Fact Sheet #4 : Comparing Seasonal Calving with Non-seasonal Herds

Regional Multi-State Interpretation of Small Farm Financial Data from the Sixth Year Report on 2005 Great Lakes Grazing Network Grazing Dairy Data October 2007

Overview

The data and conclusions of this paper are derived from the report with the above title from a USDA Initiative for Future Agricultural and Food Systems (IFAFS) Grant project #00-52101-9708. Some strengths of this work include standardized data handling and analysis procedures, combined actual farm data of ten states and one province to provide financial benchmarks to help farm families and their communities be successful and sustainable. The main report is also based upon work supported by Smith Lever funds from the Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture. The full report is available at: http://cdp.wisc.edu/.

Participating grazing dairy farms must typically obtain 85% or more of gross income from milk sales, or 90% of gross income from dairy livestock sales plus milk sales, harvest over 30% of grazing season forage by grazing and must provide fresh pasture at least once every three days.

Management Intensive Rotational Grazing (MIRG) has become a more common dairy system in the northern U. S. This analysis of actual farm financial data from 115 graziers in 2005, 101 in 2004 102 in 2003, 103 in 2002, 126 in 2001, and 92 in 2000 (more than 251 farms supplied at least one year of data), mainly from the Great Lakes region, provides some insight into the economics of grazing as a dairy system in the northern U.S.:

- There is a range of profitability amongst graziers. The ratio between the most profitable half and the least profitable half's Net Farm Income from Operations (NFIFO) per cow and per Hundredweight Equivalent (CWT EQ) was greater in the lower profit years (usually with lower milk prices) than in the higher profit years. For more information, see Fact Sheet #2 of this series.
- The average grazing herd with less than 100 cows had a higher NFIFO per cow and per CWT EQ than the average grazing herd with 100 cows or more. The smallest margin appeared in the 2003 data. For more information, see Fact Sheet #3 of this series.
- Non-seasonal herds had a large NFIFO per cow and per CWT EQ advantage in 2000 and 2002. The seasonal herds (stop milking at least one day each calendar year) had a large NFIFO per cow and per CWT EQ advantage in 2001 and 2004 and a very small advantage in 2003. In 2005, non-seasonal herds had a NFIFO/Cow advantage and slight NFIFO/CWT EQ disadvantage. **Careful examination of the data suggests that achieving a given level of NFIFO per cow or per CWT EQ is more difficult in a seasonal system.** The seasonal group had a smaller range of financial performance within a year but experienced more variability of financial performance from year to year. Less than 15 percent of the herds in the data were seasonal. For more information, see Fact Sheet #4 of this series.
- The graziers in the study were economically competitive with confinement herds in the states that had comparable data from both groups. For more information, see Fact Sheet #5 of the series.
- While breed of cattle is a minor factor affecting profitability, the Holstein herds in the data had better financial performance in NFIFO per cow in five of five years and NFIFO per CWT EQ in four of five years of comparisons with other breeds. For more information, see Fact Sheet #6 of this series.
- The ranking of major cost items is remarkably similar between grazing and confinement herds. For more information, see Fact Sheet #7 and #8, of this series.
- Relatively consistent differences in financial performance between states have appeared in all years. These differences must be considered when interpreting the data.

The study also confirms that accounting methodology and financial standards are important both in the accuracy and in the standardization of comparison values across large geographic areas that involve different combinations of production assets and management skills. In comparing the results of this study with other data, it will help to understand the measures used here but not in all places in the country.

Why the Changes in the Seasonal Calving/Milking Strategy Comparison from 2000 to 2005?

Defined

In this study, a herd is considered to be employing the seasonal calving/milking system if they stop milking at least one day or more each calendar year. They may be referred to as simply “seasonal” hereafter. A semi-seasonal calving/milking herd milks at least one cow every day of the year **and** makes a serious attempt to "bunch" their calving to one or two times of the year, but are less likely to cull healthy, productive animals that don't conceive in the preferred breeding window. Continuous calving/milking herds distribute calving among most months of the year. Any calving strategies not meeting the seasonal definition is also referred to as non-seasonal in this analysis and is comprised of continuous and semi-seasonal (bunch calving) herds.

Challenge of Seasonal Calving/Milking

The biggest challenge in managing a seasonal dairy herd is maintaining a 12-month calving interval. There are three ways of maintaining the 12-month interval; (1) Shortening or increasing the voluntary waiting period to first breeding, (2) Shorten the lactation for cows that were late in breeding back and (3) Cull cows that do not fit the seasonal calving/milking strategy, requiring more raised or purchased replacements that are due to freshen in the appropriate calving window. The small number of seasonal herds in the dataset is an indicator of the challenge of maintaining the 12-month calving interval. There are fewer than 20 seasonal herds in any of the years analyzed.

