

THE TOLERANCE OF EARLY MAIZE INBRED LINES TO LOW SOIL TEMPERATURES IN THE SEED'S GERMINATION PHASE

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Improving early maize for export to northern areas with reduced thermal conditions requires the identification of parental forms with tolerance to temperatures below the optimal biological threshold of 10-12 °C for seed germination. Each plot with dimensions of 5 m² in two repetitions were planted with 100 untreated grains and distributed of 2 grains in 50 nests spaced at 14 cm. The sowing was performed at a depth of 5-6 cm at the end of March (30-31.03) and the next term over 15 days (14-15.04). Research has included as biological material 48 lines inbred in 2022 and 63 lines in 2023, representing the germplasm of the Euroflint heterotic groups with hardened grain and Iodent, BSSS-B37, Lancaster with dental grain. The experiences were placed in the permanent lot, isolated from the fields assigned to the research crop rotation, processed according to traditional corn technology. In the first decade of March 2022 the average temperature of constituted 8.0 °C compared to 5.6 °C in 2023. In the last decade, the average temperature has been 10.1 °C in 2022 and 9.6 °C in 2023. The appearance of the first seedlings in 2022 was reported after 29 days for the extra-early sowing period and 19 days for the next term. The arising period in 2023 practically recorded similar values similar with insignificant differences from the previous year. In the first sowing period in 2022 samples with higher germination rate were found in the germplasm groups Iodent - 51.5% and Euroflint - 49.0 %. Average inbred lines BSSS-B37 constituted 35.0% and the 3 samples with Lancaster germplasm recorded an average of 35.8%. Relatively more favorable thermal regime for early sowing with a 15-day gap favored the process of sprouting grains and the average per experience constituted 78.1% compared to 41.9% in the ultra-early sowing. The average germination for inbred lines with indurata grain (Euroflint) reached maximum values of 83.2%, being practically equal to the germination faculty of the Lancaster group. At the level of 78% were situated samples with BSSS-B37 germplasm group, whereas the inbred lines from Iodent group showed a seedling germination of 70.9%. On average in both terms of sowing for the indurate inbred lines in 2022 - 66.1% seedlings arose, followed by the lines of the dented seed groups: Iodent - 61.2%, Lancaster - 59.6% and BSSS-B3 - 56.3%. The average of two years of evaluations in 2 periods of sowing the germination of inbred lines of the group Lancaster was 57.1%, followed by: Euroflint groups - 55.7%, BSSS-B37 - 53.6% and Iodent - 53.8%. From inbred lines with experimental data for 2 years 8 samples with high tolerance to low soil temperatures were identified, including the MKP55 commercial line with an average of 69.8% of viable grains.

Keywords: *early maize, germplasm groups, inbred lines, seed germination, sowing times.*