

DOES PHENOLOGICAL DEVELOPMENT RATES EXPLAIN DIFFERENCES IN CHLOROACETANILIDE INJURY TO WHITE AND RED OAKS? Jayesh Samtani and John B. Masiunas, Graduate Research Assistant and Associate Professor, Department of Natural Resources and Environmental Sciences, University of Illinois, 1201 West Gregory Drive, Urbana, IL 61801.

In the landscape, loss of interveinal tissue in developing leaves (leaf tatters) is common for white oak but not red oak. Our previous research identified the cause of leaf tatters as exposure of unfolding leaves to low concentrations of chloroacetanilide herbicides. The swollen bud or the expanded leaf stages are not susceptible to injury from chloroacetanilide herbicides. We found that both white and red oaks were injured by chloroacetanilide herbicides at the leaf unfolding stage. These findings led us to theorize that white and red oak leaves emerge at different times and white oaks were more likely to be at the leaf unfolding stage when farmers apply chloroacetanilide herbicides. A comparative leaf phenology study of the white and red oak was done at three sites in Urbana, IL: the University of Illinois Arboretum, Illini Grove and Crystal Lake Park. At each of these sites, we made phenological observations on paired white oaks and red oaks (four pairs at the Arboretum, five pairs at the Crystal Lake Park and six pairs at Illini Grove). Phenological events (expressed in Julian days) occurred when the entire canopy was at the 50% swollen buds, 50% leaves unfolding and 50% fully expanded leaves stages. The red oak expanded leaf stage occurred earlier during the Julian calendar year than the same stage in white oak. The duration in number of days between phenological events however was similar between the two oak species. The earlier emergence of the leaves on red oak could play a major role in explaining why leaf tatters are less common on red oak than white oak.