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THE VALUE OF CROP ROTATION IN THE CULTIVATION OF VACCARIA HISPANICA IN CONDITIONS OF TYPICAL GRAY SOILS OF THE TASHKENT OASIS

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ABSTRACT

In the world, great importance in production is attached to the intensification of the use of valuable plants, that is, the use of all parts of the plant for specific purposes. Vaccaria hispanica (Mill.) Rauschert is one of the promising plants grown in many countries of the world for the production of medicinal raw materials and saponins. Vaccaria hispanica is a promising medicinal plant of the Spanish millennium and, despite its wide distribution on the territory of our Republic, the possibility of obtaining raw materials is very small, and at the same time, many scientists consider it a plant with a high cultivation potential, so it is urgent to develop methods for growing raw materials in the soil. -climatic conditions of the Tashkent oasis. On the other hand, the development of scientifically substantiated optimal methods for propagating and growing the V. hispanica plant, the organization of industrial plantations, and the improvement of methods for preparing high-quality raw materials acquire scientific and practical importance.

KEYWORDS

Introduction

Today, the belief that natural medicines are safer than synthetic ones has gained popularity around the world and has led to a dramatic increase in the use of phytopharmaceuticals. There is a growing interest in spices, nutrients and medicinal plants around the world. Chamolilla resutitan L., Datura stramoium L., Silybum marianum L., Gaertn. and Vaccaria hispanica (Mill.) Rauschert are medicinal plants widely used for medicinal purposes. Creation and production of phytopreparations using medicinal crops or introduced raw materials, preparation of raw materials in accordance with international standards, cultivation of medicinal and food plant species of high economic value, rich in composition, characteristic of the flora of other countries, great importance is attached. In this direction, the scientific substantiation of the patterns of growth and development of plants in various soil and climatic conditions, that is, the study of the patterns of ontogenesis, the determination of the most optimal

cultivation periods by studying the seasonal patterns of development, of particular importance are the study of the influence of planting material and planting distance on the rate of growth and development of plants and yield, introductory development of plant breeding and cultivation methods and introductory assessment, organization of large-scale plantings. At the same time, as a result of a sharp increase in the number of people in the world every day, this indicates the need to compile a floristic list of valuable and exportable plants in the medicinal plant growing and pharmaceutical industry, and to meet the need for raw materials. Therefore, it is important to obtain high-quality raw materials that can replace imports, to select and grow highly economically efficient plant species based on a deep analysis of the phytochemical composition of plants in various soil and climatic conditions.

In recent years, many research works and doctoral dissertations have been carried out on the scale of our republic, aimed at the reproduction and cultivation of medicinal plants. At the same time, decisions are being issued at the state level, and large-scale reforms are being carried out in this area. The main attention is paid to the development of the local pharmaceutical industry and the creation of a raw material base for medicinal plants. In this area, important results have also been achieved in terms of breeding medicinal plants and creating plantations at an industrial level, as well as obtaining high-quality raw materials, comparative comparison of biologically active additives and substances in various parameters, and selection of leader plants. according to various indicators. The Action Strategy for the Further Development of the Republic of Uzbekistan defines the tasks of "further development of the pharmaceutical industry, providing the population and medical institutions with affordable, high-quality medicines." To fulfill the important tasks and tasks specified in the action strategy, it is important to organize large-scale plantings of Vaccaria hispanica, justify the growth and development in various soil and climatic conditions of our republic, develop methods of reproduction, determine the phytochemical composition, evaluate the introduction and apply in practice.

Material And Research Methods

Field studies, phenological, morphometric, anatomical, phytochemical, statistical methods were used.

Discussion of The Results

Studies have been carried out on the technology of cultivation of the plant Vaccaria hispanica in conditions of typical gray soils of the Tashkent oasis. The influence of crop rotation on seed yield and other indicators in the cultivation technology of Vaccaria hispanica has been studied.

During 2020-2021 The studies were carried out in small areas on the territory of the information and consulting center "EXPANDING CENTER" at the Tashkent State Agrarian University. Research experiments were carried out on a long-term irrigated and cultivated area in two versions, that is, on an area sown in previous years with cultivated crops and Spanish millet, and on a protected area, that is, on an area cleared of weeds. and have not planted before. The abandoned area was cleared of weeds and prepared for planting. So, the options for research experiments are as follows: A) First, a reserve plot not sown with crops; B) Firstly, the area sown with Spanish millet; C) The area where crops were first planted.

In spring, on a previously uncultivated plot, the land is covered with ephemeral and ephemeroid representatives of the cornflower family (Hordeum murinum L., Poa annua L., Bromus sterilis L., etc.), and in summer, kakkra (Leuzea repens L.) D.J.N. Ind.), mulberry (Malva ignorea Wallr.), holly (Alhagi pseudalhagi (M.Bieb.) Desv. ex Wangerin) and other plants. Previously, fields sown with Spanish

millet and cultivated crops were free from weeds.

