

Dry cows

Topic 3092
Basic Concepts
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The dry period

- Restoring body energy and nutrient reserves (body condition score), is more efficient if accomplished during late lactation rather than during the dry period. The dry period is necessary to allow the mammary gland to go through a normal period of repair and development and to ensure that the mammary cell numbers continue to multiply normally during early lactation. A short or absent dry period greatly reduces the number of secretory cells in the mammary gland and reduces milk lactation yields.

Importance of the dry off phase

- The dry period is important for any cow:-
 1. to allow udder tissue to regenerate
 2. resting of the digestive system
 3. to restoring body reserves for the next lactation
 4. to give a time for controlling and combating the diseases e.g. mastitis and other infectious diseases
 5. to renew the milk production as at the end of lactation the quality of milk changes, which may cause processing problems
 6. cows milked continuously without any dry period produce 25-30% less milk (produced 75% of milk yield only) in the following lactation, while if the dairy cows milked continuously for two successive lactation season their milk yield will decrease by 38-40% (produce 60-62% of milk yield) than her normal herd mats.
- A minimum dry period of 42 days is recommended.

The ideal length of the dry period

- Old dairy cows 45-60 days
- Young dairy cows 38-42 days.

Decision of the drying off (When?)

- The decision of when to dry off can be based on any of the following factors:
 1. Expected calving date and pregnancy length
 2. Daily milk yield
 3. Days in milk (DIM)
 4. Health status
 5. SCC
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Decision of the drying off

- The decision of drying of the lactating dairy cows depending mainly upon the farm records (breeding, milk production and health records) to determine the ideal time to dry off the cows. Most of the dairy producers prefer to dry off their cows according to their ages. Young cow which had less than 3 lactation parities can be dry off at 220 pregnancy day, while the older ones should be at 210-220days of pregnancy.

Method of drying off

Stop milking abruptly

- Stop milk abruptly if the cow get milk less than 10 kg/ day
- If the cow get more restricted the feed and concentrates to the cow
- Restrict water to 20 L/ day

Intermittent and incomplete milking

- Incomplete milking of the cow
- Intermittent milking of the cows
- Milk the cow once a day then every other day
- The milk will decrease by the time
- When the milk get low than 10 kg/ day stop milking completely

Dairy cows grouping strategy

Dry cow grouping

a. Far off group

- It is the group which contain all dry cows which will not calve within 2 weeks

a. Close up group (Prefresh group)

- It is the group which contains the dry cows which expected to calve within 2 weeks. Also, this group has another name which is prefresh group.



Lactating cows

a. **Fresh dairy cow group**

- It is the group of the dairy cows which just calve to two weeks of calving also, this group containing the dairy cows which expected to calve within 24 hours.

a. **Normal lactation group**

- This group contains all dairy cows from 14 postpartum till the last of the late lactation phase. Practically the cows in this group are sub-grouped in to 3 groups according to their milk production and stage of lactation (early, mid, late lactation groups).

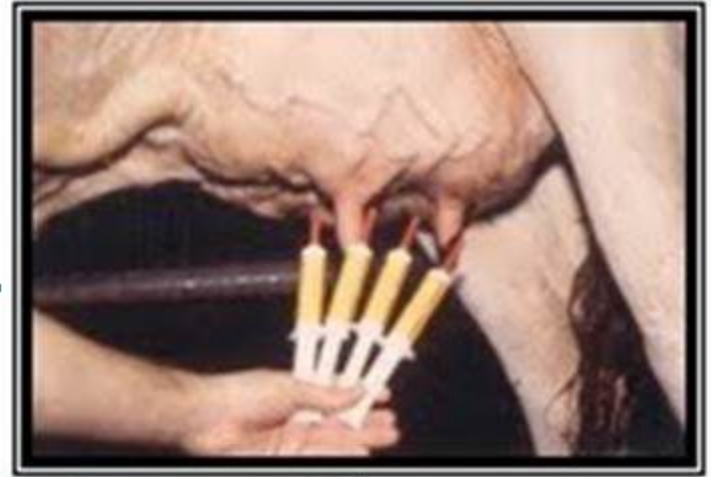
Dry cow management

Dry cow therapy (mastitis control program)

- Mastitis increase at the first week of dry off and the last week of the dry off
- The mastitis control program may be
 1. Blanket mastitis control program
 - All dairy cows received intramammary infusions at the beginning of the dry off phase
 1. Sporadic mastitis control program
 - Treatment of the mastitis affected cases only

