

MALAYSIAN FARM MANAGEMENT NOTE 1

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REARING YOUNG STOCK

The milk feeding calf phase

The key principles of milk rearing herd replacements are:

- Ensuring healthy cows can give birth to healthy calves in a clean and comfortable environment
- Providing suitable colostrum to allow adequate transfer of immunity
- Supplying milk, fresh water and appropriate and timely supplements
- Providing appropriate and clean housing
- Minimising the risk of disease and disease spread
- Managing the weaning process
- Instigating practices that reduce the risk of antibiotic and chemical residues
- Ensuring calf and welfare requirements are met for any calves sold

The process of milk rearing can be broken down to 10 steps, which together with some of the key objectives are as follows:

1. *Pre calving*

- Select sires for ease of calving
- Manage transition period, before and after calving, to minimise metabolic diseases
- Ensure target mating weights are achieved before joining heifers
- Implement a farm specific vaccination program
- Prepare facilities for calving, concentrating on space and hygiene

2. *Identification, targets and recording*

- Record all details of birth
- Permanently identify calf
- Set targets for feeding, weaning and disease control
- Decide on protocol for culling very sick calves, following treatment
- Establish a method for humane destruction, if required
- Decide on individual or group pens
- Develop calf recording schedule (notebook or computer)
- Record all calf rearing costs (including labour input) to calculate total costs to weaning

3. *Colostrum feeding management*

- Consider vaccinating the cows for local diseases to improve colostrum quality
- Preferably separate the cow and calf within a few hours and administer the colostrum by hand
- If cow and calf run together for 12 hours or more, ensure calf has a good drink of colostrum from her dam
- Ensure an adequate colostrum feeding program
- Quality of colostrum
- Quantity of colostrum fed
- Quickly feed calf after birth, within the first six hours
- Method of feeding colostrum
- Ensure bull calves also receive adequate colostrum even if they are to be sold
- Continue feeding colostrum, when available, for several days

4. *Milk feeding and access to drinking water*

- Select type of milk (whole milk, calf milk replacer, CMR)
- Be aware of the potential problems with very cheap CMRs
- Decide on method of feeding milk (buckets, teats, trough, restricted suckling)
- Seriously assess the benefits of an automatic calf feeding system for large calf rearing enterprises
- Do not dilute milk or colostrum with water
- Decide on feeding frequency (once versus twice each day)
- Decide on a warm or cold milk feeding system
- Be consistent each day (volume, temperature)
- Ensure good utensil hygiene with collecting and feeding milk
- Provide clean drinking water from Day 1 of life
- Use hot water, detergents and sanitisers when washing feeding equipment

5. *Solid feeds*

- Provide good quality concentrates (consider energy, protein and minerals)
- Understand the importance of adequate protein in the concentrates; milking cow concentrates are unsuitable due to low protein
- Decide on formulation (mixed on farm from base ingredients or commercially formulated)
- Provide to appetite from 1st week of age
- Ensure fresh concentrate is on offer at all times
- Do not mix concentrates with water
- Monitor daily concentrate intakes to aid with the weaning program
- Decide on forage supplements (hay not fresh forage)
- Feed limited amounts of forages

6. *Preventing and treating scours*

- Be aware that good colostrum feeding management is the key
- Be consistent with all feeding and herd management
- Minimise stresses on calves (overcrowding, climatic conditions, rough handling)
- Understand the difference between nutritional and infectious causes of scours
- Understand types of scours and age when they can occur
- Understand how to identify type of scours from symptoms (age, body temperature, faecal characteristics)
- Understand how to assess degree of dehydration in sick calves (sunken eyes, skin pinch test)
- Have good quality electrolyte fluid replacement on hand
- Keep feeding milk but space out feeding times
- Do not consider antibiotics until the type of infectious scours is identified by a veterinarian
- Have a hospital pen for isolation of sick calves

7. *Health and herd management*

- Dip navels in iodine solution soon after birth
- Understand calf behaviour
- Be confident with veterinarian support
- Be aware of how to assist the veterinarian with follow up treatments of sick calves
- Purchase items for “calf nursing kit” (thermometer, stomach tube feeder, watch)
- Develop knowledge of local disease problems (such as pneumonia, joint ill, bloat)
- Minimise faecal contamination of the calf rearing area
- Minimise exposure to infections
- Identify, record and isolate all treated calves

