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**Barley (*Hordeum vulgare* L.)**

is a widely diffused crop in most parts of the world for thousands of years because it can be grown in different environments, and for this reason the original homeland of barley in the world is not known. Some scientists believe that the origin of barley is in Iraq and the Levant because the inhabitants of these regions used to grow barley extensively and intensively, then its cultivation spread to all countries of the world. There are those who believe that its original homeland is Western Asia, and others believe that its homeland is Ethiopia because of the abundance of wild plants there. There are also wild types of barley on the Tibetan Plateau. The Middle East is the main homeland for barley cultivation because it was grown in this region before the sixth millennium AD. The wild type *Hordeum spontaneum* of barley is the origin of the cultivated type *Hordeum vulgare*. There are two main theories about the origin of barley: the Eastern theory, and this theory is believed to be important in barley cultivation. The theory says that hexagonal barley originated before double-row barley, based on the fact that the basic evolutionary process in cereals is moving towards reducing parts. The flower and its extinction, in addition to the fact that the barley found in Tibet was six-row barley, in addition to other types found in Egypt and Switzerland, all of which are accustomed to six-row barley. As for the second theory, it is the Western theory, and it is also supported by a number of interested parties. The theory says that two-row barley originated before six-row barley, based on the fact that two-row barley was found in the Middle East and the inability of six-row barley to adapt to the surrounding environmental conditions. Also, the habitat of barley at the present time is not important because scientists have studied what barley growth needs in each environment and have produced varieties with high production in each environment in which barley was planted to produce what humans need from grains and what animals need from green and dry fodder, as well as obtaining quality in the production of barley grains.

**Benefits and uses of barley:**

**First:** Barley plants are used as green fodder or hay and silage are made from them. Barley may be used as a fodder mixture with legume crops.

**Second:** Barley grains are widely used as a fodder material, as it is included in the feed of cows, sheep, horses, birds and other animals.

**Third:** Flour is extracted from barley grains and is used to make bread and biscuits after mixing it with wheat flour at a rate of 20 to 25%, because barley bread alone is of low quality and dries quickly. There are other uses for barley grains, such as peeled barley grains obtained from large seeds.

**Fourth:** Barley seeds, especially two-row barley, are used in the manufacture of good quality beer, because it is characterized by a low percentage of husks, 8% less than six-row barley.

**Fifth:** Barley straw or hay is used in animal feed, especially non-milking cows, as a filling fodder material.

**Sixth:** Barley has medical uses.

**Seventh:** The presence of barley in the agricultural cycle is important because it limits the spread of the halok plant, as its roots secrete a substance that encourages the germination of the parasite, whose growth dies due to the lack of a suitable host for its life.

**Eighth:** The importance of barley lies in its chemical composition. A barley grain contains 13% water, 12% protein, 64% carbohydrates and 2.8% ash, and 2.1% percent fiber. Its seeds also contain levels of dietary fiber and selenium higher than wheat, in addition to an amount of protein. Barley also contains amino acids that are important for humans and a group of vitamins, the most important of which are vitamin B, potassium, calcium, magnesium, phosphorus, iron, and zinc.

#### **Suitable environment for growing barley:**

Barley is grown in different environments, as it is grown in cold, moderate and hot regions, so its cultivation is widespread in these environments. Barley is grown in Iraq as a winter crop and it grows in most soils. Its cultivation is more successful in clayey, calcareous or sandy soils that are light and low in elements. It needs less water than wheat and oats, as barley is the most efficient in using and producing dry matter per unit of water consumed. Barley also tolerates salinity more than other crops, so we see that its cultivation is widespread in the central

and southern regions of Iraq due to its tolerance to salinity in the soils of these regions. It is preferable to cultivate it in large areas because this method increases production efficiency.

### **Cultivated area:**

Barley is one of the important cereal grass crops in the world and comes in fourth place after wheat, rice and yellow corn in terms of cultivated area. Barley has a high ability to adapt to environmental conditions, as it grows over a wide range of temperatures. Barley has been cultivated up to 70 degrees north of the equator in Sweden and Norway and up to 46 degrees south of the equator, and at different climatic altitudes that may reach 4,600 meters above sea level in the Ellis Mountains. The area cultivated with barley worldwide has reached about 65 million hectares, and global production has reached 140 million tons of grains at a rate of 2,300 kilograms per hectare. Europe is ranked first in the world in terms of the area cultivated with barley, accounting for 16% of the total area cultivated with barley worldwide, followed by Ukraine with 8%, then Australia with 7%, and Turkey with 6.5%. The area cultivated with barley in the Arab world is 6 million and 729,000 hectares, or about 21% of the total area cultivated with cereal grain crops, most of which are located in areas with rainfall rates of less than 300 mm annually.

**Planting date:** The date of planting barley in Iraq is usually different according to the varieties and the region in which it is grown. In the northern regions, barley is planted at the end of September or at the beginning of October, and in the central and southern regions, barley is planted during October. In general, barley is planted in most areas of Iraq during October and November, taking into account the time of vegetative growth and maturity to obtain the highest amount of green matter.

**Fertilization:** Barley needs appropriate amounts of nitrogen fertilizers, especially fodder barley, and the quantity and type of fertilizer are the factors that determine the amount of production. The amount of fertilizer must be added at the appropriate time because the incorrect amount and time lead to lodging and infection with fungal diseases. Nitrogen fertilizer must be added before planting and after each crop harvest when planting barley for green fodder. However, when planting it for grains, nitrogen

fertilizer should not be overdone. It is also preferable to add phosphate and potassium fertilizer before planting. According to the soil's need.

**the amount of the crop is that:** the barley crop may contain green fodder, grains and straw. This depends on the purpose of growing the crop. Barley generally produces two to four harvests during the season, and the average yield of green fodder from these harvests is between 20 and 30 tons per hectare. The harvest period may be from late November to early April, so that the plant height at harvest is about 40 cm.