

# Plant Pathology Seminar Series

## “The Future of Cranberries: Will they be bogged down or rise above?”

By: Hannah Baker



The American Cranberry, *Vaccinium macrocarpon*, has been cultivated in the United States since the mid-1800's and is recognized by the USDA as the standard for fresh cranberries<sup>1</sup>. The entire cranberry industry is valued around \$2 billion for the US economy<sup>6</sup>. Many cranberry vines in Massachusetts bogs have been in production for more than 100 years, indicating the importance of sustainable long-term crop maintenance and support<sup>4</sup>. Effective frost and freeze management of cranberry bogs is of utmost importance for maintaining the long-term viability of the vines because the ideal growing environments for cranberry are in the colder regions of the country<sup>1</sup>.

Most pathogens of cranberry are the result of fungal infection with the primary pathogen being cranberry fruit rot (CFR) which is caused by a disease complex of at least 15 different fungi<sup>5</sup>. The identification of the specific fungal species causing infection is a difficult and lengthy process causing significant delays between symptom manifestation and implementation of a management plan<sup>3,7</sup>. Other identified pathogens affecting cranberry include Phytophthora root and runner rot, upright dieback, cottonball, red leaf spot, rose bloom, and Lophodermium twig blight<sup>2,5</sup>. Several pathogens caused by viruses are emerging as possible issues for cranberry, resulting in new research and development of potential disease management strategies<sup>5</sup>.

The impacts of climate change on the planet have been demonstrated from changes in precipitation patterns to rising sea temperatures<sup>6</sup>. Cranberry will definitely be impacted by climate change and may face harsher consequences than other similar perennial crops. Cranberry relies on water for many aspects of management which indicates this crop could be significantly impacted by decreases in water availability, potential adverse impacts from strong storms, and variability in winter temperature including water temperature<sup>4,6</sup>.

In this seminar, I will be reviewing many aspects of cranberry including cultivation, pathogens including extant and emerging, and the potential impacts of climate change on cranberry production. The long history of cranberry production in the United States has led to refined production and disease management methods, but new pathogens are emerging and difficulties with extant pathogens are still present<sup>5</sup>. Research on identification of casual organisms for CFR has allowed for a greater understanding of this pathogen but more refining is still needed for effective management and mitigations<sup>3,7</sup>.

The impacts of climate change on cranberry has been anticipated with a more ominous future expected ahead<sup>4</sup>. Understanding what the impacts of climate change currently are and how impacts potentially could evolve and change is essential in determining methods of managing these stresses for the cranberry plants<sup>6</sup>.

4:10 pm | October 26<sup>th</sup>, 2020 | Plant Pathology 515, Fall 2020

Zoom Link and ID: <https://wsu.zoom.us/j/91621814000?pwd=MDVOY1prSQYbDRaMXNvTVNxTS82UT09>

Meeting ID: 916 2181 4000 Passcode: 5353 Call in number: 1 253 215 8782



College of

Agricultural, Human,  
& Natural Resource Sciences

WASHINGTON STATE UNIVERSITY

---

## References:

- (1) The Cranberry: How Cranberries Grow <https://www.cranberries.org/history>.
- (2) Caruso, F. L.; Bristow, P. R.; Oudemans, P. V. Cranberries: The Most Intriguing Native North American Fruit <https://www.apsnet.org/edcenter/apsnetfeatures/Pages/Cranberries.aspx>.
- (3) Conti, M.; Cinget, B.; Vivancos, J.; Oudemans, P.; Bélanger, R. R. A Molecular Assay Allows the Simultaneous Detection of 12 Fungi Causing Fruit Rot in Cranberry. *Plant Disease* **2019**, *103* (11), 2843–2850. <https://doi.org/10.1094/PDIS-03-19-0531-RE>.
- (4) McCoy, M. K. Cranberries, Wisconsin's Most Profitable Fruit, Face An Uncertain Future <https://www.wpr.org/cranberries-wisconsins-most-profitable-fruit-face-uncertain-future>
- (5) Murray, K.; Jepson, P.; Bouska, C.; Patten, K. An Integrated Pest Management Strategic Plan for Oregon and Washington Cranberries. Oregon State University Extension Service July 2018.
- (6) Nargi, L. With Climate Change, the Future of Cranberry Growing Is Uncertain <https://foodprint.org/blog/cranberries-climate-change/>.
- (7) Robideau, G. P.; Caruso, F. L.; Oudemans, P. V.; McManus, P. S.; Renaud, M. A.; Auclair, M. E.; Bilodeau, G. J.; Yee, D.; Désaulniers, N. L.; DeVerna, J. W.; Lévesque, C. A. Detection of Cranberry Fruit Rot Fungi Using DNA Array Hybridization. *Canadian Journal of Plant Pathology* **2008**, *30* (2), 226–240. <https://doi.org/10.1080/07060661.2008.10540538>.