



Potatoes are a popular food choice because they are filling, palatable, nutrient-dense, and affordable, and the market for frozen potatoes, French fries, and potato chips is booming. Viruses can cause serious damage to potato crop yield and quality.

MANAGING POTATO VIRUSES

Potatoes are the most widely grown and consumed vegetable in the U.S. The value of potato production in the U.S. totals nearly \$4 billion each year, with over \$1 billion in exports. Viruses are a serious threat to potato crop yield and quality. Controlling viruses is challenging and often requires the use of multiple pesticides. Potato growers are also faced with the growing public and environmental concerns about pesticide use, and some virus strains are developing resistance to pesticides.

Land-grant universities across the country are working with the USDA, Canadian partners, seed producers, diagnostic centers, and other organizations to coordinate research, share information on potato viruses and control strategies, review quarantine and certification issues, and recommend policies. Reducing the presence of viruses in U.S. potatoes will minimize damage to potatoes, reduce pesticide use, cut grower losses, and ensure a stable supply of high-quality potatoes for processors and consumers.

Research and Extension is leading to better detection and management of potato viruses.

- Research has led to a better understanding of how viruses evolve, which is critical to limiting virus spread and survival. This information is being used to improve virus monitoring.
- By identifying exactly which virus strains are circulating in the U.S. and studying the differences between strains and the reliability of methods to detect these strains, researchers help create more thorough screening techniques and more effective management strategies.
- Researchers developed virus detection methods that are more sensitive and reduce false negatives. Because these methods require no new equipment, they are easy for growers to adopt.
- A faster, cheaper virus testing protocol can now accurately test for six viruses in a few hours instead of two days as required by currently used standard testing. This sensitive test can detect mixed infections.
- Oregon State University developed a protocol that improves detection of zebra chip by 30-60% over conventional methods. Zebra chip is caused by a bacterium, but behaves like a virus.
- New information on symptoms of infection will help scientists, potato growers, field workers, inspectors, seed certification agencies, and processors correctly identify infected potatoes.
- More knowledge on how potato plants respond to different virus strains is helping scientists breed varieties that are less susceptible to viruses.
- Studies showed that potato virus A-resistant potato varieties can be planted as borders around more susceptible varieties to reduce transmission of virus A.
- With this group's coordination, researchers, growers, and industry interact more efficiently. For example, group members from the USDA, University of Idaho, Montana State University, Washington State University, and the University of Wisconsin developed a virus detection training for potato growers, inspectors, and regulators. The group also created a website, which lets them send vital information about virus testing to growers. This helps growers act quickly and prevent serious losses. Sharing information also helps growers learn from each other and improve programs for all.



In 2013, several prominent growers unwittingly purchased seed with a high percentage of potato virus Y infection and planted over 200 acres. Timely identification of the virus (symptoms shown in the photos below) by Washington State University and University of Idaho researchers helped growers contain the virus, minimize damage to potatoes, avoid significant losses, and maintain their contracts with potato processors.



This group is also having impacts internationally. Their efforts to develop and share science-based management practices have significantly reduced levels of potato virus Y (symptoms shown above) in potato seed lots in New Brunswick, an important potato producer for Canada and foreign markets.