Theme 6: Calving, Young Stock Management

FROM WEANING TO FIRST CALVING (PREGNANCY) (Level 3)

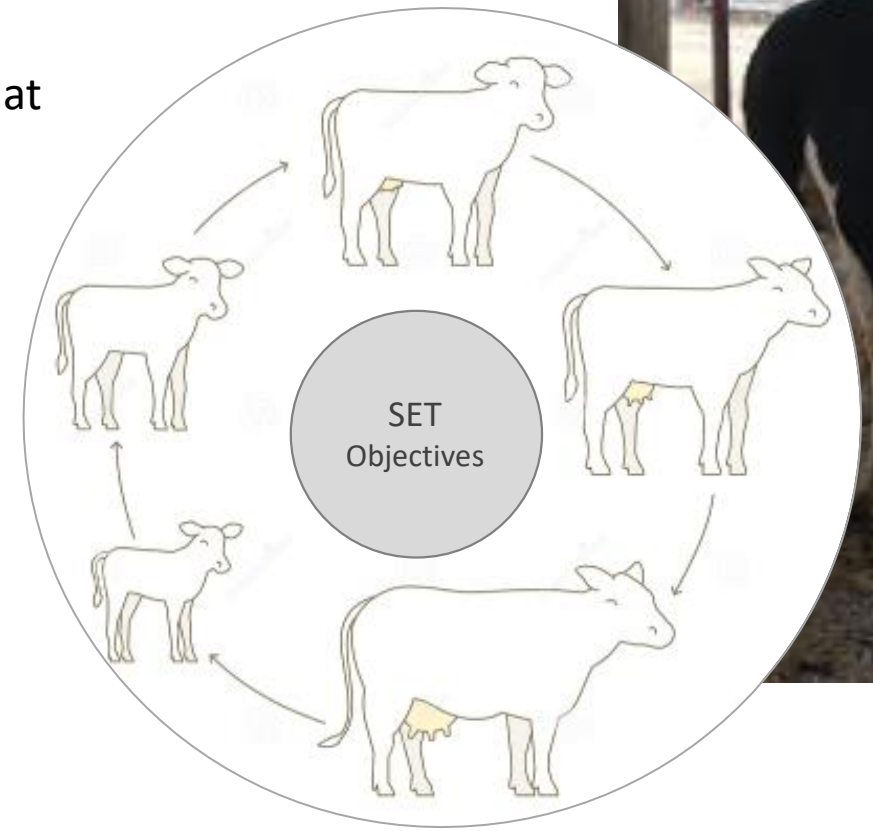
Topic	Training & information Content
6.1	Selection of bulls, use of sexed semen, feeding management of dry cows
6.2.1	The calving process
6.2.2	Use of equipment around calving
6.2.3	Care of cow and calf after calving
6.2.4	Colostrum management
6.3	Milk (replacer) feeding schedule
6.4	From birth to weaning
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):

- ❑ Costs of raising a calf to a cow.
- ❑ Management from calf /heifer from weaning till first calving.
- ❑ The importance of feeding a young animal according to their needs.
- ❑ How to prepare a pregnant heifer during the period before calving.

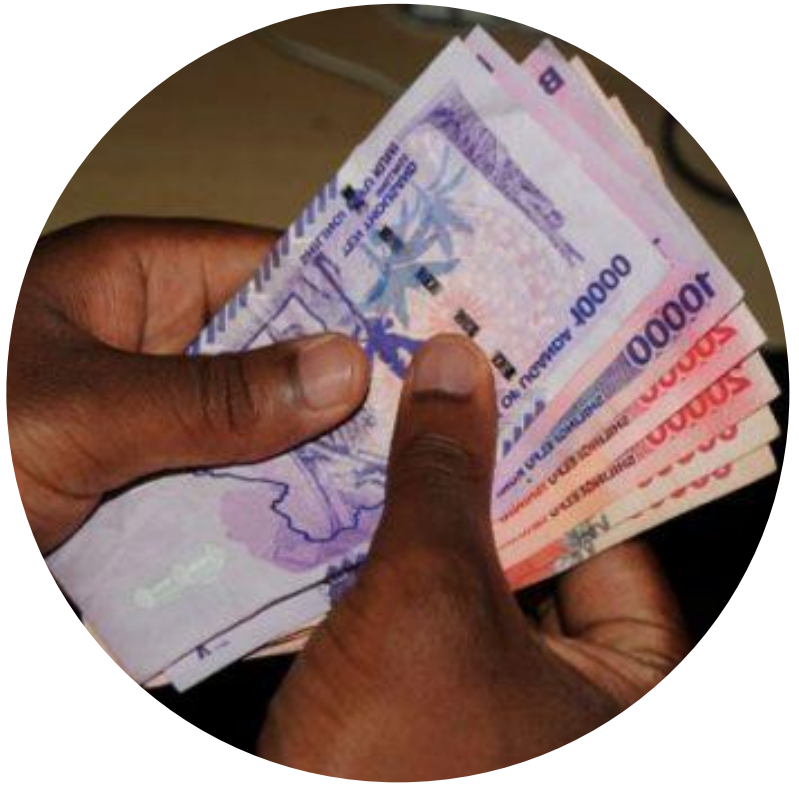
2. Background

- Your weaned calf soon will become a milking cow.
- It is important that ‘the newly calved heifer’ is in good shape to start her new job as a future milking cow. All these preparations must take place before calving.
- As a farmer, you must decide what you expect from calves/heifers; setting objectives are crucial for future successes.



3. Costs involved

Budget lines	Amount (USH)
Suckling 100 days	…
100 days x 5 litres of milk x ……USH	…
Vaccination 1	…
Vaccination 2	…
TBD treatments (0-100 days)	…
Calf starters……..kg ……..USH	…
…….	…
…….	…
Total costs	**…**

