Abstract

The evolution of research in the field of sorghum for grains has led to the creation of new hybrids with higher production potential and resistance to various diseases and pests. Sorghum cultivation technology is similar to that of corn. Sorghum has an explosive emergence at higher temperatures, early May where sowing at densities between 250.000 and 300.000 germinating grains/ hectare bring important yields.

Key words: sorghum, hybrid, sowing season, production

INTRODUCTION

Sorghum is a plant considered as an alternative to corn cultivation in conditions of global warming. This plant has the ability to withstand high summer temperatures having even significant yields even in conditions of water stress.

Sorghum cultivation technology involves lower production costs than corn. Sorghum has the ability to capitalize very well on soil resources, especially mineral nitrogen and is also a plant resistant to diseases and pests.

MATERIAL AND METHOD

In 2020 we studied 5 sorghum hybrids, 3 Armorik, Moussone and Alizee hybrids from Euralis Semences France and 2 Arsenio and Lupus hybrids from KWS Germany. I sowed 2 experiments in 3 repetitions, the harvestable surface of the parcel being 10m², at a distance of 70 cm between rows and a density of 300,000 plants / ha in 2 sowing seasons, the first season April 15-April 30 and the 2nd season 1 May-May 15.

For the preparation of the germination bed, a plowing was performed at 22-25 cm then I made a passage with a disc harrow at 8-10 cm, and before sowing I performed a work with the combine to give quality to the germination bed, a good crushing and leveling.

Fertilization was performed in phases with the fertilization dose being N₁₀₁P₆₈K₄₈.

The first stage was applied under plowing, 300 kg of complex fertilizers 16.16.16., the second application of fertilizers was performed at sowing 100 kg of complex fertilizers 20.20.0, and the third application was performed at mechanical weeding 100 kg of azote.

For the weed control, a pre-emergent herbicide was performed with Dual Gold 980 EC 1.2 l / ha, the seeds being treated with Concept III, a "safener" type substance that protects the sorghum plant at sunrise from the action of the antigramine herbicide Dual Gold 980 EC.

At the 3-leaf stage of the sorghum plant, a post-emergent herbicide was performed with Casper 0.4 kg / ha.

The maintenance work of the paths was done with the cultivator.

Herbicides and phytosanitary treatments were carried out with the spraying plant worn.

Harvesting was done with a grain combine at a humidity of 14%.

RESULTS AND DISCUSSION

In table 1 we have presented the productions of sorghum hybrids on the parcel of 10 m² in two sowing seasons (PR1, PR2, PR3) at the harvest humidities (UMID 1, 2 AND 3). The productions per hectare brought to the humidity of 15 are then calculated, 5% (R1 pr / ha, R2 pr / ha, R3 pr / ha). On the last column of the table we have the average of the repetitions.

Table 1

Sorghum productions registered in 2020 for 5 sorghum hybrids

EXP epoch	HYBRID	PR1	PR2	PR3	UMID1	UMID2	UMID3	R1 pr /ha	R2 Pr/ha	R3 Pr/ha	TOTAL Average
	ARMORIK	7	7.2	6.9	16.3	16.5	16.1	6934	7115	6851	6967
	MOUSSONE	8.1	8	8.3	16.6	16.5	16.7	7995	7905	8182	8027
1	ALIZEE	7.9	8.2	8	16.5	16.7	16.5	7807	8084	7905	7932
April	ARSENIO	7.1	7.3	7.2	15.8	16.1	15.9	7075	7248	7166	7163
	LUPUS	6.8	7.1	6.9	16.1	16.3	16.1	6752	7033	6851	6879
	ARMORIK	7.3	7.5	7.4	16.4	16.6	16.5	7222	7402	7312	7312
	MOUSSONE	8.4	8.3	8.6	16.4	16.4	16.7	8311	8212	8478	8333
2	ALIZEE	8.5	8.4	8.4	16.9	16.7	16.8	8359	8281	8271	8304
May	ARSENIO	7.8	7.6	7.7	15.7	15.5	15.7	7782	7600	7682	7688
	LUPUS	7.2	7.3	7.1	16.4	16.6	16.2	7123	7205	7041	7123

PR1,PR2,PR3= productions / parcel repetitions 1,2 and 3

UMID1,UMID2,UMID3= humidity at repetitions 1,2 and 3

R1 pr/ha,R2 pr/ha,R3 pr/ha =productions per hectare of repetitions 1,2 and 3

Total average = average of the 3 repetitions per hectare.

Figure 1 shows the productions per hectare of sorghum hybrids, sowing season April 15-30, the highest production was recorded for the Mousson sorghum hybrid 8072 kg / ha followed by Alizee 7932 kg / ha with 2% lower production than Mousson, Arsenio 7163 kg / ha with 11% lower production than Mousson and the last two with yields below 7000kg, Armorik 6967 kg / ha and Lupus 6879 kg / ha with 14% and 15% lower production.

