CRYSTAL CREEK NEWSLETTER

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DECEMBER 2016

The Industry's Most Versatile Calf Barn Ventilation System

By Ryan Leiterman, D.V.M.

FLAP DUCT is the industry's most versatile calf barn ventilation system, providing calf raisers an unmatched level of fresh air control. This technology builds on the innovation of FLIP DUCT, with internal membranes that can be airtight, perforated, segmented and layered. This unique technology can be successfully implemented by any calf raiser regardless of calf barn style or farm size.

- FLAP DUCT's airtight membrane is an ideal solution for retrofitted stanchion barn calf housing, as it can direct and control the fresh air exiting the duct based on seasonal need.
- In naturally ventilated barns with curtain sidewalls, FLAP DUCT's perforated membrane allows for quick and easy changing between cold weather and warm weather ventilation systems.
- Many post-weaned calf barns have pens containing groups of different sized animals. As the size of the calves in each pen increases, the ventilation requirements for them increase as well. The versatility afforded by FLAP DUCT's segmented membranes allows those varying ventilation requirements to be met.

FLAP DUCT can be further customized with the addition of multiple layers of membrane. With FLAP DUCT, the ability to regulate air speed is virtually unlimited. Turn the page to learn more about the basic concepts and applications of FLAP DUCT and how Crystal Creek® can help address your calf barn ventilation needs.

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1

FLAP DUCT the industry's most versatile calf barn ventilation system. Delivering an unmatched level of control.

2

Let's look at how easy it is to install FLAP DUCT, then see it in action.

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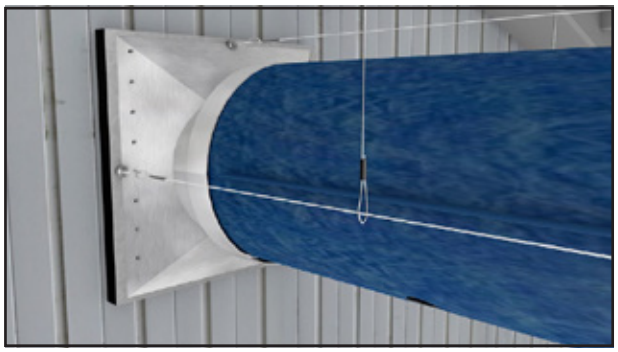

Two horizontal cables span the length of the barn and attach to eye bolts at each end. FLAP DUCT's lightweight, inflatable material easily slips over the barn's ventilation fan shroud. A clamp secures it to the fan.

4

Metal snaps securely sewn into the sides and top of FLAP DUCT attach to the cables at 12, 3 and at 9 o'clock. Vertical cables suspended from the barn roof attach to the horizontal cables, preventing sag. FLAP DUCT can be designed to perform at any height or location in a barn.

5

Many stanchion barns have been retrofitted into housing for calves. These barns often present challenges, such as low ceiling height and a lack of natural ventilation; making it difficult to achieve good air quality at calf level.

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FLAP DUCT's airtight membrane is an ideal solution for this type of calf housing, as it can direct and control the fresh air exiting the duct based on seasonal need.

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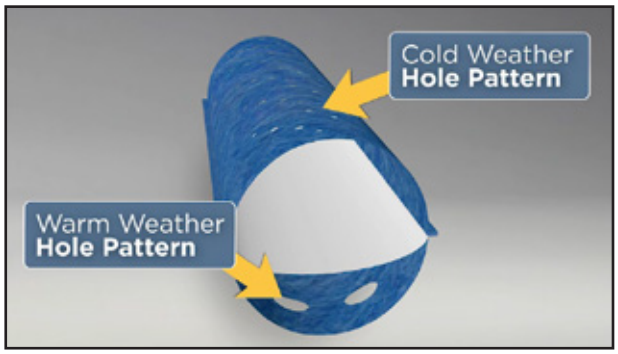

A cold weather hole pattern is placed on the top of the duct and a warm weather hole pattern is placed on the bottom of the duct.

