STUDY OF ELEMENTS OF PRODUCTIVITY IN SUGAR SORGHUM (SORGHUM B. VAR. SACCHARATUM) GROWN IN CARAS SEVERIN

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***Abstract**: History shows that cereals have always maintained their significance, along the development of human society and to this day. In addition, however, one can see a close link between grain production and progress of civilization. Sorghum is a very old culture, known in India for over 2000 years, cultivated for: beans, brooms, rich in sugar syrup, animal feed or fodder crop as green. Climate Change to heating and arid during 2001-2050 in the Balkans, which is located and Romania, requires a reconsideration of sorghum as: cereal food (beans composite flour used in the formula for baking gluten and gluten-free, fresh juice, extracted of strains used in the manufacture of syrup, vinegar and other food), fodder (as green mass, hay storage, feed pellets) and crops (sorghum and sorghum mature mellitus for the production of raw materials for energy (liquid, solid, gas, electricity, heat), chemical (stationery and textile pulp, plastics), building materials and craft industry (of household and industrial brushes, brooms, blended. Sorghum is the second cereal after maize commercially exploiting the heterosis effect in the agricultural farm, which increased the average production per hectare. is the first grain sorghum that has been fully sequenced genome (2006), which will give rhythms in November progress in improving the species in the coming years. sorghum grains used directly in the form of flour feeding people in some parts of Africa, India, China, Middle East and Egypt. In industry is used in the manufacture of starch, alcohol and beer, mixed with grains of barley. The sweet sorghum juice is extracted a sweet, rich and varied sucrose vegetable substances energy use. In many parts of the world sorghum was traditionally used in various foods such as porridge, unleavened bread, cookies, cakes, couscous and various soft drinks and alcoholic. Sorghum has unique properties that make it very suitable for food use. Some varieties of sorghum are rich in antioxidants and all varieties of sorghum are without gluten, an alternative attractive for those suffering from wheat allergy. Modern science in food and nutrition, attaches great importance to the role of nutrition in prevention of onset. Special attention is given to the development of food products for people with increased sensitivity to certain foods. The culture of sorghum, using far fewer pesticides than other crops (wheat and corn). It also should not neglect the fact that sorghum, sorghum particularly diabetes, contribute significantly to reduce air pollution ¬ bad. In different literature, shows that one hectare of sweet sorghum absorbs from the atmosphere each year between 40 and 55 tonnes of carbon dioxide (CO2), while other crops, eg cereals, only 3 to 10 tons per year CO2/ha . It should be noted that the sorghum plant is not lost anything after processing.Experience has been located in specific climatic conditions Răcasdia commune, Caras Severin, on a brown ground, I-mezogleizat moderate slope deposits formed from decomposition and alteration of basic metamorphic rocks. Experience is bifactorial type, so that the annual Repeat the cycle terminates the experimental field we have experience in first year, second year and third year. The biological material used F135ST and Primsilo were hybrids. ST F135 hybrid obtained from INCDA Fundulea, and hybrid seed is certificate Primsilo of French origin. Mineral fertilizers applied sorghum crop mellitus, increased production of strains of which was obtained raw juice production. Change in production of sweet sorghum stalks raw juice (Sorghum b. var. Saccharatum) vary depending on hybrid and the influence of fertilization. The results of this study are part of a doctoral program, with as theme: "Research on the potential production potential in sorghum mellitus (Sorghum b. var. Saccharatum) and grain (Sorghum b. var. Eusorghum)" funded by the Ministry of Education Tineretului and Sports Research, the IOD U.S.A.M.V.B. Timisoara under the distinguished university professor Valeriu Tabara.*

***Key words**: sweet sorghum, raw juice, bagasse, hybrid, fertilization.*

INTRODUCTION

The sorghum crop is sorghum diabetes category, considered to be most productive in terms of ind obtain juice and spirits food biomass for biofuels. From sweet sorghum juice is extracted a sweet, rich and varied uses sucrose fitomasă energy. In China and Africa, the flower and leaf sheaths to obtain a dye used to dye fabrics, wool and hides. In many parts of the world, sorghum has been used traditionally for various foodstuffs, such as porridge, unleavened bread, cookies, cakes, couscous and various soft drinks and alcoholic. Traditional cooking of sorghum is plentiful, cooked sorghum grain is one of the simplest products. Whole grains can be presented as ground flour or shelled before grinding, which then are used in different traditional foods. The cuisine of the southern United States sorghum syrup is used as a sweet spice, usually biscuits, corn bread, pancakes, cereals or beans. The sweet sorghum juice fertilization seeks to quality, which is why it is recommended for food purposes, growing on fertile soils. Favorable moisture conditions, sorghum react favorable to nitrogen fertilization both in terms of the yield and protein content in dry areas, have positive effect and phosphorus.

Doses practiced today in the world varies, depending on experimental conditions. Mass production of raw juice green sorghum stalks, is very influenced by the technology used (especially fertilizer) that determines the quality and increase production.