- With group pens, don't mix calves of different ages
- Plan for disease prevention rather than treatment
- Consider routine vaccination against Clostridial diseases
- If using antibiotics, record treatment dates and the withholding period to avoid sale of contaminated stock
- If selling stock, ensure they are fit for travel and sale
- Ensure excellent hygiene in calf pens and of milk feeding equipment
- Be aware of important calf welfare issues
- Record all instances and degree of health problems for later reference
- Decide on protocol for other herd management (disbudding, vaccinations, internal and external parasite prevention and treatment)
- Ensure newly introduced stock are kept in a separate quarantine area
- Ensure all staff are aware of farm health protocols
- Ensure any children wash their hands and change into clean clothes after leaving the calf rearing area

8. *Managing weaning*

- As weaning is a process, not an event, it must be carefully planned
- Decide on weaning protocol (based on concentrate intake, age, weight or some combination of these)
- Preferably use concentrate intake and wean once calves are eating 750 g to 1 kg/calf/day
- Immediately remove milk from diet (don't dilute with water or gradually reduce intake)
- Note whether concentrate intakes quickly increase following weaning
- Minimise early post weaning stress, such as vaccinations and disbudding
- Move weaned calves to other pens only after a few days weaned
- Continue feeding concentrates for many months even if forage quality is good

9. *Environmental management*

- Protect stock from climatic stresses
- Consider sprinklers and fans in very hot climates
- Maintain a clean environment to minimise disease risk
- Ensure rearing facilities do not cause undue stress on new born calves
- If cold weather is likely to be experienced, ensure walls are solid to calf height
- Provide artificial heating for sick calves in cold conditions

10. *Housing and facilities*

- Consider individual calf cages for rearing calves for the first few weeks of life
- If using individual pens, provide a slatted floor or comfortable bedding, such as straw or sawdust
- Ensure each pen has containers for fresh water, milk, concentrates and if being fed, forage
- If using group pens, ensure no more than 6 calves per group with sufficient floor space for each calf (at least 1 m²/calf)
- Ensure good ventilation in the calf shed
- Provide adequate lighting in the shed for night time activities
- Ensure hot water is readily available for cleaning purposes
- Provide a small refrigerator for storing vaccines and other drugs in a secure area
- Clean and disinfect each calf pen between batches of calves
- Ensure good effluent disposal system for regular cleaning of facilities

The weaned heifer phase

The key principles of rearing weaned replacements heifers are:

- Ensuring they grow well to achieve target live weights for mating and calving
- Basing the ration on high quality forages with concentrates specially formulated for growing heifers
- Supplying fresh water at all times
- Providing appropriate and clean housing
- Minimising the risk of disease and disease spread
- Ensuring welfare requirements are met for any calves sold
- Monitoring heifer performance to fine tune feeding management

The aim of heifer rearing is to achieve maximum growth and development and earliest puberty at least cost. This ensures that maintenance costs are minimised, that there is the earliest possible return on the investment in the original animal and that the heifer can produce well during her first lactation. Any small growth check, due to sub optimal feeding, is unlikely to have a permanent effect on her future productivity (unless it is severe) but can delay puberty, increasing rearing expenses hence decreasing profitability. The feeding of high quality forages, including legumes, should ensure acceptable growth rates, but will invariably require additional high energy and protein supplements and possibly additional forages to ensure good year round live weight gains. Growing heifers may need to be housed to protect them from ecto parasites, such as ticks and biting flies, and in central and southern America, from vampire bats during the night.

Tropical cattle do not grow as quickly in the tropics as do temperate dairy heifers in temperate regions. This is primarily because of the nutritional limitations of tropical forages, compounded with heat stress, which reduces appetite. Tropical dairy cattle also have lower mature sizes hence less propensity for live weight gain.

