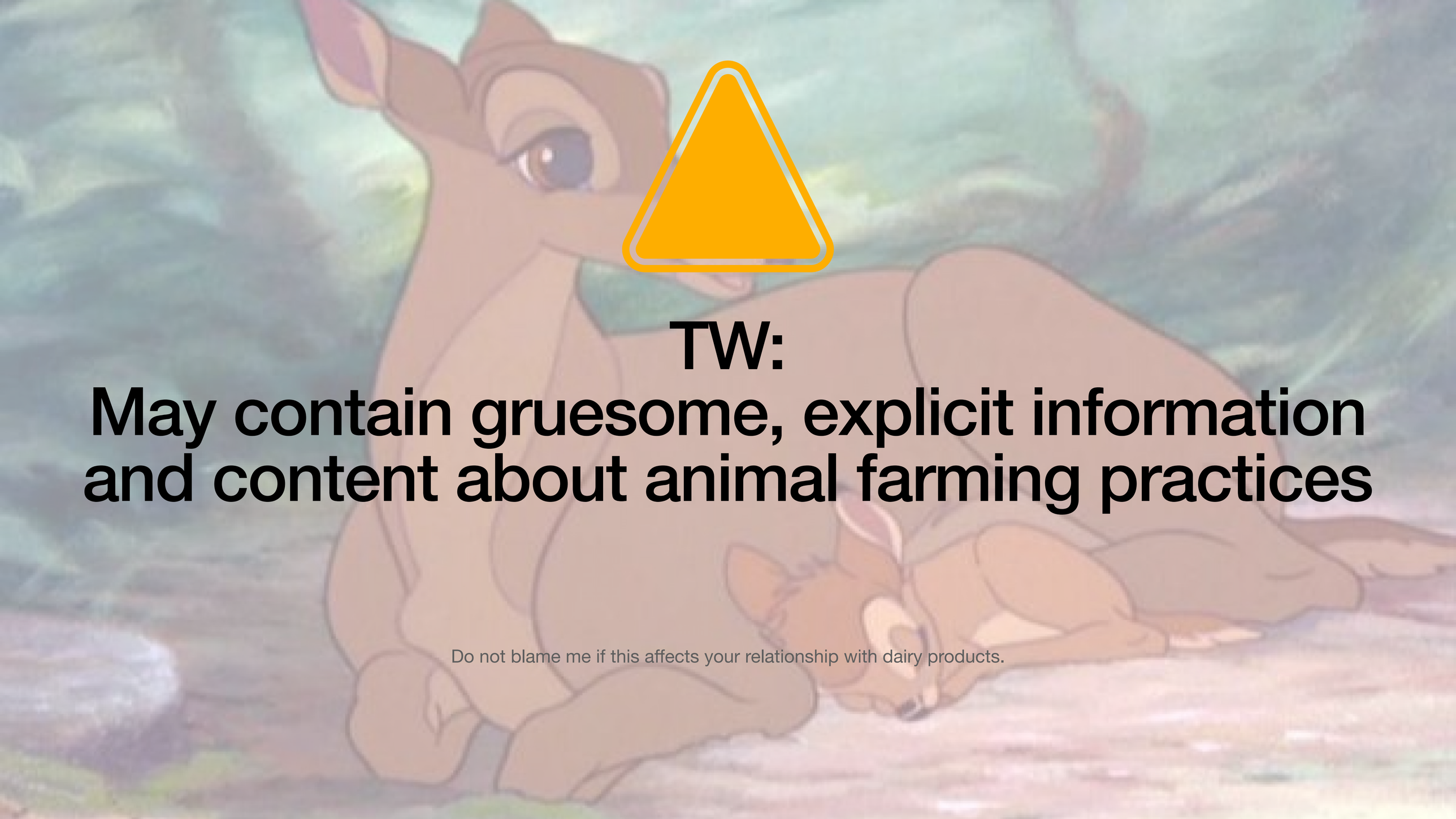
Felipe Andrés Bañados Schwerter
University of British Columbia
Undistinguished Lecture Series 2020

Got milk, part one

Farming

Except when noted, all photos (C) Felipe Bañados Schwerter or (C) Maria Luisa Schwerter

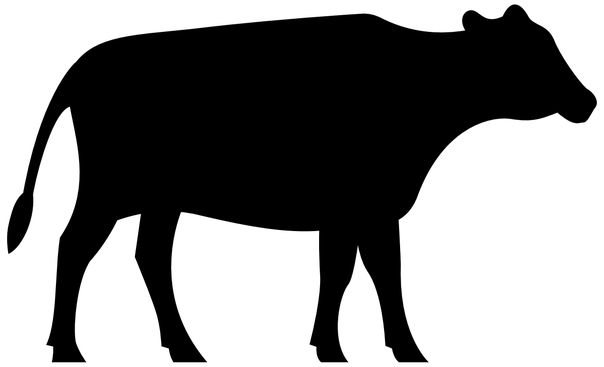


TW:
May contain gruesome, explicit information and content about animal farming practices

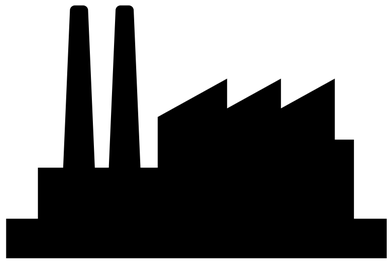
Do not blame me if this affects your relationship with dairy products.

I 😍 milk.