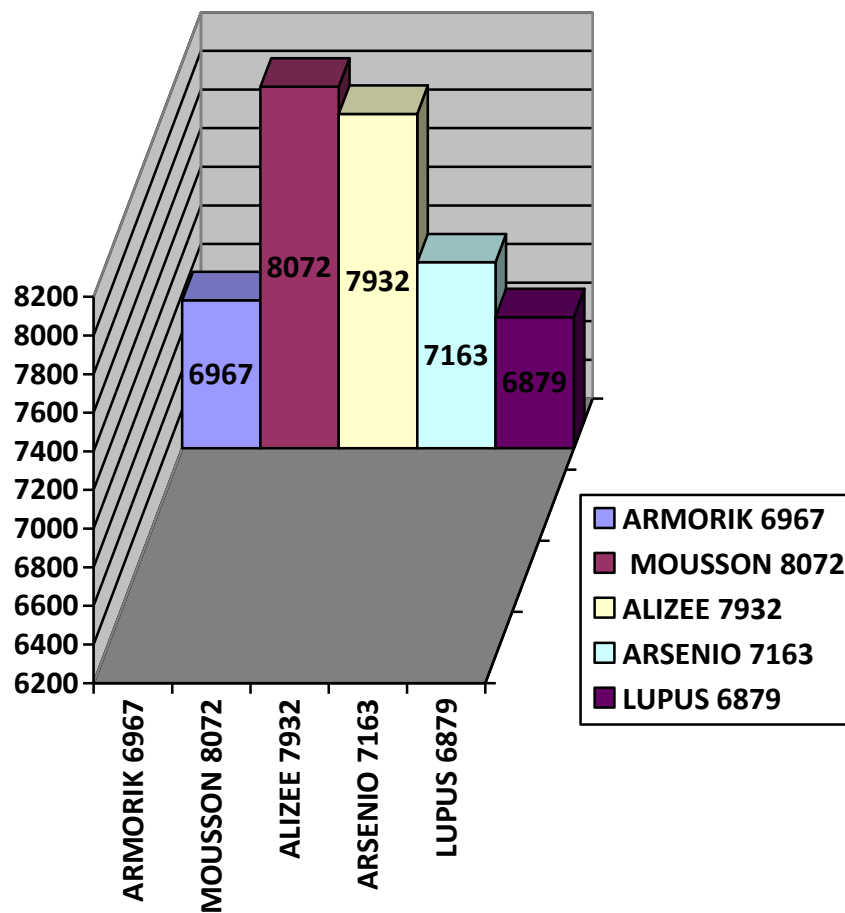


Fig 1. Variation of production per hectare of sorghum hybrids, sowing season 15-30 April.

Figure 2 shows the productions per hectare of sorghum hybrids, sowing season 1-15 May, the highest production was also recorded for the Mousson hybrid 8333 kg / ha, followed by Alizee 8304kg / ha with 0.5% higher production lower than Mousson, Arsenio 7688kg / ha production by 8% lower than Mousson, Armorik 7312 kg / ha and Lupus 7123kg / ha production lower by 12% respectively 15%.

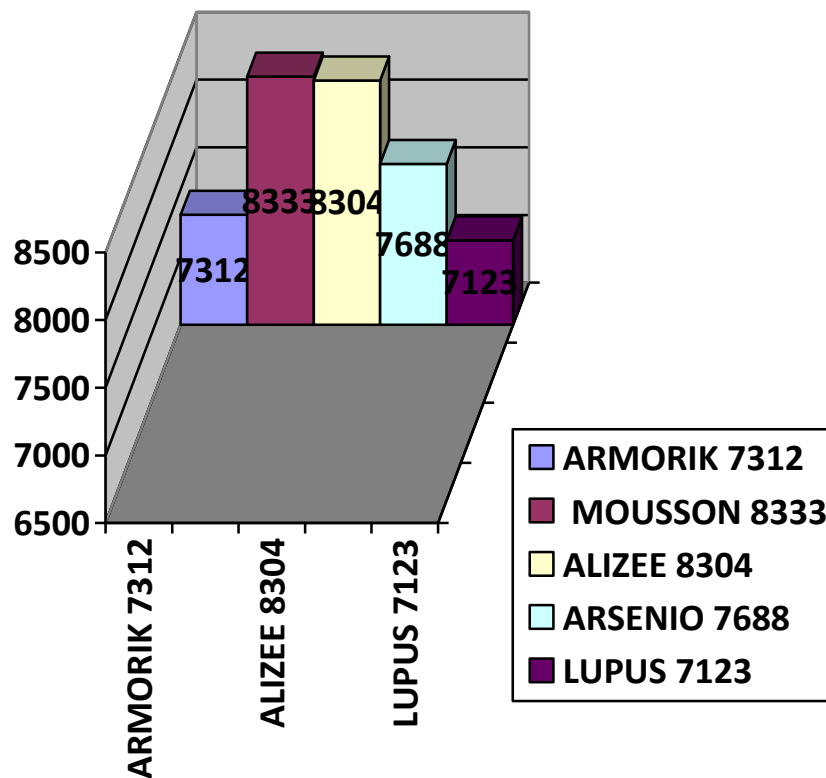


Fig 2 Variation of production per hectare of sorghum hybrids, sowing season May 1-15

