

TRANSITION PERIOD MANAGEMENT

&

NUTRITIONAL PREVENTION OF

METABOLIC DISORDER

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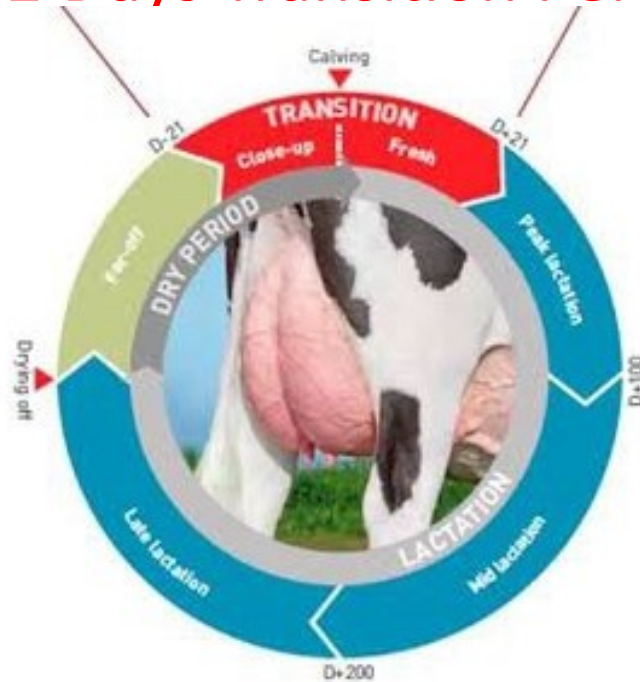
Training Workshop on
TRENDS IN
FARM ANIMALS FEED FORMULATION



Transition Period

It is considered - 3 weeks before calving & 3 weeks after calving

“42 Days Transition Period”



Close-up Dry Period
(-21 days)

Calving
(0 days)

Fresh / Early Lactation
(21 days)

Why Transition Period Matter?

Metabolic and Physiological Changes in Transition

- ❑ **Hormonal and Metabolites Changes**
(progesterone, estrogen & growth etc.)
- ❑ **Morphological Changes in Rumen**
(size, morphology, functionality)
- ❑ **Changes in Immune Status**
(Depressed)
- ❑ **Oxidative Stress**



As Increasing Demands of Nutrients...

- **Fetus Growth**
- **Growth and Development of Mammary Glands**
- **Synthesis of Colostrum and Milk**

Importance of Transition Period

TRANSITION PERIOD Mis-Management can lead the conditions...

- Retention of Fetal membrane and Metritis
- Poor Fertility and Poor Milk Production
- Hypocalcaemia and Downer Cows
- Hypomagnesaemia
- Fatty Liver and Ketosis
- Udder Oedema
- Abomasal Displacement

ECONOMIC LOSS

Treatment cost, Production loss, Premature culling



Managing the Transition Period

(1) Dry Matter Intake (DMI) & Body Condition Score (BCS)

- **High BCS of Cow**
low DMI in transition period
- **Excessive loss of Body Condition Score after calving**
adverse effects on production, health & reproduction

Stage	Score (1-5 Scale)
Drying off	3.5-4.0
Calving	3.5-4.0
One month postpartum	2.5-3.0
Mid lactation	3.0
Late lactation	3.0 to 4.0
First lactation heifers at calving	3.5

Table 1 Desirable body condition score in physiological stage of lactation

Managing the Transition Period

(2) Minimize Fat Mobilization Disorder

(Causes of Fatty Liver & Ketosis)

Propylene glycol / Glycerol

- Provide in feed 200-300 g/day in Transition Ration

Managing the Transition Period

(3) Dietary Cation Anion Difference (DCAD)

Acidic Ration

- Cow need in before Calving (Chlorine Cl & Sulfur S)

Alkaline Ration

- Cow need after Calving (Na & K)

- ❖ Acidic Ration Stimulate PTH for Ca mobilization in Bones.