Importance of the mastitis control program

- 1. Curing of the existing infections
- 2. Preventing new infections



Infusion procedures

1. Clean and dry teats.
2. Inspect the cow udder and teat
3. Milk all quarters out fully
4. Wear clean gloves, and change them when they become soiled
5. Disinfect the teat ends a. Start with the teats furthest away, to prevent contamination b. Using sterile swabs
6. Infuse antibiotic gently into each quarter by 3X intramammary antibiotic infusion a. Start with nearest teats, to prevent contamination b. Massage contents up towards udder. c. If using teat seal, do not massage towards udder
7. Repeat the intramammary infusion with 3X antibiotic infusion 7 days after the first one
8. Dip teats in an effective germicidal product after treatment.
9. Teat spray entire surface of all teats when finished
10. Mark the cow (legs/udder) to prevent treated cows being accidentally milked
11. Record cow number, treatment date and product details

Conditioning BCS control program

- Overcondition cows (fatty cows) have high milk yield but they have high incidence of metabolic diseases
- Low condition score cows (thin cows) have low milk production
- Medium condition cows are ideal cows get high milk yield with low level of metabolic diseases

Conditioning BCS control program

- BCS is the assessment of the body reserves regardless to the weight
- The ideal BCS at the calving is 3.5 ± 0.25
- To get this figure you must follow the following

Body Condition Scoring in Dairy Cattle



2.0



2.5



2.75





Conditioning BCS control program

- Decrease the weight of the fatty cows during the late dry off
- Fed the low condition score cows more during the dry off phase (0.75kg grains/day).
- Don't allow the fatty cow to lose the weight during the dry off phase as this gets more metabolic diseases

