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MUTATION BREEDING OF ORNAMENTAL CROPS

The Stavropol botanical garden located in the city of Stavropol (45°02'10.4"N 41°54'28.3"E) at 640 m above the sea level, has an aster collection of some 68 genotypes. In 2003 investigations were initiated to study the effects of ^{60}Co (gamma) irradiation of aster seeds for mutation induction of commercially interesting traits. The work was new as there were no data on aster seed irradiation at the time. Initial experiments involved ten aster varieties, which were irradiated with gamma rays with a total absorbed dose of 90-100 Gy (using a gamma emitter of 1.3 Gy/min), but seed germination of varieties *Utrennyaya Zarya* and *Solnechnaya* was zero and seedlings of all other varieties died 25-30 days after germination. In 2012, reduced dose treatments were given (60–90 Gy) and germination was successful in all but one variety. However, although germination was increased by the 50th day after germination all the plants had died. To extend M1 plants life, dose rates were reduced further to 20–90 Gy (at 10 Gy intervals). The results show that the various aster varieties had different radiosensitivity. Seeds of all the varieties resulted in viable and fertile plants, from which M2 seeds were obtained. During the following years, a wide range of mutant traits was observed. Plant selection was performed annually. By 2018, in M5 generation ~200 lines with features different from the original parental varieties were selected. According to the requirement for the new varieties of plants to be resistant to fusariose, the varieties that were obtained have a resistance to the complex disease. These plants have the potential to produce highly decorative features and additional resistance to diseases and pests by further breeding.

Country or International Organization

Russian Federation

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