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Biology of Legumes and their Importance

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Annotation: Legumes belong to the Fabaceae family, which includes mung beans, soybeans, beans, peas, lentils, green peas, vetch, fenugreek, common peas, and lupins. More than 60 species of legumes belonging to 17 genera are known worldwide.

Keywords: Fabaceae, Papilionaceae, chickpea, vetch, alkaloid-free lupin.

Legumes are plants grown for grain (seed); members of the Fabaceae subfamily (Papilionaceae) are used in crop rotation to increase soil fertility.

The Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 259 of March 29, 2019 "On the rational placement of agricultural crops and forecast volumes of production for the 2019 harvest" was adopted. This resolution stipulates that 824,350 hectares or 75.5% of the 1,091,630 hectares of the main crop, winter wheat, are planned to be replanted, of which about 284,067 hectares are planned to be planted with legumes. According to the use of legumes in the national economy, there are four: - food (mung beans, soybeans, beans, green peas, peas); - fodder (peas, vetch, lupine, etc.); - universal (beans, lentils); - divided into groups for planting as green manure (alkaloid-free lupine). Legumes belong to the Fabaceae family, which includes mung beans, soybeans, beans, peas, lentils, green peas, vetch, pea, common pea, and lupine. More than 60 species of legume crops belonging to 17 genera are known worldwide. In Asia, including Uzbekistan, mung beans, soybeans, beans, lentils, vetch, peas, lupine, etc. are widespread. The stem grows erect (peas), creeping (beans), creeping (vecchia), or spreading (mung beans, lentils). The leaves are complex, pinnate or claw-like. The root is of various shapes, and the flower structure is similar to that of the buttercups. The fruit is a pod (2-9 seeds). The seeds are small (such as lentils) and very large, round, kidney-shaped, flat, etc., surrounded by a solid or dotted colored shell. A distinctive feature of the seed is the presence of a seed coat. In the Central Asian regions, the growing season lasts from 60-

90 days (chickpeas, lentils) to 90-160 days (peas, soybeans, beans). During the budding and flowering period, the above-ground parts grow more strongly. The fruits of most grain legumes are laid one after another, from the bottom up, so the seeds ripen evenly. Soybeans and beans are quite demanding on heat, their seeds germinate at 10-13 ° C, lupine and pea seeds at 5-6 ° C, lentils and fenugreek at 3-4 ° C. Peas and fenugreek can withstand temperatures down to -8°C, and soybeans - up to -4°C. Legumes require a lot of heat during the grain filling and ripening phase. Soybeans and lupine are very demanding on moisture. Peas and fenugreek are drought-resistant. Legumes grow best on light sandy and loamy soils. Peas, vetches, and legumes grow best on neutral soils, beans and soybeans on semi-acidic soils, and lupines on acidic soils. Legumes require phosphorus-potassium fertilizers. Grain legumes are of food and nutritional value, they are grown to obtain protein-rich grains. Grains, especially immature grains, are rich in protein (12-60%), carbohydrates (11-60%), fat (0.5-52%; calculated on dry matter), vitamins, and carotene. Ripened grains are used directly for food. They are used to make cereals and flour. Grains, bran, stems, and straw of grain legumes are valuable, protein-rich feed for livestock and poultry. Grain legumes enrich the soil with nitrogen and are important predecessor plants for crops. In irrigated farming regions, grain legumes are grown as a cover crop or catch crop (alone or in combination with other crops in the autumn-winter and winter-spring periods). The green mass is used as feed for livestock or green manure. Each crop has its own specific bacterial flora. Some species are associated with a group of legumes (peas, vetch, chickpeas, lentils, peas), while others live in symbiosis only with certain species: lupine, soybeans, beans, mung beans, etc. Each type of bacteria consists of many strains. The presence of nutrients, moisture, air, light, nitrates, a neutral reaction pH of 6-7, a comfortable temperature (27 ℃) and the normal content of organic matter in the soil have a positive effect on the activity of endotoxin bacteria.

Legumes are of agrotechnical importance, peas accumulate up to 150 kg of nitrogen per hectare, soybeans up to 250 kg. The yield is 3-4 t, if the process of assimilation of atmospheric nitrogen is slow, 20-60 kg of nitrogen accumulates per hectare, the yield is 1.5-2.0.

Due to the low content of humus and nitrogen in the soils of Uzbekistan, leguminous crops play a significant role in increasing soil fertility. After leguminous crops, the amount of organic matter in the soil increases, and the water-physical properties of the soil improve. Their crop residues decompose faster than those of grain crops. Leguminous crops also effectively protect the soil from wind and water erosion.

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