

EDITORIAL

Role of Plantation Crops in Indian Economy: An Overview

Plantation crops are economically important perennial horticultural crops grown over large areas which are used, generally after processing and are in demand worldwide. These crops include beverages like tea, coffee and cocoa, industrial crop like rubber, oil crops like coconut and oilpalm, masticatory crops like arecanut and betel leaves, nut crops like cashew, palmyra palm and bamboo, an important plantation crop for construction, paper industry and many other uses. These plantation crops are usually high value commercial crops of greater economic importance and play a vital role in our Indian economy. The main draw back with this sector: of crops in India is that major portion of the area is of small holdings (except Tea) which hinders the adoption of intensive cultivation. Thus, 97.13 % coffee growers have holdings below ten hectares and for rubber, 82 per cent of the total area has an average size of 0.5 ha. only.

The plantation crops contribute to national economy by way of export earnings along with a slowly growing internal market. These crops occupy less than 2 per cent of the total cultivated area (i.e. 3.82 per cent of total crop land) but they generate an income of around Rs. 16,000 million or about 12.72 per cent of the total export earnings of ail commodities or 75 per cent of total earnings from the export of agricultural produce.

Production of the plantation crops is low when compared with many other countries. Crop losses due to pests and diseases are major production constraints of which diseases play a very crucial role in the productive output.. History reveals that coffee rust epidemic devastated an entire coffee yield in Sri Lanka during 1988, changing drinking habit from coffee to tea diseases caused by fungi, bacteria, viruses and phytoplasmas are major hurdles in improving the productivity of these crops. Enormous losses are caused every year due to these diseases, especially the soil borne and the insect transmitted ones.

Coffee (*Coffea arabica*) production in India is dominated in the hill tracts of South Indian states, with Karnataka accounting for 60% of the total area under coffee. Kerala ranks second contributing 21 % area and Tamil Nadu third accounting for 18%. Andhra Pradesh, Orissa, Assam and West Bengal account for 01 per cent. According to the Coffee Board of India (2009), when the disease is severe, loss of foliage up to 50 per cent and berries up to 70 per cent can occur. The quantification or reliable estimation of yield losses is a major challenge and requires trustworthy methods. Besides coffee leaf rust, black rot (*Koleroga noxia*) and root diseases are the major ones that cause crop losses.

Tea (*Camellia sinensis*) is grown in India over a wide altitude of climatic variables; an area of about 579 x 10³ ha is under tea, the major tea growing states being Assam, West Bengal, Tamil Nadu and Kerala. Other states such as Bihar, Himachal Pradesh, Karnataka, Orissa, Tripura and Uttaranchal also grow tea in small areas. Among the diseases, blister blight (*Exobasidium vexans*) extend up to 43% on annual crop basis and deserves special mention, in view of the loss it causes in South India and Darjeeling. Heavy attacks can result in death of the whole plants. Even with fungicidal control, 11.3% yield loss occurs in Sri Lanka. Recently, grey blight caused by *Pestalotropsis theae*, has emerged as a serious disease in south India. This wound pathogen gains entry through the cut leaves and stems in the shear or machine harvested fields. Black rot (*Ceratobasidium* sp.) and red rust (*Cephaleuros virescens*) are other significant disease problems in north-east India.

Coconut (*Cocos nucifera*) is an important plantation crop in India. The coconut palm is globally cultivated in around 93 countries and in India, it is grown in 2.1 million ha (2015-16) with a production of ca. 14×10^3 million nuts and an average productivity of 6.7×10^2 nuts/ha/year. This valuable plant is destroyed by several fungal, bacterial, viral, viroid and phytoplasmal diseases that not only deteriorates the quality of fruits but also reduce the vigour and yield of palms. The major devastating diseases prevalent on coconut in India are bud rot caused by *Phytophthora palmivora*, Tanjore Wilt (or) basal stem end rot caused by *Ganoderma lucidum*, Kerala wilt caused by phytoplasmas, grey leaf spot caused by *Pestalotiopsis palmarum*, stem bleeding disease caused by *Thievolopsis paradoxa*, leaf blight caused by *Lasiodiplodia theobromae*. In northern region of West Bengal the major devastating diseases prevalent on coconut are leaf rot (*Bipolaris halodes*), fruit rot (*Phytophthora omnivorum*) and bud rot (*Phytophthora palmivora*) diseases.

Areca nut (*Areca catechu*) production in India is the largest in the world, as per FAO statistics for 2013, accounting for 49.74 % of its world output and is exported to many countries. Within India, as of 2013-14, Karnataka produces 62.69 percent of the crop followed by Kerala and Assam. The major devastating diseases prevalent on arecanut during different stages of growth and development in India are Mahali or fruit rot caused by *Phytophthora palmivora*, stem bleeding caused by *Ceratocystis paradoxa* and foot rot caused by *Ganoderma lucidum*.

Hevea brasiliensis is the most important plant species yielding latex which forms rubber. In India, it is grown well in many parts at elevations ranging from about 250 to 1000 meters above mean sea level. Abnormal leaf fall caused by *Phytophthora palmivora* and powdery mildew caused by *Oidium hevae* are among the important diseases of rubber.

Betelvine (*Piper betle*) is cultivated in moist tropical and sub-tropical regions of India for its leaves, used for chewing as stimulant. Out of the total cultivable area under betelvine West Bengal constitute about 1/3 i.e. 18,203 ha. The serious diseases reported include a foot rot syndrome produced by a number of pathogens including *Phytophthora parasitica* var. *piperina*, *Phytophthora nicotianae* var. *parasitica* species of *Rhizoctonia*, *Pythium* and *Sclerotium rolfsii* Sacc. and foliage diseases like leaf rot caused by *Phytophthora parasitica*, *Phytophthora palmivora*, leaf spot and stem anthracnose caused by *Colletorichum capsici* and bacterial leaf spot and stem rot caused by *Xanthomonas campestris* pv. *betlicola*.

Plantation crops are high valued crops giving good earnings of foreign exchange. Emphasis should be given on the following aspects:

- Making use of available molecular maps in coconut and areca nut germplasm for evolving superior genotypes with desired trait(s).
 - Developing effective protocol for micro propagation of superior genotypes of coconut.
 - Molecular characterization of indigenous and exotic genotypes for their use in crop improvement.
 - Devising bio-control packages for important pest and diseases in plantation crops.
- Given the sustained efforts of scientists working ceaselessly in different organizations under ICAR, the amelioration of the problems stated is on the cards in near future.

Dr. Basudeb Dasgupta, FIPS
Former Professor
Department of Plant Pathology
Bidhan Chandra Krishi Viswavidyalaya
Mohampur 741252, West Bengal
(dasgupta.basudeb824@gmail.com)