



DETERMINATION OF THE WATER PANT OF BLUE PEAS (PIZUM SATIVUM L.) GRAIN UNDER LABORATORY CONDITIONS

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ABSTRACT

In this article, the process of swelling in the grain of mung bean cultivars was analyzed. "Vostok 55" and "Sputnik" varieties of chickpeas were selected as the object of research. The results of the study showed that the swelling of the grain accelerated in the "Sputnik" variety and received 18.8% more water compared to the "Vostok-55" variety. At the same time, it was noted that the seeds of the "Sputnik" variety took more water than the "Vostok-55" variety.

INTRODUCTION

Leguminous grain crops are important in satisfying human needs for plant protein, improving the quality of animal feed and increasing soil fertility [1]. In this place, leguminous crops, including blue pea (*Pisum L*), are considered as plants of biological, agronomic, social and selection importance. The genus of chickpea (*Pisum L*) includes several species. *Pisum sativum L*, i.e. cultivated pea, is very important and widespread. In turn, this type of blue pea (*Pisum sativum L*) is divided into several subspecies, the most important of which is - subsp. *sativum* - subspecies - ordinary sown blue pea (gorox) and subsp. *arvense* - a subspecies - called the chickpea. Green peas contain 20-26% protein and are a nutritious food. 120-185 g of protein corresponds to 1 nutritional unit of seeds. The vegetable is used in canning (green peas). It is added to improve the quality of silage. Green peas accumulate 70-100 kg of nitrogen and leave organic matter in the soil (roots, stems, leaves). The centers of origin of blue peas are Ancient Asia and the coast of the Mediterranean Sea. Green peas are grown in Europe, Asia, and America. The cultivated area on earth is 15 mln. around ha, yield 2-5 t/ha. [2,3].

Blue peas, legumes, epigallocatechin-3-gallatam (this type of catechin, which is in large quantities in tea, also affects oncological diseases, sclerosis, HIV infection, brain function, skin condition being studied), there are many flavonoids such as isothiocyanate and lutein. Because of this, if an adult eats four servings of legumes a week, he will reduce the risk of heart disease by 22%. [4,5].



Pea plant is a drought-resistant legume-cereal crop, which can be planted in dry and conditionally irrigated lands and get a high yield. In the era of global climate change, increasing temperature every year, increasing desertification of dry areas, in order to meet the demand of the population for leguminous crops, it is necessary to grow peas on irrigated lands. Before planting, if the indicators of water absorption of pea varieties are evaluated and the obtained results are taken into account during irrigation, it will be possible to create favorable conditions for the growth and development of the plant under the conditions of stress factors. [6,7].

It is known that dry (dried) seeds contain bound water, which does not participate in metabolism, therefore, a certain amount of water must be absorbed before the seeds germinate. Because this water activates the enzymes in the cells of the stem and endosperm and creates an environment for the chemical processes that take place. Even if there is enough water in the environment where the seeds germinate, not all plant seeds germinate equally. Because the seeds of some plants have a thick skin, it is difficult for them to absorb water or water does not pass at all. The skin of such seeds must be injured naturally or artificially, only then water will pass through the skin.

This structure of the seed coat, i.e. waterproofness, cannot absorb water due to the fact that the polysad (lattice) cells in the seed coat tissue are surrounded by a cuticular layer, the seed coat contains pectin, this substance prevents swelling or bulging. Thirdly, the lipid contained in the seed coat prevents the passage of water [1-6]

It is known that the germination of the grain is related to the swelling process, in which the grain receives the water necessary for its germination. This process is complicated and depends on the composition, weight, temperature and other factors of the seed. In this study, for the first time, "Vostok 55" and "Sputnik" varieties of blue peas were analyzed in laboratory conditions.

Research object and methods. "Sputnik" and "Vostok-55" varieties of chickpeas were selected as research objects. In recent years, taking into account that chickpeas are grown in irrigated fields, the rate of water absorption of chickpea varieties grown in irrigated fields was studied in laboratory conditions at a temperature of 25-28°C.

Received results

During the experiment, the ability of pea seeds to absorb water was determined in 4 repetitions, every hour. The obtained results showed that the water absorption of the seeds of pea varieties is not constant during the time interval, but absorbs a large amount of water in the first hour, that is, in this case, samples of the "Sputnik" variety 10.9-38.8%, "Vostok 55" variety samples 42.4-48.5%, and in the third hour "Sputnik" variety samples 18.6-36.1%, and "Vostok 55" variety samples 20.9-44%, the amount of water absorption was recorded. In the remaining options of the experiment, i.e., the amount of water absorbed in the next sixth hour over time was 15.4-27.0% for "Sputnik" variety samples, and 4.5-13.9% for "Vostok-55" variety samples. absorbed water, it was observed that the water absorption decreased in the following hours, and by the tenth hour, the water absorption in the samples of the chickpea variety was around 3-4.1%, and by the eleventh hour, the water absorption was zero in Vostok 55 samples, while Sputnik samples took 18 hours to absorb water, and after the tenth hour, it was noted that the difference in water absorption between hours



decreased. In terms of water uptake, Sputnik achieved the highest rate of water uptake, i.e. 113.5% water uptake by the tenth hour. It was observed that "Vostok 55" variety samples have a slightly lower rate of water absorption than "Sputnik" variety samples, and its indicator shows 94.7% water absorption.

Summary

Based on the obtained results, it can be concluded that the seed coat of the "Sputnik" variety of blue pea is thin and absorbs water up to 114.1-117.8% of its weight. On the contrary, "Vostok 55" variety samples have a thick seed coat and relatively less protein content, therefore, it was observed in the experiment that the rate of water absorption is 18.8% lower than "Sputnik" variety samples. It was noted that the amount of water used for bulging of the grain in the samples of the pea plant is closely related to the structure of the seed. The bulging process was accelerated initially in the "Vostok-55" variety, and later in the "Sputnik" variety.

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