Diseases of Edible Aroids in India and their Management

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Aroids: Plants belonging to the family Araceae

Among cultivable tropical tuber crops, the following are commercially cultivated edible aroids in India:

1. ***Amorphophalus paeoniifolius***
2. ***Colocasia (C.esculenta var.esculenta and C.esculenta var.antiquorum): Dasheen and Eddoe types***
3. ***Xanthosoma* (Tannia)**
4. ***Alocasia***

Amorphophallus tubers and crop

Amorphophallus mosaic disease

Amorphophallus Mosaic Disease

Primary spread is through planting material. Secondary spread of the disease is through insect vectors, *Myzus persicae* Sulz., *Aphis gossypii* Glover, *A. craccivora* Koch. and *Pentalonia nigronervosa* coq.

Disease symptoms include mosaic mottling of leaves and distortion of leaf lamina. Corms produced by the mottled plants are much smaller than those without mottled leaves.

Management: Use of virus free planting material, spraying of systemic insecticides to prevent secondary spread

Collar rot of Amorphophallus

Leaf blight caused by *Phytophthora colocasiae*

Storage diseases in Amorphophallus

Management of Amorphophallus Diseases

- Use of healthy planting material without any apparent rotting symptoms
- Treatment of the whole/cut tubers with cow-dung slurry mixed with Trichoderma before planting
- Application of Trichoderma enriched compost in pits/field
- Application of neem-cake @ 250g/pit
- One foliar spray with Mancozeb (0.2%) and fenithrion (0.05%) at 60 and 90 DAP



Major taro types in India

Taro Cultivation

Field view of a healthy colocasia crop

Field View of *Colocasia esculenta* (L.) Scott.

Newly developing spots due to *Phytophthora colocasiae* infection

Petiole infection leads to collapse of leaf lamina

Beginning of the devastation by Phytophthora leaf blight

A fully devastated colocasia plantation

Whitish fungal growth around the spots

***Phytophthora colocasiae*: The causal organism of Taro Leaf Blight**

Primary inoculum
Infected tubers
Self sown crop
Soil ?

Secondary inoculum
Sporangia
Zoosporangia

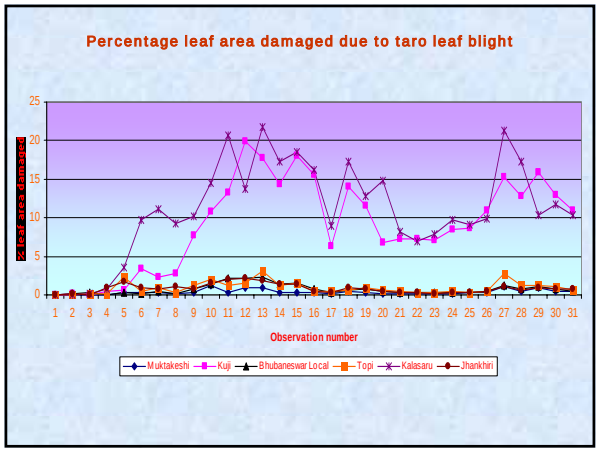
Congenial weather
Intermittent rain,
High humidity, Temp 25 – 28 degree C

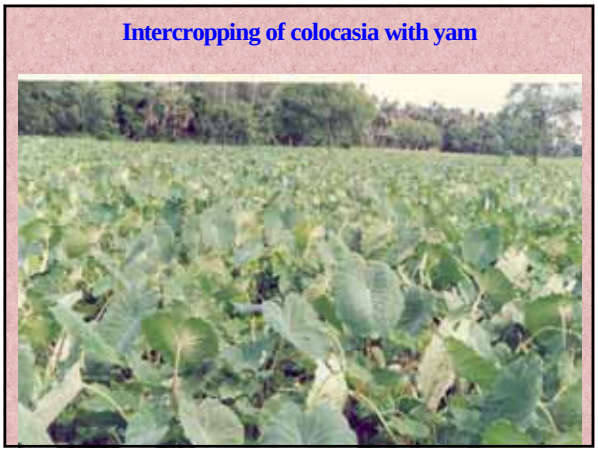
Conditions for EPIDEMIC
Abundant Inoculum, Favourable weather, Susceptible cultivar

Infected crop


Resistance in Taro Against Taro Leaf Blight
A TLB resistant variety "Muktakeshi"


Leaf spots in resistant variety

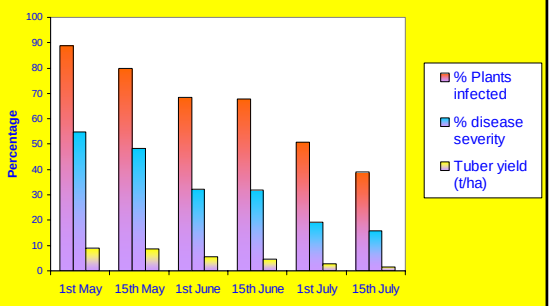

Percentage leaf area damaged due to taro leaf blight
% leaf area damaged
25
20
15
10
5
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Observation number
Muktakeshi
Kuji
Bhubaneswar Local
Topi
Kalasaru
Jhankhiri


Intercropping of colocasia with yam

Intercropping of Colocasia with Turmeric

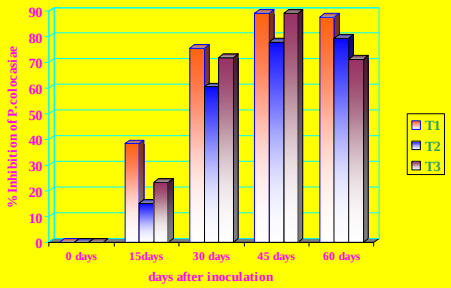
Intercropping with non-host crops

Effect of date of planting on taro leaf blight and tuber yield



Hypersensitive reaction in resistant, moderately resistant and susceptible cultivars

Inhibition of *P.colocasiae* in soil by Trichoderma



T1= *Trichoderma viridae* T2 = *T.herzlanum* T3 = *T.pseudockei*

Inhibition of *P.colocasiae* by Rhizobacterium species

Strategies for the Management of Phytophthora leaf blight disease of colocasia

- **Use of healthy planting material**
- **Use of tolerant/resistant cultivars, if available**
- **Suitable adjustment in planting dates to escape disease/crucial stage**
- **Field Sanitation and removal of infected leaves**
- **Intercropping with non-host crops**
- **Removal of self-sown plants from the vicinity**
- **Preventive sprays with Mancozeb(Protective) and Metalaxyl (Systemic) as a last resort**

Other problems in taro cultivation

Alocasia leaves

Thank You