① Farming



② Manufacturing



③ Distribution

You

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

Auction Hall in Puerto Montt, Chile. (C) 2020 FEGOSA (Fair use for education)

Auction Hall in Puerto Montt, Chile. (C) 2020 FEGOSA (Fair use for education)

Year 1 : Husbandry

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

- Identification and branding

https://twitter.com/CCIA_Canada/status/1309575887809949697
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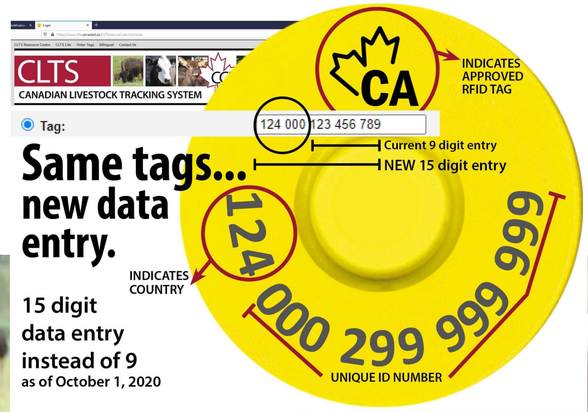

✓yes

✗no

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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

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- We need to get the heifer pregnant.

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- Detecting Estrus
- Bulls are dangerous!

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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

Background photo from ABS global (https://www.absglobal.com/)

Artificia

- Facilitates
- You get to
- Catalog of

Background photo from ABS g

Bull Search
v2.1.20200904.1

C3PO | 29HO19122 | BOMAZ C3PO-ET

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

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

Production — **Dtrs:**0 | **Herds:**0 | **Pro$:**+2978 | **LPI:**+3323

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 — **Dtrs:**0 | **Herds:**0 | **Rel:**75%

	-10 -5 0 5 10	
Conf		3
MS		6
F&L		-1
Dairy Strength		-1
Rump		-2
Stature		-7
Chest Width		0
Body Depth		-3
Angularity		+1
Rump Angle		-2 H
Pin Width		-4
RLSV		-6 S
RLRV		-3
Foot Angle		-1
Fore Udder Attachment		+8

WORLD

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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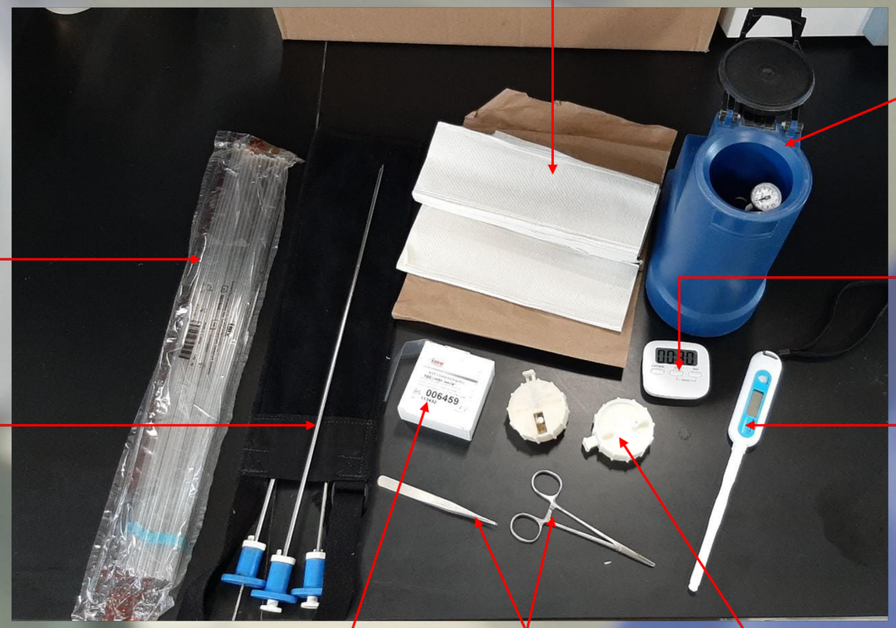

