

## REARING REPLACEMENT DAIRY HEIFERS WITH FEEDTEK

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The successful rearing of replacement heifers in a dairy farming operation is one of the most important factors that influence the profitability of the business. It comprises a large capital investment that takes years before any returns on this investment are realized. Since these initial investments don't show an immediate return and as it is very difficult to calculate whether this investment will be financially worthwhile, essential input costs in the rearing of heifers could easily be regarded as unnecessary expenses, which could explain why many farmers tend to neglect this very important facet of their dairy operation.

### Rearing dairy calves from 0 – 6 months of age

The latest research has proven that the quality and amount of nutrients supplied to the calf during the first 8 weeks of her life, has a direct effect on her ability to produce milk throughout her life, by influencing udder development. For each additional 100 grams daily gain from birth till weaning, the milk production during the first lactation increases by an average of 155 kg. To achieve maximum growth in the young calf the feeding regime must be adapted to the physiological changes that take place in the young ruminant. These changes are mostly related to effective rumen development and need strategic managerial changes to try and optimize rumen development.

#### Month 1: Development of concentrate digestion

The emphasis during this period is activation of the calves naturally secreted digestive enzymes and rumen papillae development to maximize absorption. This is achieved by feeding calves concentrate in the form of a calf starter meal together with her milk or milk replacer, which normally is fed at 10% of the calf's bodyweight per day. No extra roughage is needed during this phase.

#### Month 2 until weaning: Development of rumen fiber digestion

Good quality roughages must be made available to the calves in order to supply the medium for the microbes that need to develop. Water must be provided ad lib to provide the aqueous environment needed by microbes to live in. Therefore use a calf starter meal with lucerne on the side or a complete calf grower feed where lucerne is included in the feed.

#### Weaning to 6 month: Rumen development

During this phase calves become effective ruminants, usually by the age of six months. In order to achieve this, the size and wall thickness of the rumen must develop to provide enough volume for microbes to be able to digest sufficient amounts of roughage to provide the animal with adequate nutrients. Rumens of 3 month old calves just do not have enough volume to process enough roughage necessitating supplemental feeding to help provide the calf with the needed nutrients. Calves must therefore be supplemented with a calf grower meal or must receive a complete calve feed.

**With Feedtek's speciality calf macro premixes farmers are able to mix their own high quality fully balanced calf feeds on farm at a much lower cost than bought in calf meals.**

## Examples of home mixed calf feeds

| Ingredients                    | Calf starter meal | Complete calf starter feed | Calf grower meal | Complete calf grower feed |
|--------------------------------|-------------------|----------------------------|------------------|---------------------------|
| Maize meal                     | 600               | 500                        | 650              | 350                       |
| Molasses meal                  | 80                | 80                         | 80               | 80                        |
| Soybean Oilcake meal           | 300               | 250                        | 250              | 150                       |
| Lucerne hay (milled)           |                   | 150                        |                  | 250                       |
| <b>Feedtek Calf Gainer 65</b>  | <b>32</b>         | <b>32</b>                  | <b>32</b>        | <b>16</b>                 |
| <b>Total mixture (kg)</b>      | <b>1012</b>       | <b>1012</b>                | <b>1012</b>      | <b>846</b>                |
| <b>Composition (estimated)</b> |                   |                            |                  |                           |
| Protein (%)                    | 18.7              | 18.0                       | 16.7             | 16.5                      |
| Energy(MJ ME/kg)               | 11.7              | 11.1                       | 11.7             | 10.7                      |
| Crude Fibre (%)                |                   | 7.3                        |                  | 10.8                      |
| Calcium (%)                    | 0.95              | 1.14                       | 0.93             | 1.03                      |
| Phosphorus (%)                 | 0.56              | 0.54                       | 0.54             | 0.43                      |

