

The Skin: The Window to the Immune System



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The skin is the frontline defense mechanism for every animal and as a result, it is under constant challenges from toxins, infectious agents and physical stresses. It's more than just a physical barrier between the body and environment; the skin

is an active immune organ. Specialized immune cells found only in the skin are always on the lookout, patrolling for infection.

Unique to the skin, it is the only organ system that we can easily visibly evaluate in the live animal. Because the skin is a large immune organ and it is visible on the exterior of the animal, we can use the status of the skin to gauge the status of the overall immune system of the animal. Consider using the skin as the "window" to the animal's overall immune system status. Animals

with a healthy skin coat likely have a healthy immune system. Animals with skin infections are likely immunocompromised at some level.

Ringworm is a fungal infection of the skin that manifests itself as flat, grey, slightly raised, generally circular, hairless lesions. It is typically found on the face and neck. Like any infection, ringworm is a result of an infectious challenge that overwhelmed the animals' immune defenses.

Imagine a ringworm infection like a constant teeter-totter with the fungus challenge on one side and the immune system on the other. The only ways to prevent ringworm infection are:

1. Decrease the ringworm load in the environment through cleaning and disinfection.
2. Increase the animal's immune system function through improved nutrition.
3. A combination of one and two above.



Decrease the Ringworm Load in the Environment Through Cleaning and Disinfection

The organisms that cause ringworm are hardy and can survive in the environment for months. When asked about the ringworm, most farmers will respond hopelessly saying something like “Ahh, we’ve had ringworm in this barn forever. There is so much of it in the wood by now, there’s nothing we can do for it.” This isn’t true. The first thing needed to reduce ringworm frequency and severity is to address disinfection. Below is a simple cleaning protocol for post weaned calf barns that will help reduce the ringworm load in the barn. Both the Chlor-A-Foam™ detergent and HabiStat™ (a chlorine dioxide based disinfectant) can be purchased from Crystal Creek®.

Figure 1 CLEANING PROTOCOL FOR POST WEANED CALF PENS

1. Remove bedding from the pen, removing as much organic material as possible.
2. Apply a chlorinated alkaline foaming detergent (Chlor-A-Foam™) with hot water (140°F/60°C) to all pen surfaces using a hand held foamer. Soak for approximately 10-15 minutes.
3. Rinse with water. Allow pens to dry.
4. Apply HabiStat™ (a chlorine dioxide based disinfectant) to the post weaned calf pen.
5. Allow to dry prior to re-bedding the pen.
6. Re-bed with clean/fresh bedding.

After addressing pen hygiene, the next step is to increase the immune system’s activity through nutrition.

Improve Immune System Function Through Better Nutrition

In my experience as a veterinarian, I’ve seen many farms feed growing heifers a least cost diet that may be deficient in vitamins, trace minerals

or both. Often times, this group of animals is not heavily focused on and they might receive a cheap mineral or sometimes no mineral at all.

The immune system of an animal is highly dependent on vitamins A, D and E, as well as trace minerals such as selenium, zinc and copper to function correctly. Nutritional deficiencies in these areas will lead to a poor functioning immune system and increased prevalence and/or severity of skin diseases like ringworm.

Crystal Creek® offers a high-quality calf and heifer mineral (Swift Start® Calf & Heifer Mineral) that can be fed free choice or mixed into grain mixes and TMR rations. The Swift Start® Calf & Heifer Mineral uses a high-quality phosphorous source, chelated trace minerals, organic selenium and strong vitamin A, D and E levels; all designed to maximize the mineral’s bioavailability to the animal. A premium mineral supplement like the Crystal Creek® Swift Start® Calf & Heifer Mineral is more digestible and easily absorbed, delivering higher levels of vitamins and trace minerals into the animal’s blood stream. This in turn supports optimal immune function. This same high-quality mineral is used in the Swift Start® Calf protein pellet as well as all Swift Start® Texturized Calf Feeds.

Reducing or eliminating ringworm on your farm has a simple formula:



Improve disinfection and nutrition



Reduce ringworm exposure and improve immune function



Decreased ringworm frequency and severity

Your animals are telling you a lot about the status of their immune system via their skin condition. Are you listening to what they are telling you? Skin infections like ringworm are often the result of nutritional deficiencies in vitamins A, D, E or trace minerals like selenium, zinc and copper. If your heifers are experiencing ringworm, think beyond the skin to what is actually going on with their immune system and consider if they are suffering from nutritional deficiencies. To learn more about heifer nutrition or disinfection protocols, call Crystal Creek® today to discuss how we can help.