PRODUCTION OF QUALITY ROOTED CUTTINGS OF BLACK PEPPER THROUGHOUT THE YEAR UNDER NORTH-EASTERN REGION

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Introduction

Black pepper (*piper nigrum* L.) known as the "King of Spices" also called as "Black Gold" is the most important spice, which is indigenous to the tropical forests of Western Ghats of South India. It is one of the important and earliest known spices produced and exported from India. Being a vine crop, it requires a standard to be grown on it. Basically, black pepper requires a warm humid tropical climate but it has been found that this crop can be grown successfully in North Eastern region of India using arecanut or coconut palm as a standard, wherein these crops are being grown commonly in homestead gardens. Traditionally farmers use the runner shoot for establishing plantation, but planting in large area and field establishment of these cuttings are poor due to lack of good root system. These problems could be over come by the recently evolved "rapid multiplication" technique. Raising of rooted cuttings in poly bags is the technique that supercedes the conventional field nursery method for production of healthy rooted cuttings.

Propagation

Vegetative propagation of this crop is the normal practice. Cuttings are raised from runner shoots; originate from the base of the vine which strikes roots at each node. Cuttings from lateral branches reduce the number of fruiting shoots and produce short lived planting materials, which are bushy in nature.

The runner shoots of healthy and high yielding vines are separated in February/ March and cuttings of 2-3 nodes each without leaves are planted either on nursery beds or in polythene bags filled with suitable potting mixture. In recent years, a rapid multiplication method (bamboo method) has been evolved for raising quality planting materials. In off seasons also rooted cuttings are raised in green house under controlled atmosphere. In this direction under technology mission for integrated development of horticulture in North Eastern Region under Mini Mission-1 programme, work was initiated at Central Plantation Crops Research Institute (CPCRI), Research Centre, Kahikuchi, Guwahati, Assam to assess the possibility of producing quality rooted cuttings for the supply to the developmental agencies and farmers throughout the year.

Conventional method of propagation

Mother plants with regular high yielding habit and possessing other desirable attributes such as good yield, disease tolerance etc. preferably in age of 5 to 12 years are selected. Runner shoots from these vines are separated in February/March and 2-3 nodal cuttings are made. These are planted either in nursery beds or polythene bags filled with fertile potting mixture after trimming the leaves. Dipping the lower cut end in rooting hormone powder (Rootex/ Rooton) may be done to promote rooting and

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sufficient holes (10 to 15) may be provided at the base of polythene bags to ensure good drainage. Care should be taken at the time of planting to see that one node should be inside the potting mixture and another should be above the potting mixture. The cuttings after planting should be kept under good shade and irrigated frequently for proper rooting and growth. The cuttings will strike roots and become ready for planting in May-June.

In one year, 2-3 runners per vine are produced which may not be sufficient for large scale demand or to establish a large plantation. To solve this problem rapid multiplication technique was developed. Brief description of this method is explained below :

Rapid multiplication method (Bamboo method)

This method was developed by Indian Institute of Spices Research (IISR) Calicut. In this method, a trench of 0.75m deep and 0.3m wide having convenient length is made. The trench is filled with rooting medium (preferably top soil, sand and farm yard manure mixture in 1:1:1 proportion). Split halves of bamboos with septa with 8 to 10 cm diameter and 1.25 to 1.5m length are fixed at 45^0 angle on a strong support. The bamboos can be arranged touching one another. Rooted cuttings are planted in the trench at the rate of one cutting each per bamboo. The lower portion of the bamboos are filled with a rooting medium (saw dust/coir dust and farm yard manure in 1:1 proportion) and the growing vine is tied to the bamboo in such a way as to keep the nodes pressed into the rooting medium (Fig.1). When the vine reaches the top in about 3 to 4 months, the terminal bud is nipped off and the vine is crushed at about 3 nodes above the base, in order to activate the axillary buds. After about 7-10 days each vine is cut at the crushed point and removed from the rooting medium and each node is separated. After planting in the bamboo the first harvest of cuttings can be done after 3 to 3 1/2 months and the subsequent harvest at every 2 to 2 1/2 months interval. Such cuttings with the bunch of roots intact are planted in poly bags filled with rooting mixture (sand:soil:farm yard manure 1:1:1 proportion amended with 1g of *Trichoderma* per kg of substrate) and kept in a cool humid place. The shoots start developing in about 3 weeks and then the poly bags can be moved and kept in semi shade condition or Net house (Fig.2) and the cuttings strike roots and become ready for planting in the main field by 4 to 4 1/2 month.

