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A Billionore Cash Crop: Hop-Shoots

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Abstract

Hops are the flowers (also called seed cones or strobiles) of the hop plant *Humulus lupulus*, a member of the Cannabaceae family of flowering plants. They are used primarily as a bittering, flavouring, and stability agent in beer, to which, in addition to bitterness, they impart floral, fruity, or citrus flavours and aromas. Hops are also used for various purposes in other beverages and herbal medicine. The hops plants have separate female and male plants, and only female plants are used for commercial production. The hop plant is a vigorous, climbing, herbaceous perennial, usually trained to grow up strings in a field called a hop field, hop garden (nomenclature in the South of England), or hop yard (in the West Country and US) when grown commercially. The first documented use of hops in beer is from the 9th century, though Hildegard of Bingen, 300 years later. Before this period, brewers used a "gruit", composed of a wide variety of bitter herbs and flowers, including dandelion, burdock root, marigold, horehound (the old German name for horehound, Berghopfen, means "mountain hops"), ground ivy, and heather.

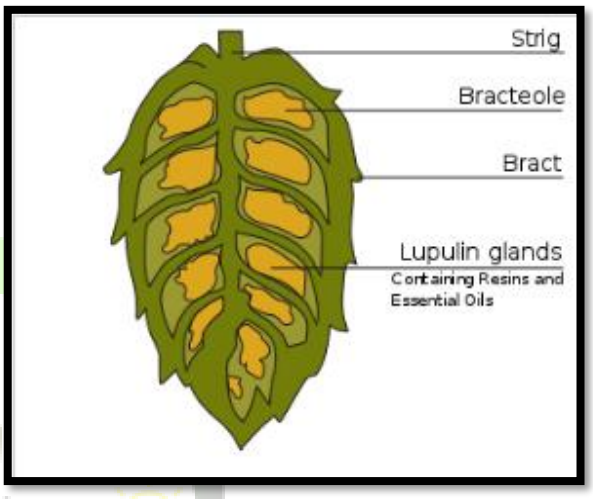
Keywords Hop shoots, Cannabaceae family, worlds costliest crop

Introduction

Hops are the green colour, cone-shaped flowers of the female hop plant. Hops are agricultural produce, the female flowers of a plant in the cannabis family. They are known as an extremely strange plant and native of North America. However, it isn't actually edible in simple way. These plants were considered weed before its peculiar properties were exposed, namely that it has specific antibacterial effects. Hops extract creates an unfavorable environment for most microorganisms, that is bad bacteria can't grow. One of the only varieties of bacteria that can endure is brewer's yeast, making it perfect for beer. And the bitter flavor of hops, normally not that desirable in food & beverage

manufacturer, serves well to balance out the sweetness of the beer. Hops are also used in brewing for their antibacterial effect over less desirable microorganisms and for purported benefits including balancing the sweetness of the malt with bitterness and a variety of flavours and aromas. Historically, traditional herb combinations for beers were believed to have been abandoned when beers made with hops were noticed to be less prone to spoilage. Many different varieties of hops are grown by farmers around the world, with different types used for particular styles of beer.

Hop flower in a hop



Cross-section drawing of a hop

As per report, fruit, flower, and stem of hop-shoots are all used in beverage making, beer making and for medicinal purposes like in making antibiotics. The medicine, which is made with the stem of this vegetable, has also been found to have a high curative effect in the treatment of Tuberculosis (TB). “It’s flower is called hop-cones or strobile, which is used as a stability agent in the making of beer. The rest of the twigs are used for food and medicine purposes,"

History

The first documented hop cultivation was in 736, in the Hallertau region of present-day Germany, although the first mention of the use of hops in brewing in that country was 1079. However, in a will of Pepin the Short, the father of Charlemagne, hop gardens were left to the Cloister of Saint-Denis in 768. Not until the 13th century did hops begin to start threatening the use of gruit for flavouring. Gruit was used when the nobility levied taxes on hops. Whichever was taxed made the brewer then quickly switch to the other. In Britain, hopped beer was first imported from Holland around 1400, yet hops were condemned as late as 1519 as a "wicked and pernicious weed". In 1471, Norwich, England,

banned use of the plant in the brewing of ale ("beer" was the name for fermented malt liquors bittered with hops; only in recent times are the words often used as synonyms).

World production

Hops production is concentrated in moist temperate climates, with much of the world's production occurring near the 48th parallel north. Hop plants prefer the same soils as potatoes and the leading potato-growing states in the United States are also major hops-producing areas; however, not all potato-growing areas can produce good hops naturally: soils in the Maritime Provinces of Canada, for example, lack the boron that hops prefer. Historically, hops were not grown in Ireland, but were imported from England. In 1752 more than 500 tons of English hops were imported through Dublin alone.

Medicinal value

The use of hop-shoot as an herb is also popular in European countries, where it is used for keeping the skin gleaming and young since the vegetable is also a rich source of antioxidants. The hop-shoot was discovered in the early 11th century and was used as flavouring agent in beer and then its use in herbal medicine and as a vegetable gradually.

