

NACAA Pre-AM/PIC 2004 Animal Science Professional Development Tour
Tip Hudson, Washington State University Extension
Range & Livestock Management Educator

Environmental Stewardship & Florida Livestock



Figure 1. Tour participants in the picture are, clockwise from top left: Gene Schurman-PA, Ron Holcomb-TX, Greg Solt-PA (hidden), Brian Beer-NC, Charlotte & Eldon Cole-MO, Hugh & Meredith Soape-TX, Howard Van Dijk-SC, Carol Schurman-PA, Tip Hudson-WA, Barry Foushee-NC, William Kanitz-Scoring Systems, Inc., Lisa Kempisty-NY, Bob Mickel-NJ, Mike Milicevic-Lykes Bros., Mark Stewart-MO, Ron Graber-KS, Everett Chamberlain-NJ, Susan Kerr-WA. Not pictured is coordinator and photographer Doug Mayo-FL.

Florida is known for its tourism and citrus – tourism accounts for \$52 billion of the state’s economy. But citrus and other agriculture and natural resource industries in 2002 comprised \$62 billion! Florida’s agricultural producers grow 280 different crops - citrus, fruits and vegetables, and livestock are the leaders in value.

Many people don’t realize the importance of livestock in Florida, the land of Disney and oranges. Florida is home to 1.75 million cattle, including nearly one million beef cows and 140,000 dairy cows. The long growing season is ideal for forage production and avoiding the winter feeding that often constitutes 50% of production costs in continental climates . . . but there are tradeoffs. The 19 participants in the 2004 National Association of County Agricultural Agents Pre-AM/PIC Animal Science Professional Development Tour were privileged to see and hear firsthand how a few of the industry leaders in southern Florida have come to grips with those tradeoffs.

Cattlemen working for water quality

Livestock producers in south Florida have some unique challenges. Aside from constant heat and humidity, external parasites, feral pigs, development pressure and associated elevated land values, alligators, and hanging chads, cattlemen in this 20th century frontier are under scrutiny for phosphorus pollution. This sounds innocuous enough, but dairy size in Florida is actually determined by the number of acres they have available to spread their phosphorus-laden effluent onto. Beef producers have not been subject to this level of bureaucracy yet as cattle production is pasture-based instead of confinement-based. However, a Braford cow makes phosphorus, too. Many cattlemen have learned to be proactive in their response to growing environmental concern, even where, as they've discovered, concern isn't entirely justified.

Lake Okeechobee is the primary receiving water body in southern Florida, and the rising level of phosphorus in the lake has been cause for much concern in the last decade. In addition, water from the Okeechobee area has historically flowed south through the Everglades before exiting to salt water. There is great interest in avoiding a nutrient imbalance in the Everglades that might shift vegetation composition. This intersection of extensive subtropical pastures and sensitive natural systems makes the area a focus for environmentalists and regulators, but also makes it a prime locale to experiment with and demonstrate sustainable grazing management.

The *Buck Island Ranch* was purchased in 1987 by the John D. and Katherine T. MacArthur Foundation for environmental research. At that time, research centered on birds of prey, especially those that are threatened or endangered such as the red-shouldered hawk and the caracara. The ranch still boasts more of each species than any other area in the U.S. Today, Foundation research is investigating the relationships between livestock management and water quality and soils. Although the Foundation provides money for research, the ranch itself is not subsidized or supplemented. Cattle, citrus fruit, sod harvest, and hunting leases have provided enough income to keep the ranch operating independently.

The pastures were originally developed for two-way water control: drainage during the wet season and irrigation during the dry season. Improved pastures serve a dual use, providing both pasture and sod. Sod is generally harvested every three years. Bahia grass (*Paspalum notatum*) was brought in from Argentina in the 1930s and now constitutes much of the "improved" pasture in south Florida. The grass isn't ideal for cows, but it is forgiving, dependable, and produces a good sod.



Figure 2. Swamp buggy at the Buck Island Ranch with Gene Lollis, manager, at right.