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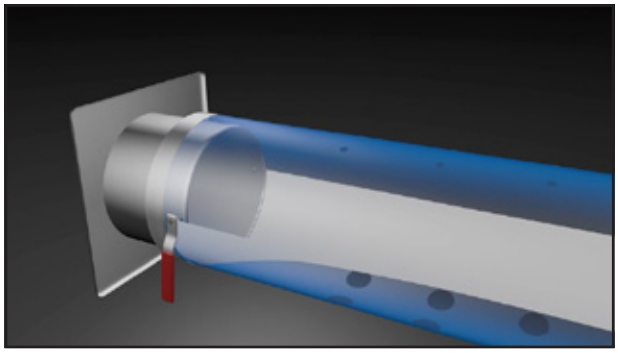

The end of the membrane is first attached to a lever control mechanism. Then, the duct is attached to the fan shroud.

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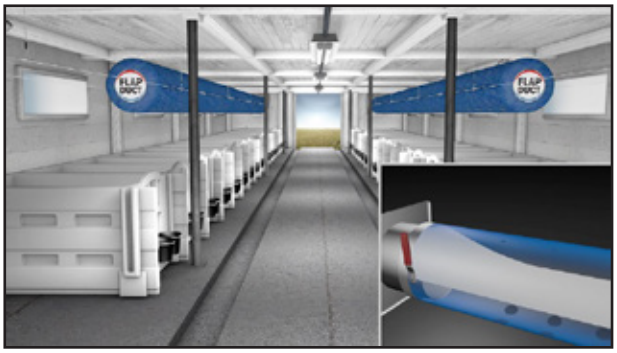

In warm weather, turn the variable speed fan to high, Increasing air flow and position the internal membrane to the top of the duct using the lever control mechanism.

10

Air from the fan will force the airtight internal membrane to the top of the duct, blocking the holes on the top and forcing air through the series of large-diameter holes at the bottom of the duct...showering calves with high speed, cooling air. This high-speed air also blows away annoying flies and helps to keep bedding dry.

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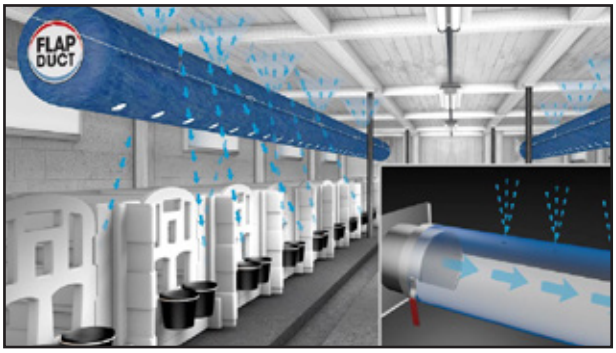

In cold weather, turn the variable speed fan to low, decreasing air flow and use the lever control mechanism to position the airtight internal membrane to the bottom of the duct, blocking the large diameter holes. This diverts the fresh air through multiple small holes in the top of the duct, causing it to deflect off the ceiling and gently fall into the calf pen.

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In this barn setting, FLAP DUCT's perforated membrane allows for quick and easy changing between cold weather and warm weather ventilation systems.

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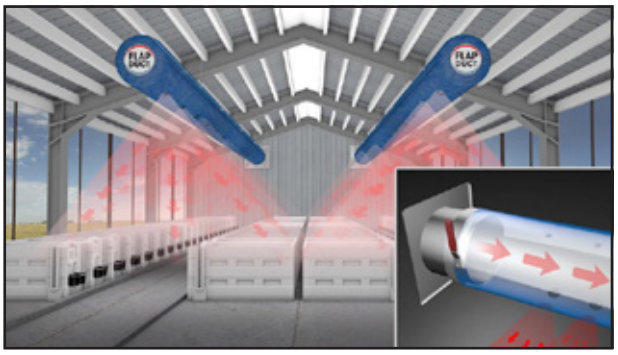

During summer, the variable speed fan is set to HIGH and the membrane is in the up position, allowing the large diameter holes in the bottom of the duct to discharge high volumes of fast cooling air to the calves.

