Towards sustainable cows, good herd practices, and quality dairy products in the USA

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Dairying in the USA is diverse

9 million dairy cows
45,000 dairy farms
The Perfect Cow

- Few metabolic disorders, maintains body condition
- Shows heat and conceives when bred
- Produces a live calf without assistance
- High milk yield, correct composition, inexpensive ration, low maintenance costs
- Walks and stands comfortably, rarely needs trimming
- Resists mastitis, avoids injury

Relative emphasis for selected USDA selection indexes

\[ \Sigma = 100\% \]

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<th>Year introduced</th>
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Average annual milk production per dairy cow (USA)

Source: future.aae.wisc.edu
Reproduction is increasing again

Source: https://www.cdcb.us
Trends in productive life 1960-2010
USA Holsteins + Red & White

Source: http://aipl.arsusda.gov/eval/summary/trend.cfm?R_Menu=HO.h#StartBody
USA national dairy herd is constant at 9 million head
Culling mathematics

1. If national herd size is constant
2. If 1.0 to 1.1 calves born per cow per year
3. If all female calves are raised to become milking cows
4. Then national annual cull rate ≈ 35%
   - Productive life = 1/35%*12 = 34.3 months
   - Involuntary and voluntary culling
   - Cows are culled to make room for calving heifers
Risk of culling, non-pregnant cows
727 US herds > 100 cows (2001 - 2006)

Pregnant cows risk:
= 25% of risk of open cows

Quality dairy products
Somatic cell count decreases in DHIA herds

http://www.aipl.arsusda.gov/publish/dhi/dhi13/sccrpt.htm
Average test-day somatic cell count from Dairy Herd Improvement herds during 2012 by State

http://www.aipl.arsusda.gov/publish/dhi/dhi13/sccrp.htm
Monthly milk shipped and SCC

≈100 Florida dairy herds 2012+2013

Larger herds have lower somatic cell counts

Fereirra and De Vries, unpublished
Summers are challenging for milk yield and milk quality in Florida

Fereirra and De Vries, unpublished
Dairy beef

- 10% of all processed cattle for meat are culled dairy cows:
  - 34.1 million cattle (2011)
  - 3 million dairy cows

- Cull cows are 5 to 15% of dairy farm revenues

- Often ignored
Bruising severity dairy cow culls
2007 National Market Cow and Bull Beef Quality Audit

The greenhouse gas emission (carbon footprint) per unit of milk produced in the USA has shrunk by more than 63% since 1944. An additional 25% reduction is targeted by 2020.

Source: USDA, Innovation Center for US Dairy
US milk production, resource use and emissions in 2007 compared to 1944
Adapted from Capper et al. (2009)

Per kg of milk produced

How?

- Genetically improved cows
- Dairy science
  - Nutrition, reproduction, health care, cow comfort
- Employee training
  - Standard operating protocols
- Environmental regulations
- Freedom of enterprise, low economic margins
  - Only the adapters survive in the dairy business
Western USA

- Dry land
- Pump water
- Grow forages
- Milk cows
- Sustainable?
Summary
sustainable cows, good herd practices, and quality dairy products in the USA

• Genetics and management have greatly improved over the last decades.
• Cows live short for economic reasons.
• Milk quality is improving.
• Good herd practices are mostly driven by economics.

Thank you