

BEAN (BABY LIMA) (*Phaseolus lunatus* 'Eastland')
Downy Mildew; *Phytophthora phaseoli* race E

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Timing of preventative fungicide applications for the control of downy mildew of baby lima bean, 2003.

Fungicide timing schedules were tested for control of downy mildew of baby lima bean at the University of Delaware's Experiment Station Farm in Newark, DE. The baby lima bean cultivar Eastland was planted on 9 Jul with a commercial four-row Monosem planter. Dual Magnum 7.62E (1.5 pt/A) and Pursuit 2SC (2.0 oz/A) were applied pre-emergence for weed control. The soil type was a Matapeake silt loam and nitrogen (60 lb/A) was side-dressed after seedling emergence on 6 Aug. Treatments were arranged in a randomized complete block design with four replications. Each plot consisted of three sprayed rows, 20 ft long and spaced 30 in. apart. A single border row separated each plot. The middle 10 ft of the center row of each plot was evaluated for percentage of infected pods, percentage of infected plants and yield. On 5 Sep and again on 12 Sep all plots were inoculated with a sporangial suspension of *Phytophthora phaseoli*, race E, in the evening using a backpack sprayer. The plots were misted nightly with a low pressure misting system equipped with low volume misting nozzles. The system was operated intermittently from dusk to dawn daily to increase humidity and favor infection. Supplemental irrigation was provided when needed throughout the growing season. Two fungicides, Ridomil Gold/Copper 2.0 lb and Champ DP 2.0 lb were tested according to different application schedules. The first application was made on 3 Sep using a backpack CO₂ pressurized sprayer that delivered 30 gal/A at 52 psi. Applications were made with a broadcast boom equipped with hollow cone nozzles (D4 disks, no. 45 cores). On 5 Oct, the middle ten feet of the center spray row were evaluated for percent plants infected (presence of infection on the raceme, petiole or pod). The plants were harvested on 8 Oct and the percentage of infected pods and yield were determined.

The disease severity in this trial was very high. All plants and more than fifty percent of the pods in the control plots were infected. One application of Ridomil Gold/Copper WP 2.0 lb followed by two applications of Champ DP 2.0 lb every seven days significantly reduced percent infected plants and percent infected pods, and increased yield compared to untreated plots. Ridomil Gold/Copper WP 2.0 lb applied three times every seven days also gave good control and reduced the percentage of infected pods and increased the total pods and yield compared to the control plots. Ridomil Gold/Copper WP 2.0 lb applied two times every seven days, Ridomil Gold/Copper WP 2.0 lb applied two times every fourteen days and Champ DP 2.0 lb applied one time all reduced the percent infected pods and increased yield compared to the control plots. No phytotoxicity was observed for any of the treatments.

Treatment and rate/A (Application timing)*	Incidence (%) of downy mildew		No. pods/10 ft	Yield (lb/A)
	Plants	Pods		
Untreated control	100.0 a**	59.9 a	341.3 c	566.0 b
Champ DP 2.0 lb (A)	95.1 ab	23.9 bc	629.3 ab	2221.0 a
Champ DP 2.0 lb (A,C)	97.7 a	22.2 cd	732.0 ab	1612.0 a
Champ DP 2.0 lb (A,B,C)	97.9 a	25.9 cd	628.3 ab	1764.0 a
Champ DP 2.0 lb (A,B,C,D) **	93.4 ab	18.7 cd	729.0 ab	1742.0 a
Champ DP 2.0 lb (A,C) alt w/Ridomil				
Gold /Copper WP 2.0 lb (B)	98.8 a	35.5 cd	720.0 ab	1699.0 a
Ridomil Gold/Copper WP 2.0 lb (A)	96.4 a	35.7 bc	689.8 ab	1742.0 a
Ridomil Gold/Copper WP 2.0 lb (A,B)	88.2 ab	29.1 cd	681.8 ab	1960.0 a
Ridomil Gold/Copper WP 2.0 lb (A,C)	61.1 ab	19.9 cd	729.0 ab	2025.0 a
Ridomil Gold/Copper WP 2.0 lb (A,B,C)	52.1 b	10.2 d	778.8 a	2570.0 a
Ridomil Gold/Copper WP 2.0 lb (A) alt				
w/Champ DP 2.0 lb (B,C)	56.3 ab	8.1 d	643.5 ab	2004.0 a

* Application timing A=3 Sep, B=10 Sep, C=17 Sep, D=24Sep.

** Means followed by the same letter are not statistically different at P=0.05 (Tukey's multiple comparison).