

Plant Pathology

with Dr Leslie Holland

Talking points

Knowledge

1. How many cranberries are produced every year in the US?
2. How many types of different fungi are associated with cranberry fruit rot (CFR)?
3. What percentage of growers reported yield losses due to CFR in the past five years?

Comprehension

4. How significant a problem is CFR for the cranberry industry?
5. What conditions favour the spread and development of fungal pathogens?

Analysis

6. What factors can affect CFR?
7. Why is it so difficult for growers to predict and control CFR?
8. What is the team analysing when collecting cranberry samples?
What insights is this analysis providing?
9. Why is the team testing fungicides which have not yet been approved?

Evaluation

10. Leslie is a mentor for the MOSAIC (Mentoring Opportunities in Science and Agriculture for Individuals of Color) programme.
Why do you think programmes like this are important? Why is encouraging diversity important in the field of plant pathology? Why is diversity important in other research fields?
11. How do you imagine climate change might affect the growth of plants in the future? Think about the conditions that Leslie mentions help the spread of fungal pathogens. To what extent do you think this will get worse as climate change develops? What do you think scientists can do to help this?

Activities

1. The cranberry plant life cycle

Have you heard about the interesting way that cranberries are harvested?

Do some research on this method and then draw out a map showing the life cycle of a cranberry plant. Make sure to include small details such as:

- the way a cranberry bed is planted
- why dikes are constructed around the bog
- when a typical cranberry harvest begins and ends
- when and why the bogs are flooded
- why the berries float to the surface
- how the berries are collected.

2. Learn and teach

The Exploring Cranberries programme developed by Massachusetts Cranberries is a great online resource to help you learn more about cranberries and what conditions affect their growth. You can access the student version of the page here: www.cranberries.org/exploringcranberries/students/index.html

The three sections of the programme are:

- 'Into a Bog': decide which tasks growers need to do during which seasons, what tools they will use, and write a letter explaining the work of cranberry growers to others in your town.
- 'Adopt a Bog': use teamworking skills to choose which of three bogs you would like to 'adopt' to grow cranberries.
- 'Challenges Await You': think about how to protect cranberries from the spring frost, how to manage insects around the plants, and learn to recognise when cranberry plants are developing from pods into blossoms.

With your new-found cranberry knowledge, become a teacher and lead younger students through these activities.

The 'What's Eating My Plants' group of graduate students in Leslie's department have developed some great exercises for younger students to learn more about plant pathology.

Have a look at them and use them to teach a group of younger students:

sites.google.com/view/whateatingmyplants/outreach-materials/lessons-for-learning-at-home/how-plants-grow-mischievous-microbes

More resources

- Read about the MOSAIC programme that Leslie mentors for here: mosaic.cals.wisc.edu
- Watch this video about one of the undergraduate research assistants from Leslie's lab: fcpp.plantpath.wisc.edu/2022/06/24/drew-was-featured-on-the-wisconsin-student-summer-life-video-series