Comparing the Six Years (also See the Wisconsin Version Below)

A lot of variability in the financial performance has appeared in the calving strategy comparison in this multi-state data from 2000 to 2005.

The seasonal herds in 2005 had a slight advantage in NFIFO/CWT EQ ($2.95 vs. $2.89) over the non-seasonal herds, but a disadvantage in NFIFO/cow ($543 vs. $631). Wisconsin non-seasonal herds had the advantage via both measures ($3.50 vs. $3.19) and ($800 vs. $648). The 14 GLGN (5 WI) seasonal herds were a small group. The 2005 price pattern was remarkably level and therefore didn’t favor spring seasonal systems as had been the case in 2001 and 2004.

The seasonal group had a substantial advantage in NFIFO per cow and per CWT EQ over non-seasonal herds in 2004. As in 2001, the milk price pattern was unusually favorable to the spring calving/milking strategy, compared to many years of price history.

The 2003 results are somewhat unique in that the NFIFO per cow were nearly the same for seasonal and non-seasonal herds at $462 and $461 respectively. At the same time, the seasonal herds had a noticeable advantage in NFIFO per CWT EQ of $2.58 versus $2.01.

In 2002, the non-seasonal herds had a nearly two-to-one advantage in NFIFO per cow. The non-seasonal NFIFO per CWT EQ was 34% higher than the seasonal NFIFO per CWT EQ in 2002.

In 2001, the seasonal herds had almost 1.5 times the NFIFO per cow and NFIFO per CWT EQ than the non-seasonal herds.

In 2000, the non-seasonal herds had more than twice the NFIFO per CWT EQ and NFIFO per cow.

The highest NFIFO per cow achieved by a non-seasonal herd was twice as high as the highest NFIFO per cow achieved by a seasonal herd in all years. The highest non-seasonal NFIFO per CWT EQ typically was 30 – 40% higher than the highest seasonal NFIFO per CWT EQ in most years.

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The seasonal herds exhibit a smaller range in NFIFO per cow and per CWT EQ than non-seasonal herds within a given year. In fact, the non-seasonal range was typically at least double the seasonal range. In all years, the high and low performances were in the non-seasonal group.

The average herd size of the average seasonal herd was much smaller in the two high milk price years (85 in 2001 and 107 in 2004 versus at least 128 in the other four years). Part of the change in herd size occurred because a very large herd provided seasonal data in 2002 and 2003, but not in the other years.

Looking at Wisconsin Seasonal Calving/Milking to Minimize the Impact of State-to-State Differences

As explained further in Chapter VI, relatively consistent differences in financial performance between states appeared in all years. Because of these state-to-state differences, it was recognized early in the project that comparing graziers from a higher performing state to confinement from a lower performing state could produce a very different result than obtained when graziers were compared to confinement herds from the same state. Therefore the grazier versus confinement comparison has been made within states. As explained in Chapter VI, the average Wisconsin grazier consistently had a higher NFIFO per CWT EQ than the average grazier from any other state contributing ten or more observations per year. Wisconsin seasonal graziers also had a higher NFIFO per CWT EQ than multi-state seasonal graziers in four of six years. Most of the other seasonal data came from states that contribute very little non-seasonal data. Since Wisconsin provided a much higher proportion of seasonal data than non-seasonal data, **the multi-state seasonal calving/milking financial performance from 2000 to 2005 (and illustrated in Chapters XV and XVI) was enhanced because a high proportion of seasonal herds were from Wisconsin.**

In 2005, Wisconsin non-seasonal herds had an advantage over seasonal herds in NFIFO/CWT EQ ($3.54 vs. $3.19) and NFIFO/Cow ($800 vs. $648) Wisconsin and multi-state seasonal herds had an advantage over non-seasonal herds in 2001 and 2004, but the Wisconsin seasonal herds' advantage over Wisconsin non-seasonal herds was much smaller. In 2003, the Wisconsin seasonal herds had a small disadvantage over non-seasonal herds in contrast to a small advantage for multi-state seasonal herds over multi-state non-seasonal herds. Wisconsin and multi-state seasonal herds had a disadvantage in 2000 and 2002.

