Potato viruses

a) Potato leaf roll virus

b) Potato virus x

c) Potato virus y

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Potato leafroll virus

Classification

- Group: (+)ssRNA
- Family: *Luteroviridae*
- Genus: *Polerovirus*

Introduction

- It is one of the most important potato virus worldwide.
- It can be responsible for individual plant yield losses over 50%.Annual yield losses causes by PLRV is 20 million tons globally.
- PLRV was first described by Quanjer in 1916.

Host Species

- This RNA virus infects potatoes and other members of family *Solanaceae.*

Symptoms

Symptoms of infection in growing season appear on younger leaves.

- Leaf margins become necrotic turning brown and purple and curl inward toward the centre of leaves.
- Few tubers cluster around the stem..
- affected leaves are slightly pale and may show purpling or reddening

Potato leaf roll virus symptoms include upward rolling of leaves

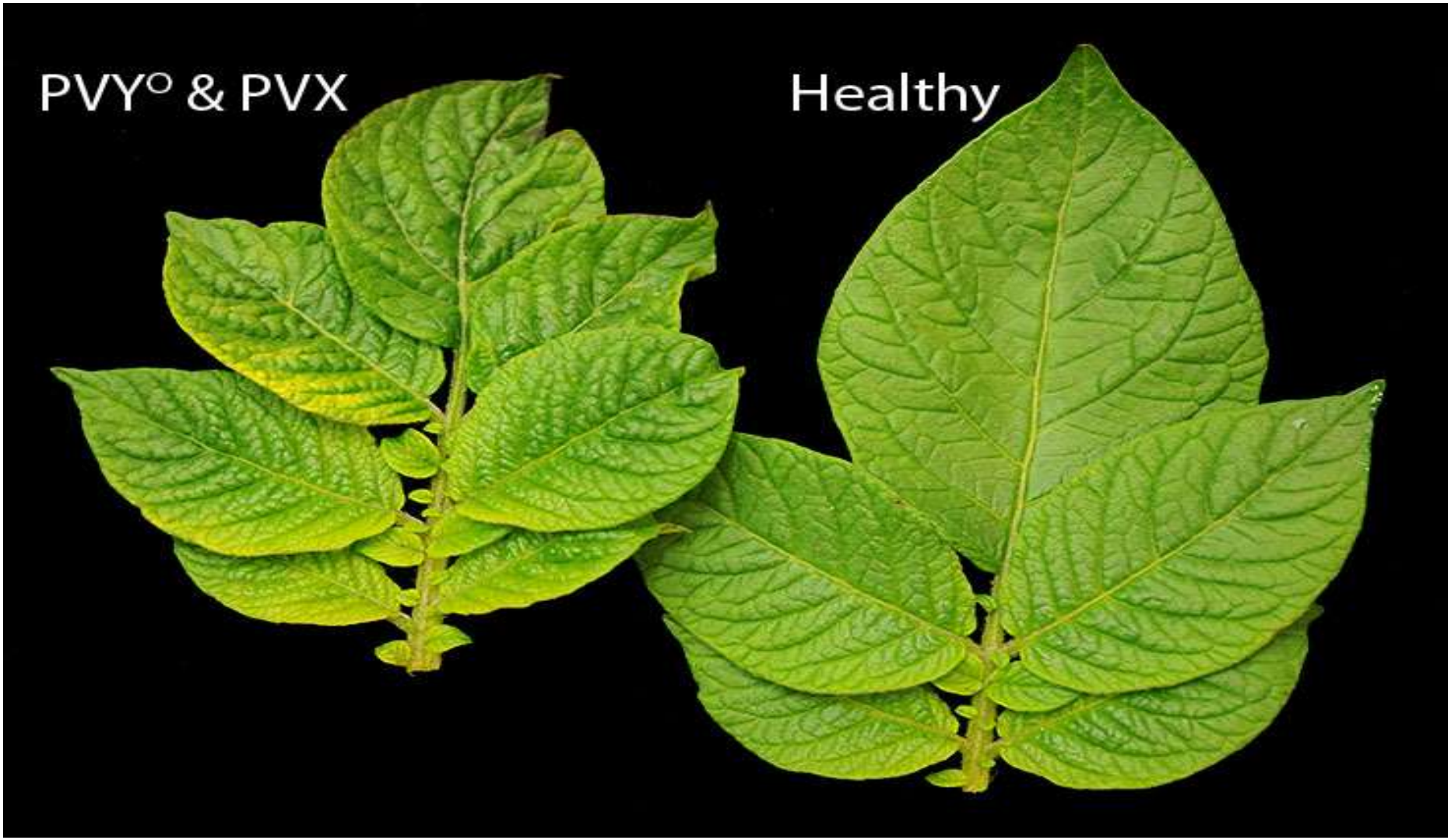
Transmission

- PLRV virus is transmitted by aphids , the green peach aphid *Myzus persicae.*
- The virus is picked up by the colonising aphids during prolonged feeding on a infected tree.

Management &Control

- This virus requires 12 hours to transmit by the help of aphid.
