



## Domestic quarantine umbrella to prevent spread of root (wilt) disease to be strengthened

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**C**oconut root (wilt) disease is now contiguously prevalent in eight southern districts of Kerala and sparse occurrence of this disease has also been reported from the remaining six districts. Root (wilt) disease (RWD) has also been reported from parts of Tamil Nadu and Karnataka, adjoining Kerala State. The disease is caused by Phytoplasma and transmitted by lace bug and plant hopper. ICAR-CPCRI has recommended strict quarantine regarding movement of coconut planting materials from disease affected areas to disease-free areas to contain the spread of the disease. Nowadays domestic

migrant labourers working in Kerala and hailing from Eastern and North-Eastern states carry coconut seedlings during their visit to respective home states. This should be viewed seriously taking into account the exploding population of domestic migrant labourers from other states and the possibility of spread of root (wilt) disease of coconut to those states which are hitherto disease-free.

It is estimated from a survey conducted during 2013 that there are over 25 lakh domestic migrant labour workers in Kerala today with an annual arrival rate of 2.35 lakhs. The study shows that over

75 per cent of the domestic migrant labourers come from five states, namely West Bengal, Bihar, Assam, Uttar Pradesh and Odisha. In this context, it is important to note that five states namely Assam, Odisha, Bihar, West Bengal and Mizoram contribute to 5% of the total area under coconut and contributing 6% of the total coconut production. Coconut Development Board is giving thrust to area expansion in non-traditional areas especially North-East and at present this area is free of root (wilt) disease of coconut.

If we consider the fact that migrant domestic labourers from Eastern and Northern Eastern states

visit their home states at least once a year and anticipating the fact that atleast 0.1% of them carry coconut seedlings while they travel to their home state, there is every chance to panic as they are most likely to carry root (wilt) disease affected seedlings to their home states. Even if a small population of 2500 migrant labourers annually carry coconut seedlings from Kerala there is likelihood of spread of root (wilt) disease to Eastern and North-Eastern India.

According to the survey conducted in Kerala during 1984, the disease causes an annual loss of 968 million nuts. In the contiguously diseased area, vast majority of palms have turned senile and unproductive to the disease. Hence, accidental introduction of root (wilt) disease in Eastern/North-Eastern India will be catastrophic to coconut cultivation in those areas, and will adversely affect the area expansion in non-traditional areas. Need for domestic quarantine to contain spread of root (wilt) disease of coconut was highlighted during early 80s. This article highlights the impact of accidental introduction of root (wilt) disease to Eastern/North-Eastern India and strategies to be adopted for strengthening domestic quarantine umbrella in Kerala specifically with regard to coconut seedling so as to arrest the spread of root (wilt) disease to those states.

### Plant Quarantine

The term 'Quarantine', a Venetian dialect, means simply forty i.e., 40 days. This was more commonly referred to the period of detention for ships arriving from countries subject to epidemic diseases like cholera, plague and yellow fever. The crew and the passengers were compelled to remain isolated on board for sufficient period to permit the diseases to develop and later be detected. Later on, the term 'Quarantine' came to be used for the detention and the practices

Table 1.

Seaports	Airports	Land frontiers
Bhavnagar - Gujarat	Amritsar - Punjab	Amritsar Railway Station - Punjab
Kolkatta - West Bengal	Kolkatta - West Bengal	Attari Railway Station - Punjab
Chennai - Tamil Nadu	Chennai - Tamil Nadu	Attari-Wagah Border- Punjab
Kochi - Kerala	Hyderabad- Telengana	Bangaon Benapol Border - West Bengal
Mumbai - Maharashtra	Mumbai - Maharashtra	Gede Road Railway Station - West Bengal
Nagapattinam - Tamil Nadu	New Delhi	Kalimpong - West Bengal
Rameswaram - Tamil Nadu	Patna - Bihar	Sukhia Pokhri - West Bengal
Tuticorin - Tamil Nadu	Tiruchirappalli - Tamil Nadu	
Visakhapatnam - Andhra Pradesh	Thiruvananthapuram - Kerala	
	Varanasi- Uttar Pradesh	

connected with it. In strict sense 'Plant Quarantine' refers to the holding of plants in isolation until they are believed to be healthy. Now, broader meaning of the plant

quarantine covers all aspects of the regulation of the movement of living plants, living plant parts/plant products between politically defined territories. Intermediate quarantine and post-entry quarantine are used respectively to denote the detention of plants in isolation for inspection during or after arrival at their final destination. In our country this mandate rests with Plant Protection Quarantine & Storage, Govt. of India under the Ministry of Agriculture.

