

horticulture in the north east states to develop private entrepreneurship in floriculture for self employment of unemployed tribal youth of NE region.

The state tissue culture laboratory, Department of Horticulture, Govt of Sikkim is also propagating seven introduced hybrids in large-scale distribution to growers under technology mission. State Horticulture Department is also introducing two promising hybrids for propagation in its tissue culture laboratory.

Other introduced hybrids are under cultivation by some hobby growers and progressive nursery people in Sikkim, Darjeeling, Kalimpong, Shillong and adjacent areas for hobby growing and selling as plant materials.

Bottlenecks in India

Although there is a great potential for cultivation of cymbidium hybrids in the northeastern region and there exist a lucrative market both within the country and abroad the enthusiasm of further introduction of newly developed hybrids is lacking due to the complex quarantine procedures for introduction of planting materials, high import duties on floriculture planting materials, non availability of suitable introduced cymbidium hybrids with requisite characters for trade, lack of technology for commercial multiplication, lack of post harvest handling technology for cut flower export and lack of incentives, appropriate policies for exporters and commercial approach in cultivation.

Conclusion

Cymbidium hybrids by virtue of their unique position in cupflower trade are expected to be in limelight with its demand growing more than that of other cut flower.

Although the major aim for the development of cymbidium orchid industry in India should be export oriented, the domestic market should not be neglected as the demand for cut flower is likely to increase in the coming days. Further action needs to be taken in the following lines:

- i) Introduction of suitable modern hybrids considering the market demand.
- ii Instead of depending totally on the foreign hybrids it is better to take planned breeding programme by the Govt. and private research institutes, universities, and NGOs for developing quality hybrids.
- iii) The procedure for the introduction of hybrids should be simplified and the import of hybrids can be done easily with a through study.

Considering the above facts well planned programme may be taken by the Organization like national research centre for orchids (NRCO), National Horticultural Board (NHB), State Department of Horticulture of North Eastern States, NGOs and other private organization to popularize the large scale cultivation by introducing quality hybrids.

Introduction, Evaluation and Economical Potential of *Pogostemon cablin* Benth. in J&K (India)

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Key Words: *Pogostemon cablin*, Patchouli oil, Introduction, Jammu

Pogostemon cablin Benth. (Lamiaceae) is an important aromatic plant and its dried herb on steam distillation yields light yellow coloured essential oil known in trade as Patchouli oil. It ranks high among essential oils and is used extensively in perfumery and cosmetics. Currently, Indonesia is the largest producer in the world with a production exceeding 1500 tonnes of oil. India is producing a very meager quantity of patchouli oil and

is importing about 50 tons of pure patchouli oil besides 100 tonnes of formulated oil. In order to promote indigenous production of patchouli oil, efforts have been made to introduce and evaluate patchouli under sub-tropical climate of Jammu (J&K) region. Its first introduction and domestication attempts were taken up at RRL, Jammu in 2000. Five years data revealed that patchouli could be cultivated in Jammu as a perennial

crop under partial shade, in well-drained fertile soils and with assured irrigation during pre- and post-monsoon periods. It thrives well in different agro-ecological situations of Jammu with a temperature ranging from 5° to 35°C and annual rainfall ranging between 100-110 cm. It shows luxuriant growth with the advent of monsoon coupled with high temperature and high humidity. Maximum yields are obtained when the temperature during growth is around 28-30°C and an average humidity of 75 percent. Results show that it can grow successfully and produces quality leaves for at least three years. Best time for raising rooted cuttings is August-September with about 90-95 percent success. Shade is essential for raising nursery. Stem cuttings selected from healthy nematode free bushes 10-12 cm length, with terminal bud and a crown of 2-3 leaves

are suitable. These become ready for transplantation in about 8-10 weeks. The first harvest of the crop is obtained after about 5 months of transplanting and subsequent harvests are done after every 2 months depending upon the crop maturation. The yield of the oil from shade-dried leaves varies from 2.5-3.0 percent. The crop yields about 2t/annum of dry leaves and about 50-60kg/ ha of oil. For encouraging commercial production, efforts are underway to develop high oil yielding varieties, low cost agro-technologies, harvest management, distillation technology for better recovery of oil, accessible market facilities to farmers and oil purification to meet the market standard. Its commercial cultivation will create employment avenues to rural communities, also providing scope for increasing oil production and hence reducing the imports.

Recent Trends in Spice and Herbal Industry

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Key Words: Spices, Herbs, Introduction

Indian spices and herbs are the prime sources of the fabulous wealth and prosperity. There are more than 100 plant species grown in India which accounts for approximately 8% of the global trade in these commodities. History of usage of spices and herbs goes back to 3000 BC when most of these plants were used for embalming, perfumery, poison antidotes, cosmetics and medicines. Great voyages of Vasco-de- Gama and Columbus resulted in the introduction of many spices and herbs including chillies, vanilla, cinnamon and many aromatic plants. Black pepper was the first to enter into international trade. As a result, spices and herbs of all kind are now available worldwide for sale in global market. India occupies the leading position in international trade as exporter while Japan, USA and European Union are the leading spice and herb importers.

Five species viz., black pepper, capsicum, cinnamon, ginger, turmeric and their derivatives accounts for the major international market share but there are many more in the list. China and Vietnam are the major producers and exporters of the star anise. Indian cardamoms are still considered to be of the superior

quality in global market. India and Guatemala are the world's largest producers of cardamom. Cinnamon has been introduced in many tropical countries but commercial cultivations are confined to India, Indonesia, Srilanka and Malaysia. Cumin is another herb where India leads the market.

Realizing the importance of these plants, National Bureau of Plant Genetic Resources, New Delhi has made efforts in introduction of promising germplasm from source countries. These introductions have contributed more genetic variability in terms of yield potential and disease resistance. A Bulgarian cinnamon cultivar S-33, for high oil content and coriander-2 for more secondary branches, large umbel, bold and yellow green seed was introduced. In Cumin cv VC-19 for yield and cv Cumin-1 with bold seeds, resistant to wilt and *alternaria* blight was introduced. Ginger free from nematode infestation from Indonesia are few other examples.

Similarly in *Mentha piperata* (EC41911) procured from Russia with high herbage yield, 0.5% essential oil and 60 percent menthol content has been released