Beef Herd Health

- Presented to Onderstepoort students
- 30 October 2018
- Compiled by Dr JD Cloete

Herd Health

- Customised Presentation
- Key points highlighted
- Important principles illustrated
- Starts with the calf from birth
- This presentation is merely a guideline to be used as below

- NB:
  Disclaimer: The programs illustrated herein should be completed and discussed by the trained agent or veterinarian with the beef owner to put the relevance and significance of each vaccination, deworming, dip remedy, antibiotics, growth promoters, fertility testing and nutrition program into the correct context for each specific farm and its conditions and management capabilities. The best caution possible has been used to compile this tool for the enhancement of beef production in South Africa

Cattle health program (Summer)

Disclaimer: These herd health guidelines are by no means complete. They do not contain 'everything' the cattle producer should know. There is a myriad of information which a cattle producer learns through their lives ranging from:

- Soil science
- Pasture science
- Stockmanship
- Animal physiology
- Animal production science
- Reproduction science
- Genetics
- Veterinary animal health
- Livestock marketing
- Labour management
- Financial management
- Business management
- Livestock management program
- Bio-security
- Sustainability
- Carbon footprint effect

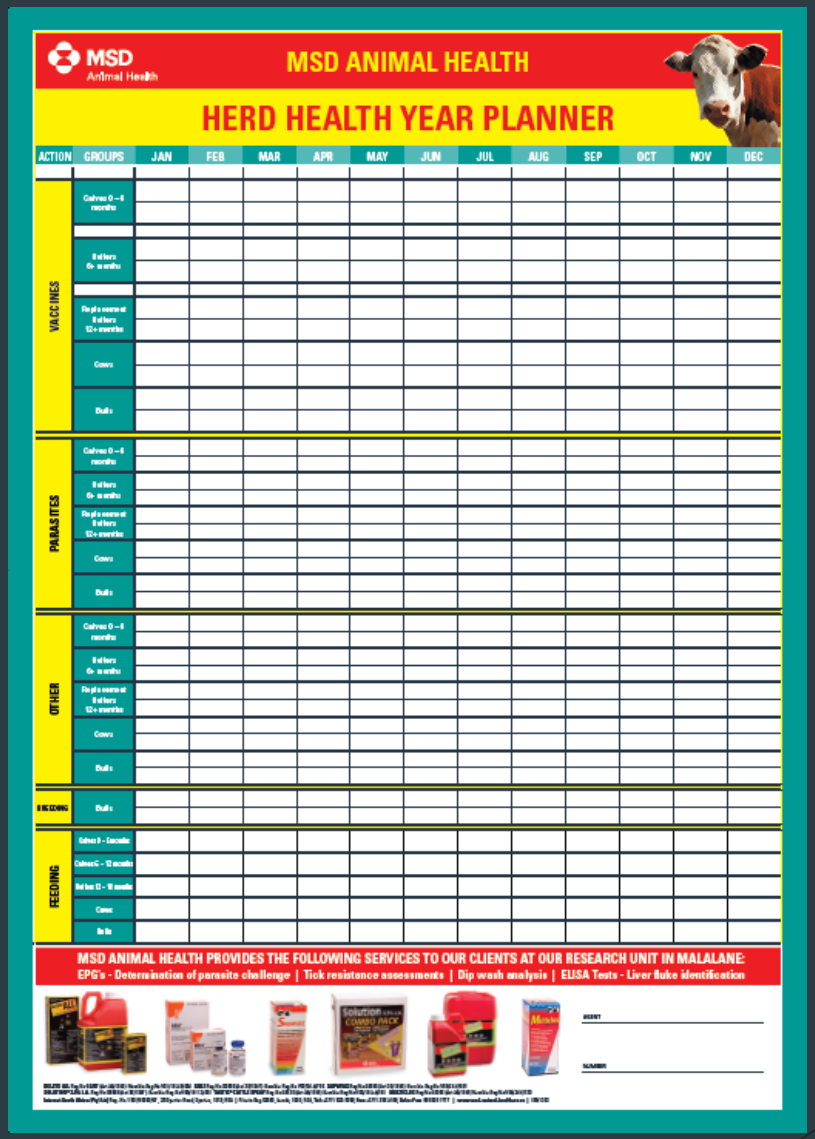
(Internal use, merely guidelines – confirm with your local veterinarian, nutritionist, animal scientist)

These guidelines are provided for MSD agents whereby certain vaccines and other products are applied at certain strategic times. Follow the product directions according to the manufacturer instructions. Reference is made to various third party publications as critical information in assisting to achieve the best possible calving %. Users of this material are referred to their consulting veterinarians, animal scientists, animal nutrionists, state vets and animal health technicians.

These guidelines are based upon late summer calving periods in Southern Africa. In this example the November to January calving season is used as a point of reference. Adjustments must be made for winter calving periods such as in the Southern & Western Cape areas.

Compiled by Dr JD Cloete, (BVSc)

Calving: Nov - Jan



MSD Animal Health

MSD ANIMAL HEALTH

HERD HEALTH YEAR PLANNER

ACTION	GROUPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
VACCINES	Calves 0 – 6 months												
	Heifers 6+ months												
	Replacement Heifers 12+ months												
	Cows												
	Bulls												
PARASITES	Calves 0 – 6 months												
	Heifers 6+ months												
	Replacement Heifers 12+ months												
	Cows												
	Bulls												
OTHER	Calves 0 – 6 months												
	Heifers 6+ months												
	Replacement Heifers 12+ months												
	Cows												
	Bulls												
BREEDING	Bulls												
FEEDING	Calves 0 – 3 months												
	Calves 6 – 12 months												
	Heifers 12 – 18 months												
	Cows												
	Bulls												

MSD ANIMAL HEALTH PROVIDES THE FOLLOWING SERVICES TO OUR CLIENTS AT OUR RESEARCH UNIT IN MALALANE:
EPG's - Determination of parasite challenge | Tick resistance assessments | Dip wash analysis | ELISA Tests - Liver fluke identification

AGENT

NUMBER

(Compiled by Dr JD Cloete, BVSc)

Sensitive periods

- Cows
- Bulls

Photos courtesy of Carla Everett /TAHC

The Texas Animal Health Commission recently approved regulations on sales of bulls to control the spread of bovine trichomoniasis. The state's two-pronged control program will first regulate interstate, and later intrastate, movement of breeding bulls.

Temperature reaction

Semen quality

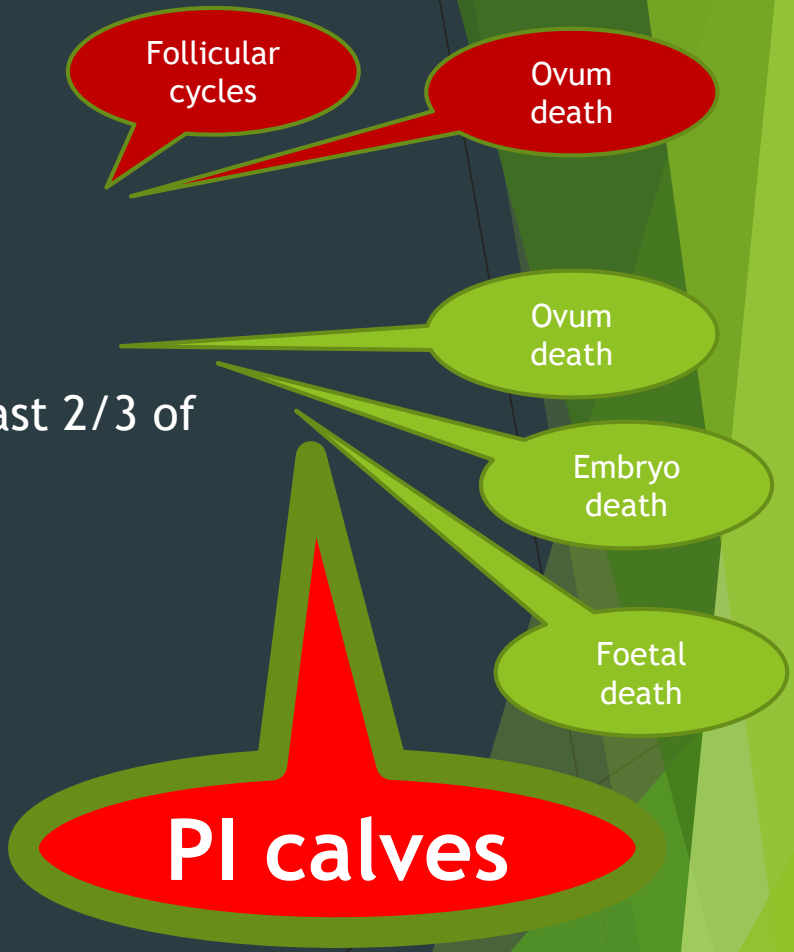
Bull fertility

Sensitive periods

- Cows
  0 – 8 weeks before mating / breeding
  0 – 3 months of pregnancy
  (still sensitive but less sensitive in the last 2/3 of pregnancy)

Photos courtesy of Carla Everett /TAHC

The Texas Animal Health Commission recently approved regulations on sales of bulls to control the spread of bovine trichomoniasis. The state's two-pronged control program will first regulate interstate, and later intrastate, movement of breeding bulls.



(Compiled by Dr JD Cloete, BVSc)

Sensitive periods

Field virus
or MLV vaccine
(modified live virus)

Temperature
reaction

- Bulls
  0 – 8 weeks before fertility tests
  0 – 8 weeks before breeding season
  0 – 12 weeks during breeding season

THINK ABOUT THE POSSIBLE EFFECT !?

(Compiled by Dr JD Cloete, BVSc)

Sensitive causes

- Live virus vaccines
- Live blood vaccines
- Nutritional disturbances
- Heat
- RB51
- Live rift valley fever can only be applied to cows in a window period 1 month after calving if it is a requirement. Thorough vaccination with rift valley vaccine 2 X in the 0 - 6+ months and the early 6 - 12 month period can be administered with a wide safety margin. This can contribute to a large degree of immune response by the vaccinated animal

Breeding season (BCS = NB)

- **Pregnancy** +/- 283 (285) days
- **Ideal calving season = 80(2) days**
  Bulls added 45-65 days after first calf born
  Bulls to be withdrawn by latest 160 days after first born calf of the season
  Ideal breeding season = 80 (82) days
  Cows that don't conceive (become pregnant) should be culled as they pull / skews the calving season to the right
- **Breeding season** 80(2) days to remain in the 365 days cycle of 1calf per year
- Can always introduce bulls a few days earlier to catch early calving cows
- Add a high nutritional value product such as a production lick for cows to allow them to reach their critical breeding weight . Cattle should be supplemented 2 – 3 months prior to the calving season

- 283(5) + 80(2) = 365 Heavier cows normally take a few days longer to reach their calving dates
  Thus add bulls already as early as 45 - 65 days after calving to get the first cows pregnant by approximately 65 to 80 days (18 to 21 + 18 to 21 to 18 to 21 days). This leaves only a second chance to get the first cows pregnant in the 365 days cycle. The majority of cows must be mated by the 2nd and 3rd heat cycle in the 80 – 82 days post calving and conceive to become pregnant to remain within the cycle. Additional nutritional support is critical to achieve this.

- Should the breeding season start too late and continue too long the following can occur:
  With the onset of a breeding season which starts 90 days after the first calving the 'cows start shifting to the right' in the breeding season and also out of the cow herd. This is especially of significance where one tries to have an **ICP (inter calving period) of 365 days** i.e. one calf per year. **This is the ideal that we strive for. To keep to this goal; the cows MUST be bred from day 65 – 80(2) after calving.**

  Remember that the most cows need 40 – 50 days to recover their uterus to the normal state post calving

  Body condition score = BCS

  BCS which is directly related to live weight with fat deposition is the most NB criteria for achieving a high conception / calving %
  See further on in the notes how this impacts on:: number of days to first heat cycle, number of heat cycles to conception, conception % in a 80 day breeding season, ICP (inter calving period)

  Conception % of cows in a time period in the breeding season should optimally be something such as:

  - 70% of cows in month 1
  - 20% of cows in month 2
  - 10% of cows in month 3

- **The conclusion** is that one does not have much time for mistakes. Cows that do not become pregnant in this period are directly to our own management capabilities. (Read the accompanying article of 'Agrilife extension' regarding pregnancies, calving periods, breeding periods. The article is from American origin but illustrates the periods concerned very well)

- **Make use of the ID tags and GMPBasic®** livestock management program to assist you with your herd's data management.

  http://www.msd-animal-health.co.za/products/intervet_id_tags
  www.gmptags.co.za

Sensitive periods

Ideal breeding:calving season – 365 day target

FIGURE 1. Length of the calving and breeding seasons and the effect of the earliness of calving on readiness to re-breed.

AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

(Compiled by Dr JD Cloete, BVSc)

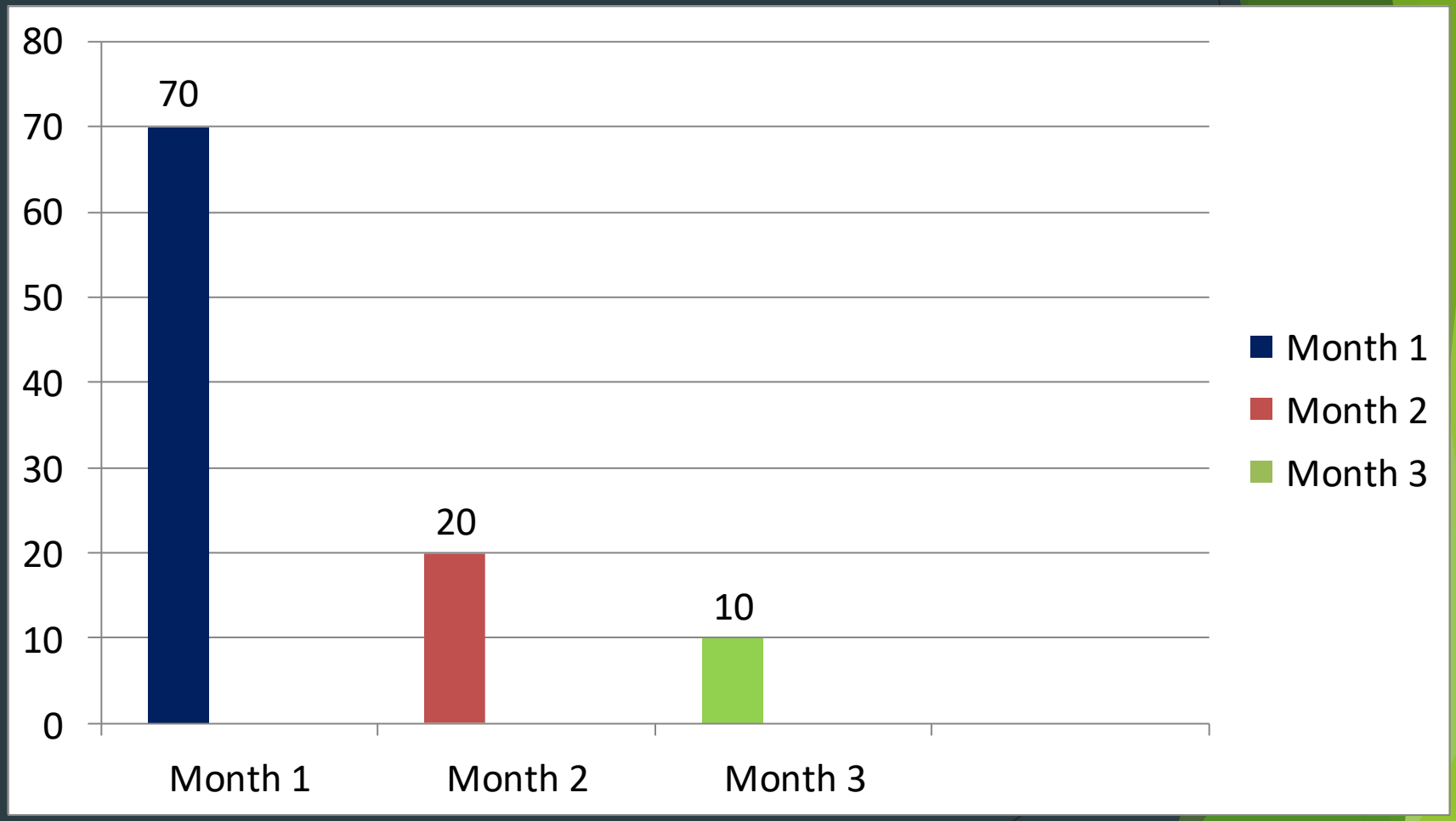
Breeding season – 70 / 30 % principle

- **Pregnancy** +/- 283 (285) days
- **Ideal calving season = 80(2) days**
  Bulls may be added 65 – 80 days after first born calf
  Bulls to be withdrawn by latest 160 days after first born calf
  Ideal breeding season = 80(2) days

  Bulls should not be allowed to serve for longer than 160 days from the date of the first born calf in the calving season. **Cows that don't conceive (become pregnant) within this period should be culled as they pull / skewer the calving season to the right. Hereby they increase the ICP (inter calving period) >>>>> .**

- http://www.msd-animal-health.co.za/products/intervet_id_tags
- www.gmptags.co.za

70 : 30 % Ratio calves born



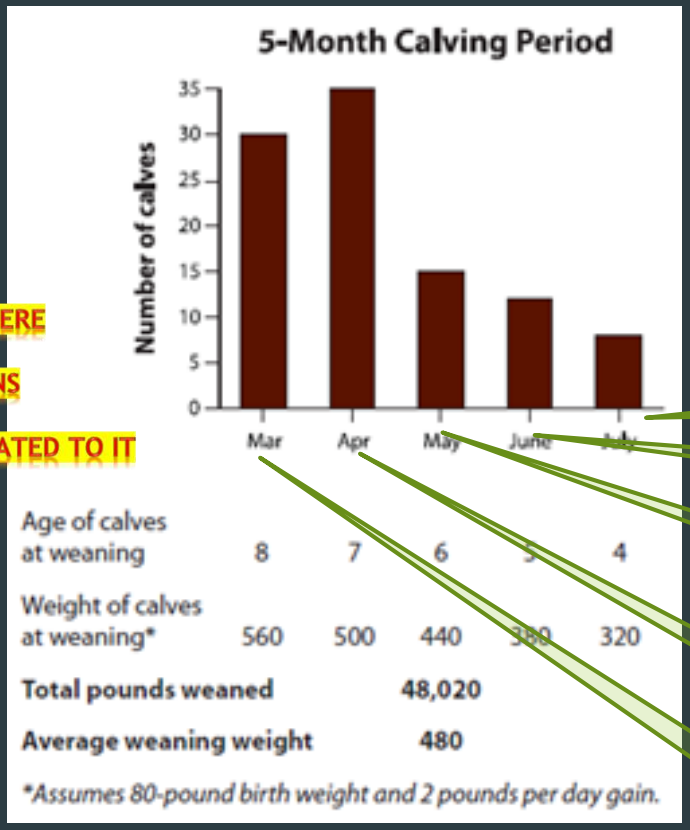
(Compiled by Dr JD Cloete, BVSc)

If No bull season……..

(Compiled by Dr JD Cloete, BVSc)

Negative effect of long calving season

IN SOUTH AFRICA - SOUTHERN HEMISPHERE
SOME OF OUR PRODUCERS
HAVE LONG SUMMER CALVING SEASONS
FROM AUG - JAN
THIS HAS ITS OWN NEGATIVE ASPECTS ASSOCIATED TO IT



Age of calves at weaning	8	7	6	5	4
Weight of calves at weaning*	560	500	440	380	320
Total pounds weaned			**48,020**		
Average weaning weight			**480**		

*Assumes 80-pound birth weight and 2 pounds per day gain.

DIVIDE THE POUNDS WEIGHT
BY 2.2 TO CONVERT IT TO KG WEIGHT

Mar
Feb
Jan
Dec
Nov

AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

A fixed Bull/breeding season

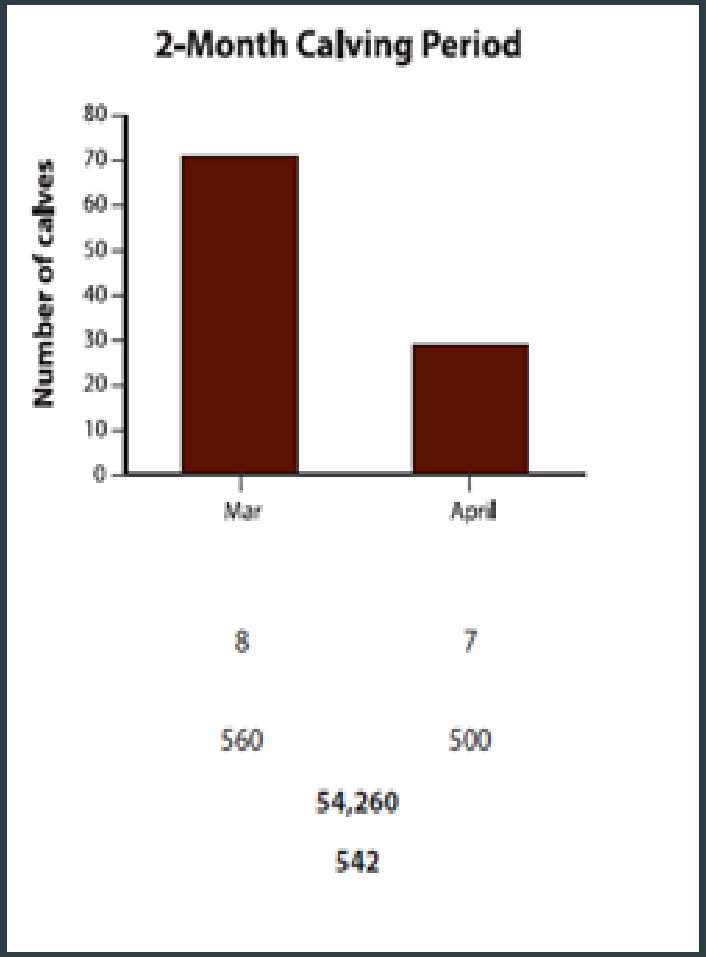
80 – 82 days

Photos courtesy of Carla Everett /TAHC

The Texas Animal Health Commission recently approved regulations on sales of bulls to control the spread of bovine trichomoniasis. The state's two-pronged control program will first regulate interstate, and later intrastate, movement of breeding bulls.

(Compiled by Dr JD Cloete, BVSc)

Short calving (AI + Bulls) - positive effect



DIVIDE THE POUNDS WEIGHT BY 2.2 TO CONVERT IT TO KG WEIGHT

Age of calves at weaning	8	7
Weight of calves at weaning*	560	500
Total pounds weaned	54,260	
Average weaning weight	542	

*Assumes 80-pound birth weight and 2 pounds per day gain

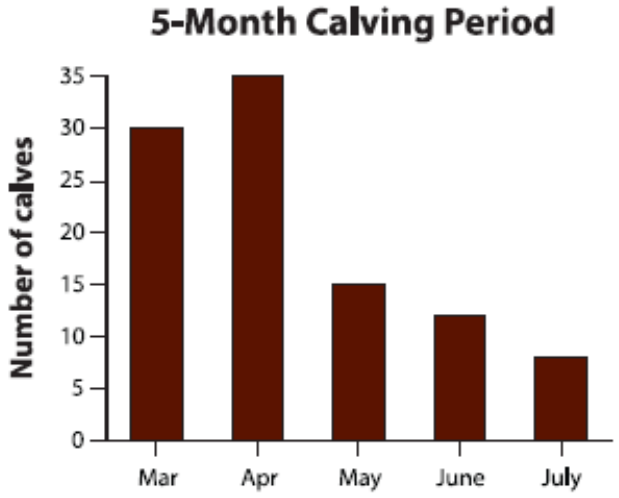
AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

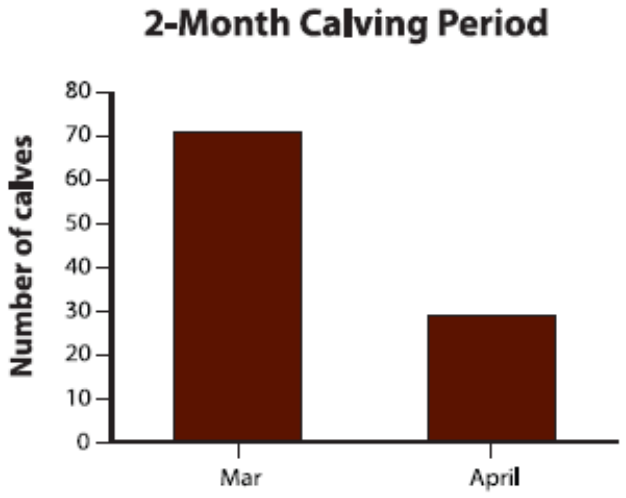
In S.A. a short calving (AI + Bulls) – positive effect

- 80 days (approx. 3 Month period)
- Reduces management effort
- Groups calf weaning weights
- Better marketable batch sizes
- Improves weaning weight
- Reduces transport costs to auctions
- Reduces handling
- Reduces stress

(Compiled by Dr JD Cloete, BVSc)

70 : 30 % Ratio calves born





Age of calves at weaning	8	7	6	5	4	8	7
Weight of calves at weaning*	560	500	440	380	320	560	500
Total pounds weaned			**48,020**			**54,260**	
Average weaning weight			**480**			**542**	

**Assumes 80-pound birth weight and 2 pounds per day gain.*

DIVIDE THE POUNDS WEIGHT
BY 2.2 TO CONVERT IT TO KG WEIGHT

FIGURE 3. Effect of length of calving period on total and average pounds of calves weaned in a 100-cow herd.

AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

IN SOUTH AFRICA - SOUTHERN HEMISPHERE
OUR SUMMER CALVING SEASON IS FROM AUG - JAN

Breeding season - A

- **Pregnancy** +/- 283 (285) days
- **Ideal calving season = 80 (82) days**
  Bulls added 60 - 80 days after first calf born
  Ideal breeding season = 80 (82) days
- The bulls should be removed no later than 160 days after the first calf is born
- Cows that don't conceive (become pregnant) within 160 days from date of the first calf born should be considered for culling as they prolong the calving season to the right of the calving calendar
- http://www.msd-animal-health.co.za/products/intervet_id_tags

  www.gmptags.co.za

Breeding season - B

- **Breeding season** 80(2) days to remain in the 365 days cycle of 1 calf per year
- Can always introduce bulls a few days earlier to catch early calving cows
- Add a high nutritional value product such as a production lick for cows to allow them to reach their critical breeding weight. Can be supplemented in the 2 – 3 months before the calving season

- http://www.msd-animal-health.co.za/products/intervet_id_tags

  www.gmptags.co.za

Breeding season - C

- 283(5) + 82 = 365 (Heavier cows normally take a few days longer to reach their calving dates
  Thus add bulls already as early as 60-80 days after calving to get the first cows pregnant by approximately 80 days (60 + 21 =81d + 21 = 102d and 21 = 123 days) after breeding date. 123 days to pregnancy post calving already extends beyond a 365 day ICP.
  This leaves only a second chance to get the first cows pregnant in the 365 days cycle. The majority of cows must be mated with the 2nd heat cycle in the 80 – 82 days post calving and conceive to become pregnant to remain within the cycle. Additional nutritional support is critical to achieve this.

- A cow that conceives on day 117 after calving will potentially shift out by 117 – 80 = 37 days in the first year. If she repeats this over 3 years she will have become a late calver and be destined to be culled early on in the 80 day system. Her breeding season will continually shift to the right of the year calendar until she shifts right out of the ideal breeding season and is eventually culled. It is not the cow's fault but that of the manager / owner. BCS and nutrition is something that the manager can rectify timeously if they are using live body weight records and BCS to manage the female animals for the most optimum reproduction and production levels.

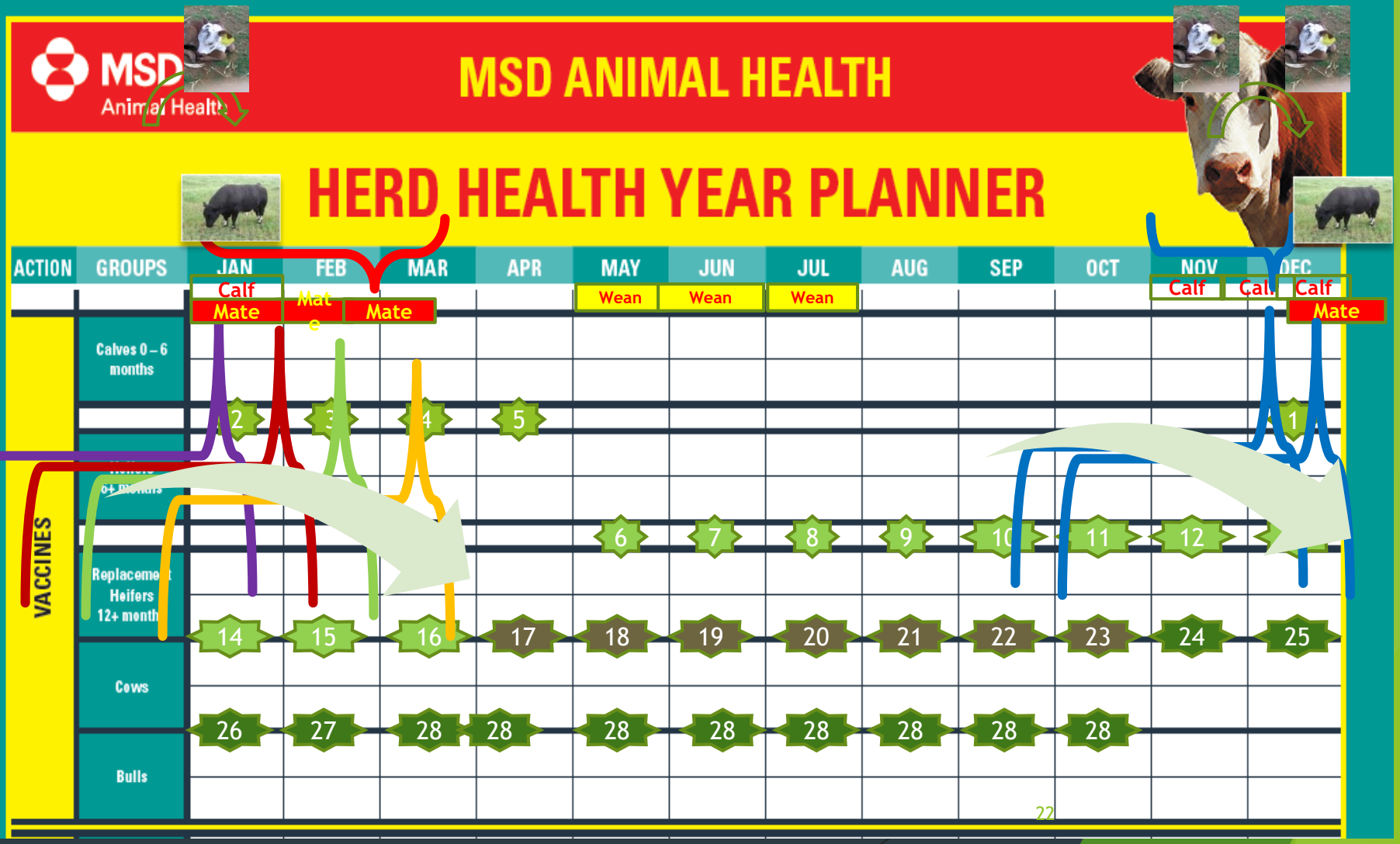
- Such an example is illustrated on the next slide. Such a herd will have a high heifer replacement % and be a relatively young herd.

- The cost of replacing her is expensive as she has not had sufficient time to justify her ROI (return on investment). She will also reduce the ROI average of the herd. The more such cows that are in the herd due to poor nutritional management, the less profitable the herd becomes.

  There are three major causes of unacceptable ROI figures:

  - **Conception / pregnancy %**
  - **ICP = Inter calving period**
  - **Low average weaning weights**

BCS:ICP effect on Breeding season shift



(Compiled by Dr JD Cloete, BVSc)

Breeding season - D

- ***Should the breeding season start too late and continue too long the following can occur:***

With the onset of a breeding season which starts 90 days after the first calvings the 'cows start shifting to the right' by 8 days a year in the breeding season and also out of the cow herd. **Within 4 years she has potentially drifted 32 days to the right = 8 x 4**
This is especially of significance where one tries to have an **ICP (inter calving period) of 365 days** i.e. one calf per year. **This is the ideal that we strive for. To keep to this goal; the cow MUST be bred from day 60 - 80(2) after calving.**

Do NOT keep moving the breeding season left (earlier) for the early calving cows as this will have a similar effect in lengthening the breeding / calving season and complicating a simplistic calendar plan for . This allows early calving cows more time to regain their BCS post calving

Remember that the most cows need 45 – 53 days for their uterus to recover to the normal post calving status. This is also directly related to a good BCS of about 3- 4.5 out of a 5 BCS

Breeding season - Duration

AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

BCS critical to get cows pregnant in 80/82 days post calving

- Early calving cow must be pregnant 80/82 days after calving
- 80 breeding days in total for ALL
- Don't get caught with poor condition cows drifting for >>>> 80 days after calving to conception

- This means the first calvers must already be mated between days 60 – 80 post calving the first time and maximally by day 80/82 after calving
- This means that if she is not pregnant by day 3 of the indicated 80 day cycle, she will already start to 'shift/drift' to the right of the breeding calendar
- What does this mean in regards to rainfall seasons and such ?
- **It means that BCS is the MOST critical component**
- It also means that producers MUST start supplementing their cows timeously with a 'Production lick' With this is meant a lick supplement that has a higher content of energy and 'protein', often increased NPN's to be able to achieve this. **Cows must receive an adequate energy/protein lick (production lick) 2-3 months before calving in order to calve at the right BCS.**
- Hence the reason for allowing first calvers a few days grace to conceive earlier if their conditions allow for it.
- Their calves are processed with the majority of calves born in the first full month of the calving season when these are at 3 months of age

(Compiled by Dr JD Cloete, BVSc)

Don't get caught with poor BCS cows

Pregnancy (D)	PPI to heat 1 (D)	PPI to heat 2	PPI to heat 3	PPI to heat 4
283	45			
283		65		
283			86	
283				107
	= 328 (<37)	= 348 (<17)	= 369 (>4)	= 390 (>25)

Involution to first heat cycle ?
>>>>>>>>>>>>>>>>>>>>>

BCS (Body condition scoring)

- The USA uses a BCS scale of 1 – 9
- **South Africa & Canada use a scale of 1 - 5**
- Practically in USA literature one needs to divide the USA BCS by 2 to have the equivalent S.A. BCS measurement
- A livestock scale and a computer system is still the best tool to assist for the best measurements for management purposes.

