



United States Department of Agriculture

**FINAL STUDY REPORT**  
Rose Lake Plant Materials Center  
E. Lansing, Michigan

**Development of Great Lakes Composite  
of Bottlebrush Grass**

J.C. Durling and J.W. Leif

**ABSTRACT**

Eastern bottlebrush grass (*Elymus hystrix* L.) is a native, cool-season, perennial bunchgrass. Bottlebrush seed from Michigan, Indiana, Ohio, and Wisconsin was collected, accessioned, and established in trials at Rose Lake Plant Materials Center and evaluated for use in restoration or revegetation as conservation cover or stream bank protection with the prospect of releasing a Great Lakes composite of bottlebrush grass. Release of a Great Lakes composite of bottlebrush grass will not be forthcoming due to the poor persistence of bottlebrush in trials at Rose Lake Plant Materials Center and because of the commercial availability of sources adapted to the region.



Eastern bottlebrush grass. Photo courtesy Robin R. Buckallew, hosted by the USDA-NRCS PLANTS Database.

J.C. Durling is Agronomist and acting Manager at Rose Lake Plant Materials Center, 7472 Stoll Road, E. Lansing, MI 48823. J.W. Leif, former manager at Rose Lake Plant Materials Center, is Field Agronomy Manager with Agro-Culture Liquid Fertilizer, 3055 W. M-21, St. Johns, MI 48879. \*Corresponding author (john.durling@mi.usda.gov).

## INTRODUCTION

Eastern bottlebrush grass is a cool-season, perennial bunchgrass, native to the eastern 1/2 or 2/3rds of the U.S. (except southernmost states) and Canada (Gleason and Conquist, 1991; Reznicek et al., 2011; USDA, NRCS, 2014). It is aptly named for its bottlebrush-resembling spikes. Shade tolerant, it can be found growing in woodlands and woodland edges. It was evaluated for yield, persistence, and quality by the Big Flats Plant Materials Center (Sanderson et al., 2004) where it was shown to have limited potential as a forage grass.

## MATERIALS AND METHODS

Collections of grass seed were made from native stands in Michigan, Indiana, Ohio, and Wisconsin by field staff and partners. Plants from each accession were established from seed in Conetainers® in the greenhouse and transplanted to a randomized complete block field site with three replicates in 2003 at Rose Lake Plant Materials Center. Evaluation criterion was winter survival with vigor, plant density, height, lodging, disease and insect damage, and seed production also observed. After this and a subsequent round of field evaluations with ‘winners’ of the first round, five finalists were determined. A last round of evaluations with the five ‘winners’ from the previous round and new accessions from Ft. Custer in Michigan was established in 2009 in a new site with light shade to partial sunlight. Plot design was a randomized complete block with three replicates.

## RESULTS AND DISCUSSION

Results of the last round of evaluations are shown in the Table 1. Survival following the second winter ranged from 0 to 42 percent without significant differences among accessions. The poor persistence of bottlebrush as observed in these trials corroborates published results from Big Flats Plant Materials Center (Sanderson et al., 2004) and is unacceptable for restoration and revegetation as conservation cover or stream bank protection – the purposes for which it was being evaluated.

## CONCLUSION

Release of a Great Lakes composite of Eastern bottlebrush grass will not be forthcoming due to the poor persistence of bottlebrush in trials at Rose Lake Plant Materials Center and because regionally adapted seed sources are commercially available.

## LITERATURE CITED

- Gleason, H. and A. Conquist. 1991. Manual of Vascular Plants of Northeastern United States and Adjacent Canada. 2nd ed. Bronx, NY: The New York Botanical Garden. 910 pp.
- Reznicek, A.A., E.G. Voss, and B.S. Walters. 2011. Michigan Flora Online (<http://michiganflora.net/> 11 Sept 2014). University of Michigan.

Sanderson, M.A., R.H. Skinner, M. van der Grinten, and J. Kujawski. 2004. Eastern bottlebrush grass yield, persistence, and nutritive value in the northeastern USA. *Crop Sci.* 44:2193-2198.

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Table 1. Bottlebrush plant growth data from plots established in 2009. Rose Lake Plant Materials Center. 2010-11.

Accession number	Origin	Winter survival as evaluated in subsequent spring or summer (%)		First anthesis		Seed yield/plot (g)
		<u>2010</u>	<u>2011</u>	<u>2010</u>	<u>2011</u>	
9084186	Polk Co., WI	85	24	14-Jun-10	22-Jun-11	26.1
9084191	Adams Co., OH	82	18	23-Jun-10	22-Jun-11	7.9
9084360	Polk Co., WI	82	15	23-Jun-10	25-Jun-11	7.1
9084533	Jackson Co., IN	85	0	17-Jun-10		6.4
9084535	Jackson Co., IN	79	18	19-Jun-10	25-Jun-11	19.8
9086418	Ft. Custer, MI	94	18	23-Jun-10	27-Jun-11	23.0
9086653	Ft. Custer, MI	97	42	10-Jun-10	20-Jun-11	8.1
9086654	Ft. Custer, MI	85	30	10-Jun-10	16-Jun-11	4.9
9086655	Ft. Custer, MI	88	21	10-Jun-10	16-Jun-11	4.4
9086656	Ft. Custer, MI	91	27	10-Jun-10	17-Jun-11	13.3
LSD <sup>†</sup> <sub>(0.05)</sub>		n.s.	n.s.	3.0 days	n.s.	n.s.

<sup>†</sup>LSD=least significant difference

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