

What's Holding Us Back? Management Opportunities on Northeast Dairies

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- I started doing nutrition work on Northeast dairies in 1978
- A huge “Thank You” to all of the dairies who have let me experiment with their herds and who taught me so much over the years!
- Most of my work in the past 10 years has been on western dairies

The Northeast

- Lots of highly profitable dairies
 - Milk price is WAY better than where I work!
- Lots of high-producing dairies
 - Many things are done right
- Northeast does a phenomenal job putting up quality forage
 - In most cases, that's not a limiting factor
 - Control of fermentation could be better (DM)
 - Kernel processing an issue – shredlage??
 - Are we maximizing forage yields?
 - ✦ Optimize use of resources

So, what's holding us back?

Do we have challenges with facilities in the Northeast?

Novus study

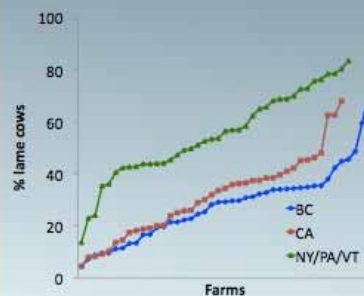


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Benchmarking cow comfort on North American freestall dairies: Lameness, leg injuries, lying time, facility design, and management for high-producing Holstein dairy cows

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LAMENESS

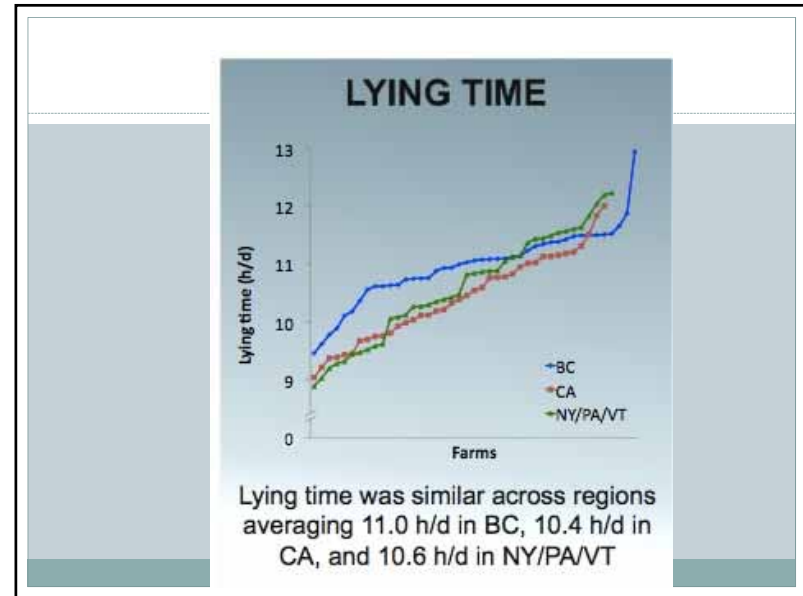
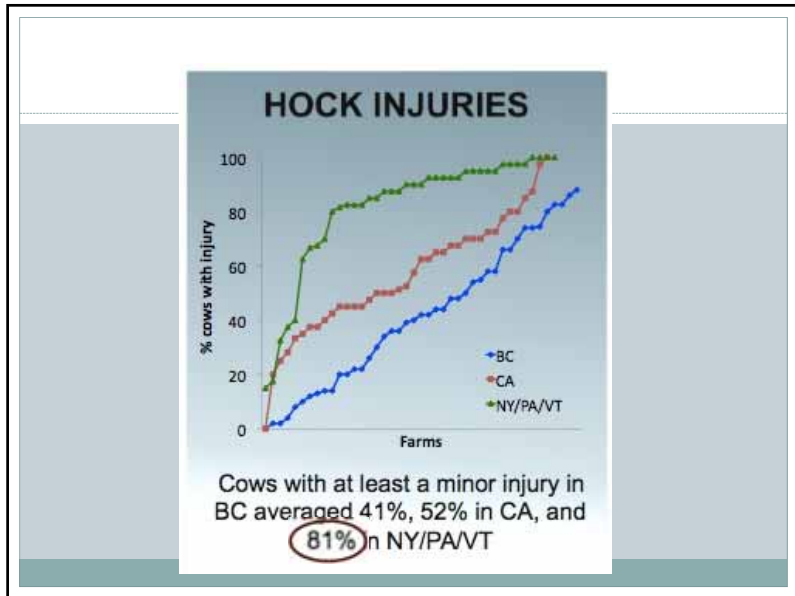


On average, 28% of cows were lame in BC, 31% in CA, and 55% in NY/PA/VT

Prevalence of clinical lameness

- Northeast – 55%
- California - 31%
- British Columbia – 28%

- Do you find this shocking??



