

BARLEY PLANT AND ITS IMPORTANCE IN AGRICULTURE

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Abstract

Barley is an expensive crop. According to the data provided by FAO in 2020, the area of barley was 55.7 million ha, and the yield was 24.4 s/ha. Barley is distributed and cultivated in most regions of the world. It is grown everywhere from cold regions, deserts, semi-deserts, mountainous regions, for example, Tibet, Pamir, Caucasus. Barley is widely cultivated in Central Asian countries, including Uzbekistan. It contains antibiotics, vitamins, proteins, trace elements, mineral salts, enzymes, amino acids. Most of these are important antibiotics and vitamins. Barley plant is divided into spring and autumn barley types depending on the period of planting. In Uzbekistan, spring tradition yields 4-7 s/ha in dry farming and 35-40 s/ha in water. Autumn barley is common in irrigated lands. It is mainly grown as fodder and cereal crops. In the national economy, barley is used as a raw material for the beer industry due to the low content of food, feed, and protein in its grain for various purposes.

Keywords: barley, *Hordeum*, poaceae, plant, leaf, stem, root, soil, fertilizer, dry land, irrigated land, food, productivity.

Introduction

Barley (*Hordeum*) - is a group of annual and perennial herbaceous plants belonging to the family of grains (poaceae). In agriculture, barley has been planted in Central Asia (south of Turkmenistan) since the 12th-10th millennium BC. Homeland of Old Asia. Planted barley (*H. sativum*) is grown in many countries of the world. According to their biological characteristics, barley is divided into spring and autumn types. Barley root cluster is tuberous: the main root develops in the arable layer. The stem is stalked, 4 - 6 articulated, 30 - 35 cm to 130 - 134 cm tall. The leaf consists of a leaf blade, leaf sheath, tongue and earlobes, wider than the leaf of other grain plants. Ball spike. The fruit is a veiled or glabrous grain, yellowish in color, light brown and light gray. 1000 grains weigh 20 - 60 g. The growing season of spring barley is 55-110 days, and autumn is 180 - 210 days. Barley is the fastest growing grain crop. Barley is a self-pollinating plant, the flower is closed. Grass germinates at 4 - 5 °C, favorable temperature for growth is 22°C. Barley is a heat-resistant plant that improves air dryness. In the national economy, barley is used for various purposes (raw materials for food, fodder, beer industry). The grain contains 13% water, 2% protein, 64.6% carbohydrates, 5.5% fiber, 2.1% fat, 2.8% ash. 1 kg of barley grain is equal to 1.2 nutritional units. In the dry farming region, spring barley is grown, and in irrigated lands, high-yielding autumn barley, which can enjoy autumn-winter and green moisture well, is grown. It ripens very early before the onset of dry heat (late March - June). It yields up to 50 s per hectare in irrigated received high praise depending on the biological characteristics of the plant, its quick ripening, its ability to be planted in the northern regions, its resistance to drought and its resistance to salt. Therefore, it can be planted in ecologically difficult conditions. It is grown everywhere from cold regions,



deserts, semi-deserts, mountainous regions, for example, Tibet, Pamir, Caucasus. It contains antibiotics, vitamins, proteins, trace elements, mineral salts, enzymes, amino acids. Most of these are important antibiotics and vitamins. Depending on the period of planting, it is divided into spring and autumn barley types.

Spring barley is an important food, fodder - hay and technical crop. Barley groats and flour are made from its grain. Barley flour can be added to 20-25% wheat or rye flour and used in bread making. On average, the grain contains 12% protein, 5.5% gluten, 64.6% nitrogen-free extractables, 2.1% fat, 13% water, and 2.8% ash.

Spring barley is a good concentrate feed for pigs and horses. It has 1.2 kg of food unit per 1 kg of grain. This crop is the main raw material of the beer and alcohol industry. For brewing, especially two-row, full, large-grain, low-skinned (8-10%), high germination energy (95%). Barley is the oldest crop. In the territory of present-day Uzbekistan, barley was grown in irrigated agriculture 4-5 thousand years ago.

