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# CONTROL OF BLACK SPOT ON ROSES WITH CYPROCONAZOLE USED AS A DRENCH

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**Background.** Black spot (*Marssonina rosae* (Lib.) Lind) is the most devastating rose disease worldwide. Infection results in lesion formation on leaves followed by rapid defoliation which weakens and eventually kills the plant. Cyproconazole, a triazole compound, controls black spot on roses when applied as a foliar spray using up to a 28-day spray interval. Uptake and activity from soil applications of other triazoles have been reported in the scientific literature. The objective of this study was to determine if soil-applied cyproconazole exhibits systemic activity against black spot on rose.

A randomized complete block of 50 (5 treatments and 10 single-plant replications) 'Peace' roses was planted on 9 March 1994 in a Bowie fine sandy loam (fine-loamy, siliceous, thermic plinthic paleudult) soil. A 0.37 $m^2$ reservoir was established around each plant using 15.24 cm metal flashing.

Drench treatments of 0, 32.5, 65, 97.5, and 130 g ai/ha cyproconazole were initiated on 9 May 1994. All treatments except the 0 rate were applied diluted in 1.89 l of water in a 0.37 $m^2$ reservoir around each plant. These treatments were repeated on 10 June, 15 July, 16 August, 19 September, and 18 October 1994.

Dual® and Princep® were used pre-emergent with spot treatments of Fusilade® and Gramoxone® post-emergent to control weeds. Each plant received 20 g homogenized 14-14-14 fertilizer on 31 May, 7 July, and 16 August. Drip irrigation was used supplementally from 21 April until 4 October 1994.

Data were taken on 6 July, 14 September, and 16 November 1994. A defoliation rating of 1 - 10 with 1 = 0 - 10% and 10 = 91 - 100% defoliation was assigned to indicate foliage loss due to black spot infection. A disease rating of 1 - 10 was also taken with 1 = no black spot and 10 = all leaves infected and heavy defoliation.

**Research Findings.** By the time the first application was made, black spot had already appeared on the plants. Disease pressure continued to be high throughout the summer so that by the time plants were rated in July, the controls were heavily infected. However, at the same time, the two higher rates resulted in significant control. At the time of the September ratings, both the defoliation and disease ratings showed a linear response with cyproconazole concentration with the highest rate giving the best control (Figure 1). The relationship between ratings and

concentration remained the same for the November ratings. However, there was a higher incidence of disease presumed to be due to the return of good conditions for disease development and increased susceptibility to the disease commonly seen at the end of the growing season. In addition, some lower leaf drop is normal by November.

**Application.** The results indicate that soil-applied treatments of cyproconazole can effectively control black spot on rose plants. Refinement of effective rates will depend upon many factors including cultivar susceptibility, product formulation for efficient application, and soil retention and movement and how these factors are affected by soil type.

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