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Herd-level risk factors for hock injuries in freestall-housed dairy cows in the northeastern United States and California

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Barrientos et al Odds ratio compared to mattresses:

Table 2. Univariable associations of the high-transformed proportion of all hock injuries and only severe hock injuries with management and facility design factors in the northeastern United States (NE-US) and California (CA)¹

Region	Variable	Odds ratio	95% CI	R ²	P-value
NE-US	All hock injuries				
	Deep bedding	0.05	0.02-0.14	0.54	<0.001
	Sand bedding	0.06	0.02-0.15	0.49	<0.001
	Bedding DM (>83.9%) ²	0.08	0.03-0.20	0.47	<0.001
	Access to pasture (dry period)	0.49	0.05-0.32	0.22	0.003
	Percentage of stalls with fecal contamination (10% increase) ³	1.26	1.02-1.54	0.13	0.03
	Seawater hosing	3.47	1.14-10.62	0.13	0.03
	Severe hock injuries				
	Sand bedding	0.22	0.10-0.49	0.29	<0.001
	Deep bedding	0.24	0.11-0.52	0.28	<0.001
Bedding DM (>83.9%) ²	0.28	0.14-0.56	0.27	0.001	
Use of automatic scrapers	2.29	1.11-4.73	0.13	0.03	
Access to pasture (dry period)	0.42	0.18-0.97	0.11	0.04	
Percentage of stalls with fecal contamination (10% increase) ³	1.14	1.00-1.31	0.11	0.05	

○

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Herd-Level Risk Factors for Lameness in High-Producing Holstein Cows Housed in Freestall Barns

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Significance in contributing to lameness

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Table 3. Univariate regression analysis probability values between prevalence of lameness and herd-level variables in 53 high-producing groups of Holstein cows housed in freestall dairy farms in Minnesota

Variable	P-value
Herd size	0.68
High production group stocking density, cows/100 stalls	0.19
High production group stocking density, m ² /cow	0.45
Distance: pen to milking parlor, m/d	0.12
Time away from pen, min/d	0.27
Number of cows per FTE equivalent ¹	0.17
Linear feed bunk space, m/cow	0.42
Type of feed barrier	0.72
Ration CP content, %	0.36
Ration NDF content, %	0.66
Milking parlor size, number of milking units	0.38
Cow comfort quotient, %	<0.01
Cud chewing index, %	0.04
Hoof trimming frequency	0.01
Presence and use of footbath	0.80
Feeding frequency	0.31
Milking parlor type	0.48
Pen type	0.08
Brisket board height	<0.01
Area behind brisket board filled with concrete	0.06

¹FTE = Full time employee (50 h/wk).

Facilities:

If you were building a new barn today,

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- Would it be a 4-row or 6-row?
 - I see better protocol adherence in 4-row
- Would you have mattresses or deep sand/solids?
- Would you over-build brisket boards?
- Would you have alley scrapers?
- How much would you overcrowd??
- HOW MUCH LAMENESS IS ACCEPTABLE??
 - By the way, Temple Grandin says 5%, and lots of consumers listen to her

○

- How much does lameness cost you??
 - Milk, components, repro, culling
- How much extra attention might it bring to your dairy from outsiders??
- What are you willing to do to reduce lameness?

Do we look at the right measures of financial success in the Northeast?

Beware of all ratios: they can be misleading

- Milk price to feed price ratio
- Feed as a percent of milk check
- Feed cost/cwt
- “Feed” or “dairy” efficiency

The real key:

- How big is the pile of money at the end of each day?
 - Not how fast did you make it
 - Not how you made it in relation to some other cost
 - It's about DOLLARS, not RATES or RATIOS

The fallacy of feed cost/cwt.
Let's say this represents 5 herds with the same feed cost/cwt.

