

RADISH (*Raphanus sativus* ‘Cabernet’)
 Downy mildew; *Peronospora parasitica*
 Rhizoctonia hypocotyl rot; *Rhizoctonia solani*
 Clubroot; *Plasmodiophora brassicae*

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Evaluation of fungicides for the management of Rhizoctonia hypocotyl rot, clubroot and downy mildew in radishes, 2004.

The experiment was conducted at the Ohio Agricultural Research and Development Center Muck Crops Agricultural Research Station in Celeryville, OH. Fertilizer (17-17-17, 500 lb/A) was incorporated into the field on 27 Apr. Plots were disked, leveled, and compacted and radishes (cv. Cabernet) were direct seeded at a rate of 12 seeds/ft on 18 Aug. Treatments were arranged in a randomized complete block design with four replications. Each plot consisted of three 20 ft rows with 18 in. between rows. Dual II Magnum (1.5 pt/A) and Sevin (1 qt/A) were applied on 18 Aug and 30 Aug, respectively. Treatments were applied on 31 Aug using a tractor-mounted 3.5 hp Honda motor driven sprayer (46.5 gal/A, 40 psi). Foliar downy mildew was evaluated on 13 Sep using a modified Horsfall-Barratt rating scale. Radishes were harvested from a 10 ft section of the center row of each plot on 20 Sep, and mean clubroot disease severity, percent Rhizoctonia hypocotyl rot, and percent healthy roots were determined. Data for percent healthy plants and plants with Rhizoctonia hypocotyl rot symptoms were analyzed using square root transformed values; downy mildew ratings were converted to midpoint values; and the remaining data were analyzed without transformation, all by ANOVA using SAS statistical software. Means were separated using Fisher’s protected least significant difference test. Average maximum temperatures for 18-31 Aug and 1-20 Sep were 78.3 and 77.9 °F; minimum averages were 60.0 and 55.6 °F and rainfall was 4.5 and 1.2 in., respectively.

Disease pressure was low to moderate for downy mildew, low for Rhizoctonia hypocotyl rot, and high for clubroot. Agri-Fos, Acrobat 50WP alone and tank-mixed with Ridomil Gold EC, and Amistar tanked mixed with Ridomil Gold EC were most effective in reducing downy mildew. Radish plants treated with Amistar or Sonata had significantly less downy mildew than the untreated control, but more than the most effective treatments. Cabrio, Pristine, and Ridomil Gold EC alone or tank-mixed with Cabrio did not reduce downy mildew severity. None of the treatments reduced clubroot severity and plants treated with Ridomil Gold EC had more clubroot than the untreated control. There were no significant differences between treatments in percentage of radishes with Rhizoctonia hypocotyl rot or healthy radishes.

Treatment and rate/A	% Downy mildew	Clubroot severity ^z	% Rhizoctonia
Amistar 3.5 oz	11.8 bc ^y	26.7 b-e	0.9 a
Acrobat 50WP 6.4 oz + ^x Ridomil Gold EC 2 pt...	4.6 d	33.5 abc	2.5 a
Cabrio 10 oz	16.6 ab	26.2 cde	1.5 a
Amistar 3.5 oz + Ridomil Gold EC 2 pt.....	6.1 cd	26.1 cde	0.9 a
Acrobat 50WP 6.4 oz.....	6.1 cd	31.8 a-d	1.2 a
Pristine 18 oz.....	19.0 a	34.7 ab	0.3 a
Ridomil Gold EC 2 pt.....	13.1 ab	38.7 a	1.2 a
Sonata 2 qt.....	11.3 bc	23.2 e	2.0 a
Cabrio EG 10 oz + Ridomil Gold EC 2 pt.....	16.6 ab	32.5 abc	1.2 a
Agri-Fos 1.25 qt/100 gal.....	3.5 d	23.8 de	1.8 a
Control.....	19.0 a	29.1 b-e	1.1 a

^zClubroot severity calculated using the number of radishes in each of five categories and the midpoint value from the categories: 1 = 0% disease; 2 = 1-20% disease; 3 = 21-40% disease; 4 = 41-60% disease; and 5 = 61-100% disease. Severity = [(category midpoint*number of radishes in category)]/n, where n = number of total radishes harvested.

^yValues are the means of four replicate plots; means followed by the same letter within a column are not significantly different at p<0.05.

^xTreatments tank mixed together.