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REARING CALVES ON TEN GALLONS OF MILK


ONLY a limited number of calves are reared on dairy farms which sell whole milk. At current prices, it is only a very good calf which is worth more than the milk it would consume, and as a result, the heifer calves from thousands of productive cows are each year slaughtered at birth. In the past the whole milk supplier was able to obtain his herd replacements from farmers in the more distant dairying districts who, of necessity sold butterfat and could rear calves on separated milk.

Now, however, these butterfat producers are selling more and more whole milk for processing and they in turn are coming up against the problem of rearing calves on a minimum of milk. Some are already taking the line of least resistance and are rearing few, if any, calves. Obviously, it is a matter of some urgency that dairy farmers should be encouraged to rear the maximum number of heifer calves. The best way to do this is to show that there are cheap and easily used whole milk substitutes.

Dried buttermilk powder is an ideal milk substitute on which to rear calves. It is cheap, keeps well while stored, and is easily used. Until recently, supplies of dried buttermilk have been limited and dairy farmers have not been able to make maximum use of the product. However, there should be increased supplies of locally-produced dried buttermilk available from now on and full use should be made of this palatable, nutritious calf food.

NUTRITIVE VALUE OF DRIED BUTTERMILK

As a calf food, dried buttermilk can be considered to be equivalent to dried whole milk. In actual fact it is dried sour milk in which the lactic acid has been neutralised. Part of the sugar in the fresh milk is changed to acid when the cream goes sour. In turn this acid is neutralised with soda when the dried buttermilk is prepared. It is not possible to extract all the butterfat from buttermilk and the dried product is registered to contain at least 5.7 per cent. fat. The dried buttermilk is rich in the...
vitamin riboflavin (hence its value as a chicken food) and also contains all the valuable minerals present in fresh milk.

COSTS

Dried buttermilk is at present sold at 78s. 9d. per 100 lb. bag. This is equivalent to about 9½d. per lb. Whole milk contains about 13 per cent. solid matter. For the outlay of one shilling the farmer should be able to buy the equivalent of the nutrients in one gallon of whole milk.

USE OF DRIED BUTTERFAT

At this laboratory 1 lb. of dried buttermilk is mixed in one gallon of water.

It is commonly assumed that milk powders have to be mixed to a thick paste with cold water and then diluted. I have found this unnecessary. So long as the powder is free of lumps, it dissolves readily when added directly to the full volume of water, particularly so if the water is warm. To get rid of the lumps empty the bag of dried buttermilk on to a concrete floor, break up the lumps with the back of a spade and store the powder in large press-top tins.

FEEDING DRIED BUTTERFAT TO CALVES

Dried buttermilk (1 lb. per gallon of water) can be used to replace milk from the second week onwards. The usual practice is to gradually replace the whole milk with the diluted buttermilk, taking three or four days to make the complete change. This gradual substitution may be preferable but is not essential. In illustration No. 1 are shown a pair of twin Jersey bull calves from Coolup which received whole milk for the first ten days after birth. They were then brought to this Laboratory and have since received nothing but reconstituted dried buttermilk at the rate of one pound per head daily in a gallon of water (two feeds daily). The sudden change caused no scouring and as can be seen from the photographs, the calves are thrifty and relish the buttermilk. They are small calves (as would be expected of twin Jerseys) and weighed 51 and 60 lb. respectively at 14 days of age. After the first week on buttermilk they weighed 56 and 66 lb. At six weeks of age they weigh 77 and 80 lb. respectively.

TRANSFER TO DRY FEEDING

Calves should be given opportunities to eat dry meals, hay and green pasture from the third week onwards. A meal of dried buttermilk, bran and pollard has been supplied to the test calves at this Laboratory and at three weeks of age appreciable quantities are eaten. Water is available and as soon as the calves drink reasonable quantities the liquid feeding is reduced.

By the time the calves are six or seven weeks old it should be possible to stop feeding liquid food from a bucket. Two Guernsey x A.I.S. twin heifers kept at this Laboratory have grown very well under this system of management. For three weeks these received whole milk (one gallon each per day). During the next three weeks they were given dried skim milk and dried buttermilk dissolved in water (1 lb. per head daily in one gallon of water). During this period increasing quantities of dry meal were consumed along with water from the trough. In the seventh week liquid feeding was discontinued. As can be seen from the illustrations these heifer twins have developed very well. No pasture or meadow hay is available for them but from three weeks they were able to pick at mature cereal hay and green elephant grass.

Obviously much time can be saved when calves can be taught to eat their ration as a dry meal. Care must be taken, of course, to see that each...
Fig. 3.—The same heifers shown in Fig. 2. At 13 weeks, they weigh 182 lb. and 222 lb., respectively. They are shown eating dried buttermilk mixed with bran and pollard and fed as a dry meal.

animal can eat its allotted share of the food made available and that clean water is consumed in sufficient amount.

GENERAL
Calves will learn to eat solid food at an early age if given the opportunity. Soft green pasture is the ideal food and excellent results will be obtained if the calves can be moved each week onto clean pasture. Good quality meadow hay should at all times be available and in the absence of pasture, greenstuff of some sort should be supplied.

As they develop, calves will eat quite a lot of a mineral lick. A good general purpose lick can be made by mixing bone-meal or bone-flour with an equal weight of Denmark Lick. Place this in boxes sheltered from the rain or add it to the dry meal mixture at the rate of 8 ozs. per 100 lbs.

FUTURE INVESTIGATIONS
At the Bramley Research Station, it is planned to make a feature of the calf-rearing programme. Trials will be carried out to determine at what age the transfer from whole milk to buttermilk may best be made. It will also be necessary to find out how quickly calves may be given dry meals only, and how much time this will save under practical conditions. If heifer calves are to be reared rather than slaughtered, it must be demonstrated very clearly that calf rearing can be both profitable and trouble free.

Trials will also be made with dried skim milk as supplies of this nutritious product may be even more plentiful than dried buttermilk. At the proposed price of 11d. per lb. for bulk lots, dried skim milk will be an economical substitute for whole milk.

Experiments will also be needed to determine the best ingredients to mix with dried buttermilk or dried skim milk when preparing the dry meal to be fed in place of the liquid. The mixture suggested here—equal parts of dried buttermilk and pollard—is not necessarily the best one.

SUMMARY
At the Animal Health Laboratory calves have been reared on ten gallons of whole milk, fed during the first fortnight, followed by dried buttermilk given first as a liquid (one pound per head daily in one gallon of water) and then as a dry meal made up of equal parts of dried buttermilk and pollard. The calves had access to mature cereal hay and green elephant grass.

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