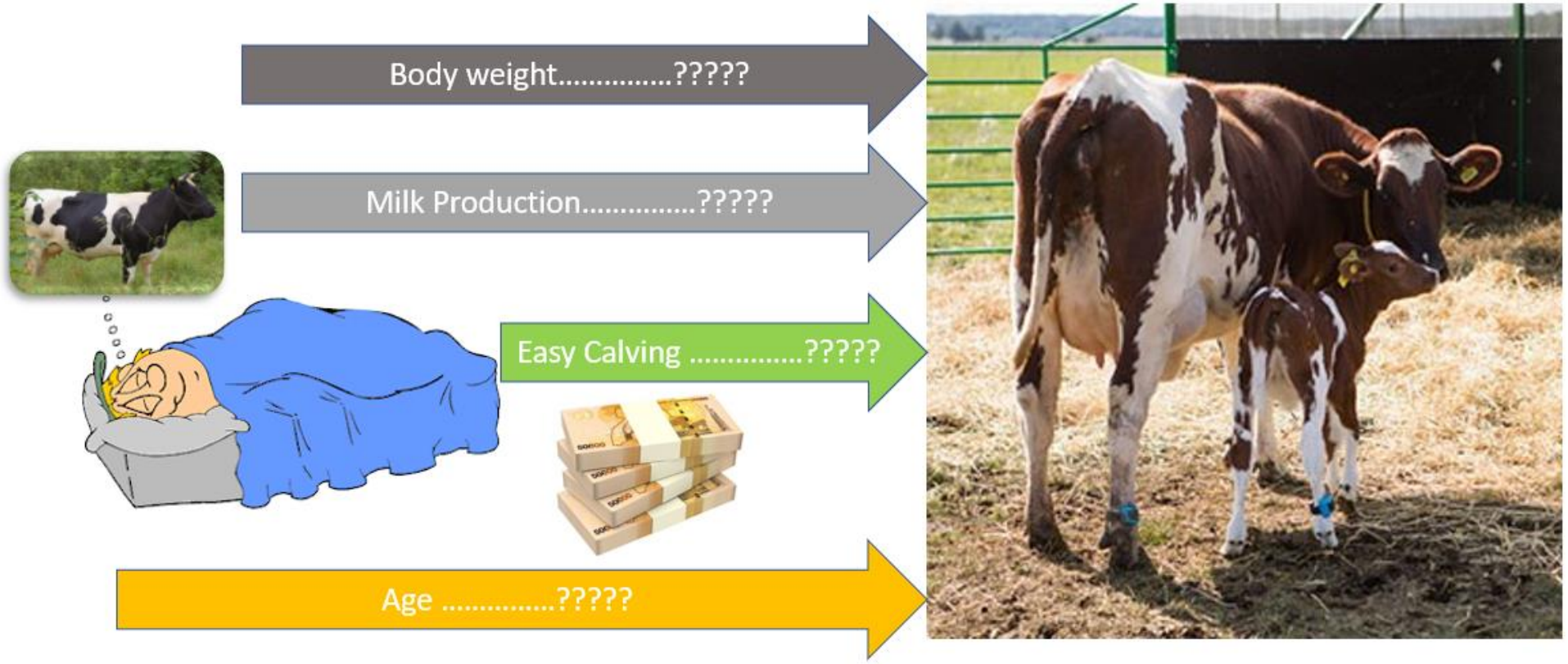


3.1 Costs involved (Other) Cont'd…

Budget lines	Amount (USH)
From birth till weaning costs	…
Concentrates	…
Roughages	…
Minerals and vitamins	…
Vaccination 1 FMD/ ECF	…
Vaccination 2.BVD/others	…
TBD treatments (100 – first calving)	…
Insemination	
……..	…
……..	…
Total costs	**…**

4. Setting Objectives

- There are a number of objectives/factors to be worried about when managing calves/heifers from weaning to first calving.



4.1 Setting objectives Cont'd…

Objectives

1. What's the body weight you are aiming for after your heifer has calved?
2. At what age do you want your heifer to calve down for the first time?
3. What can you do to make sure that the chance for parturition difficulties will be as low as possible?
4. What is the amount of milk you expect from your first calving heifer?

Take into consideration:

- Objectives are farm bounded.
- Objectives are supposed to be SMART.

4.2 Objectives should be SMART

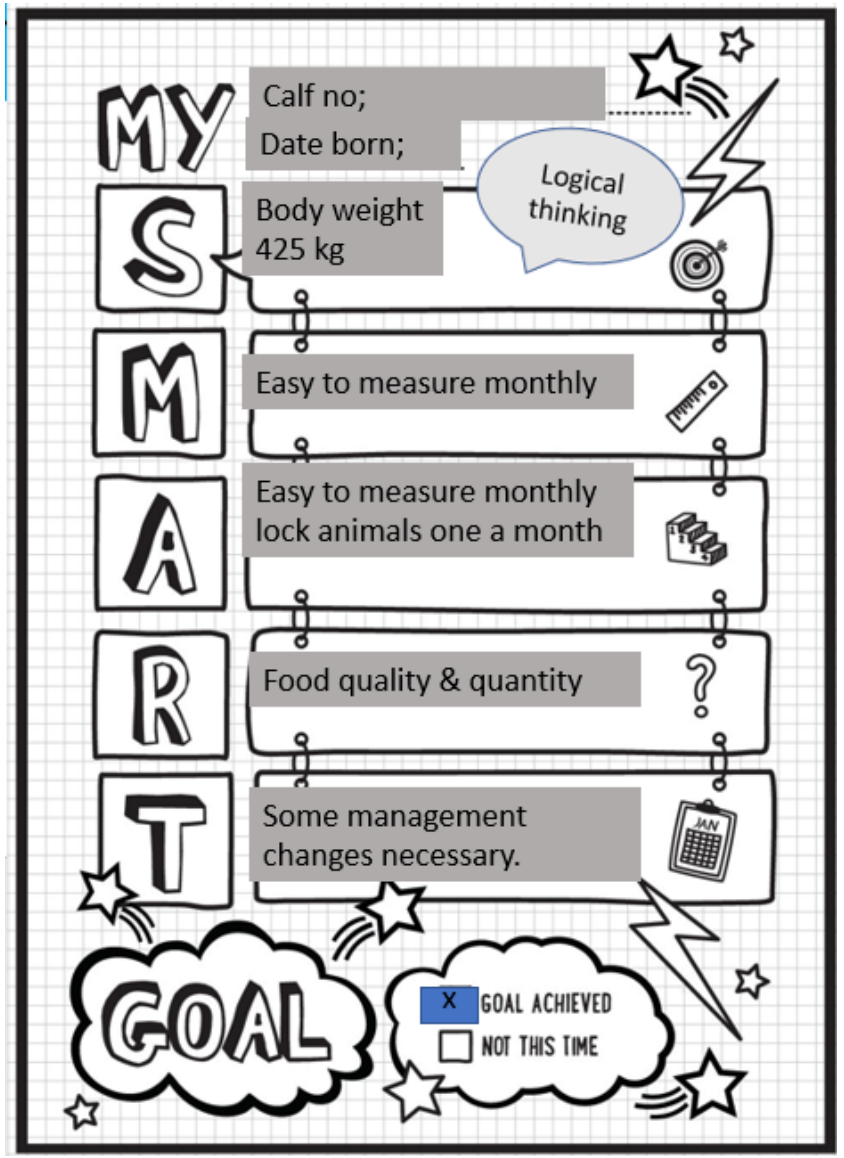
- Set SMART objectives. SMART stands for:

Specific
Measurable
Achievable
Relevant
Time bound

Important notes:

