



MORPHOLOGICAL CHARACTERISTICS OF INTERMEDIATE RYEGRASS CULTIVARS (*Lolium perenne* x *Lolium multiflorum*)

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IMPACT STATEMENT

Intermediate ryegrass cultivars were evaluated to determine if these hybrid species have desirable characteristics for turf managers in Arkansas. Seven cultivars, including two annual, two intermediate, and three perennial ryegrasses, were compared in a greenhouse study to assess morphological characteristics that are commonly associated with turf quality. Results from the study indicate that one cultivar of intermediate ryegrass (Pick-LHRT) has morphological traits similar to the turf-type perennial grasses, while the other intermediate (Froghair) has characteristics more similar to annual grasses. Our preliminary conclusion is that intermediate ryegrasses may have promise as an overseeding grass in the transition zone.

BACKGROUND

Intermediate ryegrass (*Lolium perenne* x *Lolium multiflorum*) cultivars have been developed in recent years as a low-cost alternative to perennial ryegrass, with special emphasis on use as overseeding dormant bermudagrass in the deep South. Although two cultivars are currently being marketed, there is no information available on the characteristics of intermediate ryegrass relative to annual or perennial ryegrass. The objective of this research was to evaluate morphological characteristics of intermediate ryegrass compared to annual or perennial ryegrass.

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RESEARCH DESCRIPTION

Seven cultivars of intermediate, annual, and perennial ryegrasses were included in our greenhouse study (Table 1). Individual seedlings of each line were established in a 4-in. pot containing a commercial potting mix. Three seeds were placed near the center of each pot and covered lightly with additional potting mix. After germination, each pot was thinned to one seedling.

Pots were fertilized weekly with 100 ml of a complete nutrient solution containing 50 ppm nitrogen (N). At 6, 8, 10, and 12 weeks after planting, four replicate pots of each line were harvested at the soil surface and separated into leaf sheath and leaf blade materials. Data collected at each harvest included number of tillers, width of fully expanded leaf blades (average of four sub-samples), dry weight of leaves, dry weight of sheath, and average height of leaf collar (average of four sub-samples). Data collected were used to calculate total shoot weight, leaf blade weight tiller, and sheath weight tiller. For brevity, data from the first harvest are presented in this report. The experimental design was a randomized complete block and data were analyzed by ANOVA.

FINDINGS

Cultivar differences were observed for all parameters measured. As expected, leaf texture (blade width) was significantly higher for annual compared to perennial cultivars (Table 1). However, leaf textures of the two intermediate cultivars were not truly intermediate between the other species. In fact, 'Froghair' had a leaf texture that was similar to the annual species, while 'Pick-LHRT' leaf texture was not significantly different from the perennial ryegrasses. Other parameters, including total weight per tiller, leaf weight per tiller, and sheath weight per tiller exhibited similar results.

Collar height was also significantly different between the two intermediate cultivars (Table 1). 'Froghair' had an average collar height of 61.0 mm, while 'Pick-LHRT' had a collar height of 43.3 mm. This parameter is significant for overall turf performance in that an elevated collar height reduces the amount of leaf production that occurs below the mowing height and subsequently affects turf density and quality. This data suggests that 'PickLHRT' may be much more adapted to close mowing than 'Froghair'.

Differences in morphological characteristics between 'Froghair' and 'Pick-LHRT' would suggest that, while these grasses are both intermediate species, 'Froghair' has more annual characteristics and 'Pick-LHRT' behaves much more like a perennial ryegrass. Preliminary results from a field trial comparing these varieties would also suggest that 'Pick-LHRT' has much better overall turf quality than 'Froghair' (data not shown). Although these initial observations suggest that certain intermediate ryegrass cultivars have desirable turf characteristics, long-term evaluations of these hybrids under field and controlled-environment conditions are needed to fully assess the value of intermediate ryegrass to Arkansas turf managers.

Table 1. Morphological characteristics of two intermediate ryegrass cultivars relative to annual and perennial ryegrass cultivars.

Species	Variety	Tiller no.	Leaf	Collar ht.	Sheath wt.	Leaf wt.	Shoot wt.	Total	Leaf	Sheath
			width (mm)					wt./ tiller	wt./ tiller	wt./ tiller
Annual	Gulf	10.0	6.4	54.7	226	661	887	89	67	23
Annual	TAM-90	11.3	7.0	50.3	324	923	1246	112	84	29
Intermediate	Froghair	9.7	6.4	61.0	234	688	922	102	75	27
Intermediate	Pick-LHRT	16.7	3.8	43.3	174	478	652	39	29	11
Perennial	Racer	15.7	3.0	24.7	151	332	483	30	21	9
Perennial	Jiffie	10.3	2.9	26.7	116	265	381	39	27	12
Perennial	Calypso	10.7	3.2	27.0	69	238	307	30	24	7
LSD ($P < 0.05$)		6.3	1.3	12.1	132	328	442	38	29	10