UNIT : THE CALF – NUTRITION AND FEEDING

INTRODUCTION

- Artificial rearing system
- Natural rearing system

Feed is a major cost in any beef. Appropriate nutrition and feeding at all the key stages can ensure optimum growth rates and finishing whilst keeping costs down in order to ensure profitability.

KEY PHASE IN THE PRODUCTION CYCLE

- THE REARING PERIOD – the time up to 200kg liveweight normally covers rearing up to weaning
    - on the cow or
    - artificially

NUTRITION AND FEEDING

All animals need :

- Energy
- Fibre
- Protein
- Minerals and vitamins

The amount and proportion of each varies according to their stage and rate of growth or finishing.

COLOSTRUM

Whether it is to be reared on a cow or artificially, a new-born calf needs sufficient, high quality colostrum as soon after birth as possible – certainly within the first 24 hours. Colostrum is both :-

- A highly concentrated, digestible and nutritious feed – rich in protein and vitamins in particular

- A source of lactoglobulins and other associated antibodies which provide the calf with immunity to diseases.

FEEDING THE ARTIFICIALLY REARED CALF – calves should have access to whole milk where possible but, on a farm without milking cows, milk replacer will form the mainstay of the calf's diet in the first few weeks of life. Good quality milk replacers are usually based on dried skimmed milk with added fat, the quality of the product depending on both the ingredients and the treatment during the drying process – high temperatures often 'denaturing' milk protein and reducing its nutritional value as well as possibly increasing the risk of scouring due to organisms such as E. Coli.

Although the feeding system practiced depends on factors such as the number of calves being reared, building type and layout as well as the availability of labour. Calves can be individually or batch reared with feeding systems ranging from individual feeding to automatic feeders.

The manufacturer's instructions should be followed as far as dilution of milk powder, the quantity to be fed and frequency of feeding are concerned but the emphasis should be on developing a hygienic system to avoid digestive disorders and scours and a regular routine.

Fresh water and palatable concentrates in the form of pellets or a coarse mix should be on offer from the first week with the aim of encouraging early rumen development to allow the weaning of calves either abruptly or gradually as soon as possible when they are eating 0.7kg per day of concentrate. Clean hay or straw should also be on offer and weaning may be complete as early as 5 weeks of age.

Once it is weaned, the calf must be fed concentrates but forages and alternative feeds can be gradually introduced as the calf reaches 3 months of age.

FEEDING THE SUCKLING CALF – a good supply of quality milk should sustain the calf in early life and cow breed, condition and feeding will determine the amount of milk available. By the time a suckling calf reaches 4 months of age, however, half its requirements should come from grass, silage or creep feed

- Grass – high quality grazing – grass in summer, but possibly forage crops like stubble turnips or kale in autumn and winter, provide quality grazing for rapid gain in weight and condition – calves may be allowed to gain access to grass or crops in front of the cows – forward creep grazing

- Silage – high quality silage in winter

- Creep Feed – creep feeds help rumen development and can result in improved calf growth as well as preparing the calf for weaning to reduce stress and avoid loss of performance. The creep feed should be :

- Palatable e.g. molasses
- High in digestible fibre e.g. oats, sugar beet pulp
- Moderately high in protein – 14-16% - with a high proportion of undegradable protein e.g. soya
- Adequate in mineral and vitamin content
- Fresh

TYPICAL FEEDS

- Grazed grass – usually the mainstay during the growing period as it is usually the cheapest form of feed
- Silage or hay – usually the major winter feed source – nutritional quality needs to be high for rapid growth or finishing but more moderate quality would be acceptable for lower growth rates in 'store' cattle. Wholecrop wheat or maize can provide a feed that is somewhere between grass silage and concentrates
- Straw – can play a part in the winter diet of growing calves but its poor nutritional value must be compensated for by allowing sufficient concentrates of appropriate quality
- Forage crops – particularly in out wintering systems, crops such as stubble turnips or kale allow for the production of high quality feeds, heavy stocking and a cheaper winter feeding alternative. Cereals grown as forages can produce high quality silage and root crops such as fodder beet can be high yielding and high in energy
- Concentrates – often play a vital role in rearing diets and can be cereals such as wheat, triticale, barley or oats for energy and soya, lupins, beans, peas, linseed or rape meal for protein. The alternatives are formulated blends or compounds which are convenient but often expensive

TOP ENERGY FEEDS

Feed	**Energy content - ME MJ/kg DM**	**Starch %**	**Sugar %**
Maize (grain)	14.3	71	-
Wheat	13.8	69	-
Bread	14	69	-
Potatoes	13.5	62	8

Barley	13.2	59	-
Biscuit meal	15	49	9
Sugar beet	12.3	-	69
Fodder beet*	12.1	-	65
Maize silage*	11.8	35	-
Beet pulp	12.5	-	20
Wholecrop wheat*	11	25	-
Wheat feed	11.5	27.5	-

* remember that these values are on a dry matter basis

TOP PROTEIN FEEDS

Feed	**Energy content - ME MJ/kg DM**	**Crude Protein %**	**Starch and sugar %**
Maize or wheat distillers	14.8 / 13.5	28 / 32	-
Soya	13.8	52	14
Lupins	14.3	38	13
Beans	13.8	29	47
Peas	12.8	24	53
Linseed	13	37	11
Rapeseed meal	12.1	38.5	14.5
Urea	0	287	0
Maize silage*	11.8	35	-
Beet pulp	12.5	-	20

- Feed and feeding – a balanced diet should be fed – the diet should be balanced for
    - Fibre – short fibre e.g. chopped starw in the diet ensures that the rumen is active and healthy, avoiding excessive acidity for instance

- Energy – a combination of starch e.g. cereals and digestive fibre e.g. sugar beet increases weight gains
- Protein – protein degradability must match the energy source to ensure a healthy and active population of microorganisms in the rumen e.g. rapemeal or urea are rapidly degraded in the rumen and match cereals or potatoes well
- Minerals and vitamins

INFORMATION SOURCES

EBLEX (2008) The Mini Feeds Directory

HCC (2006) Practical Beef Cattle Nutrition

www.feedsdirectory.co.uk