

TILLAGE PRACTICES, WEED SEED BANKS, AND WEED COMMUNITY DYNAMICS. Douglas D. Buhler, Professor and Chair, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824.

The composition of weed communities of arable land is largely a reflection of agronomic practices. Reducing tillage in crop production changes the environment where weeds are managed, survive, and reproduce. The shift from tillage systems that include extensive annual soil disturbance to systems that minimize soil disturbance will cause major changes in weed population dynamics. While results have varied among experiments, some general trends in weed population dynamics in conservation tillage systems have arisen. These include increased populations of perennial, summer annual grass, biennial, and winter annual species. Densities of large-seeded dicot species often decrease with decreasing tillage. The ecological and management aspects of these changes are varied and complex. Effective, economical, and environmentally sound weed management in conservation tillage systems over the long-term will require integration of new information with established principles of weed management. New technologies must be developed to deal with the altered ecosystems created by conservation tillage production systems. Current knowledge indicates that many weed species and weed control tactics behave differently as tillage is reduced or eliminated. These changes must be taken into consideration to develop economically and environmentally sound weed management systems.