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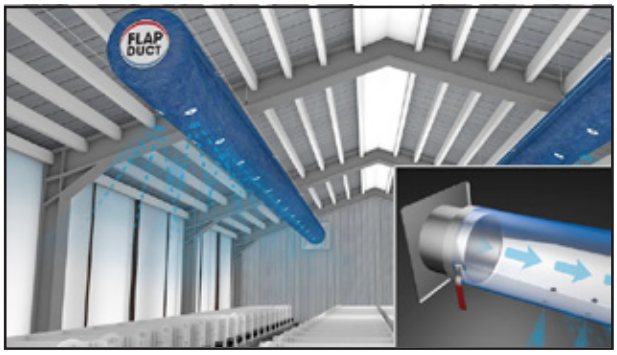

In the winter, turn the variable speed fan to low and move the membrane to the down position, overlapping the large diameter exterior holes with the smaller holes in the membrane, creating weak, thready air jets that deliver low volume, slow, non-drafty air to calves.

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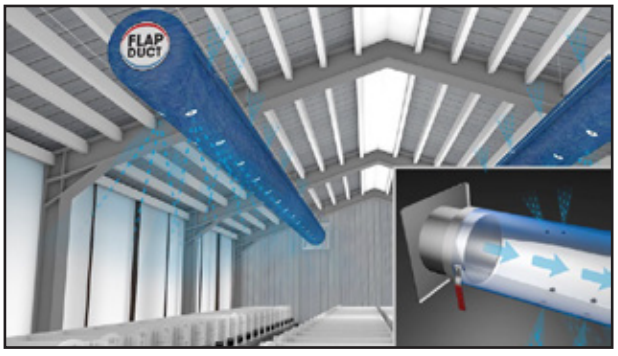

Additional "relief" holes can be added to the top of the duct to discharge excess air safely away from calves in cold weather.

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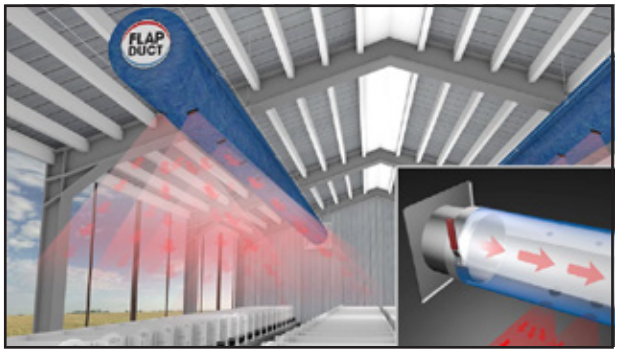


Being able to rapidly switch between a cold weather and warm weather system, with just the flick of a lever, is particularly useful in the spring and fall when the nights are cold and the days warm.

Crystal Creek

FLAP DUCT®

888-376-6777

www.crystalcreeknatural.com

Count on Crystal Creek to provide practical, innovative solutions that help calves become healthy, productive cows.

For more information, contact us at Crystal Creek®. We'd be happy to discuss how FLAP DUCT can work in your calf barn. Visit our "CALF BARN VENTILATION" page on our website to view a number of educational videos on FLAP DUCT and other ventilation solutions.

"Ask the Vet/Ask the Nutritionist"

"Based on your experience, what practices do you see successful calf raisers implementing on their farms?"

Our best calf raisers excel because they all focus on their colostrum, bedding and sanitation programs. Although each of these management topics can be an entire article in and of themselves, below are some QUICK TIPS for calf raisers:

1. Colostrum Management

a. Test all colostrum with a digital Brix refractometer prior to feeding. Only feed colostrum that has a Brix reading of 23% or greater (23% Brix = 50 grams of IgG/quart).

b. Deliver a minimum of 200 grams of IgG within 4 hours of birth if using a colostrum replacement supplement.

c. Monitor colostrum programs with routine monthly testing of total protein samples, with a goal of protein values 5.5 g/dL) or higher.

