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RESEARCHES CONCERNING THE INFLUENCE OF THE AGROFUND UPON THE PRODUCTION OF CERTAIN SUN-FLOWER HYBRIDS CULTIVATED ON A CERNOSIUM FROM THE SOUTH OF OLTENIA – PORTARESTI AREA

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Abstract. The researches have been made on a cambic cernosium soil from the south of Oltenia – Portaresti area and they have had in view the establishment of propicious levels of fertilization at certain nativ and foreign Sun-Flower hybrids to obtain a high productions.

Through applying the agrofund of 80 kg N/ha s.a + 80 kg P_2O_5/ha s.a. was achieved a massive production of 3130 kg/ha STAS. Hybrid PR63A90 has given the highest medium production, of 3270 kg/ha.

INTRODUCTION

The increase of the Sun-Flower production in the conditions created in agriculture after the events from 1989 (mainly of destroying the fields through the land reform of the justified ones), implies the using of chemical fertilizers. As we can notice from researches made until now, they increase the fertility potential of soils and contribute directly to the production increase at hectare. As part of S.C. Comcerealis – Dolj, Portaresti farm in the period 2003 – 2005, there have been made researches that have had in view the estabilishment of propicious levels of fertilization, in order to ensure high and economical production at the new hybrids of Sun-Flower, cultivated on a cernosium soil.

MATERIAL AND METHOD

The experience has been made in the period 2003-2005, on a cernosium cambic soil. The placement of the experience in field was made by the method of subdivided parcels, with two factors: A – agrofund (doses of fertilizers – kg/ha): a_1=N_0P_0; a_2= $N_{40}P_{40}$; a_3= $N_{80}P_{80}$; a_4= $N_{80}P_{80}K_{80}$; a_5= $N_{120}P_{120}$; a_6= $N_{120}P_{120}K_{120}$;
B – hybrids of Sun-Flower: b_1=Select (Witness); b_2=Performer; b_3=PR63A90; PR64A83.

The hybrids Select and Performer are simple, romanian hybrids, created at I.C.C.P.T. Fundulea, and hybrids PR63A90 and PR64A83 are also simple ones, created in the USA by the firm Pioneer. It has been used the culture technology specific to the fields with cernosium soils.

The autumn ploughing has been harrorod and the preparation of the germinative bed was made with the combinator, the last work of preparation of the germinative bed being made perpendicularly on the sowing direction (5 - 6 m/depth with the combinator).

As a preliminary plant was used maize for beans. For all Sun-Flower hybrids was ensured a thickness of 50.000 plants/ha (the experience has been made without irigation).

In rainfall registered in the three years of experimenting have oscillated a lot.

Year 2003 was characterized by a quantity of rainfall close to the yearly average, the rainfall from April, May and June determinig the achievement of good Sun-Flower productions.

Year 2004 was characterized by a dificit of 47.4 mm in comparison to the yearly average, but the rainfall from March, June and Jully ensured high Sun-Flower productions.

In 2005, were registered over 80,6 mm rainfall in comparison to the yearly average, but they weren't distributed homogeneously on vegetation phases. The productions were calculated at an 11% humidity and the production results were capitized through the method of analysing the option.

RESULTS AND DISCUSIONS

The obtained results spollight the fact than Sun-Flower cultivated on cambic cernosium soils from the south area of Jud. Dolj – Portaresti achieves high production increases (table 1).

The medium production obtained on the unfertilized option was of 2450 kg/ha. Through applying a dose of 40 kg Nitrogen/ha s.a. and 40 kg P_2O_5/ha s.a. was obtained a medium production of 2970 seeds/ha, with an increase of 520 kg/ha. By energing the dose of fertilizers to 80 kg N/ha s.a. + 80 kg P_2O_5/ha s.a. was achieved the highest production, that being of 3130 kg/ha Sun-Flower seeds, with an increase of 680 kg in comparison to the witness.

