The role of the modern dairy cow in improving the profitability of dairy production

GREG ANDERSEN
SEAGULL BAY DAIRY, INC. AMERICAN FALLS, IDAHO

Seagull Bay Dairy: American Falls, Idaho
Andersen Dairy: Declo, Idaho

One Herd on Two Sites
300 Holsteins 2,000 Crossbreds
Some Elite Holsteins (Sell 50 bulls annually to AI)

Seagull Bay Dairy
- 600 milk cow (Fresh – 90 days)
- 160 close up cows/springers
- Baby calves up to 180 days

Andersen Dairy
- 1500 milk cows
- Far off dry cows
- Heifers 7 months and older
Seagull-Bay Supersire 7H11351
Ammon-Peachey Shauna “Global Cow”

How we used to do it
Corrective Matings based on “type” evaluations

Evaluation
Classification by breed organizations
Mating programs by AI companies

Results?
Great improvement in Mammary System
More attractive cows
Taller cows
TPI index gives heavy weight to PTAT
TPI has been widely used as a selection tool for sires

Downside?
Tall cows score higher
Economic traits not necessarily correlated to Type traits

Dairy Shows Champions—“Incredible- but not always practical”
What do dairy producers want?

- Moderate Size
- Healthy Cows
- Athletic
- High Components
- Calving Ability
- Fertility
- Hardiness
- High Production
- Udder Health

Health and Wellness
Direct Selection > Indirect Selection

Health Traits in US: 1990’s
- Included in TPI and NM formulas
- Daughter Pregnancy Rate etc.
- Calving Ease
- Somatic Cell Score
- Productive Life
- Livability *New*

Wellness Traits in US: 2015
- Not yet included in TPI and NM
- Zoetis, ABS, Genex, etc...
- Metabolic Disease Resistance
- Mastitis Resistance
- Lameness
- Metritis
- Ketosis
- DA
“Type is not the limiting factor...”

Lloyd Holtermann – Rosylane Holsteins WI

1000 Holsteins Watertown, Wisconsin
All Holsteins
Does not Classify
Type not used in selection criteria
Health is main component of Feed Efficiency
PL and Protein main traits for selection

1.68 Feed Efficiency in 2016
0 Milk Fever
0 Ketosis
36 Preg Rate
4% DOA

What does the “modern cow” look like?
Will color matter? Performance only?

Points to consider

- How is your milk check calculated?
- Management & Nutrition First
- Use a selection index
- Custom indexes are highly encouraged based on your own breeding needs
- Focus on 4-5 key traits and avoid high negatives
- Gender-sorted semen technology is improving
- Consider choosing which cows and heifer will provide replacements
- Every pregnancy has a purpose

- Semen purchases are an investment and not an expense
- Use the best sires for your plan from any breed you are using
- Holstein Herds that have selected for PL and DPR have very good fertility and longevity
- Body condition is very important to cow health and fertility
- Modern dairy cows can achieve high production and maintain body condition
- Hybrid vigor is real
Interim results from Procross study

Comparison of Montbeliarde × Holstein and Viking Red × Holstein crossbreds with pure Holstein cows during first lactation in 8 commercial dairies in Minnesota
https://www.ansci.umn.edu/sites/ansci.umn.edu/files/procross_final_f1_first_lactation-Ib.pdf
Amy Hazel, Brad Heins, and Les Hansen University of Minnesota – Jan 2016

Table 1. Production (actual and not mature equivalent) during the first 305 days of first lactation for M-H and V-H crossbreds compared to pure Holstein cows.

<table>
<thead>
<tr>
<th>Trait</th>
<th>Holstein</th>
<th>Montbeliarde × Holstein</th>
<th>Viking Red × Holstein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cows</td>
<td>978</td>
<td>583</td>
<td>540</td>
</tr>
<tr>
<td>Age at calving (months)</td>
<td>23.9</td>
<td>23.8</td>
<td>23.7</td>
</tr>
<tr>
<td>Milk (lb)</td>
<td>24,185</td>
<td>24,150</td>
<td>23,229**</td>
</tr>
<tr>
<td>Fat (lb)</td>
<td>909</td>
<td>920</td>
<td>910</td>
</tr>
<tr>
<td>% Fat</td>
<td>3.74</td>
<td>3.83</td>
<td>3.87**</td>
</tr>
<tr>
<td>Protein (lb)</td>
<td>723</td>
<td>796**</td>
<td>740</td>
</tr>
<tr>
<td>% Protein</td>
<td>3.15</td>
<td>3.14**</td>
<td>3.15**</td>
</tr>
<tr>
<td>Fat + Protein (lb)</td>
<td>1,653</td>
<td>1,670**</td>
<td>1,651</td>
</tr>
<tr>
<td>Somatic cell score</td>
<td>2.1</td>
<td>2.2</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Table 4. Fertility during first lactation for M-H and V-H crossbred cows compared to pure Holstein cows.