Dr. Ryan's Experience: We have a client that changed their heifer calf colostrum protocol from 4 quarts of 23% Brix to 4 quarts of 28%+ Brix colostrum delivered within 4 hours of birth. The previous protocol of 4 quarts of 23% Brix to heifer calves yielded an average total protein of 5.5 g/dL during monthly monitoring. The new 28% Brix protocol has increased monthly average total protein levels to 6.2 g/dL. Both increased weight gains and improved health has been noted over the previous colostrum program.

2. Straw Bedding

Read Kaylee Viney's article "The Importance of Calf Bedding", found in this newsletter. This article will present new research that shows a link between calf bedding and adult cow milk production.

3. Sanitation

a. Use a chlorine dioxide sanitation product to disinfect calf feeding and housing equipment. Different concentrations of solution are necessary for varying applications.

- Use 50 ppm for rinse water on feeding equipment, bottles, nipples, buckets, etc.
- Use 100 ppm for sanitation of pens and environment in the barn when calves are present.
- Use 500 ppm when breaking down pens/hutches and washing outside in a well ventilated area.

b. Crystal Creek has recently added a new line of sanitation products that use chlorine dioxide technology which provide quick, effective disinfection against Cryptosporidium, Coccidia, *Salmonella, E. coli*, and numerous other common calf pathogens. Call to learn more about how this line of products can easily, and cost effectively, be added to your calf hygiene protocol.

Dr. Ryan Leiterman, D.V.M.

Please submit your animal health or nutrition questions in writing to:

Crystal Creek®
Ask the Vet/Nutritionist
1600 Roundhouse Road
Spooner, WI 54801
OR
askthevet@crystalcreeknatural.com

Getting the Most out of Your Feedstuffs

By Teresa Marker, B.S.

Dairy producers spend a lot of time, energy and money to grow, harvest and store quality feedstuffs that will be used to feed their livestock. Optimizing those feedstuffs by feeding a balanced ration will make the rumen more consistent and provide a stable environment for rumen microbes to grow which will help improve herd performance, productivity and profitability. Evaluating silage management, TMR mixing and bunk management on the farm are all useful areas that can be evaluated to help maximize the full potential of homegrown feedstuffs.

Harvesting and storing properly fermented feed is time consuming work. Proper silage management can help reduce shrink and preserve the quality of your livestock feed. Harvesting forages at the right time and moisture will reduce the possibility of poorly fermented feeds. Many producers use the Crystal Creek® inoculant , Inoc-u-Lock™ to help control fermentation and reduce the risk of dry matter loss. Inoc-u-Lock™ also preserves feed quality, stabilizes face quality and extends the bunk life of the forage. Once the feed is properly stored, the next focus should be on maintaining a good face. Always remove any spoiled or moldy silage prior to mixing feed for the animals. Keep silage piles small so that adequate silage is removed each day in order to stay ahead of heating. The use of a facer will help maintain a smooth face and minimize exposure of excess feed to the air. Make sure to observe the silage for any moisture differences, heating, mold or strong odors. If you do notice any differences, contact your nutritionist as soon as possible.

A ration from a nutritionist is only truly balanced if your feed is tested on a regular basis, mixed properly and delivered correctly. Regular audits of the TMR will improve accuracy of feed management on the farm. Crystal Creek® nutritionists are available to discuss how TMR audits are performed. The first step is to test feed on a regular basis and work with your nutritionist to properly balance the ration to optimize herd performance and profitability. Many farms have their own Koster Moisture Tester that they use on a regular basis to detect moisture changes in the feed. These producers then relay that information back to their nutritionist. Just because the paper ration says the ration is balanced, it does not mean the cows will receive a properly balanced ration. Correctly loading and mixing a TMR is key for delivering the right nutrition to your cows. An example of a proper loading order would be:

1. Dry Baled Hay
2. High Moisture Shell Corn
3. Protein
4. Mineral
5. Haylage
6. Corn Silage
7. Liquids

If inconsistent feed is being delivered, either determined by visual observation or testing, the following should be areas of focus:

1. Mixing order.
2. Mixing volume (do not overfill the mixer).
3. Process hay completely prior to adding other ingredients.
4. Mix TMR for 5-6 minutes after last ingredient added.
5. Regular maintenance of the TMR mixer. Evaluate mixer for worn blades, kicker plate condition, good clean out, load cells for accurate weighing and magnet.
6. Mix feed on a level surface.
7. Liquids need to be spread evenly over entire mix.
8. Load feed in center of mixer.
9. Do not mix too small of a load.

