

# Fountain Grass – Friend or Foe?

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## INTRODUCTION

Johnsongrass, sericea lespedeza, multiflora rose and perilla mint are examples of plants introduced to Missouri for forage, erosion control, or as ornamentals that have become troublesome weeds for producers. In fall of 2016, a pasture field in Cape Girardeau County, Missouri, had an unidentified grass that cattle would not graze. The grass was identified as Chinese fountain grass, *Pennisetum alopecuroides*. According to Dr. Trinklein, ornamental cultivars, such as ‘Hameln’, are considered non-invasive due to the high degree of sterility. This was the first report of an invasive cultivar of Chinese fountain grass in a Missouri pasture field. As of 2023, this invasive species of fountain grass has been confirmed in pasture or hay fields in 10 Missouri counties. It has also been identified along Missouri highways. Research and education efforts to raise awareness and help producers included:

- Characterize Identifying Features
- Herbicide Efficacy On-Farm Trial
- Greenhouse Seed Viability Trials
- Dissemination of Information

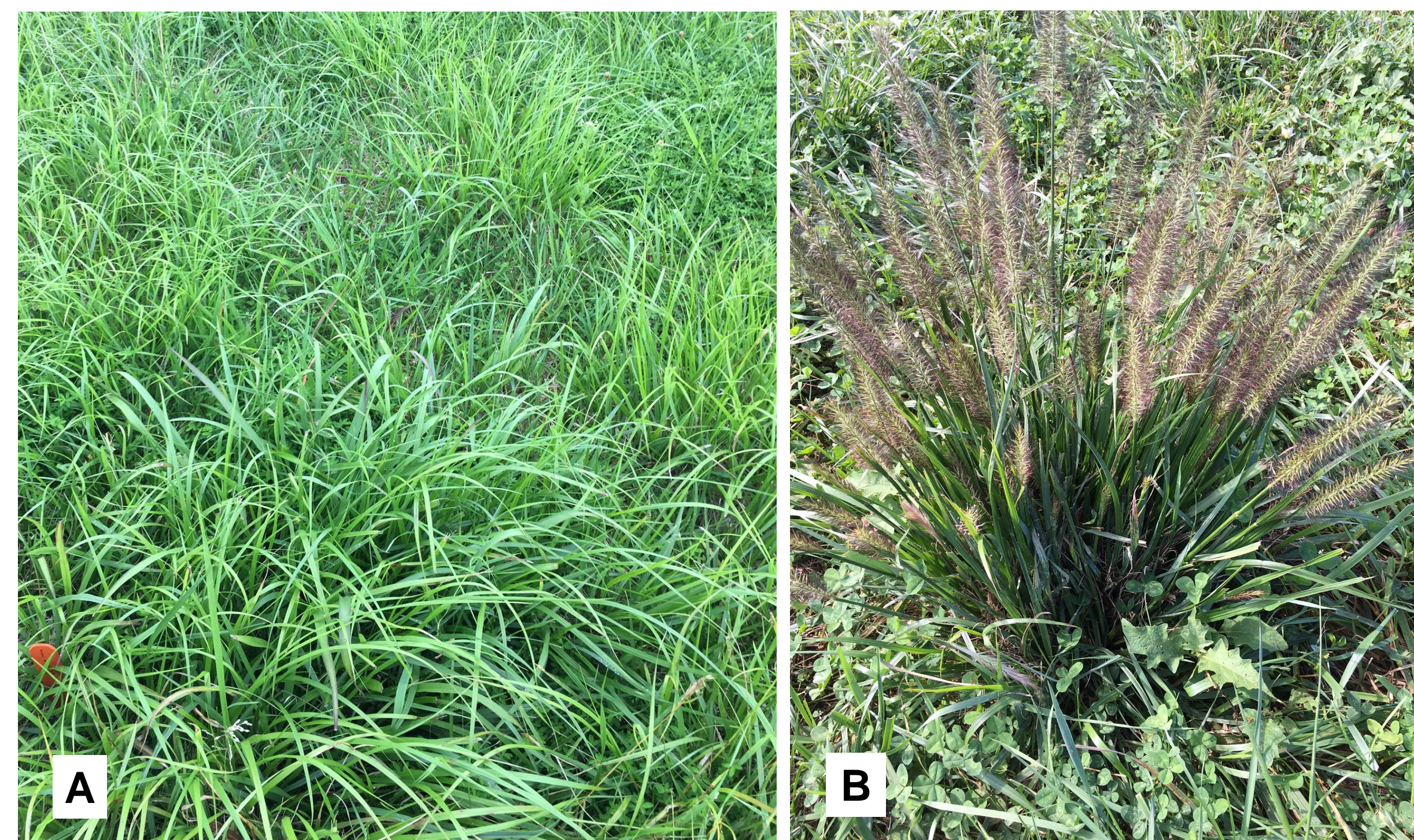


Photo 1a & 1b. Chinese fountain grass. A. Vegetative stage in early June. B. Reproductive stage in late September.

