

Ten low investment, high return management opportunities on dairy farms

T. R. Overton and L. E. Chase
Department of Animal Science
Cornell University



The disclaimer!!!

- Profitability of these individual practices, and the magnitude of the opportunity, will vary from farm to farm
 - Some require individual partial budget analysis
- The practices described are listed in no particular order, but have research and/or practical experience to support



Reduce dry period length

- Higher producing (> 50 to 60 lbs/day) cows at end of second lactation or greater can be managed down to 40 days dry without apparent loss of milk in the subsequent lactation
 - Continue to manage cows at end of first lactation for 50 to 60 days dry
 - Better outcomes if twins diagnosed and breeding records accurate
- Our research suggests that colostrum quality is not affected by dry period length, but colostrum quantity will be decreased in some cows given shorter dry periods



Reduce fresh cow loss in the first 60 days in milk

- Best dairies that we encounter maintain fresh cow loss (dead and sold for nondairy) during the first 60 days in milk in the range of 6 to 7%, WITHOUT hanging on to low producing, low profit early lactation cows
- Ranges of 10 to 15% exist on many dairies largely due to clinical or subclinical transition cow health disorders
 - Sound ration formulation and *implementation* during dry and fresh periods
 - Minimize effects of nonnutritional factors
 - Prevent overcrowding (minimum 100 sq ft of pack and 100% of headlocks – some data suggests 80%)
 - Ventilation / heat abatement for dry cows and fresh cows
 - Separate cows and heifers if feasible



Frequent milking of fresh cows

- Some research suggests that milking fresh cows 4X to 6X for 20 to 40 days postcalving can result in carryover responses in milk yield after cows are returned to 2X or 3X milking
 - Field experience suggests that implementation of 6X milking is problematic on many farms, and may interfere excessively with normal fresh cow routines/behavior
 - 4X milking (milk fresh cows first and last at each milking) on a 2X dairy may result in 60 to 70% of the increase expected from changing a dairy from whole-herd 2X to 3X
 - Large commercial farm study in New York resulted in increased component-corrected milk yield of about 3.5 lbs/day across the first 7 monthly test days with 4X/2X for the first 21 DIM compared to 2X
 - Range of minimum interval 3.5 to 5.5 h

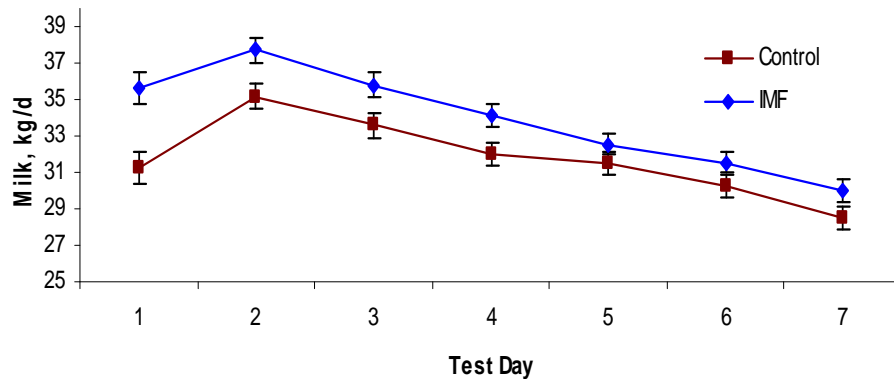


Figure 1. Least squares means and standard errors for milk yield during the first 7 test days of lactation for cows milked either 2X (control) for the first 21 d or 4X (IMF) for the first 21 d postpartum followed by 2X for the remainder of the period on three commercial farms. The P value for the effect of treatment was < 0.01 and the interaction of treatment and month was 0.27. Soberon et al., 2008.



