

Seed Production Comparison of Three Eastern Gamagrasses in East Texas

R. Alan Shadow and Joel Douglas

Introduction:

Eastern gamagrass, *Tripsacum dactyloides*, is a native warm season perennial adapted throughout most of the eastern United States. It is typically used as livestock forage, and has potential for use in vegetative barriers and soil phytoremediation. Low seed yields have limited its acceptance in the commercial seed industry. The objective of this study is to compare seed production potential of two cultivars and accession 9043629 currently produced by the USDA-Natural Resources Conservation Service East Texas Plant Materials Center (ETPMC).

Methods:

Two cultivars of eastern gamagrass ('Medina', 'Jackson'), and accession 9043629 (Nacogdoches, County, Texas.) were planted in a randomized complete block design with 3 replications at the ETPMC on an Attoyac fine sandy loam in 2006. Plots were 9x12 feet, and started from vegetative rootstock spaced on 3 foot centers with 4 foot allies between replications. Data was collected from the interior plants in each plot to minimize edge effects. A soil test was used to adjust pH to 6.0 and to bring P and K to a medium level. Nitrogen fertilizer was applied at a rate of 75 lb/acre using ammonium nitrate as the N source when spring regrowth reached 6 inches. Fertility was maintained at a medium level throughout the course of the study. The number of vegetative tillers, reproductive tillers, and axillary seed heads per reproductive tiller were recorded from 3 randomly selected plants in each plot. The axillary seed heads were hand harvested when approximately 75% of the staminate portion of the flowers had shed. Seed was allowed to air dry, cleaned with a South Dakota Seed Blower set at 70% open to eliminate any unfilled seeds, and yield and germination results were recorded. Four replicates of 100 seed were placed in germination boxes and germinated in a controlled chamber (20°-30° C, 8 hours light and 16 hours dark). Counts were made at 14, 21, 28, and 35 days.

Results and Discussion:

Vegetative data collected in 2007 and 2008 showed accession 9043629 had significantly increased ($P<0.05$) reproductive tillers, axillary seed heads, and fewer vegetative tillers than 'Jackson' or 'Medina'. Germination tests performed on seed collected in 2007 did not show any significant differences ($P<0.05$) between the entries. There were also no significant differences ($P<0.05$) in yield between entries when compared on a pure live seed (PLS) basis. However, 9043629 had the highest pure live seed (PLS) yield in 2007. Harvest from production fields at the ETPMC support this trend with accession 9043629 producing twice the yield per acre as 'Medina'. Additional germination and PLS yield data are scheduled to be collected in the fall of 2008 and 2009. 'Medina' was heavily infected with the fungal pathogen, *Puccinia* spp. in 2007. Reduced yield and vegetative data were collected in 2008. This study is in its first of three years of data collection.