Once feed is mixed properly, delivery of that feed at the right time and management of the feed at the bunk is essential to maintaining good herd performance and improving feed efficiency. Prior to feeding fresh feed each day, the bunks should be cleaned out to remove old forage that may have some heating or mold. This is especially necessary during warm weather. Observe the bunks for weighback. Are the bunks empty? Is the weighback evenly distributed between pens? Are weighbacks hot or smelly? Does the weighback look like the original TMR mix? Aim to have around 3% weighback and never feed to an empty bunk. Once you have observed the weighbacks for each group, you can then make sure the right amount of fresh feed is available for the cows after milking. Push feed up often so cows do not have to stretch to reach the feed. Cows should never experience an empty bunk. Evaluate bunk space for the animals so each animal has space to eat. Milking cows require a minimum of 24" of bunk space. Headlocks are useful and help to reduce competition at the bunk as compared to a post and rail setup.

If you have questions on how to get the most out of your homegrown forages or how to properly evaluate feedstuff management on your farm, call a Crystal Creek® nutritionist and see what they can do to help with your farm's profitability.

Crystal Creek® Welcomes New Employee

Jessica Dercks

Crystal Creek® welcomes Jessica Dercks to our team of professionals as a Livestock Nutritionist.

Jessica graduated from the University of Wisconsin-Madison with a Bachelor of Science degree in Dairy Science and Microbiology. Jessica has always had a passion for animal care and first discovered her interest in dairy when volunteering with UW-Madison Dairy Science department research. Since then, she has aided the UW-Madison Dairy Science department in research regarding animal welfare and nutrition, and also worked for the USDA Dairy Forage Research Center in a nutrition lab. Her interest in animal physiology and nutrition ultimately led her to pursue a career that would allow her to help producers raise the healthiest animals possible.

In her spare time, Jessica enjoys cooking, reading, and visiting with her family and friends. She also enjoys spending time with her newly adopted dog.

Jessica is looking forward to working with producers of all varieties of livestock and helping them to increase their profitability through the health of their animals.

Beef Up Your Mineral Feeding Program: *Are Your Cows Getting What They Need in the Third Trimester of Pregnancy?*

By Erik Brettingen, B.S.

Limiting or decreasing the amount of mineral provided to beef cattle is a common practice to save money throughout the year for some beef producers. If a cow is shorted the vitamins and minerals needed during the third trimester of pregnancy, it will negatively affect the health of the cow and her calf. The third trimester is a critical time, with 75% of the calf's total weight gain occurring over these three months[1]. The fetus's growth increases the nutritional stress load on the dam and cows that don't consume enough mineral during this period deplete crucial reserves of many nutrients such as calcium, copper, manganese, selenium, and zinc. By reducing supplemental mineral during this time, future rebreeding, immune function, udder health, and calf health can all be negatively affected. Providing an adequate supply of supplemental bioavailable vitamins and minerals during the third trimester is a must to maximize health and productivity of both the cow and her calf.

Uterine Health and Re-Breeding: Mineral depletion can affect reproduction in a couple different ways. The first is due to improper immune function. The placenta is attached to the cow's uterine lining by little circular structures called cotyledons. These cotyledons attach to caruncles on the cow's placenta to create the connection that delivers nutrients to the calf while in utero. Shortly after birth, these connections are dissolved by the cow's white blood cells, and the placenta is expelled. White blood cells are the first defense of the immune system and they require proper mineral levels for optimal function. Zinc, copper, manganese, and selenium are key building blocks for antioxidants, proteins, and enzymes that are critical to immune function[2]. If the immune system doesn't have these key trace minerals available, it becomes suppressed and unable to properly separate the placenta from the cow's uterus. This results in a retained placenta which increases the cow's odds of developing a uterine infection. Cows that develop uterine infections are more challenging to get pregnant and often need to be culled.

