



Pacific Pests, Pathogens & Weeds - Fact Sheets

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Taro rhabdovirus diseases (089)



Photo 1. The dark green distorted area on the leaf is typical of CBDV in the "male" taro, the common type of taro in the Pacific islands. This is not a serious disease as only 1-2 leaves are affected.



Photo 2. Bobone on the "female" taro variety Oga showing stunted distorted leaves (Malaita, Solomon Islands) after infection by CBDV.



Photo 3. Leaf infected with TaVCV showing the yellowing is along the smaller veins giving a feather-like symptom.



Photo 4. Leaf with symptoms of TaVCV. Note the yellow feather patterns are starting to decay as the leaf ages; this does not happen with *Dasheen mosaic virus*.



Photo 5. Feather like pattern on a leaf infected with TaVCV. Note the insects on the leaf are *Tarophagus* sp., which are likely to spread this virus.

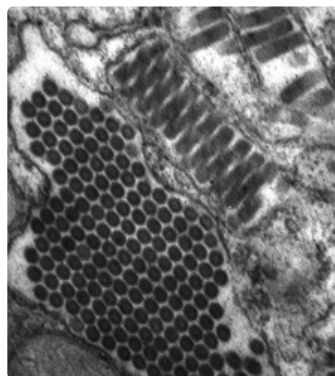


Photo 6. Rod-shaped virus particles of TaVCV in a taro leaf. The virus particles can be seen lengthways and end on.



Photo 8. The Philippine egg-sucking bug, *Cyrtorhinus fulvus*.



Photo 9. Nymphs, winged and wingless adults of *Tarophagus* species, the planthopper that spreads *Colocasia bobone disease rhabdovirus*, and most probably *Taro vein chlorosis virus*.

Common Name

Bobone and an unnamed disease

Scientific Name

Colocasia bobone rhabdovirus (CBDV) and *Taro vein chlorosis virus* (TaVVCV).

Distribution

Narrow. CBDV occurs in Papua New Guinea and Solomon Islands. TaVVCV occurs more widely. It has been recorded from Federated States of Micronesia, Fiji, New Caledonia, Papua New Guinea, the Philippines, Samoa, Solomon Islands and Vanuatu. There is evidence that TaVVCV in Fiji and Samoa are different strains.

Hosts

These viruses have only been found in taro.

Symptoms & Life Cycle

CBDV. This virus causes different symptoms depending on the variety of taro. In most varieties (so-called 'male' taro, which are susceptible to *alomae*, a lethal disease in Papua New Guinea and Solomon Islands) it causes small dark green distorted patches on one or two leaves and then healthy leaves are produced (Photo 1). In so-called 'female' taro (those that have resistance to *alomae*) the virus causes *bobone* (Photo 2). In this case, the plants are grossly distorted with short, thickened, twisted leaves that stay green. Gradually plants recover and leaves are produced that look healthy. (See **Fact Sheet no. 1.**)

TaVVCV. Symptoms of this virus are seen in all varieties of taro, in all the countries where it is present. The virus produces a yellow feather-like pattern similar to *Dasheen mosaic virus* (see **Fact Sheet no. 88**), but in the case of TaVVCV, the yellowing is much brighter (Photos 3-5). Also, as the leaf ages the yellow lines turn brown (Photo 4). Symptoms of TaVVCV occur on plants with *bobone* and also with *alomae*, but it is unlikely that this virus is involved in either of these diseases.

Spread of CBDV and TaVVCV is by planthoppers, *Tarophagus* species (Photo 7). The planthoppers suck up the viruses when they feed on sap. The viruses multiply inside them, and after 3-4 weeks are able to spread the viruses as they feed.

CBDV and TaVVCV are also spread in other ways:

- From mother plants to suckers.
- In planting material when infected plants are taken to new gardens.

Impact

These viruses are relatively unimportant alone, but it is their association with other viruses that is of interest and concern. It is very likely that CBDV is involved with other viruses in *alomae*. Knowing what causes *alomae* is important if the disease is to be managed properly

Little is known about the impact of CBDV or TaVVCV on the yield of "male" taro. Usually, only one or two leaves are affected before healthy-looking leaves develop, so it is likely that any impact is small. By contrast, the impact of CBDV on "female" taro is known. It reduces the yield of individual plants by about 25%. Plants usually start to produce healthy leaves after 4-6 weeks, and then appear

normal. However, the disease only occurs in a few varieties of taro, and not all the plants develop *bobone* in any one planting, so the effect on yield is probably quite small, less than 10%.

Detection & inspection

Look for leaves showing irregular, thickened patches which are dark green on "male" varieties, or show more extensive, stunted green twisted leaves on "female" varieties (CBDV). Look for leaves showing bright yellow, feather-like symptoms along the main veins, and produce healthy leaves after one or two with symptoms (TaVCV). Under the electron microscope the virus particles are rod shaped (Photo 6).

Management

NATURAL ENEMIES

Cyrtorhinus fulvus, a bug that feeds on the eggs of *Tarophagus* species (Photo 8), reduces the population of the plant hopper, but experience shows that it is not enough to stop the spread of *alomae* when *Tarophagus* populations are high (Photo 9).

CULTURAL CONTROL

At present, the cause of *alomae* is unknown; it can only be managed as follows:

- Do not grow "male" and "female" taro in the same garden; CBDV from plants with *bobone* may interact with other viruses to cause *alomae* in the so-called "male" taro.
- If symptoms of CBDV and TaVCV are seen, mark plants with a stake; at harvest, cut off the corms, sell or eat them, and burn the plants and suckers. Do not replant them.
- If *alomae* occurs, remove the plants and, if available, use chemicals to kill the planthoppers (see **Fact Sheet no. 01**).

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