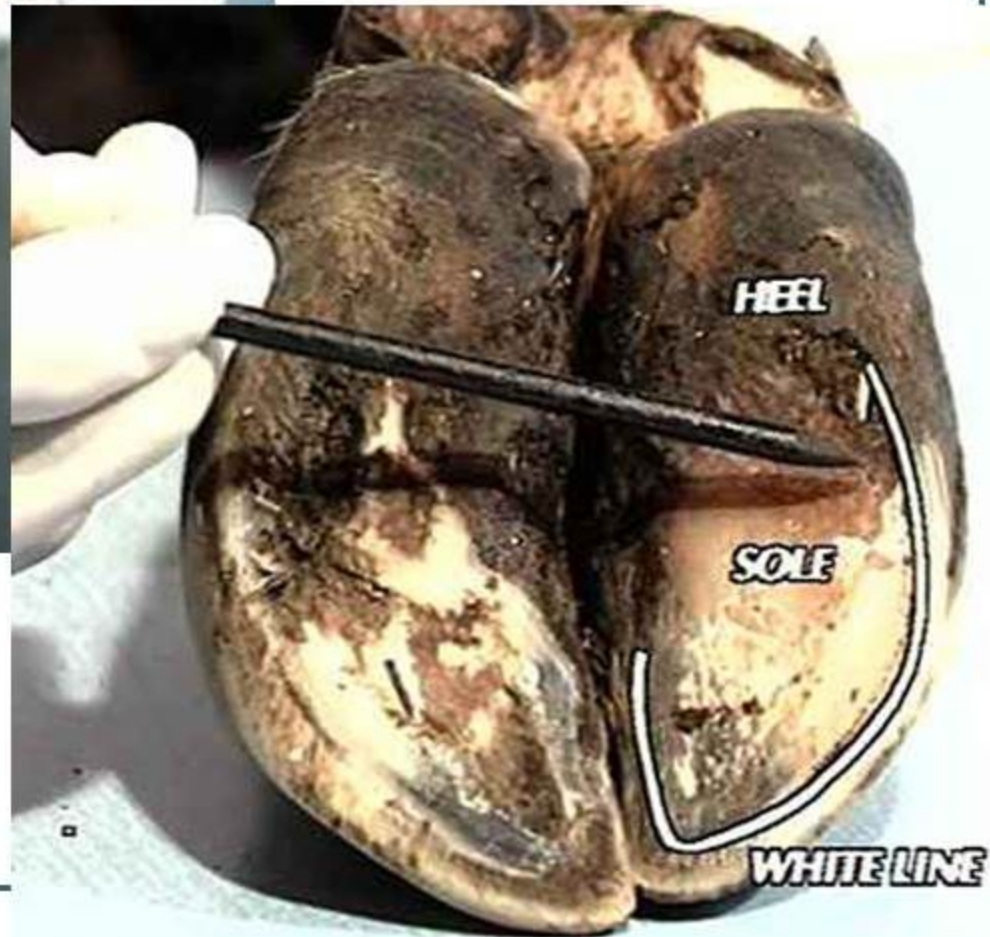
Vaccination programs

- Respiratory viruses
 1. Infectious Bovine Rhinotracheitis vaccine (IBR) used for prevention of respiratory diseases and abortion in cows.
 2. Bovine Viral Diarrhea and Mucosal Disease vaccine (BVD and MD) – Prevention of diarrhea and abortion in cows.
- Scour virus
 1. Rota and Corona virus vaccines (Virasheld ®), as this vaccine provides colostral protection for calf against viral diarrhea diseases.



Hoof Trimming Program (Recharging Hoof Health)

- The forelimbs hooves must be adjusted with hoof knife to be at 45° ,
 - while the hind limbs ones must be at 55° .
- Also, dehorning practices must be done if necessary.



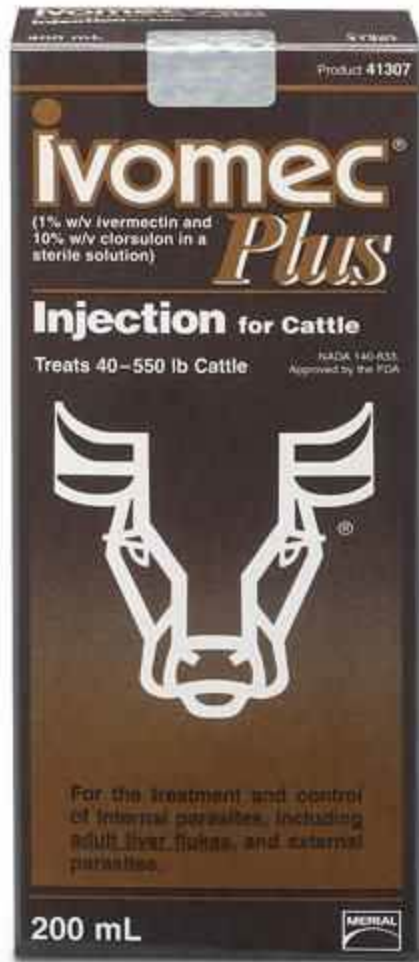
Disinfestation program

- Spray the dry cows periodically with nontoxic insecticides in order to combat all external parasites, as many external parasites acts as vector for many infectious diseases.



Deworming program

- The dairy cows during their dry off phase must be subjected to deworming program to control the internal parasites. The deworming practice cannot be done during the lactation phase as this practice leads to high milk drug residues in milk. Milk with high drug residues must be discarded as this type of milk cannot be used for dairy manufacture or direct human consumption.

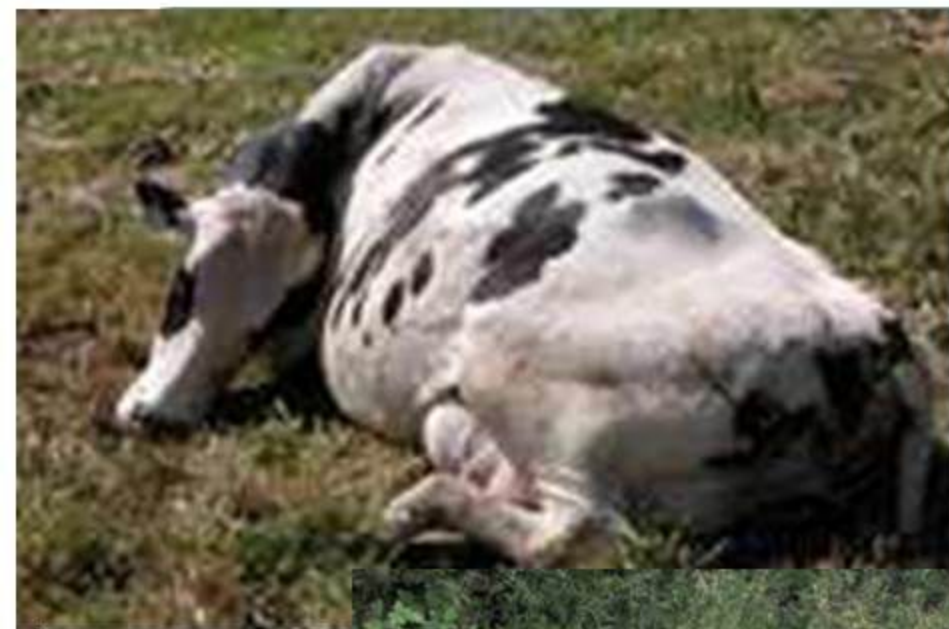


Dry cow treatment

- It is essential to use a dry cow treatment that fits with the length of the planned dry period. The treatment must be active against contagious pathogens and environmental pathogens. Towards the end of the dry period, the risk of infection from environmental pathogens increases. One dose of long acting antibiotic may be injected to the dry cows during the close up stage in case of high incidence of infectious diseases during the early fresh stage.

