



Pest e-alerts



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Vegetable Crop Fungicide Update

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Recent changes in pesticide registrations have occurred which may affect vegetable crop growers:



Maneb registration canceled: Maneb is a broad-spectrum, protectant fungicide that has been registered for over 40 years for disease control on numerous crops. It is a multi-site inhibitor in dithiocarbamate (M3) group of fungicides. Other members of this fungicide group include mancozeb, ferbam, metiram, thiram, and ziram. Because of health concerns surrounding dithiocarbamate fungicides and

associated metabolites, the number of labeled use sites (crops) has declined and use restrictions have increased over the years. For vegetable crops, the total allowed amounts per season have been reduced and the number of days to harvest from the last application (pre-harvest interval) has been increased. These changes have served to reduce dithiocarbamate fungicide usage. Nevertheless, dithiocarbamates remain important fungicides because they are effective against a wide range of diseases and they carry almost no risk for developing fungicide resistance. They are particularly important components of spray programs with strobilurin fungicides in preventing resistance problems.

United Phosphorus (UP), the sole registrant of technical maneb has voluntarily cancelled all maneb registrations in the U.S. This apparently is an economic decision because of limited maneb sales relative to the cost of re-registration. The products affected include Manex 4F (DuPont), and Maneb 80W and Maneb 75DF (UP). Rumor has it that existing inventories are mostly now in California for use on almonds where alternative fungicides are limited. While labels of maneb are still in effect, the product essentially will no longer be available.

For several of the vegetable crops on the maneb label, mancozeb (Dithane, Manzate, Penncozeb) is a labeled alternative and there will be no impact of losing maneb. These include sweet corn, cucumbers, melons (cantaloupes and watermelon), onions, potatoes, summer squash, and tomatoes. Mancozeb is not a registered alternative for several of the vegetable crops on the maneb label. These include cole crops (broccoli, cabbage, cauliflower, Brussels sprouts, Kohlrabi), eggplant, lettuce, endive, kale, peppers, pumpkins and winter squash. An expansion of the mancozeb label to include some of these orphaned crops (broccoli, cabbage, lettuce, peppers, pumpkins, and winter squash) is being sought, but will not be reviewed by the EPA until July 31, 2009 at the earliest and will not be on the label for the 2009 season.

On the positive side, EPA just approved the addition of several new vegetable uses for chlorothalonil (e.g. Bravo), a different broad spectrum and protectant fungicide. All of the lost maneb uses except for lettuce are now have registered chlorothalonil uses. Chlorothalonil will supply the need for a broad-spectrum fungicide control on vegetable crops.

A critical benefit for both maneb and mancozeb is their bactericidal activity when applied in combination with copper hydroxide (e.g. Kocide). The dithiocarbamate fungicide apparently increases the availability of copper ion which is toxic to the bacteria. These tank mixtures are recommended for control of bacterial spot of pepper and tomato, and bacterial speck of tomato where copper resistance is a problem in local bacterial pathogens. In tomato, mancozeb is already registered for this use. However, there is no alternative to maneb for this use on peppers. In previous trials on the control of bacterial diseases on peppers and tomatoes, I have not observed a great benefit from these combination treatments compared to copper alone. I may be that the bacterial pathogens in my trials are still copper sensitive. Some state may be submitting emergency exemption (Sec. 18) requests for the use of mancozeb to control bacterial spot on peppers. If growers in Oklahoma feel that this need is critical, they should let us know.



Folicur is registered for use on several vegetable crops: Folicur (active ingredient = tebuconazole) has recently been registered on several crops. Folicur is a triazole, or DMI fungicide in mode of action group 3. It is systemic and fairly broad spectrum with excellent activity Cercospora leaf spots and powdery mildew. It generally has little activity on anthracnose diseases and no activity on disease caused by water molds. Because it has a specific mode of action, resistance management strategies such as tank mixing and alternating

with fungicide from a different mode of action group should be used. Folicur has been widely used on peanuts where it provides control of leaf spot, southern blight, and Rhizoctonia limb rot. It is now off patent and several generic formulations are on the market. Its excellent activity on soybean rust also spurred some of the generic labeling. Thus the market competition for tebuconazole formulations has been keen and the fungicide has come down in price by about 50% making its use very economical. Only the Folicur brand currently has the vegetable crop registrations.

Labeled uses beneficial for Oklahoma include:

Crop	Disease
asparagus	Cercospora blight
beans	rust, Cercospora
corn	rusts, leaf spots
cucurbits	powdery mildew
onion	purple blotch
leafy Brassica greens (collards, kale, mustard, turnips, etc)	Cercospora and Alternaria leaf spots
beets	Cercospora
okra	Cercospora

Fact Sheet on Fungicide Resistance Revised: Fact sheet [EPP-7663 “Fungicide Resistance Management”](#) has been revised. It was originally written to describe the biology and management of fungicide resistance, and fungicide mode of action groups for Certified Crop Advisor training. However the mode of action listing was outdated as several new fungicide groups with high resistance risks including the strobilurins (Group 11) have come on the market since it was written. The fact sheet is probably over-kill for most producers, but the listing of fungicides by mode of action group should be useful in selecting appropriate fungicides in spray programs for crops such as turf, ornamentals, vegetables, peanuts, fruit, and nuts where multiple fungicide applications are made per season.

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