Spring barley occupies an area of 55.6 million hectares in world agriculture, the yield was 38 s/ha, and the gross yield was 153.5 million tons. In Uzbekistan, spring tradition is planted with alfalfa in a covered crop and clean form. It is also grown on irrigated land for its grain and blue mass. In Uzbekistan, spring traditions are planted on an area of 20,000 hectares on dry and irrigated lands. In Uzbekistan, spring tradition yields 4-7 s/ha in dry farming and 35-40 s/ha in water. In advanced farms, in water, the traditional yield reaches 65-70 s/ha. Spring barley is adapted to different soil and climatic conditions. Seeds begin to turn blue at a temperature of 1-2°C. The most favorable temperature for germination is 20-22°C. Lawns 8°C withstand cold. During flowering and ripening, the plant is damaged by even a little frost. During the full period of the grain, 1.5-3°C cold is also dangerous for the bud. Spring barley has different resistance to low temperatures. Very resistant to high temperature (40°C high). According to V.R.Zelensky, the mouths of barley leaves lose their closing properties after 25-30 hours at 38-40°C, spring wheat after 10-17 hours. The heat resistance of spring barley is due to its rapid ripening and rapid absorption of nutrients in the early stages of development. During the growing season, 1000-1500°C, for fast-ripening varieties, 1900-2000°C requires an effective temperature. 6-12 mm of water reserve is used in the soil to produce grains with a transpiration coefficient of 400 and 1 s. At the end of the most frequent water-tube period, it is necessary to spike. At the most favorable temperature and soil moisture, the accumulation coefficient is 2.5-3.0, if the humidity decreases, this indicator decreases. In Uzbekistan, the productive barley variety is very resistant to high temperatures and drought. It is distinguished by the high water retention capacity of the leaf, high concentration of cell sap, and an abundance of chlorophyll. Spring barley likes fertile soils. It develops poorly in sandy and sandy soils. Peat soils are not suitable for it, pH = 6 - 7 is the most convenient. The growth period lasts from 60 to 110 days, depending on the varieties.

In Uzbekistan, spring barley is grown in irrigated and dry areas. It is grown as a clean and cover crop on irrigated lands. In the irrigated lands for spring barley, the best predecessors include cotton, inter-row crops, legumes, vegetable crops, potatoes, and sugarcane. In dry farming, plows, peas are good predecessors for spring barley. Spring barley grows well in fertile, mechanically sandy soils with a soil environment pH of not less than 5.5. In Uzbekistan, fruitful barley and duvarak barley Temur varieties of spring barley are widespread.

Fields where spring barley is planted on irrigated lands are plowed in the fall at a depth of 25-27



cm. In dry farming, autumn plowing is carried out at a depth of 20-22 cm. In wind-eroded areas, the soil is treated with ploscores, which gives good results. If there is a lot of moisture in the soil, it is necessary to abandon the use of heavy-duty tractors. In order to prevent soil compaction, it is necessary to carry out several work processes in one go. Processing is carried out on the basis of giving a transverse or angular angle to the main soil treatment.

For planting, seeds that meet the requirements of the 1st grade, with a mass of 1000 seeds, a mass of 40 g, and a growth strength of not less than 80 % are used. In Uzbekistan, spring barley is planted very early, in February, at the beginning of March, when the ground ripens. Delaying the planting period leads to a sharp decrease in productivity. The rate of planting in irrigated lands is 4-4.5 million fertile seed/ga. In dryland, 80-110 kg/ha is planted in regions with moisture. Planting depth is 4-6 cm. Seeds are sown in moist soil. Spr-6, SZ-3,6, SZP-3,6 or seeder cultivator SZS-2,1, SZS-2,1 seeders are used when technological traces are left. Traces are left at 1800 or 1400 mm. In this case, 6-7 and 18-19 planting machines are attached.

The efficiency of mineral fertilizers used in irrigated conditions is high. Normal application of nitrogen, phosphorus, and potassium fertilizers in irrigated lands dramatically increases productivity and crop quality. With planting, 15-20 kg of granulated superphosphate or nitrophoska is added per hectare at the expense of 'glazing substances. The annual rate of mineral fertilizers for spring barley in irrigated lands is nitrogen 120-150, phosphorus 80-100, potassium 40-60 kg/ha. Fertilization of 15-20 t per hectare increases productivity by 8-10 s/ha. The addition of trace elements boron, molybdenum, copper, zinc has a positive effect on productivity. Before planting seeds, 10 g of boron, 30 g of copper, 18 g of manganese, and 12 g of zinc are added to 1 s of seed. P₄₀₋₆₀, K₃₀₋₄₀ kg are added per hectare in dry farming. P₄₀₋₆₀, K₃₀₋₄₀ kg are added per hectare in dry farming. Nitrogen fertilizers for beer barley are reduced by 30-40.

Autumn barley - winter hardiness is lower than that of winter wheat and autumn rye. Therefore, its planting regions are limited. In Uzbekistan, barley is also grown for food as an intermediate crop. Cultivation of autumn barley as a monocorm is of great importance in increasing forage production. On irrigated lands, autumn barley is also planted as a cover crop for alfalfa. Autumn barley is distributed in regions with mild winters. Its main cultivated areas are located in Central Asia, the Caucasus, Ukraine, Russia and the south of Kazakhstan, in European countries. In Uzbekistan, for many years, the autumn and spring barley fields were almost equal, now autumn barley is widespread in irrigated lands, spring barley is often planted with alfalfa as a cover crop. Autumn barley spring is twice as fruitful as barley, but its low winter hardiness limits the possibility of planting autumn barley instead of spring barley. Autumn barley ripens earlier than winter wheat, rye, triticale. In the conditions of Uzbekistan, the heat will ripen before the onset of heat. Therefore, it is less affected by soil and air drought. It makes good use of moisture in autumn, winter, spring. Due to the large grain and low protein content, autumn barley gives the best beer grain. The nutritional value of straw and straw is high, 33 nutritional units are stored in 100 kg of straw. Autumn barley seeds 1-2⁰C. begins to germinate at a temperature. The optimal temperature for seed germination is 15-20⁰C. It withstands 12-14⁰C frost in the budding phase. In the absence of snow cover, when the plants do not have time to collect -7-8⁰C cold is also dangerous for autumn barley. In Uzbekistan, biological autumn, spring and two-season (duvarak) varieties are planted in autumn. But the most winter-hardy biological autumn varieties are then round varieties. Spring barley varieties have low winter resistance. Plants that are well collected and rooted in irrigated



