
CULTIVATION AND REPRODUCTION OF THE SWEET PLANT (GLYCYRRHIZA GLABRA) IN THE CONDITIONS OF KARAKALPAKSTAN

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Introduction.

Widespread in the territory of Karakalpakstan and in the national economy, including; Licorice (*Glycyrrhiza glabra* L) is one of the medicinal plants used in medicine. Chemical substances obtained from its roots are used in food, chemistry, non-ferrous metallurgy and other industries. Root juice is used in folk medicine to treat colds, gastrointestinal, respiratory and other diseases. In scientific medicine, preparations made from it are used in the treatment of body, skin, eye, urological, gynecological, malignant tumors and other diseases.

Material and methods.

Objectivity, universality, concreteness, experimentation, logical and historical dialectical results were established in the research from the main structural-structural conditions. It is widely distributed to explain the importance of this medicinal plant in the life of man and society.

Results

According to the sources, the licorice plant is widespread in the regions of Europe, Crimea, Caucasus, Western Europe, Central Asia, Asia Minor, Iran, Afghanistan and North Africa. It grows on the banks of rivers, streams, orchards, and irrigated fields in Central Asia. In the middle and lower regions of the Amudarya, a lot of research work has been carried out to study the ecology, morphology and biological properties of the licorice plant.

Discussion.

According to A.Bakhiev's information, only one type of licorice *Glycyrrhiza glabra* L. (sweet licorice) is distributed in the territory of the Republic of Karakalpakstan and it forms 30 plant associations, 99 belonging to 27 families and 68 genera in licorice formation. It is shown that there are plants of this species [1]. Negative environmental conditions in recent years and the increase in the preparation of root-raw materials of this medicinal plant lead to a sharp decrease in

its natural reserves. At the beginning of the second half of the last century, in the lower region of the Amudarya, 19 natural massifs of licorice plants with a total area of 18,000 hectares, 136,271 tons of biological and 59,354 tons (dry roots) production reserves were taken into account [1]. But in recent years, due to the aggravation of ecological conditions in the region, water shortage, and violations of agrotechnical measures in the collection of raw materials of sweet potato root, the area of natural reserves of this plant has decreased and their productivity has decreased. For this reason, the protection of natural resources of the licorice plant in the region and the establishment of seed plantations are considered to be urgent problems in this field. The aggravation of the ecological situation in the lower region of the Amudarya River has led to significant changes in the flora and fauna of the region, as well as a decrease in the productivity of forest and cultivated crops. For this reason, it was necessary to carry out more in-depth scientific research of the world of flora and fauna in the regions.

The raw material obtained from the licorice plant is its root. Licorice root has been used as a medicinal drug since ancient times. It was known in Chinese medicine 2800 years before our era. In Tibetan classical medicine, it was widely used among samurai, indeets. Its root contains more than 15 chemical substances (glycyrrhizic acid - 3.6 - 11.8%, glucose - 0.6 - 15.2%, sucrose - 0.3 - 11.0%, fiber - 9.7 - 28.2%, ascorbic acid 11.0 - 31.2 mg %, etc.). At the present time, due to the development of chemical and pharmaceutical research of licorice plant, new medicinal preparations are being prepared from it. Also, the above-ground stem of this plant is widely used as fodder for livestock. Licorice plant is a good fodder for farm animals. The stem of this plant should be cut during the fruiting period.

The research work was carried out in 2016-2020 in the Botanical garden of the Karakalpakstan Department of the Academy of Sciences of Uzbekistan and in the 5th plot (Nukus district) belonging to JSC "Karakalpak Boyan". The soil of the experimental plot (field) is grassy-alluvial, the land areas that were previously cultivated are moderately saline. Humus in the soil is 0.95-1.130%, mobile nitrogen-17, mobile phosphorus-15%, variable potassium 210 mg/kg. The depth of groundwater in the region is 1-1.5 m. In the study of climatic and soil conditions of the region, plant growth and development, U.E. Ismailov's "Nauchnie osnovy povyshenia plodoregia pochvyi" [2], I.N. Beideman "Metodika fenologicheskix nablyudeny pri geobotanicheskix issledovaniakh" [3], M.A. Mikhailov "Vegetativnoe razmnozhenie solodki goloy (Glycyrrhiza glabra L.)" [4]; and other scientific methodical sources were used.

Experiment 1. Studying the germination of licorice plant seeds in laboratory and field conditions: Variants from seed 1 (control); 2-frozen seed (45-55 °C in warm water, for 4 hours); 3-scarified seed.

Experiment 2. Propagation of the licorice plant from seeds and cuttings. Experiment options: from seed 1 (control, planting scheme 60x10, 60x20 and 60x30cm); 2-frozen seeds (frozen in warm water at 45-55 °C for 4 hours, sowing scheme 60x10, 60x20 and 60x30cm); 3-scarified seed (planting scheme 60x10, 60x20 and 60x30cm); 4-planting from legumes (planting scheme 60x10, 60x20 and 60x30 cm); Planting from 5-root-stem cuttings (planting scheme 60x10, 60x20 and 60x30 cm); The area of the plots is 12 m². the total area is 240 m², the experiment is 4 replicates.

