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Fertility of Seeds of Circassian Species and Samples Collected From Different Ecological Regions under Laboratory and Field Conditions

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Abstract:

The article illustrates the results of laboratory and field fertility of samples of Circassian seeds collected from different regions, which allow to increase the productivity of natural pastures in crisis.

Keywords: laboratory, Salsola richteri Karelini, Salsola Paletzkiana Litv, seeds, germination, storage period, recovery temperature, constant temperature, pastures.

Introduction. In our republic, 95% of the annual feed needs of livestock are covered by natural pasture plants. Although natural pastures are cheap, convenient, year-round areas, their nutrient reserves are extremely low (1.5-3.5 centner per ha per hectare) and vary dramatically between years and seasons. Another negative characteristic of natural pastures is that the nutritional value of their feed decreases from spring to winter.

In most cases, the fertility indicators of the seeds of desert nutritious plant species collected from natural pastures are low in field conditions, and because of the scattered and sparse distribution of plant species in natural pastures, some difficulties arise in seed preparation. Therefore, it is a very urgent task to increase the productivity of pastures based on the use of promising pasture nutritious plant species resistant to drought and salty soil conditions, and to enrich their composition with new plants.

Decision of the President of the Republic of Uzbekistan dated April 27, 2018 PQ-3686 "On measures to radically improve the seed production system in the Republic of Uzbekistan" is aimed at improving the condition of natural pastures and increasing productivity by organizing the primary seed production of pasture nutritious plants as well as the seed production of cultural plants. The research that is planned to be carried out is of great importance in the solution of this urgent issue.

The first studies on the germination of seeds of desert forage plants under laboratory conditions were carried out by [2] and [1]. The seeds do not have a period of dormancy, and the decrease in fertility was observed as the storage period increased. After harvesting, the fertility of the seeds stored for 3 months did not change and was 90%, after 4 months the fertility decreased to 40%, after 5 months to 30%, after 6 months to 25%, and after 8 months it has dropped to 15% [1]. It has been noted that the germination of Keyreuk (Salsola orientalis) seeds in laboratory conditions varies from 60% to 90% in different years [5].

Research methodology. The researches used generally accepted methods in plant science, plant introduction. Methods of seed germination in laboratory conditions [3] were used.

Experimental results. The researches were carried out in the seed breeding laboratory of the scientific-research institute of Karakollik and desert ecology and in the "Nurota" experimental field.

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Cherkez-Richter sorghum - Salsola richteri Karelini - Shrub of 1.5-2 meters tall, belonging to the sorghum family. Sertanal, old branches, the bark is gray, one-year branches are thinner, the body is hairless. The leaves are gray-green, diamond-shaped. It is adapted to grow in compacted sands, the root system spreads widely (up to 10 meters) on the surface of the soil and on the sides.

Cherkez - Paletsky shorary - Salsola Paletzkiana Litv - from the shoradosh family, 3-4 m tall, 1-1.5 m long branches growing from the sides. Paletsky's brine is not significantly different from Richter's brine in terms of biological and economic properties, as well as in the formation of the root system. Even if the trunk is buried with sand, it has the ability to regenerate at the base of lateral roots. Has the ability to bruise from March.

Circassians continue to grow starting from March, bloom in March-June, and the seeds ripen in October. Circassian annual shoots and seeds are well eaten by sheep and goats in spring, autumn and winter, and by camels all year round. Their hay contains 16.5-22.9% protein, 2.0-2.48% fat, 38.3-43.1% AEM, 15.9-25.0% ash and 17.8-21, 0% cellular available. Hay contains 25-45 nutritional units throughout the seasons

Circassian seeds were collected during the autumn scientific expedition of 2020. Among them, sample K-5237 of the Richter cherchez is from Muynoq district of the Republic of Karakalpakstan, sample K-5238 is from Amudaryo district, sample K-5240 is from Nurabad district of Samarkand region, sample K-5241 of Paletsky cherchez is from Karakol district of Bukhara region, sample K-5242 is from Nurota district of Navoi region (Haydarkol) is presented.

To determine the germination of seeds of Circassian species and samples in laboratory conditions, 100 seeds were placed on moistened filter paper in Petri dishes and placed in a thermostat (experimental repetition 4 times). The seeds placed in a thermostat were kept at a temperature of +200C for 12 days and kept moist.

Fertilization of Circassian types and samples under laboratory conditions is equal to 49.5-59.8%, and among Richter Circassian samples, the K-5238 sample from the Amudarya district of the Republic of Karakalpakstan prevailed (55.2%). Among Paletsky cherkezi- Salsola Paletzkiana samples, high fertility (59.8%) was recorded in sample K-5242, whose seeds were collected from Haydarkul. Fertilization of other samples in laboratory conditions was found to be in the range of 47.6-53.4%.

Experiments were also conducted to determine the fertility of Circassian species and samples in field conditions. As can be seen from the table data, there is also a difference in the fertility of Circassian species and samples in field conditions. In particular, the highest fertility (19.5%) was recorded in sample K-5242 from Haydarkul of Paletsky Circassian (Salsola Paletzkiana). Among samples of Richter's cherze (Salsola richteri), sample K-5240 (17.7%) from Nurobot district prevailed (Table 1).

Table 1. Fertilization of Circassian species and samples under laboratory and field conditions

Catalogue	Cherkez types	Origin	Sleeplessness, %	
			under laboratory conditions	under field conditions
K-5237	Salsola richteri	Karakalpakstan, Moynaq district	49,5±1,8	13,1±0,6
K-5238	Salsola richteri	Karakalpakstan, Amudarya district	55,2±1,9	17,4±0,5
K-5240	Salsola	Samarkand region,	47,6±1,5	17,7±0,7

	richteri	Nurabad district		
K-5241	Salsola Paletzkiana	Bukhara region, Karakol district	53,4±2,1	16,2±0,9
K-5242	Salsola Paletzkiana	Navoi region, Haidarkol (Nurota district)	59,8±1,8	19,5±0,8

According to the data in the table, it was found that the germination of Circassian seeds in field conditions was high in samples K-5238 of Richter saline and K-5242 of Paletsky saline.

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