(Compiled by Dr JD Cloete, BVSc)

BCS (Body condition scoring)

BCS is SUBJECTIVE !!
Not as accurate as weighing
Use the 2 together

(Compiled by Dr JD Cloete, BVSc)

Heat Cycle vs BCS : Days post calving

Table 4. Percent of cows cycling at 60 and 90 days post calving based on their BCS at calving.

	Days after Calving	
BCS at calving (USA scale)	**60**	**90**
1 – 4 (1.5 - 2)	46%	66%
5 – 6 (2.5 - 3)	61%	92%
7 – 9 (3.5 - 4.5)	91%	100%

Table 4 shows that 92% of cows at BCS 5 to 6 at calving, are cycling by 90 days post-calving whereas only 66% of the cows at BCS 1 to 4 were cycling by 90 days after calving. Even though there were more cows cycling at BCS 7 to 9, there is some evidence in work done by Meaker that conception rates are lower in these heavier cows. It is also more costly to keep cows in that heavier condition.

Johns and Ely (98) reported similar results in a study comparing BCS at calving and the post partum interval. Table 5 depicts the pertinent observations. Cows cycled sooner after calving if they calved in good body condition.

Cycling = cows coming on heat with or without a quality egg release (ovulation)

- **STRATEGIC FEEDING OF BEEF COWS,** Dennis Lunn, Brian Tarr, Ruminant Nutritionists
- Shur-Gain, Nutreco Canada Inc.

BCS critical to get cows pregnant in 80/82 days post calving

AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

FIGURE 1. Length of the calving and breeding seasons and the effect of the earliness of calving on readiness to re-breed.

- Beware
- 80 breeding days in total for ALL
- Don’t get caught with poor condition cows drifting for > 80 days after calving to conceive
- See the information further on regarding BCS, Fat coverage, days to conception and related

Breeding season - E

- Ideal Conception % of cows in a time period in the breeding season:

  - 70% of cows in month 1
  - 20% of cows in month 2
  - 10% of cows in month 3

- **The conclusion** is that one does not have much time for mistakes. Cows that do not become pregnant in this period are directly to our own management capabilities.
  (Read the accompanying article of 'Agri life extension' regarding pregnancies, calving periods, breeding periods. The article is from American origin but illustrates the periods concerned very well)

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BCS ratio vs PPI cycling %

- BCS at calving (BCS = body condition scoring)
- PPI (post partum interval)

Johns and Ely (98) reported similar results in a study comparing BCS at calving and the post partum interval. Table 5 depicts the pertinent observations. Cows cycled sooner after calving if they calved in good body condition.

Table 5. Post partum interval (PPI) at different BCS at calving.

BCS at calving (USA scale)	≤ 4	≥ 5
PPI (days)	61	49

2

2.5

The positive relationship between BCS at calving, the length of anestrus and pregnancy rate emphasizes the importance of this parameter in determining the success of the beef cow herd. Body condition scoring is a practical way of monitoring the nutritional (particularly energy) status of cows. This is a valuable tool in helping to optimize reproductive performance.

- **STRATEGIC FEEDING OF BEEF COWS,** Dennis Lunn, Brian Tarr, Ruminant Nutritionists
- Shur-Gain, Nutreco Canada Inc.

Breeding season - 80 Days

- Beware, even this breeding season starts too late: **80(2) + 283(5) = 365**

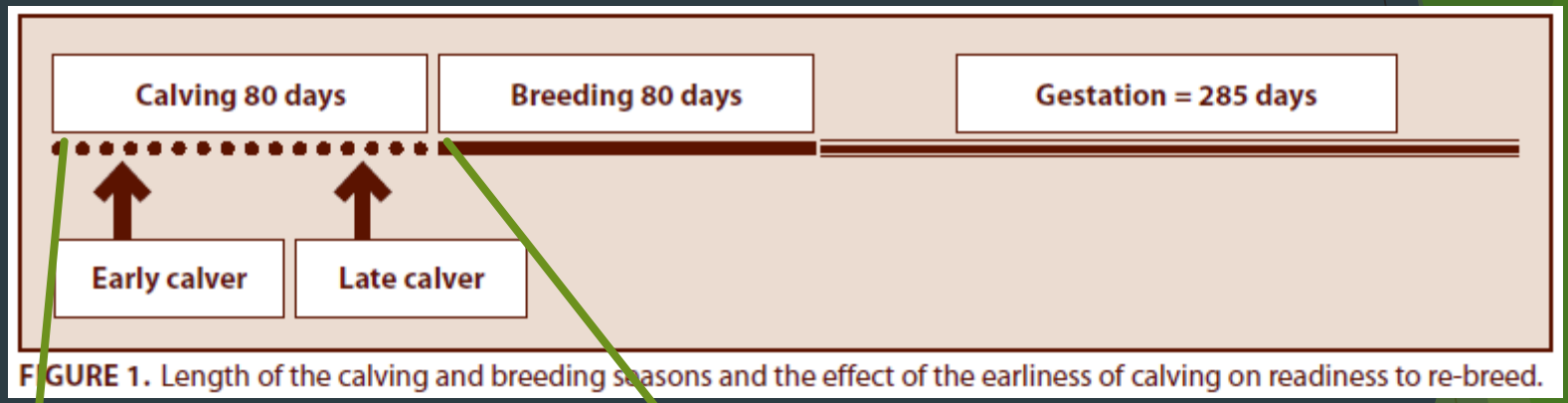


FIGURE 1. Length of the calving and breeding seasons and the effect of the earliness of calving on readiness to re-breed.

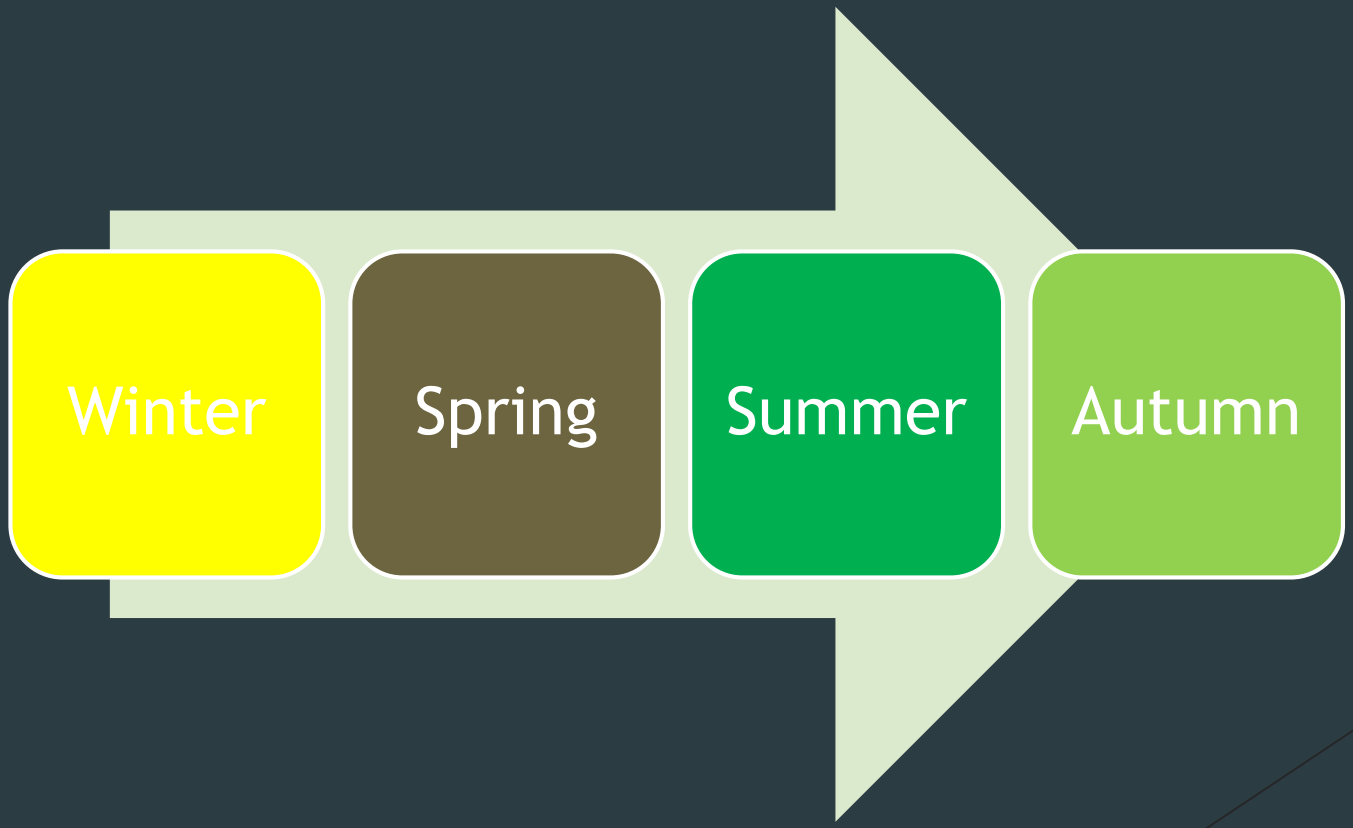
- 70% of cows in month 1
- 20% of cows in month 2
- 10% of cows in month 3 (80days maximum)

Nutrition & fodder flow planning

- The main influencer of a cow herd's reproduction capacity
- The producer who does not measure, evaluate and make and implement actions does not know what they are 'losing'
- In this program nutrition is applied at strategic times to adjust to the specific nutritional requirements which may produce the most cost effective opportunities for the maximum (optimal) pregnancy and calving percentages
- Weaning weights which drastically affect profitability may also be addressed correctly
- Discuss with your consulting nutritionist

(Compiled by Dr JD Cloete, BVSc)

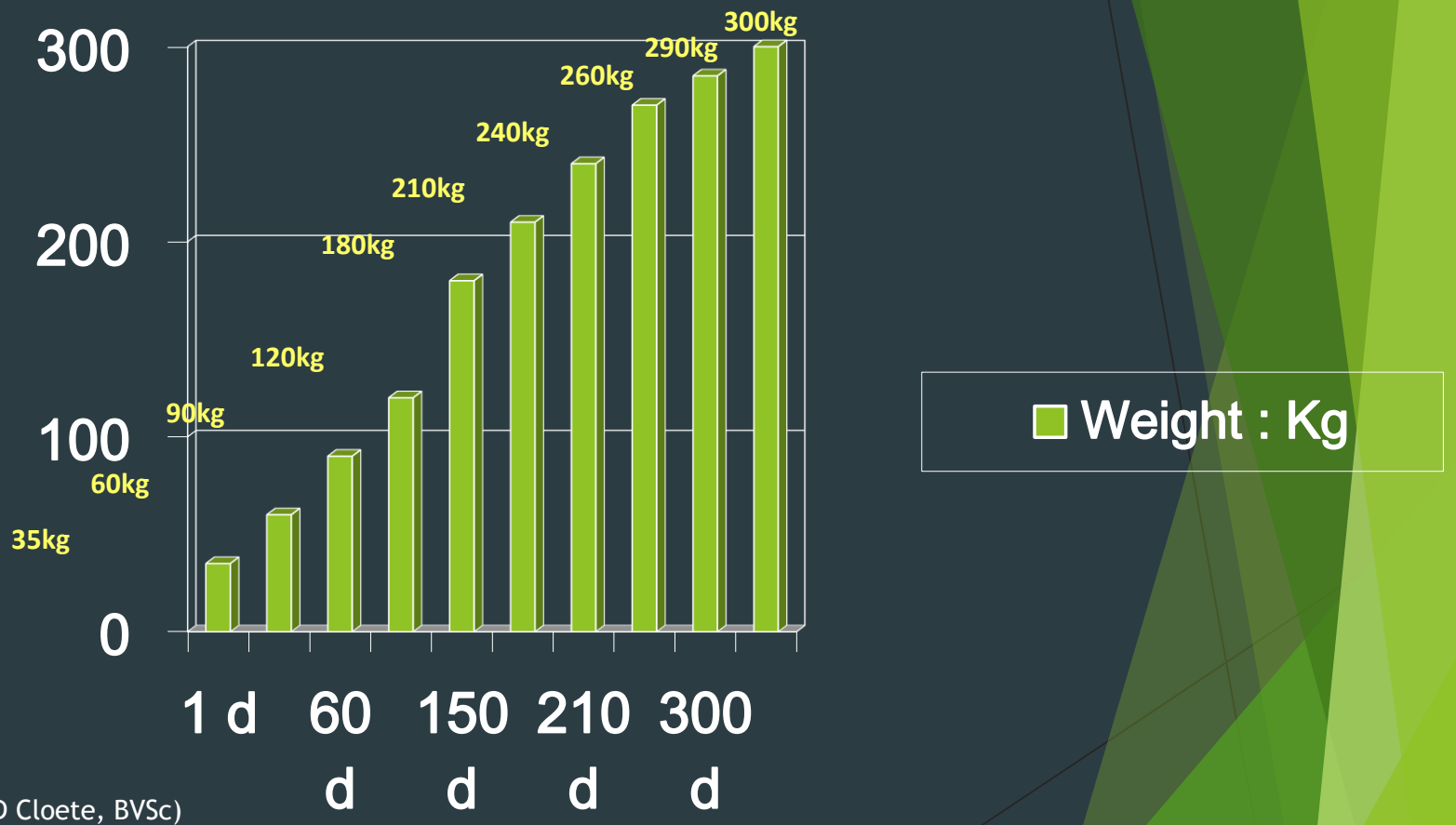
Nutrition & fodder flow planning



(Compiled by Dr JD Cloete, BVSc)

Cattle - Growth & General Factors
Typical example of monthly bodyweight gains (best case scenario)

Begin
Parasites
Implants
Breeding
Nutrition
Vaccines
MSD index



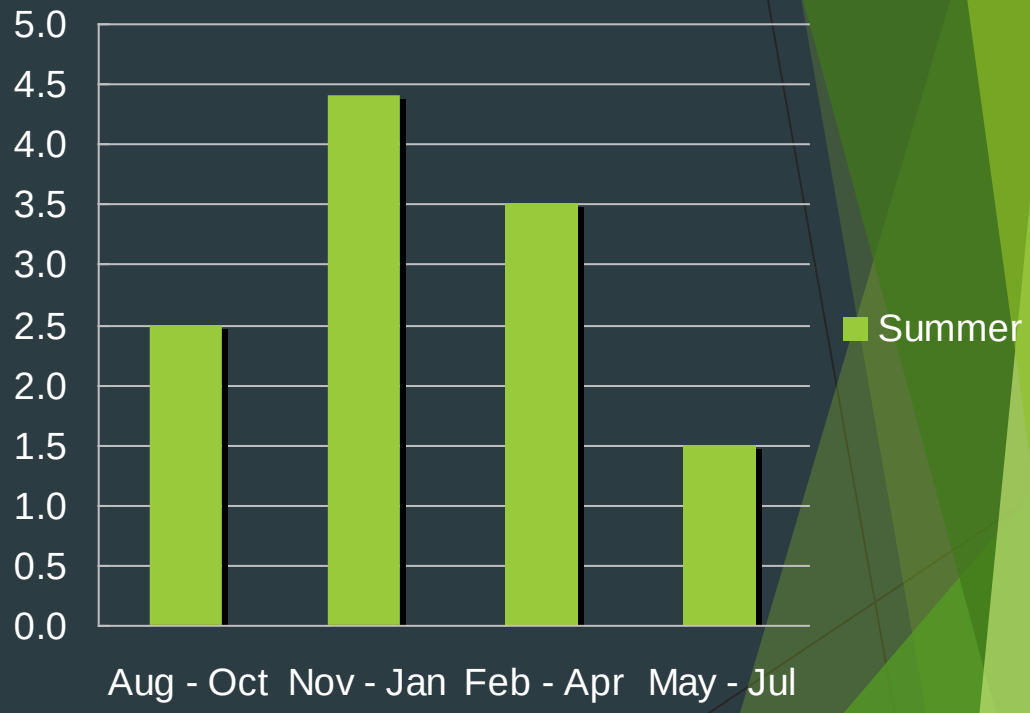
(Compiled by Dr JD Cloete, BVSc)

Cattle – working on an assumptive potential of 750g - 1 kg ADG (average daily gain) for calves till approximately 13 months of age with sufficient QUALITY roughage and supplemental feeding

Breeding guidelines
Traceability
GMPBasic

Typical Summer Rainfall region scenario
Grass Growth & Reserves: Wet & Dry Material

- Aug – Oct, Early Rain
- Nov – Jan, summer rain
- Feb – Apr, late summer rain
- May – Jul, dry winter



(Compiled by Dr JD Cloete, BVSc)

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Lifetime ROI

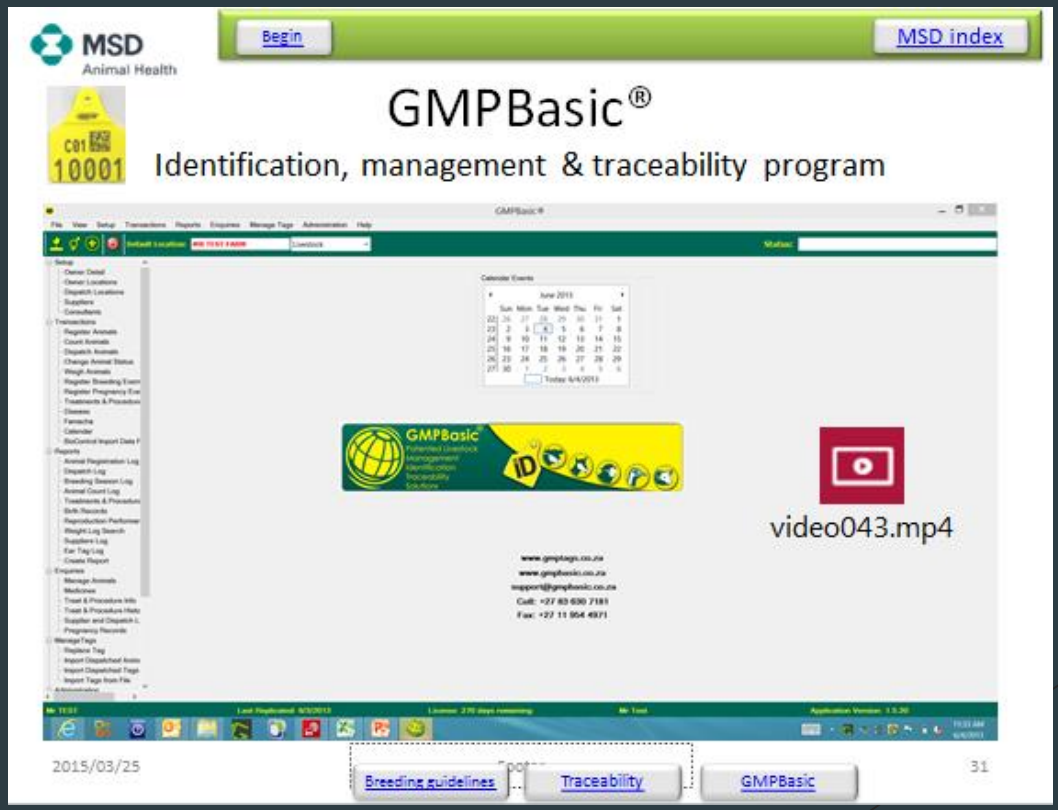
TABLE 1. Lifetime return on investment per female as affected by earliness of calving as a 2-year-old.

	Calving in:			
	1st 21 days	2nd 21 days	3rd 21 days	4th 21 days
Herd 1	14.8%	10.4%	4.7%	8.6%
Herd 2	(-3.2%)	(-10.3%)	(-12.4%)	(-11.2%)
Herd 3	9%	(-13%)	(-16%)	(-9%)
Herd 4	18%	9%	3.6%	(-10%)
Herd 5	14.7%	2%	6%	6%

Data taken from five commercial herds made up of approximately 1,500 cows that calved annually throughout their lives.
From L.R. Sprott

AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

Record keeping of data:
- GMPBasic software
- www.gmptags.co.za



(Compiled by Dr JD Cloete, BVSc)

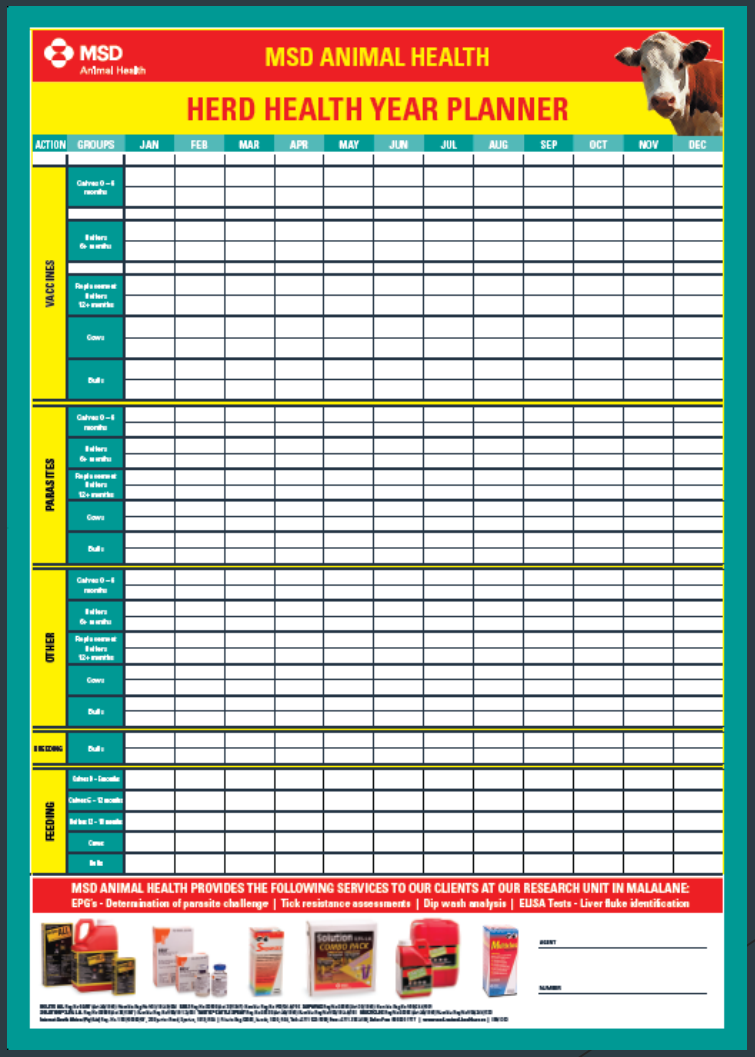
MSD index

- Split the program
- Action groups
- Months
- Vaccines
- Parasites
- Antibiotics / implants
- Breeding
- BCS & conception
- Basic breeding guidelines
- BCS (body condition scoring)
- Nutrition
- Pasture management

- Agent details
- GMP
- System ear tags
- GMPBasic
- Traceability (Brucellosis, TB, BVD etc.)

(Compiled by Dr JD Cloete, BVSc)

Split the program



MSD Animal Health

MSD ANIMAL HEALTH

HERD HEALTH YEAR PLANNER

ACTION	GROUPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
VACCINES	Calves 0 – 6 months												
	Heifers 6+ months												
	Replacement Heifers 12+ months												
	Cows												
	Bulls												
PARASITES	Calves 0 – 6 months												
	Heifers 6+ months												
	Replacement Heifers 12+ months												
	Cows												
	Bulls												
OTHER	Calves 0 – 6 months												
	Heifers 6+ months												
	Replacement Heifers 12+ months												
	Cows												
	Bulls												
IF NECESSARY	Bulls												
FEEDING	Calves 0 – 6 months												
	Calves 6 – 12 months												
	Heifers 12 – 18 months												
	Cows												
	Bulls												

MSD ANIMAL HEALTH PROVIDES THE FOLLOWING SERVICES TO OUR CLIENTS AT OUR RESEARCH UNIT IN MALALANE:
EPG's - Determination of parasite challenge | Tick resistance assessments | Dip wash analysis | ELISA Tests - Liver fluke identification

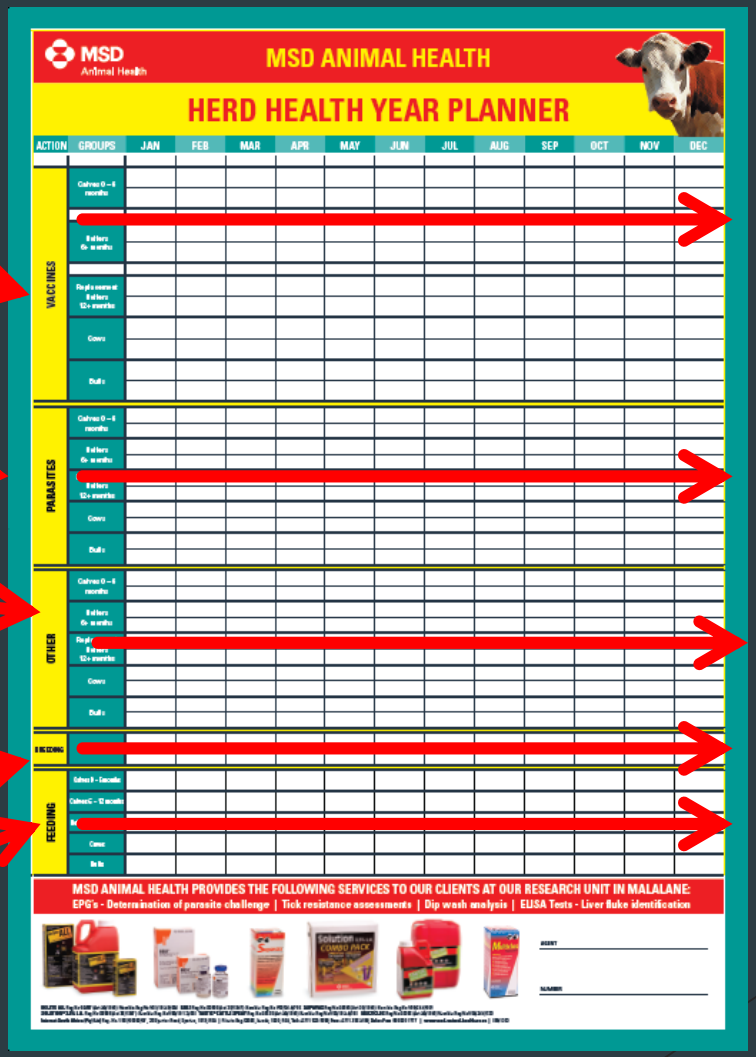
AGENT _____

NUMBER _____

(Compiled by Dr JD Cloete, BVSc)

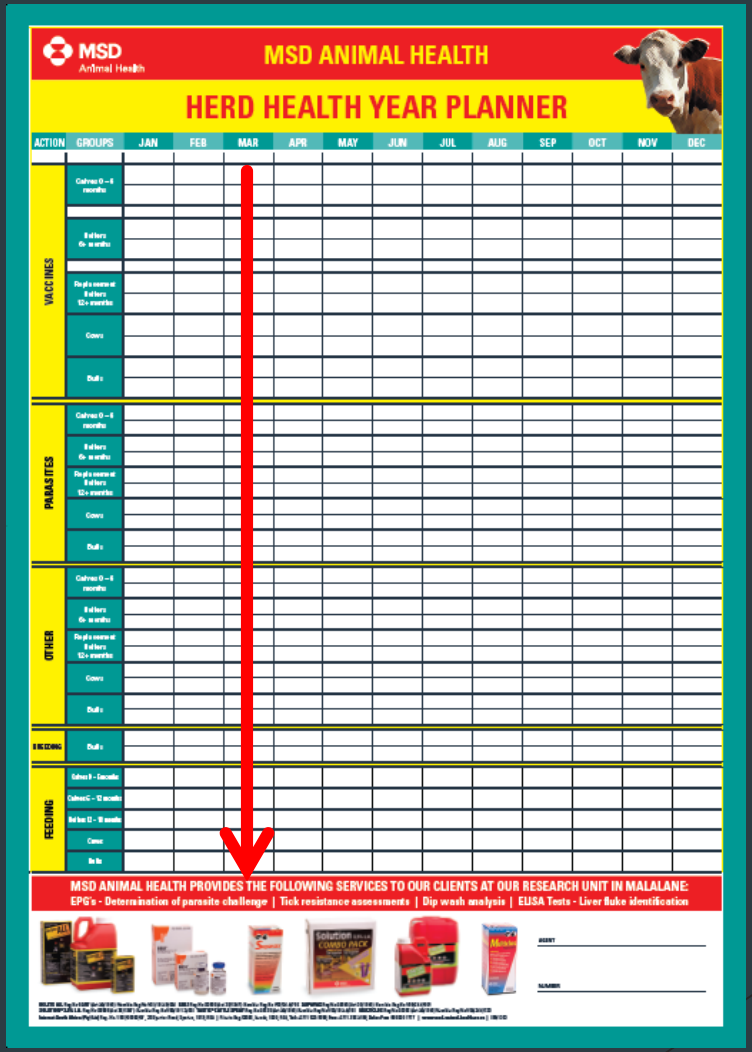
Action Groups (5)

1. Vaccines
2. Dip & Dose
3. Antibiotics (Implants), Minerals and Vitamins
4. Breeding & procedures
5. Nutrition



(Compiled by Dr JD Cloete, BVSc)

Months (12)



(Compiled by Dr JD Cloete, BVSc)

Age Groups (5)

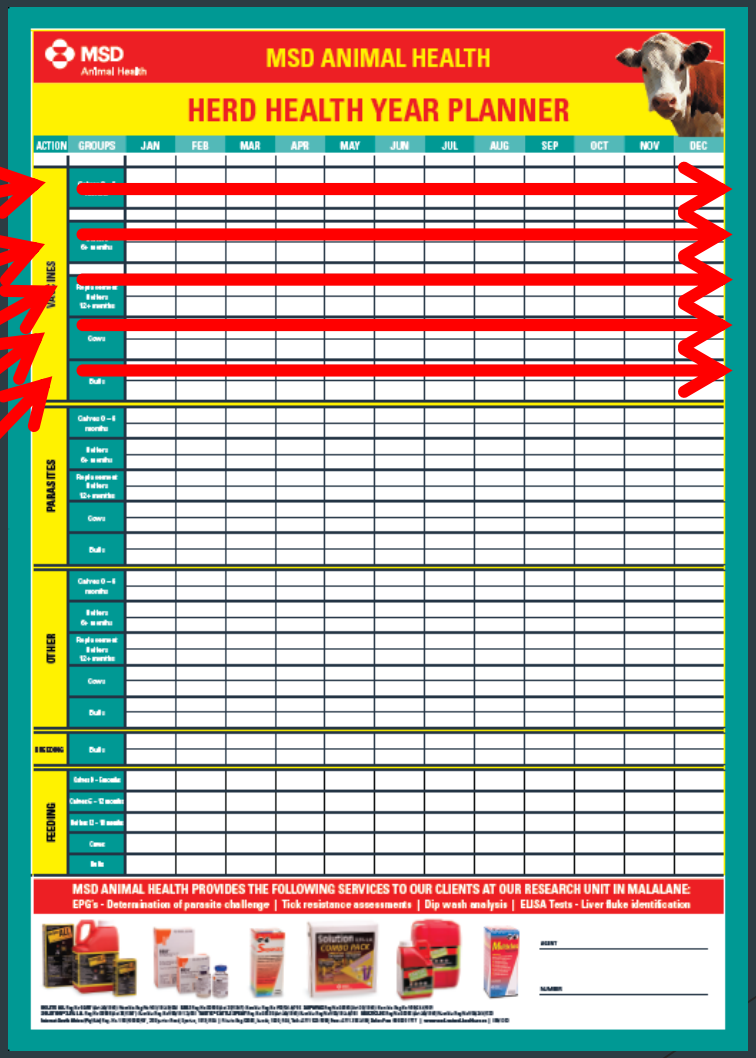
Calves

Heifers

Replacement heifers

Cows

Bulls

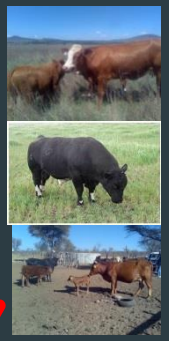


(Compiled by Dr JD Cloete, BVSc)

Virus shedding

Breeding season ?

- 2 – 6 months old Calves
- Cows Heifers Bulls
- Viraemia
  - Temp Reaction
  - Semen ? Ovum ? Embryo ? Fetus ?



