About author

Dr. Ahmad Fahim has completed his B.V.Sc & A.H. in the year 2009 from Govind Ballabh Pant University of Agriculture and Technology, Pantanagr, Uttarakhand, India. He got admission in a master's degree program in the subject of Livestock Production Management at Indian Council of Agricultural Research-Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, India after securing 29th rank in All India ICAR-JRF examination. He has completed his Masters degree in the year 2011 and carried out research work on "Phenotypic Characterization of Rohilkhand Local Goats". He has completed his Ph.D. degree in the year 2016 from the ICAR-National Dairy Research Institute, Karnal. His PhD dissertation work was on "Parlour Performance, Udder Health and Milk Quality of Crossbred Dairy Cows in Automated Herringbone Milking Parlour". He was selected as Assistant Professor in the Department of Livestock Production Management, College of Veterinary and Animal Science, Sardar Vallbhbhai, Patel University of Agriculture & Technology, Meerut, Uttar Pradesh, India in the year 2014. He has in his credit more than 40 research papers, 3 books and other publications. He is a member of Indian society of Animal Production Management and actively participates in conferences/ symposiums/ workshops held during the year. He is on panel of experts for framing question papers for various Universities.

Description

This lecture note was prepared and delivered to B.V.Sc..& A.H. students studying the course of Livestock Production Management The course is offered during the first professional of the academic year at College of Veterinary & Animal Sciences, Sardar Vallabhbhai Patel University of Agriculture and Technology, Meerut, Uttar Pradesh, India. This lecture provides an over view of system of livestock production, especially in tropical and sub-tropical countries. I had tried my level best to extract the contents simplify the facts in easy to memories in very short time. Further constructive suggestions to improve this lecture note are always welcome its users on my email and WhatsApp.

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Care and management of adult stock

- During pregnancy
- During lactation

Gestation

- ✓ Conception to parturition
- ✓ Physiological condition of female to carry foetus- Gravid uterus
- ✓ Co-ordinated by neuro-humoral mechanism
    - Tubal passage 3-4 d. Descend to uterus
    - Period of ovum : Short period of free life. Attachment of blastocyst 2-5 wk Maternal recognition of pregnancy, Maintenance of C.L., Anoestrum)
    - Period of embryo – Organ formation. Placentome formation at 70 d and develop in 3-4 month
    - Period of foetus – 4th month to parturition. Rapid growth and development of foetal organ.

Management decisions:

- ✓ Choice of sire and dam
- ✓ Heat detection and service (Natural/AI)
- ✓ Feeding: greens and concentrate as per requirement. Steaming up
- ✓ Potable drinking water
- ✓ Comfortable housing
- ✓ Disinfection of pen
- ✓ Shifting to calving pen

During pregnancy

- Avoid fighting and chasing
- Isolation from problematic herd
- Limited grazing and transportation
- Reduce environmental stress
- Careful supervision
- Adequate clean water
- Proper care with kindness of advanced pregnant

Freshly parturited cows

- Mild laxative diet – Palatable and energy rich
    - ✓ 2kg bran + 1 kg molasses in lukewarm water with green fodder
    - ✓ Sodium propionate @ 60 gm daily to prevent ketosis
    - ✓ Mineral mixture

- Antiseptic washing of hind portion
- Removal of placenta : up to 10-12 hrs
- Disposal of placenta: Avoid ingestion
- Avoid complete milking
- Suitable measures to check mastitis, milk fever &other associated ailments

Care and management during lactation

Production of milk by mother for survival of young one
Biosynthesis of milk and milk let-down

Mammary gland

- ✓ Modified sweat gland
- ✓ quarter ratio rear: front 60:40

Hormone

- ✓ Pituitary
  - Prolactin, ACTH, GH, Oxytocin
- ✓ Estrogen
  - Enhances production of prolactin
- ✓ Progesternoe
  - Lactation is inhibited during pregnancy (progesterone produced by placenta)
  - Progesterone interferes with prolactin binding to the receptors on the alveolar cells, thereby directly suppressing milk production.
- ✓ Prolactin
  - Act on full grown mammary cells for milk synthesis
  - Induces gene expression for casein synthesis with guloco-corticoid

Mammogenesis

- ✓ Development of mammary gland
- ✓ Growth, functional differentiation, and regression
- ✓ Estrogen+ G.H. - ductal growth
- ✓ Progesterone - alveolar growth (myo-epithelium)

Lactogenesis

- ✓ Initiation of lactation
- ✓ Series of cellular changes whereby mammary epithelial cells are converted from a non-secretory state to secretory state.
  - Stage I (Cytologic and enzymatic differentiation of alveolar epithelial cells).
  - Stage II (Copious secretion of all milk components).
- ✓ Hormones: Prolactin, Estrogen, adrenocorticotropin (ACTH, which stimulates glucocorticoid secretion), placental lactogens, Insulin, GH.

Galactopoiesis

- ✓ Maintenance of milk production. Prolactin, GH, Thyroid Hormones.

Galactokinesis

- ✓ Milk ejection
- ✓ Oxytocin is critical for the milk let-down reflex in response to suckling.

Management

- Balanced ration
  - Roughages (Green + Dry).
  - Green legumes provided with dry fodder (prevent bloating)
- Challenge feeding
- Mineral mixture and Vitamins
- Washing of milking shed
- Washing of cow and udder
- Milking method
- Avoid excitement and stress
- Frequency of milking : Twice/Thrice
- Regular milking time and uniform interval
- Monitoring health of herd
  - Periodical testing of milk for mastitis
  - Screening for TB, Johne's disease, Brucellosis
- Drying off - 60 days before EDOC
- Disease prevention
  - Routine vaccination and deworming
  - Spraying of insecticides (ecto-parasites)

Drying off

Cessation of lactation with no damage to udder and avoiding udder infection

- Method: Abrupt cessation, Intermittent milking, Incomplete milking
  - ✓ Reducing the ration
  - ✓ Teat wiping and sealing

Milking

- Skillfull act of drawing milk from lactating animal. Gentle, quick and complete
- Oxytocin: milk let down
- Completed in 5-7 min
- First drwan milk stripes for any abnormality

- Last strippings rich in fat

- Hand milking
    - Full hand
    - Stripping
    - Knuckling
- Machine milking

Transition cow management

- ✓ 3 wks pre and post calving
- ✓ Non-lactating to lactating state
    - Rumen papillae size and absorption surface
- ✓ Transition phase
    - Energy requirement increase
    - Immune stress
    - Anionic balance altered
    - Rumen population altered
    - Liver function changes

Management

- Feeding and nutrition
    - Gradually increasing grains
    - Densification of feed and fodder – Wilting to incr. DM
    - Increase feeding frequency
    - Supplementation of fat @ 250 ml mustard oil (total fat not exceed 5%)
    - Rumen protected protein
    - Yeast and enzyme – Niacin and Vit E
    - Buffers – Soda bicarb @ 0.5% in concentrate mixture
- Stablize pH
    - Anionic mixture (chloride and sulphate)
- Thermal comfort
    - cold water in summer