

The Importance of Plant Biological Properties in Rice Cultivation

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Annotation: In order to achieve a regular, stable high yield of agricultural crops, it is of great importance to take into account the biological characteristics of the plant. According to its biological characteristics, rice is a short-day crop, demanding light and heat.

Keywords: biological characteristics, long and short-day crops, swamp, meadow, peat, saline, salt marsh.

In order to achieve a regular, stable high yield of agricultural crops, it is of great importance to take into account the biological characteristics of the plant. Biological characteristics refer to the plant's response to light, heat, moisture, soil conditions and nutrients. Plants are divided into two groups according to their biological characteristics: long-day crops and short-day crops. According to its biological characteristics, rice is a short-day crop, demanding light and heat. Rice differs from other agricultural crops in its ability to grow and develop in water. Without sufficient water, rice cannot produce high yields. Rice is hygrophytic, that is, it grows in waterlogged conditions, but its water requirements change depending on the development periods. Rice does not need a water layer during the germination period. The same is true during wax ripening and full ripening. Water is needed for seed germination, but a water layer in the soil can only lead to the development of the shoot, but the roots do not develop, therefore, after the seed germinates, water is drained from the field until it fully sprouts (until the 1st leaf is formed). After the rice sprouts, the water layer rises to a height of 15-20 cm. For better development of the root system and lateral branches, the water layer is reduced during the budding period until it is absorbed, but it should not dry out. During this period, fertilizers are applied, and then the water layer is again raised to a height of 15-20 cm until the wax ripening period. The water layer creates favorable conditions for the thermal regime of the rice field, that is, it improves the daily fluctuations of air temperature, has the effect of leaching on saline soils,

destroys weeds, protects the soil from erosion, and also creates conditions for planting rice in the same field for several years. Rice is very demanding on heat. The temperature of the water at different stages of its development is of great importance for the development of rice. The lowest water temperature for seed germination is 10-14°C, but at this temperature the seed germinates for 12-15 days. At a temperature of 20-25°C, the seed germinates in 5-7 days. Low temperatures have a negative effect on the plant at all stages of the plant's growth, especially during the flowering period. The optimum water temperature for rice is 30-33°C. When the temperature is 40°C and higher, flowering and germination processes are disrupted. Continuous water flow serves to reduce the water temperature and increase rice yield. It has been found that during the rice paddy stage, lowering the water temperature to 20-22°C by means of sprinkler irrigation or running water leads to an increase in the number of rice shoots. In the formation of rice yield, the number of sunny days, that is, the amount of illumination, is of great importance. Rice is a short-day plant, many varieties require 11-12 hours of light. Rice varieties grown in Uzbekistan develop well with 9-12 hours of light. Compared to other cereals, rice has a much higher photosynthetic activity, with the maximum concentration of chlorophyll occurring during the transition to the vegetative state. Low photosynthetic activity in rice occurs during flowering and wax ripening. The highest photosynthesis intensity is observed during the period of grain ripening ~ grain ripening. Rice is not demanding on soil conditions, it can be grown on swampy, meadow, peaty, saline and brackish soils. Loamy soils brought from river banks or flowing, with a heavy mechanical composition and a sufficient amount of organic matter are considered good. Rice reacts differently to soil salinity. Young plants die when the initial salt content is 2-3%, including more than 3% sodium chloride and more than 0.1% sodium carbonate. The soil reaction pH is 5.6-6.5 - very good. (Zaurov) Rice is demanding on the amount of nutrients in the soil. If the amount of nitrogen is insufficient, rice will not set well, the size of the panicle will decrease, and grain yield will be low. It requires a lot of nitrogen from germination to tillering. Lack of phosphorus leads to disruption of metabolic physiological processes, the leaves become very small. Of all the nutrients, rice takes a lot of potassium with it. From the period of emergence to the flowering period, the rice plant requires a lot of fertilizers. For the formation of one ton of grain, an average of 20-24 kg of nitrogen is required, 8-13 kg of phosphorus and 25-32 kg of potassium are required. In addition, rice requires small amounts of sulfur, iron, zinc, copper, potassium, molybdenum, and manganese minerals.

When using organic fertilizers, it is of great importance to regularly enrich the rice fields with organic matter in order to increase productivity. Organic fertilizer (not fresh) is evenly spread over the field during autumn plowing or in early spring at the rate of 15-20 tons per hectare. The periodic use of manure, plowing green manure, creates the opportunity to save on mineral fertilizers.

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