(Compiled by Dr JD Cloete, BVSc)

Vaccines






MSD Animal Health

MSD ANIMAL HEALTH

HERD HEALTH YEAR PLANNER

ACTION	GROUPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		Calf										Calf	Calf
		Mate	Mate	Mate		Wean	Wean	Wean					Mate
VACCINES	Calves 0 – 6 months	Heartwater	Redwater Blood Respiravax	RVF Respiravax	3 DSS Botuthrax/ Covexin 10	Galsickness Blood						Heartwater	Heartwater
		2	3	4	5	CA 4 – 8m				Bovilis S Rotavec Corona			1
	Heifers 6+ months					Botuthrax / Covexin 10 Lumpyvax		RB51		RB51	Bovilis S Rotavec Corona		
						6	7	8	9	10	11		
	Replacement Heifers 12+ months	Trich/Vib/ Lepto	Respiravax			Botuthrax / Covexin 10 Lumpyvax						RB51	Trich/Vib/ Lepto
		14	15	16	17							12	13
	Cows		Respiravax			Botuthrax / Covexin 10 Lumpyvax				Bovilis S Rotavec Corona			Trich/Vib/ Lepto
						18	19	20	21	22	23		
	Bulls		Respiravax		3 DSS	Botuthrax / Covexin 10 Lumpyvax		RVF					
												24	25

RB51 only for young non-pregnant heifers. For older non-pregnant cows where an infected brucellosis herd exists or an infected neighbouring farm (NOT for male animals !!) - JC

XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX

** In this period we do not want to treat cows / bulls with a live virus / blood vaccine !! - JC

Enteric diseases (Gut health)

NOTE:

- These are the only vaccinations that we ideally would like to administer to the cow prior to calving. Primer and booster vaccinations apply to these dead vaccines
- This provides maximum colostrum IgG antibodies
- Cow / heifer BCS at about 1 – 2 weeks prior to calving should be in the range of 3-4.5 to provide best IgG level intakes and sero presence in the calf 24 hours post suckling
- Remember that the calf only has a 6-8 hour window period within which the IgG rich colostrum can be consumed, and the Antibodies (Ab) absorbed through the gut wall. After that window period the IgG drastically becomes digested as food with less and less of it being absorbed as IgG into the blood stream and immune system.
- This colostral IgG protection lasts on average 3 months. This means that shorter variances of 2 months or longer variances of 4 months can occur
- Key to all of this is the 'dam' (mother) BCS at point of calving

Brucellosis principles

NOTE 1:

- The S19 vaccine may ONLY be administered between 4-8 months of heifer age. Revaccination with S19 after this period MUST NOT be done as 'false positive' cows will increase in the herd. Vaccination hereafter with S19 'will' cause false positive heifers / cows. Without further tests or culling the animal it is not possible via the current RBT (rose Bengal Test) and other available tests to differentiate from a blood test tube sample if the 'positive' test is derived from a field strain Serovar type 1 – 8 or from the S19 vaccine
- Dispose of needles AND SYRINGES that were used to administer the S19 so as NOT to ACCIDENTALLY create a number of false positive BR/CA animals
- The brucellosis vaccination can be applied in a number of different combinations: e.g.

  S19 + RB51
  S19 + RB51 + RB51

  RB51 + RB51
  RB51 + RB51 + RB51

- The main difference be… …gle S19

Brucellosis principles

NOTE 2:

- Beware of buying '3 in 1' pregnant cow plus calf on hand
- Cows may be infected with brucellosis, deliver a live calf with infection rates around 50%
- The vaccines S19 and RB51 DO NOT prevent the heifer or cow from ingesting or being exposed to infected material via flies on the eyes, nose and mouth
- Remember the eye (nasal lacrimal duct), nose (cow licks and grooms her nose), the mouth (mouth or lips contaminated by flies may be licked or exposed to the cow's tongue) hereby all 3 routes potentially link up to the oral route of infection

- Consider ALL female cattle as brucellosis POSISTIVE unless otherwise proven as negative by the brucella negative herd certification test.
- This herd certification test requires a minimum of 3 consecutive tests
- ALL animals must be identified uniquely, with traceability non-reusable, tamper evident ear tags managed from a creditable 3rd party central database system

Brucellosis principles

NOTE 3:

- DO NOT vaccinate bulls or bull calves
- Do not vaccinate pregnant cows or in the breeding season especially if cows are ‘naïve’ and have not been vaccinated as heifers previously
- Vaccination of pregnant cows should be accompanied with a disclaimer for the advising veterinarian and signed by the owner / producer
- Vaccinating cows and heifers post calving:
  In case of brucellosis cases or outbreaks on surrounding farms or properties Vaccination in cows should only be done in the first month after calving with RB51. NEVER EVER with the S19 strain as ‘all’ the female cows ‘may’ test positive and they will ‘all’ have to be slaughtered. Do not fall into this trap as a veterinarian !
- There is a lot of information available regarding brucellosis management, control and prevention. Read and assimilate to empower your knowledge base to give the best advice for your own behalf and that of your cattle client

- Contact Dr Johan Cloete on 083 263 3471 for practical advice in this regards

Brucellosis principles

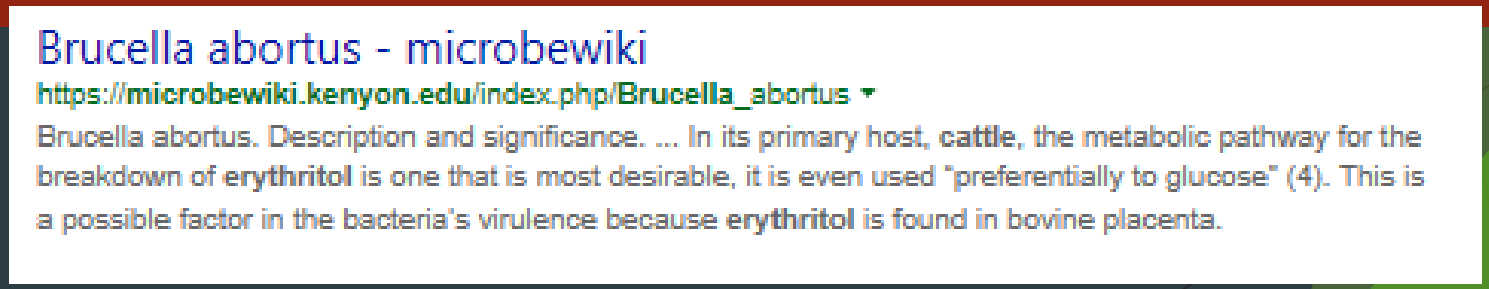
NOTE 4:

- A minimum of one brucella vaccine is required by statutory guidelines
- Two, three brucellosis vaccinations with RB51 increase the heifer / cow immune system with regards to abortions from field strain infections
- The vaccines CANNOT prevent oral contact with the *brucella* bacteria
- Practically the objective of the vaccinations is to reduce abortion symptoms and thereby reduce the spread of the disease within a herd

Brucellosis principles

NOTE 5:

- Brucella bacteria are intracellular bacteria, meaning they prefer to grow inside other cells of the body. Hence they can remain hidden from the immune system for a long time
- When a pregnant animal has increased levels of uterine sugars among which commonly is erythritol the bacterial concentration of *brucella abortus* organism is on the increase. Their increase results in increased levels of necrotizing toxins at the cotyledon sites. Mostly resulting in abortion of the fetus. This commonly occurs between 3-7 months of pregnancy but variances are possible.



Brucellosis principles

NOTE 6:

The enzyme responsible for the conversion of glucose to sorbitol is the aldose reductase (AR, AKR1B1 in human and bovines, AKR1B3 in mice) of the polyol pathway, which oxidizes sorbitol to fructose.

Erythritol Availability in Bovine, Murine and Human Models Highlights a Potential Role for the Host Aldose Reductase during *Brucella* Infection

*Thibault Barbier[1], Arnaud Machelart[1], Amaia Zúñiga-Ripa[2], Hubert Plovier[1], Charlotte Hougardy[1], Elodie Lobet[1], Kevin Willemart[1], Eric Muraille[3], Xavier De Bolle[1], Emile Van Schaftingen[4], Ignacio Moriyón[2] and Jean-Jacques Letesson[1]**

[1] *Research Unit in Biology of Microorganisms, Department of Veterinary Medicine, University of Namur, Namur, Belgium,* [2] *Departamento de Microbiología y Parasitología, Instituto de Salud Tropical, Instituto de Investigación Sanitaria de Navarra, Universidad de Navarra, Pamplona, Spain,* [3] *Laboratoire de Parasitologie, Faculté de Médecine, Université Libre de Bruxelles, Brussels, Belgium,* [4] *WELBIO and de Duve Institute, Université Catholique de Louvain, Brussels, Belgium*

Brucellosis principles

NOTE 7:

- The test results via RBT and a variety of other tests are not reliant or effective enough to determine low grade infections pre-pregnancy or even in late pregnancy in the bovine heifer
- This phenomena results in so-called ‘Trojan heifers’ similar to Trojan Horse story of Helen of Troy mythology.
- Thus it is important to identify, link the calves to the dam in a computer record system in order to do thorough back-tracing of these offspring of the cow or first calver heifer. All the offspring from an infected cow should be considered positive and culled from the herd. Neglecting to do this is the biggest single factor why brucellosis remains unresolved in a herd (Personal comment: Dr JD Cloete)

Brucellosis principles

NOTE 8:

- **10 Point Plan for brucellosis control:**
- 1. ID all cattle on a traceability system
- 2. Link all (male & female) calves to dams on system
- 3. Test heifers two months after calving (sero-conversion period)
- 4. Test ALL cows AND bulls !
- 5. Cull positive animals at an accredited abattoir (cattle may not be sold to neighbour or at auction etc…..)
- 6. Dispatch animals to such abattoir via a recognized and reputable traceability system such as GMPBasic® system
- 7. Apply brucellosis vaccination protocol as discussed in previous NOTES
- 8. Apply bio-security (wash / disinfect floors of transport trucks collecting or delivering cattle to / from the farm)
- 9. Avoid buying cattle at auctions or cattle with only a single negative brucella test – stick to 3 consecutive negative test results) Don't buy heifers from untested herds and without record of the dam's 3 consecutive negative tests
- 10. Rodent control like rats, Fly control, fly control, fly control…….

Brucellosis principles

Identification of Brucella Species and Biotypes using ...

www.tandfonline.com/doi/abs/10.1080/10408410500304041

Brucellosis is a worldwide zoonosis causing reproductive failures in livestock and a severe multi-organ disease in humans. The genus Brucella is divided into seven species and various biotypes differing in pathogenicity and host specificity.

Published in:

Critical Reviews in Microbiology · 2005

Authors:

Sascha Al Dahouk · Herbert Tomaso · Ellen Prengerberninghoff · Wolf D Splettstoesser

Affiliation:

University of Giessen

About:

Brucellosis · Polymerase chain reaction · Brucellaceae · Restriction fragment lengt...

Brucellosis principles

https://www.tandfonline.com/doi/abs/10.1080/10408410500304041

Full Article | Figures & data | References | Citations | Metrics | Reprints & Permissions

Abstract

Brucellosis is a worldwide zoonosis causing reproductive failures in livestock and a severe multi-organ disease in humans. The genus Brucella is divided into seven species and various biotypes differing in pathogenicity and host specificity. Although Brucella spp. represent a highly homogenous group of bacteria, RFLPs of selected genes display sufficient polymorphism to distinguish Brucella species and biovars. PCR-RFLP analysis shows excellent typeability, reproducibility, stability, and epidemiological concordance. Consequently, PCR-RFLP assays of specific gene loci can serve as tools for diagnostic, epidemiological, taxonomic, and evolutionary studies. Various PCR-RFLPs used for the identification of Brucella species and biotypes are reviewed.

Keywords : PCR-RFLP, Molecular Typing, *Brucella*, Brucellosis, *omp2*, *omp25*, *omp31*, *dnaK*, *ery*, *rpsL*

Brucellosis species and biovar example:

- *Brucella abortus* (Biovar 1, 2, 3, 4, 5, 6, 7, 8)
  Biovar types 1 & 2 most often identified in South Africa
  Cattle, buffalo, humans and possible in some other species such as rats
- *Brucella canis*
- *Brucella suis*
- *Brucella felis*
- *Brucella melitensis*

- *Etc.*

Brucellosis

Research Article

Identification of Brucella Species and Biotypes using Polymerase Chain Reaction-Restriction Fragment Length Polymorphism (PCR-RFLP)

Sascha Al Dahouk, Herbert Tomaso, Ellen Prenger-Berninghoff, Wolf D. Splettstoesser, Holger C. Scholz & Heinrich Neubauer

Pages 191-196 | Received 14 Jul 2005, Accepted 22 Jul 2005, Published online: 11 Oct 2008

Download citation https://doi.org/10.1080/10408410500304041

Vaccines

REG NO G1593 (Act 36/1947)
NAMIBIA REG NO V93/24.4/520

REG NO G3783 (Act 36/1947)
NAMIBIA REG NO V07/24.4/54

REG NO G3763 (Act 36/1947)
NAMIBIA REG NO V07/24.4/375

REG NO G3673 (Act 36/1947)
NAMIBIA REG NO V06/24.4/184

REG NO G2955 (Act 36/1947)
NAMIBIA REG NO V07/24.4/747

REG NO G3392 (Act 36/1947)
NAMIBIA REG NO V04/24.4/723

REG NO G2803 (Act 36/1947)
NAMIBIA REG NO V03/24.4/755

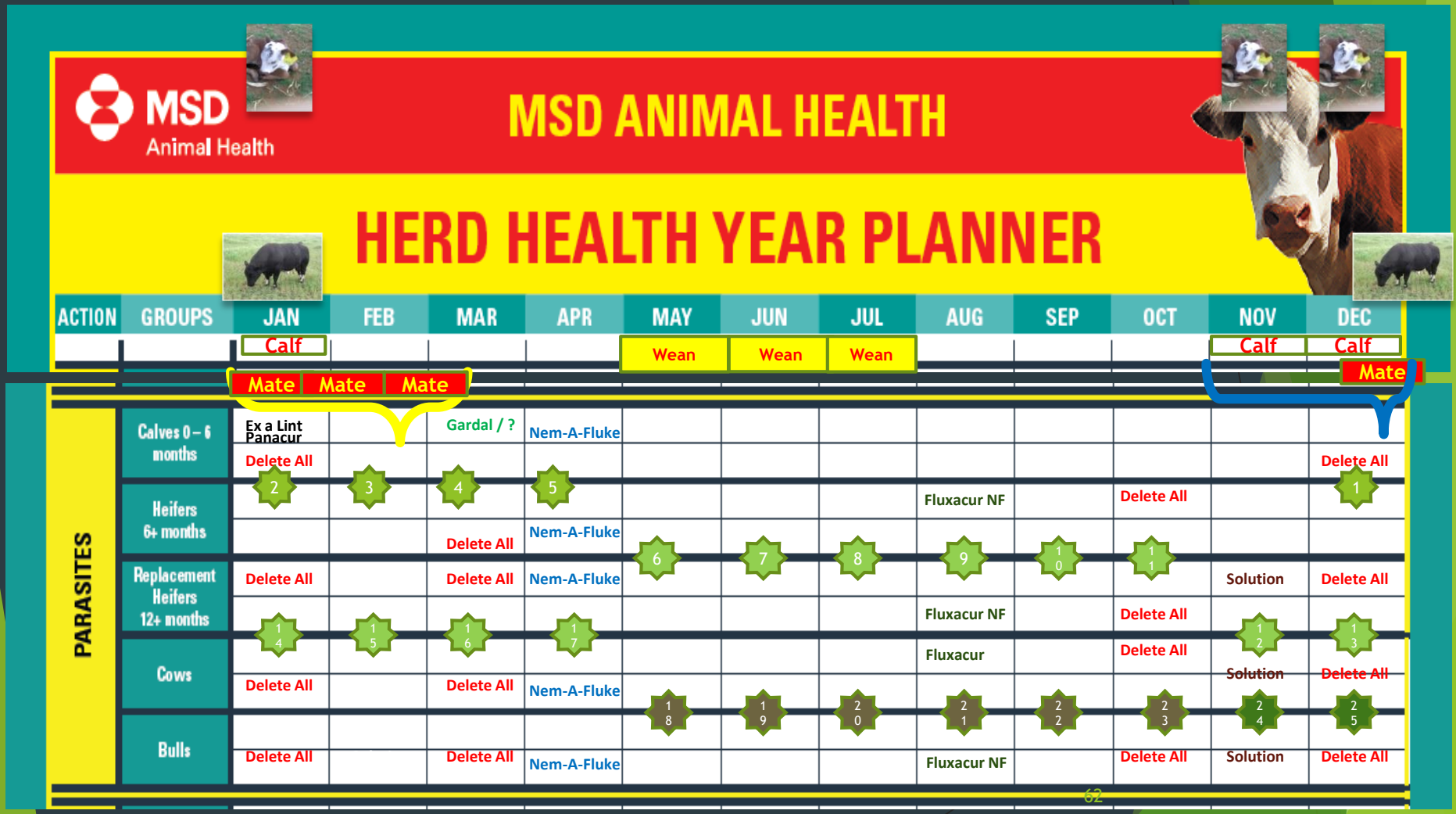
REG NO G3056 (Act 36/1947)
NAMIBIA REG NO V03/24.4/756

REG NO G3867 (Act 36/1947)
NAMIBIA REG NO V10/24.4/719

REG NO G2643 (Act 36/1947)
NAMIBIA REG NO V99/24.4/501

(Compiled by Dr JD Cloete, BVSc)

Parasites - Ticks, mites, lice, flies, round worms, liver flukes



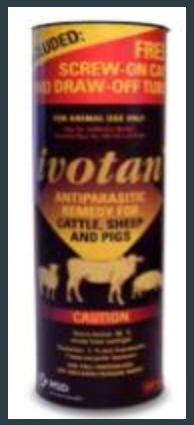
(Compiled by Dr JD Cloete, BVSc)

Anti-parasitic remedies - ectos

REG NO G2837 (Act 36/1947)
NAMIBIA REG NO V01/18.3.9/664

REG NO G2815 (Act 36/1947)
NAMIBIA REG NO V01/18.3.3/663

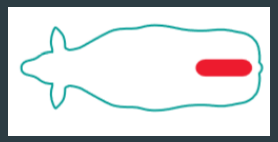
REG NO G3279 (Act 36/1947)
NAMIBIA REG NO V03/18.3.3/688



REG NO G2858 (Act 36/1947)
NAMIBIA REG V01/18.1.2/731

REG NO G3689 (Act 36/1947)
NAMIBIA REG NO V06/18.1.2/651

REG NO G2535 (Act 36/1947)
NAMIBIA REG NO V02/18.3.4/781



REG NO G3745 (Act 36/1947)
NAMIBIA REG NO V07/18.1.2/376

Ticks, lice, mites, flies

(Compiled by Dr JD Cloete, BVSc)

Anti-parasitic remedies - endos

REG NO G3202 (Act 36/1947)
NAMIBIA REG NO V03/18.1.8/679

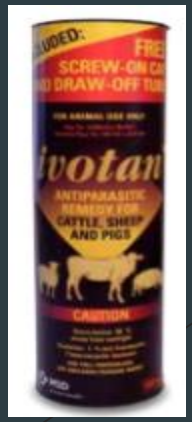
REG NO G3201 (Act 36/1947)
NAMIBIA REG NO V03/18.1.1/678

Milk tapeworms, Roundworms, Lungworms, Liver fluke

REG NO G1481 (Act 36/1947)
NAMIBIA REG NO V02/18.1.1/655

REG NO G1481 (Act 36/1947)
NAMIBIA REG NO V02/18.1.1/655

REG NO G3563 (Act 36/1947)
NAMIBIA REG NO V95/18.1.8/46



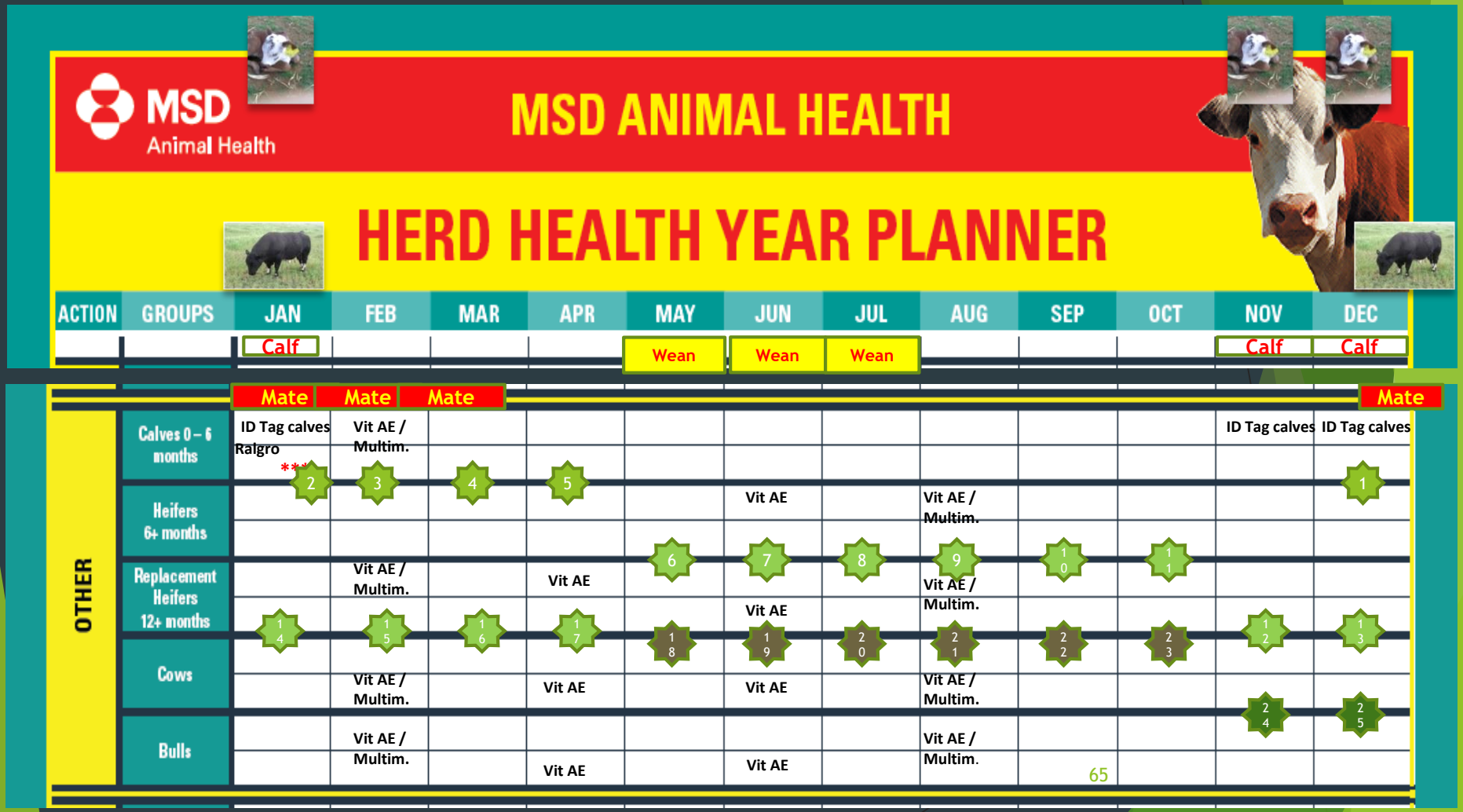
REG NO G2858 (Act 36/1947)
NAMIBIA REG V01/18.1.2/731

REG NO G3689 (Act 36/1947)
NAMIBIA REG NO V06/18.1.2/651

(Compiled by Dr JD Cloete, BVSc)

Other, anti-biotics, implants...

***= only for animals not intended for breeding selection or males not intended for breeding



(Compiled by Dr JD Cloete, BVSc)

Growth promoters

RALGRO® CATTLE IMPLANTS

(Compiled by Dr Koba Grobler, BVSc)

WHERE DOES ZERANOL COME FROM?

Fungus grows and produces

mycotoxin

=

Zearalenone

=

Zeranol

(oestrogenic)

(Compiled by Dr Koba Grobler, BVSc)

NOT a hormone, but has the same effect as Oestradiol in the body

Zeranol

<

Oestradiol benzoate

<

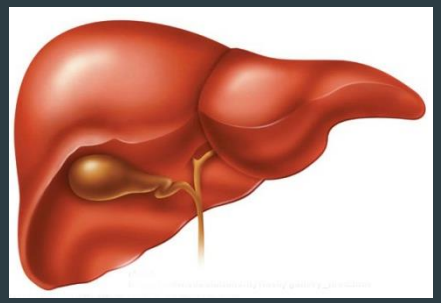
Oestradiol 17 ß

(Compiled by Dr Koba Grobler, BVSc)

Stimulates cell growth and decreases cell death

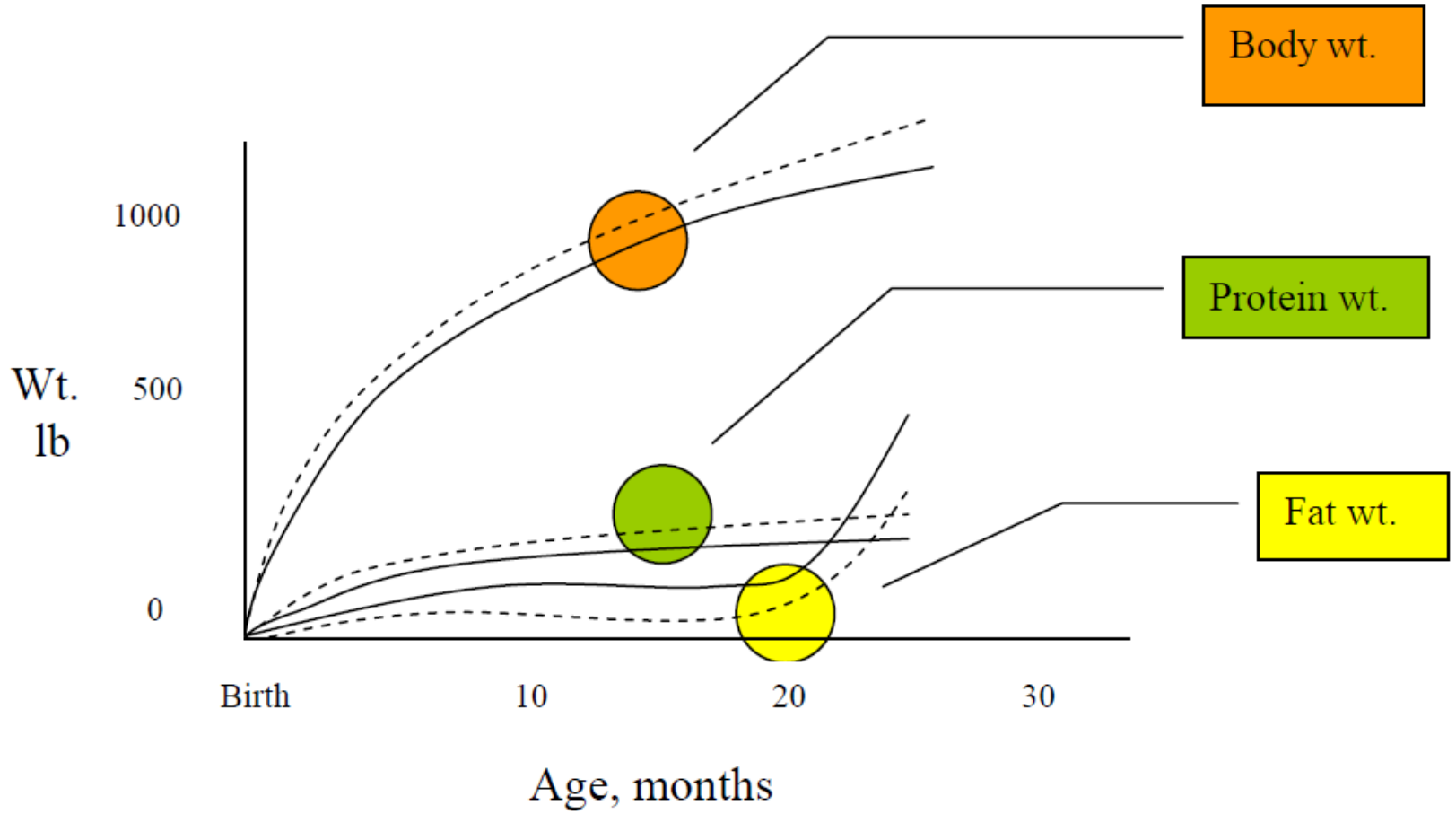
Nutrients towards protein not fat synthesis

INSULIN LIKE GROWTH FACTOR 1 (IGF1)



BRAIN GROWTH HORMONE

(Compiled by Dr Koba Grobler, BVSc)



(Compiled by Dr Koba Grobler, BVSc)

Bone **AND** muscle growth

pre-pubertal = bone

pubertal = muscle

post puberty = delays fat deposition

(Compiled by Dr Koba Grobler, BVSc)

WHICH CATTLE?

Suckling **OR** weaned calves

NOT for breeding bulls

Replacement heifers **AFTER** selection

Cull cows

(Compiled by Dr Koba Grobler, BVSc)

WHAT ABOUT FUTURE REPRODUCTION?