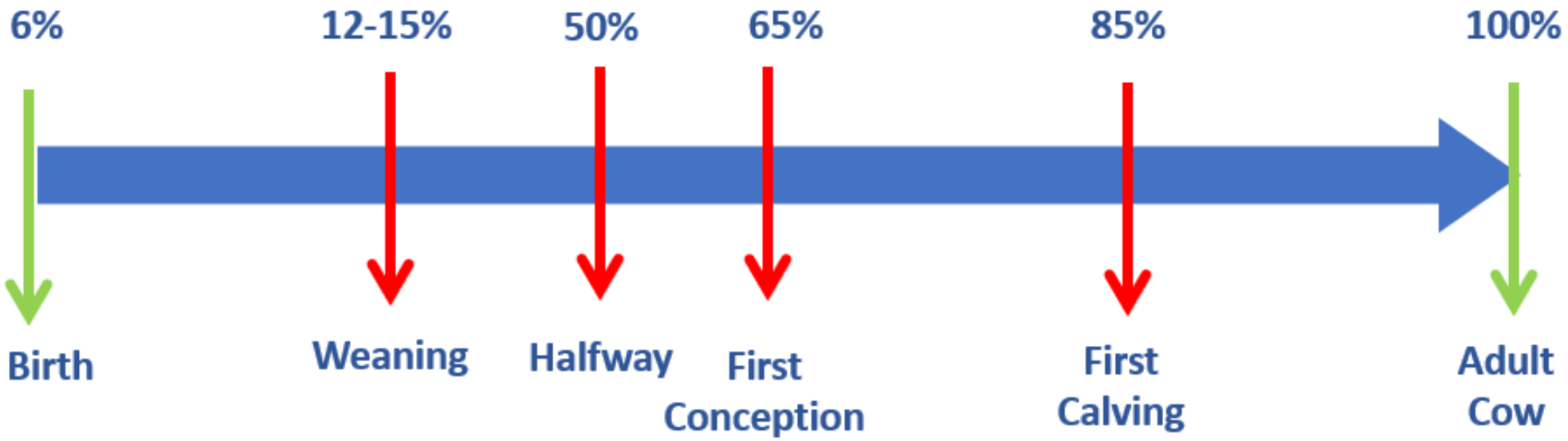
Note 1: If the food quality and food quantity is not according what is necessary for the desired growth rate, the objective is not SMART.

Note 2: A good heifer is not an objective, you should always name what a good heifer should look like. (weight/height/time/amount etc.)



5. Objectives: Body weight

- There are several moments that you want your animals to reach a certain bodyweight (i.e. at birth, weaning, first insemination and after first calving).
- If for instance the calving age is set at 30 months, half way, i.e. 15 months the heifer must have reached the 50% target weight.
- The targets or objectives are related to the environmental conditions/breed (See next slide).



5.1 Objectives: Body weight Cont'd…

Where is my herd?

Birth 6%	Weaning 12-15%	Halfway 50%	First insem. 65%	First calving 85 %	Adult 100%	Breed.
18-20 kg	40-45 kg	150 kg	195 kg	255 kg	300 Kg	Local
25 kg	50-60 kg	200 kg	260 Kg	340 kg	400 kg	Jersey (low)
27 kg	55 -65 kg	225 kg	290 kg	380 Kg	450 kg	Jersey (med)
30 kg	60 -70 kg	250 kg	325 Kg	425 kg	500 kg	Jersey (high)
33 kg	70 -80 kg	275 kg	358 kg	465 kg	550 kg	Cross.
36 kg	75 -85 kg	300 kg	390 kg	510 kg	600 kg	Holstein
39 kg	80 -90 kg	325 kg	422 kg	550 kg	650 kg	Holstein
41 kg	82 -95 kg	340 kg	442 kg	575 kg	680 kg	Holstein Holland
45 kg	90 -110 kg	375 kg	487 kg	635 kg	750 kg	Beef

6. Rearing calves post-weaning

After weaning

- Small group: 3-4 calves.
- Small area: for continuation of growth.
- Recognizable places where they can eat and drink, similar as before weaning.

After weaning

- Group size is too big: > 20 calves.
- New food, new environment, new herd mates.
- Loosing energy and growth because of long walking distances.

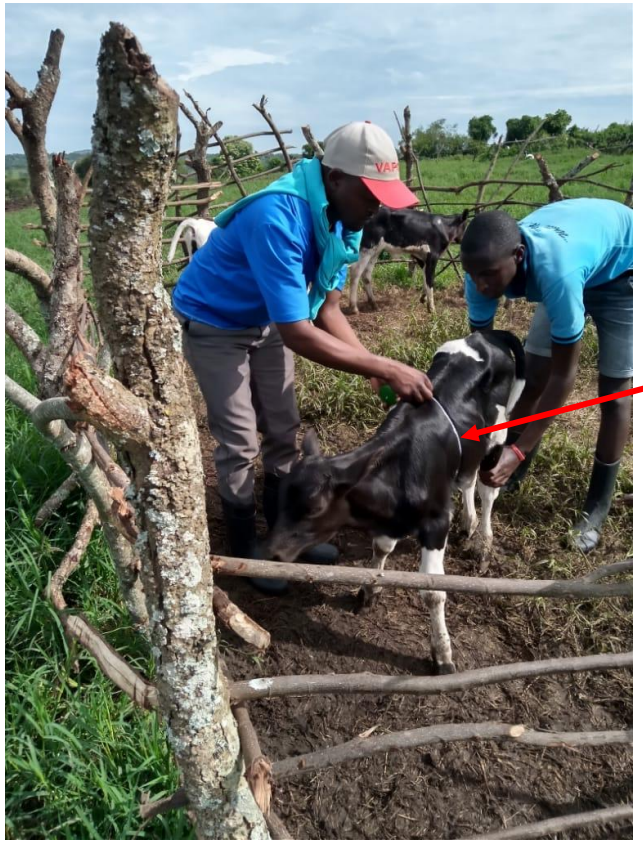
6.1 Rearing calves post-weaning Cont'd…

From weaning to first calving:

- Keep the calves in small groups to avoid stress and to optimize growth rate.
- Grazing in big paddocks means lots of energy get lost, reduces growth rates.
- Competition (at water throughs) is one of the reasons why growth rates lag.
- In the first few months after weaning, 'zero grazing' is the best way to optimize growth.

7. Growth/weight gain in calves

AGE:	January 0	February 1	March 3	April 4	May 5	June 6	July 7	August 8	September 9	October 10	November 11	December 12



- Monitor calf's growth rate regularly.

Objective: Daily weight gain of 700 grams per day (gr/day)

Tape measuring

Weight:	32 kg	41 kg	57 kg	85 kg	115 kg	137 kg	160 kg	180 kg	200 kg	245kg	265 kg	290 kg

7.1 Growth/weight gain in calves Cont'd…

- The table alongside will be a 'reliable' guide to assist the farmer in managing the growth rates of the calves and heifers.

