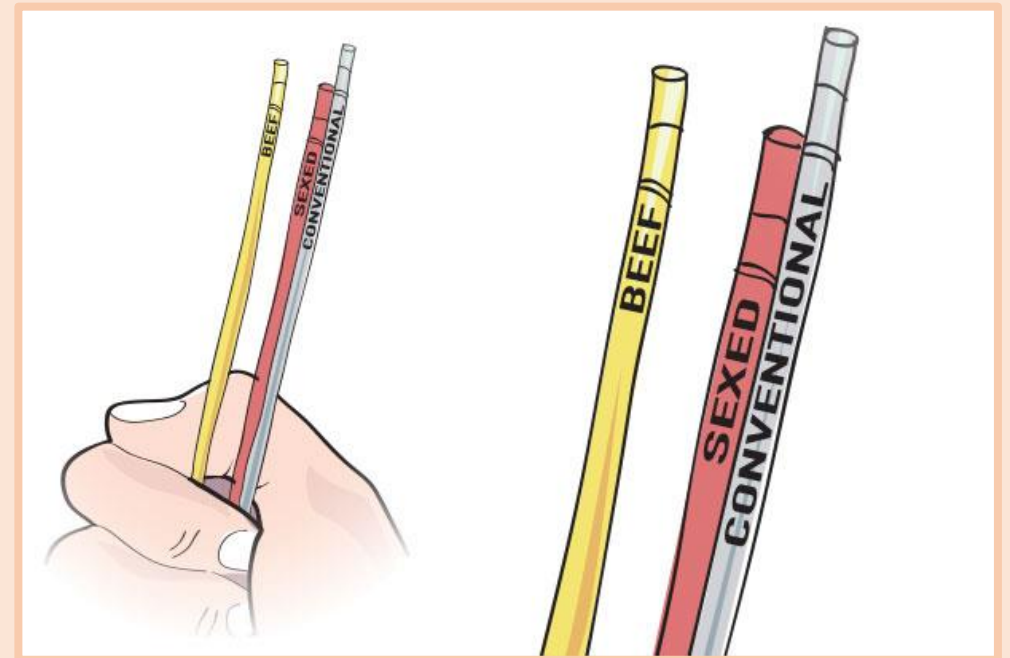# SELECTION OF BULLS, USE OF SEXED SEMEN (Level 3)

Topic	Training & information Content
6.1	Selection of bulls, use of sexed semen, feeding management of dry cows
6.2.1	The calving process
6.2.2	Use of equipment around calving
6.2.3	Care of cow and calf after calving
6.2.4	Colostrum management
6.3	Milk (replacer) feeding schedule
6.4	From birth to weaning
6.5	From weaning to pregnancy
6.6	Disease and health management
6.7	Handling of calves after difficult birth
6.8	Young stock rearing info and Key Performance Indicators

1. You will learn about (learning objectives):

❑ Sexed semen:
- Importance of bull selection in case of artificial insemination (AI).
- Variety of bulls and breeds available.
- Qualities of the different breeds.
- Use of sexed semen in virgin heifers to improve herd's genetic potential.
- How to treat/handle sexed semen.
- The technical results of using sexed semen.
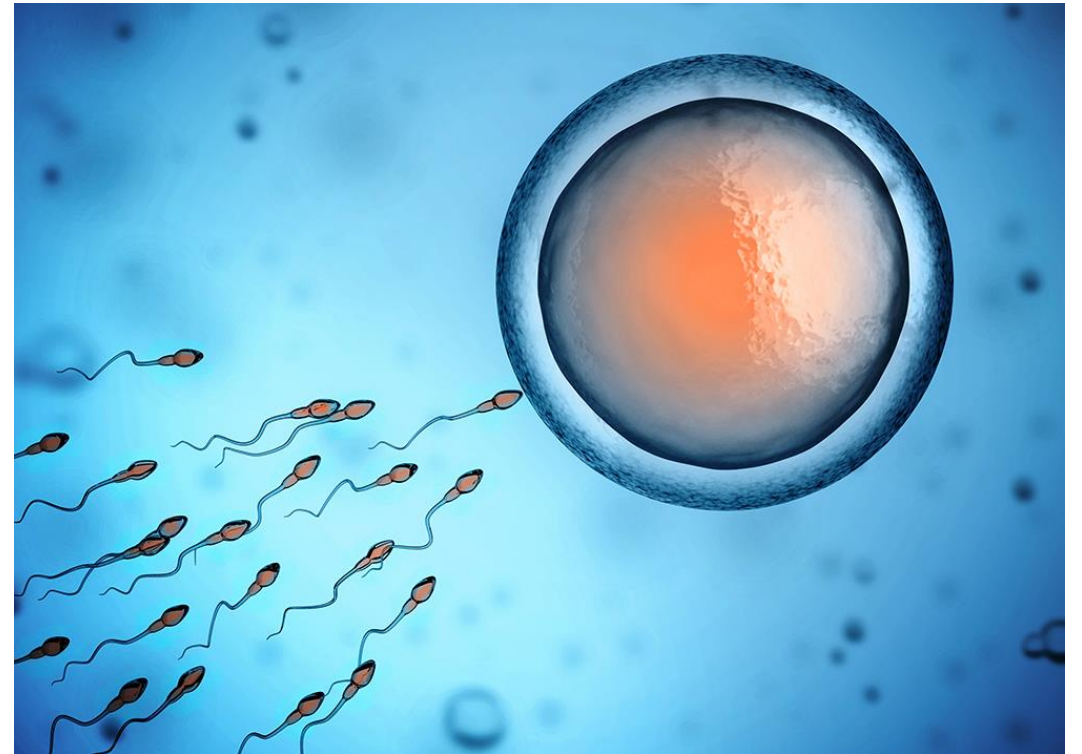
2. Background