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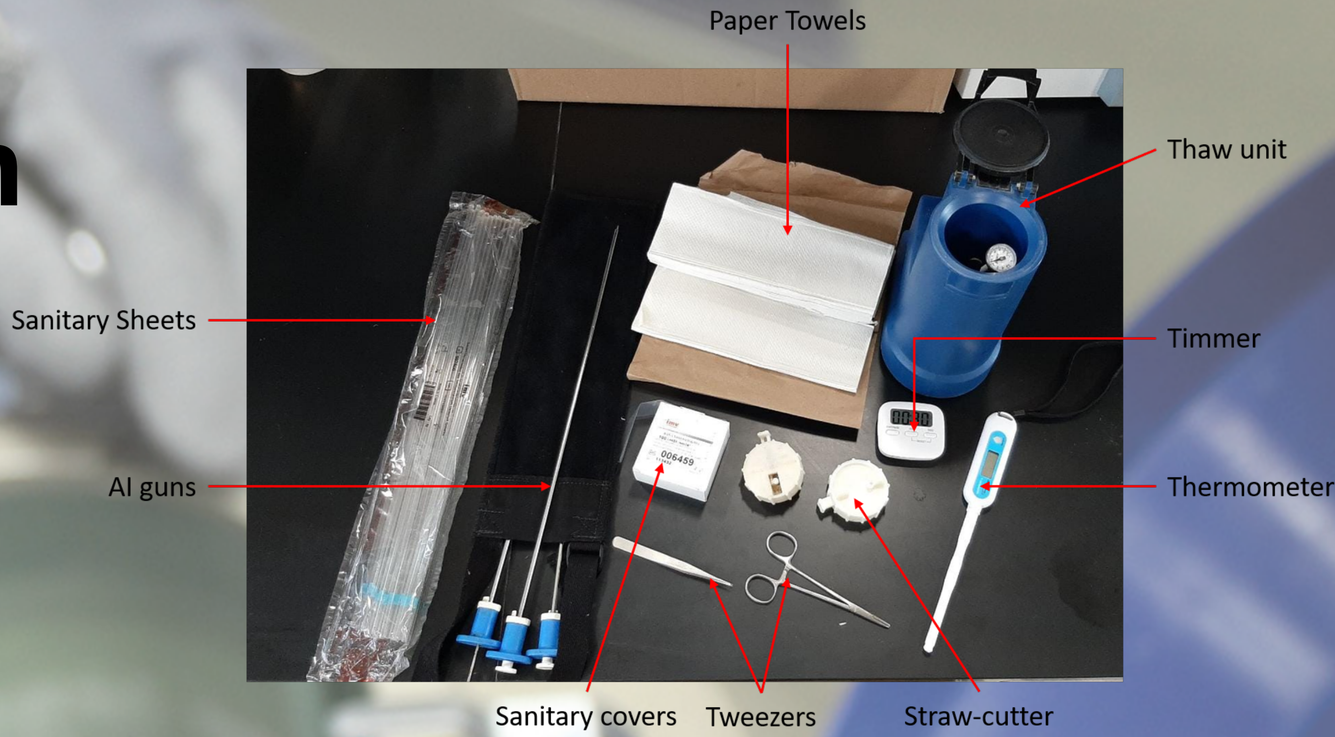