## Feeding recommendations

1. Replace up to 50% of the maize meal with hominy chop if preferred
2. Grain needs to be coarsely milled to stimulate the development of the rumen in calves
3. Provide the calf starter meal unrestricted for calves from 0 to 3 months of age. Provide additional coarse roughage separately for development of the rumen **OR**
4. Provide the complete calf starter feed unrestricted to calves from 0 to 3 months of age
5. Provide the calf grower meal unrestricted for calves from 4 to 6 months of age. Provide additional coarse roughage separately for development of the rumen **OR**
6. Provide the complete calf grower feed unrestricted to calves from 4 to 6 months of age
7. It is advisable to add one unit Feedtek Marine Buffer Pack to a ton of calf feed to help prevent acidosis
8. These feeds contain ionophores and is therefore not suitable for horses and game.

Feedtek Calf Gainer 65 supplies the optimal levels of Calcium, Phosphorus, Magnesium, Sulphur, all 7 essential trace minerals as well as vitamins A, B1, D, E and Niacin. It ensures that the calf is resistant against disease and improves growth and feed conversion. It also contains Zinc Bacitracin and Monensin to prevent coccidiosis, improve rumen health and digestion, resulting in improved feed conversion. It contains a molasses flavouring palatant to stimulate feed intake and prevent adaptation problems when new ingredients are used. Calf Gainer 65 is also available with the latest nutritional technology developed in Europe by Provimi, one of the world's leading feed companies. This technology includes essential oils, pre-biotics, pro-biotics, effective fibre and an antioxidant. This technology improves digestion, rumen development, resistance against disease as well as digestion of the milk, leading to stronger, bigger and healthier calves. This version of the product is known as Feedtek Calf Gainer 65 (Elite).

## Rearing dairy heifers from 7 months of age until pregnant

In general heifers are allowed out to pasture (normally inferior to the pasture reserved for the lactating cows) at around 6 to 7 months of age and left to fend for themselves. To make matters worse they normally receive the minimum supplements or even no supplements at all. At 15 months of age it is then expected of these heifers to have reached puberty, but most heifers will not be capable to reach the minimum target mass for first insemination under these circumstances. The consequence is that heifers are being inseminated at a live weight lower than minimum target mass or heifers being inseminated for the first time at an older age. If the heifer is inseminated before she has reached her minimum target mass (which is at least 60 % of her mature mass) it will lead to her never reaching her full potential mature live weight and re-conception after first calving will be difficult since the heifer is still busy growing. The result therefore is a lengthened calving interval, which stays with her for her whole life. Heifers, which are inseminated for the first time at an older age, automatically have a bigger chance to produce one calf less during their economically viable lifetime. A study conducted by the University of Cornell in 1998 clearly proved that optimum profitability was attained with heifers calving at 21 months compared to heifers calving at 24 and 27 months respectively. Because of "maturity" problems that might arise when heifers calf too young, a practical target age for first calving remains 24 months of age.

The accelerated growth of a heifer receiving supplementary feed enables her to reach puberty at 12 to 15 months and to calf at 24 months. This results in a saving of nine months of feeding costs for a non-producing animal, while her total milk production over her lifetime will increase, due to a much greater chance of producing an additional calf during her lifetime. In the process the heifer is not only producing milk earlier than normal, but her calf will be nine months old when the regular growing heifer has her first calf. If this second generation heifer also calf at 33 months of age, the farmer will have lost 18 months in generation interval, aggregating to 27 months by the time the third generation offspring calves. The time lost in three generations represents another calf, meaning the farmer lost a generation of genetic advance. In today's competitive environment this can be the difference between success and failure.

Depending on the amount and quality of available grazing for heifers, they can be grown out extensively, semi-intensively or intensively. Since mature lactating dairy cows produce milk very efficiently from good quality pastures, it might be sensible to reserve all the best pastures for them, and rear heifers either on relative poor pastures or in small camps with limited grazing. Since heifers need to grow out at a minimum required rate, Feedtek recommends that heifers should rather be reared semi-intensively at this stage. This will enable the farmer to monitor and weigh them regularly and ensure they are on target for their minimum required weight for AI or breeding at the target breeding age of 15 months.