## MATERIALS AND METHODS

### Characterization of Identifying Features.

- Chinese fountain grass samples in the reproductive stage of development were collected from the field and sent to MU State Extension Weed and Floriculture Specialists.

### Herbicide Efficacy On-Farm Trial

- Cape Girardeau County field located with uniform stand of Chinese fountain grass.
- 18 treatments in a randomized complete block design with 4 replications (Table 1).
- Herbicide treatments applied at 20 gallons per acre (GPA) using a CO<sub>2</sub> pressurized backpack sprayer.
- Visual control rating data collected at 4-, 10-, and 21-weeks after application (WAA) (Table 1).

### Greenhouse Seed Viability Trials

- 2018: 3 in-field treatments (Table 2).
- 2019: 2 in-field treatments (Table 2).
- Seed collected from field for greenhouse trials.
- 50 seeds planted in flats with three replications in a randomized design.

## MATERIALS AND METHODS

### Dissemination of Information

- Information about Chinese fountain grass provided through an IPM publication, news article, electronic newsletters, presentations at 120 producer meetings, and social media.

## RESULTS

Chinese fountain grass is a C4 perennial bunch grass with a fibrous root system as well as short rhizomes. Stems are flat and leaf blades are glabrous except for tufts of white hair at the collar. The bottle brush seedheads consist of individual spikelets with long bristles that turn reddish-purple during the early fall (Photo 1b). Plants spread through seed dispersal and rhizomes. The bristly seeds attach to fur, clothing, and equipment.

Results from the treatments at the 4-, 10-, and 21-WAA ratings are in Table 1. The trial indicated that only glyphosate applied at the 1X (28 oz/A) and 2X rates provided control at all evaluation timings. Although not labeled for forage grass, herbicide treatments of clethodim and fluazifop provided suppression at the 4-WAA only. All other treatments did not provide adequate suppression nor control. The mowing treatment did not provide vegetative control nor was it viable for seedhead suppression due to the plant's ability to produce seedheads close to the ground.

Table 1. Herbicide on-farm trial, 2017.

Treatments Common Name (Trade Name)	Rate	Fountain Grass Control		
		4 Weeks after Application	10 Weeks after Application	21 Weeks after Application
		----- % -----		
Sulfosulfuron (OutRider)	0.75 oz/A	24	10	0
Sulfosulfuron	1.33 oz/A	40	17	0
Nicosulfuron+Metsulfuron (Pastora)	1 oz/A	53	68	10
Nicosulfuron+Mesulfuron	1.5 oz/A	52	61	17
Imazapic (Panoramic)	8 fl ozs/A	50	35	13
Imazapic	12 fl ozs/A	62	36	17
Imazapic	1 % v/v	63	43	25
Imazapyr (Arsenal)	32 fl ozs/A	34	73	15
Imazapyr	48 fl ozs/A	46	81	10
Imazapyr	1 % v/v	50	63	10
Glyphosate (Roundup PowerMax)	28 fl ozs/A	95	96	85
Glyphosate	56 fl ozs/A	98	98	92
Clethodim (SecectMax)	16 fl ozs/A	88	15	27
Clethodim	32 fl ozs/A	85	25	33
Fluazifop (Fusilade DX)	12 fl ozs/A	87	62	17
Fluazifop	24 fl ozs/A	87	57	20
Repeated Close Mowing	-----	0	7	8
LSD (0.05):		17	15	16

## RESULTS

Since the key identifying feature of fountain grass is the seed head, the farmer-cooperator questioned if there was an application timing window of glyphosate in the fall where seed viability was still reduced. The greenhouse trials indicated that spot-applied glyphosate reduced seed germination regardless of 3 application timings compared to an untreated check (Table 2). The germination of the untreated seed averaged 65% both years.

Table 2. Fountain grass greenhouse trials, 2018 and 2019.

	Treatment	Application Timing	Rate	% Germination
2018 Trial	Common Name (Trade Name)			
	Glyphosate (Roundup PowerMax)	1-Month Before Frost	1% v/v	0
	Glyphosate	1-Week Before Frost	1% v/v	0
	Untreated	-	-	65
2019 Trial	Glyphosate	10-Days Before Frost	1% v/v	< 1
	Untreated	-	-	65

## CONCLUSIONS

Identification of an invasive cultivar of Chinese fountain grass, in 2016, led to both research and extension efforts to characterize key identifying features, identify management options and provide information to producers across the state and across state lines. What we have learned:

- Grazing and mowing are not viable management options.
- Spot-application of glyphosate is the only current option in a grass pasture or hay field.
- The application timing up to 1-week before a frost will reduce seed viability.

