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## Today's Program

- Lessons learned with Covid-19
- Today's changing Covid-19 dairy industry
- Managing milk volume—what you need to know and consider
- Smart strategies in today's Covid-19 dairy market

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CHANGE
AHEAD
Change
is Happening
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Changing
Dairy Industry
Covid-19
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## Changing Milk Prices

| Milk prices | Dec, 2019 | May, 2020 |
|---|---|---|
| Class III--cwt (cheese) | $20.20 | $12.14 |
| Milk fat (lb) | $ 2.20 | $1.38 |
| Milk protein (lb) | $ 3.30 | $2.09 |

Base excess programs being implemented

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## Dead Cat Bounce

- **Are the trends real or not real?**
- **Grocery store sales up 20% (normal 50%)**
- **Recession / round 2 covid-19 / no vaccine / unemployment**
- **All-milk for 2020 was $14.35 cwt (April)**
- **June milk prices at $20+ / cwt (45 kg)**
- **U.S. cheese and butter inventories are high**
- **Government purchased $320 million (Food Box program) and $120 million (Section 32 cheese program)**

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# Strategies in June, 2020—Covid-19

- **Protect milk price on the down side**
  - **Margin protection contract**
    - **2019 was 39 cents / cwt for all milk at $9.50 level**
    - **2020 can be 66 cent / cwt for all milk at $9.50 level**
  - **Government direct payment: $1.50 / cwt ($6.20)**
  - **Hedging (government program or put options)**
- **Do not need more milk**
  - **Keep milk < 1% increase in 2020**
  - **Cow slaughter down; heifer replacements prices up**
  - **Cooperatives continue "base excess" programs**

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# Changing Alternative Economics

Close up heifers
< $1,300+

Wisconsin costs to raise
a heifer is $2,000

Cull cows at
40 to 62 ¢/lb


Bull calves worth $100

Heifer calves are lower

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## A Change: Selz-Pralle Aftershock 3918

**365-day milk production record**

- 78,170 lbs. of milk
  - 3,094 lbs. of fat
  - 2,393 lbs. of protein

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## So We Changed


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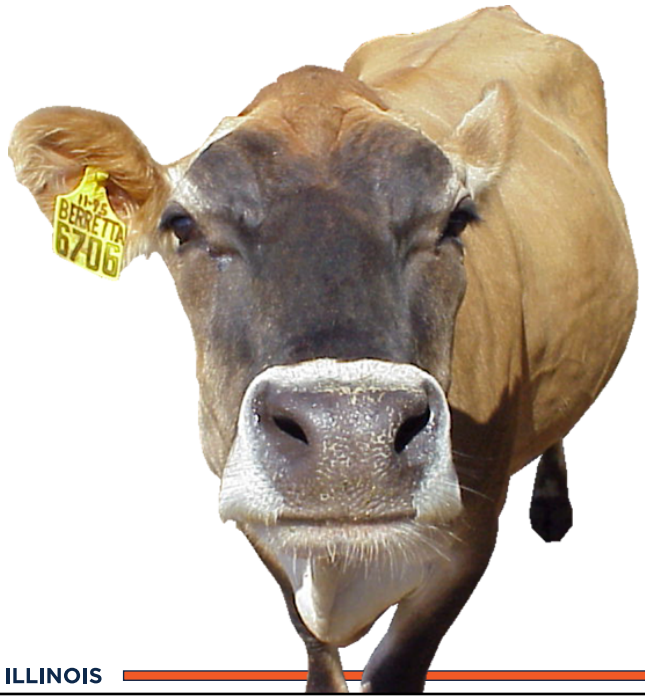
## Reducing Milk Volume Covid-19

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## Choices and Risks—You Need to Understand

- Factors that may impact your clients and dairy farm managers
- Ranking factors to consider
  - **Green is recommended**
  - **Orange is caution**
  - **Red is not recommended**

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## Important Questions I Can Not Answer

- How long will base excess milk production continue (from zero to 15 percent)?
- Will the demand for dairy products respond to January, 2020 levels?
  - Will you be able to respond?
  - Do you have heifers available?
- Will export markets grow (exporting 16% in January, 2020)

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## #1. Reducing the Number of Cows