- Herd improvement (breeding) involves first looking at your cows and setting goals.

Look at your cows.
What is your goal?

3. Setting breeding objectives

Questions to ask yourself:

- What options are available to make cross breeding a success.
- What are your long term objectives in case of cross breeding.

Assess:
- Feed requirements.
- Management skills.

Are you well informed about the requirements for keeping a cross bred?
- Energy, protein requirements throughout the year.
- Necessary management skills.

3.1 Setting breeding objectives Cont'd...

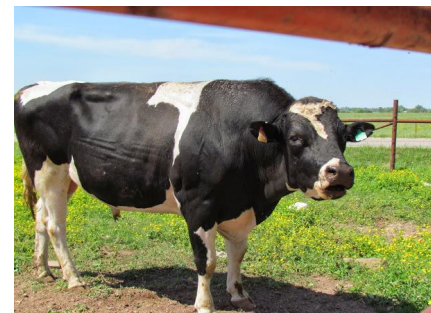Your goal can be:
- Milk
- Calves
- Beef

Milk

Calves

Beef

4. Selecting the breed

- Which breed suits your goal?

4.1 Selecting the breed Cont'd…

- Dairy breeds

Milk

4.2 Selecting the breed Cont'd…

- Beef breeds

Calves

Beef

5. Cattle breed bulls: Jersey

Jersey cattle bull

Advantages	Disadvantages
High milk fat and protein	Agressive at older age.
Calves with ease	Milk fever sensitive.
High feed conversion efficiency	

6. Cattle breed bulls: Holstein Friesian

Holstein bull

Advantages	Disadvantages
High milk potential.	Heat stress sensitive.
Good udder conformation.	Fertility issues.
	Higher susceptiblity to sun burns.

7. Cattle breed bulls: Ayrshire

Ayrshire
bull

Advantages	Disadvantages
Disease resistant.	High feed requirement.
High quality drinking milk.	
Good udder conformation.	

8. Cattle breed bulls: Boran

Milk production from Boran/Friesian F1.

1st lactation;
Av 9,3 kgs/day
High 13,8 kgs/day.

2nd lactation;
Av 10,4 kgs/day
High 15,6 kgs/day

3th lactation;
Av 13,4 kgs/day.
High 19,5 kgs/day
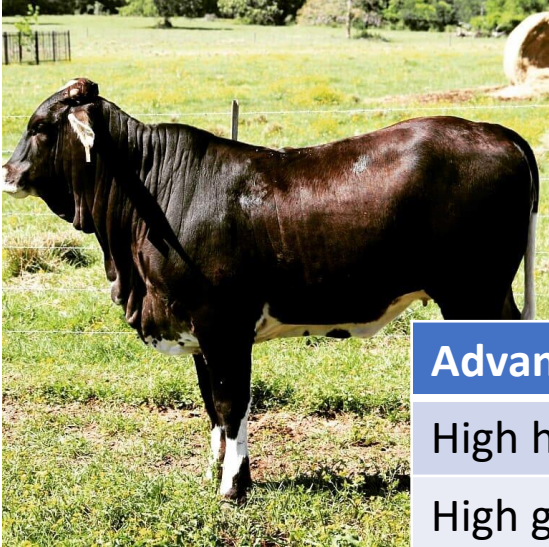
Source: www.borankenya.org

