

## BEHAVIOUR OF SOME SUNFLOWER HYBRIDS CULTIVATED AT ARDS ȘIMNIC, UNDER CLIMATIC CONDITIONS OF 2007 YEAR

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### ABSTRACT

*The spreading of the arid and semiarid zones due to erratic rainfall and the progressive heating of the atmosphere has become a major problem for cropping. One of the main measures in order to alleviate the draught in the sustainable agriculture is the identification and using draught resistant genotypes. Thos is why the present paper has studied the behavior of 25 sunflower genotypes at ARDS Șimnic-Craiova in the climatical conditions of 2007 year. The climatical conditions of this year in Oltenia werw extremely dry. As a results of these conditions, the production capacity of researched genotypes has severely decreased under the real potential, between 850 and 1850 kg/ha. A better doroght tolerance expressed by seed yield was recorder with L 2740, L 625 202, E 627 001 and S861 810. The XR CHMT 0321 and X6 NHW 5353 genotypes have proven the most sensitive to the drought of this year.*

### INTRODUCTION

Sunflower is one of the most important crop plants in Romania, with regard to surface area it occupies third place after maize and wheat.

Although the sunflower consumes the grand quantities of water (the specific consumption being between 390-765 mm), for all that it is one of the resistant plants to the dryness in virtue of its very strongly developed radicular system, of the periosity of the plants and especially in virtue of the fact that the plant endures the temporary dehydration of the tissues. But the dryness of long duration can determine the important modifications in the growth and the development of the plants (Vranceanu A.V., 2000).

For the getting of the big productions of sunflower it is necessary that in every zone there be cultivated the genotypes which improve superiorly the natural resources, and the establishment of the structure of the hybrids must be made in terms of the comportment of these towards the limitative factors of the capacity of production and quality, especially in terms of the meteorological phenomena. Numerous research studies for different climates have shown that the quantity of rainfall and the temperature over the vegetation influences the growth, seed yield and quality of sunflower (Agele S.O., 2003; Goksoy A. T., and Turan Z.M., 2007; Hunyadi B. et al., 2007; Stanciu D., et al, 2008; Ungureanu Claudia and Tabara V., 2010; Cerny I. et al., 2011; Vevercova Alexandra and Cerny I., 2012).

### MATHERIAL AND METHODS

The studied biological material from the present work, was represented by 25 hybrids of sunflower, found in the test (under the different codifications) or homologated. The experience was located at ARDS Șimnic, on a reddish preluvosoil, in the climatical conditions of the year 2007. Climatically, the year 2007 was a year with the extreme

dryness. For achieving the proposed scope, during the period of vegetation there were quantified the main elements of yield, and the data concerning the seed yield, were interpreted statistically through the analysis of the variety (Saulescu N.A. and Saulescu N.N., 1967).

## RESULTS AND DISCUSSIONS

For the 25 tested hybrids of sunflower in the comparative cultures from ARDS Șimnic, in the climatical conditions of the year 2007, the dryness and the heat had a direct effect on the seed yield of these.

From the table 1, it is observed that this reaches to an average of 1270 kg/ha. With the very significant spores of yield (in contrast with the average), there were inscribed the hybrids: L 2740 (1850 kg/ha), L 625 202 (1810 kg/ha), E 627 001 (1790 kg/ha) and S861 810 (1650 kg/ha), and with the distinctly significant spores of yield, only the hybrid L 5T 4969 PC (1580 kg/ha). The least yields were achieved by the hybrids: X6 NHW 5353 (850 kg/ha), XR CHMT 0321 (880 kg/ha), S461 124 P (900 kg/ha), S 862 600 (930 kg/ha) and RIMISOL (930 kg/ha).