Milk/lb. @ \$19	Milk lbs.	DMI lbs.	Feed cost @ \$.14	Feed cost/cwt	IOFC \$/day
\$0.19	75	50	\$7.00	\$9.33	\$7.25
\$0.19	80	53.3	\$7.46	\$9.33	\$7.74
\$0.19	85	56.7	\$7.94	\$9.33	\$8.21
\$0.19	90	60	\$8.40	\$9.33	\$8.70
\$0.19	95	63.3	\$8.86	\$9.33	\$9.19

Is highest IOFC or FE *per cow* really what you want??

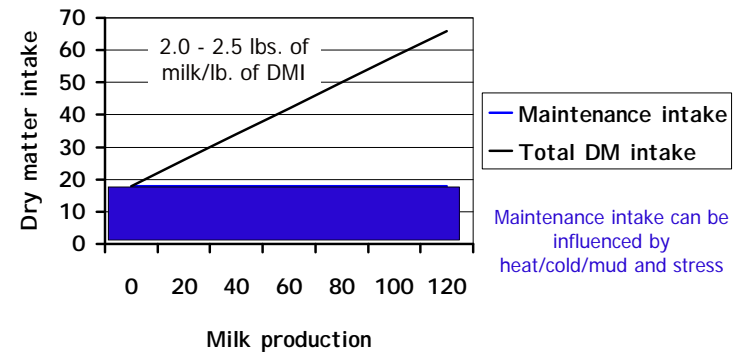
- If so, you would probably feed a ration high in forage made up of top quality forage.
 - That's what you tell your nutritionist to do, right?
- What about HERD profit?
- How many of you have excess acres for farming?
- Would herd profit be higher milking more cows with a lower forage percent???
- Profit per cow may be lower but your pile of money is bigger.
- Don't forget about nutrient management.

Are we too focused on feed efficiency in the Northeast?

How important is dairy efficiency?
Which herd would you rather own?

	Herd A	Herd B
Dairy efficiency	1.80	1.70
IOFC	\$6.80	\$7.00

Don't forget the basics of biology:
Dry matter intake as a function of milk production



TMR conversion: dairy efficiency

- Pounds of *component corrected milk* / pounds of intake
 - HEAVILY influenced by production level
 - HEAVILY influenced by repro status of the herd
- Other influencers of conversion:
 - Production
 - DIM (repro)
 - forage %
 - chew factor/length of cut
 - NDFd
 - walking distance to milking parlor
 - heat/cold stress/corral condition/stall comfort
 - ration sorting
 - rumen enhancers like Diamond V, Rumensin

TMR conversion: dairy efficiency

- Influencers of conversion:
 - Stress – lameness??
 - Disease: how much does it add to maintenance requirement to have an overactive immune system??

Where does benchmarking fit in?

- Two benefits of benchmarking:
 1. Identify categories that vary widely across dairies
 - Variability = opportunity
 - If everybody is the same, quit tracking that category.
 2. Help you set goals for your business

What indicators should you track?

- Feed cost/lb. of Dry Matter
- Income over feed cost
 - great for evaluating management changes
 - great for short-term decisions
 - ADJUST FOR COMPONENTS!
 - Should standardize milk and feed price
- Feed cost/cwt
 - Only as a manufacturing input cost
 - ✦ Not for comparison across dairies
 - MUST be adjusted for components
 - ✦ often not done in benchmarks or by lenders
 - should not be used to evaluate management interventions

Key elements of financial success

- **Component corrected hundredweights sold out the door**
 - Trumps milk per cow
 - Marginal milk sold/herd is highly profitable
 - Necessitates maximization of parlor utilization, overcrowding and component production
- **Herd health**
 - Crucial for milk production, reproduction, replacement costs, etc.
 - Repro undervalued as driver of profit
 - Allows for high cull rate at low replacement cost

Are we properly controlling feed costs in the Northeast?

Feed utilization factors that can be controlled

- **Don't pay more than you have to for ingredients, then.....**
- **Minimize shrink and waste in storage**
 - HUGE opportunities for improvement
- **Minimize mixing errors**
 - Don't look at percents; look at pounds or count of errors
- **Utilize any pushout in other TMRs**
- **Minimize maintenance cost (comfort and health)**
- **Optimize milk production and components**
- **Optimize cow health**

Controlling feed costs

- **Cull aggressively**
 - Minimize hospital, sick, lame cows
- **Minimize maintenance requirements**
 - Excellent cow comfort
 - Good heat abatement
- **Maintain a high percent of herd pregnant**
- **Maximize IOFC, not Feed Efficiency**

Do we have control of our feeding processes in the Northeast?