Figure 3 shows the variation of production in the two sowing seasons where we can see that the best productions were recorded in the sowing season May 1-15

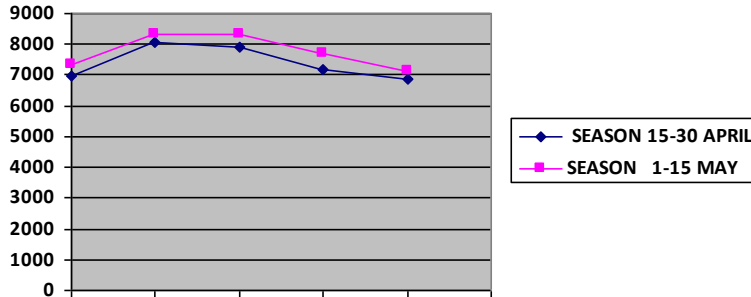


Fig 3 Variation of productions in the 2 sowing seasons

Figure 4 shows the productions of each hybrid in the 2 sowing seasons as well as the difference in percentage of production increases recorded in the sowing season 1-15 May compared to the sowing season April 15-30.

For the Armorik hybrid in May, a production increase of 4.9% compared to April was obtained, for the Mousson hybrid an increase of 3.2%, Alizee 4.6% and for Arsenio and Lupus increases by 7.3% respectively 3.2%.

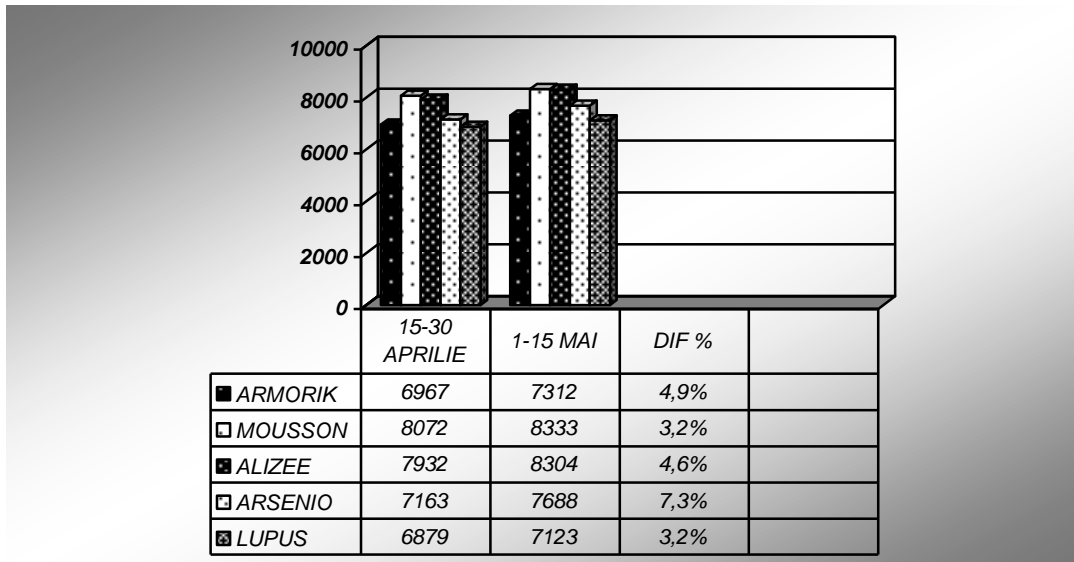


Fig 4. The difference in production in percentages in the 2 sowing seasons

CONCLUSIONS

The most productive sorghum hybrid is Mousson, at which the highest yields were obtained in both sowing seasons 8072kg / ha in the period 15-30 April respectively 8333kg / ha in the period 1-15 May, followed by Alizee 7932 and 8304 kg / ha, Arsenio 7163 and 7688 kg / ha, Armorik 6967 and 7312 kg / ha and Lupus 6879 and 7123 kg / ha.

The best time for sowing is May 1-15, when higher yields were obtained for all hybrids, at Armorik 4.9% more than in April, Mousson 3.2% Alizee 4.6%, Arsenio 7.3% and Lupus 3.2%. The hybrid with the highest production increase is Arsenio 7.3%

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