- ❖ Urine pH 6.0

Nutritional requirements of Transition Period

Nutrients (NRC 2021)	Close-up	Fresh
Cow's Body weight (kg)	740	580
DMI (kg/day)	12.2	20.8
ME (Mcal/kg)	2.25	2.39
Crude Protein (%)	14.3	16.2
NDF (%)	25-33	25-33
Ca (%)	0.39	0.57
P (%)	0.21	0.35
Na (%)	0.69	1.03
K (%)	0.17	0.21
Cl (%)	0.14	0.29
S (%)	0.20	0.20
Vit. A (IU/kg)	6630	3021
Vit. D (IU/kg)	1810	1099
Vit. E (IU/kg)	181	22
DCAD (mEq/kg)	-100	148

Managing the Transition Period

(4) Retained Placenta & Metritis

Retained Placenta (Failure placental membrane to be expelled within 24 hours)

Metritis (Enlarged uterus with red brown vaginal discharge)

- I. Reduced milk Production,
- II. Reduce Reproduction,
- III. Treatment Cost

Physiological & Nutritional Factors:

Around parturition **Immune system dysfunctions** and **Oxidative stress**

- Vit. A, Vit. E, Selenium, B-Carotene, Zn, Copper,
- Energy
- Protein

Managing the Transition Period

(5) General Management

- ☐ Avoid Rumen Disruption
- ☐ Avoid Social Stress
- ☐ Avoid Change the Pen Continuously
- ☐ Hygiene

NUTRITIONAL PREVENTION OF METABOLIC DISORDER

- ❖ Fatty Liver
- ❖ Ketosis
- ❖ Milk Fever
- ❖ Rumen Acidosis
- ❖ Displacement of Abomasum



Nutritional Prevention of Metabolic Disorder

1- FATTY LIVER (Accumulation of fat in Liver)

- Major risk for DA, Ketosis & Immune dysfunction
- Before & after calving; High energy demand and Low DMI, high BCS
- Occurs when NEFA exceeds the capacity of the Liver to oxidize

Plasma NEFA conc.

- 0.2 mEq/L (normal)
- 0.8 mEq/L (Just before calving)
- 1.0 mEq/L (risk of fatty liver)

NEFA complete Oxidize or Convert into Triglyceride (TG) part of VLDL.

Less excrete more deposited

Prevention:

- 1- Supplementing Rumen-Protected **Choline 15g/d**
(Helps speed-up fat metabolism)
- 2- Supplementing Rumen-Protected **Niacin**
(reduced plasma NEFA)

Nutritional Prevention of Metabolic Disorder

2 - KETOSIS (Excessive Ketone Bodies in blood)

Low DMI, low milk production, abnormal behavior & aggression etc.

- B-hydroxybutric acids (BHBA) end product of B-oxidation
- Produced when glucose demand increase by mammary gland for milk production

Normal value 1.0 mmol/L

Sub-clinical Ketosis 1.4 mmol/L

Clinical Ketosis <1.4 mmol/L

Prevention:

Provide **Propylene glycol** in ration in Transition

- It increases plasma glucose
- Reduced NEFA & BHBA (ketones bodies)

Nutritional Prevention of Metabolic Disorder

3 - MILK FEVER (Low blood calcium)

Normal Blood Calcium : 9.0 mg/dL

Sub-clinical Milk Fever : below 8.0 mg/dL

Clinical Milk Fever : <4.5 mg/dL

Causes :

Excrete in colostrum and milk

Low Ca level in feed

Mobilization of Ca from bones failure

Nutrition and Milk Fever

Acidic Ration in Close-up (DCAD negative)

Low Ca Diet before at least 14 days of calving

Low P & K

High magnesium (0.8 mmol/L)

Nutritional Prevention of Metabolic Disorder

4 - RUMEN ACIDOSIS

- Rumen pH drop below 5.8
- Diarrhea
- Decrease feed intake

Causes:

- Switch rapidly forges to concentrate
- High concentrate / fermentable grains
- Feeding cow low fiber

Nutrition and Acidosis

- Start Concentrate (4-5kg) in Close-up Ration
- Gradually Change Forages to Concentrate
- Dry Forage (Wheat straw, Rhode grass hay) NDF 30-32%
- Low Quantity of Grains (maize or wheat grains)
- Provide **Prebiotics** (Live Yeast 5-10 g/daily)

Nutritional Prevention of Metabolic Disorder

4 - DISPLACED ABOMASUM

Abomasum lies on the floor of abdomen, can become filled with gases, rise to the top of abdomen, displaced left or right.

Incidence rate 2.2%

- Loss of appetite
- Drop in milk yield
- Reduced rumination
- Mild diarrhea

Nutrition and Abomasal Displacement

- **Dry matter & Fiber**
- **Calcium & Energy** is needed for smooth contraction
- **Less Grain** feed in close-up and Fresh

THANKS !!