What Is A TMR Audit™?

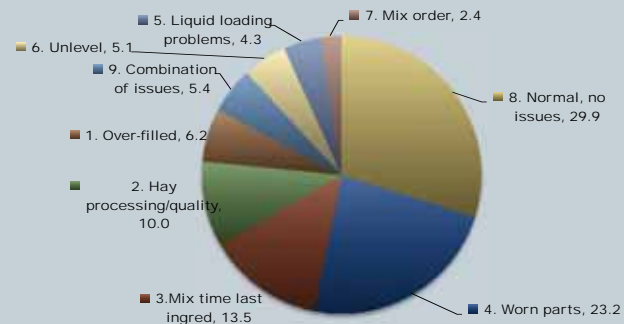
An on-farm evaluation of the

- ✓ Feed Storage and Preparation,
- ✓ Mixing and Delivery of the TMR
- ✓ Ingredient Variation and Shrink
- ✓ Utilization of Labor and Resources

Reduce Variation and Improve Efficiency



Factors affecting TMR variation in Diamond V TMR Audits™



- Less than 30% of the loads are normal
- Over 20% of the loads are mixed with worn out wagons

Use of grain premixes

- **Reduce loading times and reduce shrink**
- **Watch outs**
 - Are they getting getting mixed?
 - Watch density
 - Separation of ingredients
- **Adding liquids and hay or straw helps**
 - Molasses or whey products

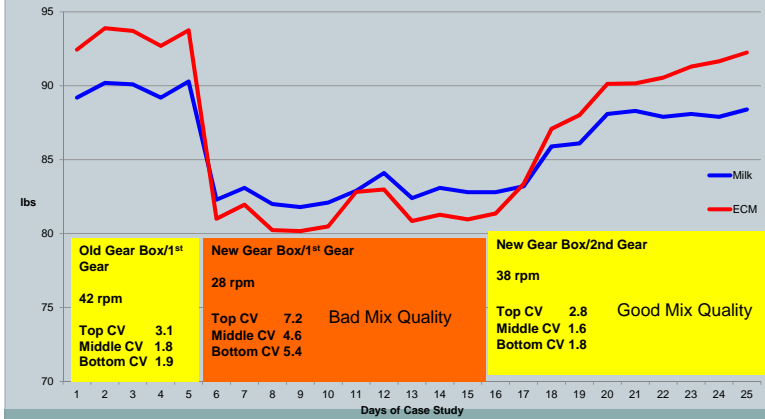


Lowering the Density of the Premix Improves Mixing and Consistency

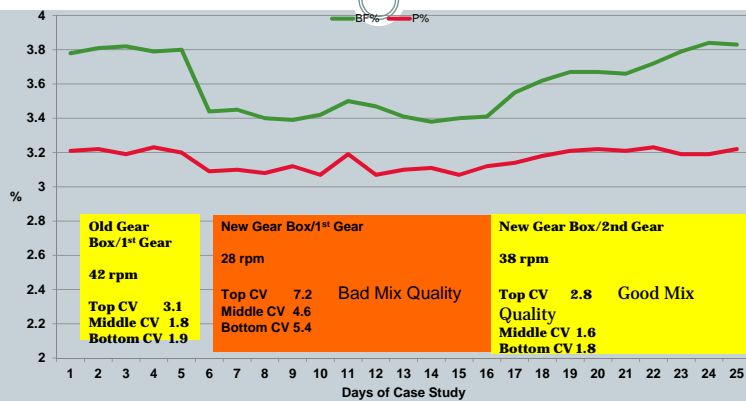


Oelberg 2010

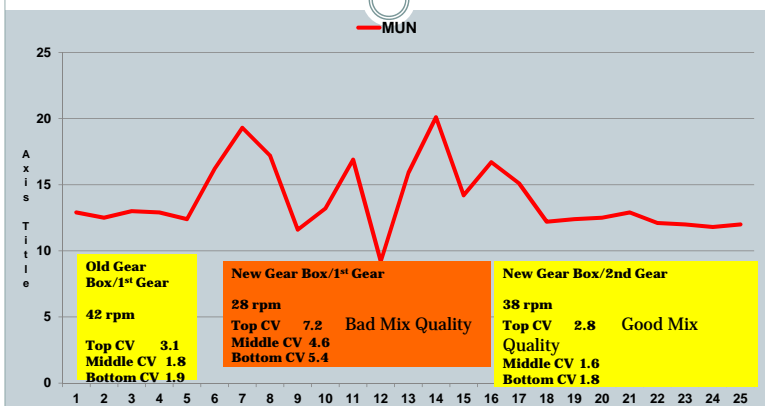
Influence of Changing Mixer Wagon Gear Box on Milk Production



