

MOLECULAR BASED IDENTIFICATION AND PHYLOGENY OF THE *CHENOPODIUM* COMPLEX WITHIN THE NORTH CENTRAL STATES. Sukhvinder Singh and Patrick J. Tranel, Graduate Research Assistant and Associate Professor, Department of Crop Sciences, University of Illinois, Urbana, IL.

The genus *Chenopodium* is a complex group as it includes several species which have considerable genetic and morphological variation, sometimes even within species as is the case with *Chenopodium album*, known as common lambsquarters. Several species of *Chenopodium* resemble each other e.g., *C. album*, *C. berlandieri* and *C. strictum*, due to similar morphology. Recently, it was reported that common lambsquarters, becoming more difficult to control with glyphosate. To plan a proper weed control strategy, we need to correctly identify the weed species. This study was initiated to identify the prevalent *Chenopodium* species that are found in the North Central States. To investigate this, a molecular based phylogeny was developed from twelve *Chenopodium* species prevalent in North Central states using the sequence from the internal transcribed spacer (ITS) region. Using the ITS based key, we studied the diversity of *Chenopodium* species in five different North Central states. Preliminary studies from ITS sequence from these samples showed that there is no variability in these samples and they all fall in the same cluster with *Chenopodium album*. ITS sequence data also indicated that there was no difference in molecular phylogeny between the most and the least glyphosate sensitive populations. Further, we found variability in response to glyphosate among the different *Chenopodium* species and also among different populations within the states. Some species, such as *C. ficifolium* and *C. berlandieri*, have higher tolerance to glyphosate than *C. album*. Despite the fact that there is variability in response to glyphosate among populations from different states, this variability cannot be attributed to variable response among the *Chenopodium* species. In other words increased glyphosate tolerance is occurring due to evolution of *C. album* rather than a species shift.