Boran bull

Boran*Friesian

9. Cattle breed bulls: Brahman

F1

Brahman/Holstein.
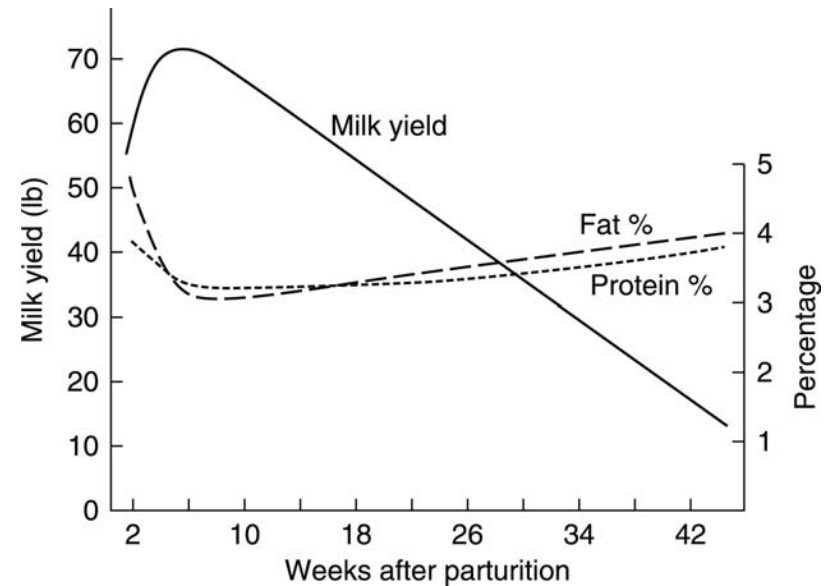
Brahman bull

Advantages	Disadvantages
High heat tolerance.	Low milk potential.
High growth rate.	
Tameness & easy calving.	

10. Breeding goal influences the choice of breed

Which features do you want to improve for the future? That's your breeding goal.

- Milk yield
- Total solids
- Longevity
- Udder
- Speed of milking
- Good feet and legs
- Etc.

11. Heritability of traits

Total longevity 7.2%

Liveweight 35%

Milk 36%

Protein 31%

Milkfat 33%

Fertility 9%

Somatic Cells 15%

Calving difficulty 4.3%

Residual survival 5.5%

Adaptabilty to milking 13%

Shed temperament 14%

Milking speed 21%

Overall opinion 13%

Stature 37%

Capacity 22%

Rump angle 25%

Rump width 19%

Legs 7%

Udder support 20%

Front udder 20%

Rear udder 20%

Front teat placement 25%

Rear teat placement 28%

Udder overall 23%

Dairy confirmation 19%

12. Choosing the right bull

Consider:

i. Appearance
ii. Information from daughters.

Note: The most reliable bull selection is a selection based on breeding values.

