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Calf Note #29 – Supplemental Fat in Liquid Diets for Calves

Introduction. Raising young dairy calves in the winter can be a challenge - for both the calf and the producer. Freezing temperatures, increased precipitation, and added stress can markedly reduce growth rates of calves. In addition, bedding tends to stay wetter longer, making the overall environment less comfortable. This can increase stress on the calves, further increasing the animals need for energy to maintain body temperature.

Calf raisers know the difficulties of raising calves in winter - especially in the northern U.S. To be sure, the cold weather is difficult for calves and calf raisers as well. Dealing with frozen pipes, frozen buckets, sick calves, cold weather, snow, rain, ice and all the other challenges that winter brings can test the resolve of even the most dedicated of calf raisers.

Calves raised in cold conditions need more energy. Researchers at Penn State estimated that maintenance energy requirement for calves fed milk replacers was increased by 32% when they

Effect of supplemental fat on health, growth, and cost of rearing calves to 28 or 42 days of age.

Item	Control milk replacer	Replacer + 113 g fat supplement	Replacer + 226 g fat supplement
Replacer DM intake (d 1-35), g/d	483	503	497
Starter DM intake (d 1-42), g/d	382	428	332**
Body weight gain (d 7 to 28), g/d	328	342*	376*
Body weight gain (d 7 to 42), g/d	357	414	371
Fecal scores (1 = normal to 4 = watery diarrhea)	1.45	1.32	1.34
Cost of feeding (replacer + supplement + starter), d 7 to 28	$16.76	$20.18	$21.68
Cost of feeding (replacer + supplement + starter), d 7 to 42	$24.74	$28.69	$29.31

*Higher than control. **Lower than control. Calves were fed milk replacer (12.5% DM) at 10% of body weight to 28 d, then 5% of body weight to weaning at 35 d of age.

Source: *E. H. Jaster, G. C. McCoy, N. Spanski, and T. Tomkins. 1992. Effect of extra energy as fat or milk replacer solids in diets of young dairy calves on growth during cold weather. Journal of Dairy Science. 75:2524-2531.*

were housed at -4°C (25°F) compared with calves housed at 10°C (50°F). So, in very cold weather, calves will require additional energy to maintain their body weight, and to grow. There are several options for providing additional energy for calves. These include additional milk or milk replacer feeding, increasing the concentration of milk replacer solids fed to calves, or the use of supplemental fat in milk or milk replacers.

Supplemental fat products are high fat (usually about 60%) and usually contain about 7 to 10% protein. The are added to milk or milk replacer at 1/4 to 1/2 lb/day to provide extra energy for maintenance and growth. The primary benefit is from increased energy and subsequent body weight gain (See Table 1). However, there may be other, less well defined benefits. When calves are subjected to cold conditions, more energy is directed toward maintenance of body temperature. Thus, less energy is available for growth - or to support immune competence. If the animal is challenged with an enteric pathogen during the liquid feeding period (e.g.,

Cryptosporidium), the amount of energy available to support the immune response *may* be limited. In this situation, the animal's ability to fight off disease *may* be impaired, resulting in increased severity or extent of disease.

What are the potential problems with adding supplemental fat to liquid diets? There are several. These include:

- Economics. Supplemental fat products are expensive. Retail prices are approximately $0.08/calf per day (excluding labor for mixing, etc.). If you have a lot of calves and feed them supplement for an extended period, this can be expensive.
- Starter intake. Calves consuming additional energy from supplemental fat products ***may*** show a depression in calf starter intake. The degree of this depression depends on the calf's age, energy needs, and extent of rumen development. This depression may be due to the animal meeting it's energy needs from the liquid + supplement. Simply put, if the animal is meeting its energy needs from milk replacer and supplement, then it has less of a need to consume calf starter. Generally, research suggests that in very cold conditions (< 0°C, 32°F), there is less (or little) depression in starter intake with added fat, and more of a depression in starter intake when the temperature is not so cold.

The decision to use supplemental fat in liquid feeds depends on your personal situation. In certain situations, adding fat supplements may provide the extra energy your calves need to more readily handle the cold, cruel winter.