

Concept of Reproductive Health Management

Dr Ravi Kiran Gorti

Goals

Preventing disease and health problems during the early postpartum period.

Strategic treatment of early postpartum reproductive disorders

Controlled breeding programs can decrease days open and percentage of open cows.

Age at first calving for heifers should be at approximately 24 months of age.

Aim for a calving interval of 12 to 13 months.

Average calving interval between 12 to 13 months.

Breeding efficiency below 1.5 services per conception and less than 30 percent returns after 60 days.

Postpartum interval to first standing heat between 30 to 40 days.

Postpartum interval to first breeding no greater than 55 to 70 days.

Repeat breeders of 8 to 10 percent or less,

Abnormal anestrus after 60 days postpartum reduced to 2 to 15 percent.

Abortions of 1 to 2 percent or less.

Retained placentas of 5 to 10 percent or less.

Metritis of 5 to 10 percent or less

Culling percentage for reproductive failure below 18 percent.

Healthy Cows Reproduce Well

- Healthier Cows (first two months) have better reproductive performance than those that experience health problems
- Conception rate at first service
 - healthy multiparous cows 30% higher compared to cows with severe health problems (71% versus 44%)
 - culling rate was three times greater among older cows with severe health problems than among healthy older cows (31.7% versus 11.2%)
 - culling caused by infertility was four times greater in unhealthy older cows than in healthy herdmates (19.0% versus 4.7%).

Trait	Lactation= ≥1		
	Healthy	Minor	Severe
No. of Cows	134	58	142
Days open	84	97	107
Services/conception	1.4	1.5	1.9
1 st Conception rate	71	65	44
% culled –overall	11.2	19.1	31.7
% Culled-repro	4.7	10.3	19.0

Management During the Dry Period

- Maintain two to four dry cow groups so that cows are managed alike at the same stage of pregnancy.
- Prevent new intramammary infections and trim feet during the early dry period to enhance the health and vigour of fresh cows.
- Feed a dry forage-based diet during the early dry period to promote rumen and gastrointestinal function and to control body condition.
- Provide selenium and vitamin E to enhance postpartum health by preventing mastitis and postpartum disorders
- Avoid over-conditioning or excessive weight gain.
- Provide a transition ration one to two weeks before the due date, with special attention to calcium intake and the cation-anion balance.
- Prevent excess weight loss and onset of a negative energy balance during the last week before calving.
- Calve cows in the driest, cleanest location available on the farm, and force-feed colostrum to the newborn calf.

Making the Nutritional Transition

- Cows voluntarily reduce their feed intake by about 40% during the last week before calving --- negative energy balance -- metabolic disorders
- Dry cows should be offered some of the fresh cow ration before calving to enhance DMI postpartum.
- Fresh cows should be fed a ration to stimulate appetite.
- Fresh cow consume as much DM as possible as soon as possible after calving. This prevents excessive body weight loss which delays resumption of postpartum cycles and lowers fertility during the breeding period

Feed a total mixed ration.

Provide forage energy >1.32 Mcal/kg of DM.

Balance degradable protein and non-fiber carbohydrate.

Avoid rumen acidosis by using buffers.

Limit fat intake during the first three to five weeks postpartum to stimulate appetite.

Provide fresh free-choice feed.

Dietary guidelines for fresh cows and cows in early lactation

Ration Ingredient	Fresh	Early lactation
Crude protein (% DM)	20	18
Degradable Protein (% CP)	60	62
UDP (%CP)	40	38
Soluble Protein (%CP)	30	31
Fiber		
ADF(%DM)	21	9
NDF (%DM)	30	28
Effective NDF(%DM)	22	20
Fat (%DM)	4	6
NE/Mcal/Kg	1.67	1.76

Reproductive Management Around Calving

Most critical period in a cow's life is the period from four weeks before to four weeks after calving



Outcome is poorer performance in terms of

- calf survival
- milk yield
- reproductive performance
- survival of the cow in the herd

Environment: Cows should be calved outside in a dry area if weather permits. Otherwise, cows should calve in a well-bedded box stall or on a bedding pack.