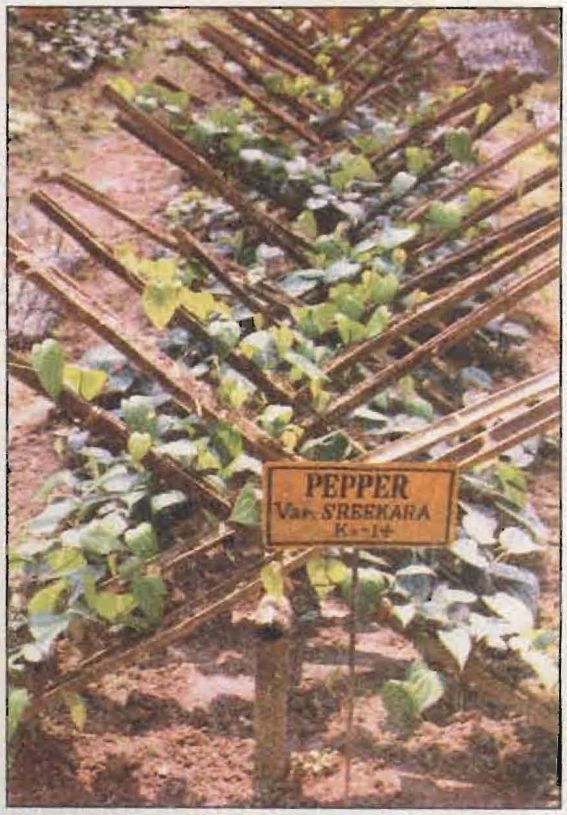

Fig. 1: Arrangements of bamboos in rapid multiplication method

Fig. 2. View of poly bags kept in the net house

Advantages of rapid multiplication technique

1. Multiplication is rapid (1:40)
2. The root system is well developed.
3. A better field establishment and more vigorous growth can be obtained as a result of better root system.

Multiplication through Green House

Green house is a structure constructed of plastic, polythene and fibreglass material having temperature control and ample light availability needed for propagating plants by seed, cutting and grafting. Under North Eastern region of India lower temperature (15-18°C) prevails during winter season which results in shoot emergence becoming very slow process in rooted pepper cuttings. For better shoot emergence and growth of pepper it requires optimum temperature of 25 to 30° C and relative humidity of about 80 to 90 per cent. Under green house optimum temperature and humidity can be provided for better growth of pepper rooted cuttings (Fig.3). After separating the cuttings from the runner shoots or vines with the bunch of roots intact, they are planted in poly bags filled with sand:soil:farm yard manure 1:1:1 proportion amended with 1 g of *Trichoderma* per kg of substrate. These poly bags can be shifted to green house and misting is to be provided daily to maintain humid and cool atmosphere around the cuttings for the early emergence of shoot and better growth of the cuttings. The shoots start developing in about 3 weeks and the cuttings strike roots and become ready for planting after 4 to 4 1/2 months.

Conclusion

Successful establishment of black pepper in the main field depends upon the quality of rooted cuttings. By adopting the above technologies available, quality rooted cuttings can be produced throughout the year and supplied to developmental agencies or farmers for planting purpose.

Fig. 3. View of the green house for multiplication of rooted cuttings

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