Milk fever control program

- Milk fever is a disorder that usually occurs around calving time and is most prevalent in older high producing cows. It is caused by a decreased mass in the calcium pool prior to parturition and failure of calcium metabolism to adapt the fast need of calcium at the onset of lactation. The incidence of milk fever increased just before and after the parturition time.
- An animal afflicted with this condition exhibits a decreased appetite and an inactive digestive tract. The cow will show signs of being dull, listless, incoordination, muscular tremors, cold ears, dry nose dry. With the progress of the disease the cow lie down and cannot stand up again (paresis). A decrease in body temperature is common, usually ranging from 36°C to 37°C . The level of blood calcium is decrease than normal ($> 8\text{ mg/dl}$).



Milk fever control program

- Prevention
 1. This problem of hypocalcemia could be tolerated via adding anionic salts in the dry cow rations. The anionic salts which commonly used for the dry cows are magnesium chloride, calcium chloride, and magnesium sulphate.
 2. The calcium phosphorus ratio must be adjusted at 2: 1 at the ration of the far off group via adding of grounded lime stone in the ration, while in the ration of the close up group the calcium phosphorus ratio must be at 1: 1 or 1:1.5. this decrease of the calcium level in the ration of the close up group stimulate the calcium metabolism to be get the calcium from bone towards the blood and thus prevent the parturient paresis.

Ketosis

- Ketosis is a metabolic condition that occurs when intake of nutrients, especially energy, is inadequate to meet production demands. It usually occurs a few days to six weeks after calving and in high-producing cows, with the highest incidence occurring at about three weeks after calving. Most high-producing cows go through a subclinical type of ketosis in early lactation when they are unable to consume enough energy to meet the energy output in milk. Cows with this disorder are known to have primary ketosis. The animals' temperature is not normally elevated in this case. An elevated temperature accompanying primary ketosis suggests additional complications.



Ketosis

- Prevention
- Suppling of the dry cows with niacin (Vit B₃) with dose rate of 6: 12 gm/ cow/ day together with daily oral dosing of bypass fat, glucose with essential mineral during the transition phase will results in decreasing of the level of the ketosis in the dairy farms.

Fatty liver syndrome

- As a result, they are more susceptible to metabolic disorders and are more likely to go off-feed. Cows that enter the dry period over conditioned should not be placed on high energy diet.

Prevention

- Efficient management of dry cows body condition score to be at 3.5 point during the dry off and calving.



Retained placenta

- Retained placenta or afterbirth occurs when the placenta fails to separate from the uterine wall shortly after the time of calving. A cow should normally clean within an hour or so after calving. If the cow fails to clean within 12 hours after birth, it is very likely that the cow is going to retain her placenta.



Retained placenta

- Prevention
- Injection of the vit E by 680 IU with 50mg of selenium/ cow during the late dry off stage (close up groups) will decrease the retained placenta cases to its permissible level (5%).

Displaced abomasum

- Displaced abomasum (DA) or a twisted stomach occurs when the abomasum (true stomach) becomes misplaced. Eighty to 90 percent are left DAs and 10 to 20 percent are right DAs. When DA occurs, food passage to the stomach is restricted and the abomasum fills with gas.



Displaced abomasum

- Prevention
 1. Gradual changes of the diet from the low energy dry off ration to high energy early fresh ration during the close up stage. This gradual change of the ration will stimulate the rumen to microflora and microphona to be adapted with high energy diets.
 2. The adaption of the ruminal environment during the close up stage could be done via gradual adding of the fresh diet to the close up ration. This gradual changed done via adding the following ingredients to the dry off ration:-
 - 10 kg of silage/cow/day
 - 5.5 kg of grains/cow/day
 - 0.75 kg of concentrate mixture/cow/day

Udder edema

- Most udder edema is partially related to the sharp drop in blood serum proteins that occurs near calving time. This drop is closely associated with the transfer of gamma globulins to colostrum and it is usually more severe in animals calving for the first time than in subsequent lactations.



