Fruit 'Scarring' in Wisconsin Cranberry Beds
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This cranberry season has been full of puzzlers thanks to some pretty wild environmental conditions over the past nine months. While there are several issues we could discuss, there is a particular issue that has led to a great deal of concern and speculation about the cause of the problem and possible implications. Shortly after fruit set, some growers started to observe 'scarring' on fruit (Fig. 1). The symptoms appeared sporadically throughout the bed and did not seem to show consistent patterns. Upon initial investigation, there was no clear cause for the symptoms, so a group of researchers and industry members have been working to better understand what we are seeing. Although we have not yet come to a clear understanding of the problem, we wanted to let growers know what avenues we are pursuing. The possibilities that are being explored are; phytotoxicity, physical damage caused by thrips, nematode activity and virus infection. These possibilities are discussed below in no particular order.

The symptoms that are appearing do share a lot of similarity to phytotoxicity symptoms we have seen in the past with certain fungicides applications (Fig 2). The potential for phytotoxicity can be higher in hot conditions such as we have seen this year. Spray records of the beds that are demonstrating symptoms are being collected to determine if there are any commonalities across the sites.

One site where symptoms were identified, there were high populations of “stubby root nematode” which may have caused damage to the roots and influenced uptake of micronutrients that are important for proper fruit set and development. These populations are being investigated along with the impact in root growth. These nematodes are also known vectors of several viruses. Samples will be tested for these viruses in the near future.

Thrips are small insects that feed on a variety of plant species and cause damage by piercing plant tissue and sucking out the contents of the cell. This can result in scarred and misshapen fruit. Thrips are found in cranberry beds every year but have not been of concern to growers as they have not caused damage to the crop. Due to the high spring temperatures, the emergence of several insects was much
earlier than we typically see, so it is possible that thrips activity was influenced by the environmental conditions and caused damage to the fruit at an early stage of development. Thrips are also common vectors of several viruses and if the symptoms are related to a virus thrips could be a potential vector. We are examining the fruit and will examine scouting data to help understand the relationship between the symptoms and thrips.

Samples of uprights showing symptoms and uprights without symptoms were collected to survey for possible virus infections. The results of the survey indicated the presence of tobacco spot virus (TSV) in some of the samples submitted, however, the data were not conclusive as to whether the virus is the cause of the symptoms. Although the virus has been detected in some plants, this does not mean the virus is having any adverse effect on the crop or that it is the cause of the symptoms. There are many factors that influence the impact of a virus on a crop including; insect pressure, environmental conditions, and abiotic stresses, mixed infections with multiple viruses. There are also several examples of viruses that are present in plants but are asymptomatic or do not have a negative impact on crop productivity. Also, there are numerous examples of a virus having a serious impact on one cultivar of a crop and being symptomless in another cultivar of the same crop. To better understand the relationship between the virus and the symptoms that we have observed, we will be collecting additional samples to conduct more detailed analysis. We are collaborating with Bob Martin who is a virologist with the USDA-ARS in Corvallis, OR who has worked on several fruit crops.

While we understand that this is a great concern for the industry and we are doing our best to address it, there are a couple points to be considered. The first is that we have had extremely unusual environmental conditions over the last 9 months and we have observed many unusual things in the field, not only in cranberry, but in all fruit crops across the state. It is therefore possible that unusual problems that are appearing are due to the extreme conditions and may not be repeated in a year with normal weather patterns. The second is that in the case of any of the possibilities mentioned above, there is no immediate fear that this will spread to other beds or regions during the rest of this season.

We will continue to pursue all of the potential causes of scarring on the fruit so that, if necessary, we can give timely recommendations on how to address the problem if it is likely to persist. We will keep you informed about the progress of the project through the newsletter.