

USE OF OFF SHORE ISLAND FOR PLANT QUARANTINE

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Importance of Off Shore Island for Plant Quarantine has been brought to the notice of the authorities from time to time during two international symposia organised by Indian Phytopathological Society in 1966 and 1972. Resolutions were passed in the Plenary Session for consideration of the authorities to use Off-Shore Island for plant quarantine purposes in India. It is very essential since we are importing a lot of material from outside India for using in breeding from time to time for stepping up food production. Unfortunately, so far, nothing has been decided in this vital matter and we certainly hope and wish that something will be done in the near future.

Plant Quarantine set up in India

Like any other country, India also has plant quarantine regulations in the form of Destructive Insects and Pests Act which was passed as far back as 1914. The enforcement of the rules and regulations of DIP Act was the responsibility of the customs deptt. prior to the establishment of the Directorate of Plant Protection, Quarantine & Storage in 1946 under the Ministry of Food & Agriculture when this job was entrusted to this Directorate. Two categories of regulatory measures are at present in operation for controlling pests and diseases in the country. In the first case the aim is to prevent the introduction of exotic pests and diseases into the country or their spread from one State to another. The second category deals with suppression or prevention of spread of pests and diseases in localised areas within a State. The former derives its authority from the DIP Act of 1914 (which has been revised eight times and corrected upto 1967) while the latter is covered under the Agricultural Pests and Diseases Act of various States (Joshi, 1974).

Under the DIP Act rules governing import or movement of plants and plant materials, insects and pathogens are framed. There are, at present 24 plant quarantine stations in the country (eight at seaports, nine at airports and seven at the land frontiers). The responsibility for plant quarantine at present rests with the Directorate of Plant Protection, Quarantine and Storage which is mainly concerned with the enforcement of various regulations under the DIP

Act. As per the decision taken some years back by the Government of India, the Division of Plant Introduction at Indian Agricultural Research Institute, New Delhi has been charged with the introduction of Agri-horticultural crops. The Forest Research Institute at Dehra Dun looks after forest crops while the Botanical Survey of India deals with crops not covered by the above two organisations. Under the Division of Plant Introduction, there is a full fledged plant quarantine section comprising of Mycological, Entomological and Nematological units which are responsible for quarantine work in the respective fields. Currently the National Bureau of Plant Genetic Resources (ICAR) is looking after this important work.

International barriers with regard to the movement of seed and other plant material are disappearing very fast both because of greatly increased speed of transportation facilities and increased zeal by the scientists to utilize genetically improved plant materials as widely and quickly as possible. This is essential also in the present context when there is a widespread food shortage particularly in the developing and less affluent countries of the world. Efforts are being made everywhere to increase food production by introducing high yielding disease resistant varieties as well as improving the indigenous ones through breeding work. This large scale exchange and fast movement of plant material has greatly increased the danger of introducing new and serious diseases into new areas. There are innumerable examples in literature of new diseases being introduced into countries where they had not been known earlier. According to Stakman and Harrar (1957) "Although evidence is incomplete, it is known that over 50 per cent of major plant pests and diseases which cause a loss of over a billion dollars annually in U.S. were introduced from other countries. More than 200 fungi and bacteria, several nematodes and over 100 insects have been identified and traced to their point of foreign origin". For such a situation man himself has been his worst enemy as too often he has been responsible for taking destructive pests and pathogens across national barriers, like oceans and mountains and in the words of Stakman (1969) "Every continent and probably every country now pays direct or indirect financial tributes to weeds, insect, viruses, bacteria and fungi that would not now be where they are had man not sent or brought them there". This is not to suggest that we should not exchange and introduce new and promising exotic varieties. This is actually a must for rapid development of agriculture of a country. However, we have to be judicious and careful about the dangers that are associated with careless introductions.

Although, most countries now have plant quarantine regulations to prohibit or restrict the entry of foreign pests and diseases, by and large these have proved ineffective. Neergaard (1970) listed a number of reasons for this ineffectiveness, some of which are :

- (a) Seed-borne inoculum is generally inconspicuous and not easily detectable.
- (b) For many important seed-borne pathogens reliable laboratory seed health testing methods are not yet available.
- (c) Seed-borne inoculum of many pathogens is sometimes present only in extremely small quantities and hence their detection by the sampling procedures commonly employed may be inadequate.
- (d) In many cases, while framing the import regulations against plant pathogens, the policy is not clearly defined. A 'general' seed health certificate is required and no further guidance is given to the exporting countries. Such a certificate will not serve any useful purpose.