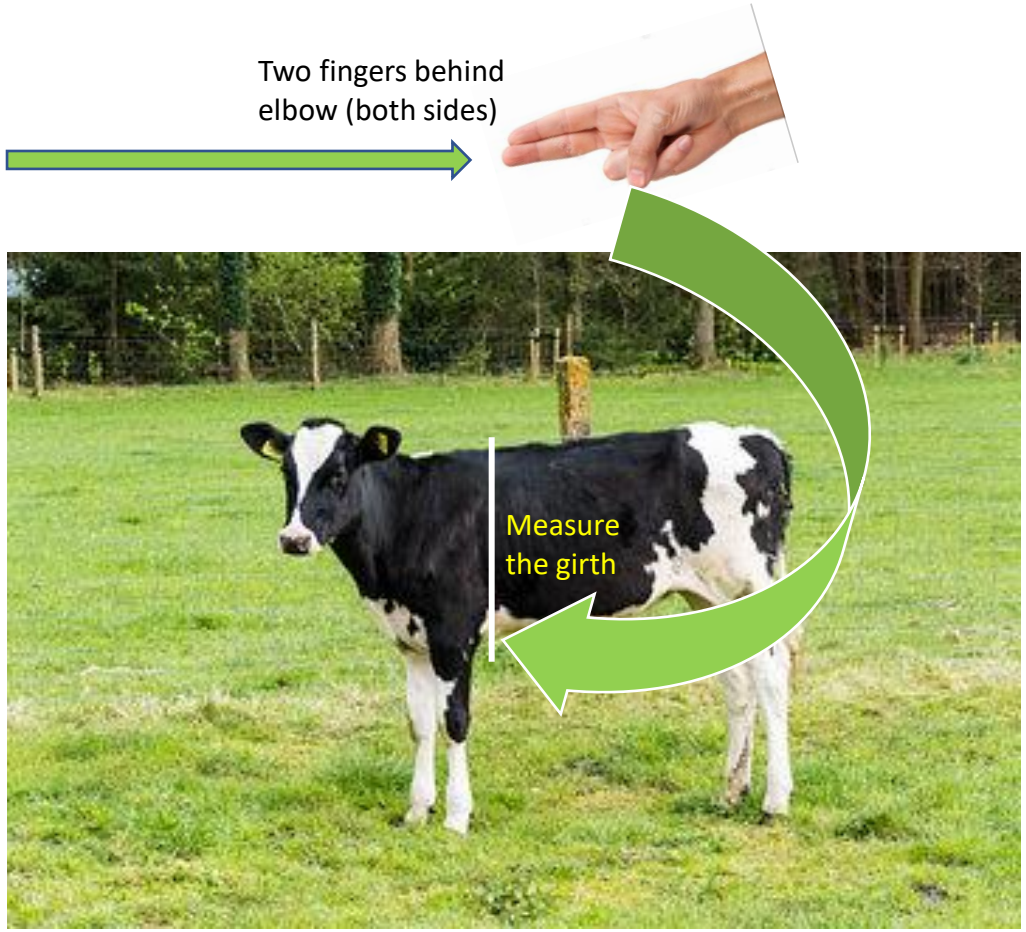
Examples:

98 cm = 85 kgs
128 cm = 180 kgs
151 cm = 290 kgs
186 cm = 500 kgs

Cm's	Kg's	Cm's	Kg's	Cm's	Kg's	Cm's	Kg's
75	41	108	114	142	236	176	435
76	42	109	117	143	240	177	440
77	44	110	120	144	245	178	445
78	46	111	123	145	250	179	452
79	48	112	126	146	255	180	460
80	49	113	129	147	260	181	467
81	51	114	132	148	268	182	474
82	53	115	135	149	276	183	480
83	54	116	139	150	283	184	487
84	56	117	142	151	290	185	493
85	58	118	145	152	295	186	500
86	60	119	148	153	300	187	508
87	62	120	151	154	305	188	516
88	64	121	154	155	310	189	523
89	66	122	158	156	315	190	530
90	68	123	162	157	320	191	538
91	70	124	166	158	325	192	546
92	72	125	170	159	330	193	554
93	74	126	173	160	335	194	562
94	77	127	176	161	340	195	570
95	79	128	179	162	345	196	578
96	81	129	183	163	350	197	586
97	84	130	187	164	357	198	594
98	86	131	191	165	364	199	600
99	88	132	195	166	370	200	608
100	91	133	198	167	377	201	616
101	93	134	202	168	384	202	624
102	96	135	208	169	390	203	632
103	99	136	212	170	397	204	640
		137	216	171	404	205	645
104	102	138	220	172	410	206	650
105	104	139	224	173	417	208	654
106	107	140	228	174	424	209	657
107	110	141	232	175	430	210	660

7.2 Growth/weight gain in calves Cont'd…

- If tape measuring is done correctly, the reliability is high.
- Under normal conditions keep the tape two fingers behind elbow (both sides) and don't pull (hard), just measure the girth only.
- When the calf is skinny (low BCS), the measurement must be tightened .
- When the calf is 'fat,' the measurement can be looser.
- Always use the same person to do the measurements – for consistency and accuracy purposes.



8. Growth/weight gain in heifers

January 13	February 14	March 15	April 16	May 17	June 18	July 19	August 20	September 21	October 22	November 23	December 24

- Monitor heifer's growth rate regularly.

Objective: Daily weight gain of 670 grams per day (gr/day)

Tape measuring

300 kg	310 kg	320 kg	340 kg	360 kg	380 kg	400 kg	425 kg	445 kg	470kg	490 kg	510 kg

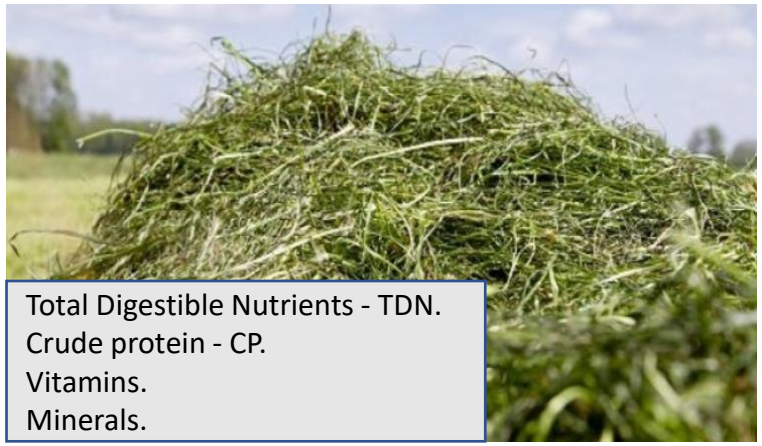
9. Feed/ration calculation

- Feeding/ration calculation is a continuous process with consequences.
- Every age group needs a different ration to accomplish objectives.

125 Kilogram

Maximum

12.5 Kgs



Total Digestible Nutrients - TDN.
Crude protein - CP.
Vitamins.
Minerals.

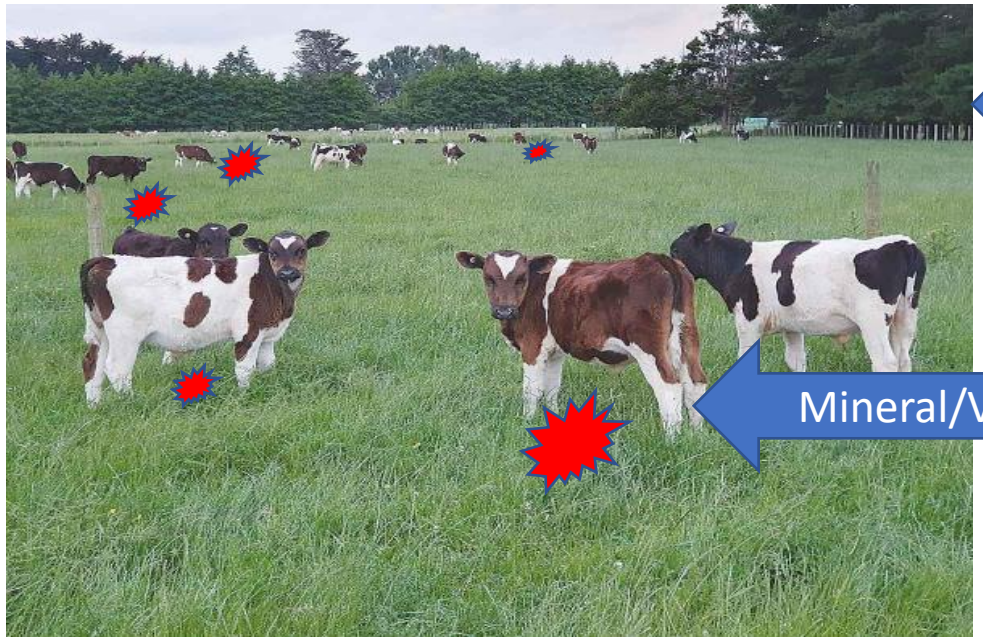
10. Minimum Energy requirements for young calves and heifers

