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***GST Study in Wild Oats***

Wild oats (*Avena fatua* L.) are a major problem in cereal grain crops. Near continuous use of triallate, a preemergence herbicide, selected for wild oat populations that are resistant to the herbicide in several areas of Montana. Subsequent use of other herbicide families has led to the evolution of a wild oat biotype with resistance to at least four different herbicide modes of action. Preliminary evidence supports the idea that resistance is due to enhanced transcription of one or more genes for cytochrome P450 monooxygenases. The purpose of my project is to investigate the hypothesis that increased glutathione S-transferase (GST) activity is also involved in the multiple herbicide resistance phenotype. In the greenhouse, two herbicide resistant and two herbicide sensitive wild oat lines were treated with three herbicides with different modes of action. Plant tissue was harvested after 24 and 48 hours, and frozen at -80C. Tissue was ground under liquid nitrogen and proteins extracted into a Tris-based buffer. Total protein assays are conducted using the Bradford procedure and GST activity assays are being performed by monitoring absorbance of the CDNB conjugate at 340 nm. My objective is to determine if there is a difference in the GST activity between the sensitive and resistant lines. GST activity levels before and after herbicide application will also be compared to see if activity increases in response to the application of the herbicides. These experiments are ongoing and the GST response comparisons will be discussed.