

Purple Spot Disease of Asparagus

Dr. Mary K. Hausbeck and Cheryl L. Engfehr

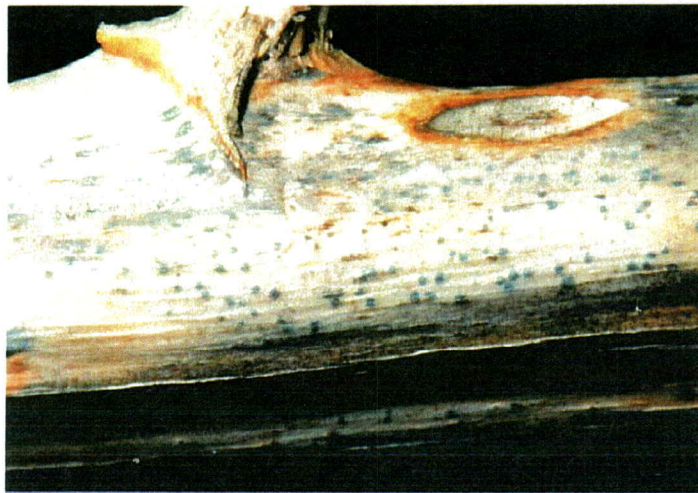
September 2021

MICHIGAN STATE UNIVERSITY Extension

The fungus, *Stemphylium vesicarium*, causes purple spot disease of asparagus spears and fern in Michigan. The sexual stage of the organism (*Pleospora herbarium*) produces overwintering structures (pseudothecia) that contain and release sexual spores (ascospores) in the spring. These structures appear to the eye as small, black dots on fern debris from the previous season. They are responsible for releasing ascospores during rain and causing the primary infection in the spring (see graph, below).



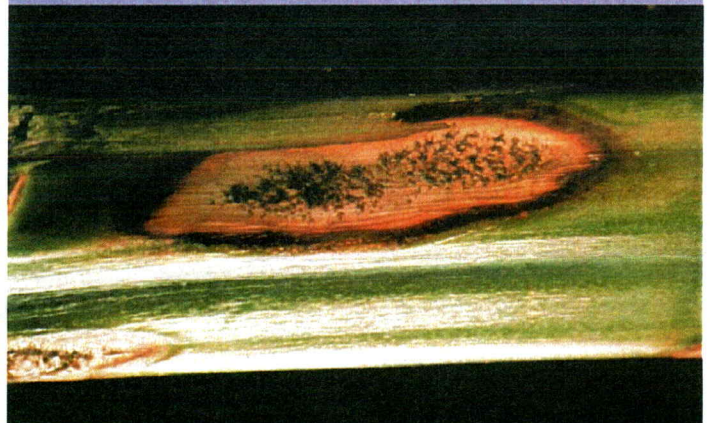
Purple spot on asparagus stems.



Pseudothecia overwintering on asparagus debris.



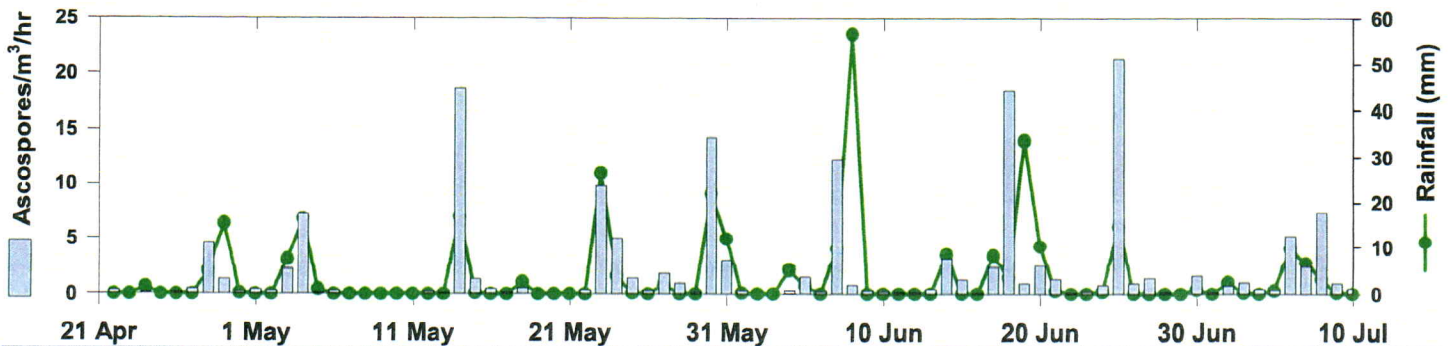
Conidia of *Stemphylium vesicarium*.