A partnership of the Univ. of Florida Institute of Food and Agricultural Sciences, the Archbold Biological Station, the S. Florida Water Mgmt. District, the Florida Department of Agriculture and Consumer Services, and the Florida Cattlemen's Association formed to study nutrients on grazed wetlands and design sustainable management practices for cattle operations. (Florida has water management districts run by boards of individuals appointed by the Governor; the districts have tremendous power, including the ability to tax property owners.) Researchers at Buck Island Ranch wanted to compare water quality parameters between the semi-native winter pasture of

bluestems and other warm-season grasses to the improved pastures of introduced varieties that are primarily used in the summer. Pastures with no cattle were used for a control. They found that between 1998 and 2001 cattle stocking rate had no effect on concentrations or loads of total phosphorus or nitrogen measured in runoff. Control pastures had similar results to test plots. The improved summer pastures consistently had higher levels of P than the winter pastures, but the level could be accounted for by 15-20 years of P fertilization prior to 1987. Winter pastures had never been fertilized. The tentative conclusion was that current cattle production practices are, at the least, not exacerbating the 'P' problem.

Ralph Pelaez is a cow/calf operator whose father came to Florida from Columbia to raise cattle. He is known as a highly reputable producer who maintains high standards for livestock quality and environmental stewardship. The South Florida Water Management District monitors water quality in their area of jurisdiction, and they found that Mr. Pelaez was out of compliance. Mr. Pelaez, questioning the sampling protocol that the district used to establish his noncompliance, worked with the University of Florida to initiate research into water quality on his ranch. The District allowed the University to test whether the wetlands on Ralph's ranch were filtering phosphorus.

Grant money obtained through the Lake Okeechobee Protection Program funded installation of water control structures that would regulate the flow of water through the wetlands. A system of culverts, risers, and water tanks allows control of the water elevation in the wetlands and allows cattle to drink outside certain established buffer areas. The geographic region encompassing Ralph's ranch is about 18% isolated wetlands. The project will also create some constructed wetlands. The objectives are, over the next few years, to demonstrate and measure the efficacy of these wetlands on phosphorus assimilation and storage and to design on-farm field treatment wetlands that will maximize phosphorus removal.

Lykes Brothers, at over 300,000 mostly contiguous acres, is one of the largest private agricultural businesses in the country. With 22,000 mother cows, they are second largest cattle operation in Florida and fourth largest in the U.S. Profit centers include sugar cane, forestry, cattle, citrus, hunting leases, and sod. Aside from their size, Lykes Brothers stands out because of their proactive approach to changing technologies and culture.

Since the mid-80s, they have used GIS to manage information on land use. The initial mapping was done before digital maps were available, so they manually digitized 7.5-minute quads to establish the initial database. Aerial photos are used to identify areas in need of improvement.

Lykes Bros. uses grazing to keep fuel loads and brush down. The pine forest on Lykes' property is the largest in the state. In the forest, cows are grazed to reduce forage competition with young trees. The older pine stands are managed for the red-cockaded woodpecker.

They too have been heavily involved in addressing nutrient management on pasture. Mike Milicevic, the head of cattle operations, spearheaded an effort to develop Best Management Practices for livestock producers to get ahead of impending regulation. These voluntary BMPs, developed in cooperation with the Natural Resources Conservation Service, the University of Florida-IFAS, the FL Dept. of Environmental Protection, the FL Dept. of Agriculture, and the Florida Cattlemen's Assn., met with initial resistance, but was finally accepted for a few key reasons: BMPs are voluntary; BMPs cannot be practices that would harm the economic viability of an operation; and importantly, if a producer signs up to participate in the BMPs with the Dept. of Agriculture, there is a *presumption of compliance*. If there is a basin-wide problem, the DEP will first look at producers who have not signed on to the program. Cattlemen also successfully made the case that cattle are low intensity agriculture.

The water quality concern is that total phosphorus loads are high even though concentrations are relatively low, and other local research indicates that cattle are not significantly affecting P levels.

Regulators found that strict regulations and fines were very ineffective in encouraging compliance, much less creating any positive environmental changes. The Lake Okeechobee Protection Plan includes 75% cost-share for participating producers.

