Feeding, Care and Management of Dairy Calves and Heifers
CONTENTS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeding and care of the baby calf</td>
<td>3</td>
</tr>
<tr>
<td>Attention at calving time</td>
<td>3</td>
</tr>
<tr>
<td>Care of the new born calf</td>
<td>3</td>
</tr>
<tr>
<td>Teaching the calf to drink</td>
<td>3</td>
</tr>
<tr>
<td>Kind of milk to feed</td>
<td>4</td>
</tr>
<tr>
<td>Amount of milk and frequency of feeding</td>
<td>4</td>
</tr>
<tr>
<td>Raising dairy calves on skim milk</td>
<td>5</td>
</tr>
<tr>
<td>Feeding skim milk</td>
<td>5</td>
</tr>
<tr>
<td>Feeding grain to skim milk calves</td>
<td>5</td>
</tr>
<tr>
<td>Roughage for calves</td>
<td>6</td>
</tr>
<tr>
<td>Pasturing calves</td>
<td>7</td>
</tr>
<tr>
<td>Raising calves when whole milk is sold</td>
<td>7</td>
</tr>
<tr>
<td>The nurse cow method</td>
<td>7</td>
</tr>
<tr>
<td>Feeding a limited amount of whole milk</td>
<td>7</td>
</tr>
<tr>
<td>Use of calf meals</td>
<td>8</td>
</tr>
<tr>
<td>Whey for calves</td>
<td>8</td>
</tr>
<tr>
<td>Care and management of calves</td>
<td>8</td>
</tr>
<tr>
<td>Calves need water and salt</td>
<td>8</td>
</tr>
<tr>
<td>Pens and stanchions</td>
<td>8</td>
</tr>
<tr>
<td>Dehorning calves</td>
<td>9</td>
</tr>
<tr>
<td>Treatment for lice</td>
<td>10</td>
</tr>
<tr>
<td>Removing extra teats</td>
<td>10</td>
</tr>
<tr>
<td>Treatment for ringworm</td>
<td>10</td>
</tr>
<tr>
<td>Calf Scours</td>
<td>10</td>
</tr>
<tr>
<td>Feeding and management of dairy heifers</td>
<td>12</td>
</tr>
<tr>
<td>Roughage and pasture for heifers</td>
<td>12</td>
</tr>
<tr>
<td>Concentrates for heifers</td>
<td>12</td>
</tr>
<tr>
<td>Time of breeding</td>
<td>12</td>
</tr>
<tr>
<td>Handling the young heifer</td>
<td>12</td>
</tr>
<tr>
<td>Housing</td>
<td>12</td>
</tr>
<tr>
<td>The young bull</td>
<td>13</td>
</tr>
</tbody>
</table>
Feeding, Care and Management of Dairy Calves and Heifers

By

J. O. Tretsen, Extension Dairy Specialist

The development of a high-producing herd of dairy cows depends largely upon how the animals are bred and raised. Good breeding and careful feeding go hand in hand. Improper feeding will dwarf a wellbred calf. On the other hand, the most skillful feeder cannot develop high-producing animals from calves out of scrub cows and by inferior bulls. Assuming that the calf is wellbred, then its ultimate value rests with the caretaker.

Feeding and Care of the Baby Calf

Attention at Calving Time—The careful dairyman will keep a breeding record of his cows to know when they will freshen. This enables him to give them a six to 10 weeks’ dry period in which they can be well fed and conditioned for their next year’s work. When a cow is due to freshen she should be kept in a large box stall or out on pasture if the weather is warm.

As the time of calving approaches, the udder becomes more distended and the ligaments on either side of the tail-head loosen, giving a sunken appearance to these parts. By observing these symptoms experienced dairymen can tell quite accurately when their cows are going to calve. During labor the cow should not be disturbed although it is best to keep watch of her in case assistance is required.

If a weak calf is born or the cow is fretful, as is often the case with heifers, the calf may need assistance to nurse. Frequently one or more of the teats may become sealed with dirt and milk serum. The attendant may prevent udder trouble and aid the calf if he examines the teats before the calf nurses.

Care of the New-born Calf—It is well to leave the calf with its mother for two or three days. If the calf is weak or the cow’s udder is caked and tender, it is a good practice to leave the calf with the mother a little longer.

