No weaning without enough concentrates

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One of the sub-objectives of calf rearing is to achieve early and good rumen development, so that, after weaning, the calf can continue to grow without weaning check. It appears, however, that few dairy farmers are sufficiently aware of this.

Calves are weaned on the basis of different criteria, varying from minimum age, weight development and daily intake of concentrates to weaning from experience. This leads to very different total intakes of calf milk replacer and cow's milk over varying periods of time.

This article outlines a study in which two existing feeding concepts were compared. The study looked into the influence of early weaning on the growth, feed intake and health development of rearing calves in comparison to animals that were given milk over a longer period of time.

Concept comparison

This study was conducted at Denkavit's research farm in Voorthuizen with five trials with 2x28 HF bull calves. These calves entered the trials when around 10 days old at an average weight of 44kg. The two concepts are shown in Table 1.

In three of the trials the calves were fed via an automatic drink dispenser and in two with a bucket.

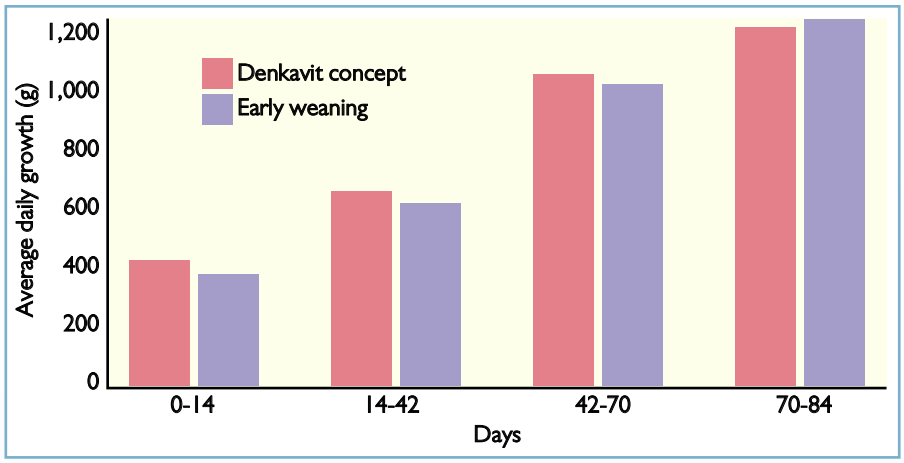

Fig. 1. The average daily growth of calves fed according to the Denkavit concept in comparison with early weaned calves.

The calves fed via the dispenser were kept on wooden slats, while the bucket fed calves were housed on straw for the first six weeks. The minimum stable temperature at the start was 18°C.

Group A calves were weaned at nine weeks with a daily intake of at least 1.8kg of calf pellets per calf. The calves in group B were weaned whenever a minimum of 750g of calf pellets were consumed per calf over three consecutive days.

Both groups were fed the same high quality flavourful calf pellets with a raw cellulose content of 12%.

The hay was chopped and the maize silage contained 34% dry matter.

Clear differences occurred during the test period of 84 days.

Table 1. Feeding schedule according to the Denkavit concept and the early weaning concept.

		Denkavit concept (A)	Early weaning (B)
Calf milk	Amount/calf/period	35kg	17kg
	Concentration	125g/l milk	125g/l milk
	Schedule	0-3 weeks: 4=>6 litres 4-5 weeks: 6 litres 6-9 weeks: 6=>2 litres	0-4 weeks: 4 litres 5-6 weeks: 2 litres
	Period	9 weeks	5.5 weeks
Calf concentrates	Max. amount/calf/day	2.5kg	3kg
Hay	Ad libitum	0-5 weeks	1-5 weeks
Water	Ad libitum	Entire period	Entire period
Maize silage	Ad libitum	After 5 weeks	After 5 weeks

Health development

Both groups started well without any serious digestive disorders and the manure also retained a good consistency later in the rearing period. In the groups being fed via the automatic drink dispenser, more calves showed signs of pulmonary problems which necessitated the introduction of group treatment.

	Denkavit concept (A)	Early weaning (B)
Total at start	140	140
Mortality rate (%)	5.0	10.7
Medical costs (€ per calf)	1.86	2.22

Table 2. Mortality rate and medical costs of calves fed according to the Denkavit concept in comparison with early weaned calves.

In comparison with test group B (early weaning), control group A appeared to:

- Have a considerably lower mortality rate (5.0 vs 10.7%, see Table 2), particularly as a

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result of having fewer pulmonary problems after the start period. Mortality occurred predominantly in two of the three groups using the automatic drink dispenser.

- Grow more homogeneously (lower standard deviation of growth) with clearly superior pigmentation and coat condition during the first 70 days.
- Have lower medical costs, averaging €0.36 per calf.

Weight development

In all groups, the control group clearly displayed superior growth to the test group (see Fig. 1).

The differences were apparent after 14 days and persisted until 70 days.

The growth in group B was, on average, slightly higher between 70 and 84 days (approximately 30g per animal per day) due to a higher share of concentrated feed in the ration.

After 84 days, the difference in average daily growth resulted in a final weight difference of 4.6kg (see Fig. 2).

Feed intake

The feed intake in both groups was good. In group B, a concentrated feed intake of 750g per calf per day was achieved for half the calves in the fourth week, with the remaining calves following a week later. The healthy calves were then weaned.