Influence of Changing Mixer Wagon Gear Box on Milk Fat and Protein



Influence of Changing Mixer Wagon Gear Box on Milk MUN



Do we have proper decision-making processes in place in the Northeast?

Dairy managers, veterinarians and nutritionists are faced with a barrage of decisions every day

- What's your process for handling them?
- What information sources do you use?

What carries the most weight???

Farm demo's

University trials

Randomized controlled farm trials

Meta analysis of peer reviewed work

Summary of randomized controlled farm trials

How to evaluate interventions

- Understand the biology behind the additive
 - Can they explain how it works??
- Demand a substantial body of proper research
 - I don't care which neighbor used some crazy foo foo dust or if your brother-in-law sells it!
- Be sure that you are comfortable with predictability of response
- Apply current economics to predicted response to calculate IOFC
- Make the decision WITH your nutritionist

If I tried everything guys tried to sell me I'd be at
140 lbs. of milk!!

- **First, throw out the products with little research, then evaluate the type of product:**
- **Fill a specific need**
 - E.g., Vitamin or nutrient "X"
 - ✦ If you need vitamin or nutrient X, you'll see a response
 - ✦ If you don't need it, you won't
 - ✦ E.g., minerals, amino acids, etc.
- **Technologies that enhance normal biology**
 - Act broadly
 - ✦ may impact hormone balance (Posilac)
 - ✦ may enhance rumen function (Diamond V, Rumensin)
 - Work across a broad range of diet types
 - Don't fulfill a specific deficiency, therefore work more predictably
 - Response distribution should be bell-shaped curve

Everybody has research, right??

- **Where was it done?**
 - University trials are gold standard, published in peer-reviewed journal.
 - ✦ Positive AND negative results published
- **Internal company research**
 - No pressure for publication
 - Standards may be lower
- **Private research farm trials**
 - No pressure for publication of ALL results
 - Make sure the research they show you is on their product!!

Meta-analysis in animal and veterinary
science

- New field we need to learn about
- **Lean et al. *Invited review: Use of meta-analysis in animal health and reproduction: Methods and application* (2009) J. Dairy Sci. 92 :3545–3565**
 - ✦ 1000 papers published using quantitative or systematic review in medical science in the year 2008.
 - ✦ Only 150 meta-analysis total in cattle as of 2008

Quick comments on meta analyses from ADSA
symposium 2011

- **Ensure that ALL of the studies on a product are included**
 - Be sure that a formal analysis of publication bias is run
 - Begg's funnel plot
- **Be sure that there is a Forest Plot**
 - Helps to visualize all of the studies
 - Helps to visualize the weighting of studies
 - Helps to visualize 95% confidence intervals and ensure that variance was properly incorporated in model

Quick comments on meta analyses from ADSA symposium

- Be sure that data are all from the same species
 - Others have included goats, water buffalo, etc.
- Be sure that all data are on a specific product, not different products.

My information hierarchy

- Meta analysis of peer reviewed studies
 - Extremely powerful if done right
- Summary of randomized controlled field studies
 - Useful if done properly
- Individual university trials
 - Limited application
- Individual randomized field trials
 - Very limited use
 - Recognize that they DO NOT represent your true response
- On-farm demo's
 - Extremely dangerous
 - Recognize that they DO NOT represent your true response

Finally, are we controlling the controllable in the Northeast?

- Proper facility design
- Shrink and feed wastage
- Mixing errors
- Repro performance and culling → DIM
- Fresh cow performance and health
- Energy and protein maintenance costs: comfort and health
- Use of proven additives based on sound decision-making process
- Learn to distinguish good research from bad, and then make sound decisions based on proper research
 - Don't try to evaluate products on your dairy



Thank you