In weaning the calf it is a good plan to remove it to a clean, well-bedded pen while its mother is out of the barn. If separated at this time so that the cow and calf cannot see or hear each other they soon cease to worry.

Teaching the Calf to Drink—Teaching a calf to drink is not a difficult task even though it has nursed for several days before weaning. No attempt should be made to get the calf to take milk within 12 to 18 hours
after it is removed from its mother. Before milk is offered, the calf should be petted and handled gently to win its confidence. Remember that a frightened calf or one that is several days old is reluctant to suck the fingers.

In case the calf refuses to suck the fingers after they are moistened in the milk, it may be gently backed against the wall or into a corner and a small amount of milk poured from the edge of the pail into its mouth, which is held upward. At the taste of milk the hungry calf will become very anxious to obtain more food and will readily suck the fingers. While the calf sucks the fingers its nose may be brought down into the bucket which is held by the other hand. See figure 1.

![Fig. 1—Giving the calf its first taste of milk.](image)

While the calf is sucking the milk, the fingers may be slowly removed from its mouth and left to rest on the nose. If the calf jerks its head up, the operation will have to be repeated. Under no consideration should the attendant try to force the calf to drink. If a little patience is exercised, the calf will generally drink alone at the end of the first or second lesson.

**Kind of Milk to Feed**—It is a good practice to feed a baby calf its mother's milk until it is five or six days old, then the herd milk may be used. The milk used should be sweet and of body temperature. For this reason it is best to feed the calves immediately after the milk is drawn. Feeding cold milk in dirty, sour buckets is one of the common causes of calf scours.

**Amount of Milk and Frequency of Feeding**—The amount of milk to feed should be governed by the size of the calf and the milk richness. The following rules may be helpful: With milk from cows testing less than
four percent, give one pint of milk daily for every nine pounds of live weight. With milk from cows testing over four per cent, give one pint of milk daily for every 10 pounds of live weight.

As a basis for estimating weights, the following figures give the average birth weight of calves from the various breeds: Brown Swiss, 100 pounds; Holstein, 90 pounds; Shorthorn, 75 pounds; Ayrshire, 72 pounds; Guernsey, 70 pounds; Jersey, 56 pounds. This means that an average Guernsey calf would receive seven pints (3 1/2 quarts) of milk daily in two or three feeds, that is, 2 1/2 to 3 1/2 pints per feed. Calves will do better if they are fed three times a day for the first month or two. However, under some farm conditions it may not be practical to feed more than twice a day.

To increase the amount of liquid fed, a small amount (1 pint to 1 quart) of clean, warm water may be added to the milk unless the calf has access to water during the day.

Raising Dairy Calves on Skim Milk

Feeding Skim Milk—Very excellent calves can be raised on skim milk, hay and grain if the right methods are employed. It is advisable to feed the calf whole milk until it eats grain regularly and is in good thrifty condition. By a little effort most calves can be taught to eat grains when they are four weeks old. The change from whole milk to skim milk should be made gradually to avoid indigestion. A week or 10 days is necessary in making the change. By gradually substituting skim milk for whole milk the change is made without any check in the growth of the calf. As the calf increases in weight the amount of skim milk should also be increased until 18 to 24 pounds are fed daily to calves three to six months of age. It is advisable to continue feeding skim milk for at least six months or longer if it is available.

Feeding Grain to Skim Milk Calves—To teach the calf to eat grain, fasten it in a stanchion while feeding milk unless it is kept in an individual calf pen. (See figure 2, page 6). When the calf is through drinking, place a handful of grain in the bottom of its milk bucket or in a box or manger directly in front of it. If left in the stanchion for an hour with only the grain before it, the calf will soon learn to eat.

From the time the calf starts eating grain until it is five or six months old it should receive all the grain it will clean up in five to 10 minutes at each feeding period. Skim milk contains all the nutrients found in whole milk less the butterfat removed in separation. For this reason the grain ration should be composed largely of fattening grains, such as cracked corn, rolled barley, wheat, or oats. The oats may be fed whole or ground. A mixture of these grains with skim milk and good hay will give very good results. A small percentage of linseed oil meal (5 to 10 per cent) and 10 to 15 per cent of wheat bran and shorts may be added to the grain mixture but the advantage of adding these protein-rich feeds is very slight.
The following grain rations are suggested for feeding in combination with skim milk and alfalfa or mixed hays:

**Ration One**

**Roughage**
Legume and grass hays mixed.

**Grain Mixture**
Rolled barley or corn, 4 parts.
Whole oats, 5 parts.
Bran or shorts, 1 part.

**Ration Two**

**Roughage**
Cereal or grass hays.

**Grain Mixture**
Rolled corn or wheat, 4 parts.
Whole oats, 5 parts.
Linseed oil meal, 1 part.

**Ration Three**

**Roughage**
Alfalfa

**Grain Mixture**
Rolled barley, corn or wheat, 4 parts.
Whole or ground oats, 6 parts.

Some dairymen obtain very good results with oats alone with legume or mixed hays.

