

# Asparagus Pathology Research Update

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Asparagus is a perennial vegetable that produces tender, edible spears for many years with proper pest management. Michigan is the nation's leading producer of asparagus. Growers have produced 16,565 tons valued at \$29 million on 8,700 acres in 2023. Asparagus production in the state is localized in Mason and Oceana counties in the northwest and Berrien, Cass, and Van Buren counties in the southwest. The goal of our 2022 and 2023 research was to evaluate cultivars and fungicides for control of purple spot disease in asparagus.



Figure 1. Asparagus showing disease symptoms in the field.

**Purple Spot.** *Stemphylium vesicarium* causes purple spot disease on asparagus spears, stems, branches, and cladophylls. This is a yearly disease that threatens spear marketability and long-term yield. In the spring, purplish lesions occur on emerging spears to be harvested rendering them unmarketable. The pathogen can infect the foliage in summer and fall, causing dark brown lesions on stems, branches, and cladophylls. Lesions develop in association with wounds caused by wind-blown sand and soil, typically on the wind exposed side of the spear. Purple spot is managed with well-timed fungicide applications to limit purple spot using the disease forecaster TOMCAST. The TOMCAST model uses the duration of leaf wetness period and the mean temperature during the leaf wetness period to calculate a daily disease severity value (DSV) ranging from 0-4. Warm temperatures and long leaf wetness periods result in high DSVs and more frequent fungicide applications. There are several commercial cultivars available to growers. 'Jersey Knight' is an older cultivar and not cultivated as often as other, newly developed cultivars. Similarly, 'Sequoia' is another cultivar that is not frequently cultivated. Currently, a popular cultivar is 'Guelph Millenium', but others include 'Guelph Equinox', 'Guelph Eclipse', and 'Pacific Challenger 2'. Identifying fungicides and cultivars for integrated purple spot control program may improve management strategies.

**Cultivar Evaluation of Purple Spot Disease Control in Asparagus.** In 2023, seven cultivars were evaluated at the West Michigan Research Station in Hart, MI. All cultivars were non-sprayed and organized in a random complete block design with four replicate plots. At the final rating date the cultivars with the least purple spot disease on the fern included 'Asparabest', 'Guelph Eclipse', and 'Jersey Knight'. In contrast, 'Sequoia' and 'Guelph Millenium' were among the cultivars with the most severe foliar disease. 'Guelph Equinox' and 'Pacific Challenger 2' displayed a moderate level of disease. Over the course of the season the cultivars with the lowest disease development included 'Jersey Knight', 'Guelph Equinox', 'Guelph Eclipse', and 'Asparabest'. The cultivars with the highest disease development over the course of the season included 'Guelph Millenium', 'Sequoia', and 'Pacific Challenger 2'.

**Field Trial: Testing New Products for Purple Spot.** A 13 treatment trial on ‘Sequoia’ asparagus was established to compare programs of fungicides with an untreated for control of purple spot. Products tested included Aprovia Top [3/7], Cabrio [11], Luna Experience [3/7], Luna Sensation [7/11], Luna Tranquility [7/9], Manzate Pro-Stick [M03], Merivon [7/11], Miravis Prime [7/12], Omega 500F [29], Quadris [11], Scala [9], Tanos [11/27], each alternated with Bravo WeatherStik [M05]. On 7 September, the untreated plot had 87.5% foliar disease. All treatments controlled disease compared to the untreated. Twenty-one days after last application, all treatments, except for Scala, controlled disease compared to the untreated.

**Field Trial: Testing Different Intervals for Purple Spot:** A field trial including ‘Sequoia’ asparagus was established to compare fungicide programs applied every 10 days, or according to TOMCAST 15 or 20 DSVs. The four fungicide programs were Manzate Pro-Stick, Merivon, Miravis Prime, and Quadris each alternated with Bravo WeatherStik. Merivon and Miravis Prime are not currently registered for use on asparagus. All treatments limited purple spot disease compared to the untreated control. For Miravis Prime and Merivon, the level of control was similar regardless of whether the sprays were timed every 10 days or according to TOMCAST 15 or 20 DSVs. The registration of these highly effective fungicides could protect asparagus fern from purple spot and reduce the number of applications by 25 to 50% when used with TOMCAST 20 DSV compared to a 10-day treatment.

**Please note:** The alphanumeric codes in the brackets [] are the FRAC codes. Fungicides are assigned FRAC codes by the Fungicide Resistance Action Committee which are based on the mode of action of the active ingredients. Check product labels and rotate among FRAC codes when applying fungicides.

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