Current recommendations include scouting fields often, identifying problem areas, timely spot treatment with glyphosate plus a spray grade dye, and avoid transporting seed.

Additional research is planned in 2024 by MU Extension Weed Science evaluating specimens from across the 10 Missouri counties.

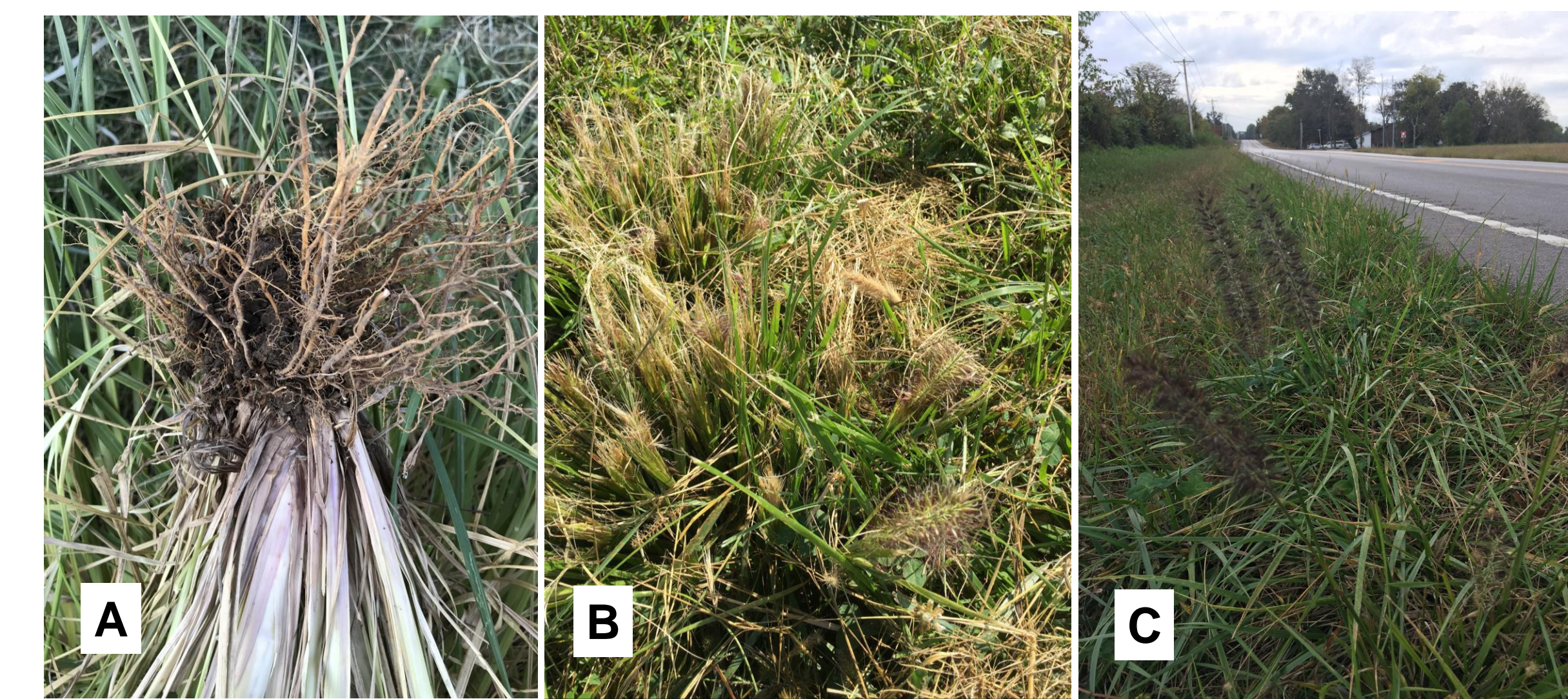


Photo 2a, 2b, & 2c. A. Root system. B. Leaves after mowing. C. Fountain grass along state highway.

## ACKNOWLEDGEMENTS

Thank you to the Cape Girardeau County farmer-cooperator for providing the location for herbicide trial and for providing plants and seed. Special thanks to MU Weed Science for providing resources, expertise and conducting herbicide and greenhouse trials. Special thanks to MU Floriculture Specialist for identifying the fountain grass.