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CHALLENGES IN THE MILK MARKET (INVESTMENTS, DISRUPTIONS, LOGISTICS, COMPETITIVENESS, PRICES, AND POLICY)

Collective work, edited by
Piotr Bórawski
Andrzej Parzonko
Ireneusz Żuchowski

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Wydawnictwo Ostrołęckiego
Towarzystwa Naukowego
im. Adama Chętnika
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MANAGING MILK MARKET DISRUPTIONS AT THE DAIRY FARM LEVEL IN THE USA

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4.1. Introduction

In the United States at the start of the COVID-19 pandemic, milk market disruptions due to restaurant and school closures resulted in raw milk excess in the supply chain as well as limits for milk sales in grocery stores. Part of the reason for this dichotomy between excess milk at the farmgate and a lack of milk on grocery store shelves had to do with disruptions in the processing and distribution portions of the supply chain (Howard 2020; Huffstutter 2020). Dairy products that were normally processed and packaged for food service or as milk for school lunches were in either very large or very small containers – neither of which “fit” into the retail dairy case for sales. Panic buying of milk in grocery stores led to empty shelves and limits on how much milk could be purchased in stores. Unable to sell milk and dairy products to food service and schools and unable to make a rapid shift to retail sized containers,

processors saw milk back up in the supply chain pipeline while consumers were clamoring for more milk at the store. Milk dumping during the COVID-19 pandemic due to the unprecedented supply chain disruptions happened nationwide in the United States (Wiener-Bronner 2020). Local partnerships arose where a tanker load of milk scheduled for dumping was able to be rerouted and processed for use in food banks, but this was very limited in scale. As the pandemic continued, some shifts were made to create a home for dairy products – school lunch distributions began happening through local groups, take-out food options expanded, and limited outdoor dining reopened. Meanwhile the pandemic travel restrictions and curfews created more demand for dairy at home as more meals were cooked and consumed at home. This shift of cooking more at home has created an increased demand for dairy products that has continued even as some pandemic restrictions have eased (Berry 2020).

Milk prices plummeted early in the pandemic due in part to market instability (Goodling 2020). As pandemic conditions continued and supply chains started to adapt, milk prices began to rebound, and oversupply became a concern in some areas. To deal with the wide swings in supply, many milk processors exercised options to enact penalties for overproduction of milk at the farm level during some portions of 2020. The overproduction penalty combined with negative producer price differentials from the milk marketing orders (Natzke 2020) made for a doubly difficult time for dairy producers to realize positive milk margins. Short term government payments were available for dairies to help weather the low milk price storm that followed milk dumping, but it was becoming clear that sound options for short term on-farm milk reduction needed to be explored.

4.2. Aim and methods

Economic stability and the ability to manage cost of production to achieve profitability is in part dependent on being able to withstand these volatile market forces by making strategic decisions about temporary reductions in milk production and about maintaining or lowering the cost of production for producing milk at the farm level. Being able to use sound data about production, feed costs and impacts on cost of

production when making decisions about short term management changes will be key to long term dairy farm viability.

The aim of our current research project was to address on-farm decision making that could lead to healthy and reversible reduction in milk yields for herds on an as needed basis as well as sound cost-control measures that maintain profit under changing market conditions.

4.3. Managing milk market disruption

The relationship between intake of feed, especially energy, and milk yield is well documented (Hristov et al. 2005). Therefore, reduction in feed intake in the lactating herd will reduce milk yields in the short term while feed is either restricted or rations are adjusted to feed less nutrients. However, reduction in the intake of nutrients, especially energy, early in lactation will negatively impact peak milk and may lead to increased metabolic issues like ketosis. For example, reduction in feed intake in early lactation resulted in an increased incidence of metabolic disorders, lower peak milk, and less milk yield over the entire lactation (Jaynes, 2014). In one recent study, (Seifi et al. 2021) addition of straw to early lactation diets reduced dry matter intake and increased the prevalence of ketosis over time compared to a more energy-dense diet for early lactation cows. Likewise, Pérez-Báez et al. (2019) showed that reduced dry matter intake both pre and postpartum resulted in negative energy balance and increased incidence of both ketosis and mastitis. So, reduction in feed intake or adjustments in diets for early lactation cows in the herd as part of a short-term milk reduction strategy may have negative impacts beyond simply lowering milk yield. Early lactation cows are more vulnerable to reduced feed intake and may have costly increases in health disorders or reductions in peak milk production which will lead to reduced milk yield over the full lactation. On-farm strategies to reduce or adjust feed intakes for short term milk yield reductions should be targeted to mid to late lactation animals in the herd in order to prevent the unintended consequences of increased health issues or longer-term reductions in milk yield.

