

PRELIMINARY INVESTIGATIONS OF ROYAL MH-30[®] EFFECTS ON YELLOW NUTSEDGE DORMANCY

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Introduction

Onion producers in the Treasure Valley of eastern Oregon and western Idaho suffer great economic losses due to yellow nutsedge competition with onion. Our surveys have shown yield losses within yellow nutsedge patches as high as 83 percent and averaging 41 to 45 percent across numerous fields. Even with the herbicides available and effective crop rotations, the ability of yellow nutsedge to grow and reproduce exceeds our ability to manage it. We have demonstrated that under local conditions a single yellow nutsedge plant can produce 2,000 to 3,000 shoots and more than 18,000 tubers in a single year. The recently completed Pest Management Strategic Plan for onion production in the West included yellow nutsedge as one of the most important pests in onion production. Some of the onion and potato crops in the Treasure Valley are treated with Royal MH-30[®] (maleic hydrazide, a growth regulator) to prevent sprouting in storage. It seems possible that MH-30 could also affect sprouting of yellow nutsedge tubers. Trials were established to examine the effect of MH-30 applications in the fall on yellow nutsedge germination the following year.

Materials and Methods

Plots used to evaluate yellow nutsedge response to irrigation were divided in half and half of each plot was sprayed with Royal MH-30[®] Xtra. Each plot was 6 ft in diameter. The spray was kept on one side of each plot by placing a panel between halves at the time of application. MH-30 Xtra was applied at 7.0 pt/acre in 10 gal/acre of water on September 23, 2003 and was applied at 14.0 pt/acre in 20 gal/acre of water on October 15, 2004. Shoot emergence was determined by counting shoots in 2 1-ft² quadrates in 2004 and 1 1-ft² quadrate in 2005 in the treated and untreated halves of each plot. Shoot counts were made June 24, 2004 and June 13, 2005. Paired samples were analyzed using a paired sample T-test at alpha 0.05.

Results and Discussion

MH-30 Xtra reduced yellow nutsedge germination by 70 percent in 2004 and 75 percent in 2005 (Table 1). These results document that MH-30 Xtra does affect yellow nutsedge tuber germination. Additional trials are needed to determine the impact of MH-30 Xtra on yellow nutsedge germination, competitiveness, and survival in subsequent crops.

Table 1. Yellow nutsedge shoot densities in plots with or without Royal MH-30[®], Oregon State University, Malheur Experiment Station, Ontario, OR, 2005.

Year	Yellow nutsedge shoots*		P-value [‡]	Decrease in germination ----%----
	Nontreated -----no./ft ² (SE)-----	MH-30 treated [†]		
2004	40 (12.88)	12 (6.87)	0.000457	70
2005	59 (18.82)	15 (8.29)	0.000255	75

*Shoot counts were taken June 24, 2004 and June 13, 2005.

[†]MH-30 Xtra was applied at 7.0 pt/acre in 10 gal/acre of water on September 23, 2003 and at 14.0 pt/acre in 20 gal/acre of water on October 15, 2004.

[‡]Significance was determined using a paired sample T-test at a 0.05 significance level.