Virus diseases of plants

• Difficult to diagnose:
  – Overlapping symptoms: many viruses
  – Overlapping symptoms: other problems
  – No visual signs of the pathogen
  – Symptoms are variable
    • Age of plant when infected
    • Crop cultivar
    • Time of year or weather conditions
    • Strain of the virus
  – Multiple viruses can infect the same plant
  – Most tests are serological / molecular
Virus diseases of plants

- Complex systems
  - Host plant
  - Virus pathogen
  - Vector that spreads the virus
  - Alternate hosts
    - Other crops
    - Weeds and surrounding vegetation
    - Over-wintering hosts
  - Source of primary inoculum: seed, vegetative propagation, alternate hosts, (soil)
Virus diseases in 2015

• Why? Vector dynamics:
  – Mild winter
  – Warm spring
  – Little rain: early dry down of hill vegetation

• Which crops?
  – Lettuce, spinach, Brussels sprouts, cauliflower, Swiss chard, beet, cilantro, radicchio, tomato

• Which viruses?
  – CMV, INSV, TSWV, LMV, AMV, BCTV, BWYV
Cucumber mosaic virus
Cucumber mosaic virus
Lettuce mosaic virus
Alfalfa mosaic virus
Impatiens necrotic spot virus
Tomato spotted wilt virus
Beet curly top virus and/or Beet western yellows virus
Cucumber mosaic virus and Tomato spotted wilt virus
Virus diseases of plants

- **Management:**
  - **Host plant:**
    - resistant cultivars, site selection, crop rotation
  - **Vector:**
    - insecticides*, site selection, IPM
  - **Alternate hosts:**
    - weed control, site selection, crop rotation, host-free periods

*Insecticides do not completely prevent infection.*
20 iceplant flowers/sample
sample average: 363 adults
654 juveniles
51 total thrips per flower
Alternaria species from cilantro