**Roughage for Calves**—The most satisfactory hay for young calves is a mixture of grasses and legumes of fine quality. Legume hay, particularly

---

**Fig. 2**—A well constructed stanchion makes feeding easy, avoids waste, prevents sucking, and enables the dairyman to feed each calf according to its needs.
alfalfa hay, is rather laxative for calves under three months old when fed skim milk. As the calves become older these hays give excellent results. Hays from the cereals and millets are not very satisfactory. It is a good plan to give the calves a little more fresh hay than they will eat every day. The coarser part of the hay that remains should be removed from the racks or manger daily. Such waste hay may be fed to idle horses to good advantage. After the calves are three months old, a small allowance of silage may be used.

Pasturing Calves—Calves need no other roughage while on good pasture. When pastures become short and dry some supplementary roughage, such as hay or green crops, may be required. Experience teaches that calves under two or three months old will do better on dry hay than on watery pasture grass early in the spring. While on pasture the calves need good water and shelter to protect them from the hot sun and flies. In addition to the pasture, a little grain fed immediately after the calves receive their milk is desirable.

Raising Dairy Calves When Whole Milk Is Sold

The Nurse Cow Method—Raising dairy calves on nurse cows is practiced on a few farms in Montana where whole milk is sold. The advantages of raising calves in this way are as follows: Cows that are hard to milk may be used for nursing; the calves raised on nurse cows are fatter and sleeker; the mortality is not so great; less care and attention are required to raise the calves; they command a higher price if sold for veal; are less likely to be stunted and undersized when mature; and less grain is required.

The principal objection to raising calves on nurse cows is that the cost of the food they consume is too high when the value of the milk or butterfat is considered. Calves can be raised successfully on skim milk or on a limited amount of whole milk when three to five weeks old at considerably less cost if good feeding and management are practiced.

Feeding a Limited Amount of Whole Milk—When whole milk is sold, the calves may be raised on smaller amounts, provided they have access to good legume hay or excellent pasture and are liberally fed a well-balanced grain ration. The calves are fed the usual amount of whole milk until they are 40 days old. If they are then in good thrifty condition the amount of milk should be gradually reduced until they are 70 days old when no more milk need be fed. For calves fed in this manner, the following grain mixture is recommended:

2 parts ground corn, barley, or wheat.
3 parts ground or whole oats.
1 part wheat bran or shorts.
1 part linseed meal.

This is perhaps the most practical method of raising calves when whole milk is sold from the farm in Montana.
The Use of Calf Meals—On some farms where whole milk is sold, either a home-made or commercial calf meal is used after the calves are three to four weeks old. The meal may replace all or only a part of the milk fed. The commercial calf meals are convenient, but are possibly no better than a good home-made meal and usually more expensive. Calves fed either the home-made meals or the commercial meals will not make as good gains as those fed on skim milk. Following are a few recommended mixtures:

<table>
<thead>
<tr>
<th>Number One</th>
<th>Number Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow corn meal ...............25 lbs.</td>
<td>Ground oat flakes ...........44 lbs.</td>
</tr>
<tr>
<td>Ground oats ...................37.5 lbs.</td>
<td>Ground flax seed meal .......20 lbs.</td>
</tr>
<tr>
<td>Wheat bran ....................12.5 lbs.</td>
<td>Flour of middlings ..........10 lbs.</td>
</tr>
<tr>
<td>Linseed oil meal ..............12.5 lbs.</td>
<td>Fine corn meal ..............23 lbs.</td>
</tr>
<tr>
<td></td>
<td>100 lbs.</td>
</tr>
</tbody>
</table>

To the above mixtures add one pound bone meal, one pound salt, and one pound slaked lime.

Skim milk powders may also be used in place of the milk.

