

VARIATION OF SOME SUNFLOWER CHARACTERS IN THE PROCESS OF SEEDPRODUCTION

H. ALTERFAH, F. TSVETKOVA*

INTRODUCTION

Seedproduction as a continuation of breeding is of great importance for obtaining high and stable sunflower yield. The proper conduct of seedproduction requires a good knowledge of the varietal biological features and the limits of variation of the most important characters, connected with the morphology and productivity of sunflower.

Investigations of varieties VNIIMK 8931, 1646 and 6540, carried out by Pustovoyt V.S. and T.G. Plytnikova /1972/ show that the values of plant height and seed yield have the greatest variation limits. Piskov A. /1978/ establishes the same regularity in variety Peredovik. According to Shabana R. /1974/ seed yield plant is the most variable character. On the contrary, Kovacik A. and Skaloud V. /1973/ in trials with interlineal hybrids have established the highest variation to be in oil content of the seed and head diameter, while the lowest one—in plant height, seed weight/plant and 1000 seed weight.

No literature till now gives any data concerning complete and detailed studies on the variation of some sunflower characters in the different sections of seedproduction.

The present investigation is aimed at studing the most important sunflower characters connected with the varietal productivity and morphology in the 2 sections of seedproduction —superelite and elite.

MATERIAL AND METHODS

Three varieties have been studied: Peredovik and Progress, Russian ones and Hemus—a Bulgarian one. Peredovik is a representa-

* Institute for Wheat and Sunflower, Tolbuhin, Bulgaria.

tive of the older varieties, while the other 2— of the younger ones. In 1979 were analyzed 120 plants of each variety from the superelite and elite sowings grown under the same soil— and climatic conditions. Plant height and head diameter were measured at hardvest maturity. Seed weight/plant, 1000 seed weight and oil content in the seeds were determined after threshing.

RESULTS AND DISCUSSION

Tables 1, 2 and 3 gives results concerning the variation of the characters in the three varieties. Data shows that the studied varieties differ only a little with respect to morphological characters. But in the 2 sections of seedproduction —superelite and elite, differences

TABLE 1

Variation of some characters in variety Peredovik in the process of seedproduction

Character	Indices	Average Values	Limits of Variation	VC
Generation				
<i>Plant height, cm</i>				
Superelite		198	162 — 271	17,5
Elite		220	181 — 250	12,5
<i>Head diameter, cm</i>				
Superelite		26,8	18 — 37	2,9
Elite		20,7	14 — 29	2,3
<i>Seed weight/head, g</i>				
Superelite		143	35 — 243	33,0
Elite		69	19 — 151	25,2
<i>100 seed weight, g</i>				
Superelite		98	44 — 142	13,8
Elite		63	44 — 87	10,8
<i>Oil content in the seed, %</i>				
Superelite		49,3	39,6 — 56,0	2,7
Elite		47,4	35,0 — 54,2	3,5

variation coefficient is from 14,5 to 17,5% for the superelite and from 12,0 to 15,4% for the elite.

Our results concerning the variability of plant height and plant productivity in varieties Peredovik, Progress and Hemus correspond to those, obtained by V.S. Pustovoit and T.G. Plytnikova /1972/, Piskov A. /1978/ and Shabana T. /1974/ for other sunflower varieties.

Third by variability is the 1000 seed weight. The variation coefficient for this characters ranges from 12,1 to 15,5% for the superelite and from 10,8 to 12,4% for the elite.

Lowest variation have the head diameter and the oil content of the seeds. For the first character the variation coefficient ranges between 2,4 and 2,9% for the superelite and between 2,3-2,9% for the elite. For the second character the variation coefficient moves respectively from 2,7 to 3,7% and from 3,0 to 3,5%.

Most variable therefore, are seed weight/plant and plant height, while head diameter manifests lowest variability.

Results obtained lead to the following conclusions:

1. Selection in the process of seedproduction results in a certain balance within each character, which maintains the variety on a definitive level. That applies in the same degree both to older and never varieties.

2. Most variable are seed weight/plant, 1000 seed weight and plant height. Thus, in the process of seedproduction a special attention has to be paid just to those characters.

REFERENCES

- (1) PISKOV A., 1978. Variation limite of some economical characters in variety Peredovik in the process of seedproduction, dissertation work.
- (2) PUSTOVOIT V. S. and T. G. PLYTNIKOVA, 1972. Uluchshaushee semenovodstvo maslichnih kultur - nauchnih rabot selectia VNIIMK, Krasnodar.
- (3) KOVACIK A. and V. SKALoud, 1973. The proportion of the variability component caused by the enviroment and the correlations of economically important properties and characters of the sunflower (*Helianthus annuus*). Plant breed. abstr., 43, 8100.
- (4) SHABANA R., 1974. Genetic variability of sunflower and inbred lines. Proceed. of the 6th Sunflower Conference, Bucharest, Romania, 263-269.