- Desirable growth rates can only be accomplished with high quality roughage. If not available, some concentrates are advised.
- Also, in most pastures there is a shortage of vitamins and trace minerals; either a mineral supplement or some concentrates can solve this problem.

body weight	Kg TDN/day.								
	Average daily gain								
kg's	0,2	0,3	0,4	0,5	0,6	0,7	0,8	0,9	1,0
50	0,98	1,07	1,17	1,26	1,36	1,46	1,55	1,65	1,74
75	1,25	1,37	1,49	1,61	1,73	1,86	1,98	2,10	2,22
100	1,48	1,62	1,77	1,92	2,06	2,21	2,35	2,50	2,64
150	1,89	2,07	2,26	2,44	2,63	2,81	3,00	3,18	3,37
200	2,24	2,46	2,68	2,90	3,12	3,34	3,56	3,78	4,00
250	2,56	2,81	3,07	3,32	3,57	3,82	4,07	4,32	4,58
300	2,86	3,14	3,42	3,70	3,98	4,26	4,54	4,83	5,11
350	3,14	3,45	3,75	4,06	4,37	4,68	4,99	5,29	5,60
400	3,40	3,73	4,07	4,40	4,73	5,07	5,40	5,73	6,07
450	3,65	4,01	4,36	4,72	5,08	5,44	5,90	6,15	6,51
500	3,88	4,27	4,65	5,03	5,41	5,79	6,17	6,55	6,94
550	4,11	4,52	4,92	5,33	5,73	6,13	6,54	6,94	7,35
600	4,33	4,76	5,19	5,61	6,04	6,46	6,89	7,31	7,74

10.1 Minimum Energy requirements for young calves and heifers Cont'd…

- Shortage of vitamins and trace minerals in pastures can be solved by supplementing the animals with mineral supplements or some concentrates.



125 Kilogram

Mineral/Vitamin deficiencies

Red stars are a 'reliable' indication of copper shortage.

10.2 Minimum Energy requirements for young calves and heifers Cont'd…

Table: Nutrient recommendations of diet for Calf and Heifer on dry matter basis.

	Age in months		
Item	3-6 months	6-12 months	12-24 months
Body weight	200	300	400
DM intake/kg	5	7,2	11,4
ME Mcal/kg	2,05	2,27	1,80
TDN % of DM	67	65	65
Crude Protein %	16	14	12
Met Protein	7,7	7,0	5,3
ADF %	20	22	23
NDF %	30	32	33
Ether extract %	2	2	2
Calcium %	0,41	0,41	0,37
Posphorus %	0,28	0,23	0,18
Magnesium %	0,11	0,11	0,08
Chloride %	0,11	0,12	0,10
Sodium %	0,08	0,08	0,07
Potassium %	0,47	0,48	0,26
Sulphur %	0,20	0,20	0,20
Vitamine A, IU	24000	24000	36000
Vitamine D,IU	6000	9000	13500
Vitamine E, IU	240	240	240
Cobalt, ppm	0,11	0,11	0,11
Cupper,ppm	10	10	9
Iodine,ppm	0,27	0,30	0,30
Iron,ppm	43	31	13
Manganese, ppm	22	20	14
Selenium,ppm	0,30	0,30	0,30
Zinc,ppm	32	27	18

Source; adapted from feeding the dairy herd Guide Mike Hutjens 2008 NRC 2001and NRC 1989

10.3 Minimum Energy requirements for young calves and heifers Cont'd…

A free choice salt lick is vital for live stock health.

Mineral	Function	Shortage
Zinc (Zn)	Integrity of epithelial tissue Immune response Cell division and recovery Protein synthesis Vitamin A utilisation	Abnormal skin and hooves Bone and joint problems Delayed immune response Fertility problems
Manganese (Mn)	Reproduction Bone and cartilage synthesis Immune response	Poor reproductive performance Bone and joint problems Abnormal skin, hair, and hooves
Iron (Fe)	Oxygen transport Energy metabolism Immune response	Rare in adult livestock Poor appetite Heavy breathing Listlessness Delayed immune response
Copper (Cu)	Immune response Connective tissue synthesis and maintenance Reproduction Iron metabolism	Bone and joint diseases Weak hooves Early embryonic loss Retained placenta Poor hair colour
Iodine (I)	Energy metabolism Growth and development Immune response	Poor reproductive performance Poor foetus development Early embryonic loss Delayed immune response
Cobalt (Co)	Synthesis of Vitamin B_{12} Fibre digestion (fermentation)	Low levels of Vitamin B_{12} Poor body condition Poor conception
Selenium (Se)	Helps against oxidative stress Thyroid hormone metabolism Immune response	Reproduction problems Poor immunity

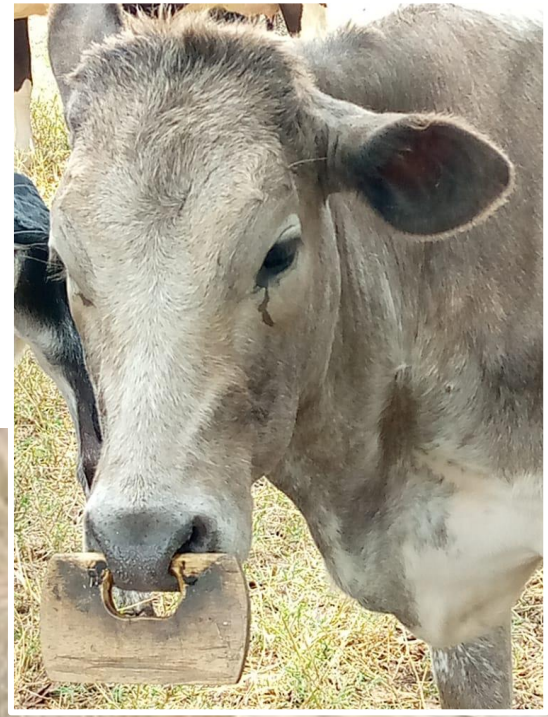
10.4 Minimum Energy requirements for young calves and heifers Cont'd…

