



Lecture No.: 18

Date: 24th April, 2020

CORE CONCEPT OF  
Group C - Microbiology

HONOUR'S PART 1  
Paper - 1

## **TRANSMISSION OF VIRUS**

*Plant viruses are transmitted by various steps :-*

- 1. Seed Transmission** - Viruses may be externally seed borne as in tomato, cucumber, etc. ; or internally seed borne in testa, endosperm and / or embryo as in barley, cowpea, bean ( bean mosaic ) etc. The internally seed borne viruses are more effective than the externally seed borne ones.
- 2. Transmission by Grafting**- It is rather easy for their transmission through grafting between living cells of virus infected and virus-free plants. Transmission of virus by grafting becomes a means of natural transmission.
- 3. Transmission by Vegetative Propagation** - Viruses are very commonly perpetuated in the vegetative organs of perennial plants (fruit trees) . When such plants are virus-infected all the vegetative parts used for their propagation also become virus-infected.
- 4. Transmission by Parasitic Phanerogams** - Species of *Cuscuta* when parasitizing virus-infected host plants sends haustoria into the host tissue and thereby receives virus infection. The same virus infected species of *Cuscuta* when extends its stem to parasitize other plants, the virus may be transmitted to such plants through the newly formed penetrating haustoria. *Cuscuta* thus functions as the transmitting agent.



**5 Transmission by Insects** - Most viruses are transmitted by insects. The insects responsible for the transmission of viruses either possess mouth parts adapted for biting or stylets for piercing and sucking.

**6. Transmission by Mechanical Means** - Transmission by this means consists of transference of sap from a virus-infected plant to a healthy plant by artificial or natural means. Viruses transmitted by mechanical means are usually in high concentration in the plant. Some viruses can spread from a diseased plant to a healthy one by contact of the leaves brought about by the wind.

Some viruses may spread below ground by mechanical contact between the roots of infected and healthy plants.

**7. Soil Transmission** - The soil borne viruses infect host through root system. These viruses do not usually persist in the soil more than a few months at the most.

**8. Transmission by Mites** - Eriophyid mites transmit several viruses. The big bud mite, *Phytoptus ribis* transmits virus that causes diseases of Ribes.

**9. Transmission by Nematodes** - Nematodes belonging to the general *Xiphinema longidorus* and *Trichodorus* transmit a number of viruses.

**10. Transmission by Fungi** - Several viruses including those causing big-vein disease of lettuce and tobacco necrosis are transmitted by *Olpidium* and *Synchytrium* which infect plants. The virus is borne internally by the zoospores of the fungus when they are developed in the virus infected host.

**11. Pollen Transmission** - Cases of dissemination of viruses through pollen grains are few in comparison with other means. Common example is bean



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mosaic virus.

12. **Transmission through Weeds** - Weeds serve as collateral host for transmission of sugarcane mosaic virus.

DR. RANJANA