Primary disorders that lead sequentially to secondary disorders in postpartum dairy cows

Secondary Disorder	Primary Disorder					
	Milk Fever	Dystocia	Retained Placenta	Metritis	Displaced abdomen	Ketosis
Dystocia	X					
Retained Placenta	X	X				
Metritis	X	X	X			
Displaced Abdomen	X	X	X			
Mastitis	X	X	X	X		
Low Conception	X	X	X	X	X	X

Cows with abnormal discharges during the first two to three weeks after calving were more likely to have a medium or large cervix at the postpartum exam than cows that were normal

Influence of type of parturition and type of uterine discharge on percentage of Holstein cows with small, medium or large cervix six weeks after calving

Cervix size	Type of parturition		Type of discharge	
	Normal	Abnormal	Normal	Abnormal
Small	42	25	44	32
Medium	34	39	35	34
Large	24	36	21	34

Influence of the size of cervix during six weeks after calving on reproductive performance of Holstein cows

Trait	Size of cervix		
	Small	Medium	Large
% of cows with each size	40	34	26
Days to 1st estrus	54	54	62
Days to 1st service	72	75	81
Days open	85	96	108
Conception rate 1st service	67	52	46

Getting Cows Off to a Good Start After Calving

Negative relationship between energy balance during the first 20 days after calving and first ovulation

A good indicator of whether a herd is being fed properly is the

If >25% of cows not cycling by six weeks ---- the feeding program needs to be examined carefully

Negative energy balance = impaired follicular development

Treating Postpartum Disorders

I/U antibiotics = Antibiotic residues in Milk

Retained Placenta

long-acting prostaglandin agonists will reduce the duration of placental retention if administered during the first few hours after calving (esp.induced calving)

Dystocia and Metritis

Administration of prostaglandin F analogues at one or two weeks postpartum or GnRH at two weeks postpartum may be beneficial for initiating estrous cycles and reducing interval to first service due to earlier cyclicity and better uterine involution

Effect of routine treatment at 24 to 31 days post partum with various prostaglandins on reproductive performance

Trait	Hormonal Treatment			
	Control	Cloprostenol	Dinoprost	Fenprostalene
First estrus(days)	69	70	68	63
First service(days)	86	84	88	76
1st service conception %	33	45	45	46
Services/conception	2.5	2.3	2.2	2.6
Service period/ days open	137	112	105	114

Effect of treatment with GnRH and prostaglandin on reproductive performance of cows with dystocia or retained fetal membranes

Trait	Hormonal Treatment			
	Control	GnRH, d12 PGF, d26	PGF, d12 PGF, d26	GnRH, d12
First service(days)	72	74	76	74
1 st service conception %	24	22	43	33
Services/conception	2.6	3.3	2.2	2.6
Days Open	120	140	112	120

Cystic Follicles

GnRH or human chorionic gonadotropin (hCG)

Repeat Breeders

GnRH @ AI

Delayed ovulation - double AI

Low dose of hCG

Early Embryonic Death

7-10% embryos die after 2nd week – delayed estrus

Summary of the trials conducted on the effect of male on estrus induction and synchronization

	Induction (NBS)			Synchronization (BS)			Synchronization (BS)			Induction (NBS)		
	Group I	Group II	Control I	Group I	Group II	Control	Group I	Group II	Control	Group I	Group II	Control
No of animals	13	13	13	13	13	13	13	13	13	13	12	13
No of animals coming to heat	9	13	4	7	13	8	6	13	7	7	10	2
% of the animals in heat	69.23	100.00	30.77	53.85	100	61.54	46.15	100	53.85	53.85	83.33	15.38
Average no of days taken after introduction of male	18.70	18.00	30.77	13.14	13.92	23.88	24.67	12.38	33.43	15	14	29
Response in Morning	73.68			90			84.21			84.21		
Response in evening	26.32			10			15.79			15.79		

Thank You

Stages of the bovine estrus cycle.

Stage	Cycle day	Duration	Events
Estrus	0	10-12 hr.	Mature follicle high levels estrogen LH surge
Metestrus	1-3	5-7 days	Ovulation (w/i 12-18 hrs) formation of CH no response to prostaglandin
Diestrus	5-18	10-15 days	Mature corpus luteum high levels progesterone
Proestrus	19-21	3 days	CL regressing maturing follicle rising estrogen

Buffaloes

Milk fever and ketosis

affect uterine contractions, delay calving and increase the risk of retained foetal membranes (RFM) and endometritis

and

Hypocalcaemia and ketosis during pre-parturient period

delayed involution of the uterus and metritis
Stillbirth and dystocia

Physical exertion and exhaustion during dystocia

left-displaced abomasums,
delayed uterine involution
secondary infections
abnormalities in the resumption of ovarian cyclicity.

From 2.73% to 9.72% buffaloes, parturition has been found to be complicated with retained foetal membranes (RFM)