Ideal Bull

Labels on the diagram:
- strong masculine head
- hold spring of rib
- strong back
- long, level rump
- neat tailhead
- thick muscular loin
- deep, muscular bulging quarter
- neat dewlap & brisket
- smooth shoulder
- long bodied
- long, muscular stifle
- muscular arm & forearm
- sound reproductive organs
- correct set of hocks
- rugged bone
- strong pasterns
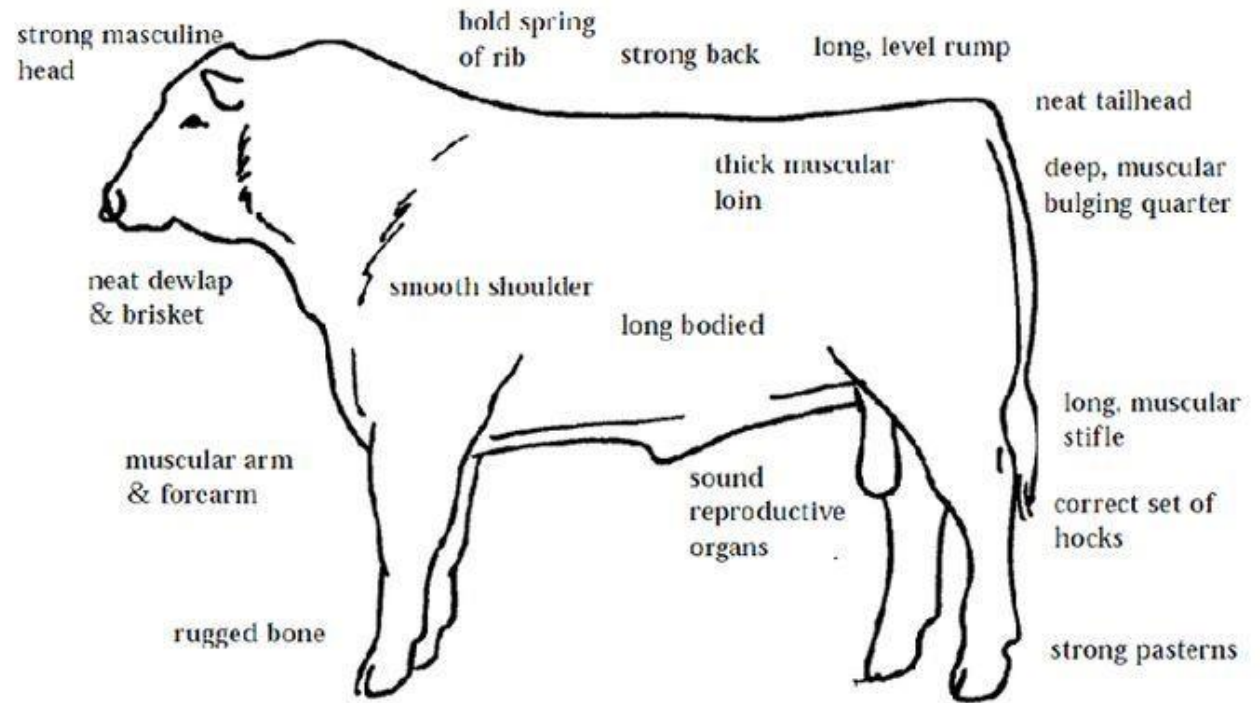
13. Always beware of inbreeding

- Inbreeding is mating between animals that are more closely related than the average relationship in the breed.
- In common terms, inbreeding refers to matings between close relatives, such as father to daughter, brother to sister, and half-brother to halfsister.
- Planned breeding programs often use this strategy of breeding to concentrate desired genes in the breeding stock, and fix a "type", or "look". It is a process that exposes both the good and bad qualities in the stock. Inbreeding does not create undesirable recessive genes, but it does tend to bring to light these unfavorable genetics.

14. Breeding values

Here are five tips to get started with breeding values

1	2	3	4	5
Ensure a balanced approach	Set a breeding objective	Choose an index	Do your research	Select sound, fertile sires

15. Breeding index

There are indexes from all over the world, do your research.

- TPI.   Total Performance Index   USA
- LPI.   Lifetime Profit Index   Canada
- Pro$ Profit in dollars   Canada
- NTM   Nordic Total Merit index   Scandinavia.
- HWI   Health Weighted Index   Australia
- BPI   Balance Performance Index   Australia
- TWI   Type Weighted Index   Australia
- MACE   Multiple-trait Across Country Evaluation
- NMS   Net Merit Dollars   USA
- CMS.   Cheese Merit Dollars   USA
- NVI   Composite Index   Netherlands

16. Breeding index

- Index vary with country of origin. See sample alongside.

Conclusions:

- Index with high reliability 92% for production traits!
- Daughters are showing;
  1. Excellent milking speed (111).
  2. Wide rear teat placement (93).
  3. Desirable teat length (99).
  4. High fat % (+0.42).
  5. High stature (106).

Note: All scores are related to breed average in origin country.

