SOIL MOISTURE AND THE SURVIVAL OF GARLIC MUSTARD SEEDLINGS. Richard D. Dirks* and Kevin D. Gibson, Graduate Student and Assistant Professor, Purdue University, West Lafayette, IN.

Garlic mustard, (*Alliaria petiolata)*, a non-native biennial herb that displaces native species, particularly spring ephemerals, has become widespread in eastern deciduous forests of the United States. Efforts to limit the spread of this invasive weed through conventional weed management practices have been largely unsuccessful. The development of alternative practices is clearly needed but will require a greater understanding of the processes and factors facilitating or limiting garlic mustard survival and dispersal. We assessed the relationship between abiotic factors and the survival of *A. petiolata* cohorts in pine and oak forests in Purdue University's Martel Forest in 2002.
Garlic mustard survival was generally lower for late emerging cohorts than for early emerging cohorts and ranged 31% to 57%. Garlic mustard had lower survival on warm dry soils than on cool wet soils. There was a significant negative relationship between average soil temperature and percent survival at the end of the season. Changes in soil water content and soil temperature during the season explained between 13% and 57% of the variation in cohort 1 survival. Our results suggest that garlic mustard survival may be closely linked to its ability to emerge early in the season and initiate growth during more favorable environmental conditions. Our results also suggest that xeric sites may be less susceptible to garlic mustard invasion than mesic sites. Additional research to determine the relationship between soil moisture and garlic mustard distribution and movement across the landscape should be evaluated.

2002 North Central Weed Science Society Abstracts 57:101.