- Allows to optimize feeding and improve management decisions
- Few negative impacts, but the heifer and cow markets are “soft”
- Reduces any overcrowding situations
- **Recommended**

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## #2. Extend Dry Period Length

- Dry off cows earlier with longer dry days (from 50 to 120 days)
- Reduces feed costs (dry cow ration at 30 lbs. of dry matter--$2+ /day vs. 40 lbs. dry matter of lactating ration--$4+ / day)
- Risks heavy cow and increased metabolic disorders
- Put these "long" dry cows in a **separate group** on a maintenance diet
- **Recommended**



**Effect of the length of the dry period on milk production in the subsequent lactation.**

**Source: Butcher, K. R. 1974.**
Effect of days dry on production in the subsequent lactation.

| Number of Days Dry | Percentage of Cows | Yield Difference | |
|---|---|---|---|
| | | lbs | kg |
| 5-20 | 2.9 | -1,287 | -585 |
| 21-30 | 3.7 | -629 | -286 |
| 31-40 | 6.5 | -156 | -71 |
| 41-50 | 12.3 | +189 | +86 |
| 51-60 | 21.5 | +297 | +135 |
| 61-70 | 20.3 | +312 | +142 |
| 71-80 | 9.4 | +158 | +72 |
| 81-90 | 6.0 | +64 | +29 |
| 91+ | 17.4 | -108 | -49 |

## Tools With Dry Cows > 3.25 BCS

- Rumen protected choline (liver protection)
- Organic chromium (glucose and insulin)
- Propylene glycol / glycerin (glucose precursor)
- Monensin / Rumensin (propionate increase, lower ketone levels, and/or protein sparing effects)
- Rumen protected niacin (reduce body fat mobilization)

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## Studies with Unprotected Niacin

| Form of Niacin | Dose | Milk Yield | Milk Fat | Milk Protein | NEFA | BHBA | Reference |
|---|---|---|---|---|---|---|---|
| Niacin | 3g<br>6g<br>12g | --<br>--<br>-- | ↑<br>--<br>↑ | --<br>--<br>-- | --<br>--<br>↓ | ↓<br>↓<br>↓ | Dufva et al. (1983) |
| Niacin | 12g | -- | -- | | | -- | Jaster et al. (1983) |
| Niacin | 6g | ↑ | ↑ | ↑ | | | Muller et al. (1986) |
| Nicotinamide<br>Nicotinic Acid | 6g<br>6g | ↑<br>↑ | ↑<br>↑ | --<br>-- | ↓<br>↓ | ↓<br>↓ | Jaster and Ward (1990) |
| Nicotinamide<br>Nicotinic Acid | 12g<br>12g | --<br>-- | --<br>-- | --<br>-- | --<br>-- | --<br>-- | Campbell et al. (1994) |
| Nicotinic Acid | 12g | ↑ | ↑ | ↑ | -- | -- | Drackley et al. (1998) |

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## Raw Niacin and RPN Equivalency Calculation

| Item | Raw Niacin | Rumen-Protected Niacin (NiaShure™) |
|---|---|---|
| % Niacin | 100 | 65 |
| % Rumen Degradation | 95 | 12 |
| % Rumen Stable | 5 | 88 |
| % Intestinally Available | 100 | 70 |
| % Metabolizable Niacin | 5 | 40 |
| Relative Potency of Raw Niacin and NiaShure | 8 times potent | |

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## Feeding Guidelines For Rumen Protected Niacin

- **Prepartum**
  - Feed 4 to 12 g rumen protected niacin (RPN) in the close-up period
  - Cows / heifers over-conditioned (3.25+)
  - DMI in close-up pen is inconsistent or too low
  - Postpartum NEFA and or BHBA levels maybe excessive
- **Postpartum**
  - Do not feed rumen protected niacin postpartum
  - Cows need NEFA and ketones as energy sources
  - 15 g of rumen protected choline chloride may be needed
  - Could add RPN to slow body weight mobilization if needed

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## Advantages of RPN vs. Raw Niacin

- More consistent, predictable delivery of niacin to the small intestine
- More predictable animal response (bioavailability)
- Encapsulation
  - Less dusty
  - Prevents reactions to niacin (flush) in feed manufacturing facility
  - Masks taste and smell of niacin
- More cost effective source of biologically available niacin in ruminants

