



Intensive Grazing versus Conventional Confinement on Small Dairy Farms in Maryland

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Abstract

Development pressures on land values and environmental constraints are making it increasingly difficult to produce milk economically in Maryland. Expanding the farm or replacing depreciated facilities is not an option for most small dairy farms. Unless economical alternative methods of production are implemented, many dairy farms will cease operation.

Data collected from conventional confinement and intensive grazing dairy operations provides evidence that intensive grazing may be a profitable alternative to help small dairy farms stay in business. Maryland Cooperative Extension is conducting research and education programs to analyze and improve intensive grazing methods and to educate farmers in improving production.

The Maryland Dairy Farm Business Summary analyzes financial data to compare confinement and intensive grazing dairy operations. Five-year running averages of income, expenses, and profit on a per cwt, per cow, and total per farm basis are used to evaluate the differences between the production methods. The average of years 1997-2001 shows the grazing operations generated a \$1.55 per cwt, or a \$171 per cow higher profit than confinement operations. While the grazing operations annually produced 3,464 lbs less milk per cow and averaged only 88 cows per farm in comparison with 118 cows per farm on the confinement operations, the grazing operations generated a \$1,106 higher profit per farm. This analysis is not a random sample. Farmers participate in the summary voluntarily and may not reflect the Maryland dairy industry as a whole.

Studies conducted at the Western Maryland Research and Education Center are determining the

characteristics of various grass species for intensive grazing in Maryland. These studies include both plot work and grazing trials. Thirty-eight perennial varieties and 20 annual varieties are harvested under a simulated-grazing cutting frequency. The results from the annual variety plots are released at the end of each season. Results of the 3-year perennial trials will be released at the end of the 2002 growing season. The perennials are also replicated in paddocks grazed by pregnant Holstein heifers. Although perennial data has not been released, these trials have already been used to assist producers in selecting improved grass varieties.

Since 1996, bi-monthly pasture walks have been conducted on dairy farms across Maryland, averaging 25 producers in attendance. These pasture walks provide a farmer-to-farmer discussion of practical alternative methods of production used to increase profitability under intensive grazing.



Financial Comparison of Confinement and Intensive Grazing

The Maryland Dairy Farm Business Summary helps dairy farmers analyze their financial data to determine their strengths and weaknesses in their operations. This simple analysis uses tax and production data that are easily obtainable. Five years of income, expense, and profit data are averaged to help farmers understand what is happening over the long-term. Five year averaging also mitigates price and yield fluctuations and changes in inventories on the farm.

Data from all farms participating in the summary are then averaged so farmers can compare their farms to other farms. Income, expenses, and profit are reported on a per cwt, per cow, and total farm basis. Using a per

cwt comparison is most useful since this is independent of farm size and milk production levels. But per cow and per farm comparisons are also useful.

The analysis includes a comparison of confinement and grazing operations. The average of years 1997-2001 shows that grazing operations generated a \$1.55 per cwt, or a \$171 per cow higher profit than confinement operations. While the grazing operations annually produced 3,464 lbs less milk per cow and averaged 30 fewer cows per farm in comparison to confinement operations, the grazing operations generated a \$1,106 higher profit per farm.

**Financial Comparison of Confinement and Grazing Farms
1997-2001 Average Income, Expenses, and Profit**

	Confinement 19 Farms	Grazing 11 Farms
Average number of cows	118	88
Pounds of milk sold per cow	19,747	16,283
Farm income per cwt		
Milk sales	\$ 14.70	\$ 14.96
Cattle sales	0.71	1.26
Other income	1.14	1.09
Total income	16.55	17.30
Farm expenses per cwt		
Feed purchased	4.17	3.42
Seed, fertilizer, chemicals	1.29	1.12
Depreciation and repairs	2.39	3.04
Labor	1.09	0.58
Medical and breeding	0.75	0.45
Hauling and transportation	0.77	0.86
Rent	0.74	1.21
Interest	0.53	0.63
Custom hire	0.52	0.32
Other expenses	1.93	1.78
Total Expenses	14.19	13.40
Profit per CWT	2.36	3.91
Profit per COW	465	636
Profit per FARM	\$ 54,918	\$ 56,024

Grass Variety Plot Analysis and Grazing Trials for Improving Dairy Intensive Grazing

Studies conducted at the Western Maryland Research and Education Center are determining the characteristics of various grass species for intensive grazing in Maryland. These studies include both plot work and grazing trials. Thirty-eight perennial grass varieties (which include 9 species) and 20 annual varieties are harvested under a simulated-grazing cutting frequency. The perennial plots were cut 10 times in 2000, 5 times in 2001, and 6 times in 2002. Both 2001 and 2002 were drought years. Results of the 3-year perennial trials will be released at the end of the 2002 growing season. Annual varieties are harvested 6 times per year and the results are released at the end of each season. Annual ryegrass varieties provide alternative forage to be utilized as a quick cover or in a double crop system.



vigor and resistance to weather extremes, and disease. These observations have been made at pasture walks, field days, and numerous visits by producers, grass seed company representatives, and Extension agents. Data is also being compiled on stand persistence, relative plant maturity, and disease incidence. Through a cooperative effort with USDA, all 3 years of the perennial samples (~3,000) will be analyzed. The resulting forage quality data will be used to further producers' grass variety selection knowledge. Another 3-year study will be initiated with a new set of perennial grass varieties in September 2003.

The 38 perennial grasses are also replicated in paddocks grazed by pregnant Holstein heifers. Under management intensive grazing, these grasses are being tested for grazing suitability, stand persistence, and animal preference. Another 46 grasses are being tested in this system in cooperation with North Carolina State University and Ag Research, Inc.

