

WILSON, ROBERT G.* and PATRICK J. SHEA, University of Nebraska, 4502 Ave. I, Scottsbluff, NE 69361. - Dinitroaniline herbicide carryover to sugarbeets.

ABSTRACT

A four-year field experiment was conducted near Scottsbluff, NE, to compare the soil degradation of ethalfluralin, pendimethalin, and trifluralin in soil. Dinitroaniline herbicides were applied preplant incorporated before planting dry edible beans at rates of 0.56, 1.12, and 2.24 kg/ha. Herbicide degradation was monitored by analyzing soil utilizing a chemical extraction and gas chromatograph analysis of the extract. Sugarbeets followed dry edible beans in the crop rotation and crop growth was related to dinitroaniline herbicide concentration. Moldboard plowing of the soil before sugarbeet planting reduced dinitroaniline herbicide concentration in the upper 0- to 8-cm zone of the soil profile by 39 and 76% in 1990 and 1992, respectively. Moldboard plowing increased the concentration of herbicide in the 15- to 30-cm zone of the soil profile. Ethalfluralin degraded faster in the soil than pendimethalin or trifluralin. Eleven months after herbicide application soil residues of 0.07 ppmw or greater of pendimethalin or trifluralin in the upper 0- to 8-cm of the soil profile reduced sugarbeet growth and stand.