Do not implant heifers **TOO EARLY** (D1-30; D30-60) Ideal on **Day 60-90**

Just use **ONCE**

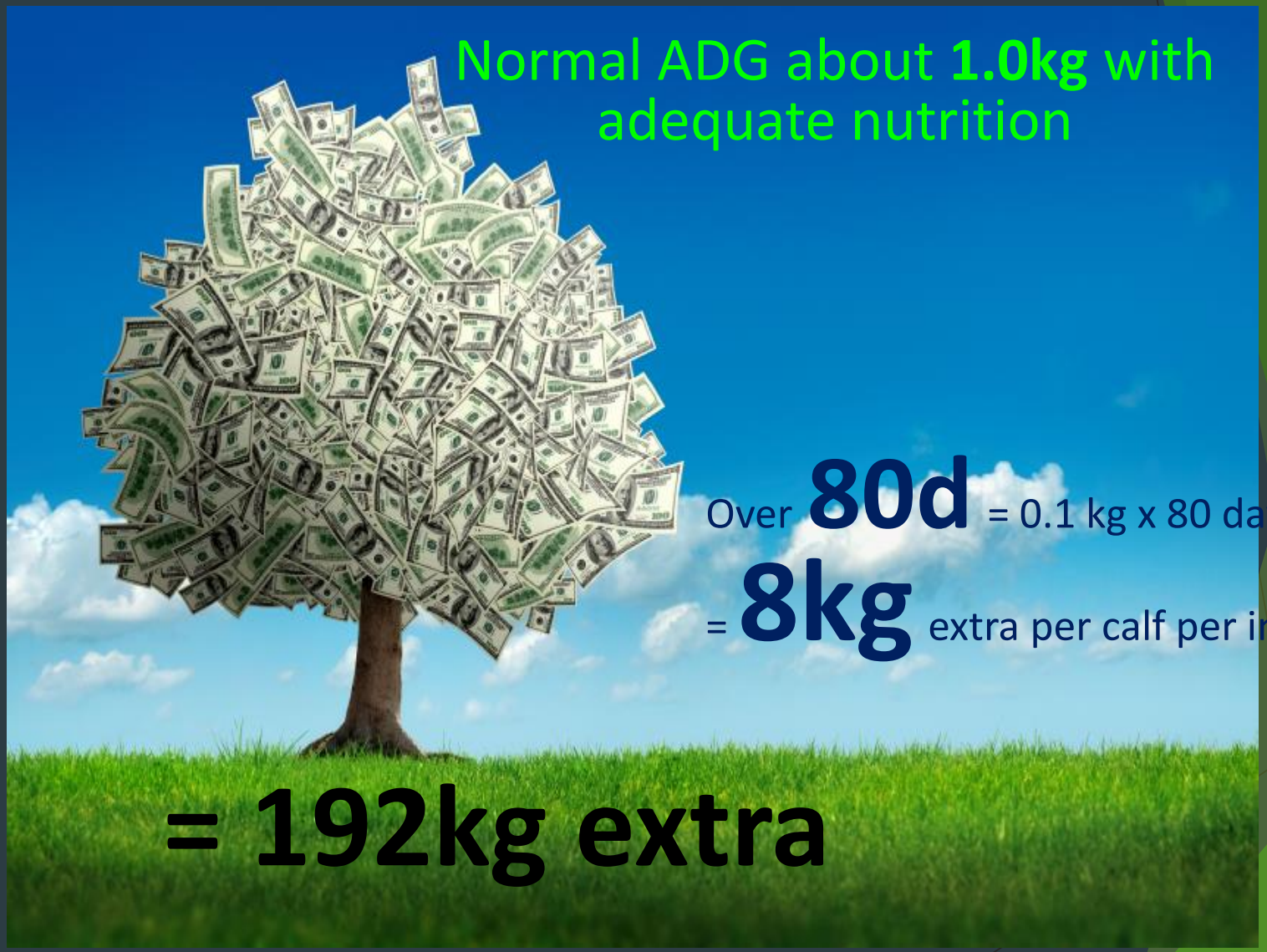
Ensure adequate **NUTRITION** over next 3-4m

Do not implant during **PUBERTY**

The effect on **MALE** animals - decreased testicular growth (before puberty); decreased sperm quality (after puberty)

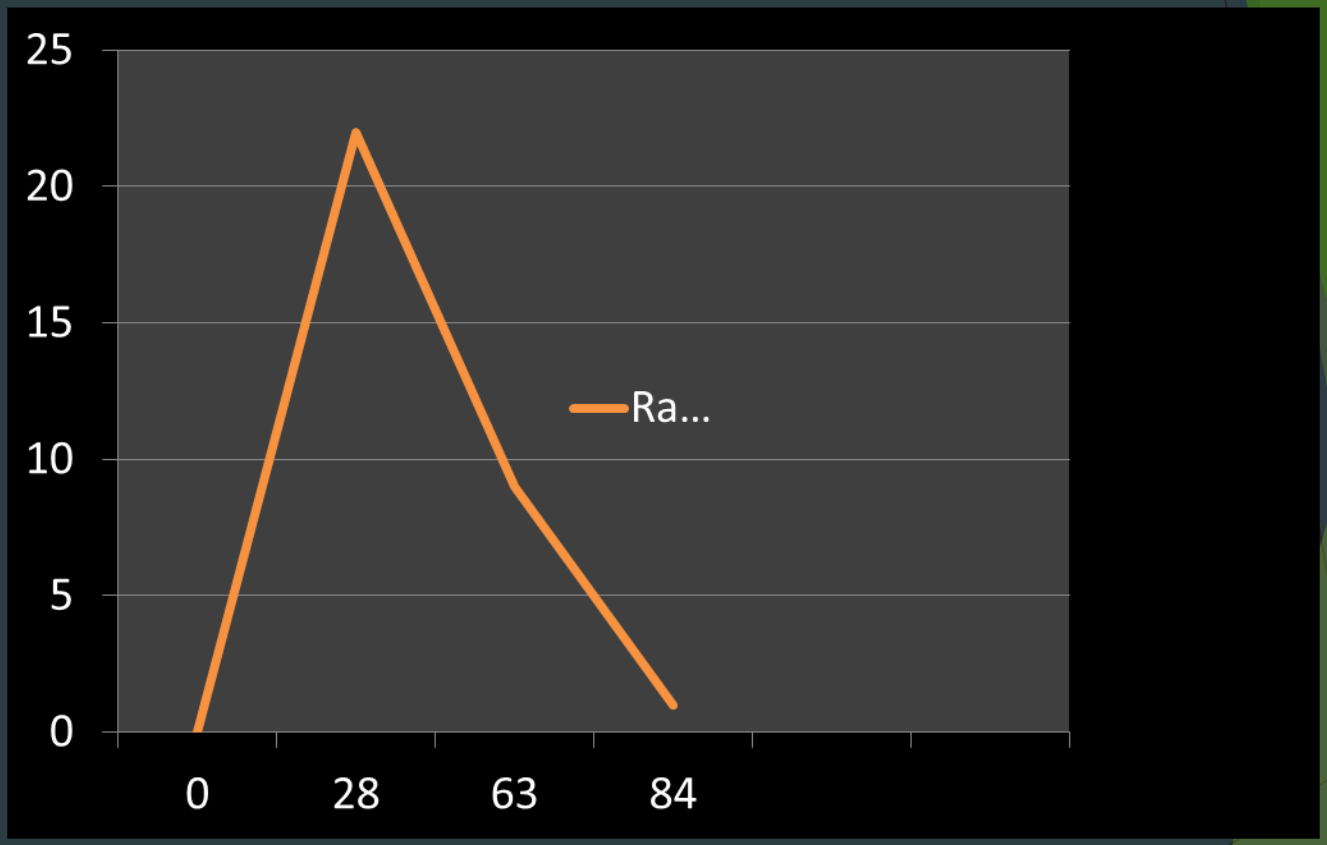
(Compiled by Dr Koba Grobler, BVSc)

(Compiled by Dr Koba Grobler, BVSc)



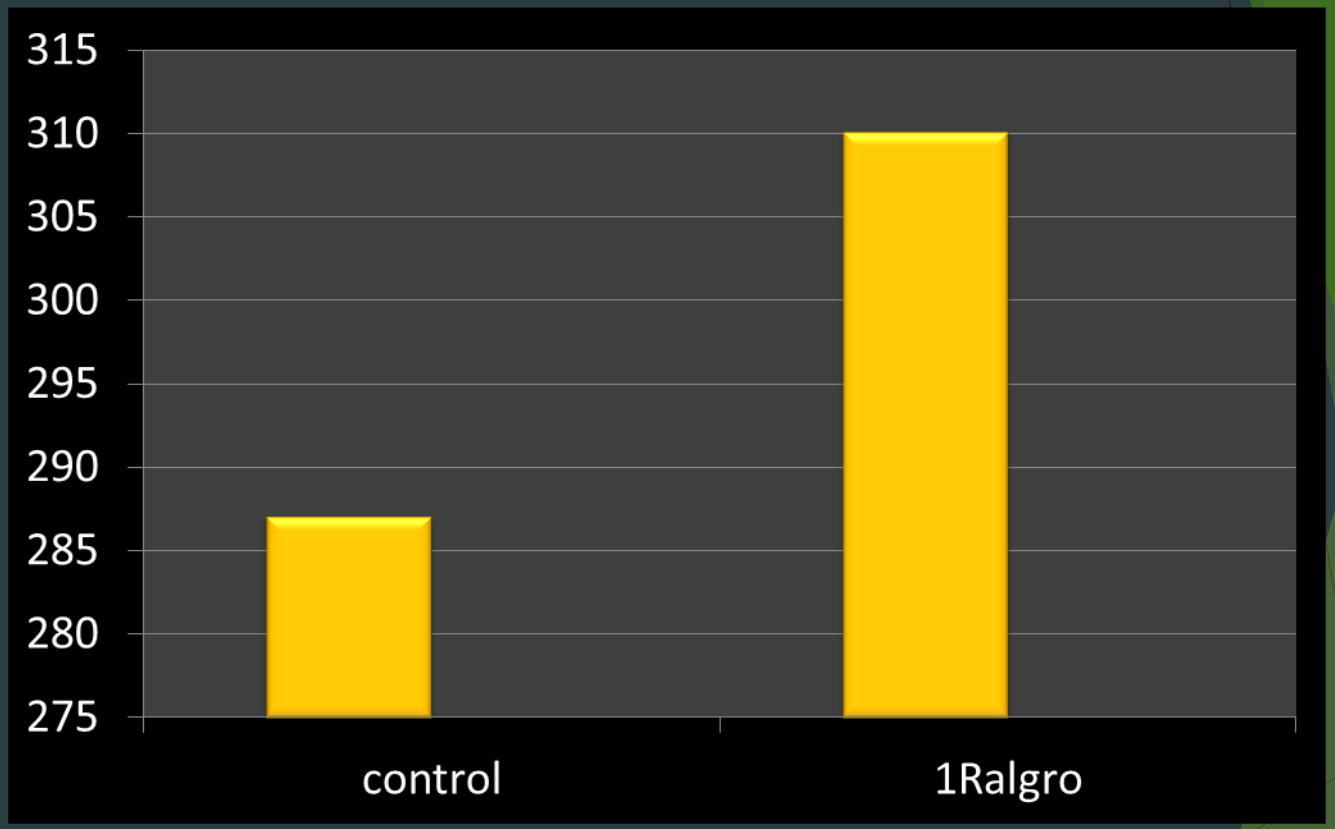
(Compiled by Dr Koba Grobler, BVSc)

% increased gain over control



Days post implanting

(Compiled by Dr Koba Grobler, BVSc)



23 trials, 2358 calves. 8% improvement.

(Compiled by Dr Koba Grobler, BVSc)

Growth promoters

Synovex C

Zeranol

<

Oestradiol benzoate

<

Oestradiol 17 ß

High potency ≠ good implant

Low potency ≠ bad implant

Ralgro	36mg Zeranol
Zeramec	10mg/ml Zeranol, 1ml/50kg
Compudose	21.1mg Oestradiol

(Compiled by Dr Koba Grobler, BVSc)

What about combining Zeranol with Ivermectin?

Ralgro + Ivotan vs Zeranol + Ivermectin injectable

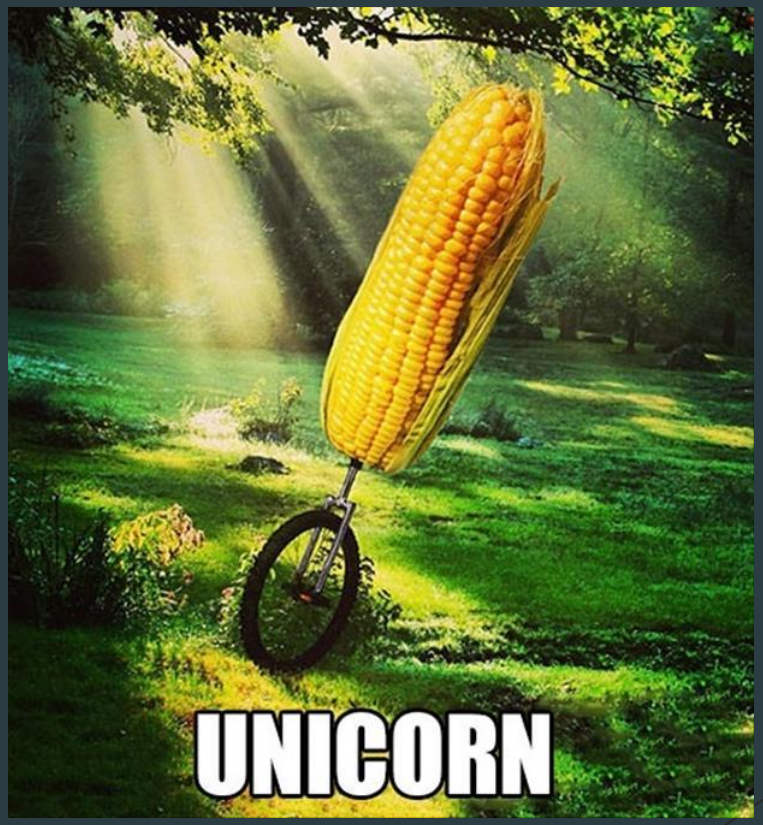
90 days backgrounding **4.97kg** advantage when using Ralgro + Ivotan

Ralgro + Gardal vs Zeranol + Ivermectin injectable

90 days backgrounding **3.87 kg** advantage when using Ralgro + Gardal

(Compiled by Dr Koba Grobler, BVSc)

MYTHS



There's no difference in weaning weight when calves are implanted while still with the cow

FALSE

US trial (2358 suckling calves)

23 lb (10kg) benefit

Implanting heifer calves will adversely affect future conception and reproduction parameters

FALSE

Data on file with Merck states 18 lb increased weaning weight + 4% increase in conception rate vs non-implanted controls. Thus will increase weaning weight if you sell them and wont affect future reproduction if you don't.

Non-implanted calves will perform better in the feedlot and have better carcasses

FALSE

If implant protocols are maintained you'll retain the gain + large trail in US showed that the amount of meat was increased but no detrimental effects on carcass quality or grade or eating acceptability.

Beef from implanted cattle are full of hormones and is detrimental to human health

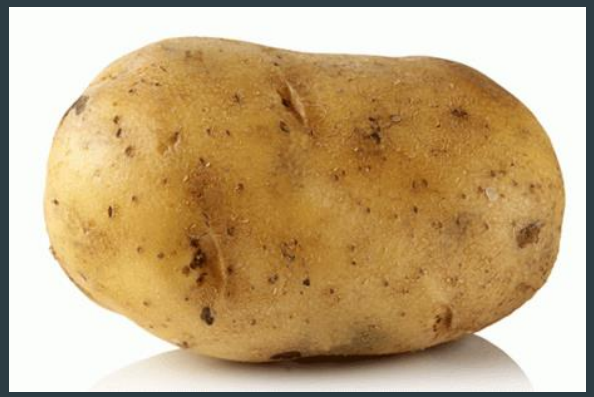
FALSE

1.9 ng

1.3 ng

225 ng

1 ng = 1 billionth of a gram!!!
1 drop in 60 000 litres water



520 ng

(Compiled by Dr Koba Grobler, BVSc)

50 000 ng Oestrogen per day

(Compiled by Dr Koba Grobler, BVSc)

(Compiled by Dr Koba Grobler, BVSc)

12mg Zeranol

Not for stud breeding animals or bulls

Can be used from 6w until slaughter

d60 ideal (min 45d)

Allows for **bone maturation**

Ensure adequate **nutrition**

Only implant registered for sheep

(Compiled by Dr Koba Grobler, BVSc)

Q&A

Can Ralgro sheep be used in my breeding flock?

NO, although it isn't a hormone it will affect negative feedback on the brain

(Compiled by Dr Koba Grobler, BVSc)

Q&A

Should I reimplant?

There will be an added benefit to implant again 2-3 months later

(Compiled by Dr Koba Grobler, BVSc)

Q&A

What benefits are there to use Ralgro sheep?

Up to 10% improvement in ADG

(11% improvement on lambs finished on rye grass)

(Compiled by Dr Koba Grobler, BVSc)

Q&A

	Beginning weight	Slaughter weight	Difference
35 days			
Ralgro	39.9	51.4	11.5
Control	39.5	49.3	9.8
60 days			
Ralgro	30.58	47.5	16.92
Control	32.78	45.33	12.55
75 days			
Ralgro	25.96	43.95	17.99
Control	25.91	43.48	17.57

1.7 kg

4.37 kg

0.42 kg

(Compiled by Dr Koba Grobler, BVSc)

Q&A

How can I prevent feedlot sheep from getting too fat?

Ralgro sheep delays fat deposition and promotes muscle formation

(Compiled by Dr Koba Grobler, BVSc)

Q&A

Do not double implant sheep with Ralgro !

May cause vaginal prolapse in sheep

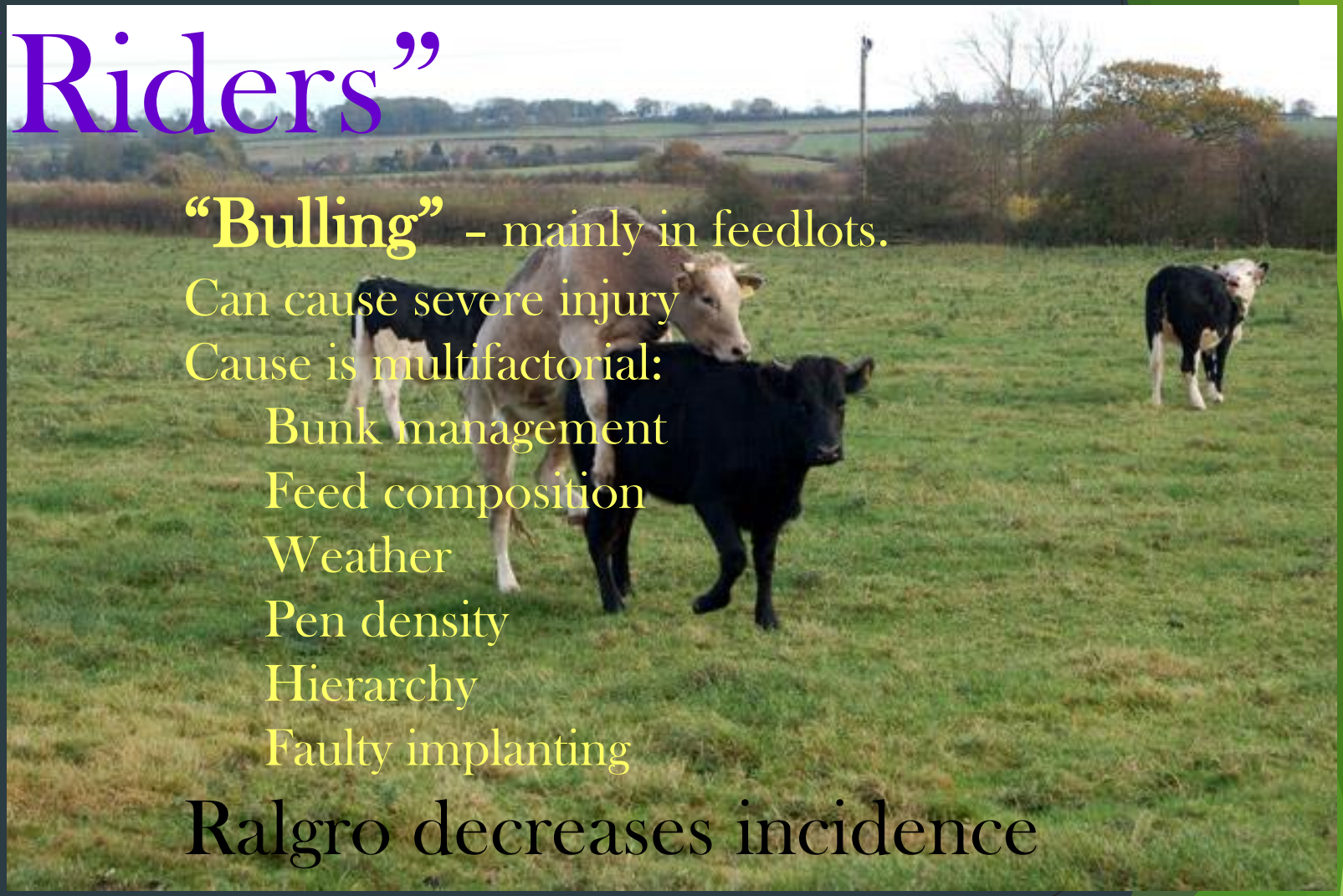
What about side effects?

(Compiled by Dr Koba Grobler, BVSc)

Growth promoters

"Riders"

"Riders"



"Bulling" – mainly in feedlots.

Can cause severe injury

Cause is multifactorial:

- Bunk management
- Feed composition
- Weather
- Pen density
- Hierarchy
- Faulty implanting

Ralgro decreases incidence

(Compiled by Dr Koba Grobler, BVSc)

Vaginal prolapse

Reduces performance/ death

Cause is multifactorial:

- Faulty implantation
- Type of feed
- Genetics

(Compiled by Dr Koba Grobler, BVSc)

REDUCTION IN CORTISOL LEVELS

Less stress
Less bulling
Eat sooner
Less effect on immunity
Decreased weaning stress
Easier adaptation

(Compiled by Dr Koba Grobler, BVSc)

Ralgro Cattle

Ralgro Sheep

ZERANOL
Use in **pre-weaned** calves 2-4 months old
Can be used in **light calves** before feedlot entry
Great in **cull cows** to improve carcass composition
Active for **90 days**

ZERANOL
Use in lambs **on grazing** or when entering feedlot
Active for **60 days**

Key points

- Ralgro increases **frame and skeletal size**
- Improved **carcass weight and ADG**
- DO NOT use in bulls and stud animals intended for breeding
- Does not negatively affect fertility of heifers
- Zeranol is **not a hormone**! But mimics the effects of oestradiol which is a hormone
- Implantation method is important – check that it is done correctly!
- Important that animals have adequate **nutrition!**

Breeding guidelines
Traceability
GMPBasic

- Performance platform
- Sheep platform

Q's

- Which implants are used at backgrounding
- Which implants are used at feedlot entry
- If implants are not used, why not
- Did sheep farmers know they can use Ralgro on grazing + supplement

(Compiled by Dr Koba Grobler, BVSc)

New born calf, tag & Fill in tag form

(Compiled by Dr JD Cloete, BVSc)

Breeding & procedures

MSD Animal Health

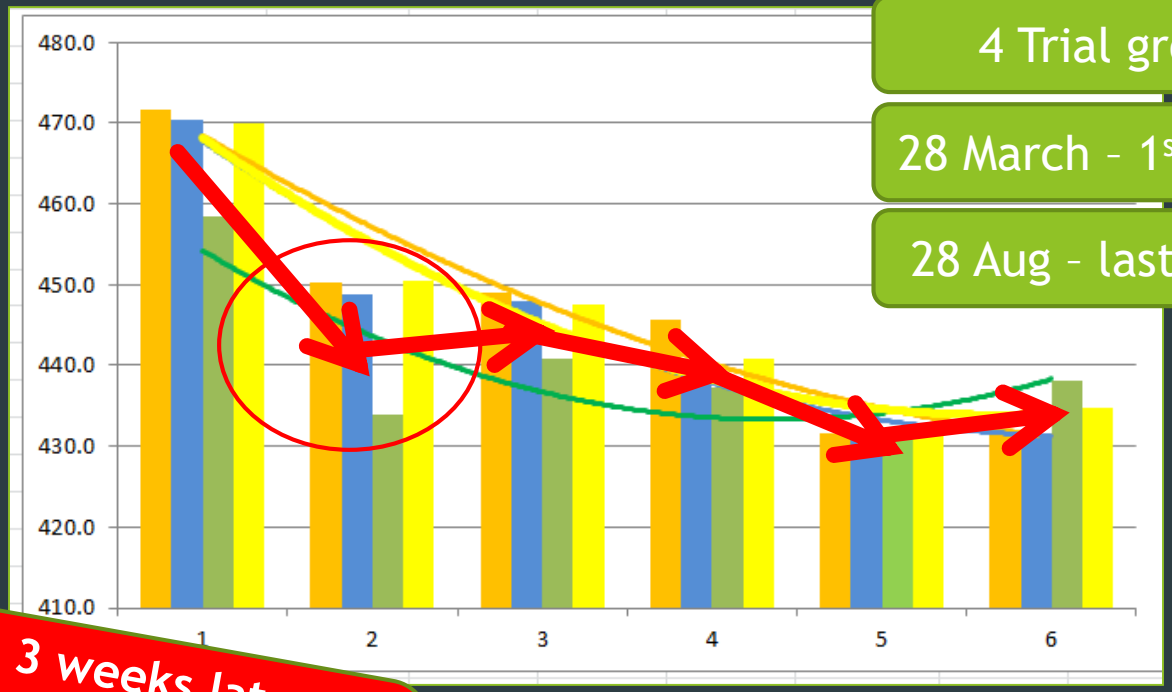
MSD ANIMAL HEALTH

HERD HEALTH YEAR PLANNER

ACTION	GROUPS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		Calf				Wean	Wean	Wean				Calf	Calf
		Mate	Mate	Mate									Mate
BREEDING	Bulls												

(Compiled by Dr JD Cloete, BVSc)

Weight loss S.A Mpumalanga 2012



4 Trial groups

28 March – 1st weight

28 Aug – last weight

Lick arrived 3 weeks late due to labour strike – see the effect on weight drop in winter

(Compiled by Dr JD Cloete, BVSc)

Monthly weight loss

- Remember that at an ADG of ~ 0.8 kg / day the cows that have lost on AVERAGE more than 33.8 kg will need:

  33.8 / 0.8 = **+42 days**

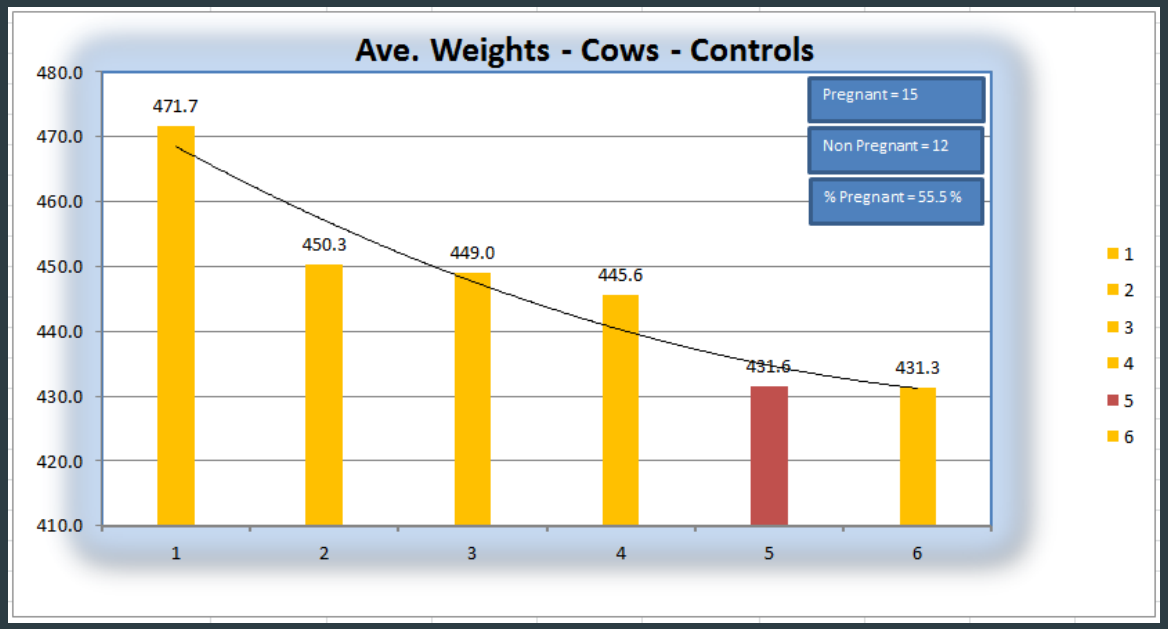
  to recover this weight

	Ave. weight 28 Mar 2012	Ave. weight 03 May 2012	Ave. weight 30 May 2012	Ave. weight 26 Jun 2012	Ave. weight 25 Jul 2012	Ave. weight 28 Aug 2012
	467.6	**445.9**	**446.3**	**441.0**	**431.8**	**433.8**
Monthly %		-4.7%	0.1%	-1.2%	-2.1%	0.5%
Accum Mnth%		-4.7%	-4.6%	-5.7%	-7.7%	-7.2%

- This is why it is important to supplement with more than a winter lick to enable the cow to regain her BCS of 3 – 3.4 (4) at point of calving. This is critical to maintain a ICP of 365 days
- This is possible without the risk of 'heavy' fetusses with calving difficulties (dystocias) – see literature based on real study cases later in the presentation material

(Compiled by Dr JD Cloete, BVSc)

Average weight loss during winter



(Compiled by Dr JD Cloete, BVSc)

Ideal breeding season to achieve:

- 1 calf / 365 days golden standard

FIGURE 1. Length of the calving and breeding seasons and the effect of the earliness of calving on readiness to re-breed.

AgriLIFE Extension, Texas A&M System, Bruce Carpenter and L.R.Sprott

Weight loss = Breeding days lost

- Convert 1 kg to 1 day
- Each day lost = 80 - lost days = decr.

	Ave. weight 28 Mar 2012	Ave. weight 03 May 2012	Ave. weight 30 May 2012	Ave. weight 26 Jun 2012	Ave. weight 25 Jul 2012	Ave. weight 28 Aug 2012
	467.6	**445.9**	**446.3**	**441.0**	**431.8**	**433.8**
	Monthly %	-4.7%	0.1%	-1.2%	-2.1%	0.5%
	Accum Mnth%	-4.7%	-4.6%	-5.7%	-7.7%	-7.2%
	Kg Loss	21.8	21.3	26.6	35.9	33.8
	Days lost:	**22**	**21**	**27**	**36**	**34**
	(@1kg/ADG)					

% Body fat vs BCS

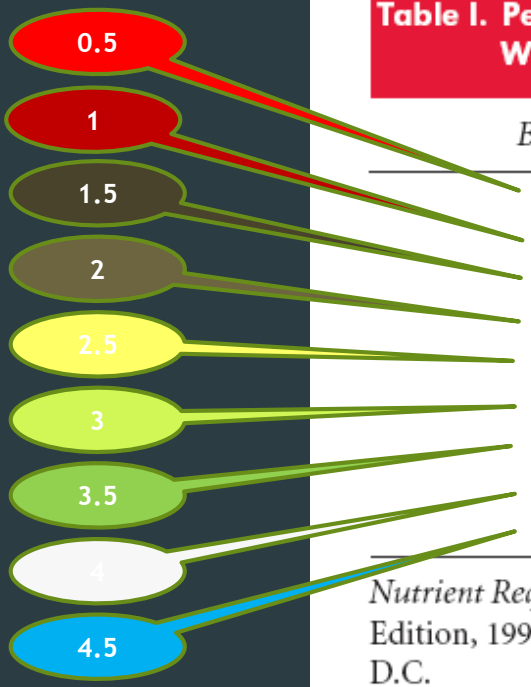


Table I. Percent of Body Fat Associated With Each Body Condition Score

BCS	% Body Fat
1	3.8
2	7.5
3	11.3
4	15.1
5	18.9
6	22.6
7	26.4
8	30.2
9	33.9

Nutrient Requirements of Beef Cattle, 7th Revised Edition, 1996. National Academy Press, Washington, D.C.

A Tool for Managing the Nutrition Program for Beef Herds – Richard J. Rasby (Extension Beef Specialist), Aaron Stalker (Beef Range Systems Specialists), Richard N. Funston (Beef Specialist, cattle)

Heat Cycle vs BCS : Days post calving

Table 4. Percent of cows cycling at 60 and 90 days post calving based on their BCS at calving.

	Days after Calving	
BCS at calving (USA scale)	60	90
1 – 4	46%	66%
5 – 6	61%	92%
7 – 9	91%	100%

1 - 2

2.5 - 3

3.5 - 4.5

PPI vs BCS at calving

Table 5. Post partum interval (PPI) at different BCS at calving.

BCS at calving (USA scale)	≤ 4	≥ 5
PPI (days)	61	49

< 2

> 2.5

The positive relationship between BCS at calving, the length of anestrus and pregnancy rate emphasizes the importance of this parameter in determining the success of the beef cow herd. Body condition scoring is a practical way of monitoring the nutritional (particularly energy) status of cows. This is a valuable tool in helping to optimize reproductive performance.

A Tool for Managing the Nutrition Program for Beef Herds – Richard J. Rasby (Extension Beef Specialist), Aaron Stalker (Beef Range Systems Specialists), Richard N. Funston (Beef Specialist, cattle)

Calving time vs estrous periods of a 120 day late calving cow season

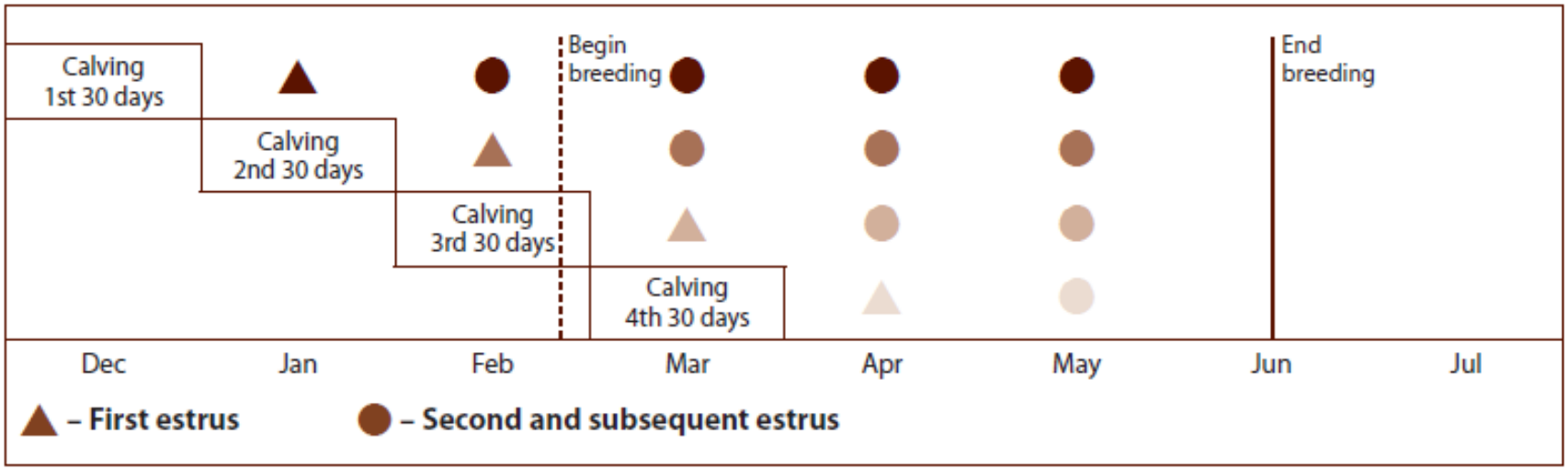


FIGURE 2. The effect of calving time on the number of potential estrous periods and the effect of a 120-day breeding season on late-calving cows.

2

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BCS/calving time vs Re-breeding failure

BCS/calving time	Risk of re-breeding failure
2.5 - 3 BCS 5-6, early calver.....	low risk
2.5 - 3 BCS 5-6, late calver.....	low to moderate risk, depending on nutrition level post-partum
2 BCS 4, early calver.....	moderate risk, depending on nutrition level post-partum
< 2 BC 4 or less, late calver.....	high risk
< 1.5 BCS 1, 2, 3.....	high risk

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Calving date vs Weaning weight vs ADG vs 120 day Calving season

TABLE 2. Effect of time of birth in relation to the start of calving on weaning weight and average daily gain (ADG) in a 120-day calving season.

Time of birth by 20-day intervals	Number of calves	Weaning weight	ADG (lb)
First 20 days	77	443	1.76
Second 20 days	264	432	1.75
Third 20 days	244	432	1.78
Fourth 20 days	138	409	1.77
Fifth 20 days	65	405	1.67
Sixth 20 days	16	375	1.59

J.L. Lesmeister, P.J. Burfening and R.L. Blackwell. 1973. Date of first calving in beef cows and subsequent calf production. *Journal of Animal Science* 33:1-6.

