

# A Case Study with Swallowdale Farm on Milking a Grass-fed Dairy Herd 3-in-2

## Introduction

As farmers continue to find ways to adapt to milk and labor market conditions, adopting alternative production strategies, such as once-a-day milking, is becoming increasingly appealing. However, while reducing milking frequency can reduce labor needs surrounding milking tasks, milk production can be significantly reduced. In a grass-fed herd, milk production is already lower than other pasture-based (i.e., organic) systems and therefore may present an opportunity to minimize production reductions in response to alternative milking schedules. Furthermore, there is some evidence to suggest that extending milking intervals up to 16 hours can maintain milk and component production while reducing labor. To examine this scenario, data were collected from a certified grass-fed dairy farm in Vermont that switched from twice-a-day (TAD) milking to milking three times every two days (3-in-2). This report will summarize the findings of that case study.

## Materials and Methods

Swallowdale Farm is a certified organic grass-fed dairy farm located in Orwell, VT. This dairy farm has been certified grass-fed for approximately 3 years. The herd is composed of approximately 80 crossbred dairy cattle that calve year-round. The average daily milk production for the herd with TAD milking was 37.9 lbs/cow. During that time the herd was certified organic and thus still feeding grain daily.



Swallowdale Farm's grass-fed cows grazing millet.

Milk sales data were collected from the farmer from September 2018 August 2021. Data included total pounds of milk, fat, and protein shipped each month as well as the number of cows milking each month.

## Results

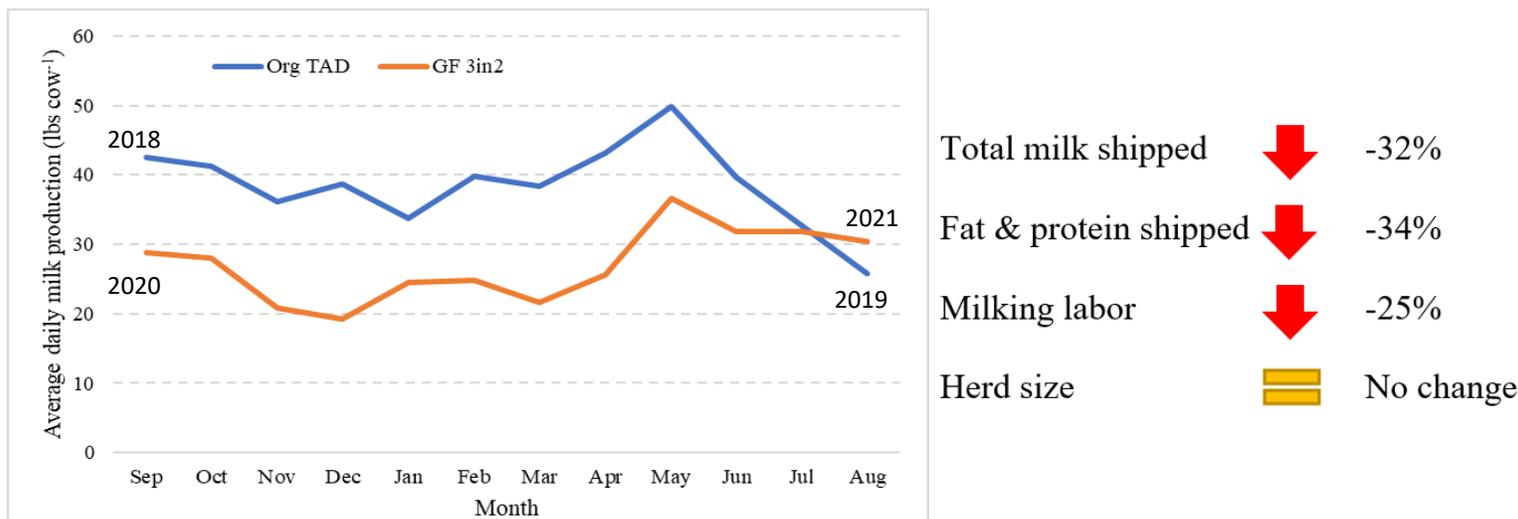
The farm switched to a 3-in-2 schedule in September 2019. At the same time the herd also switched from organic to 100% grass-fed management, removing the remaining grain from the ration. Between September 2018 and August 2019, the herd was averaging 38.5 lbs/cow when milking TAD with grain.