CRV Health — +4%

Daughter fertility	104
Udder health	101
Hoof health	108

CRV Efficiency — +6%

Production (€)	278
Longevity	432
Feed efficiency	101

Production traits — 5,676 dtrs, 2,171 herds, reliability: 92%

Kg Milk	% Fat	% Protein	Kg Fat	Kg Protein
548	0.42	0.15	63	33

Management/Health

SCC	103
Ketosis	101
Milking speed	111
Temperament	109
Daughter calving ease	101
Daughter calf vitality	101
Persistency	104
Maturity rate	98
Age of first calving	100
Body weight	105
Sire calving ease	102
Sire calf vitality	102
Milkrobot efficiency	108
Milkrobot interval	98
Milkrobot habituation	94

Conformation traits — 2,535 dtrs 1,078 herds reliability: 99%

Frame	107
Dairy Strength	103
Udder	111
Feet & legs	113
Total score	115
Stature	106
Chest width	106
Body depth	110
Angularity	110
Condition score	98
Rump angle	105
Rump width	104
Rear legs rear view	110
Rear legs side view	99
Foot angle	100
Locomotion	114
Fore udder att.	108
Front teat placem.	98
Teat length	99
Udder depth	108
Rear udder height	107
Rear teat placem.	93
Central ligament	101

17. Breeding techniques

Natural insemination

Artificial insemination (AI)

18. Sexed semen

- Involves separating male and female semen cells.

Advantages of using sexed semen

i. Certainty of heifer calves for replacement or growth
The number of desired heifer calves can be optimally controlled with sexed semen.

ii. Less difficult births
The birth of heifer calves is on average much easier than the birth of bull calves.

iii. Higher turnover and growth
By inseminating some of the animals with sexed semen, space is created too: to inseminate a larger proportion of the herd with semen from bulls with meat traits to raise more heifer calves for sale of breeding material.

iv. Faster genetic progress
When using sexed semen on the genetically best animals in the herd, genetic progress in the next generation of dairy cows is faster.
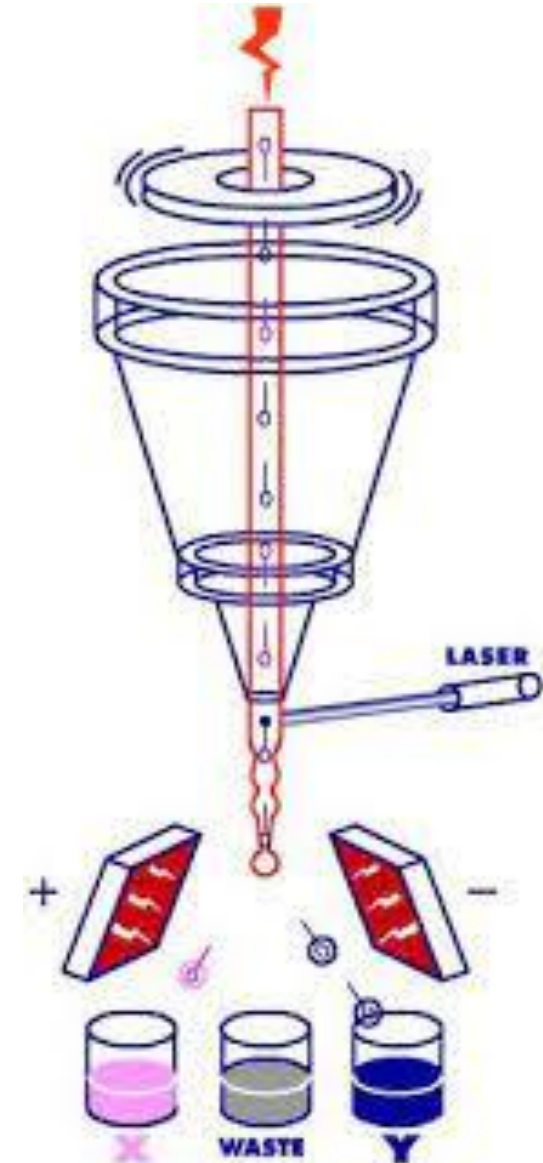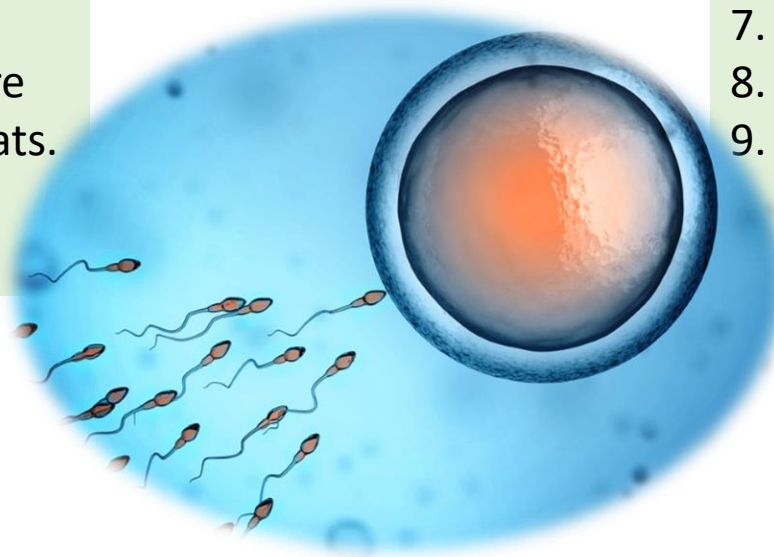
Success formula for using sexed semen