The shoots have an acid called humulones and lupulones in them that is believed to be effective in killing cancer cells in the human body. The medicine improves the digestive system, provides relaxation for those with depression, anxiety, is an analgesic and cures insomnia also. The Hop crop is very useful when it comes to medicinal usage. Hop shoots are used to make antibodies that help fight against TB. Also, hop acids, namely, humulones and lupulones, have been shown to kill cancer cells along with blocking leukemia cells from further damaging the bones. Hop shoots help in cleansing the skin and giving it a gleam as they contain antioxidants.

Other uses

In addition to beer, hops are used in herbal teas and in soft drinks. These soft drinks include Julmust (a carbonated beverage similar to soda that is popular in Sweden during December), Malta (a Latin American soft drink). Hops can be eaten; the young shoots of the vine are edible and can be cooked similar to asparagus. A pillow filled with hops is a popular folk remedy for sleeplessness, and animal research has shown a sedative effect. The relaxing effect of hops may be due, in part, to the specific degradation product from alpha acids, 2-methyl-3-buten-2-ol, as demonstrated from night time

consumption of non-alcoholic beer. Hops are of interest for hormone replacement therapy and are under basic research for potential relief of menstruation-related problems.

Toxicity

Dermatitis sometimes results from harvesting hops. Although few cases require medical treatment, an estimated 3% of the workers suffer some type of skin lesions on the face, hands, and legs. Hops are toxic to dogs.

Climate and Land Requirement for Hop Shoots Cultivation in India

Hops begin to sprout from the ground in March, the stems are plentiful, though they are weak, and need to be pruned. Pruning consists of cutting the plant stems and new wood. The crops should be treated so as not to damage the old wood, which could lead to the wilting of the entire bine. Before planting, the land is carefully dragged and Hop poles and wires are set up. Normally, hop production is limited to regions above 35°N or S latitude. A dormant period with 5 to 6 weeks of near-freezing temperatures is required for optimal growth and Hop crowns can survive temperatures of –25°C or lower when insulated by snow or soil. Ideal soil types vary considerably, but all should be deep and well-drained to promote optimal growth of the large root mass of the Hop plant. The perennial root system of a well-developed plant can grow more than 4 m deep and up to 5 m laterally. This extensive root system is necessary for uptake and storage of the water and nutrients essential to facilitate rapid growth in the spring and summer months.

Cultivation and harvest

As hops are a climbing plant, they are trained to grow up trellises made from strings or wires that support the plants and allow them significantly greater growth with the same sunlight profile. The hop plant's reproduction method is that male and female flowers develop on separate plants, although occasionally a fertile individual will develop which contains both male and female flowers. Because pollinated seeds are undesirable for brewing beer, only female plants are grown in hop fields, thus preventing pollination. Female plants are propagated vegetatively, and male plants are culled if plants are grown from seeds. Hop plants are planted in rows about 2 to 2.5 metres (7 to 8 ft) apart. Each spring, the roots send forth new vines that are started up strings from the ground to an overhead trellis. The cones grow high on the vine, and in the past, these cones were picked by hand. Harvesting of hops became much more efficient with the invention of the mechanical hops separator,

patented by Emil Clemens Horst in 1909. Harvest comes near the end of summer when the vines are pulled down and the flowers are taken to a hop house for drying. Hop houses are two-story buildings, of which the upper story has a slatted floor covered with burlap. Here the flowers are poured out and raked even. A heating unit on the lower floor is used to dry the hops. When dry, the hops are moved to a press, a sturdy box with a plunger. Two long pieces of burlap are laid into the hop press at right angles, the hops are poured in and compressed into bales. Hop cones contain different oils, such as lupulin, a yellowish, waxy substance, an oleoresin, that imparts flavour and aroma to beer.

Hop Shoot: World's costliest plant being cultivated in Bihar's Aurangabad

Bihar takes a fresh leap in the agriculture industry with the entry of a new vegetable named 'Hop Shoots'. Amresh Singh, 38, a farmer has started its cultivation on a trial basis in Bihar's Aurangabad district. The crop is estimated to be sold at around a whooping cost of one lakh per kilogram. An Intermediate graduate from Hazaribagh's St. Columbus College, 2012, Amresh is the first farmer to start hop-shoot cultivation on 6000 sq. feet of land. The cultivation of 'hop-shoots' (humulus-lupulus) is going on under the direction of agricultural scientist Dr. Lal of the Indian Vegetable Research Institute at Varanasi.

As stated in a report on 'New Indian Express', Mr. Amresh said, "The vegetable has the potential to increase farmers' income by ten times as it costs 850 pounds in the international market which is about Rs. 85000 in the Indian market." He brought the vegetable's saplings from the Indian Vegetable Research Institute at Varanasi and planted it two months ago. "The delightful part is that more than 3/5th of its cultivation has happened successfully till now." As for Amresh, other than the cultivation of this rare crop he also farms many other medicinal and aromatic plants. He has taken the risk of experimenting with the cultivation of hop-shoot in Bihar and aspires to set an example for other farmers.

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