When studying the positive or negative impact of crop rotation on plants, the main attention was paid to such parameters as plant height, number of fruits and the amount of seed raw materials (kg/ha).

In all variants, the sowing date is March 2, the seeding rate is 6.5 kg/ha or 160 seeds/m2. Seeds are small, 1 g of seeds contains 150-250 seeds. Planting depth 1.5-2 cm. Row spacing 20 cm.

Agrotechnical activities were also carried out on all variants. Watered 4 times per season. After sowing the seeds, the first irrigation was carried out, during which 600-800 m3/ha were sprayed. The purpose of irrigation is to ensure the normal germination of plant seeds and their growth and development in the subsequent period. It should be noted that at this time direct sunlight falls on the soil, causing a rapid loss of surface moisture by its layer. For this reason, after watering, they sprinkled with humus 1 cm thick in order to retain moisture in the surface layer of the soil. Further irrigation measures were carried out at the rate of 400-500 m3/ha, depending on soil moisture and plant condition. At the same time, the second irrigation was carried out at the rate of 500 m3/ha with the formation of 3 pairs of leaves, the third - with the formation of 7 pairs of leaves and the beginning of branching, the fourth - was carried out. at the rate of 400 m3/ha during the period of full flowering. At the time of the third and fourth irrigations, the height of the plant bushes was 25-56 cm, and the plants completely covered the surface layer with their habit and significantly reduced water evaporation.

The results obtained showed that at the end of the growing season of Spanish mullein, the height of the plant in the protected area was 51.7 ± 2.1 cm, the number of fruits was 54.5 ± 2.7 pieces, and the seed raw material was 4975 kg. / ha, height 46 cm, number of fruits 48.8±3.8 pcs., seed material 2154 kg/ha, plant height 58.4±1.3 cm, number of fruits 68±2.4 pcs., seed material 5985 kg/ha (Table 1).

Table 1

№	Ecological space	Plant height, cm	Number of fruits, pcs	Seed raw material, kg/ha
1	Dry land	51,7±2,1	54,5±2,7	4975
2	The place where the cultivated crop was planted first	58,4±1,3	68±2,4	5985
3	The place where Spanish millet was first planted	46,1±1,7	48,8±3,8	2154

Willenborg & Dosdall, (2011) carried out experiments on small plots (2 m × 6 m) in order to scientifically justify agrotechnical measures of Spanish millet and found that yields varied between 1300 kg ha−1 and 6500 kg ha−1 and differed significantly between genotypes. . Seed weight also varied significantly among genotypes, ranging from 3.7 mg in small-seeded genotypes to 8.8 mg in large-seeded genotypes.

The low performance of Spanish mulberry planted in protected areas is explained by the following circumstances. Due to years of non-cultivation, the soil has become compacted and hardened, the physical property of water permeability has decreased and the chemical composition has become poor. According to many scientists, in the process of land development in agriculture, the use of intermediate crops before planting the main crops is considered effective, which, in turn, has a positive effect on the improvement of soil reclamation (weed removal, soil softening, physical and water permeability properties of the soil, and then its chemical composition). (Tursunkhodjaev, 1972; Nerozin, 1980).

The Vaccaria hispanica plant, grown in cultivated fields, differed from the rest of the options in all its parameters and showed a high result. There are 178 seeds per 1 g of the plant, and it is superior to other variants due to the large size of the seeds and the abundance of fruits on the bushes. The number of fruits is 65-72 (68±2.4) pieces, 125% compared to the protected area (54.5±2.7), 139% compared to the area previously planted with Spanish millet (48.8±3.8). was high.

In conclusion, it can be said that crop rotation has a good result in increasing the seed yield of the plant, and it was found that high soil fertility is the main factor. At the same time, it is possible to plant the plant twice in the same place only when it is treated with mineral fertilizers. However, it is possible to carry out pharmacological research on the raw material prepared from the plant grown with the help of mineral fertilizers and only when positive results are achieved. For this reason, it is important to test Spanish millet in rotation with different crops. The experiments carried out by us are the measures of organic cultivation of Spanish mullein and serve as a basis for the establishment of cultivation with the help of various organic fertilizers in the future. The research experiments showed the same result as the scientific conclusions presented in the literature and showed the correct approach in conducting the experiment.

Conclusion:

Experiments were carried out in three variants of crop rotation. At the end of the growing period of the Spanish millet, the height of the plant in the protected area is 51.7±2.1 cm, the number of fruits is 54.5±2.7, the raw material of seeds is 4975 kg/ha, the height of the plant is 46 cm, the fruits are number 48.8±3.8 pieces, seed raw material 2154 kg/ha, plant height 58.4±1.3 cm, number of fruits 68±2.4 pieces, seed raw material amount 5985 kg made up /ha.

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