### Plant quarantine methods

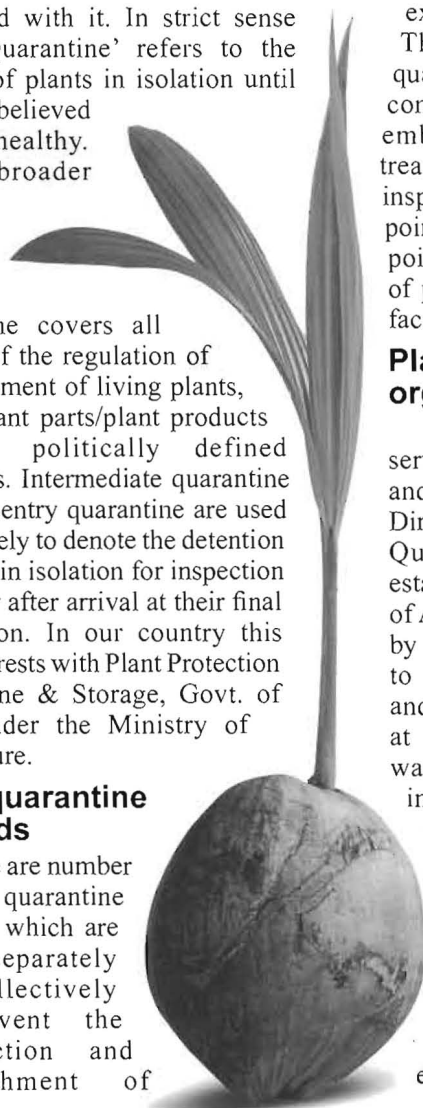
There are number of plant quarantine methods which are used separately or collectively to prevent the introduction and establishment of

exotic pests and pathogens.

The components of plant quarantine activities include complete embargoes, partial embargoes, inspection & treatment at point of origin, inspection and certification at point of origin, inspection at the point of entry and utilization of post entry plant quarantine facilities.

### Plant quarantine organizations in India

The plant quarantine service is centrally organized and administered through the Directorate of Plant Protection, Quarantine and Storage established under the Ministry of Agriculture which is headed by the Plant Protection Adviser to the Government of India and having its headquarters at Faridabad (Haryana). Seed was not originally included in the DIP Act, but because of the changing situation and to meet the current requirements, the Government of India passed the Plants, Fruits, Seeds (Regulation of Import into India) Order 1984 which came into effect in June 1985.



## Agencies involved in plant quarantine

The authority to implement the quarantine rules and regulations framed under DIP Act rests basically with the Directorate of Plant Protection, Quarantine & Storage, under the Ministry of Agriculture. This organization handles bulk import and export of seed and planting material for commercial purpose. Under this organization nine seaports, 10 airports and seven land frontiers are functioning. These are the recognized ports for entries for import of plant and plant material. The names and places of the ports and stations are given in Table 1.

The Government of India has also approved three other national institutions to act as official quarantine agencies, especially for research material.

### I. National Bureau of Plant Genetic Resources (NBPGR)

The NBPGR in New Delhi and its regional station at Hyderabad are the agencies involved in processing of germplasm, seed,

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plant material of agricultural, horticultural, and silvicultural crops of all the institutions of Indian Council of Agricultural Research (ICAR) functioning in the country. It is also responsible for quarantine clearance of seed and plant material received from International Agricultural Research Centers viz., ICRISAT, ICARDA, CIMMYT, etc. The quarantine clearance of all its exchanges was handled by formerly Central Plant Protection Training Institute (rechristened as National Institute of Plant Health Management, Hyderabad) of Directorate of Plant Protection, Quarantine & Storage, until July 1986. This authority was later passed

on to NBPGR in August 1986.

### II. Forest Research Institute (FRI), Dehra Dun, for forestry plants and III. Botanical Survey of India (BSI) for other plants.

*Quarantine inspection, treatment and certification procedures*  
**Inspection:** Inspection of plant material is an important part of plant quarantine procedure, and may be done both in the exporting country, before issue of a health certificate and after arrival to detect any pest or disease which may have become evident during transit. Publications like manuals and hand books on individual organisms of quarantine importance are prepared with illustration by each country / region to help inspectors.

