

Extension Bulletin

Cultivation of Long pepper



National Research Centre for Medicinal and Aromatic Plants
Boriavi, Anand - 387 310, Gujarat, India

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by

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Preface

Use of the herbs as a medicine and food supplement is known to mankind since very ancient periods. There are evidences of herbs having been used for revitalizing body's system in almost all ancient civilizations - The Indian, Egyptian, Chinese, Greek and Roman. Whole world is once again turning to a natural and a more eco-friendly way of life. As a result burgeoning demand for Ayurvedic medicines have been witnessed in the recent years.

Long pepper is one of the herbs widely used in Ayurvedic and Unani systems of medicine particularly for diseases of respiratory tract. Its demand is growing very fast in Ayurvedic preparations as well as food supplements. Long pepper is a powerful stimulant for both the digestive and the respiratory systems and has been shown to have a rejuvenating effect on the lungs. It plays an important role in aiding the thermogenic response, i.e. the release of metabolic heat energy and also makes it a typical Ayurvedic complementary component whose benefit is to increase the bioavailability and enhance absorption of the other active ingredients by increased thyroid hormone level in the body.

Long pepper, which tastes pungent and sweet at the same time is perfect for Roman cookery, since they are fond of these two taste sensations. Its hot and sweet taste goes well with spicy cheese specialties or wine sauces. In India, it is mainly used in pickles (achar). It is also known and popular in parts of Africa, mostly in the Islamic regions of North and East Africa. It can be found in the complex spice mixtures of Morocco. It is also of some importance for the cuisine of Ethiopia, where long pepper is usually found in the traditional meat stews (wat) together with black pepper, nut meg, cloves and turmeric. Berebere- a classical Ethiopian spice mixture, which resembles Indian masalas used to spice mutton dishes. It is really a hot mixture, the main ingredient of which is long pepper.

Cultivation of this crop is expanding in large areas since it fetches handsome income in the hands of its cultivators and

also meets consistency of quality and continuous production. Cultivation practices presented in this bulletin is to provide available information to the farmers, which of course needs refinement in the future.

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Satyabrata Maiti

Introduction

Long pepper of commerce is the dried mature unripe fruits of *Piper longum* (Linn.). Roots and thicker stem portion at the base called "Piplamul" are also attributed to numerous medicinal values. Fruit as well as "Piplamul" are extensively used in many Ayurvedic preparations like "Pipaliyasavam", "Lohasavam", "Rasanadikashayam", "Chyavanaprasam", etc. It is used as carminative, stomachic, laxative, haematinic, anti-dysenteric, expectorant and analgesic.

The plant is a dioecious perennial creeper. Its lower leaves are broadly ovate, deeply cordate with big lobes at the base. Upper leaves are dark green and cordate with short petiole or nearly sessile. Female spike arising singly from leaf axil is cylindrical, short and stout. It gives rise to multiple fruit, which are shining dark green when immature and blackish green when fully mature. Male spike having no economic value, also arising from the leaf base is single, long cylindrical and wavy.

Commercial cultivation of the crop is distributed in West Bengal, Assam, Meghalaya, Maharashtra (Akola region), Orissa, Andhra Pradesh (Vishakhapatnam), Uttar Pradesh, Tamil Nadu (Anaimalai Hills) and Kerala. However, India imports a large quantity of long pepper from Malaysia, Indonesia, Singapore and Sri Lanka.

Climate

Long pepper is cultivated as a rainfed crop in Assam and Maghalaya and as irrigated crop in other parts wherever it is cultivated. It requires high humidity and frequent irrigation since it is a shallow rooted crop. The plant also requires partial shade for its good growth.

Soil

The crop thrives well in a variety of soils. It is cultivated successfully in laterite soils with high organic matter

content and water holding capacity, lime stone soil and well drained fertile black cotton soil. However, light, porous and well-drained soil rich in organic content is most suitable for its cultivation.

Land preparation

The field needs two to three ploughings followed by one or two harrowings and leveling considering the slope of land to facilitate drainage of excess water. The crop can not survive in water logging condition.