Table 1. The influence of agrofund upon the Sun-Flower production on the cambic cernosium soils from Portaresti area – Jud. Dolj

Agrofund Kg/ha s.a.	Medium production		Production increase kg/ha	Significance
	Kg/ha	%		
N_0P_0	2450	100	-	-
$N_{40}P_{40}$	2970	121	520	***
$N_{80}P_{80}$	3130	128	680	***
$N_{80}P_{80}K_{80}$	3060	125	610	***
$N_{120}P_{120}$	3020	124	570	***
$N_{120}P_{120}K_{120}$	2970	121	520	***

DL 5% = 54 kg/ha
DL 1% = 73 kg/ha
DL 0.1 % = 95 kg/ha

The potassium fertilizers have not determined importnant production increases, the soil being well provided with theis element (over 15-17 mg K_{20}/100 g dry soil).

Through applying doses of fertilizers above the level 80 kh N/ha s.a.+ 80 kg P_2O_5/ha s.a. (120 kg N / s.a. + 120 kg P_2O_5/ha s.a., respectively 120 kg N/ha s.a. + 120 kg P_2O_5/ha s.a. + 120 kg K_2O_5/ha s.a.) weren't achieved production increases, but, on the contrary, was registered a diminution of it, given the precise option.

Analysing the behavior of each hybrid on the six levels of fertilization (figure 1), are noticed the following:

- The select hybrid has achieved on the unfertilized option a medium production of 2350 kg/ha. The highest production – 3169 kg/ha was achieved on the agrofund 80 kg N/ha s.a. + 80 kg P_2O_5/ha s.a., with an increase of 819 kg/ha. Over this level of fertilization, the productions obtained were a bit smaller (3010 – 3090 kg/ha).
- The Performer hybrid has achieved in the unfertilized option 2210 kg/ha Sun-Flower seeds. The production has increased to the maximum on the agrofund 80 kg N/ha s.a + 80 kg P_2O_5/ha s.a. (3075 kg/ha), with an increase of 865 kg/ha.
- The hybrid PR63A90 has achieved the highest production – 3318 kg/ha – on the agrofund 80 kg N/ha s.a. + 80 kg P_2O_5/ha s.a., with an increase of 998 kg/ha in comparison to the unfertilized witnees (2320 kg/ha).
- The hybrid PR64A83 has given a maximum production on the agrofund 80kg N/ha s.a. + 80 kg P_2O_5/ha s.a. given the witnees option (figure 1). The production increases given the unfertilized option, on all agrofunds were extremly important.

Regarding the medium productions registered by all the four hybrids in the experimenting period, we can conclude that the hybrid PR63A90 has achieved superior production, in comparison to the other hybrids, achieving a medium production of 3270 kg/ha, with a very important increase of 190 kg/ha, given the select hybrid, taken as witness.

The hybrid PR64A83 has achieved a production almost equal to the witness (3050 kg – 3080 kg), the lowest medium production being made by the Performer hybrid thet, of 2960 kg/ha.

The superiority of hybrid PR63A90 regarding the production capacity, it is noticed also in figure 1, were the production level is superior to the other three hybrids on five from the six agrofunds (on agrofund $N_{120}P_{120}K_{120}$, hybrid PR64A83 has achieved a production of 3120 kg/ha, with 37 kg more than PR63A90).