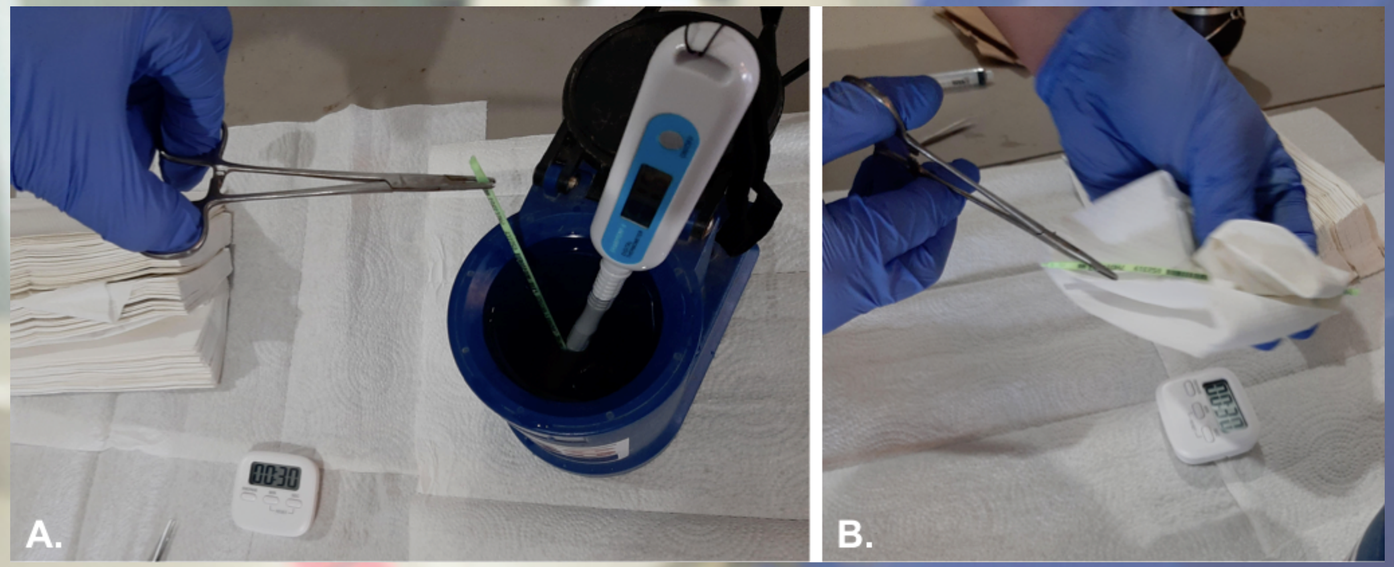

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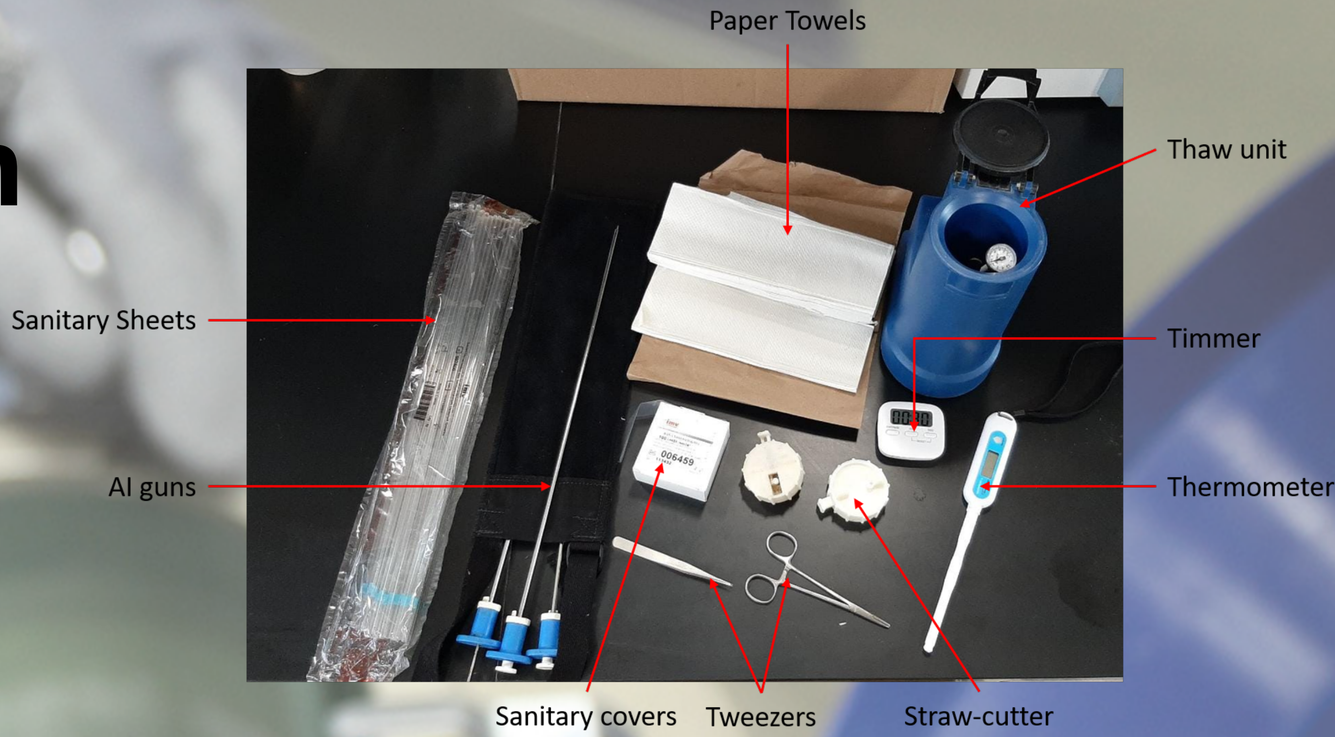

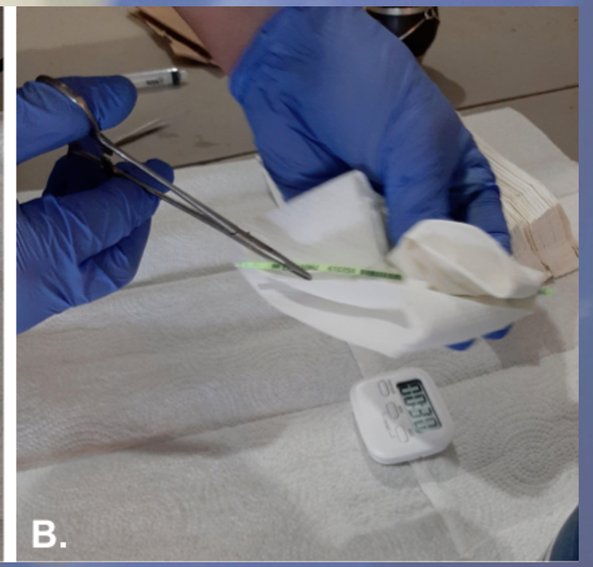

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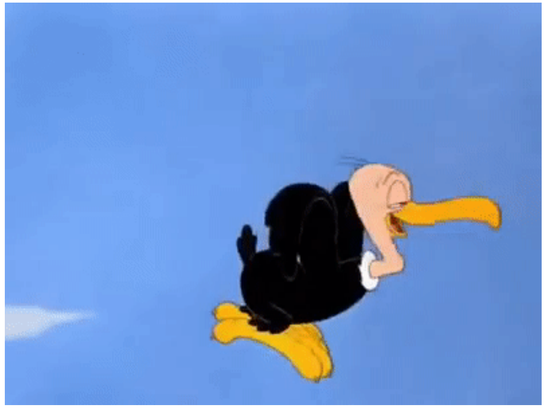
Year 2 : Heifer becomes Cow

