

WEED CONTROL IN NEWLY ESTABLISHED FRENCH-AMERICAN HYBRID GRAPES. Harlene M. Hatterman-Valenti and Collin P. Auwarter, Professor and Research Specialist, Department of Plant Sciences, North Dakota State University, Fargo, ND 58105

Field research was conducted at the NDSU Agricultural Experiment Station Research site near Kindred, ND to evaluate the influence of cultural and chemical weed management strategies on weed control and plant growth in newly established grapes. The trial was arranged as a split plot with three cultural (landscape fabric, wheat straw, and wood chips) and one chemical (flumioxazin at 0.375 lb ai/A + oryzalin at 3 lb ai/A) weed management strategies as the main plot and four grape cultivars (DM8521, MN1131, MN1200, and St. Croix) as sub-plots, replicated three times. Two year old grape plants were transplanted May 25, 2008 with two plants per experimental unit. Weed management treatments were applied the same day. Herbicides were tank-mixed with glyphosate (1 lb ae/A) using a CO<sub>2</sub>-pressurized backpack sprayer with a 2-nozzle boom equipped with 8002 flat fan nozzles with an output of 20 GPA and a pressure of 30 psi since weeds were present. Annual weeds were removed by hand (perennials treated with glyphosate) prior to the application of the mulches. Soil volumetric water content and soil temperature at 4-inch depths were recorded hourly in each main plot. No supplemental water was provided.

Weed control evaluations 5 weeks after treatment (WAT) indicated that all treatments provided satisfactory control ( $\geq 85\%$ ) of common lambsquarters, horseweed, and yellow foxtail. Glyphosate applied just prior to the application of wood chips or wheat straw did not provide the anticipated control of Canada thistle or dandelion. Populations were variable, but more prevalent in these treatments. Spot applications with glyphosate reduced the Canada thistle population and eliminated the dandelions. Weed control evaluations were similar at 16 WAT except that the yellow foxtail control decreased in the chemical treatment. Soil water content was greater within the wheat straw mulch treatment than other treatments and soil temperature was cooler until September when the soil temperature within the chemical treatment began to reflect the much cooler night temperatures. Soil water content was lowest and soil temperature had the greatest daily fluctuation within the chemical treatment. Soil temperature and soil water content differences did not affect vine growth (stem number and stem height) but may affect winter hardiness, bud break, fruit production, or fruit ripening. These factors will be evaluated the next two years as well as weed control to determine if cultural weed management methods are feasible strategies for grape production in North Dakota.