### Certification

Phytosanitary or health certificate is a certificate which should accompany a plant or plant material or seed which is to be moved from one place to another place. This certificate indicates or certifies that the material under transit is free from pests or diseases. In addition, a pest-risk analysis has now become mandatory for the import of any planting materials from other countries.

### Strengthening domestic quarantine

Under the DIP Act, the Directorate of Plant Protection, Quarantine and storage has the responsibility to take the necessary steps and regulate the inter-state movement of plants and plant material in order to prevent the further spread of destructive insects and diseases that have

### General points for strict adherence

- Review the status of existing domestic quarantine for establishment of interstate quarantine check-posts to monitor movement of pests of significance as well as movement of planting materials especially in sensitive zones.
- Quarantine check posts should be invariably present in all inter-state bus terminal or railway stations to arrest the movement of planting materials.
- Review the national regulatory framework and develop a mechanism for distribution or sale of pest-free planting material within the country, by all agencies involved in the distribution of planting materials / seeds.
- Compulsory seed certification mechanism to ensure the supply of pest-free seed/planting materials.
- Develop an early warning system and rapid response team to curtail spread/ eradicate the recently introduced pests in an area so as to contain further spread and establishment.
- Amend the Biological Diversity Act 2002 for making provisions to check international/ interstate movement of invasive pests and to harmonize the Act with the quarantine and Export-Import (EXIM) regulations for implementation.

already entered the country. The sole object of enforcing domestic quarantine is to prevent the spread of these diseases from infected to non-infected areas. Currently, domestic plant quarantine exists in four diseases, wart (*Synchytrium endobioticum*) of potato from 1959, bunchy top (virus) of banana from 1959, mosaic (virus) of banana from 1961 and apple scab (*Venturia inaequalis*) from 1979. Most of the states in India have plant quarantine laws to avoid entry of plant pests and diseases.

In Tamil Nadu as per Madras Pests and Diseases Act of 1919, quarantine regulations are periodically enforced. e.g., cardamom mosaic disease prevalent in Anamalai area of Coimbatore District is absolutely free in Nelliampatti area. Hence, the movement of diseased plant material from Anamalai to Nelliampatti area is prevented through enforcing strict domestic quarantine. Furthermore, movement of potatoes from Nilgiris (Ooty) to other parts of Tamil Nadu as planting material was successfully curtailed by effective implementation of domestic quarantine and thereafter arrested the spread of cyst nematodes.

### Limitations

There are many limitations in implementing domestic plant quarantine in India due to the vastness of the country and the unrestricted movement of plant



A domestic migrant labourer at Thiruvalla railway station ready for departure. (Inset: *Proutista moesta*, a vector of RWD, feeding on coconut seedlings)

material from one state to another. As a result, diseases like bunchy top and mosaic of banana have spread to several other states. However, the wart disease, cyst nematode of potato, and scab of apple are restricted in the states where they were initially noticed.

In view of the difficulties in diagnosis of the root (wilt) disease of coconut, phytosanitary certification would not seem to offer adequate

protection. Moreover, as such there is no treatment available for the elimination of the pathogen from the planting material, the transportation of the seedlings from the disease endemic-areas need to be strictly prohibited as we know that strict quarantine is the only way to prevent the spread of this disease. Therefore, careful watch (domestic quarantine) and banning the movement of coconut seedlings from Kerala at least in the railway stations of disease endemic tract (Thiruvananthapuram to Thrissur) should be implemented so that the RWD will not reach North-East immediately. A sensitive vigil and awareness campaign to all railway authorities concerned would be the need of the hour. Red alert should also be made in Inter-State Bus Terminal complex restricting the movement of coconut seedlings to nearby states as well. Prevention would be the key factor to avoid entry of this debilitating malady (RWD) of coconut into the Eastern and North Eastern India. ■

Though DIP Act calls for effective implementation of domestic quarantine it is not scrupulously followed. Some of the key issues in coconut that warrants domestic quarantine are

- Movement of planting materials (seedlings/seed nuts) from RWD zones of Kerala to other States. In this process, the invasive pest, *Myllocerus undatus* prevalent in RWD zones could also be introduced in other regions.
- Movement of planting materials (seedlings/seed nuts) from Andaman and Nicobar Islands so as to arrest the introduction of foliar pest in coconut nursery, Chrysomelid beetle *Wallacea* sp. prevalent in Port Blair and Little Andaman to the main land and vice-versa as the Bay Island is more or less free from coconut eriophyid mite, *Aceria guerreronis*.