

Fungicides Make Commercial Wild Rice Production Possible in Minnesota

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Wild rice originated in Minnesota and the surrounding Great Lakes. It is the only cereal native to North America that was domesticated from a wild plant. Before commercial wild rice production began, Native Americans hand harvested it from wild stands. The first commercial field of wild rice was planted in 1950 in Minnesota using seed from natural stands. After one successful season, fungal brown spot destroyed the second crop in this field. Over the next decade, fungal brown spot destroyed many other wild rice crops. Epidemics in 1973 and 1974 resulted in complete crop loss in many Minnesota paddies and contributed to the demise of several large wild rice farms [1].

Fungal brown spot disease inoculum comes mainly from infected crop debris. When paddies are flooded in the spring, infected crop debris floats to the surface and disease organisms infect the leaves and stems of wild rice as it emerges from the water. Brown spot forms brown lesions on the leaves and stems, interrupting photosynthesis and preventing seed formation. Infected panicles can become covered by a dense mat of fungus that generates massive amounts of fungal spores that disperse above the wild rice canopy [1]. After infection, leaves may shrink and die and stems may become girdled and break, causing the panicle to fall and seed to be lost. Growers report that the brown spot pathogen infects up to 100 percent of wild rice acreage in most, if not all, years [2].

Growers and experts estimate that wild rice losses from fungal brown spot can reach 75 to 100 percent without fungicide use but are typically reduced to 5 to 30 percent with the use of fungicides [2]. The use of fungicides was one of the key factors accounting for significant increases in Minnesota wild rice production beginning during the mid-1970s (Figure 1). USDA recently concluded that without fungicides, a severe outbreak of fungal brown spot could destroy the entire Minnesota wild rice crop [2].

References

1. Johnson, D.R. and J.A. Percich. 1992. Wild rice domestication, fungal brown spot disease, and the future of commercial production in Minnesota. *Plant Disease*. 76(12): December.
2. USDA. 2000. *Crop Profile for Wild Rice in Minnesota*. Available at: <http://www.ipmcenters.org/CropProfiles/docs/mnwildrice.pdf>.



Brown spot on wild rice



Harvesting wild rice in Minnesota

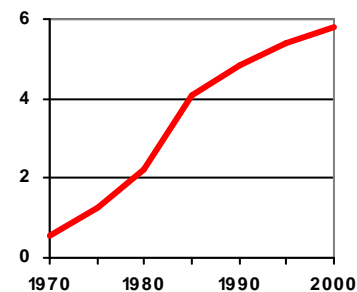


Figure 1: Wild Rice Production in Minnesota (Million Lbs/Yr)