Planting material

It is propagated by vine cuttings. Three to five noded cuttings taken from any part of the stem serve as planting material. However, terminal shoots are usually used for planting. Rooting takes about 15-20 days after planting. Cuttings can be directly planted in the field or rooting can be initiated in the nursery before they are transplanted in the field.

Planting method

Planting of long pepper is done on the onset of monsoon in the month of May-June in West Bengal and in Kerala. About 60 x 60 cm spacing is maintained between row to row and plant to plant. If plants are to be raised first in nursery, best time for nursery preparation would be one month earlier than the actual planting time. In Maharashtra, planting is done in February end to middle of March. Planting is done in such a way that three to four nodes remain inside the soil and two nodes kept above the soil line. Sprouts start usually within 15-20 days of planting. Hard wood cuttings of *Sesbania grandiflora* or *Erythrina varigata* or both are planted near the sprouted cuttings of long pepper for providing support and shade. In south India, it is also successfully cultivated as an intercrop in irrigated coconut and arecanut gardens.

Varieties

Viswam is the only released variety in the country so far. The variety was developed by Kerala Agricultural University through clonal selection. It was recommended to grow as intercrop in irrigated coconut and arecanut gardens. It has prolonged flowering phase and bears stout, short and thick fruits. Un-ripened mature fruits are blackish green. The variety gives economic yield for about 240-270 days in a year. Fruits contain about 20 percent dry matter and 2.83 percent alkaloid.

Manuring

About 20 t per hectare FYM or any other organic manure is applied at the time of land preparation. In the subsequent years also a similar quantity of FYM or organic manure is to be applied before the onset of monsoon. No chemical fertilizer has been recommended so far in this crop.

Interculture operations

In the first year, weeding is required as and when necessary. Generally two to three weedings are sufficient. Once the crop grows and covers the field, no serious problem of weed is noticed.

Irrigation

Irrigation is utmost essential during summer months. One or two irrigations in a week depending upon the water holding capacity of the soil, is needed. Even in the monsoon period if there is a failure of rain for quite some time, irrigation has to be given. In irrigated crop, fruit production continues even in summer months.

Plant protection

Phytophthora leaf and stem rot and anthracnose are important diseases of long pepper. Spraying of 0.5 per cent Bordeaux mixture at 15 days interval and soil drenching of 1.0 per cent Bordeaux mixture at monthly interval reduce the loss caused by these diseases effectively.

Application of 0.25 per cent neem seed kernel extract or any other neem based insecticides as spray, is effective to control mealy bugs (*Helopeltis theivora*) damaging tender foliage and spikes.

Harvesting and yield

Vines start flowering six months after planting. Fruits take about two months to mature from its formation. Full-grown mature fruits are harvested before ripening when it is firm and blackish green. Harvesting of over-matured or ripened fruits reduce the quality of the produce as well as it does not break easily after full drying. In Kerala, three to four pickings are made depending upon the maturity of fruits. Yield of dry fruits in first year is about 100-150 kg per ha and it attains up to 750-1000 kg per ha in third to fourth year. Thereafter, yield starts declining and gradually becomes uneconomic after fifth year. Therefore, it is usually cultivated as a 4 to 5-year crop.

Besides fruits, roots and thicker basal stem portions are also collected before crop is abandoned. These are cut into small pieces of 3.0-5.0 cm long and dried. On an average about 500 kg roots are obtained per hectare.

Drying

Harvested mature un-ripened fruits are dried in the sun. It takes about 4-5 days for drying and fully dried fruit breaks easily. Fresh and dry fruit ratio is about 5:1. Dried fruits are stored in moisture proof container. Produce should not be stored for more than a year.

Chemical composition

Fruits contain volatile oil, resin, alkaloids (4-5% piperine) and a terpenoid substance. Root contains piperlongumine as major alkaloid in addition to piperine.

Economics

The crop gives about Rs. 25000-75000 net profit per hectare from second year of planting. At the terminal year profitability increases due to extra income from dried 'Piplamul'.

