

Hop Shoots- The Vegetable of New India

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Introduction

Hops (*Humulus lupulus*) [2n=2x=20] are the green colour, cone-shaped flowers of the female hop plant belonging to the Cannabinaceae family having their roots of origin from North America. Its flower is called hop-cones or strobile. Fruit, flower, and stem of hop-shoots are all used in beverage making, beer making and for medicinal purposes like in making antibiotics. The medicines, which are made with the stem of this vegetable, has also been found to have a high curative effect in the treatment of Tuberculosis (TB). Hop acids, namely, humulones and lupulones, have been shown to kill cancer cells along with blocking leukaemia cells from further damaging the bones. Hop shoots help in cleansing the skin and giving it a shine as they contain antioxidants.



Climate and Soil

Hop production is limited to regions above 35°N or S latitude in both the hemispheres of the earth. A dormant period of 5 to 6 weeks near-freezing temperatures is required for their optimal growth, and Hop crowns can survive temperatures of up to -25°C or lower when insulated by snow or soil. Hops will grow successfully on a range of soil types from light sandy soils to clay (Neve 1991). However, a well-drained sandy-loam soil having pH 6.0-7.0, free from water logging is ideal for Hop cultivation. Hops are sensitive to wind. Strong winds can cause leaf damage and loss of cone-bearing laterals, both of which will affect bine health

and yield. Hot winds from flowering to maturity, can also negatively affect cone quality. So, if the site where you are growing the hops is prone to winds then make some arrangements e.g. shelterbelts, wind-breaks etc. for their protection.

Propagation

The hop plant consists of a crown of rhizomes below ground, annual climbing vines above ground, and flowers that are harvested as green cones. The common method of propagating the hop plants is to dig up the crowns early in the spring season and harvest rhizomes from the rootstalk. The rhizome is the perennial storage organ and ensures the plant's survival from one season to the next. They are cut into sections and planted directly in the hop yard, or potted and grown in the glasshouse. Rhizome cuttings are ideally 110–160 mm long with a diameter of 15–20 mm and a minimum with 2 nodes. They are also propagated from the runners (6-8 inches long having at least two sets of buds) that arise from the crown just below the soil surface. Softwood propagation by green cutting is also one of the effective methods to rapidly multiply hop plants.



Figure 1. Dormant rhizome cuttings enable the grower, to propagate from established crowns of high performing mother plants



Figure 2. Green stem cuttings are taken in spring and early summer can be an effective method of propagating large numbers of new plants during the growing season

Planting System

The most common training system used for hop production worldwide is the V-trellis and other systems are the low trellis (not widely used due to lower yield). Top height around the world typically varies between 4 m and 6 m for V-trellis, or 3 to 4 m for a low trellis. The length of conebearing laterals also differs by variety grown. Row spacing is 3-4 m and plant spacing is 1-1.5 m.

Growth Stages

The hop plant is annual above ground and perennial below. According to the German BBCH scale published in Meier (2001), the annual growth of the hop has nine stages. Which are:

1. Sprouting
2. Leaf Development
3. Elongation of Bine
4. Formation of Side Shoots
5. Flower Emergence
6. Flowering
7. Development of Cones
8. Maturity of Cones
9. Senescence (Start of Dormancy.)

Water Management

Hops are a deep-rooted plant, however, most of the feeder root system is located in the upper portion of the soil. For optimum yield and cone quality, the feeder root system needs to be kept moist during critical growth periods. In areas of moderate to low annual rainfall, spring/summer irrigations are essential to maintain adequate soil moisture.

Harvesting

Mature cones must be harvested, cleaned and dried in the shortest time possible to ensure optimum quality and storability. Depending on the range of varieties planted, a typical hop harvest period can be around one month. For optimum storability and quality, freshly harvested hops with a field moisture content of around 80% are dried down to 8–12% moisture. Above this target moisture content, hops are prone to breakdown, and below this level, they become brittle and suffer from increased oxidation (Madden and Darby 2012).

Other Uses

A fine brown dye is obtained from the leaves and flower heads. Essential oil from the female fruiting heads is used in perfumery. Average yields are 0.4 - 0.5%. Extracts of the plant are used in Europe in skin creams and lotions for their alleged skin-softening properties. A fibre is obtained from the stems is used to make a coarse kind of cloth. It is sometimes used for filler material in corrugated paper or board products but is unsuited for corrugated paper because of low pulp yield and high chemical requirement, or for production of high-grade pulp for speciality paper. The fibre is very durable but it is difficult to separate, the stems need to be soaked beforehand for a whole winter. A paper can also be made from the fibre, the stems are harvested in the autumn, the leaves removed and the stems steamed until the fibres can be removed. The fibre is cooked for 2 hours with lye and then hand pounded with mallets or ball milled for 2½ hours. The paper is brown.



Is India Ready To shift From Conventional Agriculture?

It takes immense time, hard work & zeal to adopt a change effortlessly. What is successful in the West doesn't necessarily guarantee its success in India due to varied climatic, economic and management practices. But few instances have proved that new adaptations in cropping can let people harness the profit in a better and elevated way. As a country India is not new to transitions, it has to try and develop new inventions which can ease the farmer's life and uplift their socio-economic status with careful planning and monitoring.

Miracles doesn't happen Outright

They take plenty of efforts, will power and zeal to achieve

So farmers need to take a risk at a small level supported by government intuitions to learn and inculcate new crops in their farm by ensuring proper marketing facilities. New crop new challenges new achievements new risks everything is new except the Indian farmer who is skilled enough to pour his blood and sweat in the soil to nurture & make it productive while earning a fortune.