

PLANT DISEASE AND INSECT ADVISORY



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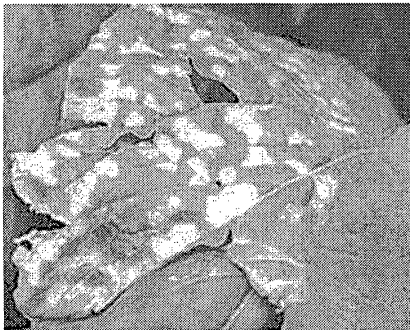
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Quadris Label Expanded To Leafy Brassicas John Damicone, Extension Plant Pathologist

Quadris (azoxystrobin) is a broad-spectrum fungicide that belongs to the strobilurin class of chemistry. Because of the favorable food and environmental safety profiles of most strobilurin fungicides, they have been registered relatively quickly by EPA. Quadris has been registered for control of countless diseases on numerous vegetable crops. For Oklahoma, important registered use sites include cucurbits, potatoes, tomatoes, and spinach. Azoxystrobin has also been registered as Abound for peanuts and pecans. The Quadris label was recently expanded to include even more vegetable crops as well as strawberries.



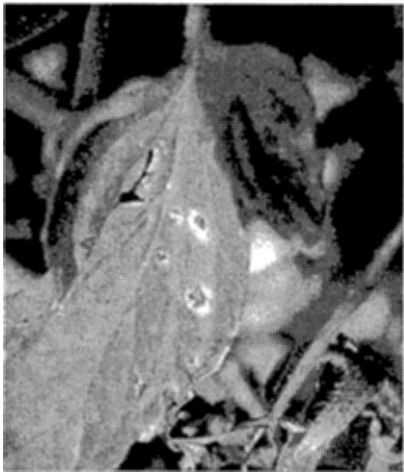
Leafy Brassicas grown in Oklahoma include turnip, mustard, collards and kale. These crops are mostly grown for processing. *Cercospora* leaf spot (white spot) is a widespread and damaging fungus disease of these crops in the state that causes leaf blemishing. Benlate was registered for control of this disease, but only on turnip. Quadris was also registered for control of *Cercospora* only on turnip. The recent label expansion now includes all leafy Brassicas. This addition to the Quadris label fills a critical need for Oklahoma now that all Benlate registrations have been canceled. Field trials with

Quadris have demonstrated good to excellent control of *Cercospora* leaf spot with one or two applications at 9.2 fl oz/A. The degree of disease control is similar to that for Benlate. The labeled rate is 6.2-15.4 fl oz/A.

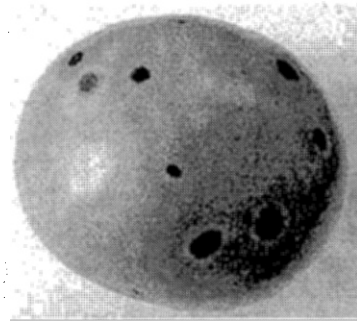
The manufacturers of azoxystrobin fungicides (eg. Abound, Quadris, Flint) are concerned about resistance developing over time with repeated use. Already, resistance to strobilurins has reported for powdery mildews, blast of ryegrass turf, and gummy stem blight of watermelon. Therefore, a resistance management strategy is directed on the various labels. For most diseases, the labels direct no more than two consecutive applications before switching to a fungicide with a different mode of action. Unfortunately, there are no effective fungicides other than Benlate registered for use on leafy Brassicas.

Bacterial Disease Control On Tomatoes And Peppers

John Damicone, Extension Plant Pathologist



Bacterial spot of tomato and pepper and bacterial speck of tomato are widespread problems in Oklahoma. Both diseases blemish tomato fruit and cause defoliation and yield losses on both crops when severe. The diseases are introduced into fields on contaminated seed and transplants. Once established, they can become yearly problems. Hopefully growers have implemented chlorine bleach seed washes and transplant spray programs that I have written about for the last several years. Given that



transplanting time is fast approaching, the following management practices for the field are recommended:

- 1) **Crop rotation** - Once established, the bacteria survive in crop residue from year to year. Select production sites that have not been cropped to tomatoes and peppers for at least two years. There is little value to the labor and expense of producing disease-free transplants if they are to be planted into a site where the diseases have been a recent problem.
- 2) **Disease resistant varieties** - Pepper varieties are available with resistance to the prevailing races of bacterial spot in Oklahoma. Effective varieties contain the *Bs2* gene or 'X3R' type of resistance. Unfortunately, no tomato varieties are available for bacterial spot, and only a few Roma types are resistant to bacterial speck
- 3) **Drip irrigation** - Overhead irrigation contributes to the spread and development of many diseases by increasing periods of splashing, runoff, and leaf wetness. Drip irrigation reduces wetness periods and disease spread.
- 4) **Disease diagnosis** - It is important to distinguish between bacterial diseases and fungal leaf spots such as Septoria leaf spot because symptoms are similar and control strategies differ. Submit suspect leaves to the OSU Plant Disease and Insect Diagnostic Laboratory to confirm the presence of bacterial leaf spots.
- 5) **Spray program** - Beginning within a week of transplanting, a spray program with Kocide (2 lb/A) or Maneb (2 lb/A)+Kocide (2 lb/A) should be initiated. Dithane can be substituted for Maneb on tomatoes. Where bacterial diseases have not been a problem, two sprays should be sufficient to prevent disease establishment. However, when transplanting into a problem field or where symptoms of bacterial spot or speck appear, the weekly spray program should be maintained. Since maneb and mancozeb cannot be applied within 5 days of harvest, use just Kocide or Kocide + Bravo during harvest.

ActiGard is a plant defense activator registered for use on tomatoes. It is an effective alone or may be used in alternation with the above materials. Actigard is not directly toxic to plant pathogens, but stimulates host plant resistance. The label permits up to six weekly applications beginning during the first week after transplanting. The 0.3 oz/A rate is recommended during the first two weeks after transplanting. Thereafter, the rate should be increased from 0.5 to 0.75 oz/A and the plants increase in size. Actigard may not be applied within 14 days of harvest. Other plant defense activators such as KeyPlex and Messenger have not been effective in University trials.

6) **Residue management** - Incorporate diseased crop residue into the soil quickly after harvest to hasten its decomposition.

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