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## #3. Manipulate Milk Components

- Increase milk components while reducing milk volume
- An economical decision as most milk markets are based on pounds of fat, true protein, and other solids
- May not be desirable in fluid milk-based market (no added value for protein)
- Need to "explain" to your cows to understand
- **Recommended**

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**Table 1 Holstein Component Profiles**

| Lact # | Milk (lbs) | Fat % | | | | Fat/Prot | Protein % | | | | Milk (kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1-40 | 41-100 | 101-199 | 200-305 | 1- 40 | 1-40 | 41-100 | 101-199 | 200-305 | |
| 1 | 19,000 | 2.9% | 3.0% | 3.5% | 3.7% | 1.32 | 2.2% | 2.4% | 2.8% | 3.0% | 8,618 |
| | 23,000 | 3.4% | 3.3% | 3.6% | 3.8% | 1.36 | 2.5% | 2.6% | 3.0% | 3.1% | 10,433 |
| | 26,000 | 3.8% | 3.5% | 3.6% | 3.9% | 1.36 | 2.8% | 2.8% | 3.0% | 3.2% | 11,793 |
| | 30,000 | 3.9% | 3.5% | 3.6% | 3.8% | 1.34 | 2.9% | 2.8% | 3.0% | 3.2% | 13,608 |
| 2 | 19,000 | 2.9% | 3.1% | 3.5% | 3.7% | 1.26 | 2.3% | 2.5% | 2.9% | 3.1% | 8,618 |
| | 23,000 | 3.3% | 3.3% | 3.6% | 3.8% | 1.32 | 2.5% | 2.6% | 3.0% | 3.2% | 10,433 |
| | 26,000 | 3.7% | 3.4% | 3.6% | 3.8% | 1.32 | 2.8% | 2.8% | 3.0% | 3.2% | 11,793 |
| | 30,000 | 3.8% | 3.4% | 3.5% | 3.8% | 1.31 | 2.9% | 2.8% | 3.0% | 3.2% | 13,608 |
| 3+ | 19,000 | 3.5% | 3.4% | 3.6% | 3.8% | 1.35 | 2.6% | 2.6% | 2.9% | 3.1% | 8,618 |
| | 23,000 | 3.7% | 3.4% | 3.6% | 3.8% | 1.37 | 2.7% | 2.7% | 3.0% | 3.2% | 10,433 |
| | 26,000 | 3.9% | 3.4% | 3.6% | 3.8% | 1.39 | 2.8% | 2.7% | 3.0% | 3.2% | 11,793 |
| | 30,000 | 4.0% | 3.4% | 3.5% | 3.7% | 1.38 | 2.9% | 2.8% | 3.0% | 3.2% | 13,608 |

* 19,000 RHA n=1,014 herds, 23,000 RHA n=1,998 herds; 27,000 RHA n=1,022; 30,000 RHA n=292 herds

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# #4. Feeding Surplus Raw Milk

- Shift surplus milk to calves **(Recommended)**
  - Shift from milk replacer to whole milk
  - Wean at 3 to 4 months of age vs. 6 to 7 weeks
  - Feed out bull calves (20 to 30 pounds of milk / day)
- Feed to lactating cows **(Caution)**
  - 16 pounds per cow per day
  - Dry matter in the TMR > 40% (under 60% moisture)
  - Balance for added protein types, sugar, and fat
- Sell raw milk **(Not recommended-- not legal in most states)**



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## Nutrients In 16 Pounds of Holstein Milk

| Nutrient | Percent | Pounds |
|---|---|---|
| Water | 87.5 | 14.0 |
| Protein | 3.1 | 0.50 (30 cents) |
| Fat | 3.8 | 0.61 (37 cents) |
| Lactose | 4.9 | 0.11 ( 5 cents) |
| Total solids | 12.5 | **(5.08/cwt)** |

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## #5. Shift from 3X milking to 2X milking

- Research suggests a potential drop of 4 to 8 pounds of milk
- High producing cows may leak from pressure
- Milk somatic cell count and mastitis could increase
- Target low group of cows or low producer
- **Caution**

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## #6. Institute a low group

