

## Warmth for calves

### Combating the cold

Calves are not as tough as they act. Yes, they are up on their feet within minutes, but they need to be, particularly in the cold, if they do not source a feed quickly they will succumb to cold stress and risk death.

### Newborn calves (and lambs, kid goats) are susceptible to cold stress for several reasons:

- They have a high surface area to body weight ratio which means they lose heat rapidly.
- Newborns have only 3% body fat reserves (human babies have 16%) and only half of this is the brown adipose tissue used for generating heat. These stores are quickly depleted without colostrum to replenish (Faulkner, 1983).
- They are wet and often inadequately dried off by the mother. As the water evaporates it takes heat with it.
- In addition, calves born outside have to deal with adverse weather conditions and potentially a mother who has abandoned it.

Older calves and cows are much more cold tolerant because they have a lower surface area relative to body weight, a thicker insulation layer, higher fat content and the rumen makes a good heater.

Keep calves warm, supply colostrum early and supply extra colostrum when conditions are cold. Newborns do not absorb the colostrum antibodies as quickly when suffering cold stress (Olson et al. 1981).

The critical temperature when a young (under 3 weeks) calf must divert energy toward heat production is between 10 and 15 degrees Celsius. This means that if a calf is in an environment below this temperature it is wasting energy keeping itself warm instead of using that energy for growth and building an immune system. The lower the temperature, the more energy required for heat production therefore the more colostrum or milk required to meet energy demands.

### How to counteract the cold effects and promote warmth for calves:

- Feed more milk. Energy wise, a 40kg calf in 0°C requires roughly 1.5litres more milk per day than a 40kg calf in 20°C.
- Warm the milk so the calf is not using energy to warm the milk to body temperature (38.5°C). In extreme cold conditions water is also warmed.
- Dry the wet calves to reduce heat loss.
- Dry, draught free facilities with good bedding.
- Use calf covers to keep calves warm.