Mineral	Function	Shortage
Calcium (Ca)	Blood clotting Activation and stabilisation of enzymes Bone and tooth formation Nerve impulses, muscle contraction, and cardiac regulation	Listlessness Weak and broken bones Slow growth Decreased milk production Hypocalcaemia
Phosphorus (Ph)	Energy metabolism Part of DNA and RNA Cell differentiation Component of cell walls and contents Plays a role in the acid–alkaline buffer systems of blood and bodily fluids	Poor appetite and listlessness Poor growth and weight loss Decreased milk production Poor reproductive performance Delayed immune response Bone disorders Pica
Potassium (K)	Maintenance of electrolyte balance Maintenance of osmotic pressure Regulation of acid–alkaline balance Enzyme activation Nerve impulses	Decreased feed and water intake Weight loss Decreased milk production Loss of hair colour and glossiness General weakening of animals
Magnesium (Mg)	Enzyme activation Gives stability to structures Necessary for the nervous system, muscle function, and bone mineral formation	Decrease in feed intake Weight loss and irritability Lack of coordination with muscle contraction and tremors Foaming around the mouth and convulsions with sudden death
Sulphur (S)	Rumen microbe protein synthesis Important for formation and maintenance of cartilage, bone, tendons, and blood vessel structures	Decrease in feed intake Poor growth and milk production Poor feed conversion ratio
Sodium (Na)	Maintains osmotic pressure and regulates the acid–alkaline balance Involved in water metabolism and the intake of nutrients	Salt cravings Poor appetite Decreased production
Chlorine (Cl)	Involved in protein digestion Maintains osmotic pressure and regulates the acid–alkaline balance Involved in water metabolism and the intake of nutrients	Decreased intake Weight loss Dehydration or constipation Pica

11. Suckling vice in heifers

This:

- Is a deviant behaviour.
- Causes mastitis.
- -/- (reduces) milk production.

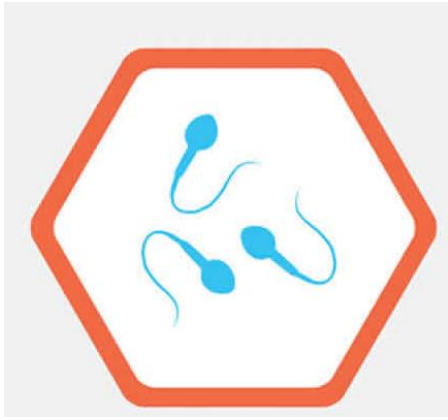


Watch video:

https://www.youtube.com/watch?v=bo03cqGK58M

12. Twins: Freemartins

- Sometimes “heifers” come in heat, but cannot become pregnant.



- Not suitable for AI.
- In case of natural mating, there are very low conception rates.

CULL!

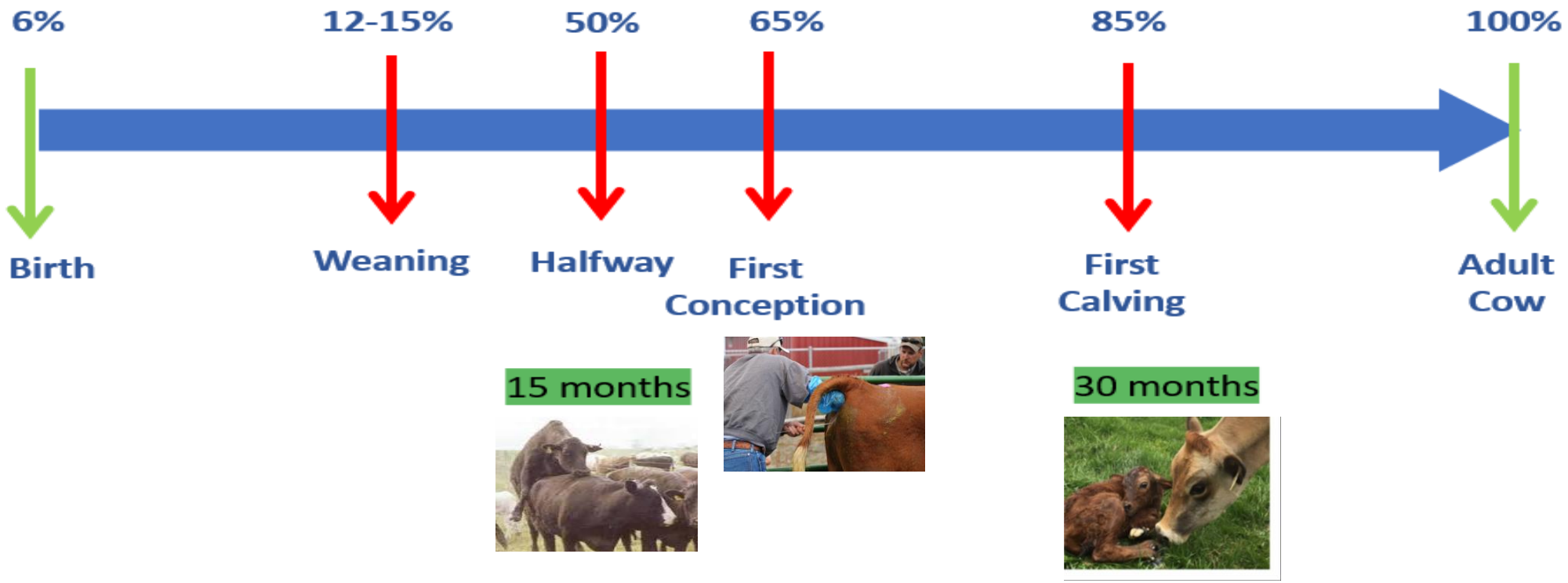
12.1 Twins: Freemartins Cont'd…

Freemartins

Bull calves have poor fertility/infertile.

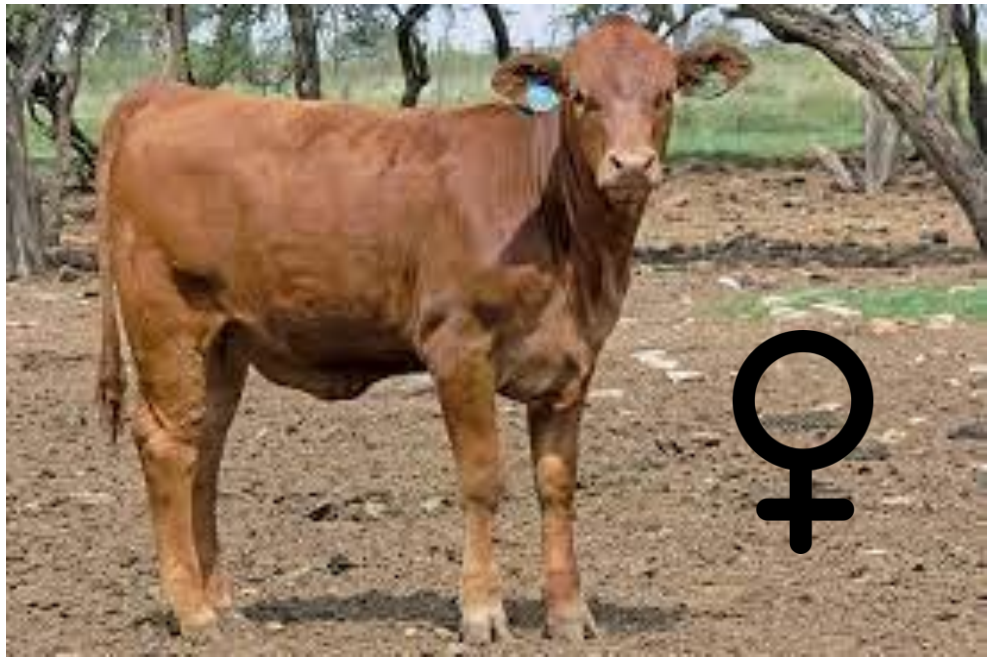
Heifer calves: 98 % deviant reproductive tract. Thickened clitoris (see pictures alongside).

