Characterization of Seed Germination for Native Switchgrass Accessions Collected from New York, Pennsylvania, and the Northeast

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Switchgrass seed varies by plant in its percent germination, depending on the temperature at which it is germinated and the year it is collected. This poster examines the correlation between seed collected over two years from native Northeast USA switchgrass seed lots grown in a switchgrass nursery in Ithaca, NY and germinated at two temperatures. Seeds from 52 plants were collected in both 2010 and 2011; seed from a total of about 500 plants was collected each year. All 2010 seed lots were germinated at standard temperatures (30C day/15C night), but only seed lots from plants that achieved a combined score of 9.5 in terms of their height, vigor, and standard temperature germination (each characteristic was scaled from 1-5) were tested at low temperatures (20C day/15C night). In 2011, all seed lots were germinated at the standard temperatures, but only seed lots that met a percent germination threshold of approximately 20% at the standard temperature or possessing seed absent of visible mold and fungi were germinated at the low temperature.

A Kendall's tau rank correlation coefficient (τ) of 0.36 (p-value = 0.0001425, N = 52) existed for percent germination at the standard temperature between seed collected in 2010 and 2011. There are insufficient data to calculate the τ between low temperature test results of seed collected in 2010 and 2011. There is a τ of 0.65 (p-value < 2.2e-16, N=135) between the percent seed germinated at standard and low temperatures collected in 2010 but a τ of 0.32 (p-value = 4.868e-06, N=113) between the percent seed germinated at standard and low temperatures collected in 2011.

These results suggest that that multiple years of data are necessary when characterizing switchgrass plants for percent germination at the standard temperature. Further inquiry is required as to the correlation between standard and low temperature tests in a given year as well as the variation in low temperature germination between years.