When a home-made meal is used, stir one pound of the mixture with a little hot water to prevent the formation of lumps, then add enough cold water to make a gallon. Feed this mixture in the same way that skim milk is fed.

Whey for Calves—The whey usually obtained from cheese factories is practically worthless as a feed for young calves. It is better to use the whey for hog feed and raise the calves on a limited amount of whole milk or on a nurse cow as described above.

Care and Management of Calves

Calves Need Water and Salt—Experiments clearly show that dairy calves need water in addition to their milk to make the greatest and cheapest gains. Young calves should have access to water at all times or water should be provided during the day between feeding periods. (See figure 3).

Salt should also be provided at all times.

Pens and Stanchions for Calves—Some dairymen provide small individual pens (5 by 5 feet) for their baby calves until they are from two to four weeks old when they are put into a larger pen with older calves. This gives the caretaker an opportunity to give each calf more individual attention and it also keeps the calves from sucking one another. When several calves are kept in a pen, stanchions and a feed manger should be provided along one side for feeding milk and grain. Partitions between the stanchions are necessary so that the calves cannot upset their milk buckets or eat one another’s grain.
The importance of a deep bed of dry straw in the pens cannot be over-emphasized. Dark, damp, dirty pens tend to bring on indigestion and unthrifty calves. If the pens are sufficient size, well lighted, dry, and free from drafts, the calves will do much better. When the calves are two weeks old they may be turned out for a few hours on bright, sunny days in winter for exercise.

Fig. 3—Give calves plenty of water.

Dehorning Calves—A herd of dairy cows will do better and be more easily managed if they have no horns. The simplest and most humane way to dehorn cattle is to apply caustic potash (potassium hydroxide) to the horn when the calf is three to 10 days old. This is done by removing or parting the hair over the horn, which is then only a small lump or button under the skin, and rubbing it with a stick of moistened caustic. Continue wetting and rubbing the very tip of the horn button until there is a raw spot about the size of a bean. One application is all that is necessary; however a second treatment may be required until the operator gains experience in dehorning. The best way to handle caustic potash is to insert the pencil in a small rubber tube. In this way it can be handled without burning the hands. It can be obtained at any drug store. Figures 4 and 5 show how the operation is performed. Note the caustic pencil in the rubber tube.
Treatment for Lice—The small gray louse can be destroyed easily by light applications of powdered Sabadilla seed dusted over the neck, back and sides of the animal. It should be applied by means of a large salt shaker when the animals are dry. Two or three light applications, 10 days apart, are sufficient. The large blue louse can be readily destroyed by one application of used crankcase oil.

Removing Extra Teats—The extra (rudimentary) teats that are often found on the udder should be removed when the calves are young. To remove these teats it is best to apply some disinfectant such as iodine and then snip them off with a pair of sharp scissors. Rubber bands snapped tightly around the teat may also be used.

Ringworms—Ringworms, which cause the white scabby formations around the eyes of calves mostly during the winter and spring months, can be cured by frequent applications of a mixture of used crank-case oil with five per cent Kreso dip. This mixture should be applied with a brush every two or three days for a period of about 10 days.

Calf Scours—Common calf scours or diarrhea is the most troublesome disease in raising calves by hand. The feeder must be on guard at all times to prevent this condition as calves affected with digestive troubles frequently die or are seriously stunted and their ultimate value reduced. Scours is generally due to indigestion brought on by improper feeding and management. The common causes are (1) too much milk, (2) cold milk, (3) sudden changes in feeding, (4) sour milk and dirty buckets, (5) too much laxative feed, such as bran, oil meal, legume hay, and succulent pastures, (6) damp, cold pens, and (7) spoiled feeds.
The first step in treating scours is to remove the cause. Reduce the milk ration to one-fourth or less by substituting warm water and then gradually increase the amount of milk to normal as the calf improves. This simple treatment is all that is necessary in most light cases if applied at the very beginning. With severe cases, in addition to the foregoing treatment, 1½ to 2½ ounces of castor oil should be given as a physic, followed with formalin at the rate of three drops to every pound of milk fed. In place of formalin a teaspoonful of a mixture of one part of salol to two parts of subnitrate of bismuth may be used. An egg beaten into the milk is very beneficial for calves that have become weak from a long, severe attack of scours.

While such remedies are necessary after scours develop, preventing the disease by good care and management is the real secret of success in raising dairy calves.

