

UPDATE ON GLYPHOSATE PRODUCTS FOR CHRISTMAS TREES

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In the November 2004 issue of THE REAL TREE LINE, I mentioned the changing situation with glyphosate formulations. Roundup Original, our standard for many years, is being phased out and many new glyphosate products are on the market. At last count there were 44 glyphosate products sold for agricultural uses by 17 different manufacturers. Some of these are similar to Roundup Original and some are more concentrated and/or contain different additives which can affect their absorption by conifers as well as weeds. Most are not registered for Christmas trees.

The Monsanto Company is considering the registration of two of their potassium salt formulations for Christmas trees in the Northeast; Roundup Original Max and Roundup Weather Max. They currently have supplemental registrations for Christmas trees in the Pacific Northwest where conditions are quite different from New England. I agreed to evaluate their tolerance by dormant Christmas trees in comparison with the old standard, Roundup Original. In our tests, I also included a product called Clear Out 41 Plus, from CPT, which is supposed to be similar to Roundup Original and has captured the interest of some Connecticut growers.

The test protocol: Roundup Original and Clear Out 41 Plus were applied at 1 and 2 quarts per acre; Roundup Original Max and Roundup Weather Max are more concentrated (48.7 vs. 41% glyphosate) so they were applied at 22 and 43 ounces per acre. Rates in Douglas-fir were lower – 1½ pts. to 1½ qts. of Roundup Original or its equivalent. Spray volumes were 30 gal. per acre applied over dormant conifers in September or in the spring before bud break. We conducted four separate experiments; one over the top of fraser fir in April 2004, one over Lincoln Douglas-fir in September 2004, and a third over fraser fir in September 2004, all in Enfield and Somers, Connecticut. A fourth, treated on May 14, 2005, involved sprays applied with off-center nozzles, hitting the lower 12 to 14 inches of 3 to 4 ft. fraser firs on my plantation in Woodbury, VT. All plots contained 3 or more trees per plot with treatments replicated 3 to 4 times in randomized complete blocks. Tree injury ratings were made at least twice during the summer

Results: Injury to the fraser firs from the glyphosate formulations in both Connecticut and Vermont was mild at the both rates of application, consisting primarily of shortened chlorotic needles on some lateral shoots. Variability from plant to plant was great. However, we obtained significantly more injury with the double rate {43 fluid ounces per acre} of Roundup Weather Max than with the other treatments in the fall 2004 experiment. In the Douglas-firs, which historically have been more sensitive than true firs to glyphosate, injury manifested itself in dead shoot tips on some branches. Variability also was great and again we did not see consistent differences in the glyphosate formulations. We did not include spruces in these tests but we know from long experience that spruces are equally or more tolerant of glyphosate than firs.

Discussion: All but one of these experiments were conducted under "worst case" situations; that is, by spraying over-the-top rather than by using semi-directed sprays. Less injury can be expected from glyphosate if we reduce foliar contact on the conifers. Of the two new Roundup formulations, Roundup Original Max has the edge for safety when sprayed the top. However, my guess is that provided we use these new formulations in the ways that we have found safe in the past, we could expect equally good results. Let us review those "ways". First, delay applications in the fall until growth has hardened – September 1st or later for true firs and spruces or before bud break in the spring. Fall applications are most effective for control of perennial weeds and brush. Spring applications control only those weeds that are "green". If glyphosate is applied in the fall and a spring application is needed for emerged annuals, it is best to reduce the spring rate so that no more than 2 qts. of Roundup Original or equivalent are applied on the same trees. Minimize foliar contact on Douglas-firs and white pines until plants are at least 2-ft. tall, and delay fall applications until late September or October. On all Christmas tree species use semi-directed (not over-the-top) sprays hitting only the lower 12 to 14 inches of trees. Apply 1 to 1½ quarts of Roundup Original per acre or equal acid equivalents of other formulations that are labeled for Christmas trees. Calibrate equipment so that you are sure of the dosages. If uncalibrated spot sprays are used, spray lightly and do not exceed 1% of Roundup Original or Clear Out 41 Plus (1 1/3 ounces per gallon) or 1 ounce per gallon of the more concentrated Roundup Original Max or Weather Max. SureGuard (flumioxazin) or Princep (simazine) may be added to these sprays at normal dosages but do not add any surfactants. Please review our comments in THE REAL TREE LINE, November 2004, and call me or Todd Mervosh if you have questions (860-683-4985 or 860-683-4984)

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