THE INFLUENCE OF METEOROLOGICAL FACTORS ON SEED GERMINATION AND SPROUT LENGTH OF MELON (*CUCUMIS MELO* L.) WITHOUT THE PRESENCE OF PHYTOPATHOGENIC FUNGI ON THE SEEDS

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Abstract

Quantification of seed germination in relation to changing environmental conditions, which can be used as data for ecological studies on melon seeds. A creeping cultivated melon plant belongs to the gourd family (Cucurbitaceae). The response of seed germination rate to temperature (T) and water potential (Ψ) can be described using heat-time (TT), hydrotime (HT) and hydrothermal time (HTT) models.). The minimum temperature for the germination of melon seeds is 12 to 15 °C. Melon seeds can retain their germination for 7 to 8 years, if properly stored. Practice has verified that three-year-old seeds in some varieties give better production results in terms of yield and fruit quality. The minimum temperature for melon plant growth is 13 to 15°C, and the optimal temperature for growth and development is 25-30°C. According to water requirements, these are plants that tolerate drought because they are xerophytic plants. During the year 2021, the seeds of the SV1232MG melon hybrid and domestic melon seeds were treated at temperatures of -16°C for 15 and 20 days. Seeds analyzed for the presence of phytopathogens. In addition to negative temperatures, hybrids and domestic melon seeds were also treated with temperatures of +60°C for 20 minutes and for 5 hours. After treating the melon seeds, they were placed in petri dishes with a diameter of 8 mm on double filter paper moistened with 5 ml of deionized water. Each treatment was seeded with 50 melon seeds. The parameters of the air conditioning chamber were set at 24°C and 40 hours after installation, the first measurement of the number of germinated seeds was made and the length of the sprout was measured. Statistical data processing was done in the InfoStat 2020 program, using the ANOVA posthoc Dunnet test for the significance level $p \leq 0.01$. The length of the sprout in treatment V (-16 for 15 days) is 23.5 mm in the hybrid and 19.2 mm in the domestic population, with a statistically significant difference compared to the other tested treatments. Observing the reaction of the domestic population for the germ length parameter, with the exception of the V treatment (-16 for 15 days), no statistically significant differences were recorded in the other treatments and also in the control. In hybrids, there are differences between treatments, but they are not statistically significant. Examination of the germination of the domestic population revealed a strong positive correlation of 0.73 between germination after 40 hours and germination after 16 days in the III treatment (seeds exposed to +60°C for 5 hours). Statistically significant differences were recorded between individual treatments after 40 hours of germination readings. After 16 days of germination readings, a statistically significant difference was found between all treatments. An extremely strong positive correlation of 0.91 was found between the germination rate measured after 40 days and after 16 days, in the examined hybrid. No statistically significant difference was found in the observed reading times between control and seed exposure treatment at +60°C for 20 min. While there are statistically significant differences between the other treatments and the control as well as the mentioned treatment. According to the results of this research, it can be seen that exposure to low and high

temperatures primarily has a positive effect on the germination and germination of domestic melon seeds compared to hybrid melon seeds.