

Glyphosate absorption by shoots and rhizomes of native versus hybrid cattail (*Typha*)

Wetlands in the Prairie Pothole Region of North America are integrated with farmland and contain mixtures of herbicide contaminants. Passive nonfacilitated diffusion is how most herbicides can move across plant membranes, making this perhaps an important process by which herbicide contaminants are absorbed by wetland vegetation. Prairie wetlands are dominated by native cattail (*Typha latifolia*) and hybrid cattail (*Typha x glauca*). The objective of this batch equilibrium study was to compare glyphosate absorption by the shoots and rhizomes of native versus hybrid cattails. Although it has been previously reported for some pesticides that passive diffusion is greater for rhizome than shoot components, this is the first study to demonstrate that the absorption capacity of rhizomes is species dependent, with the glyphosate absorption being significantly greater for rhizomes than shoots in case of native cattails, but with no significant differences in glyphosate absorption between rhizomes and shoots in case of hybrid cattails. Most importantly, glyphosate absorption by native rhizomes far exceeded that of the absorption occurring for hybrid rhizomes, native shoots and hybrid shoots. Glyphosate has long been used to manage invasive hybrid cattails in wetlands in North America, but hybrid cattail expansions continue to occur. Since our results showed limited glyphosate absorption by hybrid shoots and rhizomes, this lack of sorption may partially explain the poorer ability of glyphosate to control hybrid cattails in wetlands.