Common scours should not be confused with white scours, a disease that is very infectious, affecting calves shortly after birth. White scours is characterized by light-colored, offensive-smelling droppings and generally results in death about 48 hours after infection. For treatment of this disease it is advisable to consult a competent veterinarian.
Feeding and Management of Dairy Heifers

It should be the aim of the dairyman to keep the heifer growing continuously until she becomes a mother. Any setback that the young animal may have in its development is likely to detract from its ultimate value as a producer. After no more milk is given, the heifer should be fed liberally on roughage and enough grain to insure good gains.

Roughage and Pasture for Heifers—The most satisfactory hay to use is alfalfa or clover, or a mixture of hay containing a large percentage of these legumes. Both alfalfa and clover are rich in bone and tissue-building material and are very palatable. It is a good plan to feed the heifers all they will consume of these hays. Where silage is available it should be used freely. In addition to hay, heifers will eat from 10 to 30 pounds of silage daily, depending on the size of the animal. During the summer, when good pastures are available, the heifers need no other feeds. Soiling crops, hay, and perhaps grains, are advisable to insure growth when pastures are short.

Concentrates For Heifers—The quantity of grain to feed will depend largely upon the condition of the animal and the kind of roughage. Sufficient grain should be given to keep the animal growing steadily and rapidly, unless this can be accomplished with cheaper feeds such as pasture grasses, hay, and silage. It is not advisable to fatten the young dairy heifer but keep her thrifty and growing until a couple of months before calving, when a fairly high condition is beneficial. The grains used may consist largely of home-grown products; a mixture of chopped oats and corn, or oats and barley with legume hay, gives good results. Cheap feed wheat may also be used with oats. Slightly greater gains may be obtained by the addition of a small amount of oil meal or wheat bran to the grain ration.

Time of Breeding—The time of breeding the dairy heifer depends largely upon her size and breeding. Jerseys or Guernseys of good size may be bred to drop their first calf when they are 24 to 27 months old. This means breeding them when 15 to 18 months. The larger breeds mature more slowly and under normal conditions require a growing period two or three months longer. This would mean breeding them when 17 to 20 months old. If the animals are undersized it is a good plan to delay breeding a couple of months longer.

Handling the Young Heifer—It is a good plan to place the springing heifer in the milking herd so that she may be given special care and attention. She thus becomes accustomed to being tied and is easy to handle. Frequent manipulation of her udder and teats prior to calving will prevent considerable trouble in breaking her to milk. By no means should a heifer be roughly handled. Such treatment makes the animal afraid and lowers her production when she comes in milk.

Housing—The heifers may be housed in a well-constructed shed where they have access to feed and water.
The Young Bull

Bull calves should be separated from the heifers at three to four months of age. The feeding of bull calves is not essentially different from that of heifers, except that the bulls grow faster and require more feed. Dairymen should aim to give young bulls plenty of exercise as this is essential in the development of a strong, vigorous animal. While young, they should be taught to lead and to submit to handling. Scuffling, and handling the bull's head must never be tolerated as it encourages him to bunt and in time makes him a dangerous animal.

When the bull is about one year old a ring should be inserted in his nose. This can be done by punching a hole through the nasal division and inserting the ring by means of a cattle trocar and canula. Figures 7, 8, 9, 10, 11, 12 show how this is done. If one does not have the trocar and canula, a broken fork tine or other sharp instrument may be used. The bull should not be handled by the ring until his nose is healed.

It is a good plan to teach the bull to give his ring when the hand is stretched forward and the word "ring" is spoken. This is done by holding the right hand out to receive the ring when the command is given and at the same time with the left hand by means of a rope tied fast to the ring, pulling his nose over to the outstretched hand. By repeating this exercise several times each day the animal will soon learn to give his ring. As the bull grows older he should be handled with a strong staff.

Fig. 7—Ready to insert the trocar and canula.
Fig. 8—Showing the trocar and canula inserted in the nasal division.

Fig. 9—Showing the canula in the nose after the trocar has been removed.

Fig. 10—Inserting the end of the open ring into the canula.
Fig. 11—Showing how the canula is extracted.

Fig. 12—Showing the closed ring and the job completed.
Fig. 13—Showing method of throwing cattle. The rope is placed on the animal as shown; then by pulling straight back on the loose end the animal is easily cast.