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TECHNICAL INFORMATION FOR TODAY'S FEED PROFESSIONAL

# What Do You Mean, My Calf Starved to Death?

In the FrontLine® article T001.55 titled "*Turn that Dead Calf into An Asset*", we looked at the three most important areas to look at on a post-mortem examination of a calf. These are:

**1. Lungs:** this will help to determine if the lungs are involved in the death of a calf. A post mortem exam allows us to actually look inside the chest cavity and determine if the calf is suffering from an actual pathogen infection in the lung tissue.

**2. Umbilical Cord:** the umbilical cord is important because on a post mortem exam, we can actually see the internal parts of the umbilical cord to determine if any pathogens have actually penetrated the internal organs via the umbilical vein and arteries.

**3. Kidney:** for surrounding fat tissue (perirenal fat): The fat that is normally surrounding the kidney is one of the last areas that fat is mobilized from for support of basic body functions such as staying warm. If there is no fat around the kidney, this is a sign that the calf may have died from "starvation".

The following will use the above findings and discuss what actions a calf raiser may choose to implement should they find their calves do not have any perirenal fat. Any findings and action plan should be finalized with input from the local veterinarian and the local nutritionist where appropriate.

**Kidney** – The exterior surface of the kidneys of a young calf are lobulated. This means that there are indentions every so often that, under normal conditions, are surrounded by fatty tissue. This fatty tissue is an easily visible, white-to-cream colored material and is a readily available source of energy to the calf. If the fat around the kidney is gone, there are few explanations other than the calf ran out of energy to meet its body requirements.

For this reason, a veterinarian doing a post mortem on a calf with no kidney fat may comment that the calf "starved to death".

**Management Action Plan**

There are some management changes that will need to occur if a post mortem exam identifies a calf with no kidney fat on your operation. These include:

**1. Liquid Milk Diet**: The primary source of nutrients for a calf in its first three weeks of life is from milk or milk replacer. Because of this, calves need to receive a high quality milk replacer. The standard milk replacer in the field is an All-Milk formula (containing all-milk proteins) with 20% protein and 20% fat. This is a highly digestible milk replacer, but when fed at 1.25 lbs. (567g) per calf per day, according to the latest NRC, it will only support growth in a 100 lb. (45 kg) calf at temperatures above freezing (32°F / 0°C) when no calf starter is consumed. The NRC t ells us that calves that are fed 10 ounces (283g) of a 20-20 formula twice a day will lose weight when fed in below freezing temperatures (32°F / 0°C).

**2. Volume of Milk Being Fed**: Traditional feeding rates of 16 ounces (454g) per calf per day are insufficient to meet a calf's maintenance needs when temperatures drop below 50℉ (10℃). Most companies now recommend 20 ounces (567g) of powder per calf per day, yet even at this feeding rate, calves will lose weight when ambient temperatures drop below 32°F (0°C). This is why it is common to increase milk feeding by up to 50% in cold weather to meet the calf's increased maintenance needs. This will avoid the calf from having to mobilize the fat it has stored around its internal organs. When

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feeding powder at higher mixing rates, do not concentrate milk powder at rates greater than 24 ounces (680g) of powder per gallon (3.8 liters) of water.

**3. Calf Starter**: Calf starter provides important nutrition for the young calf. Starter feed initiates the development of the rumen and provides nutrients to supplement the liquid diet. Calf starter also provides the young calf with carbohydrates and protein for fermentation to begin in the early rumen. This fermentation provides a source of heat to the young calf. Think of it as a little furnace burning in its belly. It may not be much in a young calf, but when it is below freezing, any furnace is better than none.

**4. Free Choice Water**: Free choice water is very important to a young calf. It has been shown that having free choice water available improves dry feed intake. Water helps to stimulate dry feed intake and encourages fermentation in the rumen as discussed above. Water should be offered to calves all year long. Cold weather may simply mean that water is offered for an hour or so then dumped to avoid the chunky ice mess that can occur when the water is allowed to freeze in pails. Freezing temperatures should not prevent offering of water.

**5. Environment**: Cold weather means the calf must divert more of its diet to maintaining its body than to growing its body. Calf feeders can feed more nutrients as discussed above but what can be just as (if not more so) important is to reduce any temperature effect on the calf by how it is housed. Calves need a place to "nest" in cold weather. They should have plenty of straw bedding to lie in. Avoid putting calves on concrete without a proper bedding pack, to protect them from the concrete's ability to pull heat from a young calf. Avoid drafts.

Placing a cover over an open pen can help a calf reflect back its own heat and allow it to stay warmer when "nesting". Anything a producer can do to keep a calf warmer during cold weather will relate to either more growth or less body weight loss.

**6. Monitor Body Condition**: In cold weather, calves develop a fluffy hair coat to help them stay warm. Because of this, the calf may look like it has good body condition. Body condition can really only be determined by feeling the calf over its back and hips to determine the level of body condition. Check calves at birth, 10 days and again at 21 days of age. If their body condition drops significantly from birth to 10 days, the calves probably need more milk to meet their needs based on the environment in which they are housed. Listen to what the calves are saying.

The above points are important when raising calves in cold weather. Work with your local veterinarian and nutritionist to be sure that calves are being fed and housed properly in accordance with their environment. Together, everyone will find that calves can handle the cold weather and grow just fine.


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