

Stemphylium Management for Onions

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Spots and blights on the leaves can get in the way of good onion growth. In Michigan and other eastern production regions, producers wage a yearly battle to protect onions from various foliar diseases. Purple blotch used to be a common disease of onion leaves in the northeast U.S., but *Stemphylium* leaf blight has now become the most formidable opponent for many onion producers. *Stemphylium* leaf blight is caused by a fungal pathogen of the same name (*Stemphylium vesicarium*).

Early symptoms of *Stemphylium* leaf blight can be difficult to diagnose. Tip burn may be associated with herbicide damage but can also be a first symptom of disease. The brown spots of *Stemphylium* leaf blight are small at first but increase in size, extending down the leaf. These elongated lesions can appear similar to symptoms of bacterial stalk and leaf blight. An accurate diagnosis can be obtained by sending plant samples with symptoms to a university diagnostic lab. In healthy onions the oldest onion leaves die first. However, premature leaf death resulting in a mid-season loss of green leaf tissue is typical of *Stemphylium* leaf blight. Without healthy foliage, bulb size is reduced and so is total yield.

Many of the fungicides that were historically used to manage purple blotch do not adequately protect against *Stemphylium* leaf blight. Field research from Michigan State University has shown that the *Stemphylium* leaf blight pathogen is resistant to fungicides classified as strobilurins such as azoxystrobin, picoxystrobin, pyraclostrobin, and trifloxystrobin. On the other hand, Omega SC, Luna Tranquility SC, Miravis Prime SC, Tilt SL, and Luna Experience SC effectively limit *Stemphylium* leaf blight. Our research has also shown that fungicide programs to protect the onion's foliage from *Stemphylium* leaf blight should begin when plants are young (by the 5- to 7-leaf stage) and include highly effective products at the front end of the season to prevent the pathogen from becoming too well established (Figure 1). Protecting the onion leaves early in the season helps to ensure that the plants have a fighting chance to reach maturity and achieve their full yield potential.

Fungicide Trial Results: To illustrate the efficacy of various fungicides, the results of a fungicide trial conducted by Michigan State University in collaboration with a grower cooperator in Hamilton, MI are included below. Please remember that alternating among fungicides with different modes of action is necessary to avoid pathogen resistance and the label instructions must be followed. In research trials, single fungicide applications are often made to determine whether a particular active ingredient is effective and thus can play a role in a program in rotation with other fungicides.

Planting occurred on 10 May from seed; the cultivar used for this experiment was ‘Bradley.’ The field was managed according to standard commercial practices. Treatments were arranged in a completely randomized block design with four replicates in a split-plot arrangement. Each replicate was 20 ft with a 2 ft buffer between each plot in a row. Treatments were applied using a CO₂ backpack sprayer and a broadcast boom equipped with three XR8003 flat-fan nozzles spaced 18 in. apart, calibrated at 35 psi, and delivering 50 gal/A. The fungicide treatments were sprayed on 21 and 28 May; 4, 11, 18, and 25 June; 2, 9, 17, 23 and 30 July; and 6 August. Disease was assessed based on visual estimation of the percentage of foliage with *Stemphylium* blight symptoms on 9, 17, 23, and 30 July; 6, 13, and 24 August. Foliar data were analyzed using an analysis of variance (ANOVA) with means separation performed using Fisher’s protected least significant difference (LSD).

Results from the field trial (see below) indicate that each of the fungicide products tested in our trial were effective in limiting *Stemphylium* leaf blight compared to the untreated control. However, since many of the fungicide tested have similar modes of action as indicated by their FRAC codes, it is important to also use a broad-spectrum fungicide such as chlorothalonil (e.g. Bravo WeatherStik) in alternation with the locally systemic fungicides. Please note that the strobilurin fungicides have not adequately controlled *Stemphylium* leaf spot in recent years.