Diseases introduced in the country

Although our DIP Act was passed as far back as 1914, there are a number of serious diseases that have been introduced and are now well established in the country. Two most serious and dreaded diseases of potato i.e. wart (*Synchytrium endobioticum*) in Darjeeling District of West Bengal (Ganguly and Paul, 1953) and Golden Nematode (*Heterodera restochiensis*) in the Nilgiri hills of Tamil Nadu (Jones, 1961) were introduced from some European Countries and are now well established, causing huge losses in the respective areas. Bunchy top of banana which was introduced from Sri Lanka in 1940 (Varghese, 1945) in Kerala is taking heavy toll of the crop not only in Kerala but also in the States of Tamilnadu, Orissa, West Bengal and Assam (Mehta *et al.*, 1963). Similarly, banana mosaic, another introduced disease, is serious in Gujarat and Maharashtra States. Onion smut (*Urocystis cepulae*) has been known to occur in Karnataka State for many years now (Urs *et al.*, 1963). Bacterial black rot of crucifers which was recorded for the first time in India by Patel *et al.* in 1949, is another important disease which is considered by the authors to have been introduced through infected seed. Bacterial blight of paddy (*Xanthomonas oryzae*) which was recorded by Srinivasan *et al.* in 1959 from Maharashtra is now wide spread throughout India. There is clear evidence available that Maharashtra imported paddy seed from Indonesia where the disease has been known to occur for a long time. With the arrival of Taichung Native 1, a highly susceptible variety, the disease became epiphytotic during 1963 (Srivastava and Rao, 1963) in certain areas. Certain other diseases like black leg of sugarbeet (*Phoma betae*); glume blotch of wheat (*Septoria nodorum*); Soybean rust (*Phakopsora pachyrhizi*); fuscous blight of bean (*Xanthomonas phaseoli var fuscans*) and a number of others which has been recorded in the country during recent years have no doubt been introduced through infected seed material.

In the plant quarantine unit of Mycology Division, IARI a number of serious plant pathogens have been intercepted on introduced seed material (Ram Nath

& Lambat, 1971). The Race 'T' of *Helminthosporium maydis* which was responsible for the "Southern corn leafblight of maize" in U. S. A. was intercepted on seed of sorghum imported from U. S. A (Ram Nath *et al.*, 1973). These and several other diseases if introduced could be serious threat to our agriculture (Neergaard, 1969 ; Raychaudhuri, 1970, 1973 ; Lambat & Ram Nath, 1974 ; Raychaudhuri and Ram Nath, 1975).

National and International Cooperation

It is needless to repeat here that only way to improve the plant quarantine in India is the cooperation both at national and international level among various authorities engaged in this activity. At international level action on the following lines should be taken immediately ;

- (a) There should be free and rapid exchange of information among plant quarantine workers with regard to pests and pathogens prevalent in a particular country. For this, check lists of important and new pathogens should be prepared and exchanged. This should be a regular feature.
- (b) Seed health testing method, which are quick, reliable and at the same time sensitive enough to detect low percentages of infection, should be developed.
- (c) Health certificate issued by the exporting country should be based on proper inspection and critical laboratory testing. The Rome health certificate at present is too general and serves no purpose and in most cases is issued without any field inspection or laboratory testing. Authorities of various countries should try to make this certificate more meaningful.
- (d) International research projects on plant disease problems involving quarantine risks should be established for joint action.
- (e) There should be regular exchange of plant quarantine personnel to promote mutual understanding and effective enforcement of quarantine.

The authorities should without delay establish off shore plant quarantine stations away from the main land. This is essential because very often we have to destroy some very promising and useful plant materials due to certain objectionable pathogens associated with them.

Quarantine is not a guarantee against unwanted pests and diseases ; it is a mechanism to minimise the risks involved. The problem of quarantine is international in its nature and quarantine procedures have to be developed by cooperation. Unless quarantine regulations are scientifically sound and administratively feasible they cannot be successful and may even cause serious political and economic problems. Again the problems of quarantine are conti-

nuous and change continuously. They need periodic and intelligent consideration by the concerned authorities.

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