Table 1

The sunflower seed yield under non irrigated crops. ARDS Simnic, 2007)

No.	Genotypes	Seed yield		
		Kg/ha	%	Diff. (s)
1	R 64 A 83	1250	98	- 20
2	PR 64 HP 91	980	77	-290 <sup>00</sup>
3	PR 64 A 90	1070	84	-200 <sup>0</sup>
4	RIMISOL	930	73	-340 <sup>000</sup>
5	L 2670	1300	102	+30
6	S 862 600	930	73	-340 <sup>000</sup>
7	XR CHMT 0321	880	69	-390 <sup>000</sup>
8	L 5 T 4969 PC	1580	124	+310 <sup>**</sup>
9	S 862 090	1320	104	+50
10	S 812 372 M	1370	108	+100
11	L 527 005	1310	103	+40
12	S 861 810	1650	130	+380 <sup>***</sup>
13	S 758 001	1040	82	-230 <sup>0</sup>
14	E 627 001	1790	141	+520 <sup>***</sup>
15	L 625 202	1810	143	+540 <sup>***</sup>
16	L 625 227	1360	107	+90
17	S 461 101 P	1200	94	-70
18	S 461 124 P	900	71	-370 <sup>000</sup>
19	L 2740	1850	146	+580 <sup>***</sup>
20	F 627 005	1240	98	-30
21	F 627 002	1260	99	-10
22	F 625 024	1430	113	+160
23	S 863 350	1070	84	-200 <sup>0</sup>
24	PARA 101 CL	1350	106	+80
25	X 6 NHW 5353	850	67	-420 <sup>000</sup>
	Average (x)	1270		

LSD 5% = 184 kg/ha; LSD 1% = 246 kg/ha; LSD 0.1 % = 318kg/ha

Table 2

**The elements of yield. ARDS Simnic-2007**

No	Genotypes	Height	TGW	HW	Head diameter
		cm	g	kg	cm
1	R 64 A 83	108	45	37	19
2	PR 64 HP 91	118	48	29	17
3	PR 64 A 90	104	46	35	18
4	RIMISOL	97	40	37	19
5	L 2670	102	45	40	18
6	S 862 600	111	42	35	21
7	XR CHMT 0321	104	39	42	18
8	L 5 T 4969 PC	114	39	41	18
9	S 862 090	115	49	33	18
10	S 812 372 M	112	50	42	18
11	L 527 005	102	49	40	20
12	S 861 810	101	57	42	19
13	S 758 001	97	40	41	16
14	E 627 001	105	51	37	19
15	L 625 202	104	47	36	19
16	L 625 227	115	42	38	20
17	S 461 101 P	97	45	35	17
18	S 461 124 P	90	46	34	15
19	L 2740	111	49	36	20
20	F 627 005	120	44	43	18
21	F 627 002	111	46	37	19
22	F 625 024	96	47	34	20
23	S 863 350	99	44	35	19
24	PARA 101 CL	109	39	39	21
25	X 6 NHW 5353	117	42	33	20

There it is known that the dimensions and the development of the stalk are strongly influenced by the environment. As result of this, the dryness of the year 2007 determined a diminution of this (table 2), the variation limits inscribing between 90 cm (S461 124P) and 120 cm (F627 005).

The head diameter varies in terms of the genotype and of the environment conditions. In the case of the hybrids which are tested by us, the values of this varies in the limits of 15 cm (S 461 124 P) and 21 cm (S 862 600, PARA 101 CL).

The 1000 grain weight (TGW) is an element which is found in the beans production. In the case of the hybrids which are tested by us, TGW was drastically influenced by the high temperatures and by the hydric deficit, being reduced almost to half, in contrast with a normal year for the culture of the sunflower. The variation limits for this character had the values which are comprised between 39 g (XR CHMT 0321, L5T 4969 PC, PARA 101 CL) and 57 g (S 861 810).

The values of the hectolitic weight (HW) are not diminished more than a normal year of culture for the sunflower, having the values which are comprised between 29 g (PR 64 HP 91) and 43 g (F627 005).

## CONCLUSIONS

The capacity of survival or adaptation in the extreme conditions of environment, can serve as the objective criterion of zoning of the sunflower hybrids.

In the given conditions, the L 2740, L 625 202, E 627 001, L 5T 4969 PC hybrids were remarked through the very significant spores of yield.

The lowest yield, which was obtained by the X 6 NHW 5353 hybrid, was of 850 kg/ha.

Among the yield elements which are quantified by us, TGW was the most drastically influenced by the high temperatures and by the hydric deficit from this year.

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