	Control		IMF		SEM	P		
	Primi	Multi	Primi	Multi		Trt	Lact	Trt*Lact
Milk, kg/d	27.7	35.9	29.9	37.9	0.7	<0.01	<0.01	0.93
Fat, %	3.68	3.76	3.60	3.64	0.07	0.02	0.21	0.78
Fat, kg/d	1.01	1.33	1.07	1.36	0.03	0.04	<0.01	0.64
True protein, %	3.04	3.02	3.02	2.93	0.03	0.05	0.06	0.24
True protein, kg/d	0.83	1.07	0.90	1.10	0.02	<0.01	<0.01	0.46
3.5% FCM ¹ , kg/d	28.4	37.0	30.3	38.4	0.7	<0.01	<0.01	0.76
ECM ² , kg/d	27.9	36.2	29.8	37.5	0.7	<0.01	<0.01	0.68
MUN ³ , mg/dL	13.45	12.78	12.88	12.76	0.29	0.64	0.02	0.16
LS	2.07	2.55	2.08	2.45	0.16	0.73	<0.01	0.78


Soberon et al., 2008



Least squares means and standard errors for milk yield by farm for multiparous and primiparous cows milked either 2X (control) for the first 21 d or 4X (IMF) for the first 21 d postpartum followed by 2X for the remainder of the period.

Farm	Control		IMF		SEM	Increase yield %		Increase yield %		Control	IMF	SEM	Increase yield %		P
	Primi	Multi	Primi	Multi		Primi	Multi	Primi	Multi				Primi	Multi	
1	29.1	35.7	30.9	40.1	1.7	1.8	6%	4.4	12%	32.4	35.5	1.0	3.1	10%	0.05
2	28.9	39.4	31.3	39.9	1.0	2.4	8%	0.5	1%	34.1	35.6	0.7	1.6	5%	0.12
3	25.2	32.5	27.6	33.7	1.0	2.4	10%	1.2	4%	28.9	30.7	0.6	1.8	6%	0.08
4*	32.2	38.0	32.8	41.3	1.8	0.6	2%	3.4	9%	35.1	37.1	1.1	1.8	5%	0.25

Soberon et al., 2008



Maintain low dead-on-arrival (DOA) rate in newborn calves

- Best dairies that we encounter maintain DOA rates in heifer calves in the range of 4 to 5%
- Ranges of 8 to 10% or more are common, and have huge effects on the number of calves available to enter the replacement enterprise or be sold as excess
- Intensive management of the calving process for a “just-in-time” move from a close-up group or pack to a calving area usually decreases DOA rates (and overall fresh cow health problems)
 - Requires 24/7 monitoring of calving
 - Eliminates cow moves 2 to 5 days prior to calving



Colostrum management

- Need to ensure consumption of 4 quarts of quality colostrum ASAP following birth – within 6 hours of birth
- Quality colostrum
 - > 45 to 50 mg/ml of IgG
 - < 100,000 CFU of bacteria
- Insufficient colostrum consumption
 - Increased sickness and death loss in calves
 - Slower growth rates at same nutrient intake
 - Potentially decreased lifetime production

