

## Laboratory 8 Study Guide (video: 1 hour 33 minutes)

### Study Questions

1. Whereas potato X virus incidence was once extremely common in North American and European potatoes, it is rare in those grown in the Andes. Why? How is this virus transmitted, and where does the inoculum originate?
2. Citrus tristeza virus once caused catastrophic losses in Florida. Why? What strategy was used to reduce these losses? Why is citrus such a vulnerable crop to diseases such as tristeza and citrus canker (a bacterial disease)?
3. What is the primary inoculum of lettuce mosaic virus? Secondary inoculum? How is this potyvirus controlled?
4. Celery mosaic potyvirus once caused serious losses in South Florida. How is it transmitted, and what strategy was used to successfully control it?
5. Passionfruit, like papaya and certain other tropical crops, can be grown throughout the year. Knowing this and knowing that passionfruit woodiness potyvirus can cause debilitating yield losses, what could be done to solve that problem assuming that there was no source of genetic resistance and that the only source of inoculum was passionfruit?
6. Gladiolus is susceptible to cucumber mosaic virus, which is aphid-transmitted in a stylet-borne manner. Yet, unlike the potyviruses, growers can control this cucumovirus by roguing? How is this possible? What is the Achilles heel of this virus in gladiolus?
7. What are stylet oils, and how do they work? Are they toxic to aphids?
8. Stylet oils, while effective against all stylet-borne (i.e. nonpersistent) viruses are only used commercially for certain crops, such as squash and peppers. Why is their use restricted to these crops?
9. What are volunteers? Do they usually serve as primary or secondary inoculum? What role did volunteers play in the onion scenario described in class?
10. What are aluminum mulches? Are they effective in controlling viruses? If not, what are their limitations?
11. Potyviruses of potatoes are much more abundant in the lowlands than highlands. Why? How is this information of any help to those growers living in the lowlands?
12. Dieffenbachia and caladiums are both susceptible to dasheen mosaic potyvirus, and both crops were once ubiquitously infected. Tissue culture technology was successful in eliminating this virus from commercial plantings of dieffenbachia, but not caladium. Why the difference? (Both crops can be cultured *in vitro*.)

### Key Words

Altiplano/Scottish potato virus scenario (aphid transmission in the highlands and lowlands)

Caladium virus scenario (economic constraints)

Celery mosaic virus scenario (2-year crop)

Citrus tristeza virus scenario  
Cucumber mosaic scenario (in gladiolus)  
Dieffenbachia virus scenario (control by tissue culture)  
Eradication (as a principle of control)  
Exclusion (as a principle of control)  
Garlic virus scenario (ubiquitous infections)  
Genetic resistance (as a principle of control)  
Lettuce mosaic virus scenario (seed transmission)  
Mulches (to control aphids)  
Onion virus scenario (volunteers)  
Passionfruit woodiness virus scenario (passionfruit-free growing period)  
Potato X virus scenario (in the Andes)  
Potyviruses  
Primary inoculum  
Protection (as a principle of control)  
Roguing  
Squash virus scenario (use of stylet oils)  
Stock/scion incompatibility  
Stylet oils  
Tissue culture)  
Ultraviolet light (as it affects aphid flight behavior)  
Volunteers  
Yellow color (as an aphid attractant)