- 10 to 20% of cows could be included
- Shifting these cows may lead to a drop of 4 to 6 pounds of milk (herd specific)
- Lower feed costs by removing protein, additives, and less dry matter intake adding forage / fiber
- Facilities may not allow
- **Caution**

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## #7. Reduce milk yield per cow

**Not recommended**

## #8. Remove all feed additives

**Not recommended**

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## Positioning Your Feed Additives With Covid-19


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## Remove all feed additives

- Reduce feed costs (38 cents vs. $6.50 per cow)
- Some feed additives may increase milk yield (biotin, rumen protected choline, and/or buffers)
- Other additives improve immunity, fertility, rumen health, feed efficiency, and/or lameness
- Evaluate each phase of the lactation / gestation cycle (do not negatively impact transition or peak milk phases)

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# 2019 U.S. Feed Additive Use

*2019 Hoard's Market Survey*

| | |
|---|---|
| Buffers | 38 |
| Yeast/yeast culture | 29 |
| Rumensin | 24 |
| Mycotoxin binders | 24 |
| Probiotics | 11 |
| Niacin | 10 |
| Omnigen | 8 |
| Don't use | 7 |
| Feed bunk stabilizer | 2 |

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# Roles of Feed Additives

**Energy Balance**
- Propylene Glycol
- Encapsulated Choline
- Niacin
- Calcium Prop
- Rumensin
- Bypass Fat
- Probiotics

**Calcium Balance**
- SoyChlor
- Biochlor
- Animate
- Zeolite
- CaCl
- $CaSO_4$
- $NH_4Cl$

**Immune Function**
- Organic Selenium
- Vitamin E
- Organic TM
- BioMos
- OmniGen-AF & Pro
- Probiotics

**Rumen Enhancers**
- Yeast product
- DFM's
- Rumensin
- Buffers
- Sugars
- Enzymes
- Amaferm
- Probiotics

**Reproduction**
- Bypass essential fatty acids
- B-carotene
- Organic selenium

**Foot Health**
- Biotin
- Organic TM

**Protein Efficiency**
- MicroAid

**Mycotoxin Binders**
- AB20
- OmniGen-AF
- Bentonite

***Courtesy of Vita Plus***

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## Benefit to Cost Ratios—Show Me The Money

| | |
|---|---|
| Buffers | 8 : 1 |
| Biotin | 7 : 1 |
| Yeast products | 5 : 1 |
| Ionophores | 5 : 1 |
| Silage inoculant | 3 : 1 |
| Rumen protect choline | 3 : 1 |

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## Additives Recommended for Lactating Cows

- Rumen buffers
- Yeast culture/yeast products
- Monensin (Rumensin)
- Silage inoculants
- Biotin
- Organic trace minerals
- Mycotoxin binder—maybe

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## Additives Recommended for Close Up Dry Cows

- Yeast culture/yeast products
- Monensin (Rumensin)
- Silage inoculants
- Organic trace minerals + chromium
- Rumen protected choline
- Anionic product

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## Additives Recommended for Fresh Cows

- Rumen buffers
- Yeast culture/yeast products
- Monensin (Rumensin)
- Calcium supplement (bolus/drench)
- Silage inoculants
- Biotin
- Organic trace minerals + chromium
- Rumen protected choline

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# Covid-19
# Peak Milk


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## Lactation Curve Rules

- Peak milk sets the lactation curve—you only get one chance each lactation
- High producing cows are most efficient and profitable
- Never give up milk
  - One pound of DM costs 11 cents
  - One pound of DM can support 2 pounds of milk
  - Profit of each pound of marginal dry matter is $0.23