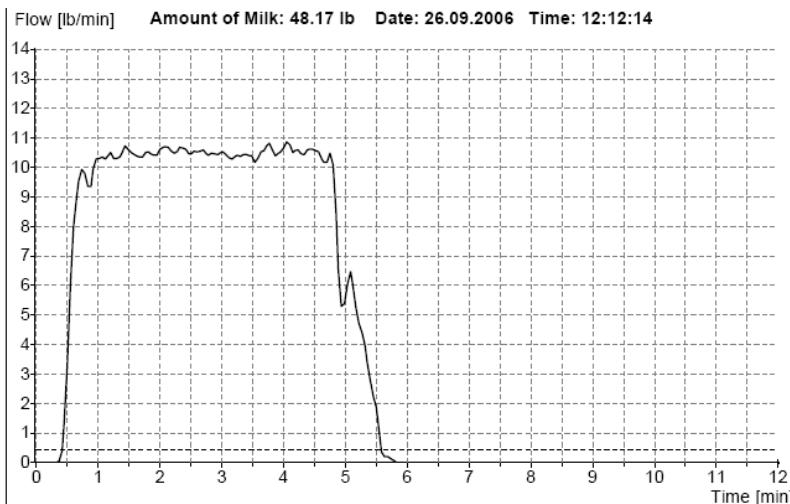


Evaluate milking routine and opportunities for quality premiums

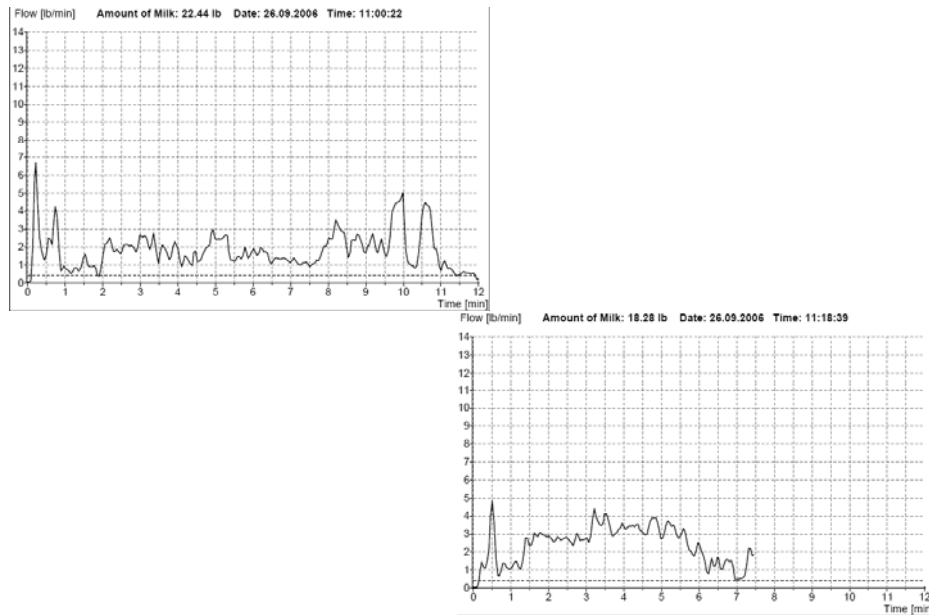
- Target prep-lag times in range of 60 to 90 seconds (easy to let this slip)
 - Deviation from this prep-lag time leads to slower milk flow rates and altered patterns, lower production, greater risk for mastitis, and elevated somatic cell count
 - Low cost evaluation of milking routines available using lactocorder graphing (through QMPS and some veterinary practices)
- Are there a handful of very-high SCC cows that are keeping your dairy from achieving quality premiums?



Lactocorder output – the good.....



The bad and the ugly



Avoid temptation to stop using profitable technologies

- Always tempting to reduce cost by eliminating use of technologies that add cost, need to consider returns and whether cost savings is offset by decreased revenue or increased feed costs per unit of milk or milk components shipped
- bST – profit on some dairies approaches \$1 per cwt, well in excess of any premiums for rBST-free milk
- Rumensin
 - Increased feed efficiency
- Protected amino acid sources (methionine and now lysine)
 - ~ 50% of time balancing amino acids seems to increase milk protein percentage and yield



Evaluate milk components

- Important to remember that farms are paid on the basis of milk component yields, not percentages
- That being said, milk fat and protein percentages considerably below breed average or below historical trends within a farm suggest that there is opportunity to improve



If milk fat is below 3.5% (Holstein)

- Amount and ruminal availability of unsaturated fats (linoleic acid from corn or oilseed sources)
- Altered ruminal biohydrogenation (low rumen pH, altered feeding patterns, off-fermented silages, mycotoxins, excessive unsaturated fat load in the rumen)
- Factors that affect rates of biohydrogenation (fish fatty acids, in some cases ionophores)
- Factors that affect rates of passage (unusually high feed intakes relative to milk production)



If milk true protein is below 2.9% (Holstein)

- Suggests that either rumen production of microbial protein is low or amino acid balance is poor
 - Carbohydrate availability in the rumen
 - Degradable protein availability in the rumen
 - Poor rumen fermentation (slug feeding, sorting)
 - Digestibility of undegradable protein sources
 - Amino acid balance (histidine on grass-based diets, methionine on many corn-soy based diets, lysine if most protein coming from corn)
- Consider balancing for amino acids (milk protein response ~ 50% of time within 2 weeks)



Check ration phosphorus levels

- Research indicates no productive or reproductive reason to exceed 0.40% phosphorus in ration dry matter for early lactation cows and 0.35% phosphorus in ration dry matter for cows at other stages of lactation
- In many rations, 0.35% phosphorus can be achieved without any added phosphorus



Check forage analyses and feeding management

- Accurate forage analyses
 - Tighter ration formulation and cost control
 - Ensure maximum value from purchased feed ingredients
- Check feeding management
 - Make sure dry matters of wet ingredients are accurate
 - TMR particle size and management of sorting
 - Decrease variation in dry matter and nutrient intake



Specific questions or more detailed information contact:

- Dr. Tom Overton
 - 607.255.2878
 - tro2@cornell.edu
- Dr. Larry Chase
 - 607.255.2196
 - lec7@cornell.edu

