

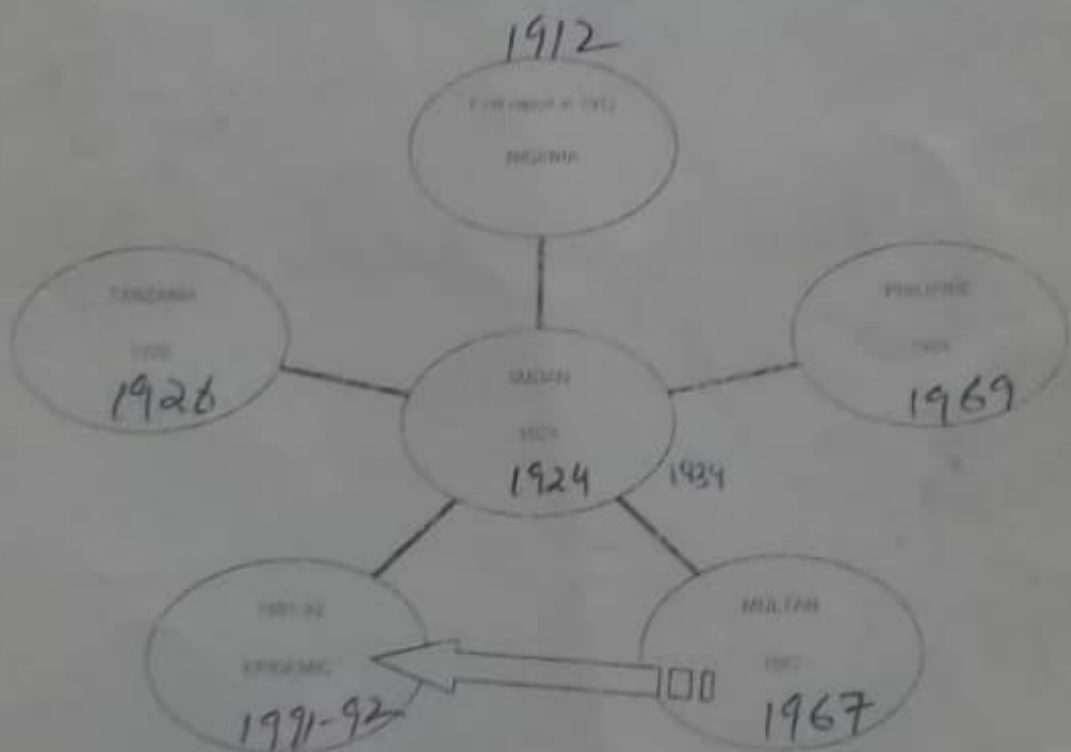
Virus

- Submicroscopic nucleoprotein causes diseases in humans, animals and plants. Their genetic material comprised of DNA or RNA and is enclosed by protein called capsid.

Epidemiology

- Virion: A complete infectious particle with protein coat
- Pinon: Infectious protein of the virus
- Viroids: Small circular, single stranded naked RNA having low molecular weight than virus.

Cotton leaf curl virus.

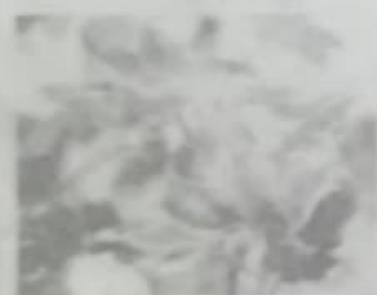


Cotton leaf curl virus and Cotton ^{CLCuV} leaf crumple virus (CLCrV)

- CLCuV disease is found in Asia and Africa while CLCrV is found in North America.
 - CLCuV curls are upward while CLCrV curls downwards
 - There will be mosaic pattern in cotton leaf crumple virus, while in CLCuV mosaic is not present.
- ⇒ Vector of both is same *Bemisia tabaci*

Mosaic (Combination of green and yellow colors of cotton leaf)

Symptoms of CLCuV



Symptoms of CLCrV



(small leaf appears) (at dorsal side)

Symptoms of CLCuV



Symptoms of CLCrV





Host Range of CLCuV

- It has long range of hosts other than cotton.
- It includes many weeds and vegetables hosts like:

Lady's finger, tomato, chili, cucurbit (especially water melon), beans, sunflower, sesame, soybean, cow peas, egg plant (brinjal), sun kukra, china rose, thorn apple (dhatura), mint (podina), holly hock (gul e khera), zinnia, AK (Calotropis), shesham (taihi) and citrus species.

TRANSMISSION

- Cotton leaf curl virus is transmitted by white fly (*Bemissia tabbaci*).
- Single female of (white) fly having virus can transfer to healthy plants of cotton with*in a period of 6.5 hrs. A female having virus can transfer to different plants upto 7 days.

The pathogen of cotton leaf curl virus

- Cotton leaf curl virus belongs to family *Geminiviridae*
- Members of *Geminiviridae* are also called Begomovirus.
- The members of *Geminiviridae* are single stranded DNA.
- These are Isometric in shape

(Circles)

Epidemiology

- Studies of all environmental factors (Maximum, minimum temperatures, rainfall, relative humidity, sunshine radiations, wind speed etc) which play vital role in the disease epidemics *such as*

Epidemiology of CLCuV and white Fly

- Maximum temperature of 36-40°C ✓
- Minimum temperature of 20-25°C ✓
- 60-70% Relative humidity ✓
- 2-4Km/h wind speed ✓
- 0.2-0.5mm rainfall ✓

Management of CLCuV

Acetamiprid

- Imidacloprid (Confidor, Imida) Acetacloprid (Mocpilon and Rani), and Polo can be used to control white fly vector.
- Cultivation of resistant varieties. CCRI (Central Cotton Research Institute, Multan), varieties (CIM-496, CIM-474, CIM-707) has less infection of CLCuV. Varieties NIBGE.2 and BT cotton has also shown good results against this disease. But are susceptible against Burrewala strain.
- Crop rotation with non-host crops.
- Proper use of irrigation and fertilizers. (Avoid excess use of N₂), N₂ gives lush green colour to leaf, and becomes more vulnerable to white fly
- Potassium fertilizer improves the disease resistance power in plants.
- Eradication of other host plants.

CIM-534 FH-901

CIM-506 NIAB-999

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CIM-534 FH-901
CIM-506 NIAB-999
CIM-496 MNH-786
CIM-499 FH-1000

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