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Presentation Type: Poster presentation

Abstract Title: Development of Switchgrass Gall Midge Susceptible and Resistant Cave-in-Rock Populations

Abstract (250 words or less): In 2011, 37 genotypes were selected from named switchgrass cultivar Cave-in-Rock planted in a space plant nursery in Ithaca, New York on the basis of height, vigor, uprightness, and seed germination. Ramets were transplanted to an isolated seed production nursery in May 2012 in a randomized, complete block design containing three replicates. In summer, 2012, shortened tillers and partially emerged panicles characteristic of damage caused by the switchgrass gall midge, C. virgati, were observed. In fall 2012, plants were rated for the severity of C. virgati damage with a 1-5 scale, where 1 represented a plant with no damaged tillers, and 5 represented a plant with more than 2/3's damaged tillers. An analysis of variance performed on these data revealed significant variability among genotypes. In fall 2014, plants were scored again for C. virgati damage based upon each plant's proportion of midge-damaged tillers. Based upon the 2014 data, the broad sense heritability for C. virgati resistance was 0.88, and seven resistant genotypes and seven susceptible genotypes were identified. Correlation with 2012 results was low, possibly because of the different scoring methods employed in each year. As well, 5 of the 21 plants identified as "susceptible" in 2014 could not be scored in 2012 because the plants had too few tillers. In spring 2015, resistant and susceptible seed production blocks were established using ramets from the 2012 seed production block. Each 2015 seed production block consisted of six replicates of the seven resistant or susceptible genotypes.