STIMULATED DRIFT INJURY TO OAKS AND HACKBERRY. Jayesh B. Samtani, James E. Appleby, and John B. Masiunas, Graduate Research Assistant, Research Associate Professor, and Associate Professor, Department of Natural Resources and Environmental Sciences, University of Illinois, 1201 W. Gregory Dr., Urbana, IL 61801.

During 2004 and 2005, two-year-old potted red and white oak seedlings, 0.6 m in height, were treated at 1/4, 1/10, and 1/100X of the standard field-use rate of six herbicides: 1) 2,4-D ester (LV 400) (1.5 kg a.i./ha); 2) glyphosate (Roundup Weathermax) (1.1 kg a.i./ha); 3) 2,4-D ester + glyphosate (0.8 + 1 kg a.i./ha, respectively); 4) dicamba (Clarity) (0.7 kg a.i./ha); 5) acetochlor + atrazine (Harness Xtra) (3.5 kg a.i./ha); and 6) s-metolachlor (Dual Magnum) (2.0 kg a.i./ha). The trees were sprayed with the herbicides at three growth stages: (i) swollen bud, (ii) leaves unfolding stage, and (iii) expanded leaves. Oaks treated with water served as controls. A compressed air sprayer with a moving 80015 EVS spray nozzle delivering 187 liter/ha at 207 kPa was used to apply the herbicides. Weekly visual ratings based on overall health of the plant were conducted. We determined photosynthesis rates once each month and measured leaf area at the end of growing season. The greatest herbicide injury occurred when seedlings were treated at the leaf unfolding stage. Injury developed within five days after treatment (DAT) with the growth regulator herbicides 2,4-D and dicamba. The injury consisted of leaf cupping and rolling, leaf curling, and elongation of the leaf tip. A few seedlings treated with 2,4-D had leaf strapping with parallel veination. Oak seedlings treated at the expanded leaf stage had wilted, browning leaves. Injury from 2,4-D and dicamba lasted throughout the growing season. The chloroacetamide herbicides, acetochlor and s-metolachlor, applied at the leaf unfolding stage caused browning of the interveinal tissue which subsequently dropped off, leaving only the veins. These symptoms are similar to “leaf tatters” which we have observed on mature oak trees. Later flushes of growth were normal. Atrazine in other studies did not enhance chloroacetamide injury. Oak seedlings treated with glyphosate at the leaf unfolding stage had leaf yellowing and browning, abnormal leaves, and death of the growing points. Glyphosate treatment at the expand leaf stage caused slow growth, browning of leaves, and leaf wilting. This study provided documentation of injury symptomology caused by drift from common agronomic herbicides and supported our contention that “leaf tatters” could be caused by chloroacetamide drift.