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A Comparative Note on Plant Propagules of Pepper Mint

Mentha (*Mentlia piperata* L.) is a small genus of aromatic perennial herbs belonging to family Libiate (*Laminaceae*) distributed mostly in temperate and sub-temperate region of the world.Pepper mint (hybrid between *Mentha spicata and Mentha aqnuatica*) cultivation is largest in USA, occupying an area of 1,00,800 acres, producing oil of market value of $ 86.4 Million (Chamber and Hammer, 1992).Incidentally the oil of pepper mint has around 52 to 55 per cent menthol, that is like dementholized oil but has a sweet,more pleasant delicate odour as compared to other mint species.

The pepper mint oil has fine odour and is an excellent carminative, antiseptic, preservative and gastro-stumelant properties. As a flavoring agent it is used in wide range of pharmaceuticals, confectioneries, alcoholic drinks, dental creams, and mouth washes. Its pleasing odour can influence behavior and induce alertness in patients.

Pepper mint plant consists of shoot having above ground main stem with big leaves and flowers, runners having crawling succulent stems with small leaves and under ground rhizomes (also reported stolons/suckers in India). And these are the three Propagules of this crop. Since seeds are not viable, the farmers use rhizomes for commercial cultivation of the crop. However, no report is available on pepper mint about the effect of various planting materials on rooting under semi-arid climatic conditions of Raichur. Hence, this study was undertaken at the Department of Horticulture, Regional Research Station, Raichur. Three propagules viz., stem , runner and rhizome cuttings were separated just before planting from three months old plants and these constituted the planting materials for the study. The selected stem cuttings (Preferably growing tips) were of 6-8 cm long, bearing 2-3 pairs of leaves per cutting, runner cuttings, the selected runners were 6-8 cm long, bearing 2-3 pairs of small leaves and rhizomes, 4-5 cm in length bearing 1-2 nodes per cutting. For each treatment 50 cuttings were employed. The experiment was laid out in Randomized block design with nine replications. The planting materials were planted in a polythene bags (5 X 15 cm^2 size) filled with soil: sand: FYM :: 1: 1: 1. All the recommended cultural practices were adopted for raising the crop. The planting was done during second week of November 1999.

Fifth day after planting observations on number of days taken for sprouting and 15 days after planting (DAP) percentage of successful cutting was recorded. Total number of fresh leaves and root length (longer and shorter) per cutting were recorded at 30 days after planting.

A perusal of the table indicated that planting materials differed significantly with respect to number of days taken for sprouting, percentage of success in rooting and shortest root length. Runnercuttings sprouted first (6.23 days) followed by stem cuttings (7.13 days) and rhizome cuttings (9.10 days). These findings were in conformity with those of Kattimani *et al.* (1999), in Japanese mint. Less number of days take by the runners for sprouting may be attributed to the presence of small, active and thick leaves, which are prime organs for photosynthesis and also source of plant hormone required for rooting. While stem cuttings carried large and thin leaves, resulting in more leaf area and evapotranspiration consequently took more days for sprouting. While rhizome cuttings consisted of miniature leaves, took more days for sprouting. Runner cuttings registered highest percentage of successful rooted cuttings (72.30) followed by stem cuttings (71.00) and rhizome cuttings (59.57)

Total number of roots was found to be highest in rhizome cuttings (8.67) followed by runner cuttings (8.44) and stem cuttings (7.78). Enhanced rooting in the presence of leaves were reported by Vadivel *et al.* (1980) and Kattimani *et al.* (1999) in Japanese mint. Rhizome cuttings produced highest fresh leaves (9.89) followed by runner cuttings (9.22) and stem cuttings (8.33) Longest root was observed more in stem cuttings (4.68) followed by runner cutting (4.09) and rhizome cuttings (3.37). Shortest root was registered more in runner cuttings (1.88) which significantly differed from stem cuttings (1.59) and rhizome cuttings (1.20). Similar results were also reported Kattimani *et al.*(1999).

Runner cuttings proved to be the best planting material for commercial multiplication . Runner as a planting material in pepper mint offers the following advantages:-

1. They remains viable for longer time compared to stem cuttings.
2. Planting can be done either vertically or horhorizontally in furrows.
3. Helps in using the otherwise wasteful parts since runners are not used in extracting essential oils.
4. These can be easily packed and transported with little damage in transit.

The study indicated that the peppermint can be propagated quickly by runner cuttings. This method of propagation can be used for large scale cultivation.

Table 1. Rooting of different propagules in pepper mint

Propagules	Number of days taken for sprouting	Percentage of successful cuttings	Total number of roots	Total number of leaves	Root length (cm) Longest	Shortest
Stem cuttings	17.13	71.00	7.78	8.33	4.68	1.59
Runner cuttings	6.23	72.30	8.44	9.22	4.09	1.88
Rhizome cuttings	9.10	69.57	8.67	9.89	3.37	1.20
$SEM_{\pm}$	0.82	0.60	0.66	1.00	0.46	0.08
CD at 5 %	2.46	1.82	NS	NS	NS	NS

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