

Breeding and Development of Zoysiagrasses for the Southern United States

Background

Turfgrass is one of the largest cultivated crops in the nation, covering more surface area than irrigated corn. The diversity of climates throughout the United States, however, also demands using grasses with specific areas of adaptation and specific utilities. A turf species of considerable interest is zoysiagrass which is native to the Pacific Rim countries and is represented by 11 different species in the genus. Zoysiagrass is a warm season grass with a wide area of adaptation to extreme climatic conditions including temperature swings, soil salinity, acidic to alkaline soils and low to high available water. AgriLife scientists have traveled the world gathering a diversity of zoysiagrass types over the past 25 years, producing a germplasm collection of nearly 900 accessions and representing one of the broadest germplasm resources available for zoysiagrass improvement.

Objectives and Approach

- Develop seeded as well as vegetatively propagated cultivars of zoysiagrass which are adapted to the harsh environmental conditions of the southern United States.
- Develop *Zoysia japonica*, *Z. matrella* intra- and inter-specific hybrids which are genetically superior for resistance to biotic and abiotic stresses such as insects, diseases, temperature extremes (cold and heat), drought conditions, and poor quality water.
- Develop 'greens' grade zoysiagrass by performing intra-specific hybridization in *Z. matrella* and inter-specific hybridization between *Z. matrella* and *Z. minima*.
- Develop cultivars with improved tolerance to low light conditions both for residential and recreational turfs.
- Chose parental lines with traits of interest, make paired crosses between the seed and pollen parents, collect seed from the crosses and germinate to produce a progeny population segregating for characteristics which we wish to improve.
- Test progeny in space plant nurseries and replicated field trials in as many locations as possible in order to identify the new varieties with the widest area of adaptation that are superior to the parental checks.

Program Benefits

- The Center's turfgrass breeding and genetics program has released six superior Turfgrass cultivars noted for low water demand, good/excellent shade tolerance, salinity tolerance, excellent wear tolerance and wide adaptation. To date these grasses are being grown in 24 states and several countries where adapted.
- Breeding efforts continue with the objective of releasing new varieties with incremental improvements in shade and salt tolerance as well as cold hardiness which have lower water demands and the ability to provide exceptional performance even when poor water quality (brackish and effluent) is used.
- Develop cultivars which are able to enhance our quality of life with reduction in demands for water resources and which can survive with poor quality water supplies.

Researchers

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