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IMPACT OF ENVIRONMENTAL CONDITIONS ON THE PRODUCTIVITY OF SUNFLOWER HYBRIDS

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In the face of climate change, the risk of decreasing agricultural production, including sunflower seeds, is increasing. An important role in mitigating climate risks is reserved for the creation, evaluation, and introduction of drought-resistant hybrids. Given that the productivity and quality of the sunflower crop are strongly influenced by genotype, environmental conditions, and their interaction. The aim of this study was to evaluate how sunflower production is affected by the Genotype-Environment interaction.

For this, in the period 2015-2020, 21 sunflower hybrids were studied in five localities on the experimental sectors of the State Commission for Testing Plant Varieties located in different agro-climatic areas of the Republic of Moldova such as Visoca, Pelenia, Băcioi, Grigorievca, and Svetlîi.

During the investigated period, two of the investigated years 2015 and 2020 were characterized by droughts of different intensities. If in the dry year 2015 the small amount of precipitation during the vegetation period is partially supplemented by the precipitation in the cold season before the growing season, in 2020, the effects of drought were more pronounced due to insufficient rainfall in the cold season, and higher thermal average.

The best conditions for sunflower growth were in 2017, when an average harvest of 3.36 t / ha was recorded. In 2015 and 2020, the average harvest was 2.99 t / ha and, respectively, - 2.81 t/ha, decreasing by about 13% compared to the average multiannual data.

The two-factors variance analysis identified the relative contributions of the specific climatic conditions of the year on productivity, regardless of the agro-climatic zone of which the given location is part. The average in all five locations of the relative contributions of meteorological conditions of the year in the yield variance is about 38%. It should be noted that the relative contributions of genotype & year interaction in some localities such as Visoca and Svetli exceeds 50%. The relative contributions of the "growing year" factor varies from 51,4% in the North to 26,4% in the South, and the relative contributions of the "location" factor varies from 68.3% in 2020 to 25.3% in 2016. The relative contributions of the „genotype" factor contribution is usually less than 20% in most locations.

So, the meteorological conditions of the location or the growing season and their interaction with the genotype, are the main sources of crop variation.

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