## Examples of home mixed heifer feeds

| Ingredients                    | Heifer meal | Complete heifer feed<br>(7 – 11 mths) | Complete heifer feed<br>(12 – 15 mths) |
|--------------------------------|-------------|---------------------------------------|----------------------------------------|
| Maize meal / Hominy chop       | 700         | 500                                   | 500                                    |
| Molasses meal                  | 120         | 120                                   | 120                                    |
| Cottonseed Oilcake meal        | 150         | 100                                   | 50                                     |
| Grass hay (milled)             |             | 250                                   | 300                                    |
| <b>Feedtek Beef Gainer 110</b> | <b>54</b>   | <b>36</b>                             | <b>36</b>                              |
| <b>Total mixture (kg)</b>      | <b>1024</b> | <b>1006</b>                           | <b>1006</b>                            |
| <b>Composition (estimated)</b> |             |                                       |                                        |
| Protein (%)                    | 17.0        | 13.7                                  | 12.1                                   |
| Energy(MJ ME/kg)               | 11.3        | 10.4                                  | 10.2                                   |
| Crude Fibre (%)                |             | 12.3                                  | 13.3                                   |
| Calcium (%)                    | 0.86        | 0.67                                  | 0.67                                   |
| Phosphorus (%)                 | 0.46        | 0.35                                  | 0.31                                   |

## Feeding recommendations

1. Feed the heifer meal at the following levels together with the following different qualities of roughage/grazing available unrestricted
  - a. Good grazing/roughage: 2 – 3 kg/day
  - b. Average grazing/roughage: 3 – 4 kg/day
  - c. Poor grazing/roughage: 4 – 5 kg/day
2. Feed the complete heifer feeds at 2.5 % of live body weight per day
3. Weigh heifers at least every 2 months to ensure they are growing in accordance with minimum required rates to reach target weight for first conception at the planned age
4. These feeds contain ionophores and NPN and should therefore not be fed to horses or game
5. Please read the NPN warning on the bag label thoroughly when NPN containing feeds are going to be fed.

Feedtek Beef Gainer 110 supplies optimal levels of soluble protein in the correct ratio to sulphur for effective utilisation of this protein. It also provides high levels of calcium, phosphorus, magnesium, all seven essential trace minerals as well as vitamins A, B1, D, E and Niacin for fertility, growth and resistance against disease. It further contains no less than 2 buffers together with Rumensin and Zinc Bacitracin for a healthy rumen, effective digestion and better feed conversion and growth. Furthermore it also contains a flavouring palatant to stimulate feed intake and prevent adaptation problems when feed composition changes.

Should good quality pastures be available for rearing heifers from 7 months of age, they may be reared extensively, but they should receive a high quality energy supplement together with the pasture, to ensure that they grow at the required minimum rate.

## Examples of home mixed energy supplements

| Ingredients                          | Lick for dry pasture | Lick for green pasture |
|--------------------------------------|----------------------|------------------------|
| Maize meal / Hominy chop             | 650                  | 620                    |
| Molasses meal                        | 80                   | 80                     |
| Cottonseed Oilcake meal 38           | 50                   | 100                    |
| Salt                                 | 150                  | 100                    |
| Feedlime                             |                      | 25                     |
| Monocalcium phosphate                |                      | 50                     |
| Feedtek Veldgrazer 128               | 75                   |                        |
| Feedtek Greengrazer Premix           |                      | 25                     |
| <b>Total mixture (kg)</b>            | <b>1005</b>          | <b>1000</b>            |
| <b>Composition (estimated)</b>       |                      |                        |
| Protein (%)                          | 16.6                 | 8.8                    |
| Urea (%)                             | 3.0                  |                        |
| Energy (MJ ME/kg)                    | 9.4                  | 9.6                    |
| Calcium (%)                          | 1.1                  | 2.5                    |
| Phosphorus (%)                       | 0.6                  | 1.3                    |
| <b>Recommended intake (gram/day)</b> | <b>1000 - 2000</b>   | <b>500 - 1000</b>      |

