SOUTH PACIFIC COMMISSION

Quarantine Advisory Leaflet 9
1984

TARO

Latin name:	*Colocasia esculenta*
Family:	Araceae
Closely related plants:	*Alocasia, Amorphophallus, Cyrtosperma, Xanthosoma,* and many ornamentals such as *Anthurium, Caladium, Dieffenbachia, Monstera* and *Philodendron*
Trade commodities:	Corms or leaves for consumption
Propagating material:	Tops, cormels, suckers, tissue cultures, seeds or sterile seedling cultures

Quarantine Risks

Taro and other aroids can be affected by many extremely serious diseases and pests; examples are virus diseases such as alomae, bobone and dasheen mosaic (DMV), *Phytophthora* leaf blight, *Pythium* root rots, *Papuana* beetle and various nematodes. These diseases and pests are not present in all countries of the Region and every effort must be made to prevent their further spread.

It must be recognised that unless special precautions are taken corms for consumption can also be used for propagation.

Propagating material

There are three methods that can be used to transfer taro germplasm; in order of decreasing risk these are:

1. vegetative planting material from field plants; the whole range of diseases and pests mentioned above could be carried on such material.
2. plantlets from shoot-tips excised from field grown plants, growing in tissue culture media or vegetative material derived from them; until indexing procedures for all the viruses are available viruses are the main risk.
3. seeds or sterile seedling cultures; none of the viruses are known to be seed-borne so these should present minimal quarantine risk.

Mandatory commodity treatments should normally be carried out in the exporting country.

Fresh corms for consumption

Pacific Island countries would normally aim to be self-sufficient in root crops such as taro. But if it is essential that taro be imported it should be devitalised. The treatment is to remove the tops, wash the corms free of soil and fumigate with methyl bromide at normal atmospheric pressure as follows:

g/m³	time (hours)	temperature(°C)
48	3	10 — 15
40	3	16 — 20
32	3	21 — 26
24	3	27 — 32

Countries where aroids are not an economic crop

The same treatment can be used against insects where inspection shows this to be necessary. Corms should be free of soil and the tops trimmed to about 100-150 mm.

Fresh leaves for consumption

If intact, clean, unblemished leaves are imported it is unlikely that any serious fungal, bacterial and viral pathogens would be present.

If insect infestation is found fumigate with methyl bromide as above.

Propagating material

Vegetative planting material from field grown plants

This presents the greatest risk and should only be used if the pest status of taro is identical in the countries between which plants are to be moved. The method may also have application for the movement of taro within countries where disease or insect problems are localised.

The recommended procedures are as follows:

1. The propagating material 'tops' should be thoroughly washed and the outer sheathing petiole bases removed to expose clean corm tissue above the zone of previous root formation.
2. The 'tops' with petiole bases cut to approximately 200mm in height and with 5-10 mm of exposed corm tissue should be treated by either fumigation at normal atmospheric pressure with methyl bromide as for insects (above) or dipped in a mixture of carbaryl (0.1%), malathion (0.1%) and white oil (1%)for 30 seconds and then dry dusted with captan or thiram fungicide.
3. A hot water treatment (50°C for 15 min) should be considered if there is a risk that important nematodes (*Meloidogyne* spp., *Pratylenchus coffeae*, *Hirschmaniella miticausa*) may be present but this is not a method that can be used to provide virus-free planting material.

4. An accompanying phytosanitary certificate should state, precisely, the treatments given.
5. Preferably the material should be sent to an intermediate quarantine station to be grown for at least one crop cycle, checked for fungal diseases and insects and, if possible, examined by electron microscopy and indexed for dasheen mosaic virus (DMV) using serological methods and *Philodendron selloum* as indicator plant.
6. On arrival in the country of final destination it is advisable that the plants are maintained in post-entry quarantine for at least one crop cycle before being released for multiplication and/or field evaluation.
7. If intermediate quarantine is not used, leaves from plants held in post-entry quarantine, in the recipient country, should be sent for examination by electron microscopy.

Tissue cultures

The transfer of virus-indexed plantlets, derived from meristems and/or shoot-tips, excised from field grown plants and maintained in a tissue culture medium, is the safest way of making new introductions of established cultivars from most countries. The recommended procedures are as follows:

1. Meristems or shoot-tips, the meristem and one or two leaf primordia, excised from apparently disease-free plants are cultured on an artificial medium.
2. Plants grown from meristems and shoot-tips should be indexed for taro viruses using serological methods, indicator plants and by electron microscopy. Methods are presently available for DMV and are being developed for other viruses.
3. Plants sent to the importing country as sterile cultures should be maintained in post-entry quarantine for at least one crop cycle.
4. After the period of post-entry quarantine plants should be field-planted in isolation from other taro plantings and inspected regularly for disease symptoms before multiplication and/or field evaluation.

Seed

Neither DMV nor the bacilliform viruses are known to be seed-borne, and for this reason it is recommended that seed is the only form of germplasm that can be transferred from Papua New Guinea and Solomon Islands.

1. Seed should be selected only from plants without obvious symptoms of pest damage.
2. Only seed without blemishes should be despatched.
3. If seeds are to be sent directly to the importing country they should be fumigated with methyl bromide as follows:

g/m^3	time (hours)	temperature(°C)
48	2	10 — 15
40	2	16 — 20
32	2	21 — 26
24	2	27 — 32

or dusted with captan or thiram fungicide (0.25 g/100 g seed).

4. If seeds are to be sent to a seed health laboratory or to intermediate quarantine, chemical treatments are best applied after inspection and/or agar or blotter tests have been done and before despatch to the importing country.
5. Samples of seed should be grown in intermediate quarantine and seedlings indexed for DMV and examined for virus particles by electron microscopy.
6. After visual inspection of seed in the recipient country they should be germinated and the seedlings grown in post-entry quarantine for one crop cycle. This approach should be used for seed received directly from the exporting country or for that processed through intermediate quarantine.

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This leaflet gives general guidance only, quarantine action is subject to the legislation and regulations of individual countries of the Region.

Leaflets in this series include:

(1) Banana
(2) Beans
(3) Cabbage
(4) Citrus
(5) Cucurbits
(6) Orchids
(7) Peanuts
(8) Tomato
(9) Taro