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

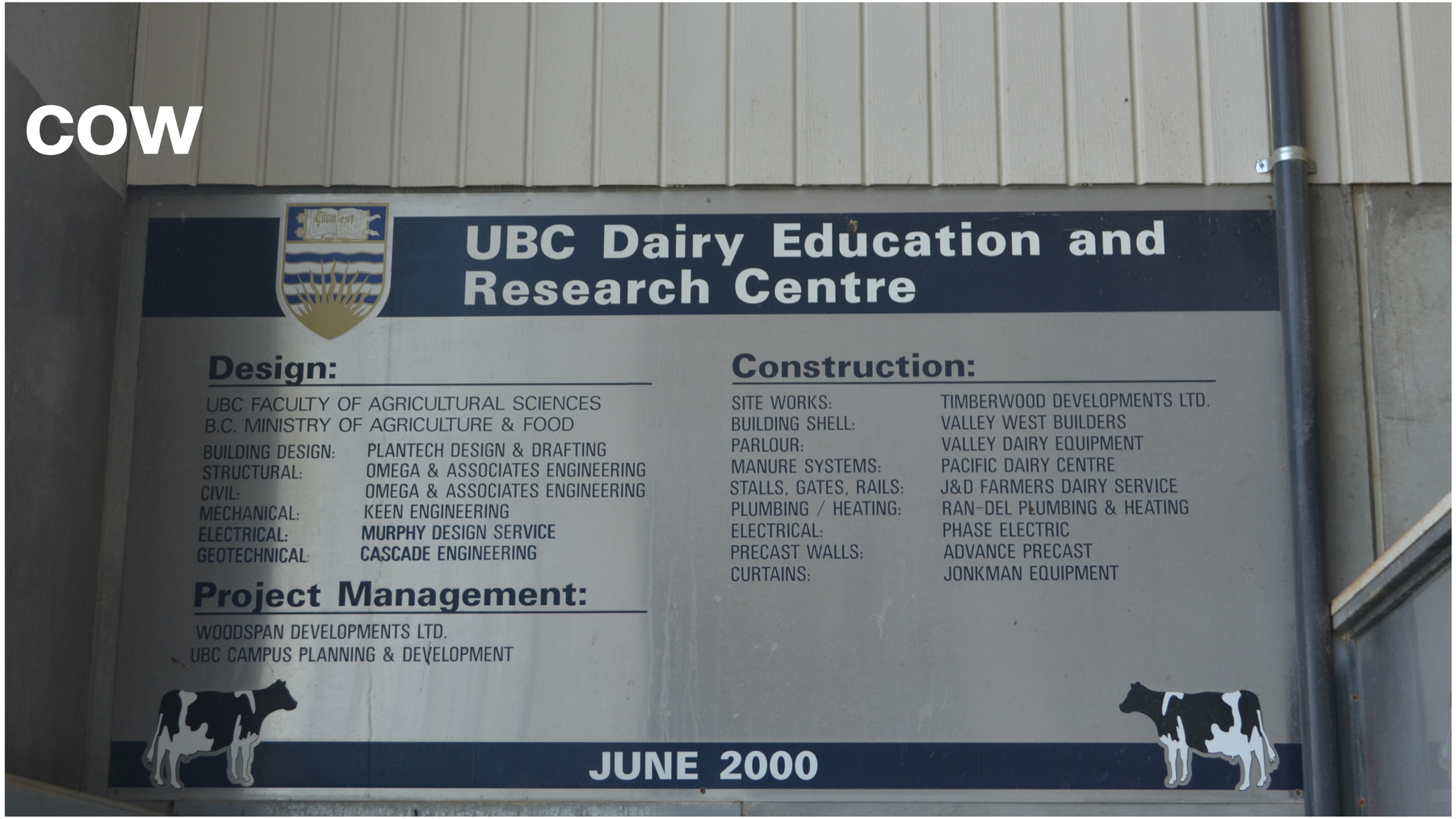
Birth complications on the cow



- 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

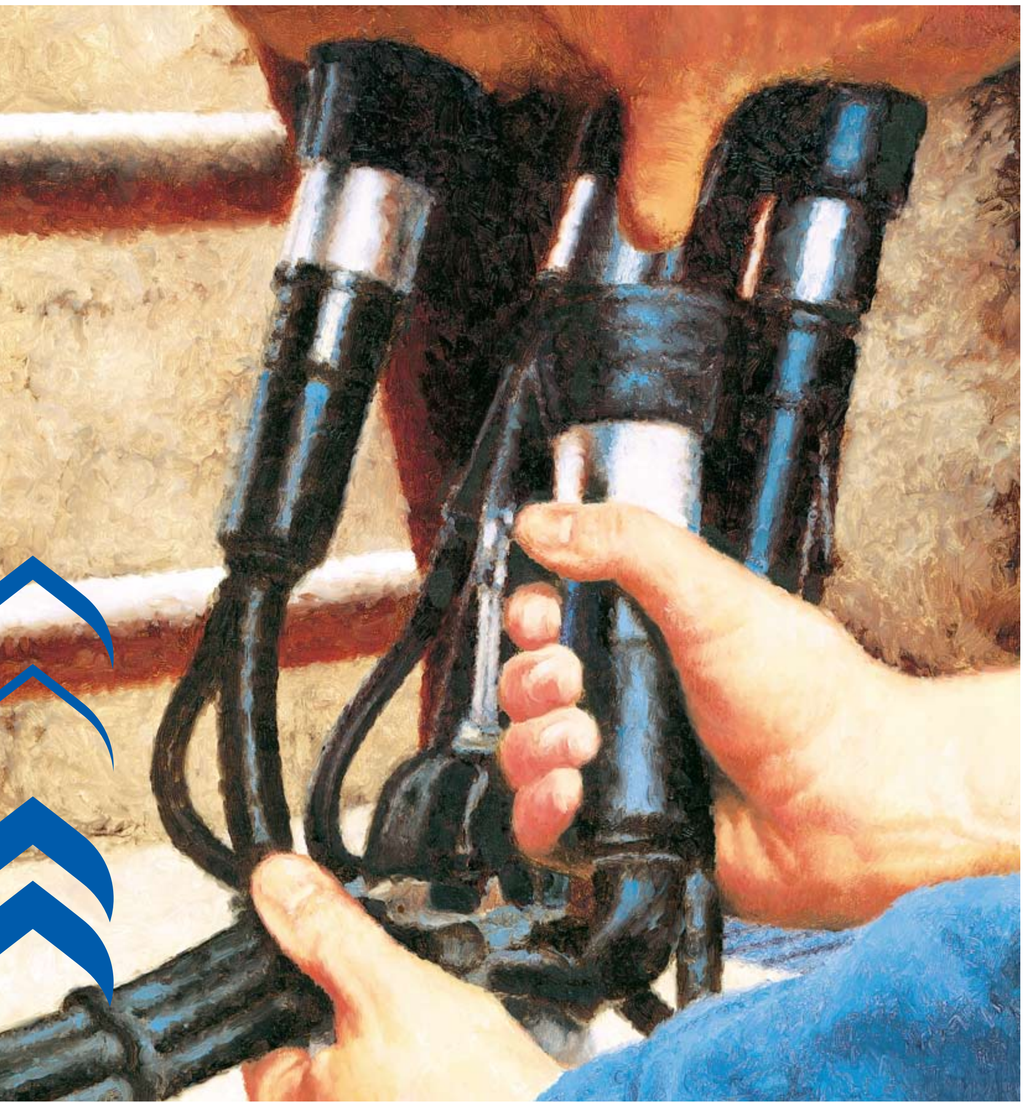
10. Clean/disinfect milking equipment

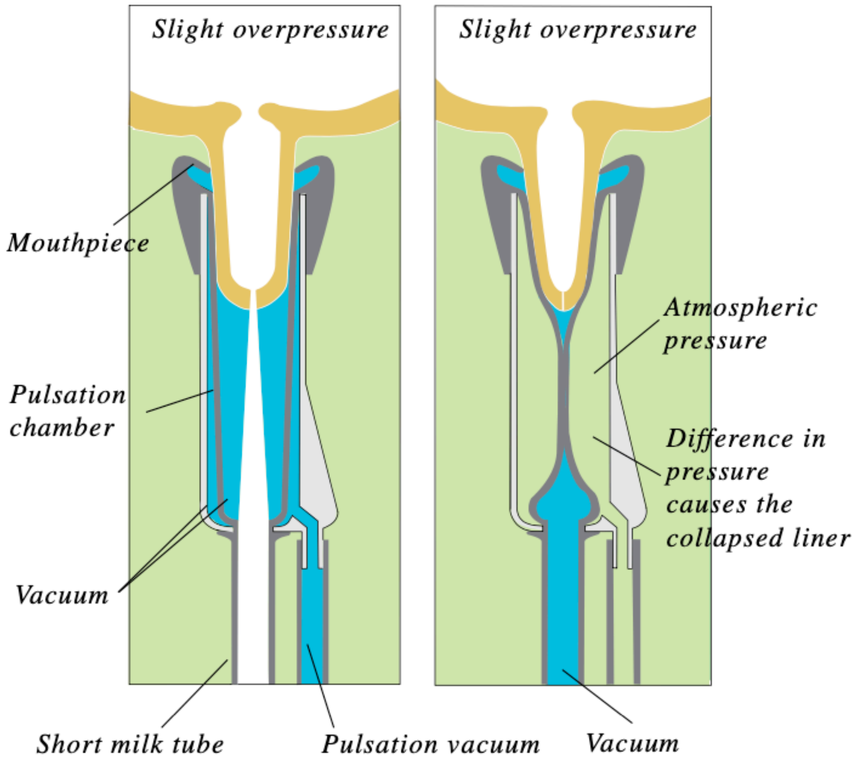
