



Managing the Uncertainties in Growing and Marketing Fruits and Vegetables

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New Products for Disease Control

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Several new products have recently been registered for disease control on tomato. Table 1 lists new products, industry standard, and products not currently registered that were included in MSU trials in 2002.

Table 1. Fungicides tested for control of tomato diseases at MSU in 2002.

Product	Active ingredient	Company	Registered
Acrobat 40WP 6.4 oz	dimethomorph	BASF Corp	yes
AEC 67 65.4WG	~	duPont & Co, Inc	no
Bravo Ultrex 82.5WDG	chlorothalonil	Syngenta Crop Protection	yes
Bravo Weather Stik 6SC	chlorothalonil	Syngenta Crop Protection	yes
Cabrio 20WG 1.0 lb	pyraclostrobin	BASF Ag Products	yes
Cuprofix Disperss MZ	copper sulfate	Cerexagri, Inc	yes
Dithane DF Rainshield 75DF	mancozeb	Dow Agrosciences LLC	yes
Equus 720 6SC	chlorothalonil	Griffin LLC	yes
Gavel 75DF	mancozeb	Dow Agrosciences LLC	yes
Kocide DF 61.4DF	copper hydroxide	Griffin LLC	yes
KQ 667 68.8WG	~	duPont & Co, Inc	no
Manzate 200 75DF	mancozeb	Griffin LLC	yes
Previcur N 6SC	propamocarb HCl	Aventis CropScience	no
Quadris 2.08SC	azoxystrobin	Syngenta Crop Protection	yes
Ranman 4SC 2.0 fl oz	~	ISK Bioscience	no
Reason 4.17SC	~	Aventis CropScience	no
Ridomil Gold Bravo 76.5WP	mefenoxam + chlorothalonil	Syngenta Crop Protection	yes
Scala 3.33SC	pyrimethanil	Aventis CropScience	no

Trial 1. Fungicides play an important role in managing foliar blights and fruit rots caused by fungi such as *Alternaria* (early blight) and *Colletotrichum* (anthracnose). Each year, my program tests products that are newly registered and those that are not yet registered, and compares them to industry standards to see if they control disease (see table 2). Not all products were equally effective in preventing fruit rot. Bravo Weather Stik has been considered a standard for fruit rot control, and was effective in this trial. Equus 6SC also performed well, and was comparable to Bravo Weather Stik 6SC. Other effective programs included rotating Bravo Weather Stik 6SC with a strobilurin fungicide such as Quadris 2.08SC or Cabrio 20WG. Both Quadris 2.08SC and Cabrio 20WG were recently registered for use on tomatoes. Manzate 200 75DF + Kocide DF 61.4DF are commonly used fungicides and were effective in limiting fruit rot in this study. Other fungicides that are not yet registered may have a fit in managing tomato diseases and will be tested further.

Table 2. Control of diseases of fresh market tomato 'Mountain Spring' with fungicides.

Treatment and rate/A, applied at 7-day intervals	Trial 1	Foliar early blight*	Diseased fruit (5 plants) (%)
Untreated		6.0 c**	22.2 d
Bravo Weather Stik 6SC 12.0 fl oz, apps. 1-3 Reason 4.17SC 5.4 fl oz + Scala 3.33SC 10.2 fl oz, apps. 4-8		1.5 ab	18.4 cd
Bravo Weather Stik 6SC 12.0 fl oz, apps. 1-8 + Reason 4.17SC 2.7 fl oz + Bond 4.0 fl oz, apps. 4-8		2.5 b	18.3 cd
Bravo Weather Stik 6SC 12.0 fl oz, apps. 1-3 Reason 4.17SC 2.7 fl oz + Bond 4.0 fl oz, apps. 4-8 Previcur N 6SC 1.2 pt + Bravo Weather Stik 6SC 1.0 pt, app. 9		1.3 a	12.2 abc
Bravo Weather Stik 6SC 1.5 pt, alternated Quadris 2.08SC 6.2 fl oz		1.5 ab	9.9 a
KQ 667 68.8WG 1.5 lb, alternated Manzate 200 75DF 2.0 lb + Kocide DF 61.4DF 2.0 lb		2.3 ab	10.7 ab
AEC 67 65.4WG 3.0 lb, apps. 1-9 + Manzate 200 75DF 2.0 lb + Kocide DF 61.4DF 2.0 lb, apps. 2,4,6,8		1.8 ab	11.0 ab
Manzate 200 75DF 2.0 lb + Kocide DF 61.4DF 2.0 lb		1.3 a	11.0 ab
Bravo Weather Stik 6SC 1.5 pt		1.5 ab	9.9 a
Cabrio 20WG 1.0 lb, alternated Bravo Weather Stik 6SC 2.0 pt		1.5 ab	8.0 a
Equus 720 6SC 2.0 pt		2.5 b	11.3 ab

*Based on a visual estimation of percentage of foliage affected.

**Column means with a letter in common or with no letter are not significantly different (Fisher LSD; $P=0.05$).

Trial 2. In a second trial, fungicides were evaluated when early and late blights were present (Table 3). While late blight has not been a problem in Michigan, it has the potential to occur whenever the disease is a problem on potatoes. As new fungicides are registered for tomatoes and others identified as potential tools, it is important to determine their range of activity. The standard fungicides, including Bravo Weather Stik 6SC, Equus 720 6SC, Dithane DF Rainshield 75DF, and Ridomil Gold Bravo 76.5WP, were all effective in limiting both early and late blight. Newly registered products, including Acrobat 50WP (specific for late blight), Gavel 75DF, and Cabrio 20WG, performed well in this trial. Other products not yet registered also looked good and will be tested further.

Table 3. Chemical control of early and late blights of tomato 'Peto 822.'

Treatment and rate/A, applied at 7-day intervals	Trial 2	Foliar blight (%) [*]	
		Late blight	Early blight
Untreated		7.5 d**	4.8 c
Cabrio 20WG 1.0 lb		1.0 a	1.0 a
Cabrio 20WG 1.0 lb, alternated			
Acrobat 50WP 6.4 oz + Bravo Ultrex 82.5WDG 1.8 lb .		1.8 abc	1.3 a
Dithane DF Rainshield 75DF 3.0 lb, apps. 1-3			
Ranman 4SC 2.0 fl oz + Silwet L-77 2.0 fl oz, apps. 4-6			
Cabrio 20WG 12.0 oz, apps. 7-8		1.0 a	1.8 ab
Cuprofix Disperss MZ 42DF 5.0 lb		2.0 abc	1.3 a
Bravo Ultrex 82.5WDG 1.8 lb, alternated			
Ridomil Gold Bravo 76.5WP 2.0 lb		2.0 abc	1.8 ab
Dithane DF Rainshield 75DF 3.0 lb		1.3 ab	1.3 a
Bravo Weather Stik 6SC 2.0 pt		2.8 bc	2.0 ab
Equus 720 6SC 2.0 pt		3.0 c	2.8 b
Gavel 75DF 2.0 lb		2.3 abc	1.8 ab

^{*}Based on a rating of 1 to 10 where 1=0% to trace of disease to 10=complete defoliation and death.

^{**}Column means with a letter in common or with no letter are not significantly different (Fisher LSD; P=0.05).

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