

Influence of DNA Herbicides on Cold Hardiness during Nursery Field Overwintering

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Investigating the influence of dinitroaniline (DNA) herbicides on cold hardiness during nursery overwintering would be of immense help to the nursery growers as the DNA herbicides are commonly used herbicides in nurseries. An experiment was conducted to evaluate the cold hardiness of three species - *Syringa reticulata*, *Acer rubrum*, and *Malus 'Dolgo'* after imposing six treatments -trifluralin, prodiamine, oryzalin, trifluralin with glyphosate, prodiamine with glyphosate and clean cultivation in summer and fall 2006. The design of the experiment was a split plot with five replications. Three evaluation methods-visual scoring (browning), plant live height (regrowth) and TTC analysis were used to evaluate the three species after freezing them to four temperatures -5°C , -10°C , -15°C and -20°C . The results show that absorbance values from TTC analysis of red maple decreased significantly between -10°C and -15°C across all treatments. For *Syringa* and *Malus*, there was a treatment by temperature interaction in the regrowth portion. Prodiamine caused a decrease in regrowth at -5°C when all other treatments showed positive growth at that temperature on *Syringa*. There was a general decrease in regrowth as temperatures decreased across all treatments for *Malus* except for the clean cultivation; there was a negative regrowth at -5°C and -15°C , but a positive regrowth at -10°C . Based on linear regression models, LD_{50} values for *Syringa*, *Acer*, and *Malus* were -10.35°C , -12.75°C , and -15.45°C respectively, across all treatments.