

## Translocation of herbicides in leafy spurge

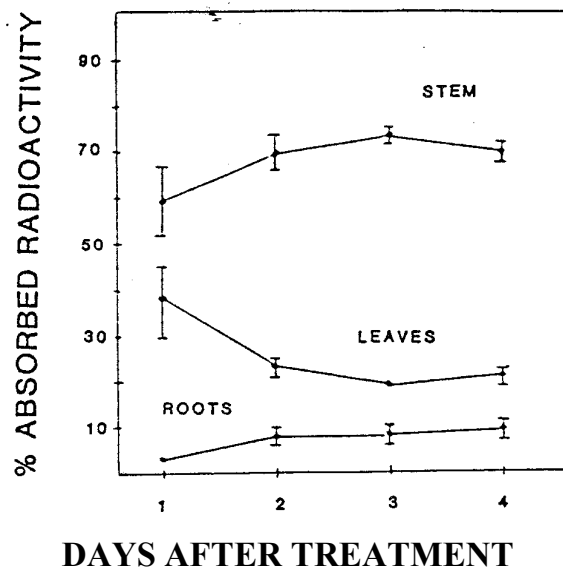
J. C. SUTTLE and D. R. SCHREINER

U.S.D.A. Metabolism and Radiation Research Laboratory, Fargo, ND 58105

We have initiated a research program designed to systematically examine the effects of environmental factors, cultural practices and plant growth regulators on herbicide translocation in leafy spurge. Our first goal was to reduce the variability associated with field-grown material. This was accomplished with the following techniques: 1) a stock of cloned plant material was derived from a single plant and was utilized in all experiments; and 2) rooted cuttings to be used for experimental analysis were obtained from the cloned stock. Utilizing this system we were able to eliminate genetic variability and were able to considerably reduce the variability associated with non-uniformity of plant size and root to shoot ratios.

Using this system we have begun to examine the translocation of herbicides such as 2,4-dichlorophenoxy acetic acid (2,4-D). The results of a typical time-course experiment examining the movement of radioactively-labeled, foliarly-applied 2,4-D are shown in Figure 1.

With time, there was a progressive loss of radioactivity from the leaves with a concomitant increase in radioactivity associated with both the stem and root material. By the end of the experiment (day 4) the aerial portions of the cuttings exhibited typical phenoxy injury symptoms yet less than 10% of the absorbed radioactivity had reached the root system.



While our research program is still in its infancy, these results demonstrate the potential usefulness of our system in evaluating various factors which can be used to enhance basipetal translocation of herbicides. Research will continue in an effort to provide field-oriented investigators rational approaches to improved leafy spurge control with conventional herbicides.