**Title: Effects of Age of Weed and Method of Weed Management on Phosphorus Losses in Runoff**

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**ABSTRACT**

The role of crops and cover crop residues on Phosphorus (P) losses during freezing, thawing and runoff has been studied extensively. However, the potential contribution of weeds to P losses is relatively unknown. Weeds are often managed using a variety of methods, and timely management is critical to crop growth and P losses. The response of six weed species to three weed control methods (herbicide, desiccation and no management), applied at three life stages (3 weeks, 6 weeks, and 9 weeks) was evaluated. A portion of the samples were subjected to freezing and thawing and total dissolved phosphorus (TDP) was measured in the leachate. The remaining samples were dried, grinded and analyzed for total phosphorus in the biomass.

The result showed that the load of TDP was lower in unmanaged volunteer wheat and foxtail plants than in desiccated volunteer canola plants. While the load of TP in the biomass was higher in younger canola and pigweed plants. Older plants released less P than younger plants. Weed management resulted in high TDP losses, while no management resulted in higher TP retention in the biomass. Therefore, weed management determines TDP loads in runoff, while age determines TP loads in biomass.