## Feeding recommendations

1. For the best regulated intake, licks need to be put out unrestricted. Should actual intakes differ markedly from recommended intakes after a period of 14 days, please contact a Feedtek nutritionist to adapt the formulations.
2. Good quality roughage and/or grazing should be available with these licks at all time
3. These licks may contain an ionophore and/or NPN and is therefore not suitable for horses and game
4. These licks may contain NPN - please read the NPN warning on the bag label thoroughly when licks containing NPN are fed.

## Rearing pregnant heifers

Once heifers are certified pregnant, they may be put out to any pasture / veld with or without additional roughage, but they should still receive a supplement that will enable them to grow out while also sustaining a developing fetus. The heifer should calf with adequate reserves as well as a good mineral and trace mineral status to ensure ease of calving and adequate colostrum for the calf within the first 24 hours.

## Examples of home mixed supplements for pregnant heifers

| Ingredients                    | Licks for dry grazing/roughage | Licks for green grazing/roughage |
|--------------------------------|--------------------------------|----------------------------------|
| Maize meal / Hominy chop       | 470                            | 370                              |
| Molasses meal                  | 80                             | 80                               |
| Cottonseed Oilcake meal 38     | 50                             | 100                              |
| Salt                           | 250                            | 250                              |
| Feedlime                       |                                | 50                               |
| Monocalcium phosphate          |                                | 100                              |
| Feedtek Veldgrazer 128         | 150                            |                                  |
| Feedtek Greengrazer Premix     |                                | 50                               |
| <b>Total mixture (kg)</b>      | <b>1000</b>                    | <b>1000</b>                      |
| <b>Composition (estimated)</b> |                                |                                  |
| Protein (%)                    | 25.0                           | 7.0                              |
| Urea (%)                       | 6.0                            |                                  |
| Energy (MJ ME/kg)              | 7.2                            | 6.5                              |
| Calcium (%)                    | 2.1                            | 4.9                              |
| Phosphorus (%)                 | 0.9                            | 2.3                              |
| Recommended intake (gram/day)  | 600 - 900                      | 250 - 500                        |

## Feeding recommendations

1. For the best regulated intake, licks need to be put out unrestricted. Should actual intakes differ markedly from recommended intakes after a period of 14 days, please contact a Feedtek nutritionist to adapt the formulations.
2. Feed these licks as soon as heifers are confirmed pregnant
3. Good quality roughage and/or grazing should be available with these licks at all time
4. These licks may contain an ionophore and/or NPN and is therefore not suitable for horses and game
5. These licks may contain NPN - please read the NPN warning on the bag label thoroughly when licks containing NPN are fed.

Feedtek Veldgrazer 128 supplies optimal levels of soluble protein in the correct ratio to sulphur for effective fibre digestion to stimulate the digestion and intake of poor quality roughage. It also provides high levels of phosphorus and magnesium, all seven essential trace minerals and vitamin A and E for high resistance against disease and high fertility in reproducing animals.

Feedtek Greengrazer Premix supplies high levels of magnesium and sulphur together with all seven essential trace minerals. It also contains Lasalocid Sodium (an ionophore), which together with the sulphur is very effective in preventing bloat and prussic acid poisoning. The Lasalocid Sodium will also lead to an additional 10 to 15% growth of animals during the green season, which implies an additional 20 to 25 kg of live weight over a 6 month period.

## Summary

The correct rearing of heifers play a critical role in the future profitability of the dairy operation. Farmers need to ensure that their heifers are fed optimally to ensure future fertility, health and milk production. The Feedtek macro premixes together with quality technical support will enable all dairy farmers to rear their heifers in a scientific but affordable way, ensuring future viability of the dairy operation.



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