11. Ensure proper milk cooling

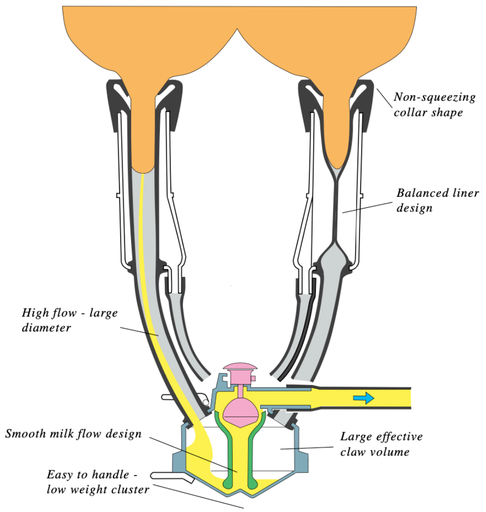
12. Regularly monitor milking results

DeLaval

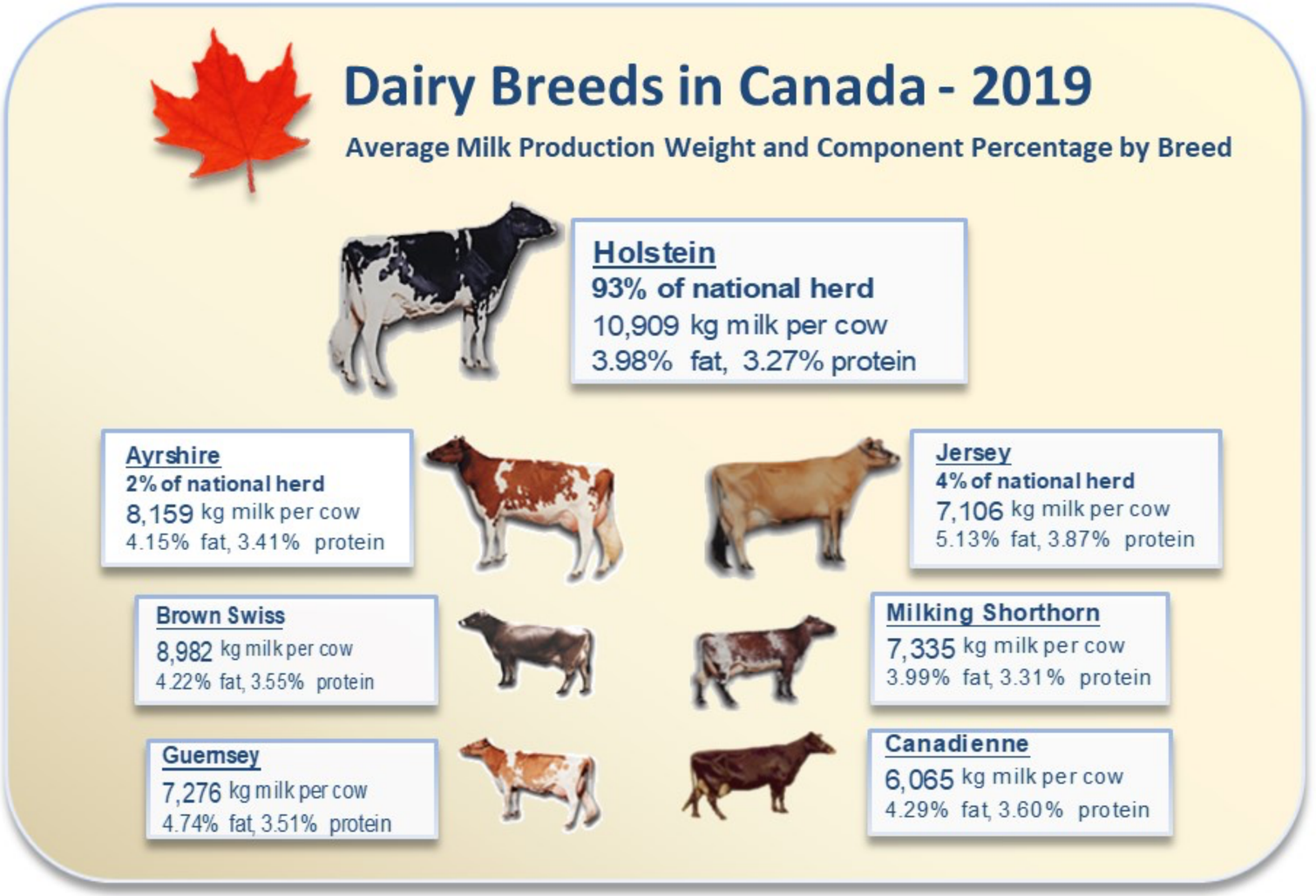
Efficient Milking







How much milk?



https://www.dairyinfo.gc.ca/eng/dairy-statistics-and-market-information/dairy-animal-genetics/average-milk-production-by-breed/?id=1502476121954

