

Title Improvement of Litchi (*Litchi chinensis* Sonn.) in India
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Citation Program and Abstracts, 3rd International Symposium on Longan, Lychee and Other Fruit Trees in Sapindaceae Family, August 25-29, 2008, Fuzhou, China. 132 pages.
Keywords litchi; quality

Abstract

India is the second largest producer of litchi after China in the world. The total litchi production in the country is 0.5m tones from an area of 60,000 hectares with a productivity of 7-8 tonnes/ha. Productivity continues to be low and the causes identified for the low productivity are the narrow genetic base, non-availability of suitable superior cultivars, poor orchard management, insect and disease problems and poor pre- and post-harvest management of the fruits. The Indian litchi industry is based mainly on two groups of cultivars, Shahi and China, but due to their short harvesting period and time of ripening, there is an urgent need for improved cultivars. Commercial cultivation of litchi is based on a narrow genetic base. Commercial varieties are largely the result of selections, and, to achieve higher production with other desirable traits/characters, there is a need for broadening the genetic base of litchi. Genetic improvement of litchi has been largely through selection among the seedling populations or elite clones.

No systematic efforts for collection, conservation of litchi germplasm and their utilization have been made. Current commercial cultivars as well as some of the germplasm conserved at different locations are the result of selection and its perpetuation through vegetative propagation. Many cultivars like Swarna Rupa, Saharanpur Selection, Bedana, etc. are the results of selection from the existing litchi orchards and the seedling progenies. The germplasm has been conserved in field gene banks at Muzaffarpur, Ranchi, Sabour, Pusa, Kalyani, Pantnagar, Gurdaspur, etc. in India. These germplasm have also been characterized at these locations. Very few attempts have been made on breeding, thus information on genetics of different characters of litchi is scanty. Hybridization among litchi cultivars at Sabour resulted in the development of cultivar Sabour Madhu, where authenticity has to be proved after molecular characterization.

Breeding efforts are being concentrated on cross-pollination of selected cultivars with desirable traits. Various biotechnological are being explored for the development of new cultivars and their characterization. Pollen storage is also being attempted for cross-pollination purposes. All locally available, promising cultivars and selections will be collected, conserved and evaluated. Improved cultivars from exotic sources will also be collected and will be included in the evaluation programmes. There is widespread confusion and uncertainty concerning the identity of litchi cultivars. For germplasm characterization and reduction of redundancy in germplasm collections, biochemical and molecular marker techniques are being standardized.