13. Pathway: Growth from mating to first calving



14. Bull selection for natural mating or Artificial Insemination (AI)

Mating



Bull Selection

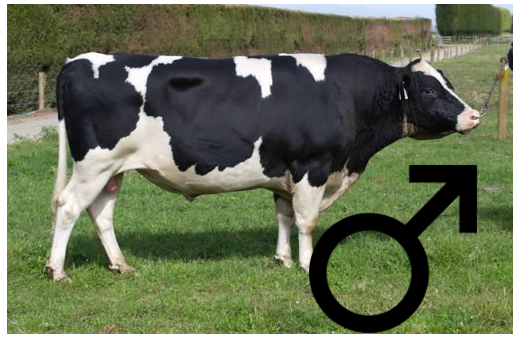
525HO00091 MALKI

04/2021	CDCB SUMMARY MACE			NM$ +76
Milk	-184	92%R	Fluid Merit $	+58
Fat	-3	+0.01%	Cheese Merit $	+84
Protein	-1	+0.02%	Grazing Merit $	+62
SCS	2.94	90%R	Gestation Len. +0	Fert. Index +0.6
PL	+2.0	90%R	Livability +2.4	Mastitis +0.5
DPR	+0.8	89%R	EFI 5.0% gEFI 5.4%	
HCR	-0.1			
CCR	-1.8		10343 Dtrs 2632 Herds 0% US	

04/2021	CALVING SUMMARY			SCE 2.4 %
Sire Calving Ease		2.4%	88%R	25885 Obs
Daughter Calving Ease		3.0%	78%R	2 Obs
Sire Stillbirth		6.3%	70%R	37408 Obs
Daughter Stillbirth		6.1%	78%R	2 Obs

04/2021	HA TYPE SUMMARY		TPI +2019
PTAT -0.69	90%R	UDC+0.00 FLC+1.14 BSC -0.14	2532 D / 781 H

			-2 -1 0 1 2
Stature	-1.69	Short	
Strength	-0.44	Frail	
Body Depth	-1.12	Shallow	
Dairy Form	-1.59	Tight	
Rump Angle	-1.19	High Pins	
Thurl Width	-0.56	Narrow	
Rear Legs-Side	-0.70	Posty	
Rear Legs-Rear	+1.05	Straight	
Foot Angle	-0.96	Low	
Feet & Legs Score	+0.74	High	
F. Udder Attachment	-0.25	Loose	
Rear Udder Height	-0.23	Low	
Rear Udder Width	-0.49	Narrow	
Udder Cleft	-0.40	Weak	
Udder Depth	-0.29	Deep	
Front Teat Placement	-1.45	Wide	
Rear Teat P. Rear	+0.19	Close	
Teat Length	+0.22	Long	



14.1 Bull selection for natural mating or Artificial Insemination (AI) Cont'd…

The very first selection criteria for an AI bull is Sire Calving Ease. Always make sure that the chosen AI bull gives either lighter calves or easy births with relative short gestation periods (< 280 days).

525HO00091 MALKI

04/2021	CDCB SUMMARY MACE			NM$ +76
Milk	-184	92%R	Fluid Merit $	+58
Fat	-3	+0.01%	Cheese Merit $	+84
Protein	-1	+0.02%	Grazing Merit $	+62
SCS	2.94	90%R	Gestation Len. +0	Fert. Index +0.6
PL	+2.0	90%R	Livability +2.4	Mastitis +0.5
DPR	+0.8	89%R	EFI 5.0%	gEFI 5.4%
HCR	-0.1			
CCR	-1.8		10343 Dtrs	2632 Herds 0% US

04/2021	CALVING SUMMARY		SCE 2.4 %
Sire Calving Ease	2.4%	88%R	25885 Obs
Daughter Calving Ease	3.0%	78%R	2 Obs
Sire Stillbirth	6.3%	70%R	37408 Obs
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04/2021	HA TYPE SUMMARY		TPI +2019
PTAT -0.69	90%R	UDC+0.00	FLC+1.14 BSC -0.14 2532 D / 781 H

			-2 -1 0 1 2
Stature	-1.69	Short	
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Udder Depth	-0.29	Deep	
Front Teat Placement	-1.45	Wide	
Rear Teat P. Rear	+0.19	Close	
Teat Length	+0.22	Long	

In case of natural mating, it is important that the gestation period of the chosen bull is (far) below the average (< 280 days).

Also beware that the gestation period of the heifer will have some impact on her calving ease. Both bull and heifer are 50% each, responsible for what will happen (easy caving - yes/no).

