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WAYS TO INCREASE THE EFFICIENCY OF GROWING PEANUTS IN OUR COUNTRY

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Abstract:
This article discusses some morphological, physiological characteristics, nutritional value of the peanut (Arachis hypogeae) plant. At the same time, information on resistance to abiotic factors, differences in morphological features, and peanut cultivation technologies is provided.

Keywords: Arachis hypogeae, pod, chlorophyll, crowding, nitrogen bacteria, rhizobacteria, number of pods, gynaphor.

Introduction

Agriculture in our country is developing at a fast pace, like other industries. The world's population is increasing, and the demand for consumer products is increasing. In particular, legumes and oil crops with high nutritional value are widely used not only in industry, but also in agriculture. For example, flax, sesame, soybean, peanut, and similar products are of great importance. Today, as a result of the increase in the number of people in the world, the demand for food products, including fruits and vegetables, pulses and oil crops, along with grain and grain crops, is increasing day by day. That is why, in order to increase the production of agricultural products and get more crops, farms are bringing and growing high-yielding plant varieties brought from abroad. One of these plants is peanut - Arachis hypogea L. Along with other agricultural plants, it is important to increase the productivity of peanuts and the quality of their seeds.

Peanuts are grown in 117 countries of the world and the total gross harvest is 43.9 million tons. 68% of the crops grown in the world are in Asia and 25% in Africa. According to the 2018 world statistics, Uzbekistan ranks 51st in the world in terms of peanut production [3]. In 2021, Uzbekistan exported 17,000 tons of peanuts worth 18.4 million US dollars. In January-March 2022, Uzbekistan exported 5.8 thousand tons of peanuts worth 6.8 million US dollars to 23 countries [14]. It can be seen that Arachis hypogea L. is one of the plants with high indicators of use, which is among leguminous and oil crops used in many sectors today.

In our republic, large-scale work is being carried out on the development of industry and export, due to the expansion of the peanut cultivation area, the increase of the yield per hectare.

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The homeland of peanuts is South America (Peru), and even now peanuts can be found wild in the southern parts of Uruguay, Brazil, along the coast of the Amazon. Peanuts mainly came to the territory of our republic from countries such as India, Pakistan, Russia, Turkey, China and Japan. Mostly local varieties are grown in our country. Among them are such varieties as - Qibray-4, - Tashkent-112, - Salamat, - Mumtoz. Peanut, Arachis hupogea L., is an annual oil plant belonging to the legume family Fabaceae.

Classification:

Section - Magnolia (Magnoliophyta);

Class - Legumes (Leguminocae);

Family – Legumes (Fabaceae);

Category - Peanut (Arachis);

Species – Arachis hypogea L.

More than 10 species are known to science around the world. In the irrigated areas of Uzbekistan, the common type is mainly planted. Peanut grows best in soft, sandy soil. Peanut is a drought- and flood-resistant plant. Wild Arachis hypogea L. species are drought and heat tolerant compared to cultivated groundnut and are distinguished by the presence of thick epicuticular wax on their leaves. This helps maintain internal stomatal permeability and aids drought adaptation. In environments characterized by drought and heat, and under conditions of severe water deficit, peanut completely stops growing and accumulates solutes in the cells to protect the cell from dehydration. This phenomenon is called osmotic adaptation. Osmotic adaptation was observed in the leaves, stems, roots and seeds of the peanut plant. Low water potential causes plant metabolism to change from normal, for example, under the influence of water deficit, total soluble sugar increases, proteolysis increases, protein synthesis slows down and combines, and amino acid synthesis renews.

Peanut is a short-day plant, heat-loving, light-loving and moisture-loving annual herb. The root is an arrow root. Roots emerging from the sides of the tap root are attached vertically to the main root. In most cases, the roots penetrate 90-120 cm underground. It was found that the average young root weight is equal to 14% of the weight of the sprout formed on the surface of the soil. Nitrogen-fixing Rhizobium bacteria are located on the main and lateral roots in the form of bud-shaped nodules, that is, in the form of biologically located shoots in the atmosphere. The flowering time is the basis of the vegetative period, i.e. 80%. The flowers are zygomorphic, yellow, golden in color and bisexual. The seeds and pollinators are surrounded by a membranous shell (Fig. 1).

