

Native Warm-Season Grasses that Germinate on Command¹

Brian S. Baldwin, Jesse I. Morrison, and J. Brett Rushing²

Abstract: Native grasses are rarely used in reclamation, primarily due to seed dormancy, the lack of germination upon planting. While seed dormancy is an advantage in the wild, it is a hindrance to establishment in reclamation situations. While there are a number of laboratory methods to ameliorate seed dormancy, the effects are often reversible, or may negatively impact seedling development. This work uses standard breeding methods to decrease seed dormancy in seven important warm-season grass species native to the southern United States: upland and lowland switchgrass, big and little bluestem, purpletop, beaked panicum and eastern gamagrass. Success in meeting our objective has been excellent (0.02 to 94% germination, a 4000 fold increase) in some species and modest (1.0 to 40% and 0.067 to 20% germination, a 40 and 300 fold increase, respectively) in others. A serendipitous side effect of selection was an increase in the speed of seedling emergence, in addition to an increase in total emergence. Selection reducing seed dormancy allows for quicker emergence and stand establishment, compared to other comparable native grass varieties³.

Additional Key Words: grass improvement, reclamation, coverage.

1. Oral paper presented at the 2019 National Meeting of the American Society of Mining and Reclamation, Big Sky, MT. Welcome Back to Montana: The Land of Reclamation Pioneers, June 3–7, 2019. Published by ASMR, 1305 Weathervane Dr., Champaign, IL 61821.
2. Brian Baldwin (presenter), Professor; Jesse I. Morrison, Associate Research Professor; J. Brett Rushing, Assistant Professor, Plant and Soil Sciences, Mississippi State University, Mississippi State University, MS 39762.
3. Work reported here was conducted near 33.4504° N, 88.8184° W.