

# Economics of Conventional versus Grazing versus Hybrid Dairy Production Systems

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Partial funding for this paper was provided by Southern SARE via Project Number: LS11-243, *“Improving the Welfare of Southeastern Dairy Families Through the Adoption of Sustainable Production Systems.”*

## Introduction

Recently there has been renewed interest in dairy production alternatives to confinement or conventional dairy production systems. Due to differences in management, resources, and environments, it is very difficult to precisely define all of the alternative dairy production systems currently utilized in the Southeastern US. However, these alternative systems can generally be divided into two types; grazing (aka New Zealand style) and hybrid.

Both alternative systems seek to increase profits by reducing costs through grazing cows as opposed to relying exclusively on stored forages or feed as in the conventional system. Both of these systems have lower milk production per cow than the conventional system which averages about 24,000 pounds per cow per year.

The grazing or New Zealand (NZ) style can be characterized by relying heavily on grazing with some supplemental grain or silage provided either in the parlor or while cows are on pastures. Milk production will usually average around 15,000 pounds per cow per year.

The hybrid system also utilizes grazing. However, it tends to feature more silage and concentrate that is fed in a feeding barn or some other permanent structure. As a result, milk production tends to be somewhat higher than the NZ system at around 19,000 pounds per cow per year.

## Economic Considerations

While net returns certainly play a factor in evaluating a production system, there are also other factors. These factors include but are not limited to, risk preferences of producers, management capabilities, desired “free-time,” capital constraints, animal welfare concerns, and other personal emotions. Thus, while “dollars and cents” are certainly important, they are not everything.

The following analysis only addresses the financial aspects of the different production systems. So, while these other personal attitudes are very important, they are not addressed in this paper.

## Methods

Published UGA conventional dairy budgets were modified to create both hybrid (HY) and grazing (GRZ) budgets. Information for these budgets came from interviews with dairy producers in Georgia as well as consultation with UGA dairy specialists and industry consultants.

This analysis assumes that mature cows and springing heifers are purchased and all other replacements are raised. The cost of raising heifers is included in the annual operating expenses.

To account for risk, historical milk, corn, soybean meal and other feed prices from 2008-2012 were utilized to develop a simulation model. This model is not a historic analysis, but rather utilizes historic data to simulate the possible production, sales price, and input price combinations that can help us determine comparative probabilities or odds for the different systems.

## Results

Assumptions	System			
	Conventional	Hybrid	Grazing	Grazing Three Platforms
Number of Cows	2,500	600	600	1,800
Rolling herd average/cow	24,000	19,500	15,000	15,000
Total Annual Milk Production (million lbs.)	60.0	11.7	9.0	27.0
Total Investment (\$ million)	\$ 23.12	\$ 6.77	\$ 6.11	\$ 18.13
Investment (\$/cow)	\$ 9,249.57	\$ 11,277.12	\$ 10,180.83	\$ 10,072.08

Numerous factors impact investment costs, IOFC, and overall profitability. Not surprisingly, the two largest drivers of investment costs are land and cow prices.

	<b>System</b>			
	<b>Conventional</b>	<b>Hybrid</b>	<b>Grazing</b>	<b>Grazing Three Platforms</b>
<b>Economic Results</b>				
Total Revenue (millions)	\$ 12.52	\$ 2.66	\$ 2.05	\$ 6.14
\$/cow	\$ 5,007.54	\$ 4,433.75	\$ 3,413.40	\$ 3,413.40
Total IOFC (millions)	\$ 6.92	\$ 1.61	\$ 1.11	\$ 3.33
IOFC (\$/cow)	\$ 2,766.87	\$ 2,686.91	\$ 1,847.25	\$ 1,847.25
Total Variable Costs (millions)	\$ 7.75	\$ 1.63	\$ 1.35	\$ 3.91
TVC (\$/cow)	\$ 3,098.43	\$ 2,717.45	\$2,659.59	\$2,583.68
Total Fixed Costs (millions)	\$ 1.58	\$ 0.58	\$ 0.46	\$ 1.34
TFC (\$/Cow)	\$ 631.39	\$ 960.00	\$ 762.19	\$ 745.49
Total Profit (millions)	\$ 2.23	\$ 0.15	\$ (0.01)	\$ 0.15
Profit (\$/cow)	\$ 892.45	\$ 251.80	\$ (8.38)	\$ 84.23

Based on average prices and productions, these results seem to confirm why we see much of what has been occurring in the dairy industry in recent years. The ability to spread fixed costs over multiple grazing platforms results in increased profits. The ability to keep overhead costs low is one of the primary keys to farm profitability.

	<b>System</b>			
	<b>Conventional</b>	<b>Hybrid</b>	<b>Grazing</b>	<b>Grazing Three Platforms</b>
<b>Risk Analysis</b>				
Maximum Profit (millions)	\$ 9.12	\$ 1.49	\$ 0.85	\$ 2.66
Minimum Profit (millions)	\$ (5.11)	\$ (0.82)	\$ (0.90)	\$ (2.22)
Percent chance of covering VC	97.10%	99.00%	93.00%	95.00%
Percent chance of covering TC	86.60%	64.20%	51.00%	56.60%

Even though the Conventional system may offer higher profit potential, it also comes with greater total financial risk. Additionally, many producers may place a higher value on other non-financial factors such as free time, environmental concerns, animal welfare, aesthetics and lifestyle.

All types of operations have a very good chance of covering variable costs. Again, the ability to manage fixed costs is the difference profitability and unprofitability.

	System			
	Conventional	Hybrid	Grazing	Grazing Three Platforms
<b>Breakevens (\$/Cwt.)</b>				
Feed costs	\$ 9.34	\$ 8.96	\$ 10.44	\$ 10.44
Total Variable Costs	\$ 12.91	\$ 13.94	\$ 14.97	\$ 14.47
Fixed Costs	\$ 2.63	\$ 4.92	\$ 5.08	\$ 4.97
Total Costs	\$ 15.54	\$ 18.86	\$ 20.06	\$ 19.44

When all factors (milk production, sales price, input prices, and investment cost) are considered, the Conventional system seems to offer an economic advantage. However, this system requires substantially more capital and management. These results also seem to indicate that a Hybrid system is a reasonable alternative as the main difference in profitability is that of fixed costs.