Udder edema

- Prevention
 1. Decreasing of the sodium and potassium ions in the dry off ration
 2. Decreasing of the feeding of the legume hay to be no more than 50% of dry matter in the prefresh ration
 3. The level of sodium chloride must be at 0.5% in far off ration and less than 0.25% in the prefresh ration
 4. Decreasing of the mineral mixture in the prefresh ration
 5. Careful adjustment of BCS during dry off stage with efficient feeding policy
- Moderate exercise of the dry cows during their close up phase

Transition Cow Management





Transition Cow Management

- The transition period is critical for successful dairy farming, as it governs succeeding lactation season performance. It was defined as the period of three weeks prepartum to three weeks postpartum. Others, defined transition period as the period of 60 days pre parturient to 60 days post parturient. Many changes associated with transition, such as exponential growth of the fetus, changing endocrine profiles, compromised immune response, high incidence of metabolic diseases, decrease dry matter intake, and rapid mobilization of adipose tissue.

Transition Cow Management

- There is extreme importance of transition period that it was found approximately 25% of all cows were culled from the dairy herds within the first sixty days of lactation. Therefore, preparation of the prepartum dairy cow is important for optimizing animal production during the subsequent lactation.

Major hazards during transition

High incidence of metabolic diseases

- The transition dairy cows subjects to high level of metabolic diseases. This high level of metabolic disease is mainly due to many metabolic and physiological changed during this phase, as the dairy cows will changed during this phase from non-lactating dry cows to dairy ones. The over conditioned dairy cows suffered more during this alteration, thus make the fatty cows more susceptible for the metabolic diseases than others. The metabolic diseases which face the dairy cattle during their transition phase are abomasal displacement, ketosis,

High incidence of metabolic diseases

The permissible level of the metabolic diseases risks during transition phase:-

Metabolic disorder	Goal
Milk fever	>4%
Ketosis	>3%
Displaced abomasum	>3%
Retained placenta	>5%

Decreasing of the dry matter intake

- One of the most important problems during the transition period is the decreasing of the dry matter intake. Dairy cows during late dry off phase decrease their feed intake, this decreasing of the feed intake extended to the early fresh stage. The decreasing of the dry matter intake was mainly due to the high level of stress during the close up and early fresh stages.

Immunosuppression

- During the transition phase the dairy cows suffering from high level of circulating corticoids. The high level of circulating corticoids become from high stressful condition upon cows body such as growing fetus and physiological pains in addition to the production of high level of corticoids from fetal adrenal gland during this stage.

Immunosuppression

- These glucocorticoids resulted in decreasing of the immune resistance as well as decreasing the number of the WBCS and their engulfing ability to pathogens. So, the dairy cows during this stage had impaired immune function and susceptible for any diseases especially for mastitis especially if they exposed to high stressful condition. Dairy cows must be offered good sanitary calving areas with comfortable facilities to minimize the stress upon dairy cows.

Fresh cow management

10 days temperature monitoring program

- Body temperature was recorded daily for 10 days to all fresh cows after calving to insure healthy parturition process with no diseases.
 1. High body temperature indicate infection with infectious diseases or puerperal disease
 2. Decreasing of the temperature than the normal level (38.5 °C) indicate the affection with milk fever (hypocalcemia)





2.Pre and postpartum dosing

- Pre and postpartum dosing followed to decrease the incidence of the metabolic diseases specially the ketosis and fatty liver. The program was conducted to the fresh dairy cows before the parturition by 2-3 days and extended for 10 days postpartum. The fresh dairy cows orally dosed with the following ingredients:-

2.Pre and postpartum dosing

Polypropylene glycol	500 ml
Bypass fat	10 gm
Mineral mixture	10 gm
Yeast culture	10 gm
Niacin	10 gm
Molasses	10 gm
Dextrose 25%	1.5 L



One week udder inspection program

- The condition of this program resulted in decreasing of the udder infection among fresh cows, as these cows are more susceptible to mastitis. The inspector must be sensitive for these changes in the udder tissue
 1. Redness
 2. Hotness
 3. Loss of spongy texture
 4. Swelling of udder tissue
 5. Salty milk taste
 6. Clotted milk from any teat

Frequent milking

- Fresh dairy cows subjected to milking for 4-6 times per day to stimulate the rapid increase of the milk production.