Rinse and repeat

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

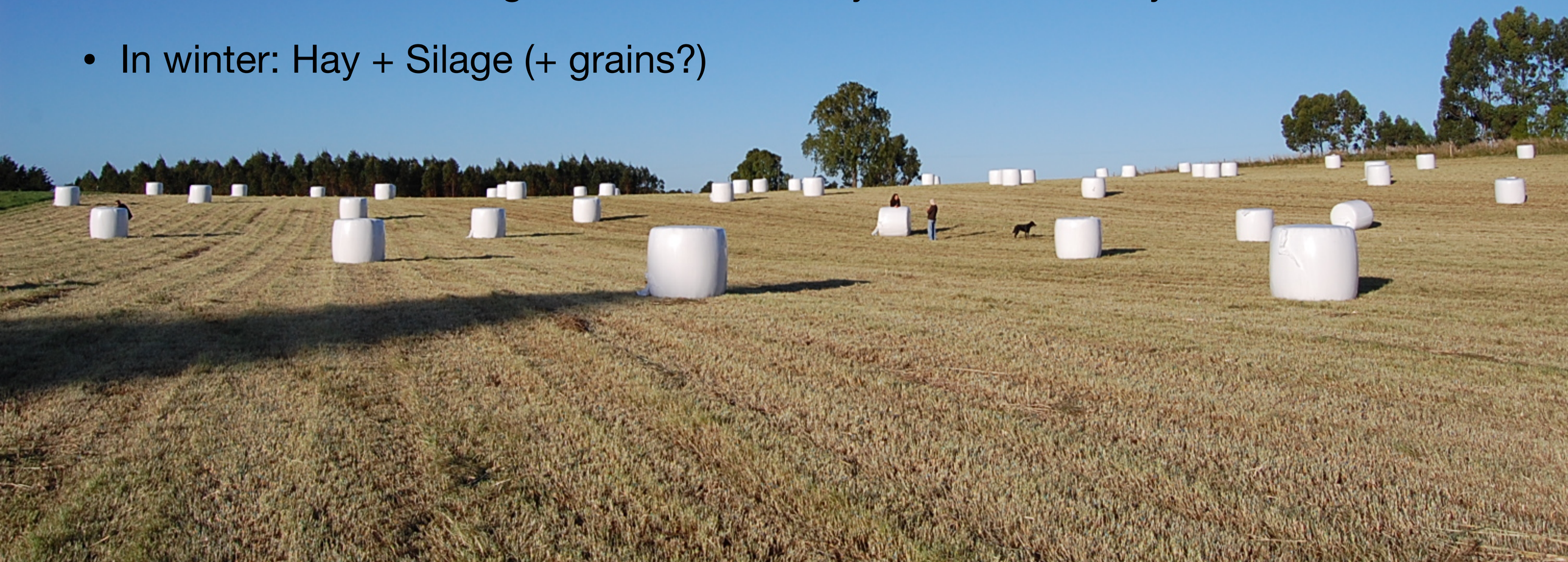
The milk leaves the farm

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

Wikimedia Commons

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*.

