

## VIRUS UPDATE 2020

Professor Pappu and his team at WSU managed to accomplish quite a lot in 2020 despite highly limited accessibility to their laboratory caused by the pandemic as well as nearby forest fires. Thanks go out to the WSU team for all the extra effort on our behalf!

Testing for virus in leaf samples provided by clubs, vendors, and team members was limited but informative. Four local Dahlia Societies participated in the clean stock project before we had to stop accepting others. More than half the samples tested for these clubs were positive for virus. On the other hand, each of the clubs was able to identify clean stock that could be used for propagation and sale at spring meetings in 2021. We are pleased to report that this project will be available again in 2021. Details will be posted on the ADS website, [dahlia.org](http://dahlia.org). Please plan for your club to participate by identifying your project manager early and following the guidelines on the website.

Tests in two individual gardens in 2020 produced disappointing results. In each case, a high percentage of Impatiens Necrotic Spot Virus (INSV) was found in the samples provided. The two gardens had been mostly clean the previous year. This virus has a wide range of host plants and we speculate that there was a host plant, perhaps new to the garden, that served as a source for transfer, by thrips, of the virus to the dahlias. Additional laboratory research is underway on INSV both to better understand this behavior and to study the distribution of INSV in the plants. The test results in one garden demonstrated our expectation that a clean garden will stay clean. All the plants that came from clean 2019 parents were negative for virus. Even more interesting, all the plants with clean grandparents in 2018 also tested clean in 2020.

One garden illustrated the importance of starting with clean stock. A high percentage of Tomato Spotted Wilt Virus (TSWV) was detected in that garden for the first time. It turned out that each of the TSWV plants were new cultivars for that garden, acquired from several different sources in the spring of 2020. In another garden, 47% of the plants acquired in 2020 were positive for one or more viruses; 53% were clean.

Professor Pappu's experience has shown that seedlings are generally free of virus. Testing of 25 first-year seedlings confirmed that expectation, none tested positive for virus, even though at least seven of the seed parent plants tested positive for TSV and/or INSV. (Now there is a great way to get clean stock!)

One objective of our team for 2020 was to better understand the behaviors of the individual viruses. Limited testing abilities limited our ability to do that. However, it is becoming clear that asymptomatic plants testing positive for INSV are likely to be free from that virus in the following year. On the other hand, plants that test positive for Tobacco Streak Virus (TSV) will almost certainly test positive the following year – even if the parent plants do not show virus symptoms. We hope to continue to study the individual virus characteristics next season.

One area of concern is that no Dahlia Mosaic Virus or Dahlia Common Mosaic Virus (DMV/DCMV) was detected again this year. Positive controls for these viruses from 2015 and 2016 plants are detected in the tests. Professor Pappu is working on determining whether these viruses have evolved in current stock varieties to the extent that they are not detectable with the current analyses.

Another generalization that held true in this year's testing was that plants with symptomatic foliage tested positive for virus. Our previous guidance of "If in Doubt, Throw It Out!" is still excellent advice. Unfortunately, there were also instances where the foliage on plants with virus were asymptomatic. That result underscores another key guidance to "Clean Between!" It is important to disinfect your tools as you move from one plant to the next! The clean-looking plant might have virus but be asymptomatic.

Perhaps the most basic conclusion from our virus work in 2020 is that we still have a lot to learn about viruses in dahlias. At the same time, it is also clear that we have learned enough to provide a very good foundation for reducing virus in our gardens. Start with clean stock; throw out plants with questionable foliage, clean/disinfect tools between working on plants in your garden and save only the very best-looking plants in your garden for the following year. We owe literally all this progress to the knowledge and the skills of Professor Pappu and the Plant Pathology group at WSU and to the generous financial support of Jim Chuey and the Scheetz-Chuey Foundation. Thank you all!

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