- Kill the infected plants
- Systemic and foliar insecticides can be used to prevent aphid feeding
- Use of Hot Water-Thermotherapy.Hot water treatment at 55 c for 15- 20 mint
- Methamidophos and Endosulfan use for the control of aphids.

Potato virus X



Classification

- Order: *Tymovirales*
- Family: *Alphaflexiviridae*
- Genus; *Potexvirus*
- Species: *Potato virus x*

Introduction

- Presence

- It is also known as potato mosaic virus.
- Presence occurs mostly in China, India, Iran, Turkey and Pakistan.

- Host plants/Affected plants

- *Brassica rapa*
- *Nicotiana tabacum*
- *Solanum Tuberosum*

- Growth stage

- Vegetative growing stage of plant mostly affected by this virus.

Symptoms

- In potato, causes mild mosaic on leaves
- Inter venial mosaic.
- Mottling with stunting
- Necrosis of leaves.
- Tuber formation occurs in potatoes
- Crinkling

Transmission

- Transmitted mechanically.
- Contact between diseased and healthy plants
- No insect transition.
- No fungal vector transition.

Causes

- Causes mild mosaic.
- Causes no symptoms in most potato varieties.
- In presence of potato virus Y, synergy between two viruses causes severe symptoms in potatoes.
- Necrotic spotting in tobacco.

