

Black Pepper---A Cash Crop for Agro-Forestry in Bangladesh*

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Black pepper (*Piper nigrum*, Linn.) locally known as *gul marich* - is a highly prized spice with heavy demand in the western countries. Old records indicate that limited vines of the species were in Jessore and Sylhet districts. Large scale use of black pepper as a condiment and scope of its introduction for multiple use of land made the authors to initiate studies for cultivation and field studies in Bangladesh.

Trials were given to raise the vines from stem cuttings on trellis as well as on living support of available fruit trees. Different methods of raising cuttings were also evaluated. Growth, flowering and fruiting behaviour were also observed.

Because of limited stock, work on pollination mechanism and ratio of male and female flowers could not be undertaken.

But as a whole it appears to be a promising crop for introduction in Bangladesh.

গোল মরিচ একটি মূল্যবান মশলা যার ইউরোপীয় বাজারে রয়েছে প্রচুর চাহিদা। সিলেট আর যশোর জেলাতেও অল্প গোল মরিচ চাষের প্রমাণ পাওয়া যায়। মশলা হিসাবে প্রচুর চাহিদা ও এর চাষে জমির একাধিক ব্যবহারের সম্ভাবনা প্রবন্ধ লেখক দ্বয়কে বাংলাদেশে উহার চাষ সম্প্রসারণ সম্পর্কে গবেষণায় উৎসাহিত করে।

কিছু কাটিং বন গবেষণাগার নার্সারীতে মাচাং এবং বিভিন্ন ফলের গাছের গোড়ায় লাগান হইয়াছিল। কাটিং প্রস্তুতেরও বিভিন্ন পদ্ধতির উপর কাজ হইয়াছে। তাহাছাড়া গোল মরিচের ফল, ফুল ধারণ ও বর্ধনের ধারাও পর্যবেক্ষণ করা হইয়াছে।

কাটিং সীমিত মওজুদ থাকায় পরাগ সংযোগ ও তৎসংক্রান্ত অন্য কোন কাজ আর হাতে নেওয়া সম্ভব হয় নাই।

প্রাথমিক কাজ থেকে এটা নিঃসন্দেহে বলা চলে যে, গোল মরিচের চাষ বাংলাদেশে প্রচুর সম্ভাবনাময়।

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Black pepper (*Piper nigrum*, L.), locally known as "Golmarich", produces a highly prized spice with a great demand in the Western countries. The spice is produced from the fruits of the vine and available in two forms, black and white. Pepper is one of the most ancient crops cultivated on the Indo-Bangladesh Sub-continent and it has gradually spread to many parts of Asia. It is still considered as the king of spices in the world market. But with the introduction of chilli pepper to the Indo-Bangladesh Sub-continent during the late sixteenth century, people developed the taste for the stronger and pungent taste of chilli instead of the less pungent black pepper. The high position attained by the black pepper industry in the spice trade and its demand by the rich and developed countries is based on some traditions and its inherent qualities have been developed through generations of use.

As the spice is still in great demand in developed and rich countries, it has great potentialities of earning valuable foreign exchange through export.

Pepper belongs to the family *Piperaceae*. It is a genus of shrubs mostly vines or creepers and rarely herbs or trees, is found throughout the tropical and sub-tropical region of the world. About 30 different species have so far been reported from Indo-Bangladesh of which *P. nigrum* (golmarich), *P. betle* (Pan) and *P. longum* (pipul) are widely known and used by the people.

The plant requires a hot humid climate with temperatures in the range of 88°F. to 95°F. and an annual rainfall of about 100 inches fairly evenly distributed throughout the year. It can not withstand prolonged draught or water-logging. Generally, it prefers level land not much above sea level, but it can be grown upto an altitude of 3500 ft. The plant can be grown successfully in a variety of soils but clay loam, rich in humus and with a pH of 5.5 is preferable.

The soil and climatic conditions of Bangladesh are favourable for the large scale cultivation of this tropical plant as a cash crop for agro-forestry. Old records, however, indicate that black pepper plants grow in Sylhet and Jessore as homestead plants to meet local requirements.

In the year 1962 a few cuttings of black pepper were procured from the Hathazari Agriculture Farm, Chittagong. The cuttings were planted in the nur-

sery at the Forest Research Institute campus and a wooden trellis was erected for support. The cuttings, by 1965, became well-developed and many cuttings were made out of the stock plants for further propagation in nursery. Cuttings were usually made in earthen pots, filled with soil mixed with saw-dust and decomposed cowdung in the proportion 1 : 1 : 1. The survival percentage of the cuttings thus made was more than 50%, and within one year these cuttings became well established for transplantation. In 1966, a large number of cuttings were transplanted to trail on a trellis as well as under different host trees to observe the difference in growth, fruiting etc. on trellis and on the trees. The host plants selected for the work were jack fruit, mango and madar (*Erythrina* Sp.) trees. The stock plant of the nursery started flowering and fruiting in 1967. The flowering and fruiting behaviour was the main object for observation at the initial stage. The weight and size of the fruits were comparable to the products sold in the market. But the continuous observation of fruiting could not be taken on the plants as they were badly damaged 2-3 times by the devastating cyclones since 1969. The cyclone damage retarded fruiting and growth for a considerable period. Work was done during this period as to how best to prepare the propagating materials i.e. cuttings with a small number of nodes and the best media for raising the cuttings. The plants in 1976 regained the original vigour and started flowering.

During the period of cultivation no definite conclusions could be reached about the yield and quality of fruit due to natural calamities which disrupted the continuity of observations, but the vegetative growth and flowering observed for two to three years indicates that there is scope for its cultivation. It became also clear that the vines need to be protected from severe wind.

The growth of the cuttings on host trees as observed was quite healthy and luxuriant. Apparently there was no ill effect on the growth of the host plants. So, it appears that fast growing forest species with long rotations may be selected as host plants to cultivate *Piper nigrum* in selected forest areas of Bangladesh on a trial basis.

Because of limited stock, the pollination mechanism through rains or wind could not be established.

The ratio of male and female flowers, important for fruit production, is now under study. The vegetative growth observed and the periodic flowerings that occurred after the vines were battered by strong wind in the previous year, and the soil characteristics of the species, indicate the potentiality of cultivating this species in parts of Bangladesh both as a home-stead crop and as a crop in the forest with natural trees as hosts.

BIBLIOGRAPHY

1. Anon 1969. The Wealth of India—Raw Materials. Vol. -VIII : Ph-Re, CSIR, New Delhi. p. 99-115.
2. Brammer, H. 1971. Bangladesh Soil Resources-Soil Survey Project Report by FAO of UN, Rome. UNDP. AgL : SF/Pak. 6, Tech. Report-3. 209 p.
3. Heath, H. B. 1972. Herbs and Spices for Food Manufacture. Trop. Sci. 14 (3) : 245-260.
4. Kay, K. E. 1970. The Production and Marketing of Pepper. Trop. Sci. 12(3) : 201-218.
5. Purselove, J.W. 1972. General Agronomic Aspects of Spice Crops. TPI Confce. Proc. Spices. London. pp. 85-90.
6. Watt. George Sir. 1908. The Commercial Products of India. John Murray. London, pp. 896-901.