

Evaluation of Fungicides for Control of Gummy Stem Blight (*Didymella bryoniae*) and Powdery Mildew (*Sphaerotheca fuliginea*) on Watermelon ‘Jubilee’, 2007

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Materials and Methods:

Experimental design:

Seed of watermelon ‘Jubilee’ was planted in the greenhouse on 16 April, 2007. The seedlings were transplanted in the field on 1 May. The plants were planted on 6-ft row centers in a randomized complete block design with five replicates of 15 plants per treatment. The plants were treated with the experimental materials on 9 and 23 May and 5 and 21 June (Table 1). On 16 May, watermelon seedlings in 6-in. pots infected with *Didymella bryoniae* were placed at each end of each treatment replicate. Over head irrigation was applied daily for one hour from 4:00 to 5:00 p.m. in order to enhance the spread of the pathogen within the test plots. The test was terminated 28 June after 7 weeks and four pesticide applications.

Table 1. Fungicide application schedule

Treatment	9 May	23 May	5 June	21 June
T1-Check				
T2- Byotrol 175 ppm	X		X	
T3- Quadris 2F 1.13L/ha	X	X	X	X
T4- BAY8 0.4L/ha (-Latex)	X	X	X	X
T5- BAY8 0.6L/ha (- Latex)	X	X	X	X
T6- BAY8+TBZ 0.5L/ha	X	X	X	X
T7- BAY8 + TBZ 0.75L/ha	X	X	X	X
T8 - Bay8+TFS 0.4L/ha	X	X	X	X
T9- BAY8+TFS 0.6L/ha	X	X	X	X
T10- Adament 8oz/A	X	X	X	X

Data collection and analysis:

Plants were examined for Gummy Stem Blight severity using the 0-11 Horsfall-Barratt rating scale and incidence on 23 May and 11 and 23 June. The incidence and severity of naturally occurring Powdery Mildew were rated at the same time. At the termination of the experiment on 28 June 28, marketable fruit were harvested and weighed. Data were analyzed using SAS 9.1 and ANOVA. Means separation was conducted using Duncan's Multiple Range Test following appropriate data transformation.

Results:

The month of May had only 0.14 in. of rainfall. June had 3.75 in. of rainfall with 66% (1.93 inches) of the total for that month falling on 2 June. These values reflect a lower than normal rainfall for the two months of the test. The five year average of rainfall for May at the test site is 2.21 inches and for June 4.72 inches. Therefore, daily overhead irrigation was employed to ensure an adequate level of disease.

Gummy Stem Blight (GSB) symptoms were initially observed on 16 May in the experimental plants and developed rapidly after a significant rainfall event on 2 June. At the termination of the experiment, Gummy Stem Blight incidence and severity reached 98% and 12.7%, respectively in the control plants, while Powdery Mildew (PM) symptoms in the controls reached 48% and 10%, respectively. All treatments except for treatment 4 significantly reduced the incidence of GSB compared to the untreated controls. All treatments significantly reduced the severity of GSB compared with the controls. Treatments 3 and 5-8 significantly reduced PM incidence compared with the untreated controls. Treatments 5, 8 and 9 significantly reduced the severity of PM compared with the untreated controls while treatment 2 increased the severity of this disease. No statistically significant differences in marketable fruit weight were observed between any of the treatments and untreated control

Table 2. Incidence and severity of Gummy Stem Blight (*Didymella bryoniae*) and Powdery Mildew (*Sphaerotheca fuliginea*) on watermelon 'Jubilee, 2007.

Treatment, Rate	GSB ¹ -Incidence (%) ²	GSB-Severity (%) ³	PM ⁴ -Incidence (%)	PM-Severity (%)	Marketable Fruit Wgt-lb
1-Untreated check	98.0a ⁵	12.7a	48.0ab	10.0b	10.4abc
2-Byotrol, 175 ppm	82.0b	6.3b	54.0a	14.8a	8.5bc
3-Quadris 2F, 1.13L/ha	74.0b	9.2b	24.0cde	11.3bc	7.6c
4-Bay 8, 0.4L/ha (- Latex)	86.0ab	5.9b	40.0ab	11.1bc	11.6abc
5-Bay 8, 0.6L/ha	80.0b	8.5b	12.0de	3.6c	13.7a
6-Bay 8 +TBZ, 0.5L/ha	66.0b	8.9b	18.0cde	11.6bc	10.1abc
7-Bay 8 + TBZ, 0.75L/ha	76.0b	5.6b	32.0bcde	7.3bc	10.4abc
8-Bay 8 + TFS, 0.4L/ha	76.0b	9.6b	10.0e	8.1c	12.9a
9-Bay 8 + TFS, 0.6L/ha	74.0b	10.2b	28.0bcde	5.8c	13.7a
10-Adament, 8 oz/A	80.0b	7.4b	34.0abcd	8.2bc	12.3ab

¹GSB= Gummy Stem Blight

²Arc sine square root transformation was used on percentage data prior to statistical analysis; non-transformed data is presented.

³Disease severity was evaluated using the 0-11 Horsfall-Barratt rating scale converted to percentages.

⁴PM= Powdery Mildew

⁵Means within columns followed by the same letter are not significantly different from each other (P<0.05) according to Duncan's Multiple Range Test.