In comparison with group A, test group B appeared to:

- Have consumed far more concentrated feed during the test period. However, this increased intake appeared not to be able to compensate for the retarded growth caused by the lower intake of milk.
- Consumed more roughage during the first six weeks. In comparison to group A, less maize silage was consumed at a later stage as a result of a higher dose of concentrated feed.
- Consumed the same amount of kVevi in 84 days, resulting in a slightly unfavourable feed conversion.

Recommendations

Weaning on the basis of a minimal intake of calf pellets per day is a good indicator for the 'weanability' of rearing calves. However, a daily intake of 750g appeared to be insufficient to prevent a substantial weaning depression and extra health risks.

Both the results of the study and practical experience show that weaning with an intake of 1.5-2.0kg of calf concentrates per day produces outstanding growth, whereby the risks of lapsing are significantly reduced.

The sooner this concentrated feed intake can be achieved, the earlier weaning can begin.

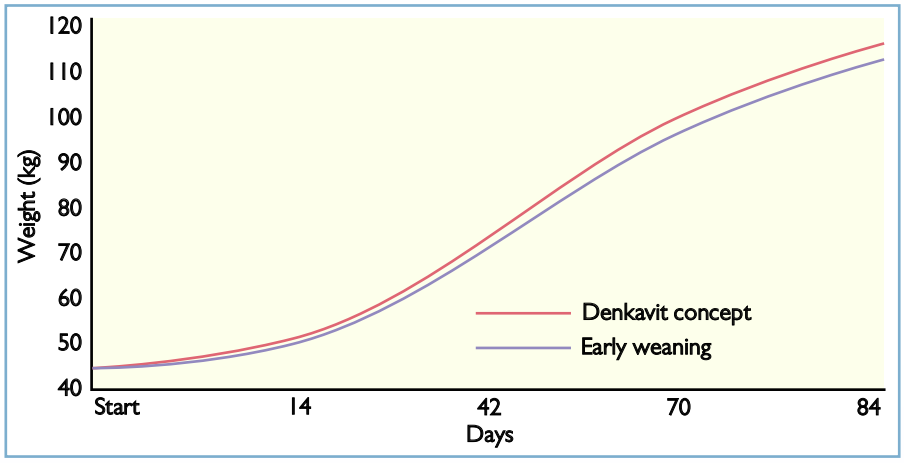

Fig. 2. Average weight development of calves fed according to the Denkavit concept in comparison with early weaned calves.

The following recommendations can help to stimulate the supplementary feed intake:

- Use a high flavour, easily digestible, special calf concentrate.
- Use them early; immediately after the colostrum period on dairy farms.
- Only use small amounts in the beginning, so that the feed provided remains fresh. Also ensure that the feed is easily accessible.
- Ensure clean fresh drinking water close to the roughage and concentrates feed. Lack of water will always result in a lower supplementary feed intake.
- When using cow's milk rather than calf milk replacer, the supplementary feed intake is slower due to the high energy content in cow's milk. Coagulation of the casein results in slower pre digestion in the abomasum, so that the intake of roughage and concentrated feed begins later than with a calf milk replacer based on a high quality dairy product without skimmed milk powder.
- Pressure on the rumen (milk in the rumen) is disastrous for good abomasum development. During bucket feeding, always ensure that the drink temperature is between 40-42°C in order to stimulate the proper functioning of the oesophagal groove reflex. Air drawn in due to a faulty teat, for example, places pressure on the rumen, and milk in the rumen has an extremely negative influence on the development of the abomasum.

Conclusion

The study has clearly shown that early weaning with a low daily intake of calf concentrates displays a greater risk of mortality and heterogeneous growth, particularly in circumstances prone to high infection pressure. Although early weaned calves consumed concentrated feed and roughage earlier and in greater quantities, daily growth appears to be slower, even when high quality concentrated feed is used.

When successfully weaning rearing calves, the aim should always be to achieve a concentrated feed intake of 1.5-2.0kg per calf per day as quickly as possible in order to lay a good foundation for the optimal rearing of young cattle without considerable weaning depression and with a lower risk of health problems. ■

Table 3. Growth and feed intake of calves fed according to the Denkavit concept in comparison with early weaned calves.

	Denkavit concept (A)	Early weaning (B)
Weight (kg)		
Start	44.4	44.4
42 days	69.8	66.5
84 days	116.6	112.0
Growth (kg)		
0 to 14 days	6.1	5.0
14 to 42 days	19.3	17.1
42 to 70 days	30.3	28.6
70 to 84 days	16.4	16.8
Std. dev. cumulative growth		
0 to 42 days	5.4	6.3
0 to 84 days	10.4	11.5
Feed intake (kg)		
Calf milk replacer (21/18)		
0 to 42 days	28.0	17.5
0 to 84 days	35.6	17.5
Calf concentrates		
0 to 42 days	16.9	26.3
0 to 84 days	95.4	124.2
Hay		
0 to 42 days	1.2	1.3
Maize silage		
0 to 42 days	3.2	4.9
0 to 84 days	75.3	72.6
Chopped straw		
0 to 42 days	0.2	0.1
Feed conversion		
0 to 42 days	2.7	2.8
0 to 84 days	2.6	2.8
Feed intake (kVevi)		
0 to 42 days	67.7	60.2
0 to 84 days	187.7	186.0