Control

- Perennial herb named as *Chlorophytum nepalense* is use as a root extract to control the dark viral necrotic lesions of sprouted potato tuber and plant and sprouted tubers by potato virus x under glasshouse conditions.
- *These extract contains;*
- (a) Chologenic acid
- (b)Kaempferol
- (c)luteolin
- These components have potential to control this virus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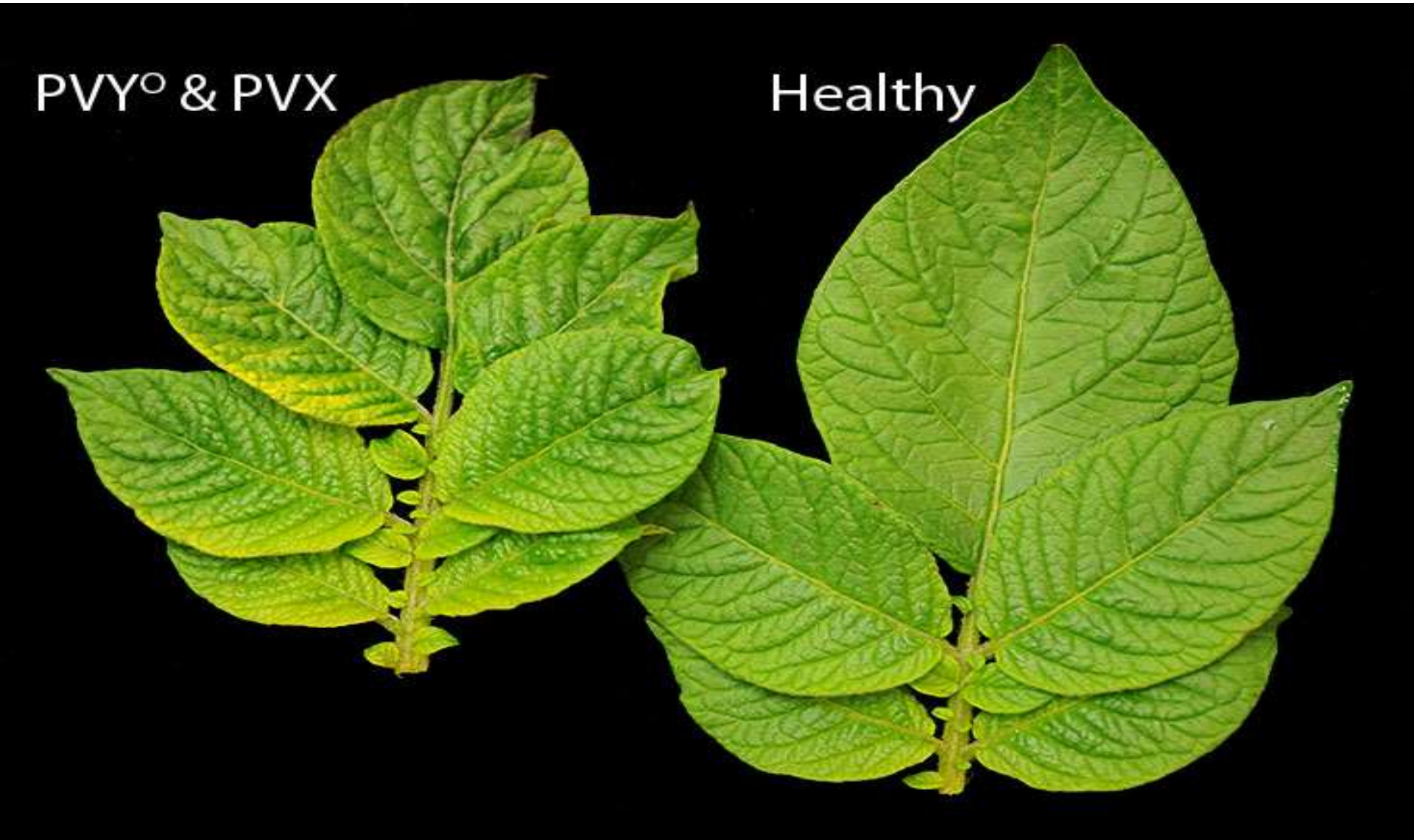
Potato virus Y



classfiation

- Group:(+)ssRNA
- Family:Potyviridae
- Gnus: Potyvirus
- Spiecis: Potato virus Y

Introduction & Importance

- It is economically important because, in last few years this virus has led to considerable losses to South Africa potato industry.
- PVY mostly infects plants in the family of Solanaceae
- Losses occurs by this virus leads to 10-100% losses. **Host plants:**
- (a)Tobacco
- (b)pepper
- (c)Tomato

Transmission

- It is transmitted by insect vectors like aphid named as Myzus persicae.
- Transmitted by grafting and sap inoculation.
- But some may also remain dormant in seed potatoes.
- So using the same line of potato for production leads to increase in viral load and loss of crop.

Symptoms

- Emergence of necrotic PVY(NTN) has led to more reliable classification tools than simple serological identification.
- Formation of mild mosaic patterns occurs.
- Leaf distortion
- Death of growing points of plants
- Tuber necrosis

Management & control

- Avoid planting seed potato downwind from commercial fields.
- Prevent the late season virus infection by top-killing seed potato fields early.
- Plant only certified seeds.
- Eliminate infected potatoes plants and weed reservoirs of aphids and PVY.
- Chemicals to hinder or prevent aphid feedings.

Thank you