

INFLUENCE OF TILLAGE METHODS AND WATERFOWL MIGRATION ON WEED SEED DISTRIBUTION

Jaime A Farmer

Dr. Kevin W. Bradley, Thesis Supervisor

ABSTRACT

With the increasing difficulty in controlling GR *Amaranthus* species in GR soybean systems, it is important to evaluate the effect of different tillage systems on *Amaranthus* species emergence in a glufosinate-resistant soybean system. Two years of identical field experiments across the Mid-western U.S. were used to determine the effects of deep, conventional, minimum, and no-tillage treatments combined with one of two herbicide programs on season long emergence of *Amaranthus* species in glufosinate-resistant soybean. The deep tillage system resulted in a 62 to 73% reduction in *Amaranthus* emergence when compared to the other tillage treatments. The deep tillage system placed 28% of the *Amaranthus* seed within the top 5-cm of the soil profile compared to 79, 81, and 77% in the conventional, minimum and no-tillage systems. Overall, the use of deep tillage with a residual herbicide program provided the greatest reduction in *Amaranthus* species emergence, thus providing a useful tool in managing herbicide resistant *Amaranthus* species where appropriate.

Migratory waterfowl have often been implicated in the movement of troublesome agronomic weed species. This research was conducted to determine what weed species are being transported throughout Missouri by ducks and snow geese and to determine the recovery rate and viability of 13 agronomic weed species after passage through a duck's digestive system. A field collection experiment coupled with a controlled feeding study revealed that ducks and snow geese are consuming a variety of agronomically-important weed species, including *Amaranthus* species which can remain viable after passage through their digestive tracts and can be dispersed over long distances.