Comparing Wisconsin seasonal with Wisconsin non-seasonal herds from 1995 to 2005, the non-seasonal herds had higher NFIFO per CWT EQ in eight of eleven and higher NFIFO per cow in nine of eleven years compared to seasonal herds. In most years, Wisconsin seasonal herds also had a disadvantage compared to Wisconsin continuous and semi-seasonal herds.

In six years of multi-state data and eleven years of Wisconsin data, no seasonal herd has attained the NFIFO per cow or NFIFO per CWT EQ levels achieved by the highest performing non-seasonal herds, including 2004 and 2001, years in which (as explained later) the milk price pattern was extremely favorable for seasonal herds. When all the evidence is considered, it appears **more likely that a non-seasonal herd will perform better than a seasonal herd** in terms of NFIFO per cow and NFIFO per CWT EQ.

Selection Bias Appears To Be a Major Factor in Explaining The Year-to-Year Differences

Twenty-eight different seasonal calving/milking herds have submitted at least one year of useable data to this multi-state project. Of these herds, 18 have been a part of the Prograsstinators, a multi-state grazing network that deliberately examines the actual farm financial performance of its members. Their interest in financial performance is an important reason for their inclusion in this project. A high percent of the Prograsstinator members have practiced seasonal calving/milking for a number of years.

The number of summarized seasonal farms changed from 7 in 2000, 18 in 2001, 13 in 2002, 14 in 2003, 12 in 2004, and 14 in 2005. Of all the seasonal herds summarized in 2001, twice as many were new to the summary than were repeats from 2000. Since one of the seasonal herds in 2000 became semi-seasonal in 2001, twelve of the seasonal herds summarized in 2001 were not part of the 2000 seasonal summary. Many of the twelve new herds were well-established seasonal herds. This group of experienced seasonal graziers made their seasonal system function efficiently in 2001 and 2004.

Of the 14 seasonal herds included in the 2005 summary, 11 were included in 2004 and 11 in 2003, 9 were included in 2002, 7 were included in 2001, and 2 were included in 2000. Some seasonal herds supplying more than one year of data missed a year because of not meeting the seasonal definition or by not submitting data in that year.

Because farms entered and left the study during the six years, some variation in comparison results is to be expected. Primarily because the sharing of farm financial data is a voluntary act, data are not collected via a random selection procedure. It is difficult to know if one year has a more representative sample than the other. In general, the larger the group, the more likely that the group is a representative sample. Also in general, most groups of less than 20 may not be representative of the larger population that they came from.

The milk price pattern in 2001 and 2004 was more favorable for spring seasonal herds than for non-seasonal herds. There was an **unusual pattern of higher prices in the spring months**. The 2001 price pattern was ideal for spring seasonal calving. The typical milk price pattern has higher milk prices in September, October and November. Milk prices in 2004 and 2001 were lowest in January, February, November and December – months of low milk output for most spring seasonal herds. All of the seasonal herds summarized in all years practice spring calving. In 2001, the annual average milk price advantage for the seasonal herds over the non-seasonal herds was $1.36 in the multi-state data and $2.75 in the Wisconsin data. In 2004, the annual average milk price advantage for the seasonal herds over the non-seasonal herds was $1.64 in the multi-state data and $2.60 in the Wisconsin data.

Prior to 2005, the multi-state "seasonal price advantage" ranged from $0.64 to -$0.80 in the other three years. The pattern in Wisconsin was similar with a range of -0.30 to $1.61 in the other three years. The "seasonal price advantage" for Wisconsin seasonal herds from 1995 to 1999 ranged from $1.07 to -$0.58. Seasonal herds were less likely to have Holsteins but the data shows that price differences between calving/milking strategies was less influenced by breed than by price pattern in 2001 and 2004.

The 2005 price pattern was nearly flat and slightly disfavored spring seasonal systems contrary to the case in 2004 and especially in 2001.

Still in 2005, the annual average milk price advantage for the seasonal herds over the non-seasonal herds was $0.87 in the multi-state data and $3.13 in the Wisconsin data. This was the largest annual price advantage for Wisconsin seasonal herds over non-seasonal herds in 11 years.

Organic milk prices appear to explain most of the price differential between seasonal and non-seasonal herds in 2005. 21% of the multi-state seasonal herds and 8% of the multi-state non-seasonal herds received organic milk prices in 2005. 60% of the Wisconsin seasonal herds and 19% of the Wisconsin non-seasonal herds received organic milk prices in 2005. A similar but reduced impact of organic milk prices occurred in 2004 when 16% of the multi-state seasonal and 8% of the multi-state non-seasonal graziers and 50% of the Wisconsin seasonal and only 8% of the Wisconsin non-seasonal herds were organic.