Cows & Critters

The *Adams Ranch* is recognized as the foundation ranch for the Braford breed. Bud Adams has had a penchant for genetic improvement for decades that is reflected in the quality of his cattle. They have continually selected for top animals, and seek to maximize heterosis in the crossing of complementary breeds. Today they are experimenting with composite cattle that are a combination of Brangus, straight Angus, and Gelbvieh. The goal is to produce a more uniform calf crop that gains well but can handle the south Florida heat and that optimizes cutability, carcass quality, and yield. The same vigor they have applied to herd development is evident in the land. Peter Harrison, nephew of Bud and vice-president of the business, explains well the compatibility between livestock and wildlife as he shows the group around the ranch.



Figure 3. Deer and Brafords graze together on the Adams Ranch

Adams Ranch is known for its wildlife. Shorebirds are plentiful, alligators are quite common, and deer are everywhere. The ranch has received numerous environmental stewardship awards from the Audubon, FCA, DAR, and NCBA for their land, water, and wildlife management. In 1999 they received the Ranch of the Century Award from the NCBA. The Adams family saw in the early 90s a popular opinion that ranching was a negative influence on the environment. This was the same era that brought a FL Growth Management Act as well as heavy regulations on pesticide and fertilizer use. Partially as a result of the Adams' efforts to educate citizens on the benefits of ranches, the trend has reversed such that more and more people are recognizing the value of open space provided by intact functioning ranches.

There is a widening realization that, in Peter's words, "If we go out of business, there'll be rooftops here."

Dairies enhance nutrient management systems

Dairy size in Florida is regulated by the state based on the acreage of the operation. The acreage/animal threshold is based on the ability of the vegetation to uptake phosphorus in the effluent irrigation water.

Wabasso Dairy, located in Avon Park, Highlands County, is a 2000-hd facility recently expanded from 1000 head following their installation of a manure digester. The dairy has modernized an old facility and utilized cost-share programs to make this improvement in their manure handling

system. Manure is collected on the cement and flushed to a solids separator. Since the cows are bedded on sand, the sand must be separated out. Sand is heavier than the other solids, so it settles out first. Wabasso Dairy is able to recover about 65% of the sand that is flushed out with the wash water at the separator. The solids, containing some of the phosphorus, are sold to a compost company that turns the waste into garden fertilizer. The waste water goes from the separator to a reservoir, which stirs the contents at a pre-determined level and sends the water into their 4-stage lagoon system. Florida dairy lagoons are not required to be lined but are bermed with sand. Cleaned water goes to irrigation pumps and some returns to the flush tanks. Lagoons are 40% lower with the digester treatment than they were prior to installation.

The dairy's Holstein cows are fed a ration of corn gluten and hominy, citrus pulp, cottonseed hulls, and corn silage. The citrus pulp, a byproduct of juice processing, is 7-8% crude protein and 80-85% TDN. When corn silage is not available, citrus pulp mixed with cottonseed hulls provides a palatable balanced ration. Wabasso Dairy grows ryegrass, sorghum, and corn, staggering harvest times over the year, with irrigation in April and May.

Larson Dairy, in Okeechobee, runs 6000 Holstein cows at 3 different facilities. They have also used cost-share to install a separation system that augments the 80 acres of lagoons. The dairy tests irrigation water before application to avoid over-applying phosphorus and nitrogen. They grow stargrass in addition to corn, soybeans, and alfalfa.

The NACAA Animal Science Committee wishes to thank the Dairy Farmers of America and Scoring System, Inc. for sponsoring the 2004 tour. DFA (www.dfamilk.com) is a farmer-owned dairy marketing cooperative that manufactures value-added dairy products, builds milk markets, and conducts product quality research. The cooperative marketed and processed 56.5 billion pounds of milk last year. Scoring System, Inc. (www.scoringsystem.com) is a global technology company specializing in information databases. The company develops record-keeping systems for livestock operations that are inexpensive and easy to use.

Special recognition goes to Doug Mayo, Jackson County Extension livestock agent with University of Florida-IFAS, for coordinating the tour.

For information on participating in the 2005 Animal Science pre-conference tour in Buffalo, New York, contact Barry Foushee with North Carolina Cooperative Extension at (336) 318-6007 or Barry_Foushee@ncsu.edu. Full scholarships are available, thanks to our sponsors.