

PLP 3002
Fundamentals of
Plant Pathology

Dr. Bill Zettler
Professor
Plant Pathology

Virus Diseases (general
properties)

- Agrios 14: 479-562

Living Organisms

- Prokaryotes
 - **Monera (bacteria)**
- Eukaryotes
 - **Protista**
 - **Animalia**
 - **Planta**
 - **Fungi**

Viruses?

- Viroids?

Viruses are

- Ultramicroscopic,
Obligate parasites

Viruses

- Require vector
- Seldom induce necroses
- Mosaics
 - **Mottles**
 - **Yellowing**
 - **Stunting**
- Local lesions?

Viruses

- Vegetative propagation
 - **Orchids**
 - **Root crops**
 - **Citrus, etc.**
- Seed propagation
 - **Certain legumes**
 - **Beans**
 - **Peas**
 - **Peanuts, etc.**

Virus nomenclature

- Common, not Latin names
 - **Tobacco mosaic virus**
 - **Cucumber mosaic virus**
 - **Potato Y virus**
 - **Tomato yellow leaf curl**
 - **Citrus tristeza virus**
 - **Tomato spotted wilt virus**

Virus classification

- nucleic acid
 - **RNA or DNA**
 - **single- or double-stranded**
- Uni- or multicomponent genome
- Morphology
 - **Spherical**
 - **Rod-shaped**
 - **Geminate**
 - **Bacilliform**

Virus composition

- Nucleic acid and protein

Viroid composition

- Nucleic acid only

Virus relationships

- Classified into "groups"

Some examples of virus groups

- Tobacco mosaic virus = tobamovirus
- Cucumber mosaic virus = cucumovirus
- Potato Y virus = potyvirus
- Tomato yellow leaf curl = geminivirus
- Citrus tristeza virus = closterovirus
- Tomato spotted wilt virus = tospovirus

Group implications

- Different host ranges, but
- Similar morphology
- Serologically related
- Similar mode of transmission

- *Tobamoviruses* (humans)
- *Cucumovirus* (aphids)
- *Potyviruses* (aphids)
- *Geminiviruses* (whiteflies)
- *Closteroviruses* (aphids)
- *Tospoviruses* (thrips)