The perennial data has not been released, however, both perennial and annual trials have already been used to assist producers in selecting improved grass varieties as they observe the growth habits, leaf texture, varietal

Educating Dairy Farmers Through the Use of Pasture Walks

Holterholm Farms hosted our first official Dairy Pasture Walk for Frederick County in 1996 and has served as a demonstration farm for Maryland Cooperative Extension since then. In 1997, Peace Hollow Farm of Washington County became our second demonstration farm. Since 1996, 65 Dairy Pasture Walks have been held on 18 different farms and at the Western Maryland Research and Education Center with a total attendance of over 2,000 producers, industry representatives, and Extension agents. These Dairy Pasture Walks provide a farmer-to-farmer discussion of practical alternative methods of dairy production used to increase profitability under an intensive grazing management system.

Objectives of the early walks were to address the basics of how to graze dairy cattle in Maryland. Since there was limited grazing experience to draw from, farmer-learners soon became farmer-teachers under this team's guidance. Some of the first subjects included grazing system design, grass and legume species selection, stand establishment, maintenance and

renovation, fencing and watering systems, and laneway construction. Dairy Pasture Walk discussions soon became more involved to include managing forage supplies, grazing nutrition, feeding systems, soil health, cow health, and dairy genetic selection. The learning curve continues for experienced as well as new graziers and Extension agents.

This team has also presented Dairy Grazing seminars at 49 state and regional meetings and 2 national conferences since 1996, reaching over 3,600 additional producers and other professionals.

Since 1996, 34 Maryland dairy farmers have converted their production systems to grass-based dairying. Of these 34 farms, 12 have purchased their farm or are positioning themselves to buy a farm since converting to grazing. Eleven of these 34 farms are currently participating in the Maryland Dairy Farm Business Summary. Five years of financial data from these farms indicate that grazing may be more profitable than conventional confinement management.

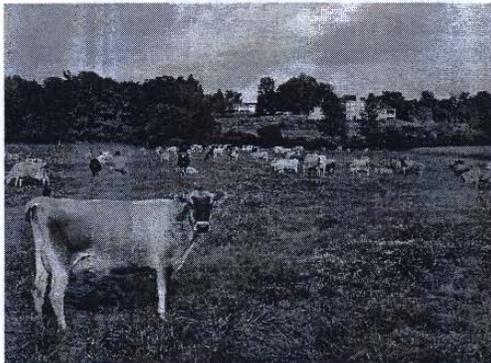
Holterholm Farms Ron and Kathy Holter Jefferson, Maryland

Holterholm Farms is a fifth generation dairy farm located in the Middletown Valley of Maryland. Ron and Kathy purchased the farm from Ron's parents in 1994. They have two children. The farm is about 200 acres. It had been a successful, 100-cow registered Holstein confinement dairy until 1995. At that time, Ron attended an Extension workshop conducted by Stan Fultz and Dale Johnson at the Frederick County Office. The workshop focused on developing mission, strategic planning, and goal setting. This was a catalyst for Ron and Kathy's decision to convert from confinement to grazing to meet farm, family, financial, environmental, and spiritual goals.

Infrastructure - In 1995, the transition to grazing began with all heifers and dry cows being grazed on old hay fields from May to October. Perimeter two-strand electric fence was installed around 154 acres of former annual crop ground. By the spring of 1996, single-strand interior fencing was completed, splitting the 154 acres into six-acre paddocks. An aboveground, 1.25-inch waterline was installed to provide water to every paddock using portable water troughs. All stock was turned out to graze in late April. The other 50 acres were seeded into hay/pasture grasses in the fall when the last of the annual crops were harvested. Geotextile-reinforced laneway reconstruction was completed in 1996 to provide year-round access to all pastures. The farm is currently divided into 66 three-acre paddocks, further divided with temporary fencing to allow fresh grass after each milking. A refurbished Waikato swing-20 milking parlor was built in 2002 to allow the milking of 100 cows per hour with a single operator.

Nutrition - Calves are fed colostrum at birth. At two days of age, they go into a pasture lot with a training fence and a mob feeder. Whole milk is fed. Calves have a calf starter and fresh water available from one week of age. They are weaned at 6-8 weeks and grain supplementation is continued until the calves reach 300 pounds. Heifers receive no additional grain until three weeks prior to calving. Dry cows receive hay or baleage and free-choice minerals. Milk cows are fed concentrates equaling one percent of their body weight at milking time. Pasture is the only forage source for all animals except for times of pasture shortage (drought and winter) when they will receive hay or baleage. The cattle are fed outside on the paddocks year-round except when the ground is too soft and pasture damage may occur.

Spring Calving - Transition to spring-calving began in 1997. Cows and heifers are bred to allow calving in late February through mid-April. Cows not falling into this calving window are sold in August. The entire herd is dried-off in mid-December, which reduces feed requirements during winter and provides a "vacation" period of about 6-8 weeks.



"Why Jerseys?" - Jerseys are smaller than Holsteins and are more efficient converters of forage to milk. They have more heat tolerance than Holsteins. Even in the heat of summer Jerseys will spread out and graze. Jerseys have expressed better fertility than Holsteins. This is critical to seasonal calving. The Jerseys will typically have a first service conception rate near 65 percent while the Holsteins average less than 40 percent. Only heifer calves from cows that calve in the first 4 or 5 weeks of the season are raised as herd replacements, thereby improving the herd fertility in future generations.

Profit - The average profit of Holterholm Farms for years 1997-2001 is \$7.87 per cwt of milk sold or \$965 per cow.



Photo by Susan Harlow
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