DIVIDE THE POUNDS WEIGHT BY 2.2 TO CONVERT IT TO KG WEIGHT

77/804	9.5%
264/804	32.8%
244/804	30.3%
138/804	17.1%
65/804	8.1%
16/804	1.9%

(Compiled by Dr JD Cloete, BVSc)

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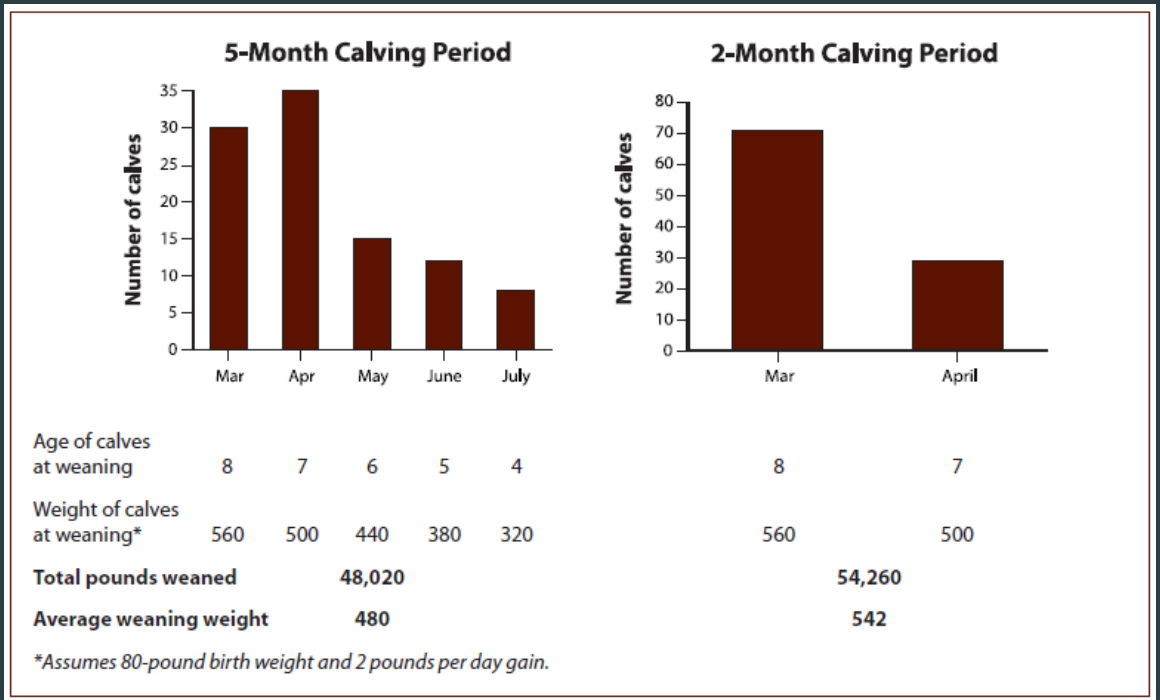
(Compiled by Dr JD Cloete, BVSc)

5 Month vs 2 Month calving (AI)



Age of calves at weaning	8	7	6	5	4	8	7
Weight of calves at weaning*	560	500	440	380	320	560	500
Total pounds weaned			**48,020**			**54,260**	
Average weaning weight			**480**			**542**	

**Assumes 80-pound birth weight and 2 pounds per day gain.*

FIGURE 3. Effect of length of calving period on total and average pounds of calves weaned in a 100-cow herd.

IN SOUTH AFRICA - SOUTHERN HEMISPHERE
OUR SUMMER CALVING SEASON IS FROM AUG - JAN

DIVIDE THE POUNDS WEIGHT
BY 2.2 TO CONVERT IT TO KG WEIGHT

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Pre-partum nutrition

Managing the Calving Season

Pre-partum nutrition

Most cows lose some weight during calving and lactation. In spite of that, those in good body condition (high body condition score, or BCS) can lose some weight and still re-breed, provided the weight loss is not more than ½ pound per day. Animals without adequate fat cover will still provide milk, but they may not re-breed, especially if they are in poor body condition **and** are late calvers as well. There-

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is not dramatic. Managers should evaluate cattle for body condition score 2 to 4 months before the calving season begins. Then there will be time to determine the type and quantity of supplemental feed needed and time for the cattle to respond to supplementation with improved body condition.

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Thin cows corrective action < 60 – 90 days prior to calving

The last opportunity to address thin cows in the herd is 60 to 90 days prior to the start of calving. However, the efficiency of body weight gain is lower during the third trimester compared to the second. It takes 40 to 60 days to increase body score by one unit so waiting this late may limit the opportunity to achieve the goal of 3 to 3.5. However, despite the poorer efficiency of gain, there are some other benefits to increased feeding at this time; notably improved colostrum quality and quantity, improved calf survival at birth, and reduced calf mortality.

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Supplementing thin cows !

If cows are not in a uniform 3 to 3.5 BCS at calving, then the thin cows with calves should be grouped together and fed a higher energy ration than the rest of the herd. Thin cows that increase in body condition in early lactation can still have acceptable conception rates.

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Feed costs ?

Feed costs are a major component of the total cost of keeping a cow. This means that feed sources must be used as efficiently as possible on a beef farm. The best way to ensure this is to have a short calving season so that all cows are in a similar stage of production at any time. This makes it easier to feed a group of cows more accurately and cost effectively. Feeding more accurately, will not only optimize feed use, but will also help ensure good reproduction and production.

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Weaning % vs weaning weight : kgs produced per cow mated

DIVIDE THE POUNDS WEIGHT
BY 2.2 TO CONVERT IT TO KG WEIGHT

Table 1. The effect of weaning percent and weaning weight on the pounds of calf produced per cow mated.

Weaning	Weaning Weight (lbs.)				
Percent	450	500	550	600	650
50	225	250	275	300	325
60	270	300	330	360	390
70	315	350	385	420	455
80	360	400	440	480	520
90	405	450	495	540	585

- **STRATEGIC FEEDING OF BEEF COWS,** Dennis Lunn, Brian Tarr, Ruminant Nutritionists
- Shur-Gain, Nutreco Canada Inc.

BCS expression

BCS data is expressed in two different ways. The American system uses a scale of 1 to 9, 1 being thin and 9 being fat. (Occasionally, a 1 to 10 scale is used). The Canadian system uses a scale of 1 to 5, with 1 being thin and 5 being fat. The approximate equivalency of the two systems is given in the table below (Appendix 2 gives an animal description of each score).

Table 2. Body Condition Score of beef cows

BCS – US	1	2	3	4	**5**	**6**	7	8	9
BCS - CDN	1	1.5	2	2.5	**3**	**3.5**	4	4.5	5

(Bold represents ideal condition for a cow)

0.5 1 1.5 2 2.5 3 3.5 4 4.5

Several experiments and observations have confirmed the importance of BCS at calving. It is related to both the interval to first heat and the number of cows cycling. Tables 3 and 4 illustrate these relationships.

- **STRATEGIC FEEDING OF BEEF COWS,** Dennis Lunn, Brian Tarr, Ruminant Nutritionists
- Shur-Gain, Nutreco Canada Inc.

BCS @ calving : days to 1st heat

Table 3. Relationship between BCS at calving and days to first heat.

BCS at calving (USA scale)	3 (1.5)	4 (2)	5 (2.5)	6 (3)	7 (3.5)
Days to 1st Heat	89	70	59	52	31
Plus 21 days (2nd heat)	110	91	80	73	52

Data in Table 3 shows that cows in BCS 5 or 6 at calving will have 2 heats (opportunities) to breed within the 82 day window, while cows at 4 or lower BCS will only have 1 heat and are more likely to have an extended inter-calving period.

- **STRATEGIC FEEDING OF BEEF COWS,** Dennis Lunn, Brian Tarr, Ruminant Nutritionists
- Shur-Gain, Nutreco Canada Inc.

(Compiled by Dr JD Cloete, BVSc)

% cows cycling at 60 - 90 days : BCS

Table 4. Percent of cows cycling at 60 and 90 days post calving based on their BCS at calving.

	Days after Calving	
BCS at calving (USA scale)	**60**	**90**
1 – 4 (1.5 - 2)	46%	66%
5 – 6 (2.5 - 3)	61%	92%
7 – 9 (2.5 - 3)	91%	100%

Table 4 shows that 92% of cows at BCS 5 to 6 at calving, are cycling by 90 days post-calving whereas only 66% of the cows at BCS 1 to 4 were cycling by 90 days after calving. Even though there were more cows cycling at BCS 7 to 9, there is some evidence in work done by Meaker that conception rates are lower in these heavier cows. It is also more costly to keep cows in that heavier condition.

Johns and Ely (98) reported similar results in a study comparing BCS at calving and the post partum interval. Table 5 depicts the pertinent observations. Cows cycled sooner after calving if they calved in good body condition.

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Table 5. Post partum interval (PPI) at different BCS at calving.

BCS at calving (USA scale)	≤ 4 (2)	≥ 5 (2.5)
PPI (days)	61	49

The positive relationship between BCS at calving, the length of anestrus and pregnancy rate emphasizes the importance of this parameter in determining the success of the beef cow herd. Body condition scoring is a practical way of monitoring the nutritional (particularly energy) status of cows. This is a valuable tool in helping to optimize reproductive performance.

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Feeding prior to calving

Feeding cows prior to calving

There has been considerable debate about feeding levels just prior (4-6 weeks) to calving. The concern often expressed is that calves get too big and this increases the incidence of dystocia. Again, several studies demonstrate the benefits of feeding higher energy prior to calving. Table 6 illustrates one study demonstrating the benefit of feeding higher energy prior to calving.

Table 6. Effect of high and low energy fed for 90 days pre-calving on post partum anestrus.

Pre-calving Diet	Post Partum Interval
High Energy [1]	51 days
Low Energy [2]	67 days

1. High = 14.1 lbs. of TDN 2. Low = 7.1 lbs. of TDN (requirement 11.2 lbs TDN)

- **STRATEGIC FEEDING OF BEEF COWS,** Dennis Lunn, Brian Tarr, Ruminant Nutritionists
- Shur-Gain, Nutreco Canada Inc.

Richard J. Rasby
Extension Beef Specialist

Aaron Stalker
Beef Range Systems Specialist

Richard N. Funston
Beef Specialist, Cattle

Body Condition Scoring Beef Cows:

A Tool for Managing the Nutrition Program for Beef Herds

A Tool for Managing the Nutrition Program for Beef Herds – Richard J. Rasby (Extension Beef Specialist), Aaron Stalker (Beef Range Systems Specialists), Richard N. Funston (Beef Specialist, cattle)

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Body fat % vs BCS

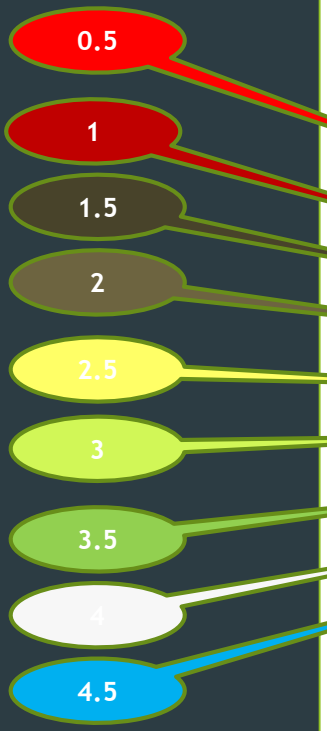

Table I. Percent of Body Fat Associated With Each Body Condition Score

BCS	% Body Fat
1	3.8
2	7.5
3	11.3
4	15.1
5	18.9
6	22.6
7	26.4
8	30.2
9	33.9

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Necessity of cow body fat

Body Condition Scores Reflect Body Fat

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BCS - Key areas

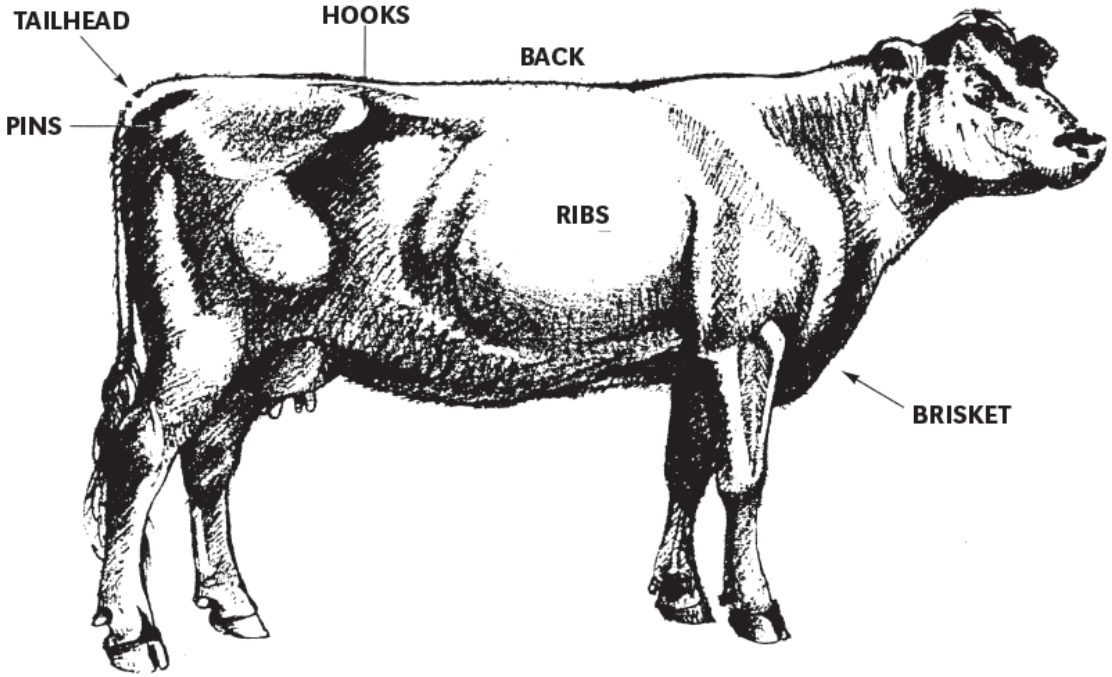

Figure 1. Key areas for evaluation on the beef cow are the backbone, ribs, hips, pinbones, tailhead and brisket. Drawings courtesy of Elanco.

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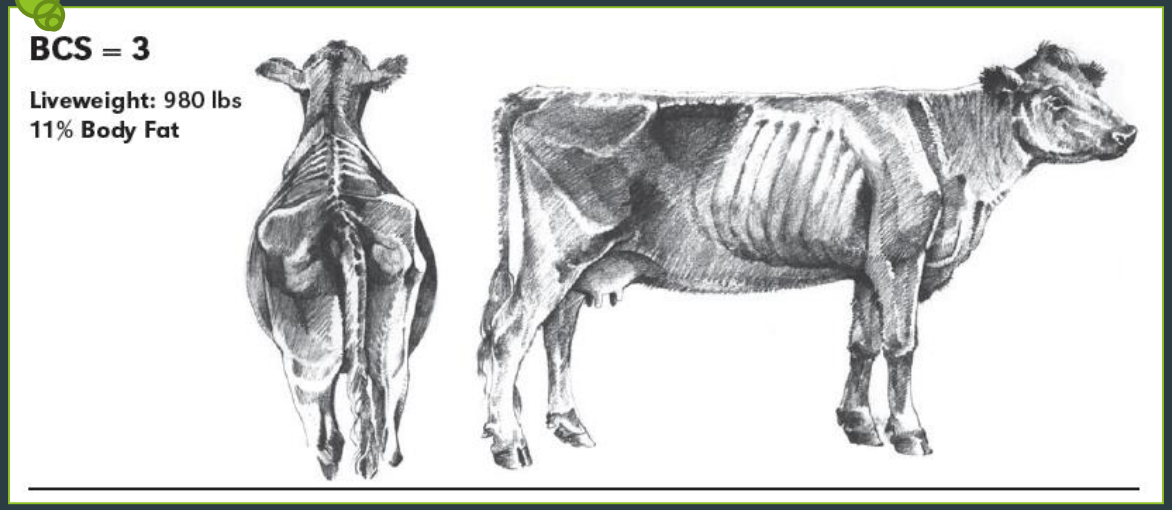
BCS 3 = 1.5 (S.Africa)

980/2.2 = 445kg



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BCS 3 = 1.5 (S.Africa)

BCS 3 — Rear view

BCS 3 — Side view

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BCS 4 = 2 (S.Africa)

BCS 4 — Rear view

BCS 4 — Side view

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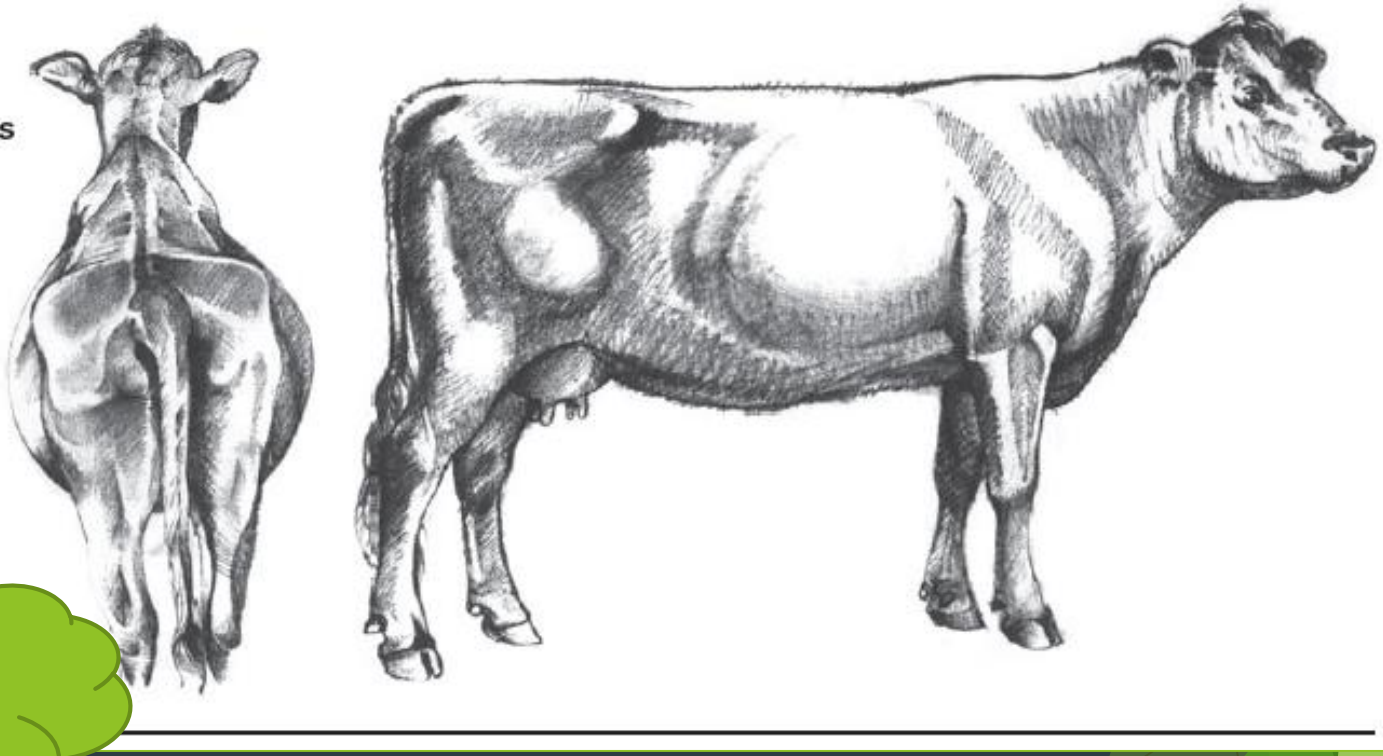
BCS 5 = 2.5 (S.Africa)

BCS = 5

Liveweight: 1130 lbs
19% Body Fat



1130/2.2 = 513kg

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BCS 5 = 2.5 (S.Africa)

BCS 5 — Rear view

BCS 5 — Side view

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BCS 6 = 3 (S.Africa)

BCS 6 — Rear view

BCS 6 — Side view

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BCS 7 = 3.5 (S.Africa)

BCS = 7

Liveweight: 1280 lbs
26% Body Fat

1280/2.2
= 581kg

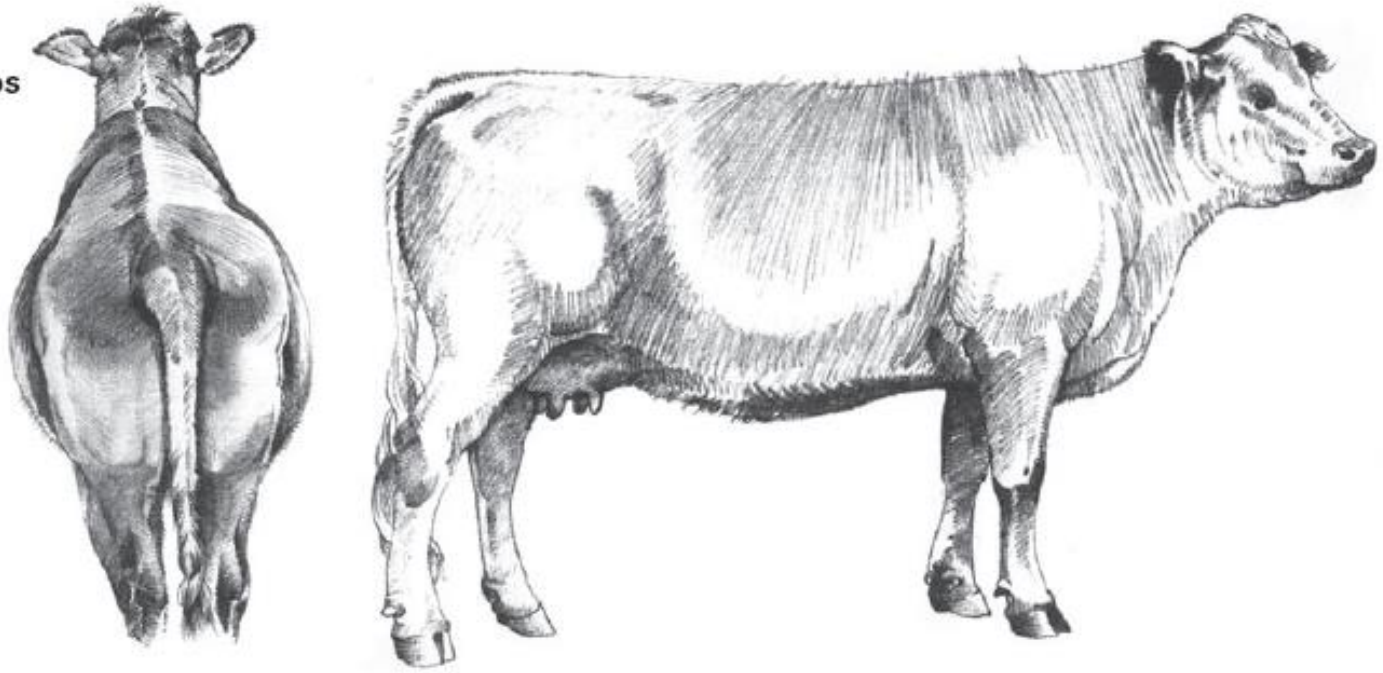

Figure 2. Drawing of what beef cows look like without hair and are in BCS 3, 5, and 7. Drawings courtesy of Elanco.

5

A Tool for Managing the Nutrition Program for Beef Herds – Richard J. Rasby (Extension Beef Specialist), Aaron Stalker (Beef Range Systems Specialists), Richard N. Funston (Beef Specialist, cattle)

BCS 7 = 3.5 (S.Africa)

BCS 7 — Rear view

BCS 7 — Side view

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Visual vs BCS

Table II. Visual Description of Key Body Locations Associated With Each Condition Score

	Body Condition Score								
Reference Point	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Physical weak	yes	no	no	no	no	no	no	no	no
Muscle Atrophy[a]	yes	yes	yes	slight	no	no	no	no	no
Outline of spine visible	yes	yes	yes	slight	no	no	no	no	no
Outline of ribs visible	all	all	all	3-5	1-2	0	0	0	0
Fat in brisket and flanks	no	no	no	no	no	some	full	full	extreme
Outline of hip and bones visible	yes	yes	yes	yes	yes	slight	no	no	no
Patchy fat around tail head	no	no	no	no	no	slight	yes	yes	yes

[a]Muscles of loin, rump and hindquarter are concave, indicating loss of muscle tissue.
Adapted from Pruit and Momont, South Dakota State University, 1988.

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Body Condition and Cow Herd Productivity

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BCS vs Ave. interval from calving to 1st heat

Table III. Relationship Between Body Condition and the Average Interval From Calving to First Heat After Calving

Body Condition Score	*Average Postpartum Interval[a], days*
3	89
4	70
5	59
6	52
7	31

[a]Postpartum interval is the interval from calving to first heat or estrus after calving.
Houghton et al., 1986. Purdue University.

1.5
2
2.5
3
3.5

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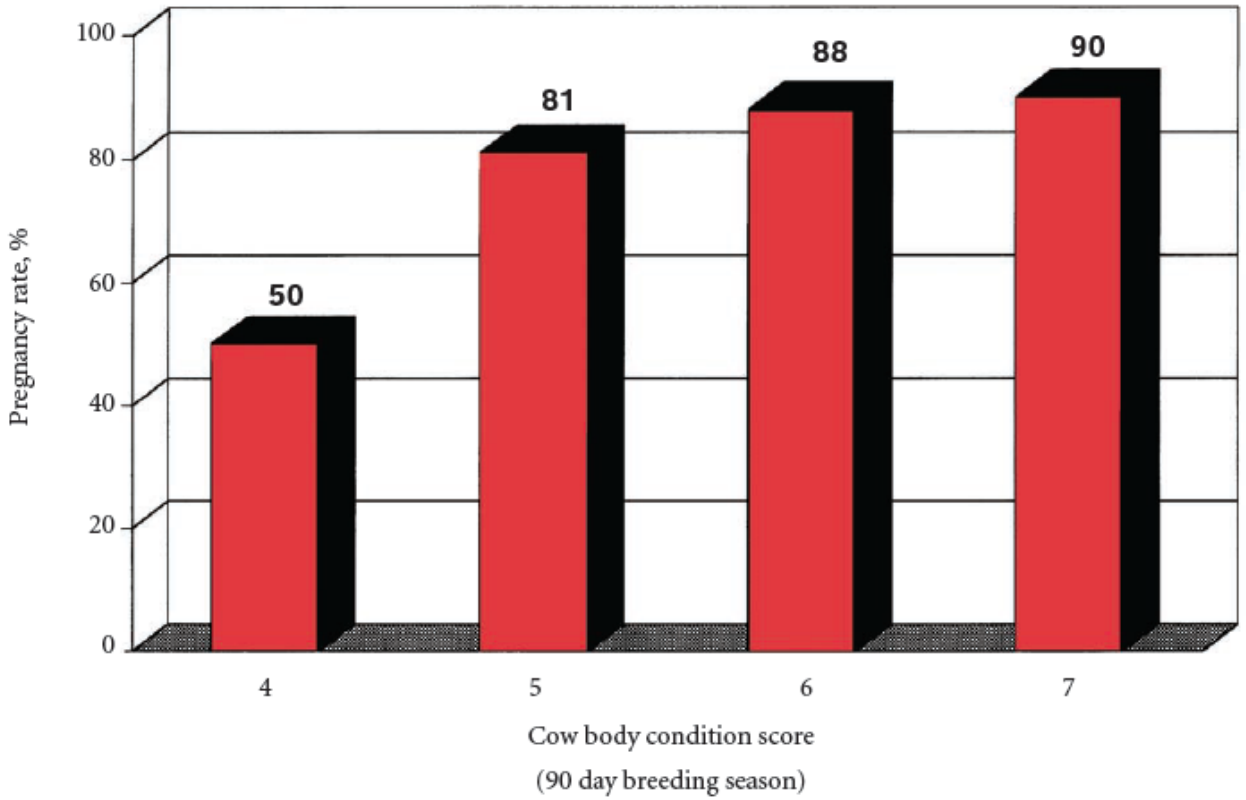
(Compiled by Dr JD Cloete, BVSc)

BCS : Pregnancy rate : Weaning

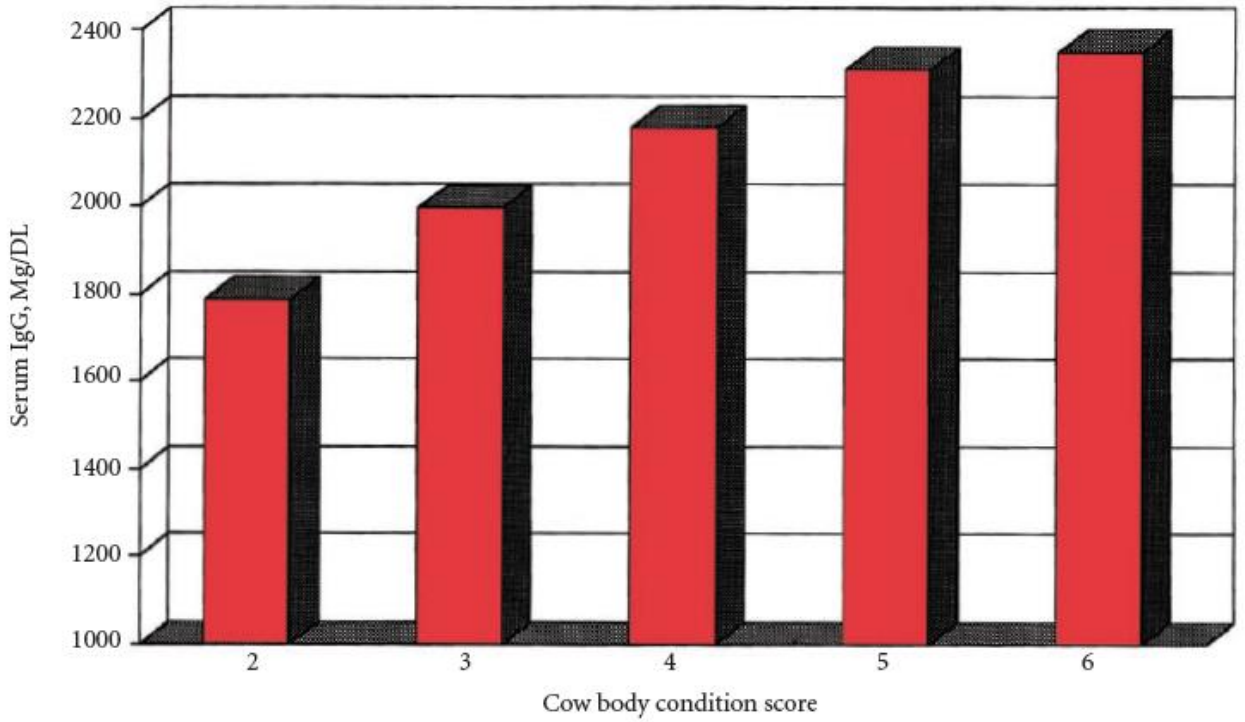


Selk at. al, 1986 Oklahoma State University.

Figure 3. Effect of cow body condition score at calving on pregnancy rate.

A Tool for Managing the Nutrition Program for Beef Herds – Richard J. Rasby (Extension Beef Specialist), Aaron Stalker (Beef Range Systems Specialists), Richard N. Funston (Beef Specialist, cattle)

BCS : calving : IgG serum : 24 hrs old



Odde et. al, 1986 Colorado State University.

Figure 4. Effect of cow body condition score at calving on concentration of IgG in serum of calves 24 hours old.

9

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BCS : Weaning : Pregnancy rate

Table IV. Relationship of Body Condition Score at Weaning and Pregnancy Rate

	Body Condition Score				
	1.5 <3	2 4	2.5 5	3 6	> 3 >6
Total Cattle	3,415	23,811	37,970	26,213	9,654
% of Herd	3.4	23.6	37.6	25.9	9.5
% Pregnant	75.7	85.4	93.8	95.6	95.6

Cherni, 1995: Padlock Ranch – Dayton, Wyo.
Nine-year summary (1986-1994) 101,063 total observations.

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Group by BCS for feeding

Grouping Cows By Body Condition For Feeding

The ideal BCS for mature cows (4 years and older) prior to spring calving is 5 and should be one condition score higher for first calf 2-year-old heifers. The higher condition score is warranted for the younger cattle because after calving they are still growing while suckling a calf plus preparing for rebreeding.

It's much easier to get condition back on cows economically before calving because the nutrient requirements are lower compared to after calving. It is also more economical to get condition back on cows through grazing or grazing along with supplementation, when needed, as compared to hauling

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BCS time

Summer

Autumn

When to Body Condition Score the Cow Herd

Time	*Reason*
Late Summer	Condition scoring the cow herd at this time may be used in planning management strategies such as early weaning or supplementation programs for cow grazing warm-season pastures or range that are decreasing in quality. Scoring cows at this time is probably more important in range areas as compared to areas that would have both cool- and warm-season pastures and crop residues. Young cows need to be examined closely, as they are likely to be the females that are losing condition and early weaning this group may be the best management option. Also, if pasture quality and quantity is decreasing at a rapid rate due to environmental conditions, weaning the whole calf crop may be necessary. Data indicate that it is more economical to feed the calf directly than to supplement the cow to feed the calf.
Fall	Condition scoring cows in the range area in the fall is critical. Because of the feed resources, it is more difficult to get condition back on cows prior to calving in the range area where the feed resources are primarily warm-season grasses. Condition scoring cows at this time will help in planning an economical winter supplementation program to get females back to the target BCS. If young females are thin, consider early weaning their calves to allow them to regain condition.
Weaning Time	Pay particular attention to young cows weaning their first calves, as they are most likely to be thin at this time. In areas where crop residues are part of the feed resource, thin cows will typically regain condition.
45 Days After Weaning	Gives a good idea how fast cows are bouncing back after weaning. Thin cows should be gaining back condition if cow type is matched with the feed resources. This is especially true if cows have both warm- and cool-season pastures or crop residues to graze. It will take longer for cows grazing dry, native range to gain back body condition.
90 Days Before Calving	Last opportunity to get condition back on cows economically. This would be the time to separate thin cows from cows in good condition and feed them separately. Pay attention to young cows.
Calving	If cows are thin, you may want to change the pre-calving feeding program or weaning date. Thin mature cows at calving may indicate a mismatch between genetics and feed resources, especially if cows received adequate diets and they are thin. It may also mean that calving and/or weaning are not matched with the resources or genetics. It is difficult to get condition on cows after calving economically. It takes large amounts of high-quality feed.
Breeding	Thin cows at this time may indicate a poor match of calving season to feed resources. Maybe calving occurs too early in the spring.

