Development of Shade–Tolerant Bermudagrass Cultivars for Fine Turf

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Objectives:

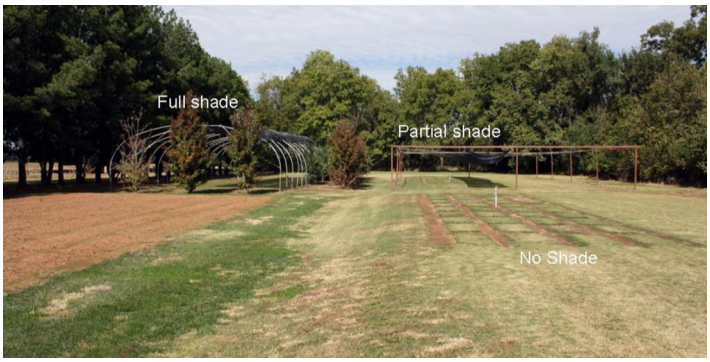
1. *Cross bermudagrass selections screened for shade tolerance and fine turf qualities.*
2. *Establish progeny from seed and evaluate the progeny for shade tolerance, seed yield, and fine turf qualities.*
3. *Develop a shade–tolerant seeded bermudagrass cultivar(s).*
4. *Study techniques with potential for rapid selection of shade resistant bermudagrasses.*

Bermudagrass is reasonably drought hardy, relatively disease and insect resistant, and cold–hardy as far north as the northern portions of the turfgrass transition zone. The main factor that prevents more widespread use of bermudagrass, especially in putting greens and rough, is shade. The major objective of this study was to develop a bermudagrass cultivar(s) that was relatively shade resistant.

Beginning in 2007, 45 common bermudagrasses [Cynodon dactylon (L.) Pers. var. dactylon] collected from China, Africa, and Australia that exhibited relatively good seed production were tested along with four popular vegetative bermudagrass varieties for shade resistance and overall turf quality. Of those 45 bermudagrasses, the 10 best–performing selections were chosen for further development. Polycrossing combinations of those 10 selections in 2011 produced three cultivars. Each of these three experimental synthetics exhibited higher seed yield than OSU's previously released synthetic cultivar, 'Yukon' and equal to that of 'Riviera'. Two of these experimental cultivars, OKS 2011–1 and OKS 2011–4, were entered into the 2013 bermudagrass trials of the National Turfgrass Evaluation Program and the third OKS 2011–3 was retained for further development.

In June 2013, 'Celebration', OKS 2011–1, OKS 2011–4, 'Latitude 36', 'NorthBridge', 'Patriot', 'Princess 77', 'Riviera', 'TifGrand', and 'Yukon' were planted on 3 ft. x 5 ft. plots and replicated four times on each of three sites (Photo 1). A full shade site provides shade for ~89% of each day, a partial shade site provides shade for ~50% of each day, and a no shade site provides shade for ~0% of each day. The plots were allowed to establish in 2013 and testing for shade tolerance and fine turf characteristics will begin in 2014. In addition, 345 progeny of OKS 2011–3 were planted in 2 ft. x 2 ft. plots on the full shade site. At the end of the growing season in 2014 the best performing of these progeny will be selected for further development.

Photo 1. The shade development site at Oklahoma State University consists of three irrigated blocks where performance studies of bermudagrass cultivars can be replicated in full shade



Summary Points

- During the growing seasons from 2008 through 2011, 45 common bermudagrass selections were screened for fine turf characteristics and shade resistance.
- Three polycrosses from the best–performing selections were field established in 2011 and produced ample seed for further testing in 2012.
- Two of these polycrosses were entered into the 2013 Bermudagrass NTEP trial and into shade studies at Oklahoma State University.
- Progeny from the third polycross was entered into shade studies at OSU for further selection and development.

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