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**Table 2. Holstein Peak Milk and Production Profile**

| Lact # | Milk* | Peak Milk | Milk/Peak | Days in Milk | | | |
|---|---|---|---|---|---|---|---|
| | | | | 1 - 40 | 41 - 100 | 101 - 199 | 200 - 305 |
| 1 | 19,000 | 68 | 279 | 56 | 62 | 59 | 53 |
| | 23,000 | 79 | 291 | 63 | 72 | 70 | 64 |
| | 26,000 | 90 | 289 | 67 | 81 | 81 | 76 |
| | 30,000 | 98 | 306 | 70 | 87 | 91 | 85 |
| 2 | 19,000 | 84 | 226 | 72 | 76 | 67 | 55 |
| | 23,000 | 99 | 232 | 84 | 91 | 81 | 66 |
| | 26,000 | 114 | 228 | 94 | 104 | 95 | 78 |
| | 30,000 | 124 | 242 | 99 | 113 | 106 | 87 |
| 3+ | 19,000 | 90 | 211 | 75 | 81 | 71 | 57 |
| | 23,000 | 107 | 215 | 88 | 97 | 85 | 67 |
| | 26,000 | 123 | 211 | 97 | 111 | 100 | 80 |
| | 30,000 | 133 | 226 | 102 | 120 | 110 | 89 |

* 19,000 RHA n=1,014 herds, 23,000 RHA n=1,998 herds; 27,000 RHA n=1,022; 30,000 RHA n=292 herds

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**Table 3. Holstein Peak and Production Profile (pounds and kilograms)**

| in Pounds | | | | | | | | in Kilograms | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Days in Milk | | | | | | | | Days in Milk | | | |
| Milk* | Peak Milk | Milk/ Peak | 1 - 40 | 41 - 100 | 101 - 199 | 200 - 305 | Lact # | Milk | Peak Milk | Milk/ Peak | 1 - 40 | 41 - 100 | 101 - 199 | 200 - 305 |
| 19,000 | 68 | 279 | 56 | 62 | 59 | 53 | 1 | 8,618 | 31 | 127 | 25 | 28 | 27 | 24 |
| 23,000 | 79 | 291 | 63 | 72 | 70 | 64 | | 10,433 | 36 | 132 | 29 | 33 | 32 | 29 |
| 26,000 | 90 | 289 | 67 | 81 | 81 | 76 | | 11,793 | 41 | 131 | 30 | 37 | 37 | 34 |
| 30,000 | 98 | 306 | 70 | 87 | 91 | 85 | | 13,608 | 44 | 139 | 32 | 39 | 41 | 39 |
| 19,000 | 84 | 226 | 72 | 76 | 67 | 55 | 2 | 8,618 | 38 | 103 | 33 | 34 | 30 | 25 |
| 23,000 | 99 | 232 | 84 | 91 | 81 | 66 | | 10,433 | 45 | 105 | 38 | 41 | 37 | 30 |
| 26,000 | 114 | 228 | 94 | 104 | 95 | 78 | | 11,793 | 52 | 103 | 43 | 47 | 43 | 35 |
| 30,000 | 124 | 242 | 99 | 113 | 106 | 87 | | 13,608 | 56 | 110 | 45 | 51 | 48 | 39 |
| 19,000 | 90 | 211 | 75 | 81 | 71 | 57 | 3+ | 8,618 | 41 | 96 | 34 | 37 | 32 | 26 |
| 23,000 | 107 | 215 | 88 | 97 | 85 | 67 | | 10,433 | 49 | 98 | 40 | 44 | 39 | 30 |
| 26,000 | 123 | 211 | 97 | 111 | 100 | 80 | | 11,793 | 56 | 96 | 44 | 50 | 45 | 36 |
| 30,000 | 133 | 226 | 102 | 120 | 110 | 89 | | 13,608 | 60 | 103 | 46 | 54 | 50 | 40 |

* 19,000 RHA n=1,014 herds, 23,000 RHA n=1,998 herds; 27,000 RHA n=1,022; 30,000 RHA n=292 herds

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# Right Sizing The Heifer Enterprise


