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 overview of calf and heifer management. 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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Calf Raising

- Future dairy herd
- Replacement/Sale
- Management skill + Application of knowledge + Careful attention
    - ✓ Reared economically- optimize growth and minimize health problem
    - ✓ Reduced mortality

During pregnancy

Genetic potential of dam and sire

2-3 month of gestation

Well balanced ration

- ✓ Maintenance : cow Steaming up + Vit E 1000 IU/day (Immune system: calf)
- ✓ Growth: foetus
- ✓ Colostrum
- ✓ Sufficient reserve

Vaccination

Expected DOC

Calving pen (1- 2 wk before EDOC)

- ✓ 5-10% of breedable cows and hefers
- ✓ Hygeinic: 4% washing soda in hot water
- ✓ Bedding: straw/ dry grass
- ✓ drinking water + laxative diet

Parturition

- ✓ Seek isolation
- ✓ Restless
- ✓ Loss of appetite
- ✓ Udder and teats- distention
- ✓ Pelvic ligament- relaxation
- ✓ Vulva- flabby
- ✓ Scratching the flank : Labour pain (distress)

3 stages

- Stage I : Contraction of uterine wall and dilatation of cervix
- Stage II: Expulsion of foetus
- Stage III: Expulsion of foetal membrane

At birth

- Initiation of respiration and circulation: Ensure breathing
- Cutting the navel cord: 2-3 cm away, Tr Iodine
- Externally aided thermoregulation
- Instinctive behaviour – Proximity to mother, Teat seeking
- Birth weight: 6% of dam
- Colostrum feeding
    - ✓ Passive immunity: Gama globulins. First 1-2 hrs
    - ✓ Total solid (twice) and protein (seven times)
    - ✓ Vitamin and minerals
    - ✓ Laxative action (meconium)
- Milk feeding
    - ✓ @1/10 b.wt.
- Dehorning
- Castration
- Removal of extra teats
- Marking/ Identification
    - ✓ Record keeping
    - ✓ Registration
    - ✓ Sale and purchase
    - ✓ Health
    - ✓ Insurance
- Periodic deworming, grooming, dipping, spraying
    - ✓ Round worm – 3-7 d, monthly, thrice a year
    - ✓ Liver fluke – before and after monsoon (May & Oct)
    - ✓ Tape worm – January and June

Artificial colostrum

- Milk- 600 ml
- Egg - 01
- Castor oil – 1 tsf
- Water – to make 1L

Milk replacer (1:8)

- SMP – 50-70%
- Animal/vegetable fat –10-15%
- Dried whey – 10%
- Protein (Non-milk source) – 15-20%
- Vit A,E, B12 and antibiotic

Calf starter (18% DCP; 75% TDN): high protein + low fibre

- Barley/Maize (crushed) – 40
- GNC – 25
- Soyabean cake – 25
- Dried skim milk/ Meat meal/ Fish meal – 08
- Steamed bone meal – 01
- Vitamin and mineral – 01
- Yeast culture – 25g/100 kg

Post weaning

2-3 months

- Dam milk yield
- Scientific calf feeding
- Clean milk production
- Letting down
- Teat injuries

Good quality legume hay and fresh green fodder

Concentrate mixture @ 0.75 – 1.5 kg /day

Calf housing

- ✓ 1-3 months : Individual pens
- ✓ Calf hutches

Exercise

Ringing

- ✓ Male calves (Breeding): 6 month

Disinfection and spraying

Calf diseases

Gastro-enteritis (E.coli, Sacchrolytic organism, Ascaris vitulorum, Trichostrongylus sp., Eimeria sp.)

- ✓ Avoid overfeeding
- ✓ Qualtiy of milk substitutes
- ✓ Colostrum feeding
- ✓ Avoid overcrowding
- ✓ Deworming

Pneumonea

- ✓ Individual calf pen with slatted floor

- ✓ Bedding
- ✓ Colostrum feeding

Septicaemia: Navel ill and joint ill

- ✓ Dressing the navel cord
- ✓ Disinfection of calf premise
- ✓ Colostrum feeding

External parasites

- ✓ Malnutrition
- ✓ Unhealthy and unsanitary housing conditions
- ✓ Environmental factors
- ✓ Periodic spraying

Management of Heifers

Heifers are the future cow

Growth –

- ✓ Permanent
- ✓ Protoplasmic mass
- ✓ Sigmoid

Limits – species and genetics

Factors

- ✓ Internal
  - Genetics
  - Hormones (G.H., Thyroid hormone, Corticoids, Insulin, Glucagon, Gonadal hormone)
- ✓ External
  - Nutrition
  - Climate
  - Management
    - Proportionate growth: No over-fattening
    - Age and weight (at puberty and maturity)
  - Disease

Principles of management

- ✓ Breeds and breeding
  - Age of breeding
    - ~60 % of mature body weight
    - Weight has more to say than age
    - Avoid breeding too early and too late
    - Optimization based on age-weight ratio
  - Gynecological examination
- ✓ Feeding and Nutrition
  - Grazing
    - Carrying capacity (Pasture)
    - Legume
    - Rotational grazing
  - Stall feeding
    - Legume hay and green fodder
    - Concentrate 1-1.5 kg
    - Mineral mixture
    - Steaming up/ Challenge feeding
- ✓ Housing and care

