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THREE-YEAR STAND SURVIVAL OF SELECTED COOL-SEASON PERENNIAL GRASSES IN EAST TEXAS

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Background. The environmental and climatic conditions in East Texas are ideally suited for warm-season perennial grass pastures with successful and reliable over seeding of cool-season annual grasses and legumes. Hay is also a management component of many forage systems to accommodate risks associated with either the absence of winter pasture or reduced winter annual forage production. Cool-season perennial grasses such as tall fescue is also adapted to specific soil types and sites in East Texas and offer alternatives to reduce hay and/or cool-season annual forage for pasture. Kentucky 31 tall fescue, for example, has been used by some East Texas producers for more than 40 years. Perhaps the factor contributing most to stand loss of tall fescue and other cool-season perennial grasses has been the desire to graze these grasses during the summer months and especially during prolonged dry conditions. Although tall fescue may have “green” leaves and have the appearance of being available for defoliation via grazing, most of these cool-season perennial grasses require summer deferment for successful persistence in the East Texas environment. Unlike areas in upper Arkansas, Tennessee, Kentucky, and across the northern-most areas of the Southeastern US where tall fescue is the dominant summer forage, summer grazing of tall fescue in East Texas often leads to stand failure. An additional factor involved with the use of tall fescue, for example, has been the presence of the endophyte, (*Neotyphodium coenophialum*), which enhances persistence but has also been closely linked to reduced animal performance and even animal health disorders.

In the fall of 1999, we established 22 cool-season grasses to evaluate persistence and stand survival in a well-drained, creek bottom land site at TAMU-Overton. These grasses represented tall fescue with endophyte (E+), without endophyte (E-) and with a novel endophyte (E+™). These E+™ varieties were released based on their potential to maintain persistence with improved animal performance over that of E+. Establishment procedures were reported in RCTP 2000-1. Initial stand persistence, density, and maturity ratings were reported in RCTP 2000-1 for data taken in 2001. This report provides percent stand taken in 2003 after a 3-year period. All cultivars were grazed in a rotational stocked scenario from winter through spring, and no grazing occurred during the summer months.

Research Findings. Three years after establishment of 22 cool-season perennial grasses that included tall fescue, bromegrass, wheatgrass, and wildrye, only tall fescue remained (Table 1). After only one year following establishment, there were weak stands for Virginia wildrye

(16%), Matua prairiegrass (11%), and Lincoln smooth bromegrass (11%). All of the commercially-available tall fescues had percent stand of about 70% or greater after one year. Three years post-establishment, January 2003, there were 5 tall fescue cultivars with an 88% stand or greater, 1 with a 77% stand, 2 with a 40 to 50% stand, 2 with a 10 to 25% stand, and 1 experimental with stand loss (Table 1). The only tall fescue cultivars that remained in a potentially, commercially useful stand were those that were either E+ or E+™. All of the E-cultivars had stand ratings of 50% or less.

Application. The opportunities to use E+ and/or E+™ tall fescue as a component of the forage systems in East Texas appear to be good. One must remember, however, that the E+ types will likely not produce the same level of animal performance as the E+™ types. And, further, that judicious management with regard to a summer deferment plan will likely be needed to maintain stands of any tall fescue used in East Texas. The future use of E+™ varieties for East Texas is encouraging for those who desire to reduce hay for cow-calf operations and/or for backgrounding opportunities with stocker cattle.

Table 1. Percent stand and persistence of cool-season perennial grasses at TAMU-Overton.

CULTIVARS	ENDOPHYTE STATUS ¹	APRIL 2, 2001 % STAND ²	JANUARY 27, 2003 % STAND ²
Tall Fescue			
Georgia 5	E+	94.2	98
Kentucky 31	E+	90.8	98
Jesup	E+	81.3	95
Jesup 584	E+™	84.6	93
Jesup 542	E+™	81.7	88
Georgia 5-542	E+™	80.8	77
Georgia 5	E-	84.6	50
Jesup	E-	83.8	40
AU Triumph	E-	88.8	25
Kentucky 31	E-	68.3	10
AGR FA 102	E+™	24.2	0
All Others			
Virginia wildrye		15.8	0
Matua prairiegrass		11.3	0
Lincoln smooth bromegrass		10.8	0
Jose' tall wheatgrass		7.5	0
AGR BW 101 bromegrass	E+™	6.3	0
Gala bromegrass		<1.0	0
Luna pubescent wheatgrass		<1.0	0
Bromar mountain bromegrass		0.0	0
Hycrest crested wheatgrass		0.0	0
NewHy wheatgrass		0.0	0
Regar meadow bromegrass		0.0	0

¹E+ indicates endophyte infection of the cultivar; E- indicates no endophyte infection of the plant; E+™ indicates cultivars infected with "novel" or friendly endophyte.

²Percent stand is based on 0-100%.