Got milk, part one
Farming
TW:
May contain gruesome, explicit information and content about animal farming practices

Do not blame me if this affects your relationship with dairy products.
I 😍 milk.
Bonus tracks: The farmers' racket & the Got Milk ads
Agenda

Maybe a cow is a compiler from grass into milk.

• “Bootstrapping a cow”:
  • Week 1: A 🐄 is born
  • Year 1: Animal husbandry
  • Year 2: Heifer becomes cow
• Milking a cow
• The milk leaves the farm
• Feeding the cows (Time permitting)
• Cleaning around (Time permitting)
Week 1: A 🐂 is born

- Separation from the mother into individual pen
- Feeding of Colostrum
- Move to standard milk feed and group pen
You are a bull calf: not good.

Depends on the farm operation

- Same 1st week as heifers.
- Dairy only: Sell ASAP.
- Beef operation too:
  - May share lot with heifers until weaning
  - Castration (in Canada before 6mo)
  - Feed until right size and selling
Year 1: Husbandry

When I was a kid, there were two kinds of dairy farms

• Identification and branding
Year 1: Husbandry

When I was a kid, there were two kinds of dairy farms.

- Identification and branding

Please remember:

- Green pin is a GO
- Red pin is a NO

Appendix A: Green pin is a GO

https://twitter.com/CCIA_Canada/status/130957588780289697
https://twitter.com/CCIA_Canada/status/1304462631388667649
https://www.holstein.ca/PublicContent/PDFS/EN/Services/TagPositioning/TagPositioning_EN.pdf
Year 1: Husbandry
(Translation into heifer normal form)

- Identification and branding
- Week 3: Horns are dangerous.
- 5-8th week: weaning
- Moving outside
- (4-6mo): “Normalization” of the udder
Year 2: Heifer becomes Cow
Year 2: Heifer becomes Cow

- We need to get the heifer pregnant.
Year 2: Heifer becomes Cow

- We need to get the heifer pregnant.
- Detecting Estrus
- Bulls are dangerous!
Year 2: Heifer becomes Cow

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Photos on this slide from ABS global (https://www.absglobal.com/)
Artificial Insemination

- Facilitates management.
- You get to have a bucket of liquid nitrogen at home.
- Catalog of Bulls for genetic properties
### Real World Data

**TransitionRight®**

- **Reg. Number**: 003150307030
- **Date of Birth**: 2018-07-15
- **aAa**: 432
- **DMS**:
- **Beta Casein**: A2/A2
- **Kappa Casein**: BB
- **Canadian Dairy Network**: 08/2020

### Pedigree

- **SIRE**: BOMAZ SKYWALKER-ET
- **DAM**: BOMAZ DELTA 7173-ET
- **MGD**: MR MOGUL DELTA 1427-ET
- **MGS**: BOMAZ FRIDO 6185
- **MGGS**: APINA ALTAEMBASSY-ET

### Production

- **Milk**: +1286 Kg  79% Rel
- **Pro**: +72 Kg  +0.26%
- **Fat**: +107 Kg  +0.52%

### Health & Fertility

- **HL**: 106
- **DF**: 107
- **SCS**: 102
- **MSP**: 106
- **MT**: 103
- **Lactation Persistency**: 103

### Recessives and Haplotypes

- HH1T, HH2T, HH3T, HH4T, HH5C, HH6T, TC, TD, TL, TN, TR, TS, TV, TY

### Calving Traits

- **CA**: 105
- **DCA**: 107

### Conformation

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<tr>
<th>Trait</th>
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Massive Semen Explosion after Blaze Hits Bull Artificial Insemination Facility, Firefighters Forced to Dodge 'Projectiles'

BY EWAN PALMER ON 9/17/19 AT 10:14 AM EDT
Artificial Insemination
A short course

- Doses stored on liquid nitrogen
- Thaw at 95-98F for 30sec
- Dry the cartridge
- Load the gun
- Cover with sheath
- Inseminate the cow.

http://nwdistrict.ifas.ufl.edu/phag/2020/05/29/tips-for-successful-artificial-insemination-of-cattle/
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Year 2: Heifer becomes Cow

- We need to get the heifer pregnant.
- Detecting Estrus
- Bulls are dangerous!
- Artificial Insemination
- Gestation: 283 days (about 9.4 mo)
Birth complications on the cow

• Days before estimated birth date cow is moved to a nursery pen

• It’s easy to tell when free range cows went into labor but harder to deal with complications.