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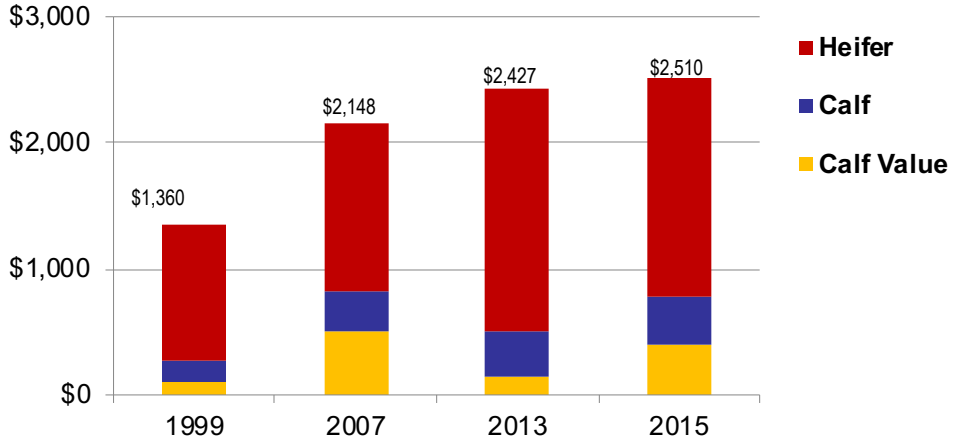
## Total Cost to Raise a Dairy Replacement from Birth to Freshening




DEPARTMENT OF DAIRY SCIENCE University of Wisconsin-Madison

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## Right Sizing The Heifer Enterprise

- Track the cost of raising replacements
- Calculate the number of heifers needed
  - Culling anticipated rate (30 or 40%) or expansion
  - Adjust for losses: **89%** born live (3% pre-weaned calves, 2% older heifers, and infertile heifers-6%)
  - Consider genomics (best females from heifers and cows)
  - Use sexed semen to get 90% heifers from target animals
  - Use beef semen for offspring not needed / wanted

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## Covid-19
## Feed Efficiency


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# Feed Efficiency (FE)

***Pounds of 3.5% FCM divided by pounds of DM consumed***

| Group | FE |
|---|---|
| High group, mature cows | >1.7 |
| High group, 1st lactation | >1.6 |
| Low group, all cows | >1.2 |
| One group TMR herds | >1.5 |
| Fresh cows (< 21 days) | <1.5 |
| Concern | <1.3 |

**Example:**
75 lbs. of 3.5%FCM

divided by

50 pounds DM

**= 1.5 lbs. milk per lb. of dry matter**

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# Milk Yield Targets For Feed Efficiency

***Source:***

***The Ohio State University***

| Milk Yield | | Feed Efficiency |
|---|---|---|
| lb | kg | |
| 55 | 25 | 1.25 |
| 60 | 27 | 1.32 |
| 65 | 30 | 1.38 |
| 70 | 32 | 1.44 |
| 75 | 34 | 1.49 |
| 80 | 36 | 1.54 |
| 85 | 38 | 1.58 |
| 90 | 40 | 1.63 |

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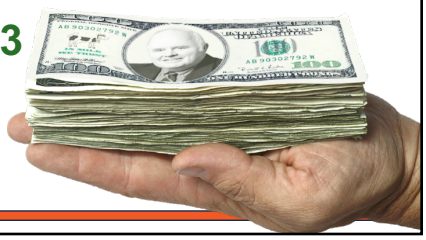
# Economics of Feed Efficiency

## (70 lbs. milk and $0.10 cent / lb DM)

| Feed Efficiency (lbs. milk/ lb DM) | DMI (lbs./day) | Difference (savings/day) |
|---|---|---|
| 1.3 | 53.9 | |
| | | $0.40 |
| 1.4 | 49.9 | |
| | | $0.33 |
| 1.5 | 46.6 | |



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# Management Changes Impact Feed (Energy) and Protein Efficiency

| | Energy | Protein |
|---|---|---|
| **Base FE for whole farm** | **21%** | **28%** |
| Increase milk 10% | +0.7 | +0.4 |
| Increase longevity one lactation | +0.6 | +0.5 |
| Reduce age 1st calving (2 mo) | +0.3 | +0.3 |
| Reduce calving interval (1 mo) | +0.4 | +0.4 |
| Reduce diet protein 2% | 0.0 | +1.3% |
| Reduce feed waste 10% | 2.3% | +3.1% |

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## What is Shrink?

