

## **Onion Stunting Caused by Rhizoctonia: Management and Economic Importance in the Columbia Basin of Oregon and Washington**

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Rhizoctonia spp. can cause patches of stunted plants in onion bulb crops planted in sandy soils of the semi-arid Columbia Basin of central Oregon and Washington following cereal cover crops. Cover crops are killed with herbicides when onion seed is planted in spring, to protect onion seedlings from wind- and sand-blasting. However, Rhizoctonia spp. colonize dead cereal roots and crowns, and then infect onion seedlings, leading to stunted patches (0.5 to >10 m in diameter). Fungicide trials were completed in center-pivot irrigated onion fields in 2011 and 2012. Each plot was 12 beds wide x the field diameter. In 2011, a pre-plant, broadcast, incorporated application of Quadris (azoxystrobin) at 0.69 and 1.39 l/ha (9.5 and 19 fl oz/acre, respectively) resulted in 51 and 56% reduction in number of patches, 60 and 68% reduction in cumulative area of stunting, and 19 and 23% reduction in severity of stunting, respectively, compared to control plots. In 2012, when Quadris (1.39 l/ha) and Fontelis (penthiopyrad at 1.75 l/ha = 24 fl oz/acre) were applied in the same manner, only Quadris significantly reduced the number of patches (by 24%), cumulative patched area (33%), and disease severity (18%). Similarly, Quadris alone or Quadris + Rhizoburst (10-34-0 + 0-0-19 + humic acid) led to comparable results in another grower-cooperator trial in 2012. In a separate growers' field in 2012, GlyStar Plus (glyphosate) was sprayed at 3.5 l/ha (48 oz/acre) on the winter wheat cover crop 3, 17, or 27 days before onion seeding. Applying herbicide 17 or 27 days prior to seeding reduced the number of patches by 46 or 54%, cumulative patched area by 43 or 50%, and severity of stunting by 13 or 19%, respectively, compared to spraying herbicide 3 days prior to onion seeding. Stunting reduced the size of onions bulbs, with a greater effect the more severe the stunting. Reduction in total marketable yield in three growers' fields (cvs. Mercury, Cometa, and Tamara) ranged from 25-49% in patches with a severity rating of 1 (most plants stunted by <33%), from 48-58% in patches with a severity of 2 (plants stunted 33 to 66%), and from 61-79% in patches with a severity of 3 (stunted >66%). Research is in progress to understand the biology of Rhizoctonia spp. in onion production and evaluate the use of fungicides, fumigants, and potential tolerance of onion cultivars to the pathogen for management of stunting caused by Rhizoctonia.