Name: Joshua Grant

Email Address: jgrant2@utk.edu

Affiliation: University of Tennessee-Knoxville

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Abstract Title: Tissue and Suspension Culture of Panicum hallii

Co-authors and affiliations: Joshua N. Grant (1), Jason N. Burris (1), Jonathan D. Willis (1), Scott C. Lenaghan (1,2), Thomas E. Juenger (3), and C. Neal Stewart, Jr. (1)

(1) Department of Plant Sciences, University of Tennessee at Knoxville
(2) Center for Renewable Carbon, University of Tennessee at Knoxville
(3) Department of Integrative Biology and Institute for Cellular and Molecular Biology, University of Texas at Austin

Abstract (250 words or less): Panicum hallii is a small perennial C4 grass in the family Poaceae, which has potential as a C4 model plant for genetic studies. P. hallii has been classified into two distinct ecotypes: the upland variety, P. hallii var. hallii (HAL2), and the lowland variety, P. hallii var filipes (FIL2). P. hallii's status as a model plant is largely dependent on its tissue culture characteristics, ability to regenerate, and rapid seed to seed time. In this work, a seed-based tissue culture method was developed that results in embryogenic callus, which can be easily regenerated into whole plants. Eight different media types for callus induction and maintenance were tested, based on preliminary data and other grass tissue culture systems, accounting for hormone and vitamin concentrations. In order to determine the plant regeneration efficiency, the number of shoot and root developing callus pieces that regenerated were divided by the total. We report callus induction frequency of 80% and regeneration frequency of 50% for two populations of P. hallii. In addition to the typical callus culture system, a cell suspension culture was established for P. hallii using callus as the starting material, followed by biweekly liquid subculture. Based on the results from this work it was concluded that P. hallii callus can be easily induced from seed, maintained in both liquid and solid culture systems, and regenerated into whole plants. The rapid cycle for this system further demonstrates the potential for P. hallii as a C4 model plant.