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In August, immediately prior to the switch, the herd was averaging only 25.8 lbs/cow. Following the switch, production increased to 28.8 and 28.1 lbs/cow in September and October respectively before decreasing to approximately 20 lbs/cow in November and December. Figure 1 compares production over the same months, during the TAD (September 2018—August 2019) and 3-in-2 (September 2020—August 2021) schedules.



**Figure 1. Daily milk production under two milking frequencies.**

Overall, during this time, the herd experienced a 32% reduction in annual milk production dropping from 14,098 lbs per cow to 9,556 lbs per cow. It is important to remember that this reflects not only a reduction in milking frequency but also a transition to 100% grass-fed management. The average U.S. grass-fed dairy produces 9,305 lbs per cow with 85% milking twice daily (Snider et al., 2019). While this farm experienced a significant reduction in milk sold compared to organic management, they were still able to maintain average productivity for a 100% grass-fed herd. If we look at the distribution of milk production throughout the year (Figure 1), you’ll see that productivity tracked similarly between the two milking frequencies. One interesting trend was that the herd’s productivity during the grazing season held more consistent under the grass-fed 3in2 management system compared to the organic TAD management. Because this comparison occurred across different years, some difference may be due to extenuating circumstances not directly related to the management systems such as weather conditions impacting pasture productivity and quality during those months. However, it may also be a result of reduced demand on the animals. With fewer milkings the cows make fewer trips to the parlor from pasture and spend less time standing idle in the holding area. This decreases their energy expenditure and increases the amount of time they have to graze, feed, rest, and ruminate, supporting productivity, animal health and wellbeing. This is particularly critical during periods of hot weather when the negative impacts of heat stress may outweigh any gain in productivity from more frequent milking.

*While transitioning to both grass-fed management and a 3-in-2 milking schedule, Swallowdale Farm was able to maintain above average milk production compared to the national grass-fed average*

- Additional benefits cited by the farmer:*
- Improved cow body condition*
  - Increased labor flexibility*
  - Decreased heat stress*
  - Improved cow health*

## Challenges

One of the main challenges associated with the 3-in-2 milking schedule compared to other alternative milking frequencies is the variation in the milking schedule. Not only do the number and timings of milkings alternate from day to day, the overall schedule repeats on a 14-day cycle. An example demonstrating this is outlined below. This can be challenging to maintain, especially for hired labor who may want a consistent schedule day to day and week to week. This schedule also fluctuates dramatically in the times of milking due to the 16-hour intervals. This means some milkings occur early in the morning and late at night which may further complicate labor scheduling and retention.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12 pm	4 am 8 pm	12 pm	4 am 8 pm	12 pm	4 am 8 pm	12 pm
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
4 am 8 pm	12 pm	4 am 8 pm	12 pm	4 am 8 pm	12 pm	4 am 8 pm

Example milking schedule in a 3-in-2 system demonstrating the 14-day cycle.

## Conclusions

Although we are not able to directly attribute all the changes in milk and component production experienced during this time to the milking frequency change alone, this comparison provides useful insights into the potential for such a strategy to be implemented on farms in this region. It is encouraging that, despite a significant reduction in production compared to grain-feeding organic management, the farm was able to implement this alternative milking schedule while maintaining above average production for a 100% grass-fed herd when they removed grain from the ration. Given that the farm was also newly adopting that management system, which itself requires significant changes in management, over time the farm may have been able to fine-tune that system to reduce any potential impact from the milking frequency itself. While a high producing organic herd may not be well suited to adopting this 3-in-2 milking schedule, these data suggest it may be a good fit for some grass-fed herds. Adopting this milking schedule allowed the farm to better manage labor constraints while also accessing a different milk market. While this may not be an opportunity for all farms, under certain circumstances this strategy may be a viable opportunity.

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