In temperate areas, dairy heifers are first mated at 15 to 18 months, depending on mature size. However in the tropics, the majority of heifers are too small, hence too immature to breed at these ages. Live weight rather than age should be used as the criterion for mating heifers. Adequate live weights should be 200 to 225 kg for smaller and 290 to 315 kg for larger breeds. Following conception, heifers must continue to grow as well as produce a viable calf nine months later. In addition, parasite control and routine vaccinations should continue during their rearing. Vaccinations for clostridia, anthrax, Brucellosis, rinderpest and foot and mouth disease should be routine depending on the dairy region. During their last two months of pregnancy, additional feeding is required, usually with concentrates.

The process of rearing weaned heifers can be broken down to nine steps, which together with some of the key objectives for each step are presented below. There is inevitably some duplication with the lists above for milk fed calves.

1. *Early post weaning management*

- Minimise stresses immediately before and after weaning
- Avoid moving calves out of milk rearing pens for several days after weaning
- Monitor individual concentrate intake after weaning to ensure rumen development is adequate

2. *Targets and recording*

- Routinely weigh (or use chest girth tapes) to monitor changes in live weight during heifer rearing, say every three months
- Use target live weights to modify feeding management, if required
- Use body condition as an extra guide to heifer feeding management
- Continue recording animal health treatments until first calving
- Plan mating at target mating weights
- Record mating times to aid with planning additional inseminations

- Decide on protocol for culling very sick heifers, following treatment
- Establish a method for humane destruction, if required
- Develop a heifer recording schedule (notebook or computer)
- Record all heifer rearing costs (including labour input) to calculate total costs to first calving

3. *Forage quality*

- Ensure forage is of good quality
- Provide adequate forage
- Chop forages into small lengths
- Consider wilting grass to increase forage intakes
- If possible include legume forages to provide additional forage protein

4. *Concentrate feeding*

- Continue feeding concentrates until puberty and even after depending on forage quality
- Ensure concentrates contain adequate protein for heifer growth
- Understand the importance of adequate protein in the concentrates; milking cow concentrates are unsuitable due to low protein
- Decide on formulation (from base ingredients or commercially formulated)
- Do not mix concentrates with water
- Provide fresh drinking water at all times
- Clean out feed troughs at least once each day

5. *Mating management*

- Ensure target weights are achieved before joining heifers
- Seriously assess the benefits of synchronising oestrus in large groups of heifers
- Consider mating heifers in specific seasons, particularly if summers are hot and humid
- Ensure adequate infrastructure and support if depending on artificial insemination (AI) for mating heifers
- Select bulls and semen on ease of calving
- Consider access to bulls for natural mating following several cycles of AI
- Ensure heifers are well fed and gaining weight during the mating period

6. *Health and herd management*

- Develop a routine disease control protocol for heifer rearing
- This should include vaccinating against diseases relevant to the location, control and prevention of external parasites as necessary
- Develop skills in understanding stock behaviour
- Be confident with veterinarian support
- If using bulls for natural mating, ensure they have been assessed for fertility and treated to prevent spread of reproductive diseases
- Plan for disease prevention rather than treatment
- If selling stock, ensure they are fit for travel and sale
- Be aware of important calf welfare issues
- Record all instances and degree of health problems for later reference
- Ensure newly introduced stock are kept in a separate quarantine area
- Ensure all staff are aware of farm health protocols
- Ensure any children wash their hands and change into clean clothes after leaving the calf rearing area
- Be aware of how to assist veterinarian with follow up treatment of sick calves
- Purchase items for “calf nursing kit” (thermometer, stomach tube feeder, watch)
- Develop knowledge of local disease problems (pneumonia, joint ill, bloat)

7. *Environmental management*

- Minimise heat (and cold) stress, as with milking cows
- Protect stock from climatic stresses
- Consider sprinklers and fans in very hot climates
- Maintain clean environment to minimise disease risk
- If cold weather is likely to be experienced, ensure walls are solid to calf height

8. *Housing and facilities*

- Ensure heifers have adequate space in their pens (at least 1.5 m²/calf)
- Ensure good ventilation in heifer shed
- Provide adequate lighting in shed for night time activities
- Provide a small refrigerator for storing vaccines and other drugs in a secure area
- Clean and disinfect each pen between batches of heifers
- Ensure good effluent disposal system for regular cleaning of facilities

9. *Pre calving management*

- Manage transition period, before and after calving, to minimise metabolic diseases
- Implement a farm specific vaccination program
- Prepare facilities for calving, concentrating on space and hygiene