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Energy : Beef cows : Pregnancy stages

Northern Hemisphere Month in South African climate

Table V. Energy Requirements of Beef Cows in Different Stages of Production

Month	Southern Hemisphere Month in South African climate	Net Energy Required Mcal/day				
		Maintenance	Growth	Lactation	Pregnancy	Total
March	Oct	10.3	0	4.8	0.00	15.1
April	Nov	10.3	0	5.7	0.00	16.0
May	Dec	10.3	0	5.2	.01	15.5
June	Jan	10.3	0	4.1	.03	14.4
July	Feb	10.3	0	3.1	.07	13.5
August	Mar	10.3	0	2.2	.16	12.7
September	Apr	8.5	0	0	.32	8.8
October	May	8.5	0	0	.64	9.1
November	Jun	8.5	0	0	1.18	9.7
December	July	8.5	0	0	2.08	10.6
January	Aug	8.5	0	0	3.44	11.9
February	Sep	8.5	0	0	5.37	13.9

Assumes 1,170-pound 5-year-old cow calving March 1 with average milk production.
Nutrient Requirements of Beef Cattle, 7th Revised Edition. 1996. National Academy Press, Washington, D.C.

A Tool for Managing the Nutrition Program for Beef Herds – Richard J. Rasby (Extension Beef Specialist), Aaron Stalker (Beef Range Systems Specialists), Richard N. Funston (Beef Specialist, cattle)

(Compiled by Dr JD Cloete, BVSc)

Energy reserves : Body size : BCS

Table VI. Energy Reserves for Different Body Sizes and Condition Scores of Cows

	Mcal Net Energy for Various Cow Weights							
BCS	500 kg	*1100*	545 kg	*1200*	590 kg	*1300*	636 kg	*1400*
2	2	139		151		164		177
1.5	3	157		172		186		200
2	4	180		196		212		229
2.5	5	207		226		245		264
3	6	242		264		286		308
3.5	7	285		311		337		363
4	8	342		373		405		436
4.5	9	418		456		494		532

The numbers in the body of the table represent the energy required to move a cow from the next lower BCS to the present one.

Nutrient Requirements of Beef Cattle, 7th Revised Edition, 1996. National Academy Press, Washington, D.C.

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(Compiled by Dr JD Cloete, BVSc)

Energy required : Change BCS

500 kg

2

2.5

Table VI illustrates the amount of energy in megacalories (Mcal = 1 million calories) required to change the body condition of cows. For example, if the goal was to increase the body condition of an 1,100 pound cow from a BCS 4 to a BCS 5, the cow would need a total of 207 Mcal of energy beyond her daily maintenance needs (*Table VI*). This 207 Mcal of additional energy could be supplied by an energy dense feedstuff, such as dried distillers grains that have 1.22 Mcal of Ne_m per lb (*Table VII*). If 3 pounds of dried distillers grains were added to the existing ration, it would take 57 days (207 Mcal / (3 lb dried distillers grains x 1.22 Mcal Ne_m per lb of dried distillers grains) = 56.6 days) to elevate the cow's body condition from BCS 4 to a BCS 5. The cow would have to gain about 1.3 pounds per day, not including fetal weight gain, to achieve this change in body condition (75 pounds ÷ 57 days = 1.32 pounds per day).

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(Compiled by Dr JD Cloete, BVSc)

Energy criteria : Feedstuffs

Feedstuffs listed other than corn have less energy and would require larger amounts to be fed in order to affect a change of one body condition score. Alfalfa hay, for example, fed at 5 pounds per day beyond daily maintenance needs, would require 69 days of feeding to change the cow mentioned above from a BCS 4 to a BCS 5. Thus, energy density is a critical factor in feeding cows to change body condition. To change cow body condition during late gestation will require some form of energy dense concentrate such as grain. If feeds with a lower energy density are used, more days will usually be required to change cow body condition score. These rations will only be successful if the female is in her thermal-neutral zone. Energy demands increase during extremely cold environmental conditions.

Lucerne Hay

2.27 kg

2

2.5

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(Compiled by Dr JD Cloete, BVSc)

Feed energy examples

Table VII. NE_m for Some Common Feedstuffs

Feedstuff	*NE_m Mcal/lb*
Corn, cracked	1.02
Corn Gluten Feed	.87
Dried Distillers Grains	1.22
Wheat, middlings	.92
Milo, rolled	.91
Corn Silage/40% Grain	.69
Alfalfa Hay	.60
Prairie Hay, early bloom	.58

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Adjusting the weaning date, particularly for first-calf 2-year-olds can be used to allow for lactating 2-year-olds to graze their way back to a higher body condition prior to winter. Weaning calves at 120 to 150 days can give first-calf heifers an opportunity to recover body condition so they won't be so thin at their second calving, will not have a long postpartum interval, or fail to rebreed during the next breeding season.

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12-6-1993

Precalving Nutrition/birth Weight Interaction and Rebreeding Efficiency

Robert P. Wettemann
Oklahoma State University

A Tool for Managing the Nutrition Program for Beef Herds – Richard J. Rasby (Extension Beef Specialist), Aaron Stalker (Beef Range Systems Specialists), Richard N. Funston (Beef Specialist, cattle)

Nutrition : Fetus

NUTRITIONAL EFFECTS ON FETAL DEVELOPMENT

Many factors influence the birth weight and survival of calves. Reduced nutrient intake during the last third of pregnancy may cause reduced birth weights as well as calf mortality, reduced milk production and decreased postnatal calf growth. Studies indicate that beef cows that have been fed restricted diets during late gestation often have calves with lighter birth weights compared to cows with adequate nutrition. These observations have stimulated some cattlemen to reduce feed intake of cows, especially first calf heifers, during pregnancy in an attempt to decrease calving difficulties.

Precalving nutrition/birth Weight Interaction and Rebreeding Efficiency,
Robert P. Wettermann, *Oklahoma State University*

Body weight after calving

767/2.2 = 348kg

863/2.2 = 392kg

925/2.2 = 420kg

Table 2. Effect of body weight of two-year-old heifers at calving on calving difficulty and rebreeding.

Characteristic	Prepartum weight gains: Low	Moderate	High
Number of heifers	36	39	40
Daily weight gain, lb	0	.5	1.0
Body weight after calving, lb	767	863	925
Heifers assisted at calving, %	58	52	48
Pregnancy rate, %	84	91	84
Calving to pregnancy, days	88	80	74

Adapted from Turman et al., 1965.

Precalving nutrition/birth Weight Interaction and Rebreeding Efficiency,
Robert P. Wettermann, *Oklahoma State University*

(Compiled by Dr JD Cloete, BVSc)

BCS : 2yr old calving heifers : calving difficulty : calf survival

Table 3. Influence of BCS of 2-year-old heifers at calving on birth weights, calving difficulty and calf survival[a]

Trait	Body Condition Score 4	5	6
Number of heifers			
Year 1	10	21	8
Year 2	8	23	11
Total	18	44	19
Live calves at birth,%	94	84	95
Birth weight of calves, lb			
Year 1	68.3±2.4	66.2±2.0	67.6±1.9
Year 2	60.8±2.3	68.0±1.8	71.8±2.4
Dystocia score, average of 1-4 scores	1.2±.1	1.4±.1	1.3±.1
Heifers requiring assistance at birth, %	33	32	35
Live calves at weaning,%	83	84	89
Heifers pregnant at the end of the breeding season, %	65	78	89

[a]Year did not influence any of the traits except birth weight, so values are the mean ± SE for both years for all traits except birth weight.

2 — 2.5 — 3

BCS/2 = S.A. score

Precalving nutrition/birth Weight Interaction and Rebreeding Efficiency,
Robert P. Wettermann, *Oklahoma State University*

(Compiled by Dr JD Cloete, BVSc)

BCS : calving difficulty : rebreeding

A recent study in Louisiana also evaluated the effect of BCS at calving on calving difficulty and rebreeding performance (Morrison, 1993 personal communication). Four-hundred-seventy-six 2 year old heifers, with less than 50% Brahman breeding, were fed diets during gestation to achieve BCS of 4, 5, 6, or 7 at calving. BCS at calving did not influence birth weights of calves or calving difficulty score, however reproductive performance was reduced in heifers calving in thin body condition.

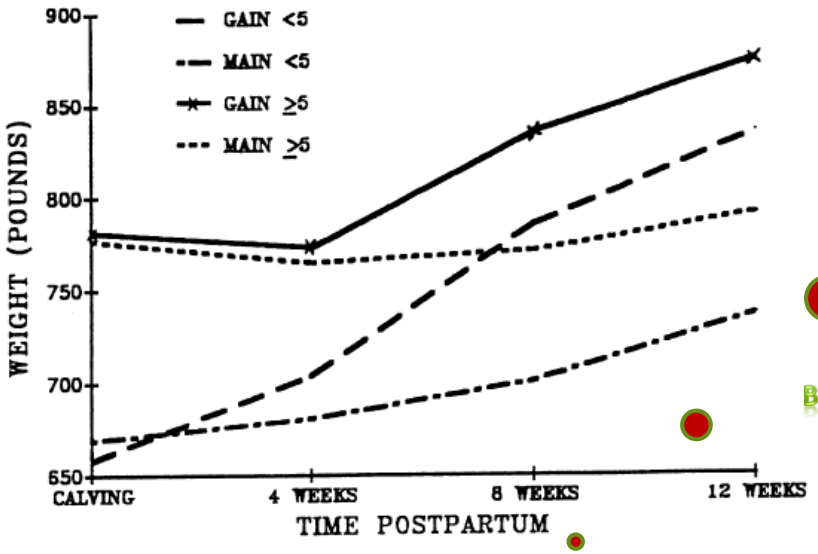

Figure 1: Postpartum weight of heifers with a body condition ≥ 5 or < 5 at calving and fed to gain or maintain weight.

BCS/2 = S.A. score

DIVIDE THE POUNDS WEIGHT BY 2.2 TO CONVERT IT TO KG WEIGHT

Precalving nutrition/birth Weight Interaction and Rebreeding Efficiency,
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(Compiled by Dr JD Cloete, BVSc)

BCS vs Rebred %

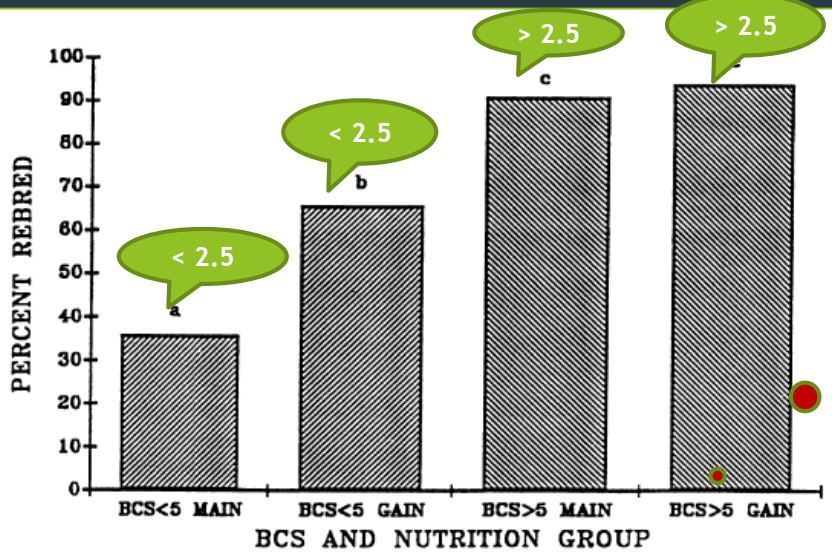

Figure 2: Percentage of heifers pregnant by 120 days after calving, when heifers calved with a BCS ≥ 5 or < 5 and were fed to gain or maintain weight. Bars with different letters (a, b, c) differ (P < .05).

< 2.5

< 2.5

> 2.5

> 2.5

BCS/2 = S.A. score

DIVIDE THE POUNDS WEIGHT BY 2.2 TO CONVERT IT TO KG WEIGHT

CONCLUSIONS

1. Body condition score of cows at calving is the most important factor that determines if cows will become pregnant during the breeding season. To insure good reproductive performance spring calving cows should calve with a BCS of 5 and heifers should have a BCS of at least 5.5.

> 2.75

> 2.5

Precalving nutrition/birth Weight Interaction and Rebreeding Efficiency,
Robert P. Wettermann, *Oklahoma State University*

Acknowledgements

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Acknowledgements

Bruce Carpenter and L.R. Sprott*

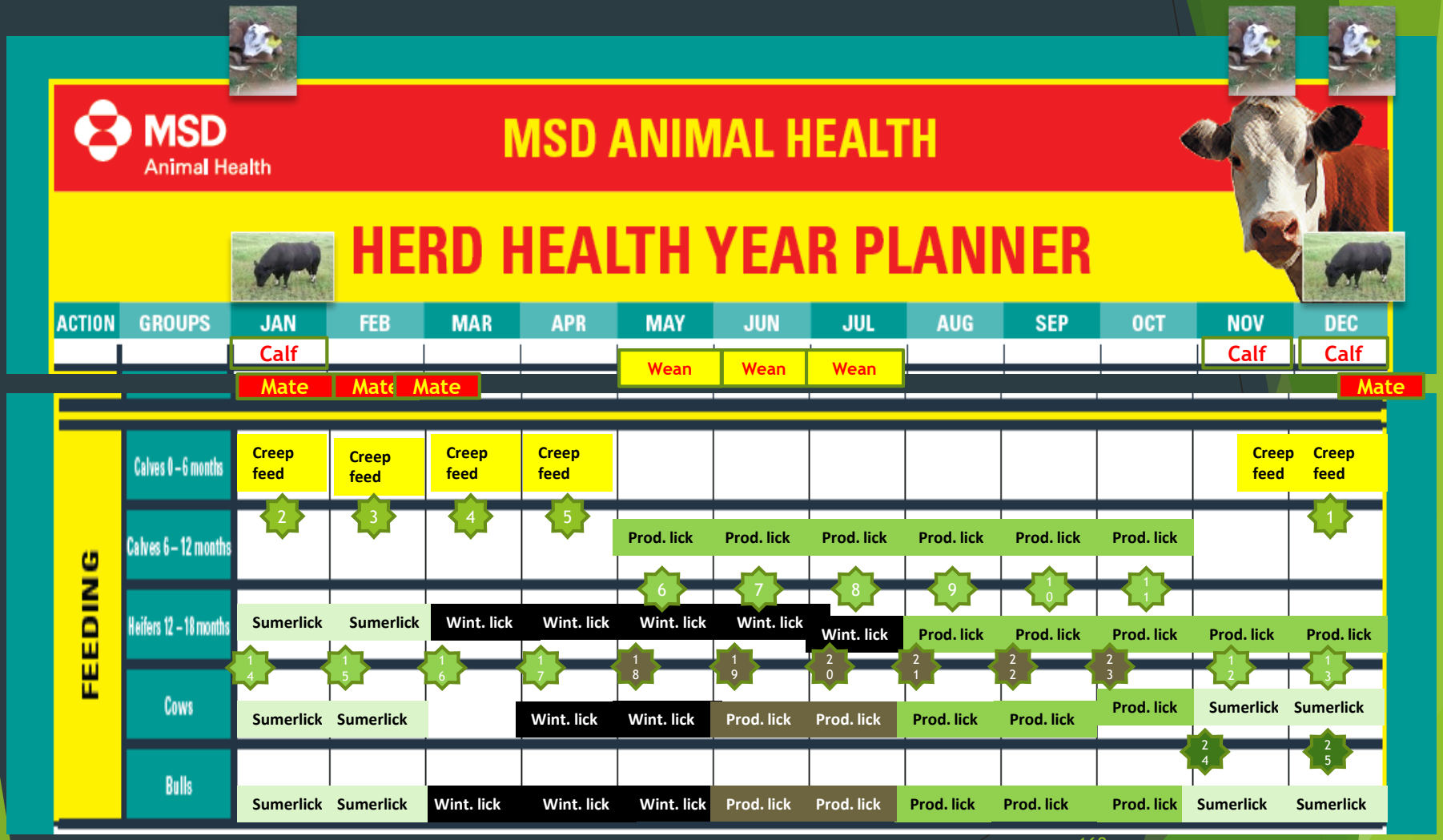
Long Calving Seasons:

Problems and Solutions

STRATEGIC FEEDING OF BEEF COWS

Dennis Lunn, Brian Tarr
Ruminant Nutritionists
Shur-Gain, Nutreco Canada Inc.

Nutrition

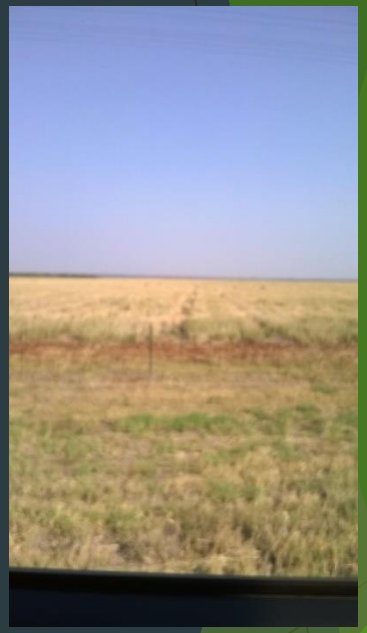


(Compiled by Dr JD Cloete, BVSc)

Agent Details

Pasture management

- At a glance
- Do you plan
- Do you have cultivated pastures
- What type of grasses
- How many hectares
- What is the dry material / ha
- What is your feed flow plan
- Is it on paper / computer
- What is your feed supplement plan
- What is a MLU
- How many Ha does 1 MLU require
- On your farm
- In your region



Pasture management

Slow down

- September 2015
- Roedtan >> Settlers area

Pasture management

- When driving
- Look around
- Stop, have a look
- Make time
- Contact the “doer”
- Learn
- Try to implement 100%

Pasture management

- What is the relevance

Body fat % vs BCS

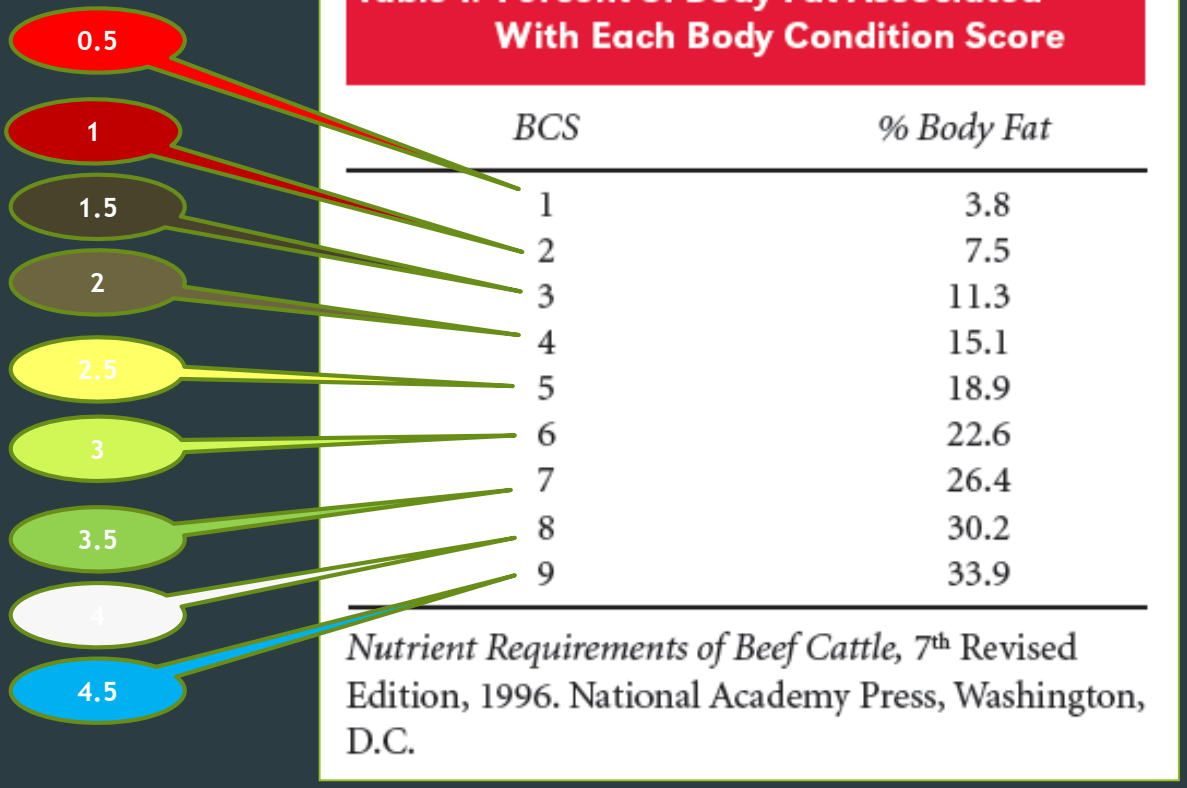


Table I. Percent of Body Fat Associated With Each Body Condition Score

BCS	% Body Fat
1	3.8
2	7.5
3	11.3
4	15.1
5	18.9
6	22.6
7	26.4
8	30.2
9	33.9

Nutrient Requirements of Beef Cattle, 7th Revised Edition, 1996. National Academy Press, Washington, D.C.

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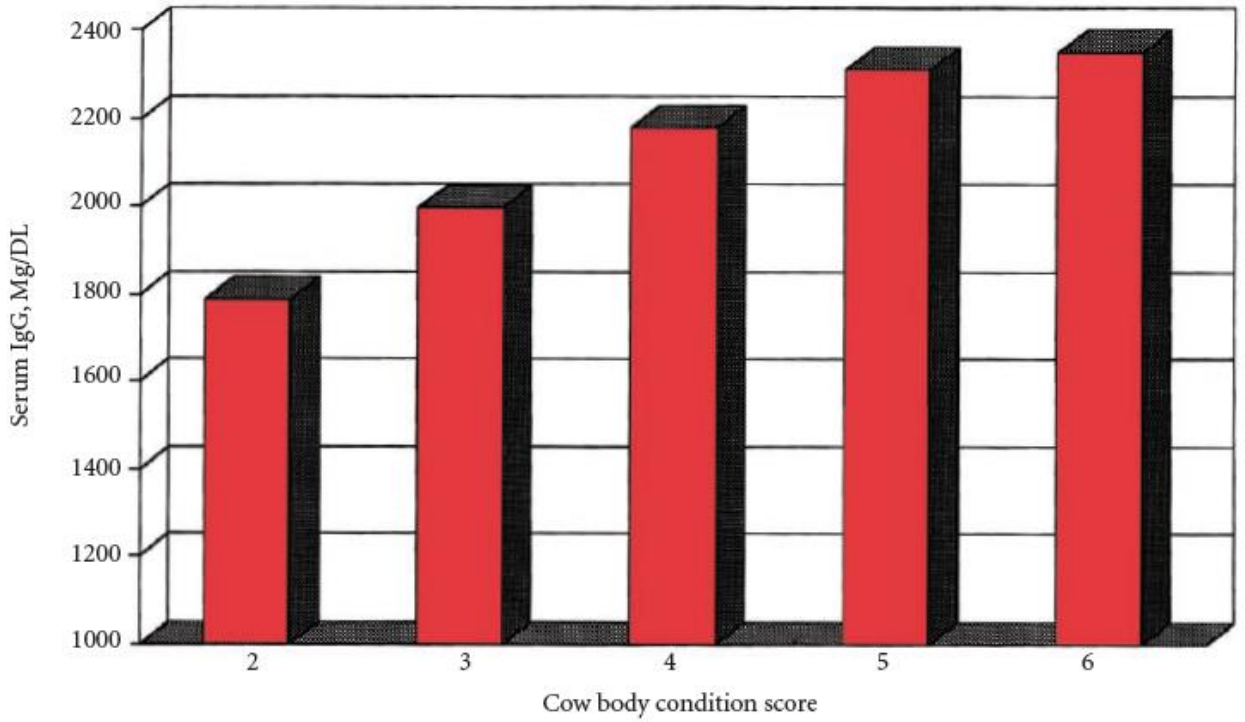

Odde et. al, 1986 Colorado State University.

Figure 4. Effect of cow body condition score at calving on concentration of IgG in serum of calves 24 hours old.

9

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BCS vs Ave. interval from calving to 1st heat

Pasture management

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1.5
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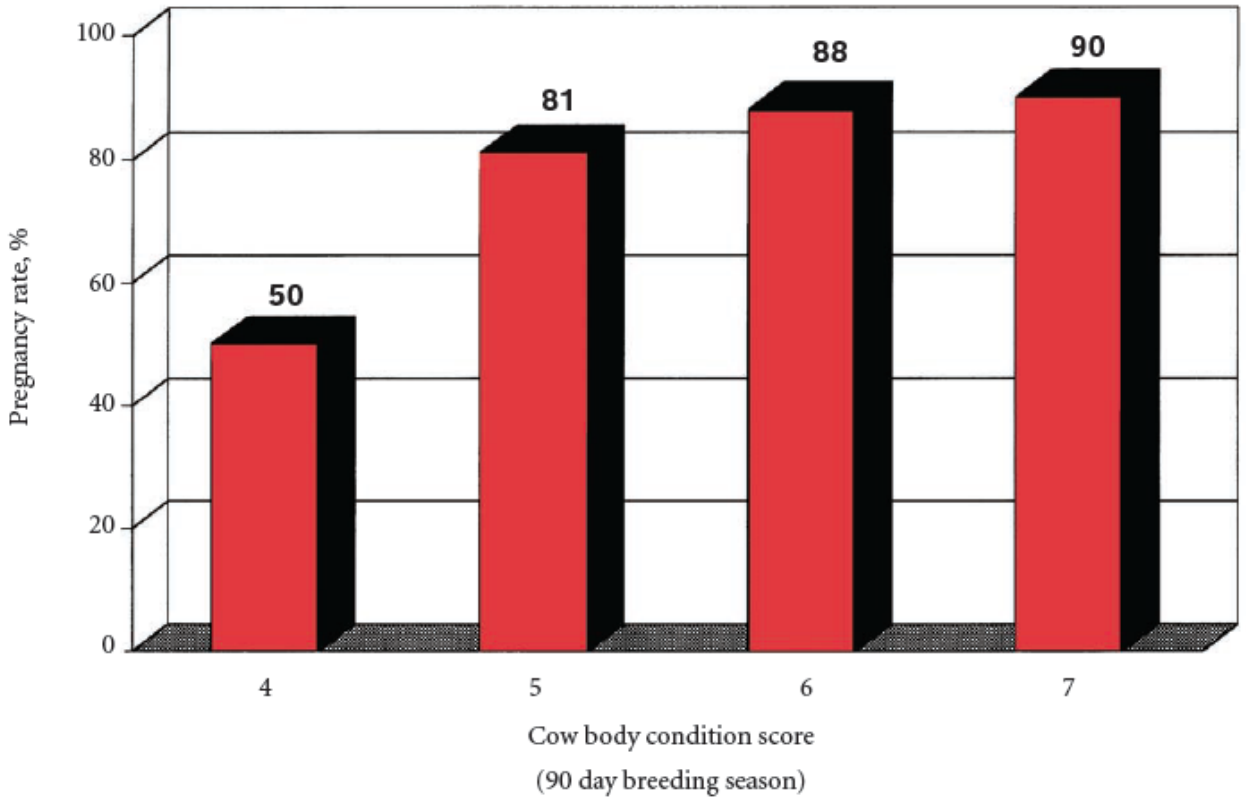
(Compiled by Dr JD Cloete, BVSc)

BCS : Pregnancy rate : Weaning



Selk at. al, 1986 Oklahoma State University.

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What is Pasture management ?

What does the producer do with all the info ?

- Use the GMPBasic system

- GMP = Good management protocol

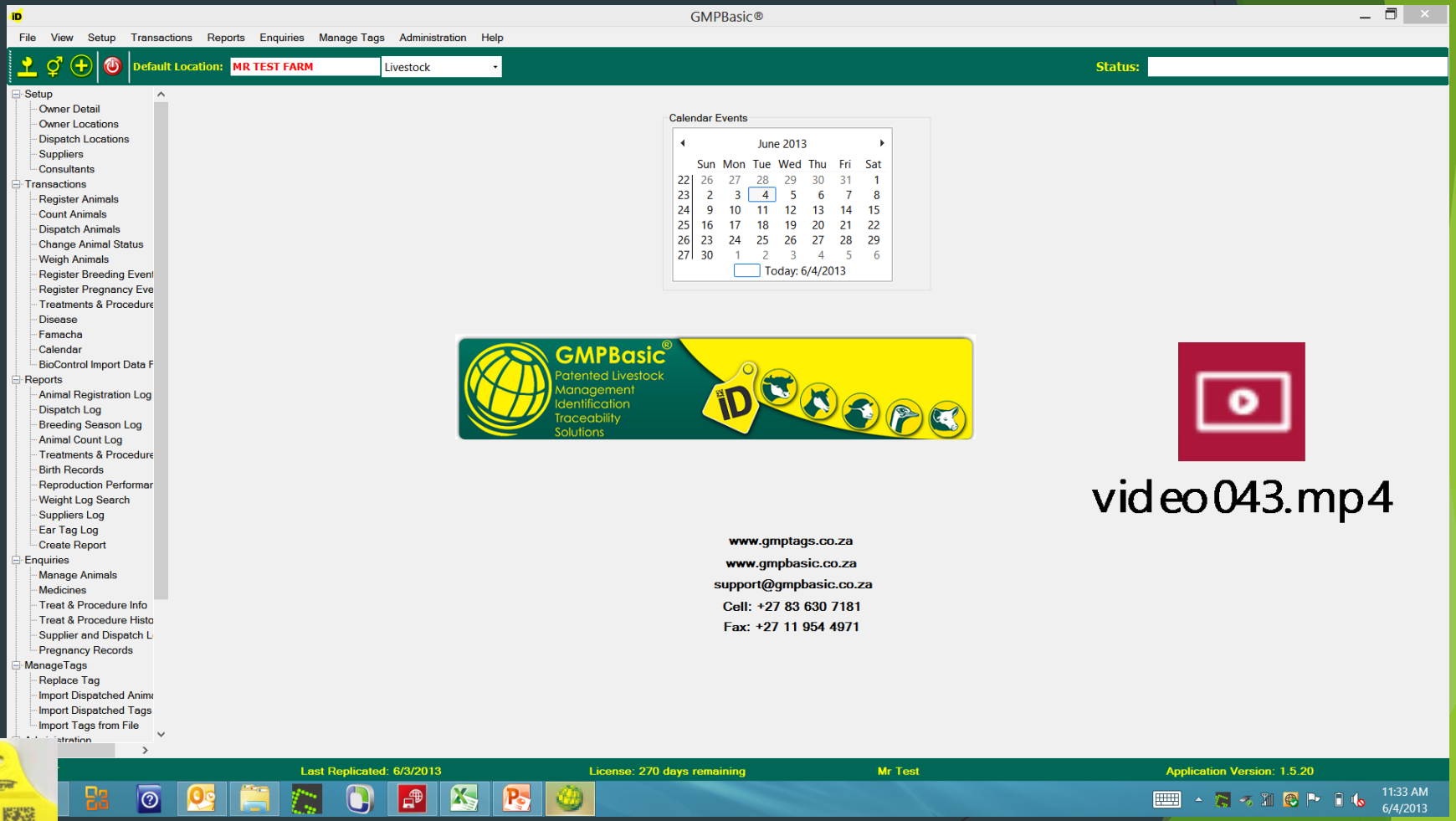
  Basic = basic principles

Ear tag system

(Compiled by Dr JD Cloete, BVSc)

GMPBasic®

Identification, management & traceability program



GMP ID tags – Sheep / cattle

(Compiled by Dr JD Cloete, BVSc)

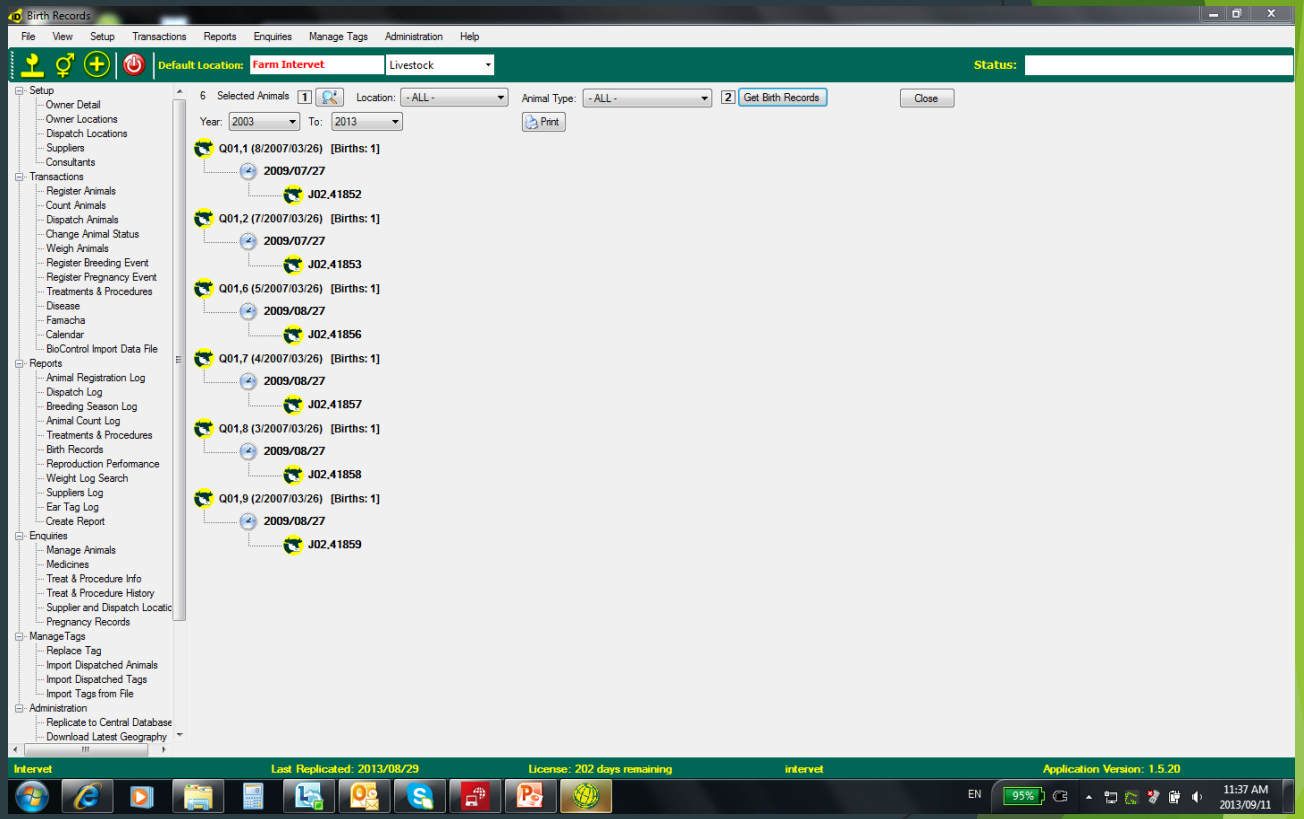
Unique, individual, tamper evident, central database issued tag

GMPBasic - Record keeping

- Identify animal
- photo
- Certificate:

  - purchase date
  - health
  - fertility
  - pregnancy etc.

