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Ryegrass Identification Keys

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Correct identification of ryegrass species is an important key to weed management. Some ryegrass species, or populations within a species, may differ in susceptibility to herbicide treatments. Italian ryegrass (*Lolium multiflorum*), which has evolved resistance to diclofop (Hoelon), is the number one weed problem in Arkansas wheat.

All of the resistant ryegrass populations evaluated for Hoelon resistance are presently Italian ryegrass (2012). There is a wide range of competitiveness among Italian ryegrass populations. For instance, tiller production ranges from 108 to 173 per plant and seed production from 20,500 to 45,000 per plant. The largest and most productive plants in Arkansas are found in Independence County.

Keys of Ryegrass Identification

Vegetative Stage. At the seedling stage (2 weeks old), ryegrass has either a narrow or wide leaf blade. If ryegrass has a narrow leaf blade (about 2 mm), it is perennial ryegrass. Ryegrass with a wide leaf blade is either poison, Italian or rigid ryegrass. If the ryegrass leaf blade is 10 to 11 mm wide, it is poison ryegrass. If the leaf blade is 5 to 6 mm wide, it is either Italian or rigid ryegrass. It is difficult to distinguish between Italian and rigid ryegrass at the vegetative stage.

Reproductive Stage (Figure 1). Ryegrass awns, spikelet and glume are the key characteristics to identify ryegrass species at the reproductive stage. Ryegrass seed is either awned or awnless. If ryegrass seed is awnless, it is either perennial or rigid ryegrass. Awned ryegrass seed is either Italian ryegrass or poison ryegrass. Poison ryegrass has a longer awn than Italian ryegrass. Poison ryegrass has an awn longer than 10 mm, but Italian ryegrass has an awn shorter than 5 mm. Another key characteristic to distinguish poison ryegrass from either Italian, rigid or perennial ryegrass is that the glume is longer than the spikelet in poison ryegrass, while the glume is shorter than the spikelet in either Italian (glume is less than or equal to half of the spikelet), rigid or perennial (glume is greater than half of spikelet to same size as spikelet) ryegrass.

Currently, rigid ryegrass has not been found in Arkansas. However, agricultural professionals should be on the lookout for this weed and know how to identify it. In other countries around the world, rigid ryegrass populations are known to be resistant to almost all herbicides, including glyphosate. Early detection of this species might help prevent its eventual spread in Arkansas.

The following tables summarize the various vegetative, reproductive and taxonomic differences between Italian, rigid, perennial and poison ryegrass species

Table 1. Vegetative characteristics of Italian, rigid, perennial and poison ryegrass grown in Arkansas.

Ryegrass Species	Growth Habit	Plant Color	Node Color
Italian	Erect (SA, P)	Green (R)	Red
Rigid	Erect (P)	Green (R)	Red
Perennial	Prostrate	Green	Green
Poison	Erect	Green	Green

SA = spreading ascending, P = prostrate, R = red. Letters in parenthesis indicate variants in the population.

Table 2. Tillering capacity, seed head characteristics and potential seed production of Italian, rigid, perennial and poison ryegrass in Arkansas.

Ryegrass Species	Tillers	Spike	Spikelet	Seed/ Spikelet	Seed/ Plant
Italian	173	145	24	12	45,000
Rigid	83	74	14	7	7,000
Perennial	129	73	20	7	11,000
Poison	43	33	18	5	3,500
LSD (0.05)	39	29	2	1	9,500

Table 3. Spike, spikelet, glume and awn length of Italian, rigid, perennial and poison ryegrass.

Ryegrass Species	Spike (cm)	Spikelet (mm)	Glume (mm)	Awn (mm)
Italian	26	19	10	4
Rigid	17	15	12	0
Perennial	19	13	11	0
Poison	25	17	23	13
LSD (0.05)	2	1	2	1

Taxonomic Key

Vegetative:

– ***Narrow leaf blade*** (2 mm) = perennial ryegrass

– ***Wide leaf blade*** (5 to 10 mm)

10 to 11 mm = poison ryegrass

5 to 6 mm = Italian and rigid ryegrass

Reproductive:

– ***No awn*** = perennial and rigid ryegrass

– ***Awn*** = Italian and poison ryegrass

– If glume > spikelet **or** awn > 10 mm = poison ryegrass

– If glume < spikelet **or** awn < 5 mm = Italian ryegrass

Figure 1. A = poison ryegrass, B = Italian ryegrass, C = perennial ryegrass, D = rigid ryegrass (Arrow is the indication of glume length and the box is the indication of spikelet length.)

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