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"Small-plot, low-dose treatments of triclopyr for selective control of Eurasian watermilfoil"

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Small-plot treatments of triclopyr were conducted on Lake Minnetonka and Lake Minnewashta, MN, during June 1998 to investigate the herbicide's potential to selectively control Eurasian watermilfoil (Myriophyllum spicatum L.) at low doses. Applications were made on l-ha plots with rates based on plot type: references (0 mg acid equivalent (ae) L^{-1}), protected plots (0.5 mg ae L^{-1}), semi-protected plots (1.0 mg ae L^{-1}), and unprotected plots (1.5 mg ae L^{-1}). Plot protection was a function of potential mixing in the water column. Herbicide residues were monitored to determine dissipation 1 through 72 h post treatment. Samples were analyzed with both a high performance liquid chromatography technique and an enzyme-linked immunosorbent assay method. Results from these two analytical techniques were compared, and found equivalent (R^2 = 0.96). Triclopyr had a relatively short half-life for each treatment (3.5 hr at 0.5 mg ae L^{-1}, 2.9 hr at 1.0 mg ae L^{-1}, and 4.2 hr at 1.5 mg ae L^{-1}). At 8 weeks post treatment, there was a 30 to 45% reduction in Eurasian watermilfoil distribution. Greatest Eurasian watermilfoil control was achieved in plots using higher triclopyr rates. Frequency of native plants decreased by 24% in the untreated reference plot, 20% in the 0.5 mg ae L^{-1} plot and 6% in the 1.0 and 1.5 mg ae L^{-1} plots. Mean species per point, however, either increased or remained unchanged in seven of the nine treated plots. Decline of native plants may be partially attributed to the onset off fall senescence. Larger contiguous areas, higher triclopyr rates, and sequential applications may be required to enhance Eurasian watermilfoil control in small-plot, partial lake treatments.

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