- Link to dam
- Allocate to group
- Weigh
- Treat
- Process
- Selection
- ADG (ADG = ave. daily gain)
- Test result records
- Calender addition
- Calender reminder
- Consultant contacts
- **And more >>>>>>**



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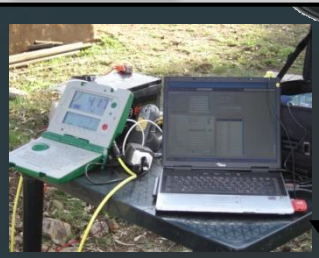
One Tag - One System – Cost effective

National Livestock Industry Solution

Begin

MSD index



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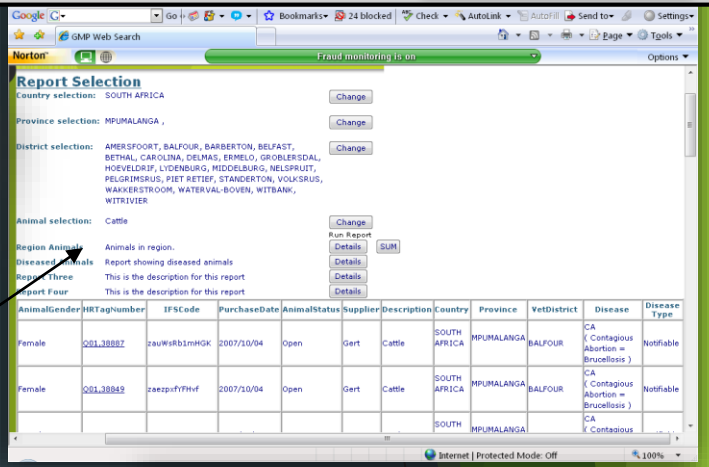

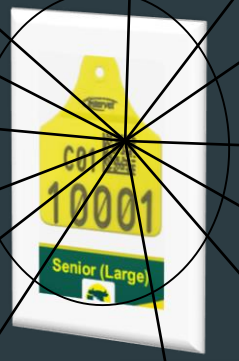

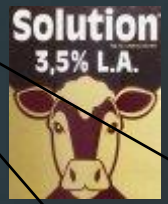

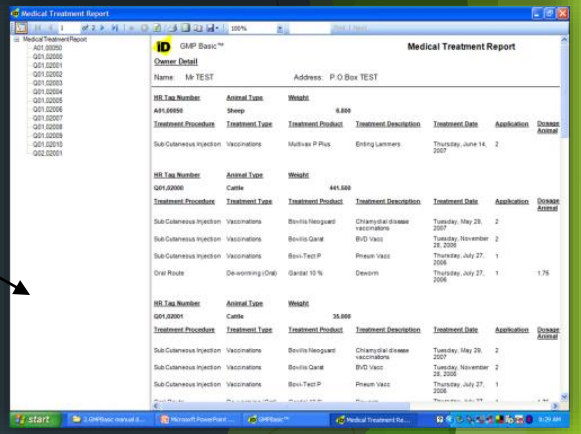

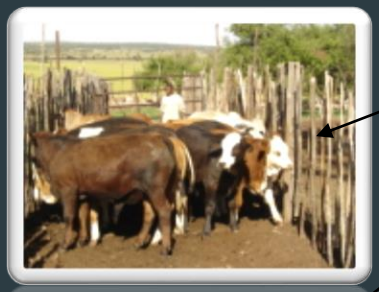

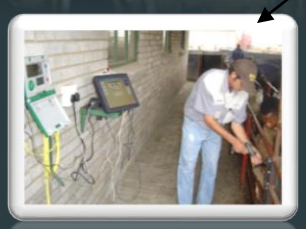

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Solution 3,5% L.A. :Reg no G 3689 Act 36/1947

Avotan Pour-on:Reg no G 3745 Act 36/1947

Bovilis S:Reg no G 3763 Act 36/1947

Where is GMPBasic used ?

- Limpopo
- Gauteng
- North West
- Free State
- KZN

- SV N Cape
- SV Gauteng

- Eastern Cape
- Southern Cape
- Western Cape
- Mpumalanga

- Ostrich industry (SAOBC)

(Compiled by Dr JD Cloete, BVSc)

- The first GMP Traceability project in South Africa

Gauteng – Heidelberg (2006)

Every animal has a UNIQUE number

(Compiled by Dr JD Cloete, BVSc)

Not breed restricted

(Compiled by Dr JD Cloete, BVSc)

Gauteng - Hammanskraal

- The number is registered into the system in one of 3 possible ways:
- Select from 'Tag log' with GMPBasic registration process - received via the internet / flash disc
- Scanning with 2 dimensional bar code scanner
  Bar Code scanner used for verifying visual tag authenticity
- Type in number (Prefix: and Count No.)
- Combo Tag – received via the internet / flash disc
- RFID stick reader is used to read the passive EID number

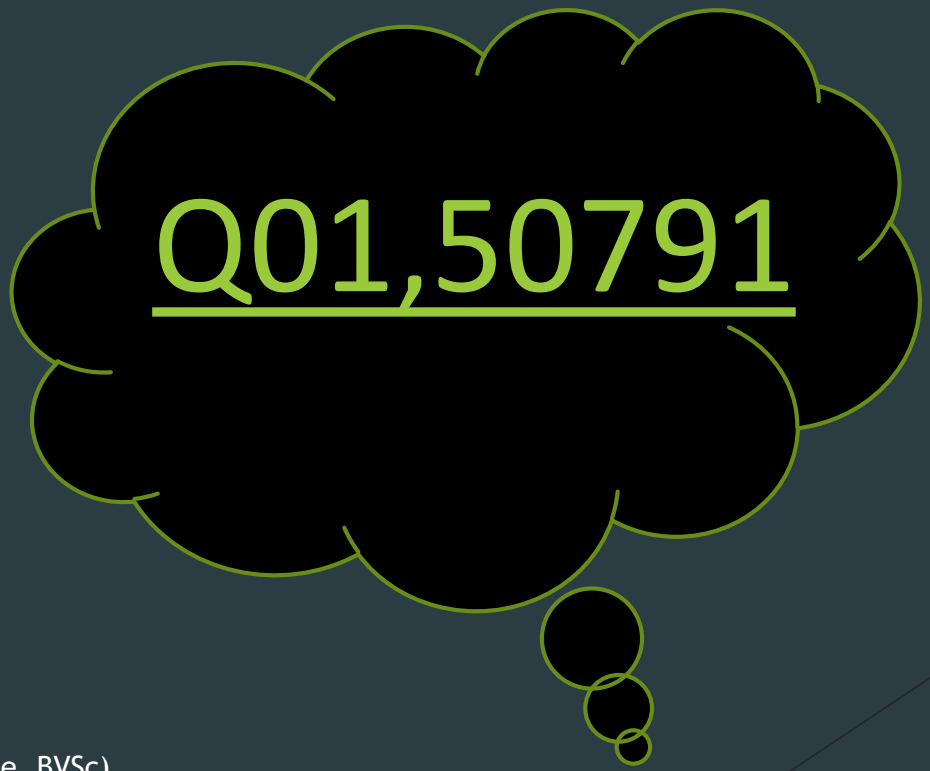
(Compiled by Dr JD Cloete, BVSc)

Q01,50791

(Compiled by Dr JD Cloete, BVSc)

The animal's data is also stored on the internet 'Cloud' on behalf of the client

- User name & password restricted



(Compiled by Dr JD Cloete, BVSc)

Hammanskral

Cow herd

Mpumalanga

Mark, identify, place in database, test for e.g. Liver fluke, Brucellosis – Buy / sell

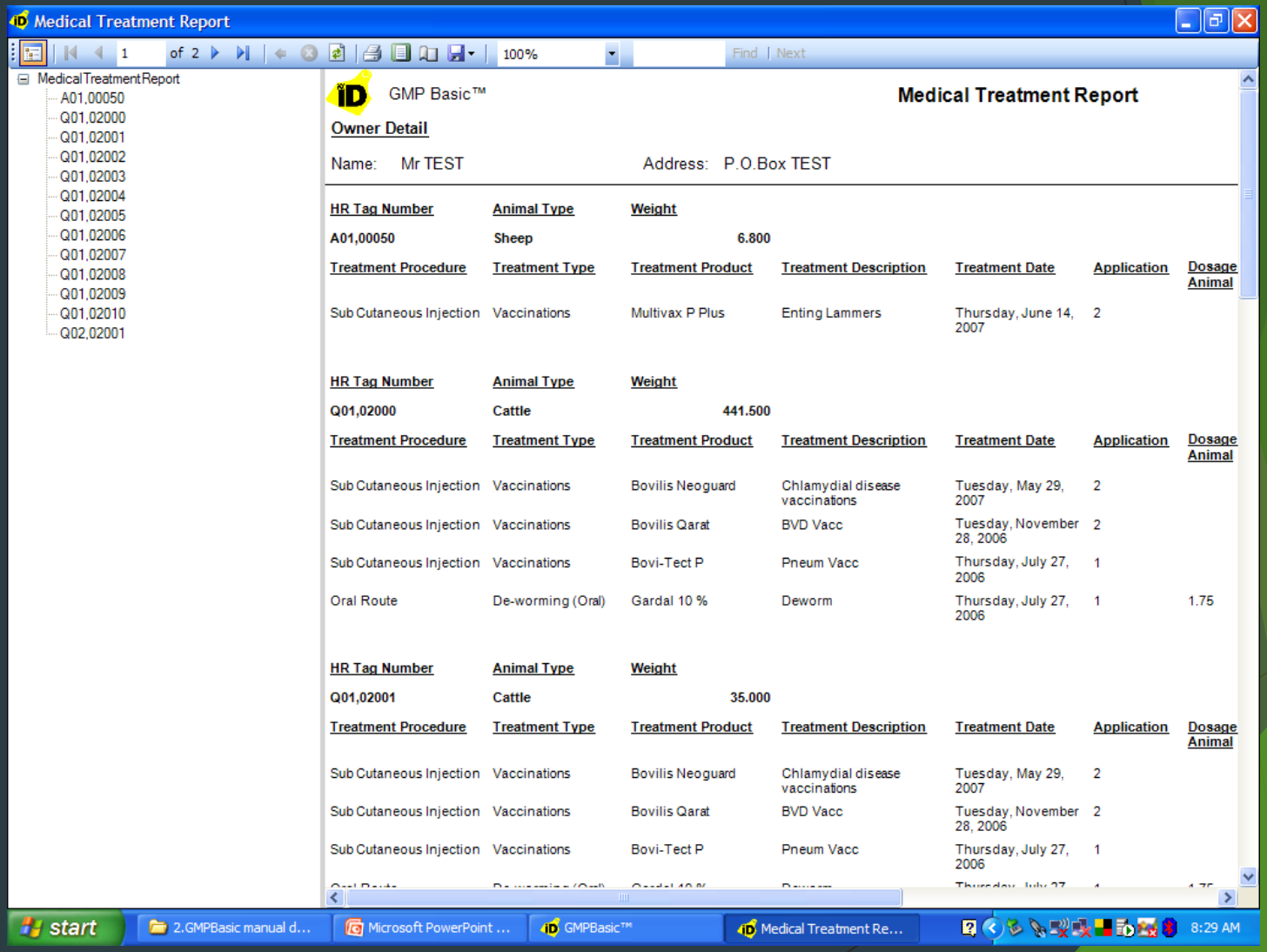
Blood samples – Brucellosis, BVD, Liver fluke …..

Treatments & Procedures recorded

- Antibiotics
- Dip remedies
- Vaccinations
- Dose remedies
- Implants
- Brucellosis, TB, BVD, EBL, Other
- Blood sampling, brandmark, selection etc.

(Compiled by Dr JD Cloete, BVSc)

‘Treatment records’



Good handling facilities !!!!

Scale for weighing - ADG - selection etc.

Consultant / Calendar

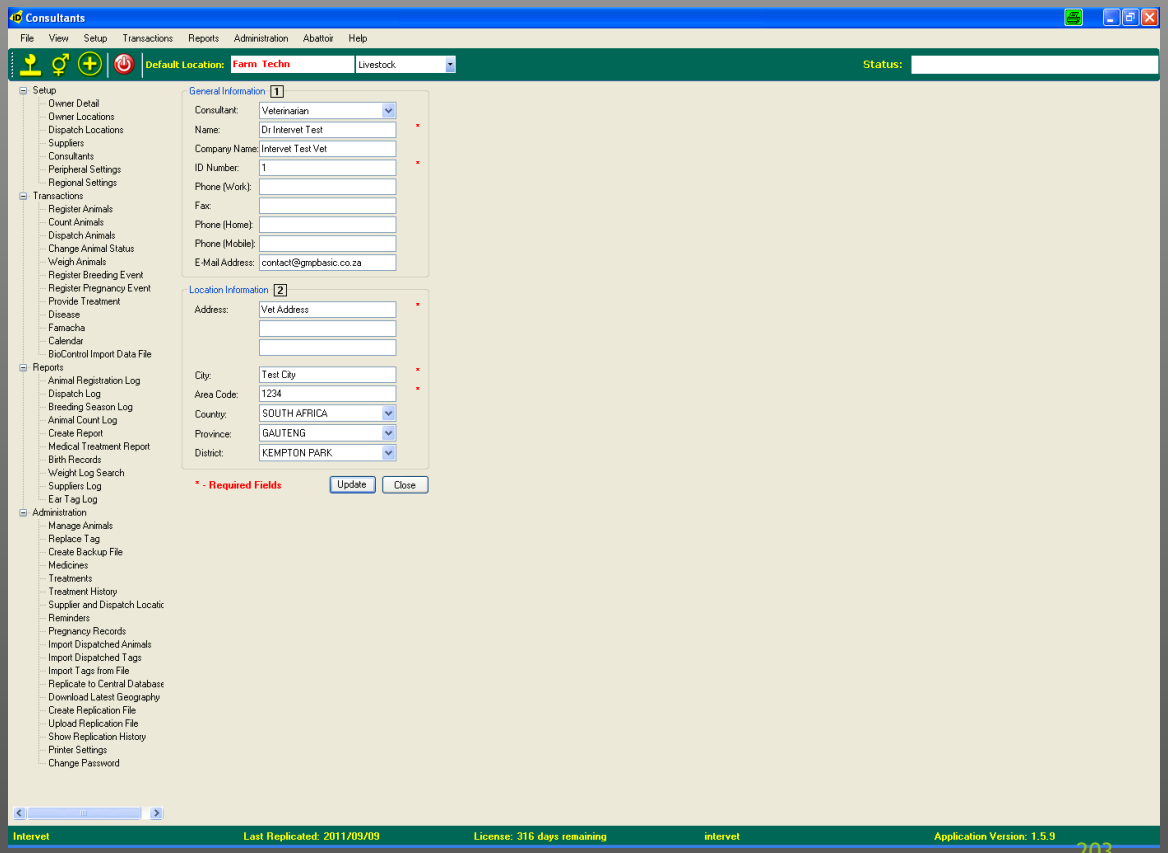
- Add consultants
- Category in industry e.g.

  Co-op branch, Field agent, Rep, Veterinarian, Nutritionist etc.

- Add e-mail – messages
- Add cell no.– messages (TBA)

(Compiled by Dr JD Cloete, BVSc)

'Consultants'

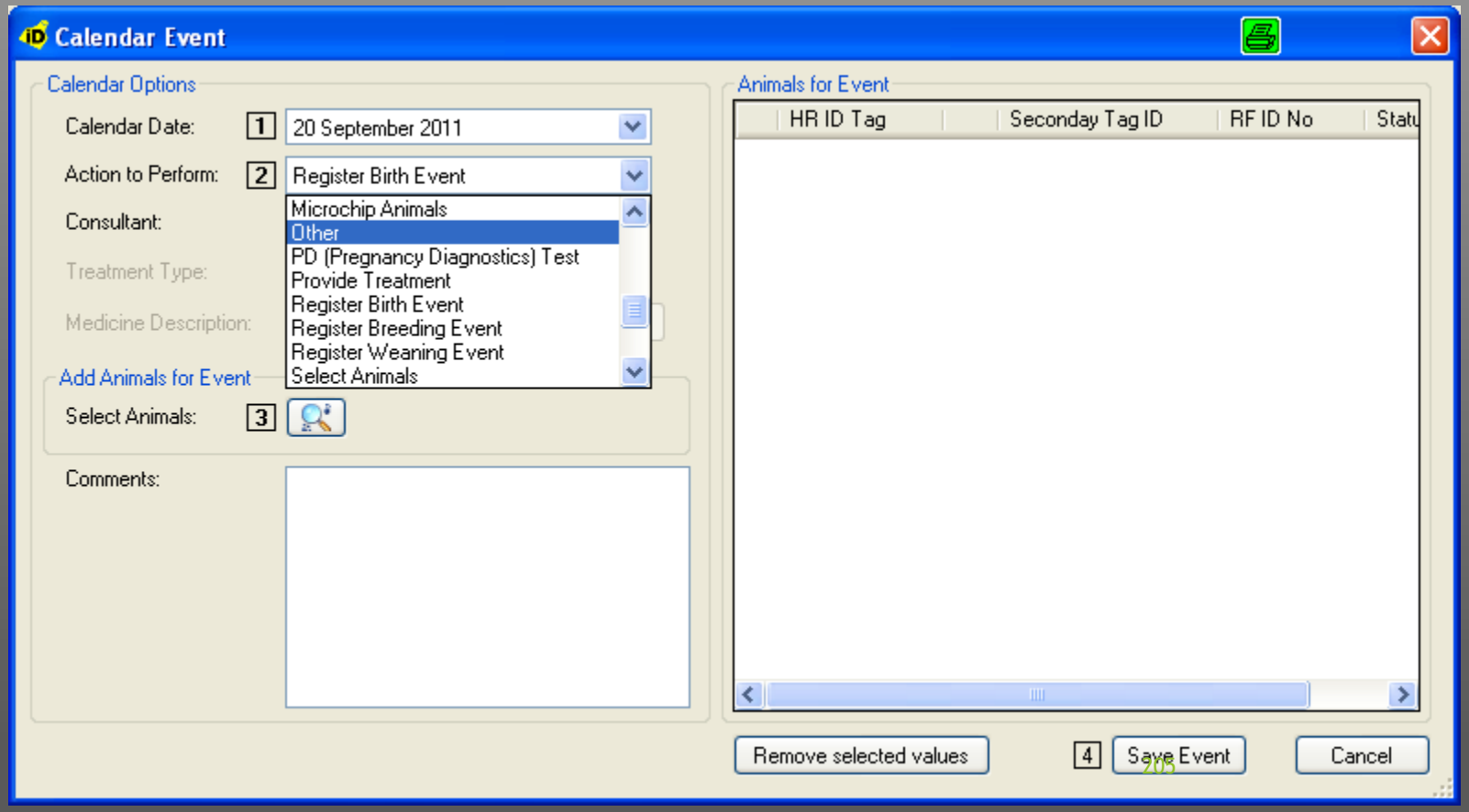


Calendar

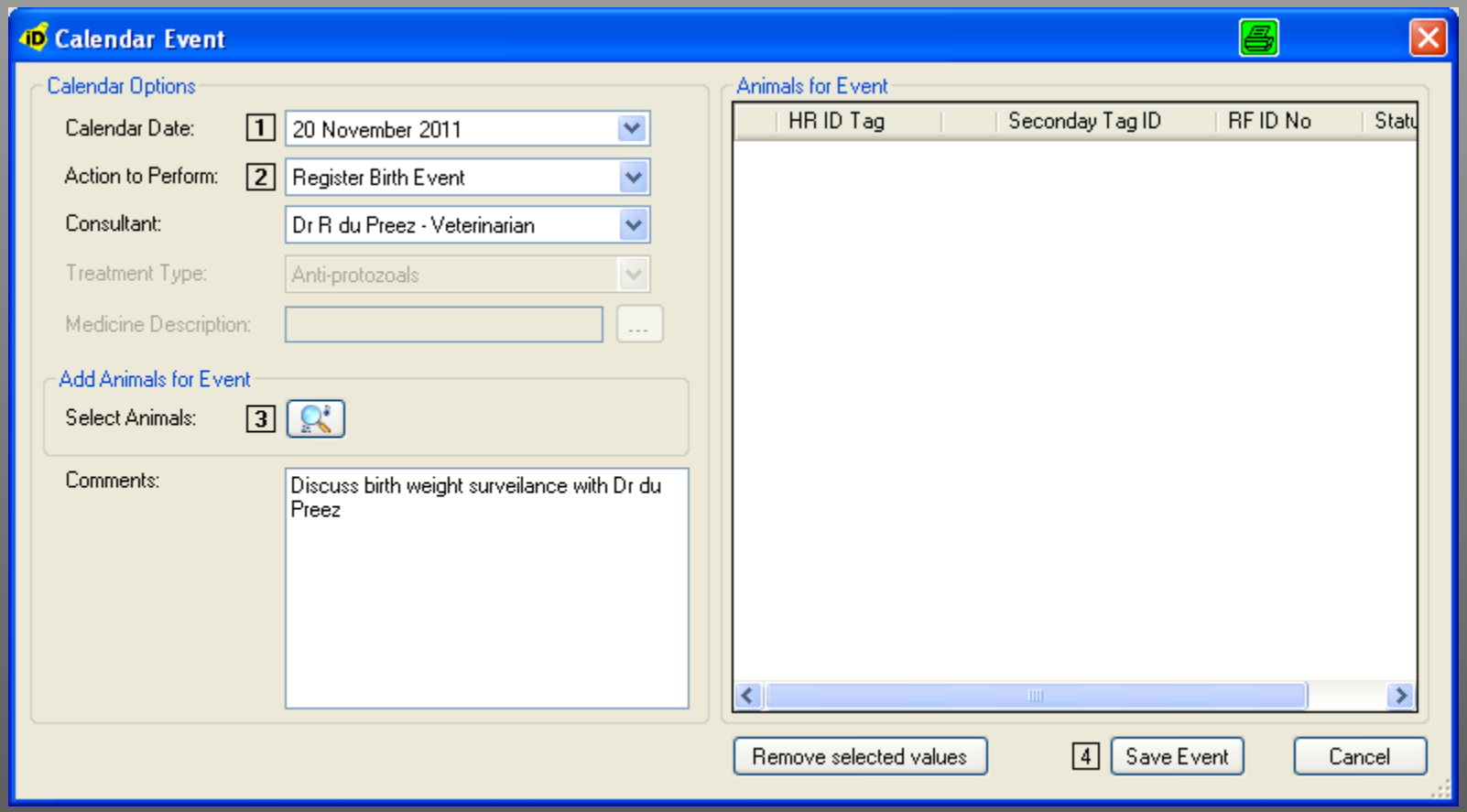
- Add date & actions
- Category e.g. Treatments, Weigh, Weaning, Nutrition etc.
- Add general
- Add consultant
- Add specific animal
- Add general calendar actions / reminder

(Compiled by Dr JD Cloete, BVSc)

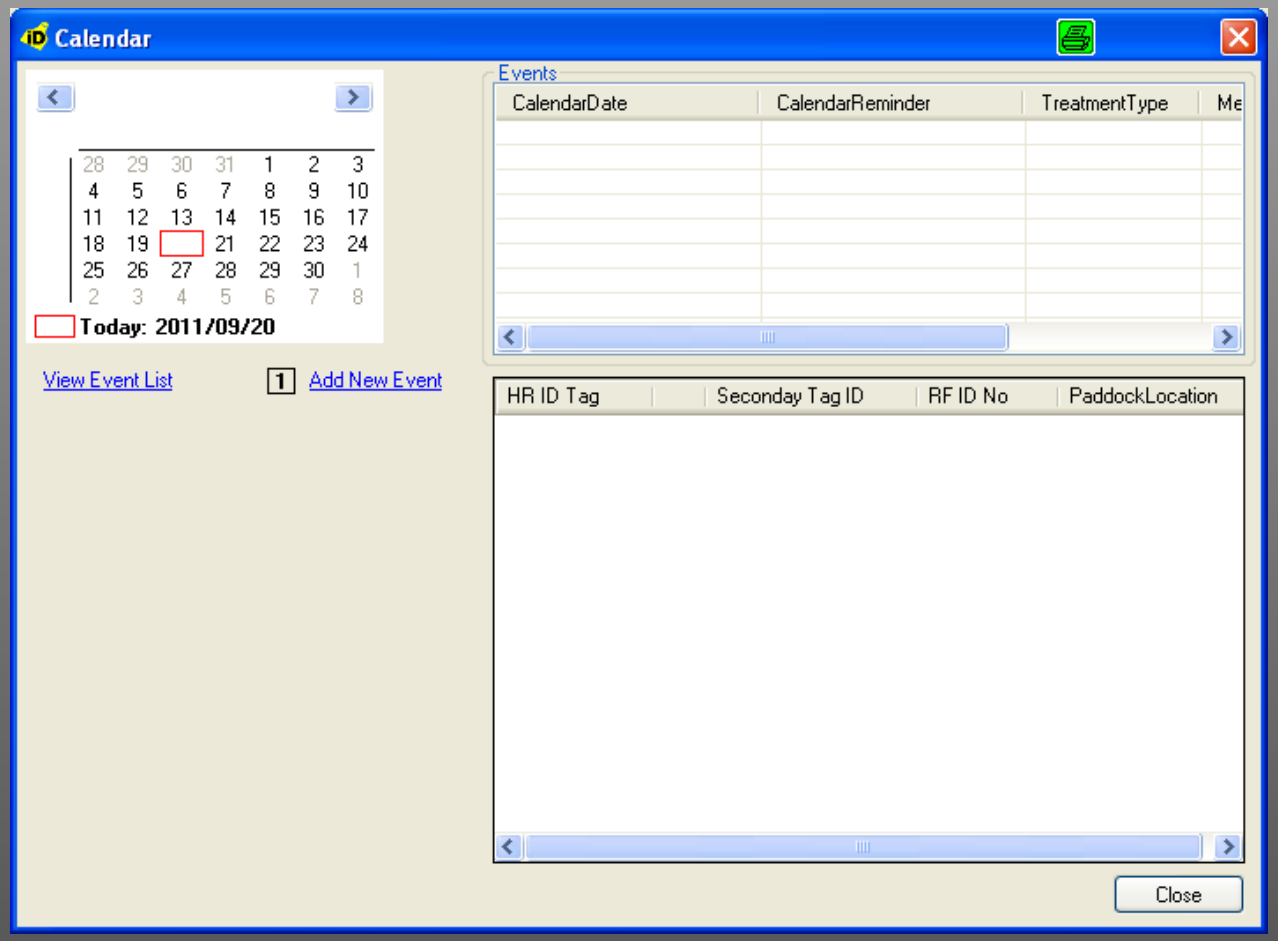
Calendar - Add an Action



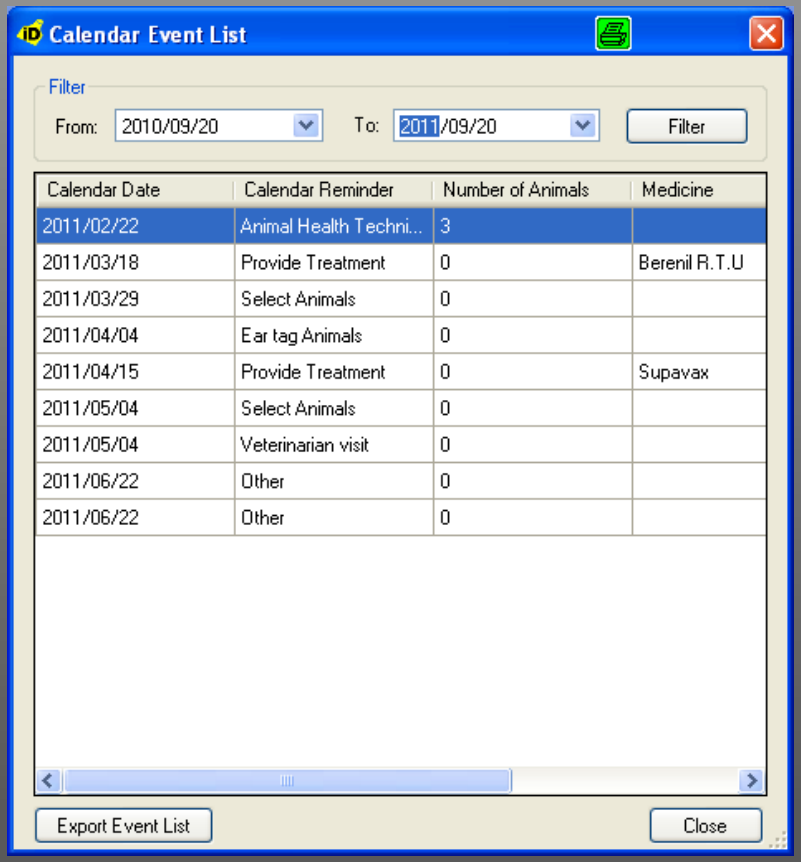
Calendar - add consultant / agent / comments etc



Calendar - Select events logged



Calendar Event List



Calendar

- Replicate to server
- Reminders sent:
  -Now
  -2 weeks
  -4 weeks
  etc.

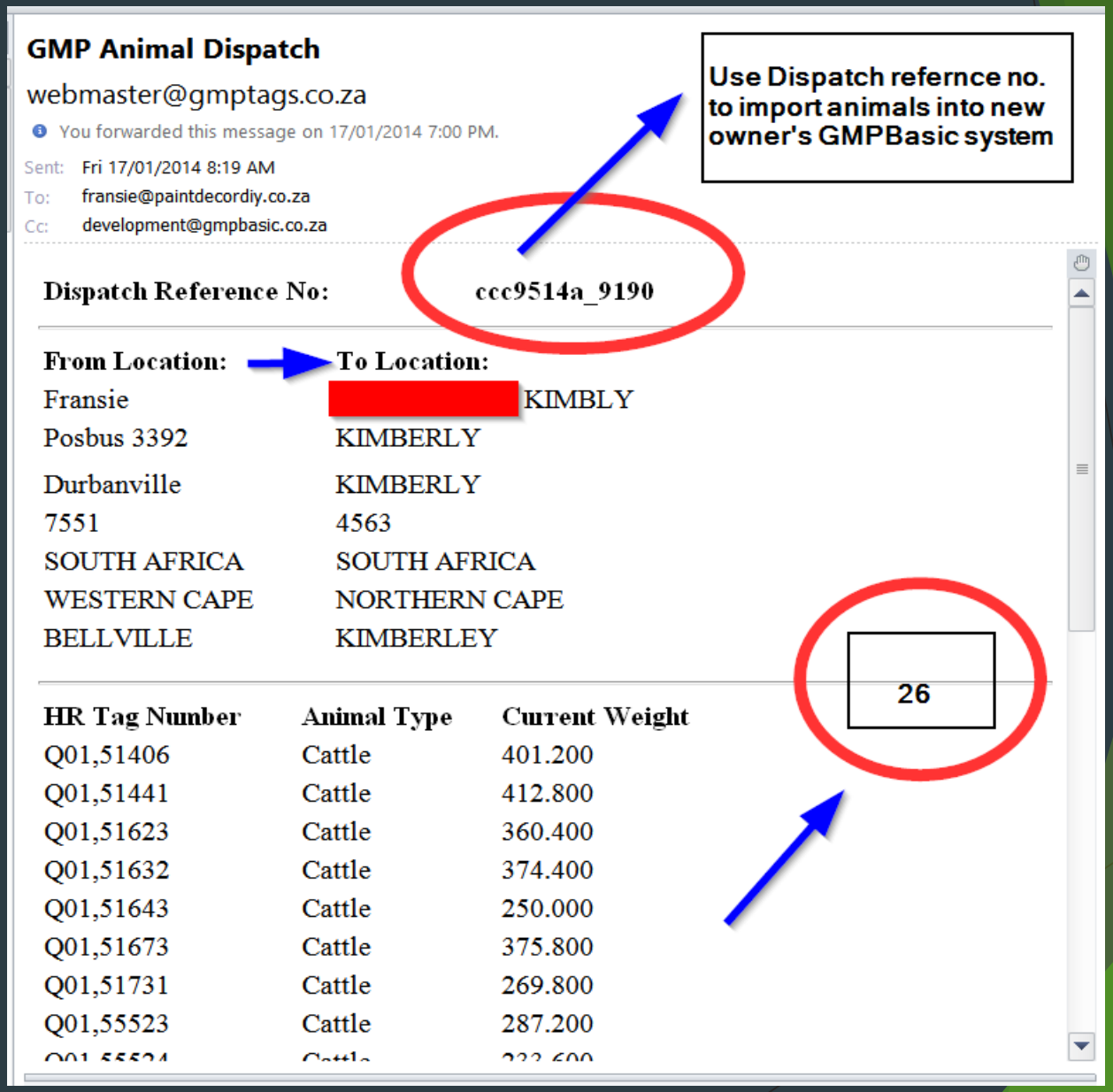
Both (or more) parties receive communication

(Compiled by Dr JD Cloete, BVSc)

What does the producer do ?