Animal Type	Daily Production	Analysis Units	N	P_2O_5	K_2O
Dairy Cow Lactating (liquid)	13 gal	lb/1000gal	28	13	25
Lactating (solid)	106 lb	lb/ton	10	4	8
Dry	82 lb	lb/ton	9	3	7
Calf and heifer	87 lb	lb/ton	7	2	7
Beef cattle Cow and calf	60 lb	lb/ton	11	7	10
Steer	75 lb	lb/ton	14	5	8
Veal	5 gal	lb/1000 gal	36	27	55
Swine Gestation	4 gal	lb/1000 gal	30	35	15
Lactation	10 gal	lb/1000 gal	25	20	15
Nursery	14 gal	lb/1000 gal	40	40	25
Grow-finish	11 gal	lb/1000 gal	50	55	25
Farrow to feeder	7 gal	lb/1000 gal	40	35	15
Sheep	40 lb	lb/ton	23	8	20
Horse	45 lb	lb/ton	12	5	9

*Adapted from: The agronomic guide 2002. College of Agricultural Sciences, Penn State University.

UMass Extension Crops, Dairy, Livestock, Equine – www.umass.edu/cdl

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Cleaning around

If you are interested in learning more

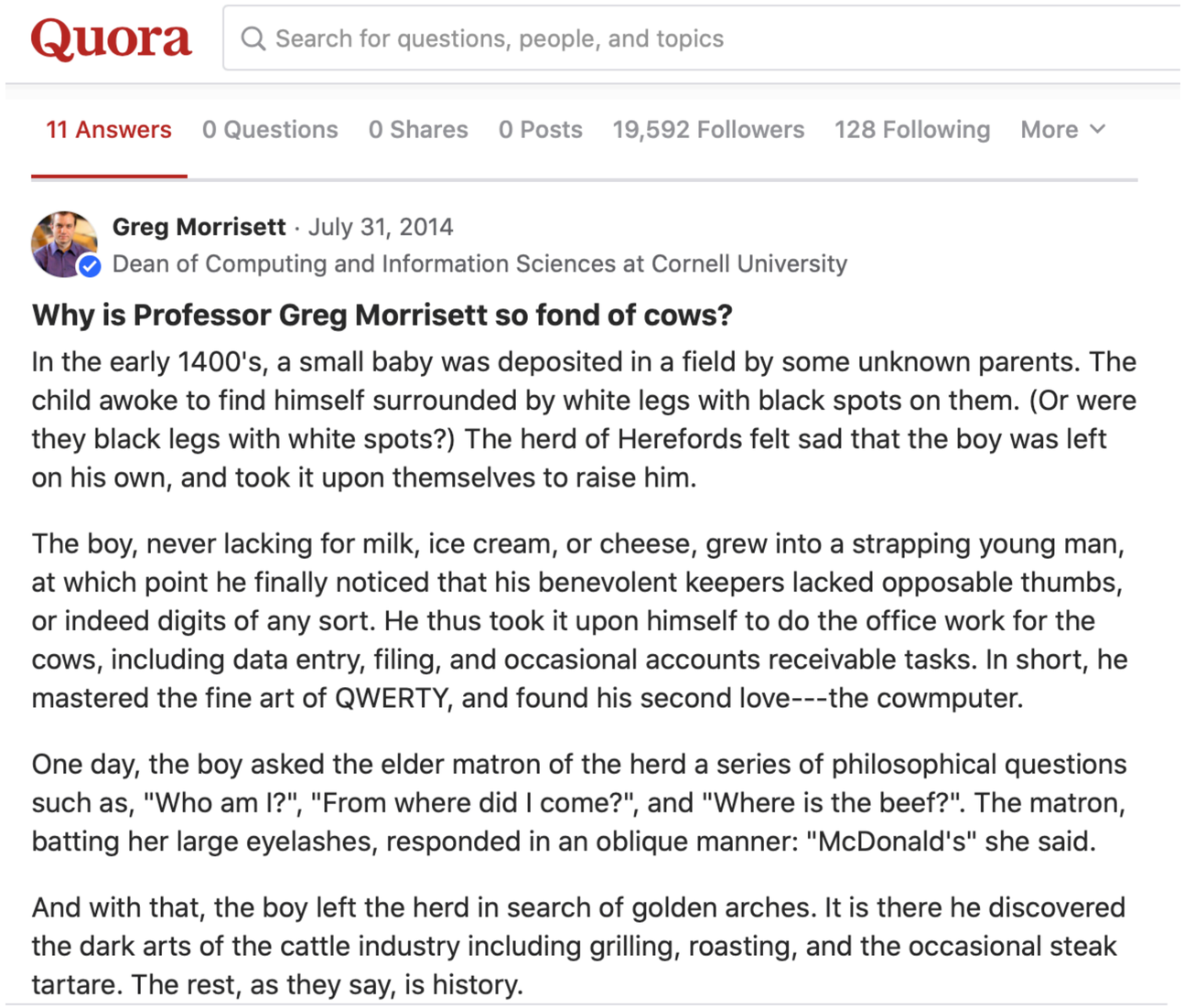
Canadian National Farm Animal Care Council Codes of Practice

- Beef cattle: https://www.nfacc.ca/pdfs/codes/beef_code_of_practice.pdf
- Dairy Cattle: http://www.nfacc.ca/pdfs/codes/dairy_code_of_practice.pdf
- Veal Cattle: https://www.nfacc.ca/pdfs/codes/veal_cattle_code_of_practice.pdf

My Grandma’s llamas say hi to you today

A dedication poem

- I dedicate this talk now to Greg Morrisett*, whom I've never met, but I am told he likes cows.



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