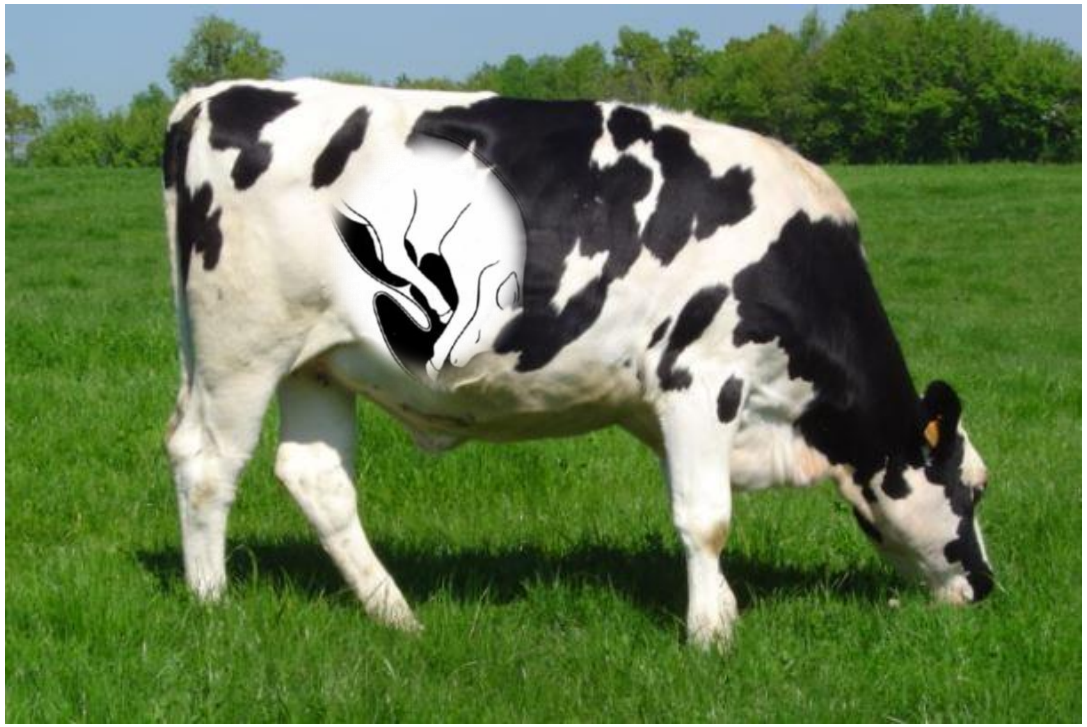
15. Pregnancy check

42 days<<<<<<<<<<<<<<<<<<<

- The moment when your heifer is confirmed pregnant, it is time to think about how to feed her especially in the last few months when foetus starts growing faster. Several adjustments in the diet are needed to maintain the heifer's growth rate.
- The Rumen 8 programme can be of great help, to prevent your future milking cow for a poor start.

15. Pregnant cow

- Pregnancy check confirms pregnancy.



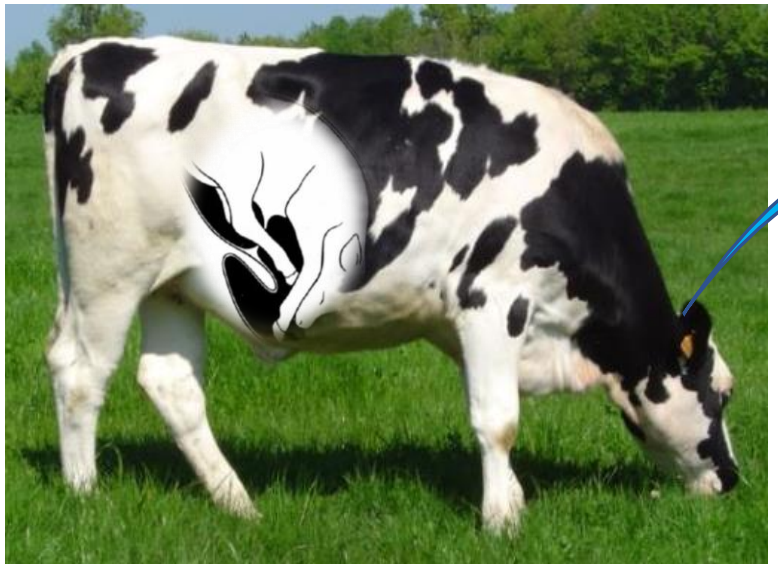
Maximum

62.5 Kgs

16. Stress prevention

- One month before the expecting calving date, the pregnant heifer moves into the milking herd to get acquainted to the new environment and to avoid various stress moments around calving.

250 days



17. Take home messages

Remember;

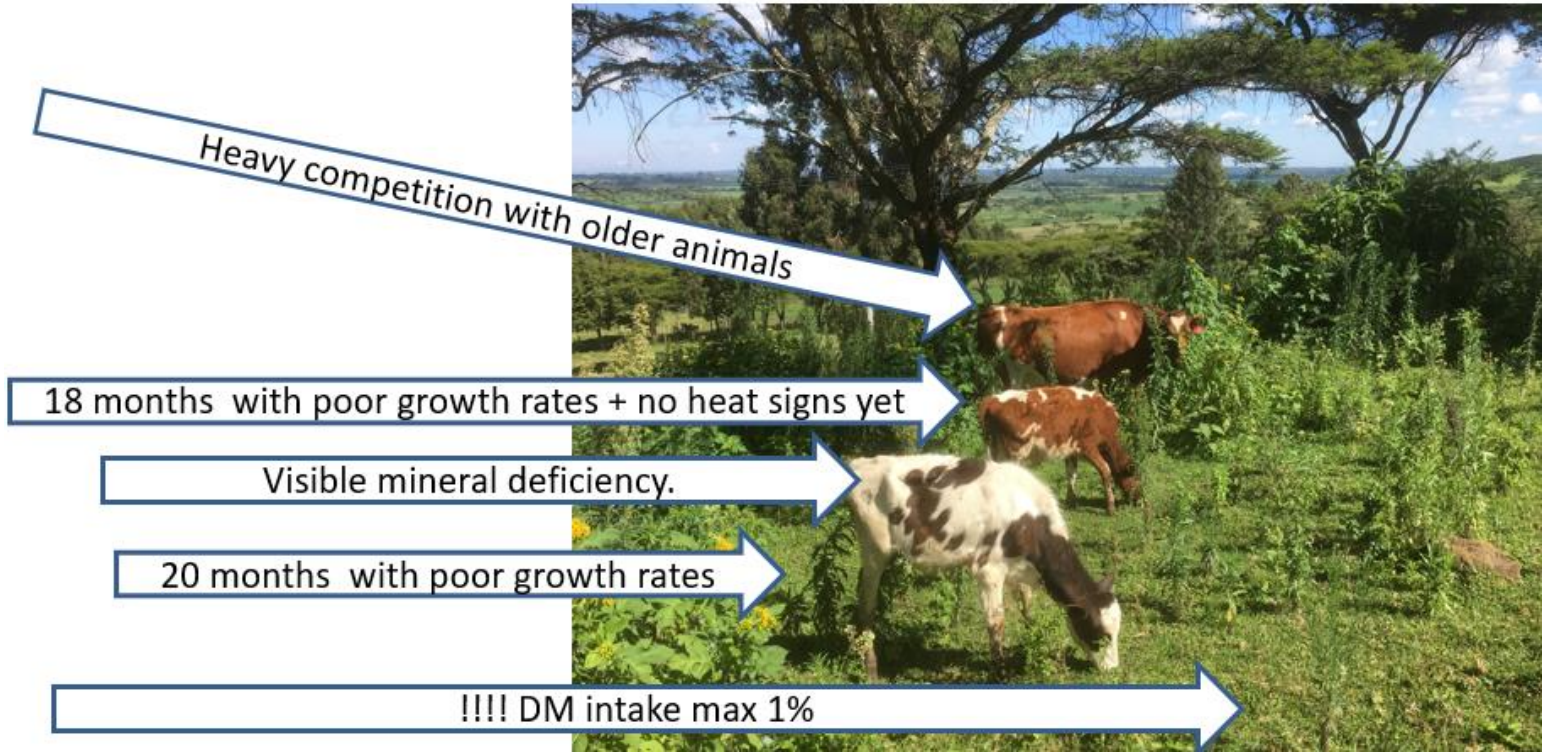
1. The calf of to day is the cow of tomorrow.
2. Seeding (rearing) must take place before harvesting (milking).
3. Youngstock rearing is very expensive.
4. Managing youngstock is an art.

NEVER allow yourself to get into this MESSY situation!

Important notes:

- ❑ The first few weeks/months are very important for a dairy animal.
- ❑ All the energy time and money that is spend during the period of birth till weaning can disappear easily in case of future poor management.

Calves that are poorly managed after weaning are disadvantaged for life.



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