Purple spot lesion with visible spore production.

Following initial infection, the fungus produces multiple spore (conidia) cycles throughout the growing season. These conidia infect plants through wounds and stomata (the pores of a plant used for gas exchange) under wet conditions.

Purple spot disease was named for the sunken, purple, oval-shaped lesions that develop on asparagus spears. During seasons that experience heavy disease



Numbers of purple spot ascospores and rainfall from 21 April to 10 July in an asparagus field.

pressure (60 to 90% infection), spears may be rejected for fresh-market sales. Infection of the fern and cladophylls (needle-like branches) appear as tan to brown lesions that may expand, merge together and cause defoliation. Premature defoliation of the asparagus fern limits the plant's photosynthetic capability, thereby decreasing carbohydrate reserves in the crown for the following year's crop. This can reduce yield especially when premature defoliation occurs in consecutive years. Infection of asparagus fern in Michigan can be attributed to the no-till cultural system, which allows the previous year's plant debris to remain on the soil surface and provide the pathogen inoculum.

Michigan growers use cover crops to reduce spear wounding from windblown sand. Once harvest has concluded and the fern have developed, fungicides may be applied in conjunction with the TOM-CAST disease forecasting system. TOM-CAST is a standard in most commercial asparagus production systems in Michigan. This disease forecaster alerts growers to protect the asparagus fern only when the environmental conditions include extended dew or rainy periods accompanied by warm temperatures.

Effective fungicides applied according to TOM-CAST can allow growers to manage the disease, while saving money and preserving the environment.

The FRAC code is an alphanumeric code assigned by the Fungicide Resistance Action Committee and is based on the mode of action of the active ingredient. When treating for purple spot, rotate among products with different FRAC codes to reduce the possibility of resistance developing in the purple spot fungus.



Asparagus spears with purple spot.



Asparagus field with severe purple spot disease.

Purple Spot Management Strategies for ASPARAGUS

- Limit overhead irrigation.
- Plant cover crops to prevent sandblasting of the foliage.
- Use the TOM-CAST disease forecasting system to time spray applications.
- Apply fungicides.

Fungicides for Purple Spot of ASPARAGUS

Product	A.I.	FRAC	Comments
Quadris Flowable, Aframe, Arius 250, Azoxy 2SC Prime, Satori	azoxystrobin	11	REI: 4-hour, PHI: 100-day
Bravo WeatherStik, Echo, Equus 720, Initiate 720	chlorothalonil	M5	REI: 12-hour, PHI: 190-day
Dexter Max (DG)	mancozeb, azoxystrobin	M3 11	2 – 2.2 lbs/acre. REI: 24-hour, PHI: 180-day
Flint Extra (4.05)	trifloxystrobin	11	3 – 3.8 fl oz/acre. Apply on a 14-day interval as needed. REI: 12-hour, PHI: 180-day

Remember that the pesticide label is the legal document on pesticide use. Read the label and follow all instructions closely. The use of a pesticide in a manner not consistent with the label can lead to the injury of crops, humans, animals, and the environment, and can also lead to civil or criminal fines and/or condemnation of the crop. Pesticides are good management tools for the control of pests on crops, but only when they are used in a safe, effective and prudent manner according to the label.