lands before winter hibernate well in the conditions of Uzbekistan.

Autumn barley is resistant to drought and heat compared to winter wheat. Therefore, in spring, winter barley often gives a higher yield than winter wheat. The most demanding period for moisture is from tubing to spike. Water-demanding, limited field moisture capacity (CHDNS) in the soil during the growing season gives a high yield of at least 70.

Autumn barley is a long day plant. On a short day of light, its spike pull is delayed and delayed. The healing period is 0-2°C, 40-45 days. Tezpushar is harvested 10-15 days earlier in the conditions of Uzbekistan compared to winter wheat. In the conditions of Uzbekistan, autumn barley ripens from the first half of May to the first ten days of June. This feature allows two crops to be grown on irrigated lands.

Autumn barley is more resistant to salt and salt than winter wheat. It can also be grown in soils near seepage waters. Gives a high yield in fertile, porous, structured soils. Lands with a heavy mechanical composition, clay, swampy, very saline are unsuitable for autumn barley. A soil environment pH=6-7 is acceptable for barley.

When grown on irrigated lands, autumn barley is especially demanding on nutrients, especially nitrogen. The best predecessors for autumn barley are cotton, legumes, alfalfa, vegetable crops. In dryland, the highest yield is obtained when autumn barley is planted in a clean plow. During fertilization, it is recommended to apply 120-150 kg of nitrogen, 80-100 kg of phosphorus, and 40-60 kg of potassium mineral fertilizers per hectare of irrigated land. Giving 100 kg of phosphorus fertilizer per hectare with planting gives good results. Applying N₃₀, P₄₀, K₃₀ kg per hectare of autumn barley in dryland increases grain yield by 30-40. In the irrigated lands, the areas where autumn barley is planted in the fall are plowed to a depth of 25-27 cm with plows, 20-22 cm in dry land, and one-way harrowing is carried out. The driving depth is taken into account by the depth of plowing before planting the previous crop and the predecessor crop. Seeds are required to meet the requirements of grades 1 and 2 and to be treated with fungicides. In irrigated lands, autumn barley is planted in the second ten days of October in Samarkand, Jizzakh, Tashkent regions, in the first ten days of October in the Republic of Karakalpakstan, Khorezm regions, and in the last ten days of October in the southern regions. Planting autumn barley early or late than the optimal planting period will cause the plants to get cold, thinned, and the yield will decrease in winter. In dry farming, planting in the last ten days of October is the optimal period. Planting method – planting in narrow rows (7-8 cm), rows, intersecting rows. The method of cross-planting rows in open fields gives good results. Planting depth is 4-6 cm. Planting rate is 4-4.5 million to seed. If planting is delayed beyond the optimal period, the planting rate will be increased by 10-15. 2-2.5 million per hectare of autumn barley in dryland. germinating seed is planted. Autumn barley is fed twice with nitrogen fertilizers in early spring. The first is 60-70 kg/ha in early spring, and the second is 50-60 kg/ha at the beginning of the tubing phase. Feeding with nitrogen fertilizers is combined with precipitation or watering. Against weeds, Granstar is used at the rate of 15-20 g per hectare in March. Harvested grains are harvested when they are fully ripe.

Conclusion

Barley plant is one of the most valuable and ancient plants. It is mainly grown as fodder and cereal crops. In the national economy, barley is used as a raw material for the beer industry due to the low content of food, feed, and protein in its grain for various purposes. Barley is divided into



spring and autumn barley types depending on the period of planting.

The plant has received high praise due to its biological properties, quick ripening, the fact that it can be planted in the northern regions, drought resistance and salt resistance. Therefore, it can be planted in ecologically difficult conditions. It is grown everywhere from cold regions, deserts, semi-deserts, mountainous regions, for example, Tibet, Pamir, Caucasus. It contains antibiotics, vitamins, proteins, trace elements, mineral salts, enzymes, amino acids. Most of these are important antibiotics and vitamins.

In Uzbekistan, spring tradition yields 4-7 s/ha in dry farming and 35-40 s/ha in water. Autumn barley is common in irrigated lands.

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