- Floor space requirememnt
- Heifer groups > 6 month age

✓ Prevention and control of diseases

✓ Selection and culling

- Defects
- Stunted growth

Identification- Branding (1 year)

De-worming

Grooming

Excercise

Spraying: Malathion

Vaccination: FMD, HS, BQ, Anthrax

Flushing

- Feeding extra concentrate or lush pasture 2-3 wks prior to breeding season
- Feeding ~ 250 gm grains daily increase lamb crop up to 10-20 %

Steaming up

- Extra amount of concentrate fed during last half of pregnancy
- Additional 1.5 kg concentrate mixture (18% DCP, 65-70 % TDN)
  - ✓ Growth of pregnant heifer and foetus
  - ✓ Development – Reproductive system and udder development
  - ✓ Colostrum and Milk yield

Challenge feeding

- Feeding increased quantity of concentrate to produce at the max
- Started 2 wk prior to parturition

Last 2 wk before calving	Starting from 500 gm, Increase 300-400 gm daily until coe eating 500-1000 gm / 100 kg b.wt.
First 2 wk of lactation	Increase 500 gm/day to free choice
2nd wk to peak yield	Free choice
Remaining lactation	1 kg for every 2.5 kg milk
All period	Green + Dry fodder

Vaccination Schedule for Cattle & Buffaloes

Disease	Age and booster doses	Route	Remarks	Vaccines available
Foot and mouth disease(FMD)	4 months; booster at 2-4 weeks after primary vaccination; repeat every 6 months.	3 ml SC	Pregnant animals above 7 months of pregnancy should be avoided	BOVILIS FMDV GEL; FUTVAC; RAKSHA
	Oil adjuvant vaccines 4 months; repeat 9 months after primary vaccination; then Annual	2 ml IM		RAKSHA-OVAC; BOVILIS CLOVAX
Black quarter (BQ)	6 months; repeat yearly before monsoon	2 ml SC	May - June	BLACK QUARTER VACCINE
Hemorrhagic Septicaemia (HS)	6 months; repeat yearly before monsoon	2 ml SC	May/ June	RAKSHA-HS., Bovilis HS
Anthrax	6 months; repeat yearly	1 ml SC	Only in endemic areas-One month before grazing season or prior to the time the disease usually occurs	RAKSHA ANTHRAX
Theileriasis	2 months and above; repeat every 3 yrs if recommended	3 ml SC	Do not vaccinate animals in advanced stage of pregnancy	RAKSHAVAC-T
Brucellosis	4 to 8 months	2 ml of reconsti-tuted vaccine by SC	Only in serologically negative female calves.-Male calves should not be vaccinated.-Do not vaccinate the pregnant animal	BRUVAX ; BRUCELLA VACCINE LIVING

Resource: Indian Immunologicals Pvt. Ltd.

Combination Vaccines for Livestock

Disease	Age and booster doses	Route	Remarks	Vaccines available
HS and QB	6 months, re-vaccinate annually	4 ml SC		HS+BQ VACCINE., BOVILIS HSBQ
FMD and HS	4 months, Booster after 9 months; revaccinate annually	3 ml deep IM	Sheep, Goat: 1ml	RAKSHA BIOVAC
HS and QB	6 months, revaccinate annually	3 ml SC		RAKSHA HS+BQ
FMD, HS and BQ	4 months, Booster after 9 months; revaccinate annually	3 ml deep IM	Sheep, Goat: 1ml	RAKSHA TRIOVAC

Resource: Indian Immunologicals Pvt. Ltd.

Vaccination Schedule for Sheep & Goats

Disease	Age and booster doses	Route	Remarks	Vaccines available
Foot and mouth disease	6-8 weeks, repeat every 6-9 months	SC or IM depending on the vaccine	1 ml SC	BOVILIS FMDV Gel; FUTVAC; RAKSHA; RAKSHA-OVAC; BOVILIS FMDV GEL; BOVILIS CLOVAX
Enteroto-xaemia	4 months, repeat after 15 days (if recommended) and then annually	2 ml SC	First two doses before august	BOVILIS ETV; ET VACCINE; RAKSHA ET; BOVILIS MCV
Hemorrhagic Septicaemia	3-4 months, repeat annual	1ml SC	May/ June	RAKSHA-HS
Anthrax	4-6 months, repeat annually	0.5 ml SC at tail fold	In endemic areas only-One month before grazing season or prior to the time the disease usually occurs	RAKSHA ANTHRAX
Tetanus	3-4 months, repeat at 6 months and then annually	0.5 - 1 ml SC or IM		TETANUS TOXOID
PPR	3-4 months, repeat at 4th year	1 ml SC	Avoid use in advanced pregnancy	RAKSHA-PPR
Sheep pox	3 months	1 ml IM	Vaccinate after lambing season or during onset of breeding season	RAKSHA-SP

Resource: Indian Immunologicals Pvt. Ltd.