MATERIAL AND METHODS

Experience has been placed in specific climatic conditions Caras Severin Răcasdia village. Experimental field was located on a brown soil type, I-mezogleizat moderate slope deposits formed from decomposition and alteration of basic metamorphic rocks. Experience is bifactorial type, with annual repetition. F135ST and Primsilo hybrids were used in the experience.

FACTOR A: variety (hybrid)
A1: F135 ST Fundulea
A2: Primsilo
Factor B = B, fertilization system
B1 = unfertilized (N0P0K0)
B2 = N80P80K80,
B3 = N160P80K80,
B4 = N240P80K80,
B5 = N 160 P 160 160K

RESULTS AND DISCUSSIONS

In table 1 presents the results of harvest of green mass under the influence of two factors taken into study (hybrid and level of fertilization), obtained in the experimental field of sorghum from Răcăşdia in 2011.

Thus the influence of hybrid was obtained an average, green mass of 42.8 t/ha, with an increase of production of 4.81 t/ha, provided statistically significantly distinct. Fertilization plays a role in increasing the production of green mass in sorghum.

The average yield of 60.4 N240P80K80 variant t/ha is 36% higher than the production version control, which is made to a production increase of 33.97 t/ha and is provided statistically very significant. On the average N160P160K160 version is 49.11 t/ha with a production increase obtained from the 27.78 version N0P0K0 t/ha provided statistically very significant.

Harvests variants N160P80K80 N80P80K80 and bring an increase of production from the control of 13.82 t/ha respectively 19.9 t/ha in the analysis as very significant.

Results obtained from the raw juice of sorghum production obtained in experimental field in 2011 from Răcăşdia.

Table 1

Green mass yields obtained under the influence of fertilization and sowing hybrid in sorghum in 2011

Factor A Hybrid	Factor B- Fertilization					A Factorial averages			
	N0P0K0	N80P80K80	N160P80K80	N240P80K80	N160P160K160	Production (kg/ha)	%	Diference (kg/ha)	Signifi cance
PRIMSILO	20,43	33,1	39,12	50,2	47,1	37,99	100	-	
FUNDULEA F135ST	22,23	37,2	43,34	60,4	51,12	42,8	113	4,81	xx

DL5%-2,97 t/ha; DL1%-4,04t/ha; DL0,1%-5,18t/ha

B Factorial averages

Production (t/ha)	21,33	35,15	41,23	55,30	49,11
%	100	165	193	259	230
Diference (t/ha)	-	13,82	19,9	33,97	27,78
Significance		xxx	xxx	xxx	xxx

DL5%= 1,89 t/ha, DL1%= 2,85 t/ha, DL0,1%= 4,11 t/ha

Average gross production from sorghum juice under the influence of hybrids and fertilization, experimental study in 2011 are presented in table 2.

Table 2

Production of raw juice obtained under the influence of fertilization and sowing hybrid in sorghum

Factor A Hybrid	Factor B- Fertilization					A Factorial averages			
	N0P0K0	N80P80K80	N160P80K80	N240P80K80	N160P160K160	Production (kg/ha)	%	Diference (kg/ha)	Signifi cance
PRIMSILO	2,90	9,77	11,42	15,30	14,18	10,71	100	-	
FUNDULEA F135ST	6,42	10,67	13,46	25,12	18,64	14,86	139	4,15	xxx

DL5%= 0,16 l/t green mass, DL1%= 0,29 l/ tgreen mass, DL0,1%= 0,72l/ tgreen mass.

B Factorial averages

Strain juice l/t	4,66	10,22	12,44	20,21	16,41
%	100	219,3	266,9	433,6	352,1
Diference liter	-	5,62	7,78	15,55	11,75
Significance		xxx	xxx	xxx	xxx

DL5%= 0,22 l/tgreen mass, DL1%= 0,47 l/tgreen mass, DL0,1%= 0,83l/tgreen mass.

Mean gross production of juice under the influence of hybrid research subject stands estab 10.711 l/tonne Primsilo hybrid strains and 14.86 l/tonne hybrid strains F135ST that has a positive difference of 4.15 provided it is statistically very significant to production control.

Mean gross production of juice under the influence of fertilization lies estab 4.66 l/tonne variant strains to N0P0K0 (control) and 20.21 l/tonne variant strains in N240P80K80 which has a difference of 15.55 positive and statistically assured him that very significantly to production control.

With values over 12 l/t strain ranges, mean values recorded versions N160P80K80 -

12.44 l/t strains and N160P160K160 - 16.41 l/t strains, each with a positive difference of 7.78 l 11.75 that it is statistically as very significant.

Notice that in comparison with the very significant witness positive differences recorded in all variants fertilized research subject in the experimental field in 2011.

CONCLUSIONS

Results of research conducted on sorghum in the year 2011 in terms of experimental Răcăşdia Caras Severin allow us to draw some conclusions on hybrids and fertilization influence on the production of green mass and raw juice.

In the experimental field of Caras-Severin Răcăşdia there were good results in all sorghum yields obtained experimentally in 2011.

Climatic conditions during sowing and harvest were largely favorable influence on the level of sugar sorghum yields.

Soil where they were located experiences provide nutritional support for good plant growth and development of sorghum.

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