Tropical Grasslands – Forrajes Tropicales (2013) Volume 1, 69−70

Survey of pasture species and management, manure management, milk production and reproduction on pasture-based dairy farms in Florida and Georgia

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Keywords: Grazing, forages, sustainability, management system.

Introduction

Traditionally, most dairy farms in the south-eastern United States confine cows to barns or on pasture lots year-round and feed stored forages and concentrated feeds (Fontaneli et al. 2005). Often, much of the feed is purchased; however, the cost of purchased feed and fuel has risen rapidly in the last 5 years (NASS 2009). In addition, a significant amount of capital is tied up in buildings, machinery and manure management systems on the farms. For these reasons, many dairy farmers have shown an interest in or started transitioning to pasture-based dairy systems (Ricks and Hardee 2012). The management practices and production results of pasture-based dairy farms in the south-east appear to vary widely (Macoon et al. 2011), but have not been described. The objective of this study was to document pasture and crop management, manure management and milk production on pasture-based dairy farms in Florida and Georgia.

Methods

A survey was designed and consisted of 62 questions covering 7 areas, including farm business structure, young stock management, milking herd management, pasture and crop management, feeding management, manure and nutrient management, and environment and sustainability. The survey focused on the year from summer 2011 to spring 2012. Dairy farmers in Florida and Georgia were invited by telephone calls, emails and announcements in newsletters to participate. Data were collected by personal interviews from September 2012 to March 2013, and analyzed using Microsoft Excel.

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Results

The survey was conducted on 23 dairy farms, involving approximately 29,000 cows and 17,000 heifers, about 15% of all dairy cows in Florida and Georgia. Rotational stocking was employed by 13 (57%) of the respondents. During the warm season, all 23 farms grew warm-season perennial grasses, and during the cool season, 18 farms grew cool-season annual grasses. The total area of warm-season perennial grassland was 5,012 ha, with mixed-species pastures occupying 2,630 ha (52%) and non-mixed pastures occupying the remaining 2,382 ha. Of the non-mixed grass pastures, areas were: 878 ha (37%) of bermudagrass (*Cynodon* spp.), which included Tifton 85, common bermudagrass, Florakirk bermudagrass and coastal bermudagrass; 1,114 ha (47%) of stargrass (*Cynodon nlemfuensis*); 100 ha (4%) of limpograss (*Hemarthria altissima*); and 289 ha (12%) of bahiagrass (*Paspalum notatum*), including cvv. Pensacola, Tifton 9 and Argentine. The total area of cool-season annual grasses was 1,475 ha, with mixed cool-season annual grasses on 878 ha (59%) and non-mixed cool-season annual grasses on 678 ha (41%). Of the non-mixed grasses, oats (*Avena sativa*) was the most common (482 ha, 71%), followed by triticale (x*Triticosecale* spp.) on 144 ha (21%) and annual ryegrass (*Lolium multiflorum*) on 52 ha (8%). The most popular mixture of cool-season grasses was annual ryegrass and oats, established on 374 ha (43%). Warm-season annual grasses were established on 2,358 ha, with corn (*Zea mays*) on 938 ha (40%), sorghum (*Sorghum bicolor*) on 850 ha (36%), crabgrass (*Digitaria sanguinalis*) on 400 ha (17%) and pearl millet (*Pennisetum glaucum*) on 168 ha (7%).

Thirteen farms (57%) treated fall army worm (*Spodoptera frugiperda*) with pesticide, while 16 farms (70%) controlled weeds with herbicides and 11 farms also used a machine to cut weeds. No manure or com-

mercial fertilizer was used on grass paddocks on 10 farms (43%), while 3 farms (13%) used only commercial fertilizer, 1 farm (4%) used liquid manure only, 1 farm (4%) used solid and liquid manure, 3 farms (13%) used liquid manure and commercial fertilizer, and 5 farms (22%) used solid and liquid manure plus commercial fertilizer. Ten farms (43%) applied no manure or fertilizer to cropland, 9 farms (39%) used all their liquid and solid manure plus commercial fertilizer, 3 farms (13%) used only liquid and solid manure, and only 1 farm (4%) used liquid manure and commercial fertilizer on cropland.

Average milk production was 27 ± 7 kg/cow/d during the winter and 20 ± 7 kg/cow/d during the summer. The rolling herd mean yield was 7,794 ± 1,773 kg/cow/yr. Average somatic cell count was 246,292 ± 69,614 cells/mL during the winter and 365,292 ± 78,587 cells/mL during the summer. Six farms (26%) utilized a year-round breeding strategy, while the remaining farms practised various seasonal breeding strategies. Three farms (20%) employed 100% seasonal breeding. The most calvings were reported in October (11 farms, 48%), while 14 farms (61%) reported the fewest calvings in August. Non-breeding periods were reported by 18 farms (78%). Summer breeding was avoided owing to low conception rates; summer calving was avoided because of calving problems at this time (9 farms, 50%), and cows were not bred during October−November (11 farms, 61%) to avoid calving during the summer.

Conclusion

Grass varieties, fertilizer practices, milk production and reproduction all varied widely among pasture-based dairy farms in the south-eastern United States. Survey results will help direct subsequent research and extension programs to gather more knowledge, help promote sustainable agriculture and meet farmers' needs from university Extension staff.

Acknowledgments

We thank the farmers who participated in the survey and the Extension agents who helped to contact them. This study was financially supported by USDA-SARE grant LS11-243 "Improving the Welfare of South Eastern Dairy Families through the Adoption of Sustainable Production Practices".

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