

Proso Millet Tolerance to Sharpen®

A field study was initiated at the High Plains Agricultural Laboratory near Sidney, NE to evaluate proso millet tolerance to Sharpen herbicide. The experimental plot design was a randomized complete block with three replications. Herbicide treatments were applied with an ATV-mounted sprayer set to deliver 12 gallons/acre at 3 miles/hour and 15 psi. Plots were 10 feet wide by 40 feet long. The study was located on an Keith silt loam soil with an organic matter content of 2.7% and a pH of 6.9. The early preplant (EPP) treatments were applied on June 1, 2010. Proso millet 'Sunrise' was no-till seeded into wheat stubble on June 18 at the rate of 15 pounds/acre. The PRE treatments were applied on June 18, after planting. Immediately after applying the PRE treatments, one-quarter of an inch of water was applied via sprinkler irrigation to ensure herbicide activation. We had intended to apply one-half of an inch of water at this time, but wet soil conditions limited what we could apply without runoff. Crop injury from Sharpen consisted of leaf necrosis and stand reduction. All plots were hand-weeded to eliminate weed pressure as an influence to crop response. Plots were harvested on September 9.



Proso harvest.

Visual crop injury was greatest when Sharpen was applied EPP at the rate of 4 ounces of product per acre. Visual injury was reduced at the lower rate of application. Visual injury from Sharpen applied PRE was not significantly different from the nontreated check. Although plants stands were somewhat variable and no significant treatment differences were observed, the lowest mean plant stand was observed with the EPP treatment of Sharpen applied at 4 ounces per acre. Despite the early crop injury observed in this study, proso millet was able to overcome the injury and no significant yield differences were observed. The lack of yield differences despite early season crop injury agrees with previous work done in 2008 and 2009. In 2008, visual crop injury was greatest, and plant stands reduced the most, when Sharpen was applied PRE. In 2009, very little crop injury was observed.

Although there is a risk for early season crop injury with Sharpen applied EPP or PRE to proso millet, crop yield has not been negatively affected. Injury has been small at the 2 ounce per acre rate, which will likely be the recommended use rate should proso millet be added to the Sharpen herbicide label. Soil moisture levels and the timing of rainfall seems to influence the amount of crop injury observed and effect of herbicide application timing on crop injury. Good growing conditions from 2008 through 2010 likely helped proso millet recover from early season injury in the three years that these studies have been conducted.

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Treatment	Rate	Timing	Crop injury	Plant stand	Yield
	oz prod/A		%	plants/m row	bu/A
Sharpen	2	EPP	9	28	44.1
Sharpen	4	EPP	15	25	46.3
Sharpen	2	PRE	1	36	44.7
Sharpen	4	PRE	1	31	45.2
Nontreated check			0	30	42.5
LSD (5%)			6	12	4.3