• Stuck babies that must be pulled (twisted/mispositioned inside the womb, etc)

• Hypocalcemia
Milking the cow

- By hand? NOPE
- The Milking pipeline
- Architectural
  - Parallel / herringbone
- Rotary
- Robot (eg DeLaval VMS)
Before milking
1. Monitor udder health regularly
2. Follow the right milking order
3. Always foremilk
4. Clean and/or disinfect teats before milking

During milking
5. Check milking vacuum
6. Attach milking cluster in time
7. Avoid overmilking
8. Detach milking cluster correctly

After milking
9. Disinfect teats immediately
10. Clean/disinfect milking equipment
11. Ensure proper milk cooling
12. Regularly monitor milking results
Efficient Milking
How much milk?

Dairy Breeds in Canada - 2019
Average Milk Production Weight and Component Percentage by Breed

**Holstein**
93% of national herd
10,909 kg milk per cow
3.98% fat, 3.27% protein

**Ayrshire**
2% of national herd
8,159 kg milk per cow
4.15% fat, 3.41% protein

**Brown Swiss**
8,982 kg milk per cow
4.22% fat, 3.55% protein

**Jersey**
4% of national herd
7,106 kg milk per cow
5.13% fat, 3.67% protein

**Milking Shorthorn**
7,335 kg milk per cow
3.99% fat, 3.31% protein

**Canadienne**
6,085 kg milk per cow
4.28% fat, 3.60% protein

Rinse and repeat

- Artificial Insemination usually in the first month after returning to milking
- Two months before labor: dry therapy.
The milk leaves the farm

- Milk quality test on sample:
  - Temperature / Water / antibiotics
  - Fat/ Protein %, CFU and SCC
Feeding the cows

- A cow eats about 50kg of “wet feed” a day. That’s 18ton a year.
- In winter: Hay + Silage (+ grains?)
Cleaning around

Table 1: Average daily manure production and nutrient content of manure. Values are based on animal unit (1000 lb) and do not include bedding*.

<table>
<thead>
<tr>
<th>Animal Type</th>
<th>Daily Production</th>
<th>Analysis Units</th>
<th>N</th>
<th>P$_2$O$_5$</th>
<th>K$_2$O</th>
</tr>
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<tbody>
<tr>
<td>Dairy Cow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lactating (liquid)</td>
<td>13 gal</td>
<td>lb/1000gal</td>
<td>28</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>Lactating (solid)</td>
<td>106 lb</td>
<td>lb/ton</td>
<td>10</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Dry</td>
<td>82 lb</td>
<td>lb/ton</td>
<td>9</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Calf and heifer</td>
<td>87 lb</td>
<td>lb/ton</td>
<td>7</td>
<td>2</td>
<td>7</td>
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<tr>
<td>Beef cattle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cow and calf</td>
<td>60 lb</td>
<td>lb/ton</td>
<td>11</td>
<td>7</td>
<td>10</td>
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<tr>
<td>Steer</td>
<td>75 lb</td>
<td>lb/ton</td>
<td>14</td>
<td>5</td>
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<tr>
<td>Veal</td>
<td>5 gal</td>
<td>lb/1000 gal</td>
<td>36</td>
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UMass Extension Crops, Dairy, Livestock, Equine – www.umass.edu/cdl
Cleaning around
If you are interested in learning more
Canadian National Farm Animal Care Council Codes of Practice

• Veal Cattle: https://www.nfacc.ca/pdfs/codes/veal_cattle_code_of_practice.pdf

My Grandma’s llamas say hi to you today
I dedicate this talk now to Greg Morrisett*, whom I’ve never met, but I am told he likes cows.

Why is Professor Greg Morrisett so fond of cows?
In the early 1400’s, a small baby was deposited in a field by some unknown parents. The child awoke to find himself surrounded by white legs with black spots on them. (Or were they black legs with white spots?) The herd of Herefords felt sad that the boy was left on his own, and took it upon themselves to raise him.

The boy, never lacking for milk, ice cream, or cheese, grew into a strapping young man, at which point he finally noticed that his benevolent keepers lacked opposable thumbs, or indeed digits of any sort. He thus took it upon himself to do the office work for the cows, including data entry, filing, and occasional accounts receivable tasks. In short, he mastered the fine art of QWERTY, and found his second love---the cowmputer.

One day, the boy asked the elder matron of the herd a series of philosophical questions such as, "Who am I?", "From where did I come?", and "Where is the beef?". The matron, batting her large eyelashes, responded in an oblique manner: "McDonald’s" she said.

And with that, the boy left the herd in search of golden arches. It is there he discovered the dark arts of the cattle industry including grilling, roasting, and the occasional steak tartare. The rest, as they say, is history.

*Member of the External Review committee for our department this year