<table>
<thead>
<tr>
<th>Trait</th>
<th>Holstein</th>
<th>Montbeliarde × Holstein</th>
<th>Viking Red × Holstein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day to first breeding</td>
<td>970</td>
<td>71</td>
<td>507</td>
</tr>
<tr>
<td>First service conception rate (%)</td>
<td>948</td>
<td>38</td>
<td>499 43</td>
</tr>
<tr>
<td>Overall conception rate (%)</td>
<td>950</td>
<td>38</td>
<td>499 46**</td>
</tr>
<tr>
<td>Time (days) to 3</td>
<td>959</td>
<td>2.30</td>
<td>356</td>
</tr>
<tr>
<td>Days open</td>
<td>901</td>
<td>128</td>
<td>481</td>
</tr>
</tbody>
</table>

n = Number of cows.
* Significant difference (P < 0.05) from pure Holstein.
** Significant difference (P < 0.01) from pure Holstein.
More results

Table 2. Twining rate, gestation length, calving difficulty score (1-5 scale), and stillbirth rate during first lactation for M<II and V>II crosses compared to pure Holsteins.

<table>
<thead>
<tr>
<th>Trait</th>
<th>Holstein</th>
<th>Montbeliard</th>
<th>Viking Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cows</td>
<td>971</td>
<td>496</td>
<td>508</td>
</tr>
<tr>
<td>Twining rate (%)</td>
<td>1.0</td>
<td>0.6</td>
<td>0.8</td>
</tr>
<tr>
<td>Gestation length (days)</td>
<td>273</td>
<td>279**</td>
<td>283**</td>
</tr>
<tr>
<td>Calving difficulty-Males</td>
<td>1.5</td>
<td>1.6</td>
<td>1.7*</td>
</tr>
<tr>
<td>Calving difficulty-Females</td>
<td>1.4</td>
<td>1.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Stillbirth rate-Males (%)</td>
<td>9</td>
<td>2*</td>
<td>3</td>
</tr>
<tr>
<td>Stillbirth rate-Females (%)</td>
<td>6</td>
<td>2*</td>
<td>3</td>
</tr>
</tbody>
</table>

Table 3. Survival during first lactation for M<II and V>II crosses compared to the pure Holsteins.

<table>
<thead>
<tr>
<th>Trait</th>
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<th>Montbeliard</th>
<th>Viking Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival to 0 DIM (%)</td>
<td>1013</td>
<td>956</td>
<td>956</td>
</tr>
<tr>
<td>Survival within 14 months (%)</td>
<td>1021</td>
<td>63</td>
<td>72**</td>
</tr>
<tr>
<td>Survival within 17 months (%)</td>
<td>1021</td>
<td>70</td>
<td>83**</td>
</tr>
<tr>
<td>Survival to 2 yr calving (%)</td>
<td>1014</td>
<td>80</td>
<td>84</td>
</tr>
</tbody>
</table>

* = Tendency for significant difference ($P < 0.10$) from pure Holsteins.
** = Significant difference ($P < 0.05$) from pure Holsteins.
*** = Significant difference ($P < 0.01$) from pure Holsteins.

Holsteins improving in profitable traits
Changes in genetic selection differentials and generation intervals in US Holstein dairy cattle as a result of genomic selection  2016
http://www.pnas.org/content/113/28/E3995.full.pdf
Adriana García-Ruiz, John B. Coleb, Paul M. VanRaden, George R. Wiggans, Felipe J. Ruiz-Lópeza, and Curtis P. Van Tassellb

Protein Yield increasing and DPR increasing

Milk yield increasing SCS decreasing

Concluding thoughts

There is an impressive pool of sires from various dairy breeds
Holsteins have the largest pool
Disciplined selection within the Holstein breed has worked very well for many herds
Genomic selection has increased the rate of genetic advancement
Choose specifically and intensely for traits of most economic importance to your business
Consider selecting for Wellness Traits

"WinStar breeding will be primarily focused on high total merit index breed improvement. Cows with innate ability for high production coupled with adequate fitness and wellness traits are proven to outperform their peers of lesser genetic merit. Improved performance will lead to increased profit potential in well managed herds of all sizes."