- Sell their animals
- Disatch them from within GMPBasic
- To the new owner / destination
- Records close on producer's computer
- Data is synched with the 'Server'
- New owner / destination receives an e – mail !
- Animal imported to new owner with full recorded history

(Compiled by Dr JD Cloete, BVSc)



GMP Animal Dispatch

webmaster@gmptags.co.za

You forwarded this message on 17/01/2014 7:00 PM.

Sent: Fri 17/01/2014 8:19 AM
To: fransie@paintdecordiy.co.za
Cc: development@gmpbasic.co.za

Use Dispatch refernce no. to import animals into new owner's GMPBasic system

Dispatch Reference No: ccc9514a_9190

From Location:	**To Location:**
Fransie	[redacted] KIMBLY
Posbus 3392	KIMBERLY
Durbanville	KIMBERLY
7551	4563
SOUTH AFRICA	SOUTH AFRICA
WESTERN CAPE	NORTHERN CAPE
BELLVILLE	KIMBERLEY

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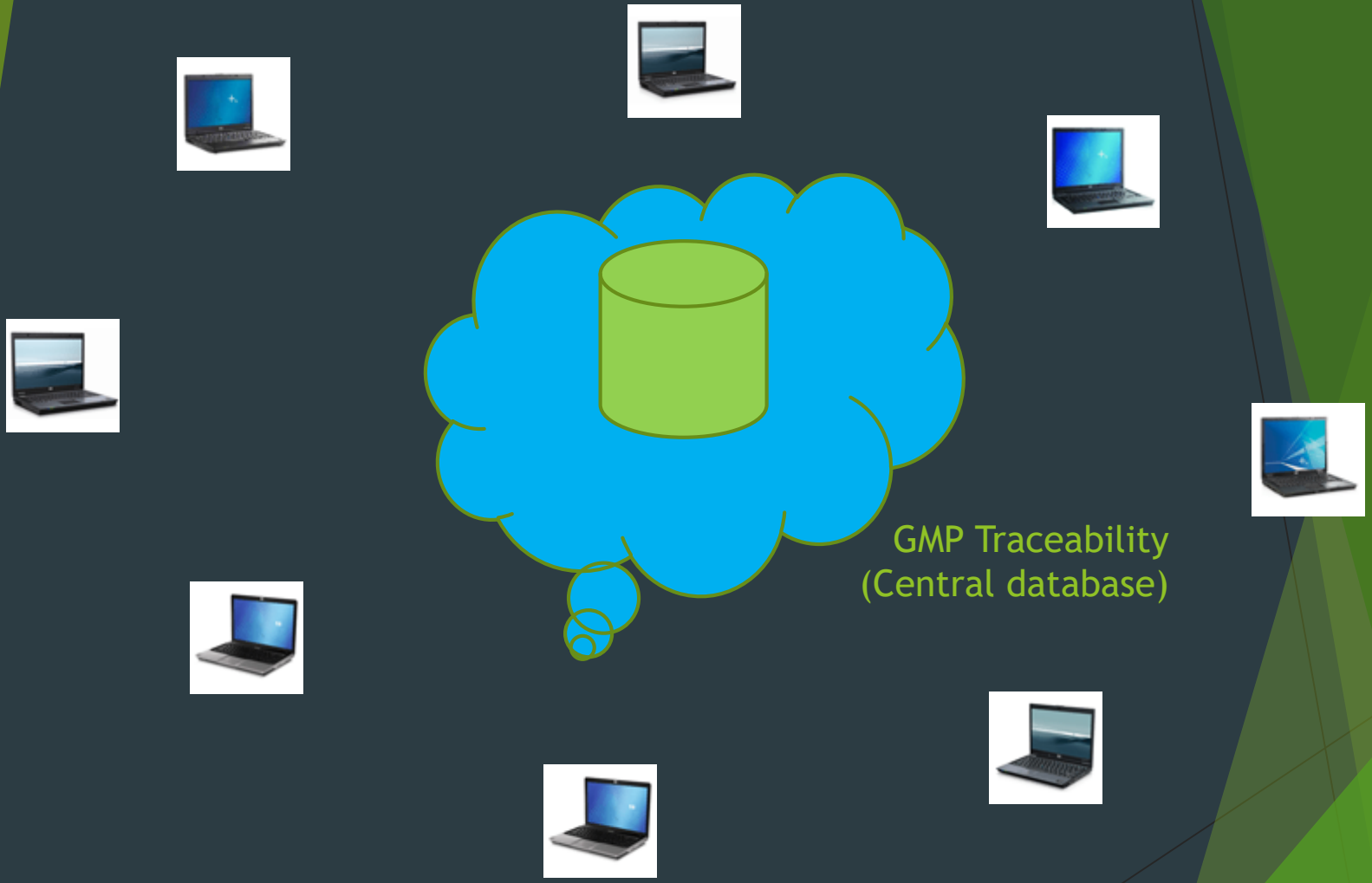
HR Tag Number	Animal Type	Current Weight
Q01,51406	Cattle	401.200
Q01,51441	Cattle	412.800
Q01,51623	Cattle	360.400
Q01,51632	Cattle	374.400
Q01,51643	Cattle	250.000
Q01,51673	Cattle	375.800
Q01,51731	Cattle	269.800
Q01,55523	Cattle	287.200
Q01,55524	Cattle	232.600

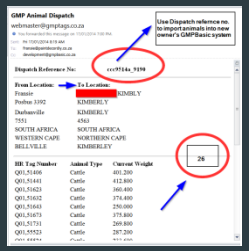


(Compiled by Dr JD Cloete, BVSc)










Producer

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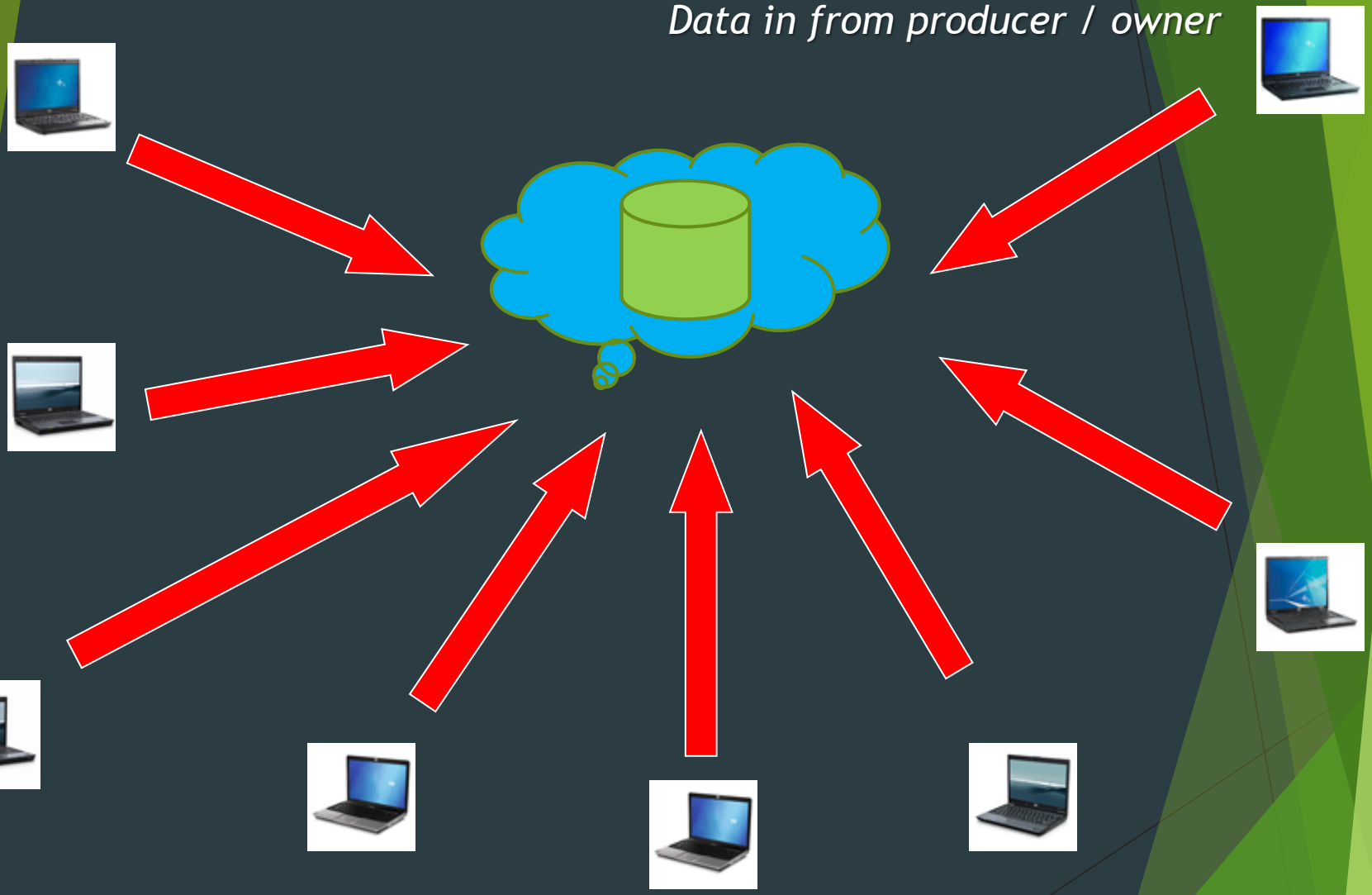
Data in from producer / owner



(Compiled by Dr JD Cloete, BVSc)

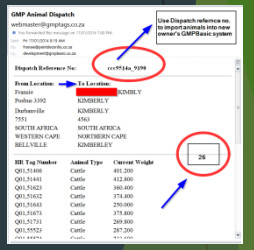






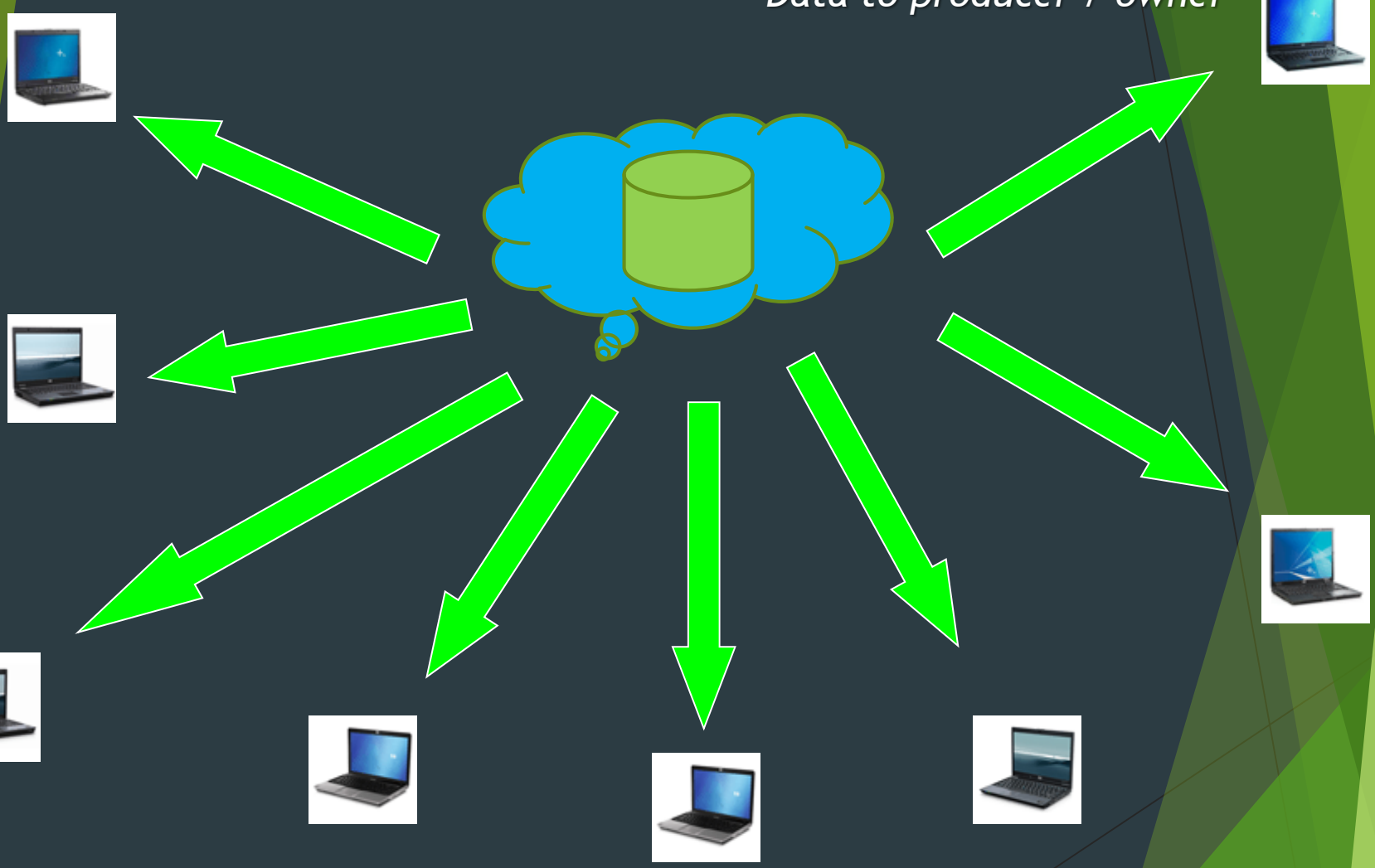


New owner

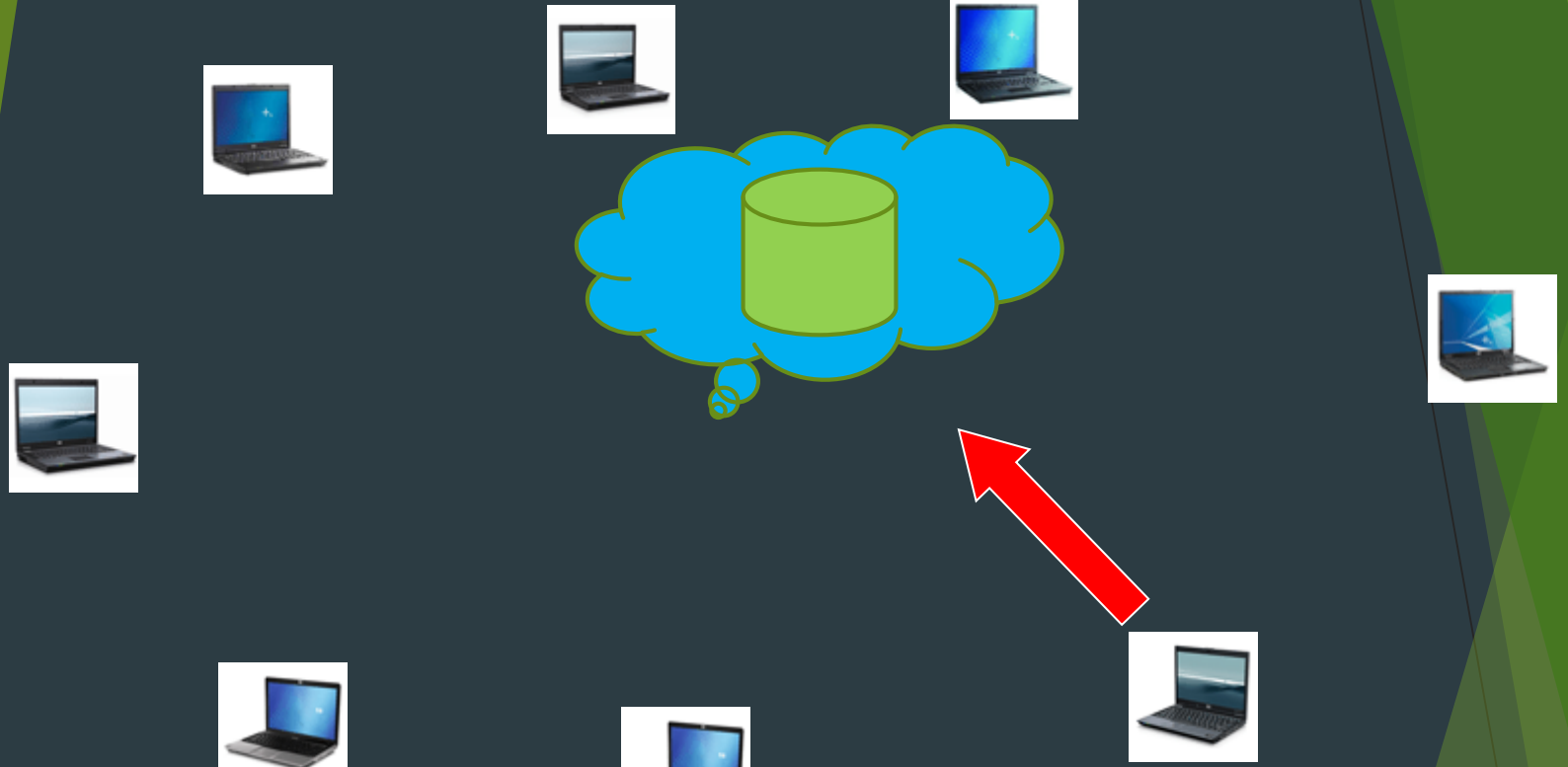


(Compiled by Dr JD Cloete, BVSc)

Data to producer / owner



(Compiled by Dr JD Cloete, BVSc)

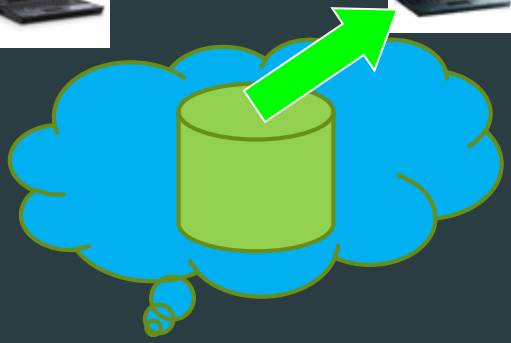


Producer

(Compiled by Dr JD Cloete, BVSc)

Auction







(Compiled by Dr JD Cloete, BVSc)

Auction










(Compiled by Dr JD Cloete, BVSc)













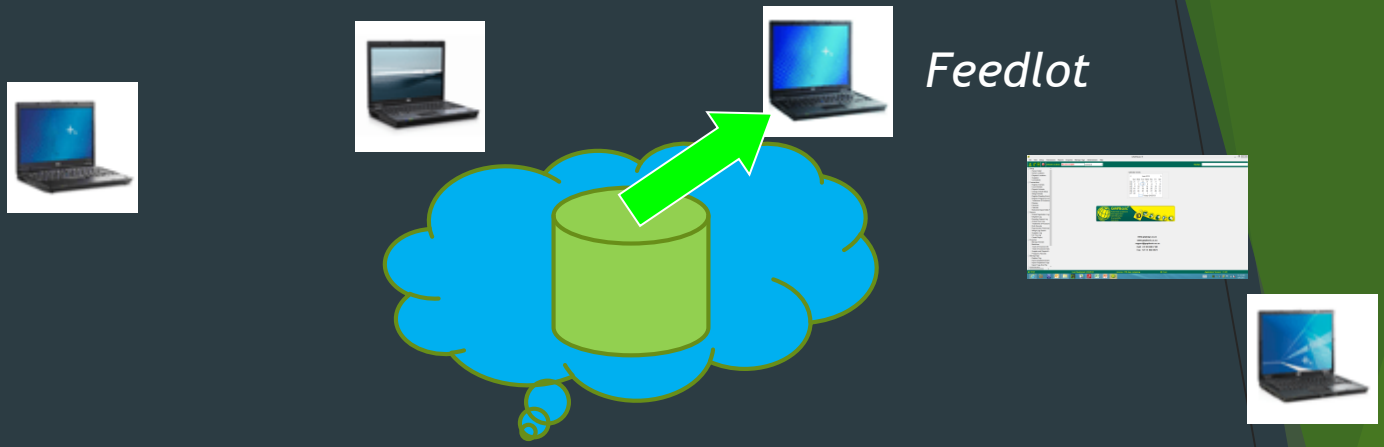

Feedlot

Producer

Abattoir

Producer

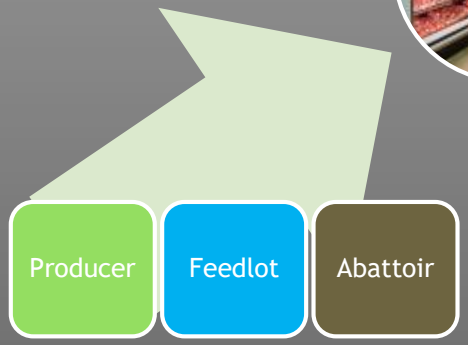
(Compiled by Dr JD Cloete, BVSc)



(Compiled by Dr JD Cloete, BVSc)

Precision traceability

- GMPBasic - www.gmptags.co.za



(Compiled by Dr JD Cloete, BVSc)

...what equipment do you need?

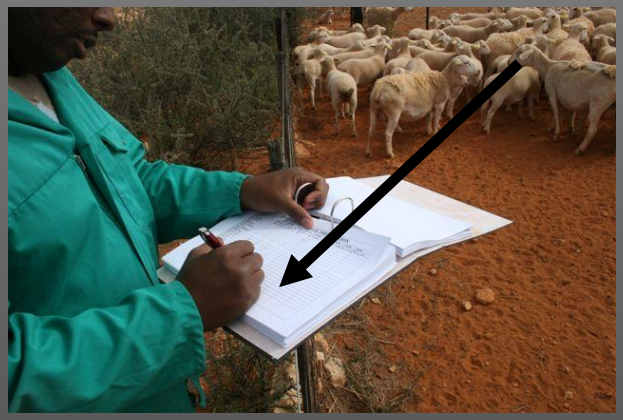
Tags

2 – D Scanner to verify visual tag authenticity

Electronic scale

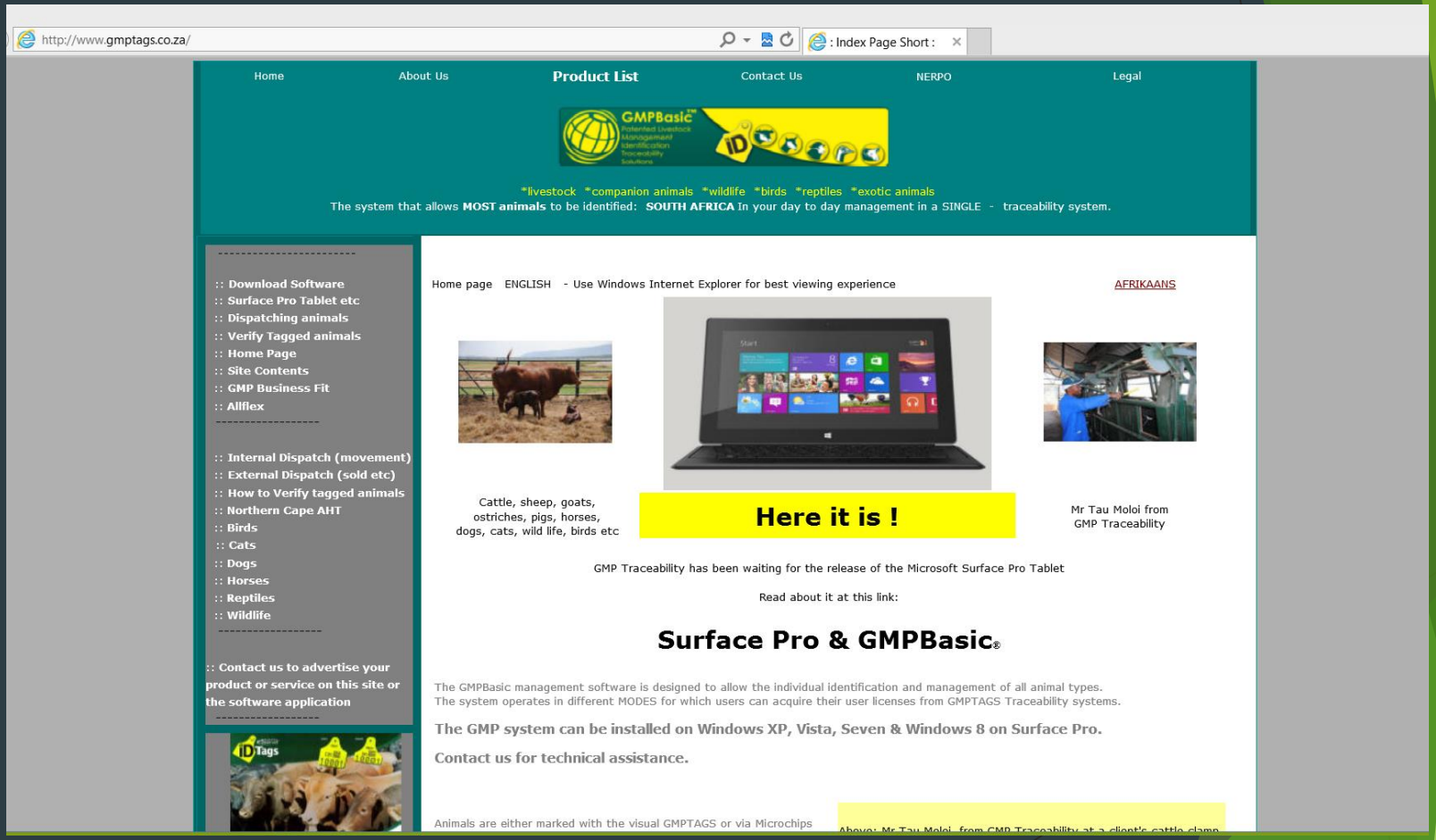
Laptop

Hand and / or paper data-capture



(Compiled by Dr JD Cloete, BVSc)

GMPTAGS website – www.gmptags.co.za



(Compiled by Dr JD Cloete, BVSc)

Demonstration data

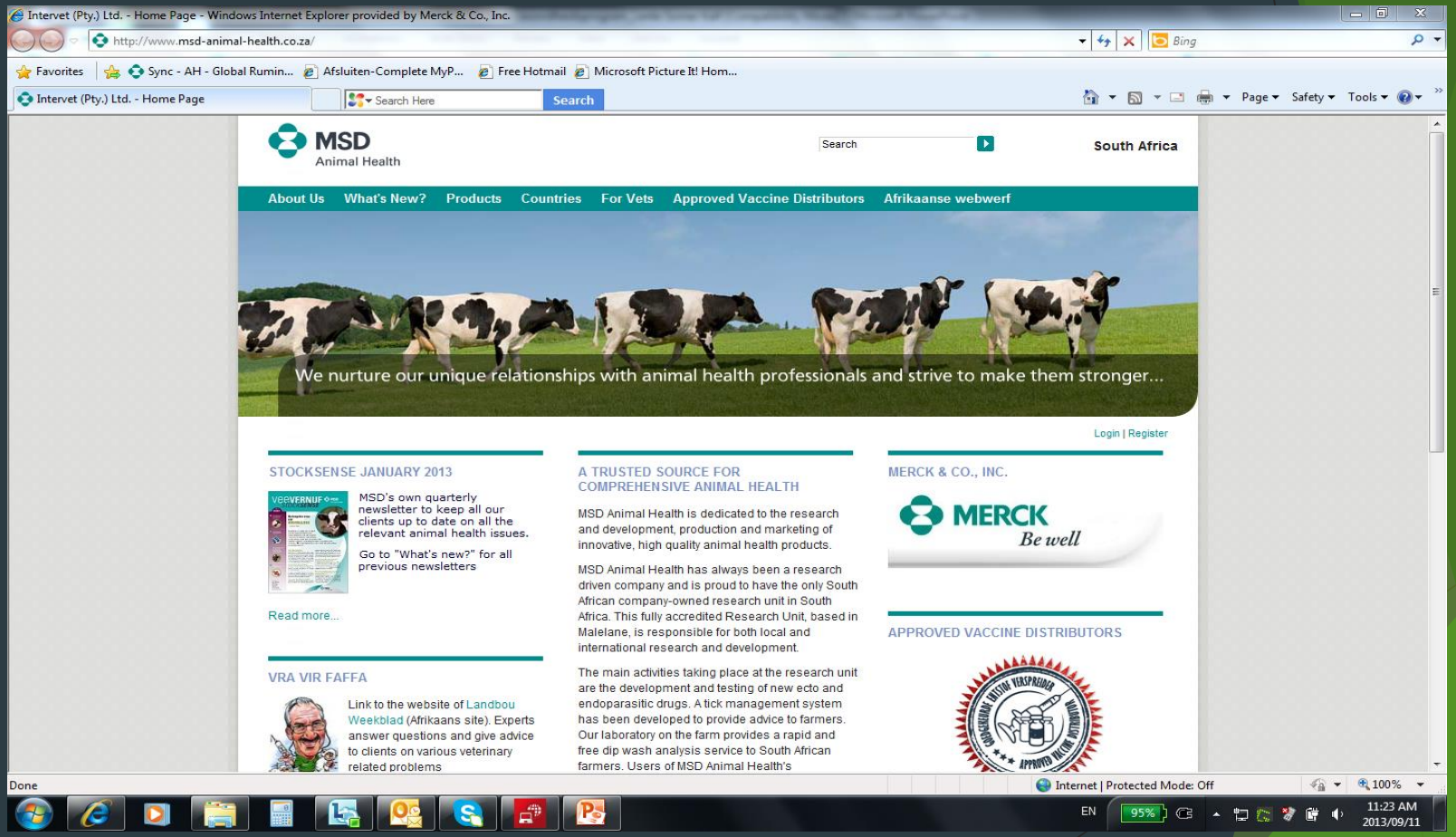
TECHNOLOGY

Who need's to know...?

GMPBasic™
Patented Livestock
Management
Identification
Traceability
Solutions

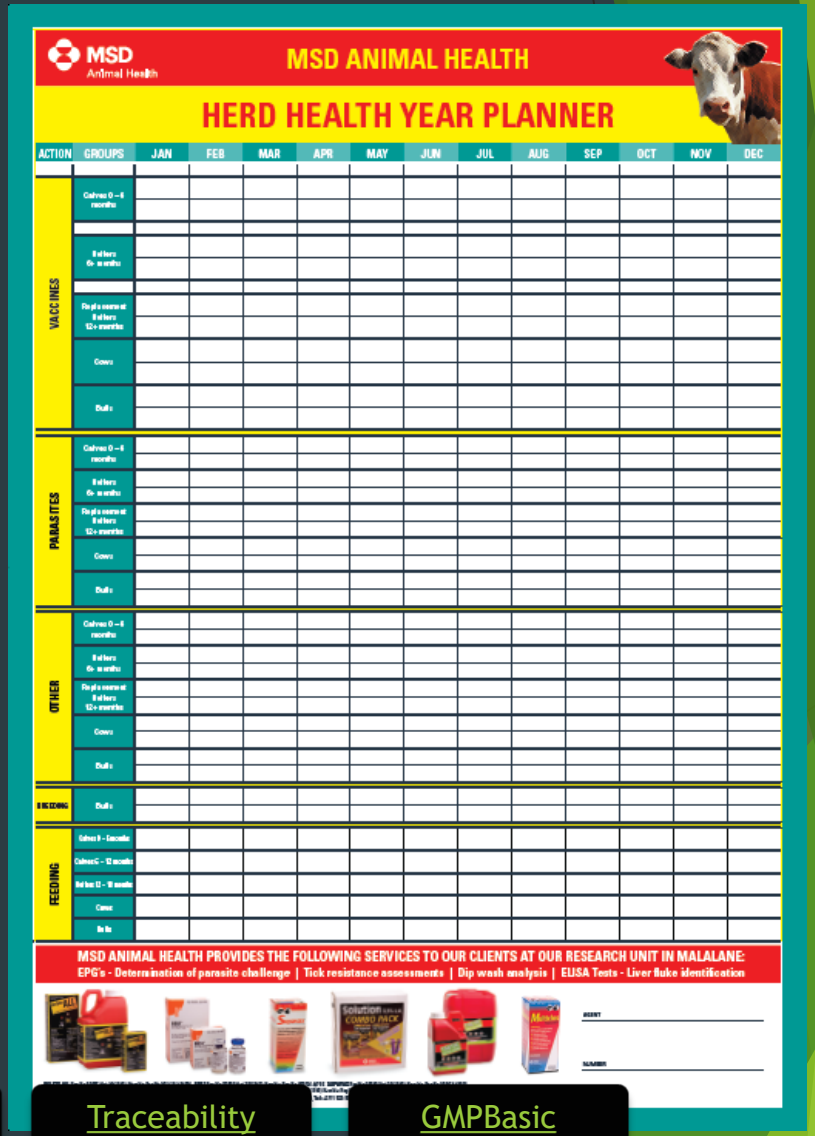
- National Department of Agriculture, Forestry & Aqua
- Insurance & Finance
- Producer Management
- Import / Export
- Feed Lot
- Export Compliance
- Auctioneer
- ACT 36
  ACT 101
- Abattoir
- State Veterinarian
- Processing
- Private Veterinarian
- Retailer
- Disease Control
  Border Control
- Consumer (Consumer ACT)
- Stock Theft
- SARS (Customs)
- RPO / NERPO
  NWGA / etc Levies
- Agricultural Research Council
- Statistics
  Animal ID

MSD Website : www.msd-animal-health.co.za



Contact your local MSD agent OR Dr Johan Cloete 083 643 5456

Calendar Eng / Afr on each side



Breeding guidelines | Traceability | GMPBasic

Modern Management e.g.

- Record keeping
- Actions
- Information availability
- Proof of vaccinations (health)
- Weights (growth)
- From one owner to another owner
- Value add
- Computer technology

(Compiled by Dr JD Cloete, BVSc)

Thank you for your time!

(Compiled by Dr JD Cloete, BVSc)