Another on-farm strategy for short term reduction in milk yield because of market disruptions or penalties on overproduction imposed by

milk processors may be to dry off lower producing cows early; thereby lengthening their dry period. Longer dry periods can lead to higher body condition scores and negative health events after calving like ketosis, fatty liver, and milk fever (Roche et al. 2013). Recent data about restricting intakes during the dry period (Esposito et al. 2020) also shows the potential for negative health impacts. Lengthening the dry period as a strategy for short term reductions in milk yield due to market disruptions or processor penalties when combined with lower energy or restricted dry cow diets may result in poor long term production performance, decreased cow longevity and increased animal health costs. Further research is needed to better understand and predict the impacts of the short-term decisions on the longer-term consequences for both cow productivity and health as well as overall farm profitability when strategies for lengthening dry period are being considered.

Disruptions in the regional, national, or international marketplace that impact milk prices are not very easily managed at the farm level, as the biology of milk production follows a predictable lactation curve and short term drops in herd level milk yield may have long term impacts. Even when targeting milk reduction strategies to mid and late lactation animals in the herd, it is important to consider how the resulting changes in feed cost and milk yield will impact not only income over feed cost but also cost of production per unit of milk and overall farm level profitability. Dairies in the Northeastern US have relatively high cost of production for both milk and home-grown feeds compared to some areas of the US (Shoemaker 2019). If cost of production per unit of milk is to be competitive, then maximizing production of milk and milk solids per cow is often the goal. For individual herds decisions are made about the number of cows to be milked and targeted milk yield desired based on factors like facilities and feed available, budgeting, debt repayment and family living needs as well as a host of factors that impact how those on-farm goals are set, and decision are made. Strategies to reduce milk yield in the herd in the short term must consider those individual farm needs but also should consider the impact on overall cost of production per unit of milk. Changes to the diet or amount of feed fed per cow and the resulting reduction in milk yield over the short term for targeted groups of cows within the herd may increase the annual cost of production per unit

of milk to a level that is not competitive for the farm. Additionally, strategies for short term reductions in milk yield due to penalties imposed by the milk processor need to be evaluated against the overall economic loss or benefit. For example (all calculations in USD), a 100- cow herd that sells 1,000,000 liters of milk per year with total expenses of \$350,000 would have a cost per liter of \$0.35/liter. If milk price averages \$0.38 per liter for the year but there is a penalty for overproduction that is imposed that reduces this price by \$0.05 per liter but only for one month of production (about 85,000 liters), then is it economically worthwhile to enact a milk yield reduction strategy to try to offset the penalty? Reducing annual milk yield by 10% without any decrease in expenses would increase the overall cost per liter and would drive up cost of production from \$0.35 to \$0.39 ($\$350,000 / 900,000$ liters of milk). To maintain the current level of cost of production per unit milk, expenses would need to be reduced by \$35,000 annually. This is a large reduction given the small penalty (\$4,250) put in place for a short time. Decisions being made at the farm level are complex and producers can benefit from decision tools that utilize sound data for various scenarios.

4.4. Preliminary findings

Preliminary data has been analyzed to examine the impact of reducing nutrient consumption to decrease milk yield in the short term. Dairy production data along with the resulting savings in feed costs and decreased income from less milk and components shipped are being evaluated to better understand the economic impact of these short-term decisions. Utilizing herd level production data and feed cost information, we are developing some scenarios for short term milk reduction at the farm level by reducing the intake of feed for a limited period during milk market disruptions or times of penalty for oversupply of milk shipped. Since there is a clear relationship between feed intake and milk yield and since cows that are past peak milk production are less vulnerable to negative health issues associated with reduced intakes, targeting these animals in the herd for short term changes during periods of time when on-farm milk yields need to be decreased may be an option for some farms.

4.5. Conclusions

The decision to reduce herd level milk production in the short-term by either change in feeding management or drying off cows early and lengthening the dry period should be considered carefully to alleviate any unintended consequences. It is important to consider how all these short-term changes will impact overall cost of production per unit of milk as well as the long-term health and productivity of the dairy cows.

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