

GENETIC RESOURCES FOR THE BREEDING OF LARGE FRUIT SUNFLOWER

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ABSTRACT

On the bases of many years maintenance and several re-sowings among 2230 accessions from VIR collection we have selected 34 genotypes which have not lost the character of a large fruit. Very long fruit accessions from China also were included in this group. These accessions were evaluated in the field at the Kuban experimental station of VIR in Krasnodar region for 3 years for the weight of 1000 seeds. The implementations of achenes was estimated using the microfocus x-ray. The radiation load on the seeds during the investigation, is extremely low and has no mutagenic effect. Three-year observations selected 15 sunflower accessions with weight of 1000 seeds more than 100 grams. Among them modern confectionery varieties bread in all-Russia Institute of Oil crops (VNIIMK) can be marked: Donskoy Krupnoplodniy k-3510, Konditerskiy k-3426, Lakomka k-3526 and also Zaporozhskiy konditerskiy k-3516. High rates of the character show landrace varieties, such as Stadion k-2642 from Bulgaria, Ger-Ger k-1589 from Armenia and the local accessions collected during the expeditions in Primorye kk-2817, 2818, 2835, 2836, 2843 and Argentina k-3583. The highest weight of 1000 seeds is typical for 2 accessions from China k- 3633, k-3586 and line VIR 846 k-3683. The last ones are characterized by light coloration of the achene with gray stripes. Accessions of oil and confectionery use, differing in origin, size of achenes, and the degree of implementation were analyzed with the use of x-ray (Fig). Mathematical analyses of the obtained radiographs were made using the specialized computer program. The largest achenes (fetus' area more than 4,00 mm²) are typical for accessions kk-3586, 3516, 3619, but their implementation is less than 50 %. Accessions with the largest implementation (over 50%) are: kk-1693, 1960, 1961, 2051, 3315, 3351, 3447, 3455, 3553, 3621. Therefore, the largest achenes are typical for one groupe of accessions, and the most implemented – for the other. The weight of 1000 seeds is not always corresponded to the size of the seed and kernel. But accession from China, k-3586 has achenes larger and heavier than all other analyzed accessions. Thus, it is shown a new opportunity for individual selection of genotypes during the creation of the initial material for breeding varieties and hybrids of large-fruited and confectionary sunflower. The method of lifetime estimation of implementation of sunflower achenes using microfocus radiography and specialized computer program for mathematical analyses of x-rays pictures.

Key Words : large fruit sunflower, the implementations of achenes, the microfocus x-ray