1. Virgin heifers.
2. Healthy animals.
3. Desirable Body Condition Score
4. At least two administrated heats.
5. Very good heat detection

6. Max 50% conception rate
7. > 90% heifer calves.
8. Precise Insemination moment.
9. Semen management.
   - Thawing temperature.
   - Act quickly.

Sexed semen increases the genetic
potential of your herd!

19. Advantages and disadvantages of the breeding techniques

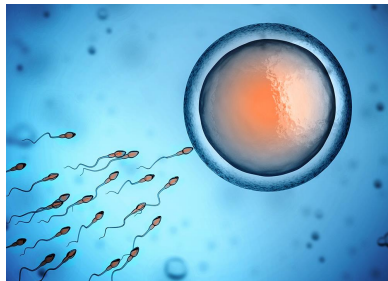Natural insemination = Cheap = No/Low genetic progress Whole herd

Artificial insemination = Costly = Genetic progress = Good cows

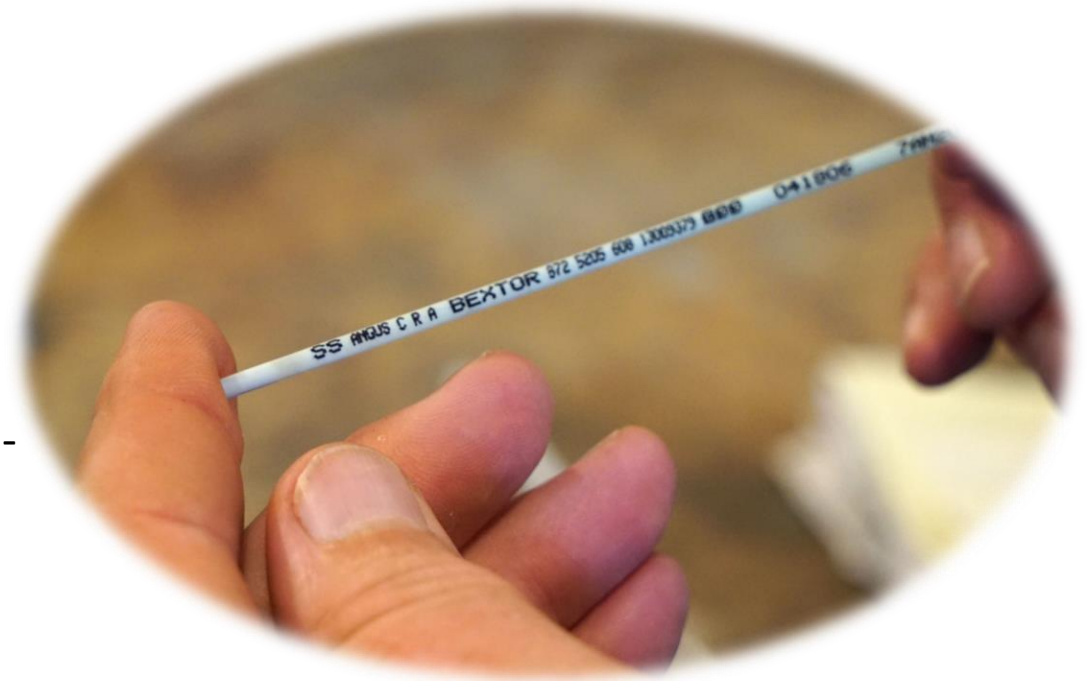Artificial insemination with sexed semen. = Expensive = Very fast genetic progress = The very best for virgin heifers.
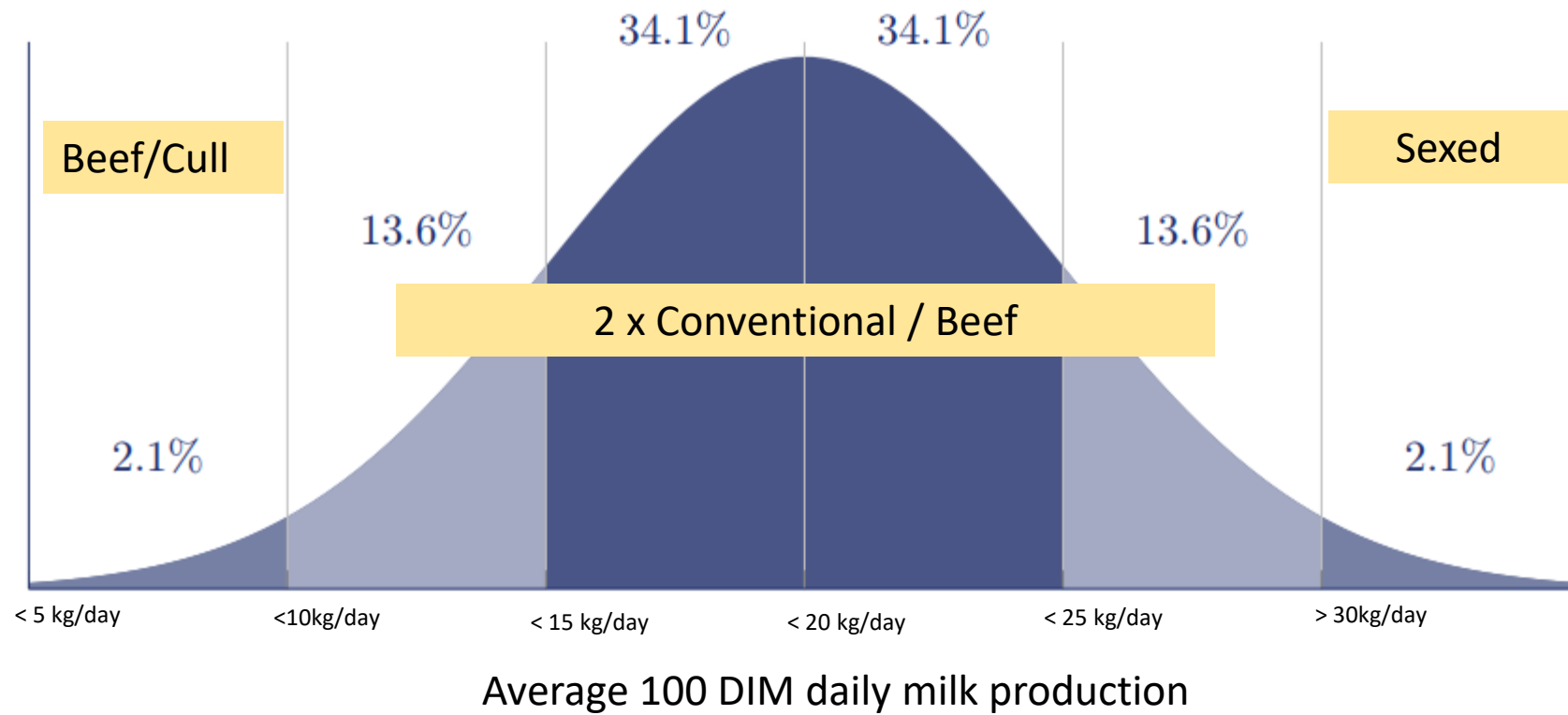
20. Herd genetic progress

- The fastest way to increase the genetic potential in your herd;

1. Categorize your cows and heifers from good to bad.
2. Low ranked animals: Do you want to make them pregnant again?
   a) Yes ? - Natural service…………….beef Semen.
   b) No ? - Fattening ……………..culling

3. Medium ranked animals: Use individual bull selection - AI with conventional semen.
   - Maximum two inseminations with a chosen bull, followed by beef semen.

4. High ranked animals (virgin heifers): Maximum two inseminations with Sexed Semen, followed by conventional semen.

16.1 Herd genetic progress Cont'd…

Normal distribution

Beef/Cull

Sexed

34.1%   34.1%

13.6%   13.6%

2 x Conventional / Beef

2.1%   2.1%

< 5 kg/day   <10kg/day   < 15 kg/day   < 20 kg/day   < 25 kg/day   > 30kg/day

Average 100 DIM daily milk production

Normal Distribution =The outcome of every trait being measured in your farm

- END -