- The quantity of feed fed that the cow doesn't eat
- Varies from 1 to > 20% of available feed
- Cost 10 cents to 15 cents per cow per day

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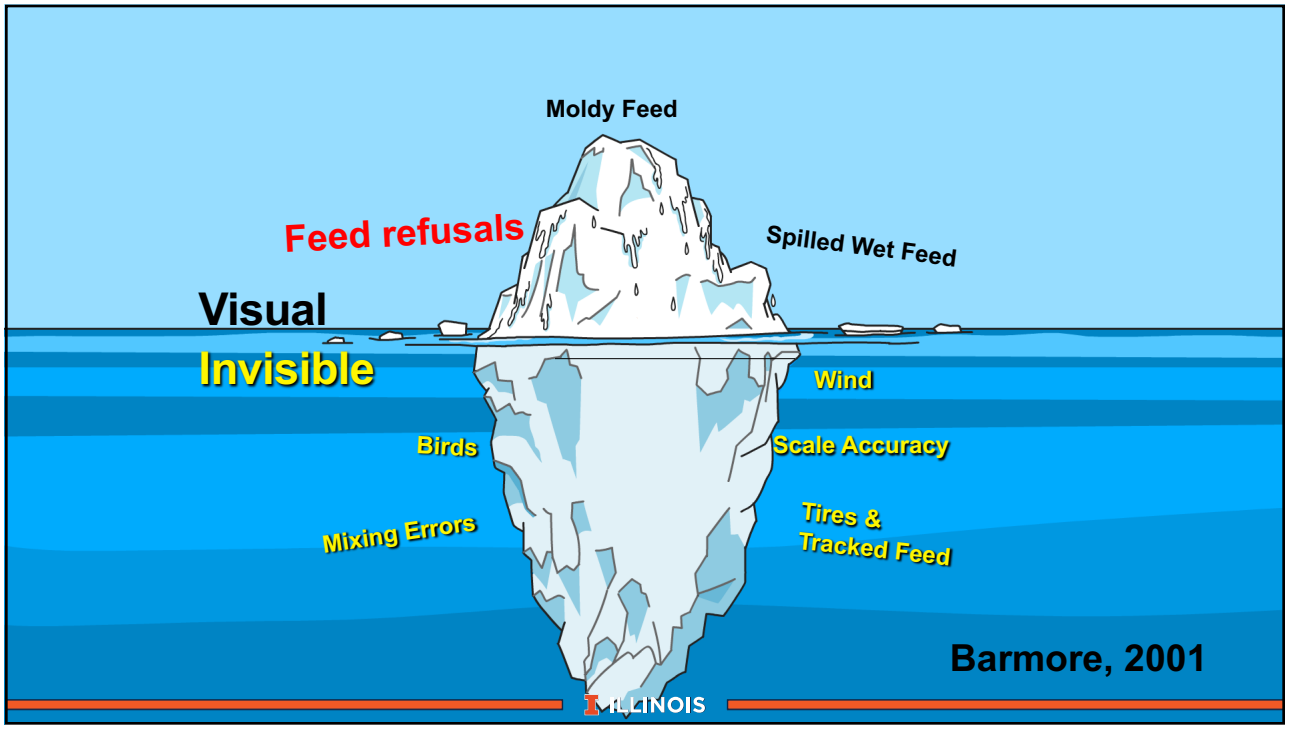


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## Weigh Back Considerations

- 1-2% of total dry matter offered (steers 1st choice)
- > 5% weigh backs must go to cows
- 50% of feed available at each feeding with 2x delivery
- Evaluate sorting (+/- 5% each box)
- Remove each day (each feeding?)
- Feed stability (propionate additive)
- Adding water (5 to 10 lbs.) vs. stability vs. sorting

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## Hutjens 2020 Feeding Covid-19 Check List

- Feeding an accelerated milk or milk replacer program (2% birth weight as milk solids DM)
- Calving heifers at 23 to 24 months of age with monitoring growth 1.8 lbs.(0.9 kg) ADG (Holsteins)
- Consider the low energy / high straw dry cow ration
- Target feed additive use

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## Hutjens 2020 Covid-19 List (continued)

- Implement a fresh cow group (for 10 to 21 days)
- Use of calcium boluses for at risk cows (50 grams with Ca chloride, propionate, or sulfate)
- Supplementing organic trace minerals (Zn, Cu, Cr, and Se)
- Heat stress abatement for all dairy cattle (dry cows and replacement heifers)

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## In Summary: Covid-19 Challenges / Risks

- **Focus on profitability**
- **Control the controllables**
- **Use the available tools**
- **Keep current on new research and technology**

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