In the experimental areas where the licorice plant was planted from seeds and cuttings, cultivation, unification, weed control, and irrigation were carried out between the rows of plants. The licorice seed is inside the pod, which is very hard. For this reason, the germination of seeds increases when they are treated in different ways before planting (freezing, heating, scarification, chemical preparations). The seeds separated from the pods were treated with tissue paper for 5, 20, 30 minutes or scarified. It is noted that the germination rate of scarified seeds is high (32.8-54.3%) and low (1.4-4.2%) in the control. In this case, the germination rate of the seeds thawed and scarified in warm water is 73-76%, that is, it is 21-24% higher than the control option.

In field conditions, it was found that freezing the seeds of the licorice plant before planting, i.e. planting scarified seeds, has a good effect. In production, when planting sweet potatoes, it is necessary to process and scarify them before planting. Freezing (in warm water 45-55 °C) or scarification of licorice plant seeds before sowing resulted in 73-76% (50-52% in control) and 55-58% (13 in control) seed germination in laboratory conditions. %) will be. The obtained data revealed that when planting the plant from seeds, two scarified methods by freezing the seeds in warm water at 40-50 °C for 4 hours before planting are effective.

The root grows from the sweet potato seed under the soil and goes deep into the lower layer of the soil. Towards the upper part of the soil, the hypocotyl seed begins to grow by pulling the pilla leaf from the seed coat. Root hairs begin to develop when the root grows out of the seed coat. Sometimes, if the growth of root hairs does not develop (that is, conditions are not created for it), the root stops growing and the branch dies. The roots of young seedlings grow to a depth of 3-5 cm in the first week. As the seed leaves grow above the ground, the growth of the

root length slows down and the seed leaves become larger. A third bud develops from the middle of the leaves of the germinated seed. After 7-10 days, the first real leaf in the shape of a circle is formed. In the first stages, real leaves consist of one leaf plate. A real compound leaf of licorice begins to form only between 4-6 joints. During the experiment, the growth of the plant and the development of side branches were studied when it was planted in different ways. The growth of the plant is slow in the first 1-1.5 months, and from the end of June, the growth pattern increases. Daily growth in August is 1.2-1.4 cm when planted from seeds, 1.2 cm when planted from pods, and 1.5 cm when planted from root cuttings. Growth in late September and early October when planted from pods (60x10, 60x20, 60x30cm) stem height 43-49cm, when planted from seed (scarified) average 53-67cm and when planted from rootstock average 75-80 cm (in control) was observed to be 32-52 cm. At the end of June, in July, side branches begin to appear on the main stem. At the end of the growing season (September 25, 2018), it was found that the number of side branches was on average 2-4 when planted from pods, 3-6 when planted from seeds, 4-8 when planted from cuttings, and 3-4 (in control). Planting scheme for plant growth and development of branches 60x30 cm. it was found to be higher compared to other options. The growth (vegetation) phase of the plant starts at the end of April when it is planted from root cuttings, and in other variants it lasts from May to autumn.

In the course of the research, plant growth and development were studied in the areas planted in 2017. In early spring, at the end of March, in the first decade of April, new plant stems began to emerge from the bushes. Plant growth accelerates from the second decade of July. At the end of September, plant height is 117-129 cm in the field planted from legume, 121-131 cm in the field planted from frozen seed, 120-135 cm in the field planted from scarified seed, and 128-143 cm in the field planted from rhizome. It should be noted that in the second year of development, there will be no significant difference between the options for the growth and development of the plant. In the second year of development, until the end of the plant's vegetation, the plant is in the growth phase. Planting from seeds, preferably from cuttings, in the areas where the root material has been collected, gives good results when establishing plant plantations in places. This method is widely used in Karakalpakboyan JSC.

Conclusion.

Conclusion: seed treatment before sowing (cooling in warm water at 45-55 °C for 4 hours, scarification) methods of giving seed germination in laboratory

conditions is high (73-76%), in untreated seeds (control, 50-52%)) and in field conditions it was 55-58% in the first and 13-15% in the second. This confirms that pre-sowing seed treatment is an effective method when growing a plant from seed.

Acknowledgement.

It was determined that different planting methods affect the growth and development of sweet potato. It was observed that the greening of lawns takes place in 16-20 days when planted from root cuttings, 12-28 days when planted from treated seeds, 19-34 days when planted from untreated seeds (control), and 20-38 days when planted from pods. It was determined that the growth and development of the licorice plant is affected by different planting methods (seed-control, frozen seed, scarified seed, pod-fruit, root-stem cutting, planting schemes 60x10cm, 60x20cm, 60x30cm). At the end of the plant's vegetation, the length of its height is 70-80 cm when planted from root cuttings, 68-70 cm when planted in frozen seeds, 53-68 cm in scarified seeds, 41-52 in untreated seeds (control) cm and the number of lateral branches is 4-8, 3-5, 3-6 and 2-4 (respectively). Before planting, it is recommended to treat the seeds and plant the rootstock in a 60x30 cm scheme.

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