As a separate report shows, organic production enhances milk prices more than it enhances NFIFO.

In a few words, the relative financial performance of the average seasonal grazier in the 2001 and 2004 data is likely to be a better indicator of what can be achieved under favorable conditions by experienced and highly capable managers committed to the seasonal system.

Furthermore, the financial performance of the average seasonal grazier in the 2001 and 2004 data probably does not represent the kind of financial performance that less experienced or less capable managers could expect to achieve quickly and consistently while working toward the establishment of a seasonal system.

This comparison of seasonal and non-seasonal calving systems illustrates the challenge in reaching confident conclusions from small groups of data and it reminds us of the danger in reaching confident conclusions from testimonials. It demonstrates the importance of using standardized and complete financial documentation to compare different farms and systems. It also begs for a careful ongoing examination to understand what is happening and what factors can result in profitability shifts.

Because of rounding, some small mathematical differences might be found in the summary tables below.

Comparing Seasonal with Non-seasonal Calving/Milking Herds	**Seasonal**					
Many Performance Measures	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Number of Herds	7	18	13	14	12	14
Number of Cows per Herd	145	85	141	143	107	128
Average Lbs. Milk per Cow	11,667	12,270	11,044	11,528	11,727	12,104
Average Lbs. Milk per Herd	1,691,715	1,044,970	1,560,561	1,645,234	1,230,137	1,548,838
Group Average Mailbox Milk Price	$13.70	$17.50	$13.05	$14.45	$19.15	$17.56
U.S. All Milk Price (used to calculate CWT EQ)*	$12.33	$14.94	$12.15	$12.50	$16.10	$15.14
Average Basic Cost per CWT EQ	$6.73	$7.67	$8.02	$7.57	$8.86	$9.34
Non-Basic Cost per CWT EQ	$4.73	$2.61	$2.81	$2.35	$2.26	$2.85
Allocated Cost per CWT EQ (Basic + Non-Basic Cost)	$11.46	$10.28	$10.83	$9.92	$11.12	$12.19
NFIFO per Cow (if all labor was unpaid)	$404	$1,101	$381	$609	$1,038	$701
NFIFO per CWT EQ (if all labor was unpaid)	$2.20	$5.46	$2.36	$3.40	$5.72	$3.91
NFIFO per Farm	$23,202	$73,322	$30,061	$65,921	$97,114	$69,425
NFIFO per Cow	**$160**	**$861**	**$213**	**$462**	**$904**	**$543**
NFIFO per CWT EQ	**$0.87**	**$4.66**	**$1.32**	**$2.58**	**$4.98**	**$2.95**

Comparing Seasonal with Non-seasonal Calving/Milking Herds	**Non-Seasonal**					
Many Performance Measures	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Number of Herds	85	101	90	88	89	100
Number of Cows per Herd	85	84	78	79	91	97
Average Lbs. Milk per Cow	17,560	15,695	16,454	16,494	16,297	16,895
Average Lbs. Milk per Herd	1,496,401	1,325,900	1,283,544	1,296,821	1,489,367	1,638,746
Group Average Mailbox Milk Price	$13.06	$16.14	$13.85	$14.38	$17.51	$16.69
U.S. All Milk Price (used to calculate CWT EQ)*	$12.33	$14.94	$12.15	$12.50	$16.10	$15.14
Average Basic Cost per CWT EQ	$7.96	$8.69	$7.69	$7.84	$9.39	$9.09
Non-Basic Cost per CWT EQ	$2.62	$3.21	$2.69	$2.65	$3.23	$3.16
Allocated Cost per CWT EQ (Basic + Non-Basic Cost)	$10.58	$11.90	$10.38	$10.49	$12.62	$12.25
NFIFO per Cow (if all labor was unpaid)	$602	$825	$683	$687	$972	$899
NFIFO per CWT EQ (if all labor was unpaid)	$2.64	$4.21	$2.89	$2.99	$4.60	$4.06
NFIFO per Farm	$33,913	$50,413	$32,686	$36,264	$67,128	$62,070
NFIFO per Cow	**$398**	**$597**	**$419**	**$461**	**$738**	**$640**
NFIFO per CWT EQ	**$1.75**	**$3.04**	**$1.77**	**$2.01**	**$3.48**	**$2.89**

*See Chapters IX and X of the full report for more information about CWT EQ and cost categories.