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A **B**

Figure 1. General view of peanut (Arachis hypogea L.) plant (A) and fruit (B).[1]

The flowers in the lower part of the stem do not open, the above-ground flowers are mainly self-pollinated and form a gynophore. The height of the stem is 50-60 cm and it is a herbaceous stem. The main stem is upright, and the lateral branches grow on the ground. Some species contain anthocyanin coloring matter. Those with anthocyanins tend to have woody stems compared to others. Peanut stems are now angular and flat while growing, and become rounded as they mature. Stem color varies between green and dark green. The stem is usually smooth, but some species have hairs. The leaves are complex, double feathery, or inverted egg-shaped, and a shingle-shaped flower is located in the axil of each leaf. The leaves are considered light and drought tolerant and close oppositely in the evening and during drought. The shape of the leaves is long-oval. Leaf colors vary from light green to dark green depending on the type, as do the stems. Flowers are bisexual, yellow, golden.

The underground flowers do not open, they self-pollinate. Flowers above the ground are pollinated from outside. After the pollination of the flower, the bud first grows vertically, then downwards, penetrates the soil at a depth of 8-10 cm, and the fruit and pods are finished. Gynophore can penetrate the soil up to 10 cm after flowering as a pod-forming plant under this soil. After that, geocarpy is observed, that is, it begins to produce fruit under the soil. On average, about 70 pods are produced in one bush of peanuts. The weight of 1000 seeds can be 200-1500 g. The podding period is on average 2 months. The pod is not chatty, has a mesh outer shell and is called a pericarp bean. The seeds are

[1] https://cyberleninka.ru/article/n/yeryong-oq-arachis-hypogae-l-o-morphological-and-physiological-characteristics of the cord.

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also surrounded by a thin shell of reddish color. The fruit is a pod, ripens in September and October. The growth cycle is 150-160 days.

Peanut seeds contain about 50% easily digestible oil and are second only to olive oil in terms of taste. Peanut oil is widely used in the preparation of high-quality preserves and margarine from various vegetable crops, in confectionery and in the perfumery industry. Peanut seeds contain 18% carbohydrates, a large amount of minerals such as K, Ca, Mg, P and C, and are also very rich in vitamins A, B and E. Basically, the nutritional value of peanut oil is due to the presence of 8 types of fatty acids, which are considered very important. It is an important animal feed, extracted from oil production. This kunjara contains about 45 percent protein, 24 percent non-nitrogenous matter and 5.5 percent mineral matter. In developed countries, a large amount of peanut butter is widely used in the preparation of mixed feeds.

Peanut shell can be processed and consumed as human food. In addition, peanut stalks are a nutritious animal feed. Peanut stalks contain 11% protein, 5% oil, 22% crude cellulose, 42% non-nitrogenous matter, 10% ash and 10% water. Fruits begin to form after two months of flowering. Peanut fruit contains 48-66% fat and 23-38% protein, up to 22% carbohydrates. Dark colored fruits are rich in protein and light colored fruits are rich in fat. The length of the fruit is 9-24 mm, and the width is 6-14 mm. Small-seeded varieties are selected for oil production, and large-seeded varieties are selected for food. It should be said that peanuts are used together with almond oil in medicine. It is used for the prevention of diseases related to the blood circulation system. When consumed regularly, it improves memory and recall and can prevent oncological diseases. It is also useful for patients with type II diabetes.

In conclusion, peanut - Arachis hypogea L. is a valuable leguminous oil and food plant and is of great industrial importance. It is important to increase the economic efficiency of the plant, to develop disease resistance mechanisms, to adapt foreign early varieties to the climate of our country and to plant them on large areas. The economic aspects of the peanut plant are also important, it is important to carry out research on hybridization between this plant, to create early ripening varieties with high yield and biochemical indicators and resistant to various abiotic factors, and to introduce foreign samples to our republic.

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