

ISOXAFLUTOLE DISSIPATION UNDER FIELD CONDITIONS IN WEST CENTRAL MINNESOTA. Sharon K. Papiernik, William C. Koskinen, Brian Barber, and Gary Amundson, USDA-Agricultural Research Service, Morris, MN 56267 and St. Paul, MN 55108.

Isoxaflutole is a relatively new pre-emergence herbicide used in corn production. Isoxaflutole's phytotoxic metabolite (DKN) has a low sorption coefficient and may be persistent in soil, indicating that this herbicide may have a tendency to contaminate water resources through leaching and runoff. Two-year field dissipation studies were conducted in three soil types (sandy loam, loam, and clay loam) in west central Minnesota to determine the rate at which isoxaflutole+DKN dissipates under relatively cool, wet soil conditions. Separate plots were treated with isoxaflutole and potassium bromide, a non-sorbed, non-degraded tracer. Soil cores were collected six times during the growing season to a depth of 1 m and sectioned into 0-10, 10-20, 20-40, 40-60, and 60-100 cm increments. Bromide or herbicide concentration was measured in replicate samples at each depth at each sampling time. Isoxaflutole+DKN dissipated by both degradation and transport in each soil, with a dissipation half-life (DT50) of 7-17 d. Leaching of low concentrations of herbicide ($<0.03 \mu\text{g g}^{-1}$) below 40 cm was observed in both years, but leaching was not a major dissipation mechanism. Because Br^- concentrations decreased by $<20\%$ in the first 10 days in each soil, much of the herbicide dissipation is attributed to transformation. These results will provide information for the development of best management practices for this herbicide.