Evaluation of Cool-Season Forages That Maximize Forage Production and Quality to Enhance Milk Production for Southeastern Dairies

Ann R. Blount
University of Florida – NFREC
Marianna, FL 32446-7906
paspalum@ufl.edu

Investigators
Ann R. Blount, Forage Breeder and Forage Extension Specialist, UF-NFREC-Marianna
Cheryl L. Mackowiak, Nutrient BMP and Water Quality Specialist, UF-NFREC-Quincy
Nicolas DiLorenzo, Livestock Nutrition Specialist, UF-NFREC-Marianna
Curt Lacy, Production Economist, UGA, Tifton, GA
Randy Gornto, Livestock Extension Agent, Highlands County, FL
Mary Sowerby, Dairy Extension Agent, Suwannee County, FL
Elena Toro, Livestock Extension Agent, Suwannee County, FL

Cooperators
Jerry Wasdin, Coordinator Research Programs, UF-Dairy Unit, Hague, FL
Shenandoah Dairy, Live Oak, FL
Triple G Dairy, Sebring, FL
Alliance Dairy, Trenton, FL
Bill Smith, Syngenta Seeds
Ron Barnett, Small Grains Breeder, UF-NFREC-Quincy

Over the past several years, collaboration among producers, researchers and extension agents has led to a series of on-farm testing of cool-season forages. The goal of this effort is to compare plant management strategies for both confinement and grazing dairy systems. We have been actively developing new cool-season forage varieties that are higher yielding and offer improved forage quality for GA-FL dairy operations. While plant breeding and dairy nutrition efforts have targeted improving small grains and ryegrass yield and quality for silage or greenchop, we have also taken an environmental focus on soil and water quality. The goal with the development of any new forage is to maximize and enhance nutrient uptake, particularly N and P removal methods on forage quality, yield and the environmental benefits of these forages for nutrient mitigation. This research has been primarily funded through the Dairy Research and Education Project supported by industry milk check-off dollars.

Our effort to develop improved cool-season forages for southern dairies emphasizes high quality, early-season forage production. While plant breeding and dairy nutrition has targeted yields and quality for silage or greenchop, we have also included an environmental focus on soil and water quality. The goal with the development of any new forage for dairy lands is to enhance nutrient uptake, particularly N and P, which accumulate in many production fields and can impact local water resources.

Beginning in 2008, we began testing advanced triticale and oat lines as to their potential for dairy silage or grazing. Silage plants differ in their structure and have a more upright appearance than

grazing types, which are typically less stemmy and better-tillered. We have advanced lines that work best for silage and similarly, others that will fit best under grazing dairy management. Evaluation of these potential varieties for production and quality to enhance milk production, while maintaining cost effectiveness, has been a collaborative goal.

Over the past years, this project has allowed us to use on-farm testing under practical dairy management. We find that seasonal distribution of forage production differs among cultivars and among forage types. Soluble sugars, in general, are higher for oat cultivars. Triticale (a rye-wheat cross) is also well suited for dairy silage operations, particularly in central and south Florida where diseases, warmer climate, and drier, sandy soils are problematic. Oat, ryegrass and triticale vary in their time of maximum forage production and distribution over the growing season. We tested the blending of cool-season forages (rye-ryegrass and triticale-ryegrass), which may maximize forage yields, particularly under grazing. This is a win-win for dairy operations and the environment. By maximizing cool-season forage production we also maximize nutrient removal. Particularly, monocultures of ryegrass or triticale or blends of these forages also tend to take up more P than other forages.

Over the past three years the information we have gained has led to the release and co-release of two new forage oat varieties, "Horizon 201" and "RAM LA 99016", along with an early tetraploid ryegrass, "Earlyploid". We have demonstrated the potential of triticale as a possible alternative cool-season forage for dairies. The three triticale varieties, "Trical 342", Trical 2700" and "Monarch" fit well in cool-season silage crop production systems for our southern dairies. In 2011, FL02011 hulless oat, a new, early and high yielding forage oat was recently released by UF-IFAS. This oat, along with sixteen other cool-season forage varieties, were showcased in the 2011-2012 milk check-off demonstration plantings at dairies in north, central and south Florida.

This research has resulted in forage recommendations for dairy silage production and grazing dairy variety selection that fit the industry needs. We annually publish (EDIS) cool-season forage recommendations for dairy and beef cattle operations and invite producers to attend on-farm field days and related programs.

Suggested Literature

Barnett, R.D., A.R. Blount, P.L. Pfahler, J.W. Johnson, G.D. Buntin, and B.M. Cunfer. 2002. Rye and triticale breeding in the south. SS-AGR-42. Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. 3 pp. http://edis.ifas.ufl.edu/AG147.

Blount, A.R. M.B. Adjei, R.L. Stanley, and C.G. Chambliss. 2010. Overseeding warm-season perennial grasses with cool-season forages. http://edis.ifas.ufl.edu/AG178.

Myer, R.O., C.L. Mackowiak, A.R. Blount, and R.D. Barnett. 2009. Soluble carbohydrate concentrations in annual cool-season forages in north Florida. J. Anim. Sci. 87 (Suppl.).

Myer, R.O., A.R. Blount, C.L. Mackowiak, and R.D. Barnett. 2009. Triticale as a forage crop for the southeastern USA. Florida Cooperative Extension Service, IFAS, 5 pp. (AN223). http://edis.ifas.ufl.edu/pdffiles/AN/AN22300.pdf

Myer, B., G. Chelliah, L. McDowell, A. Blount, and C. Mackowiak. 2009. Mineral concentrations in cool-season annual grass pastures in north Florida. UF-IFAS, EDIS, AN224. 3 p. http://edis.ifas.ufl.edu/pdffiles/AN/AN22400.pdf

NOTES