Figure 1

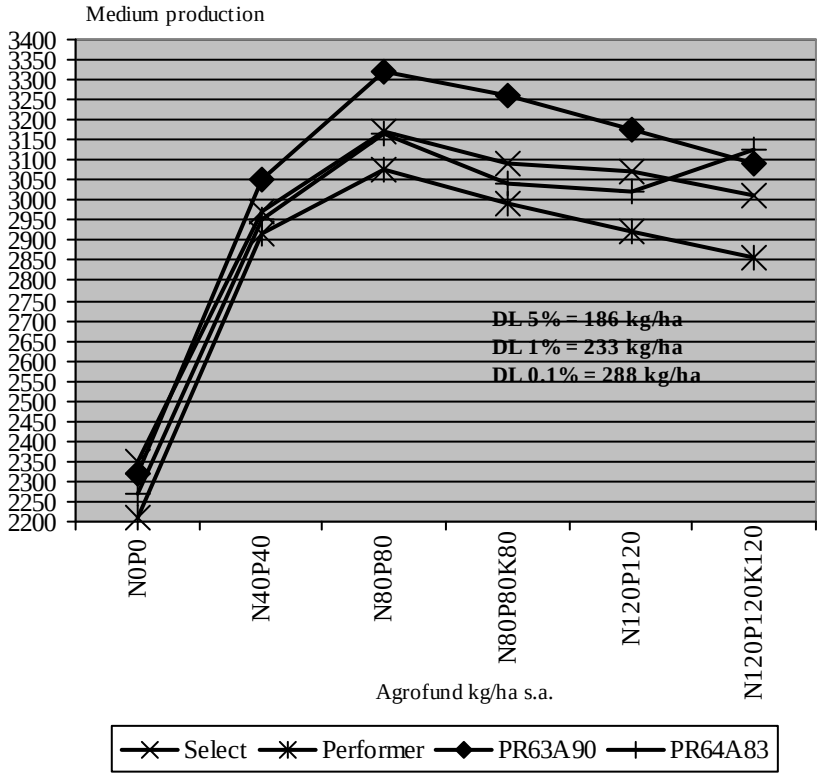

Table 2.The medium productions and certain features of Sun-Flower hybrids, experimented at S.C. Comcerealis Dolj – Portaresti area

Hybrid	Production Kg/ha	Difference	Significance	Vegetation period Days	Waist cm	MMB g
Select (Mt)	3080	Mt	-	121	172	68
Performer	2960	-120		110	170	66
PR63A90	3270	190	***	112	156	66
PR64A83	3050	-30		118	174	65

DL 5% = 75 kg/ha
DL 1% = 96 kg/ha
DL 0.1% = 120 kg/ha

The researches made during vegetation upon certain morfo-physiological features lead to the conclusion that in the conditions of S.C. Comcerealis – Dolj, the select hybrid researches maturity after covering a period of 121 days hybrid PR64A83 has reached maturity four days earlier than the Select hybrid, meanwhile hybrids PR63A90 and Performer with nine and, respectively, eleven days.

The medium waist of plants was of 174 cm at the hybrid PR64A83, of 172 cm at hybrid Select, of 170 cm at hybrid Performer and, respectively, of 156 cm at hybrid PR63A90.

Concerning MMB, there weren't noticed high differences, the value being encountered between 65 g at hybrid PR64A83 and 68 g at Select hybrid.

CONCLUSIONS

1. Sun-Flower cultivated on the cambic cernosium soil from Portaresti – Jud. Dolj, achieves important production increases through applying fertilization.
2. Through applying the agrofund of 80 kg N/ha s.a + 80 kg P_2O_5/ha s.a. was achieved a massive production of 3130 kg, with an increase of 680 kg/ha, in comparison to the unfertilized witness option.
3. All four hybrids experimented in specific culture conditions from S.C. Comcerealis Dolj – Portaresti (cambic cernosium) have achieved the highest production increases through administering the agrofund 80 kg N/ha s.a. + 80 kg P_2O_5/ha s.a.
4. Administering an agrofund bigger than 80 kg N/ha s.a + 80 kg P_2O_5/ha s.a. is uneconomical, the registered productions being lower.
5. Regarding the production capacity, hybrid PR63A90 has given the highest medium production, of 3270 kg/ha, being followed by the Select hybrid – 3080 kg/ha, hybrid PR64A83 – 3050 kg/ha, and hybrid Performer, with 2960 kg/ha.
6. Hybrid PR63A90 (vegetation period of 112 days) has been noticed through certain favourable morphological features, such as the plants vigour and uniformity.

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