The second way in which mineral supplementation affects re-breeding is due to organ function. The estrus cycle needs nutrients to properly develop and produce an egg that is available to be fertilized, and if fertilization occurs, the uterus must be healthy and provide an optimal environment for a growing fetus. The tissues involved in this process cannot function properly and support a pregnancy if the cow's vitamin and mineral reserves have been depleted from growing the previous calf without proper supplementation. Cows supplemented with highly bioavailable trace minerals are open for fewer days and become pregnant after being exposed to fewer services.

Udder Health: In the third trimester the udder must develop and prepare for the demand that is to come, producing high volumes of milk for the calf. Cows supplemented with adequate levels of Vitamin E and highly bioavailable trace minerals have significantly lower somatic cell counts, higher milk fat and protein levels, and higher overall milk production. Mineral supplementation can also increase antibodies in the colostrum produced by the cow [3]. These udder health benefits are very advantageous to the calf. Higher volumes of increased fat and protein content in milk mean better average daily gains and a thriftier calf at weaning time. Increased antibodies in colostrum give calves added protection against harmful pathogens and diseases for the first few weeks of their life.

Musculoskeletal Calf Health in Utero: During the last 3 months of pregnancy, a cow must gain

1.0 pound per day to keep up with the growing fetus. This added weight gain, paired with a growing placenta, fetus, and an udder preparing for lactation, add up to require 25% more nutrients than were needed in early gestation[4]. The growing calf needs ample amounts of vitamins and minerals to develop a healthy musculoskeletal system and a high-functioning immune system. Selenium is of special concern as it is vital for muscle growth and prevention of white muscle disease in the calf.

Crystal Creek® Beef Mineral General Feeding Guide

Production Phase	Mineral Feeding Strategy
Phase 1 (Calving, Lactation)	Full Free-Choice Crystal Creek® Beef Mineral
Phase 2 (Lactation, Re-Breeding, 1st Trimester of Pregnancy)	Full Free-Choice Crystal Creek® Beef Mineral
Phase 3 (2nd Trimester of Pregnancy, Dry)	Cut Crystal Creek® Beef Mineral with added salt to save money
Phase 4 (3rd Trimester, Rapidly developing calf, preparing for calving and lactation)	Full Free-Choice Crystal Creek® Beef Mineral

Crystal Creek® Beef Mineral Promotes Cow and Calf Health:

Crystal Creek® Beef Minerals are formulated with high quality, readily bioavailable polysaccharide chelated trace minerals. The selenium source in the Crystal Creek® Beef Mineral is selenium yeast, which is over 85% bioavailable to the cow compared to sodium selenite, which is less than 25% bioavailable. The strong vitamin levels provide everything the dam needs for the growing calf, developing a healthy and productive udder to nourish the calf, and a successful rebreed. Call 1-888-376-6777 to speak with a Crystal Creek® nutritionist to learn more.

Sources:

[1] http://igrow.org/livestock/beef/whats-going-on-in-there-fetal-development-of-the-beef-calf/

IGrow, SDSU. "What's Going On In There: Fetal Development of the Beef Calf." IGrow. N.p., 13 Jan. 2013. Web. 12 Sept. 2016.

[2] https://www.animalsciencepublications.org/publications/jas/abstracts/92/2/416?search-result=1

Overton, T.R., and T. Yasui. "Practical Applications of Trace Minerals for Dairy Cattle." Welcome to the American Society of Animal Science Publications Page! Journal of Animal Science, 24 Nov. 2014. Web. 12 Sept. 2016

[3] http://www.lrrd.org/lrrd24/12/muto24220.htm

Mutoni, G., Shiv Prasad, Kalyan De, Shashi Pal, J. Mukherjee, S. Kapila, R. Kapila, Harjit Kauer, A K Mohanty, and A K Dan. "Effect of Supplementation of Vitamin E, Copper and Zinc around Peripartum on Udder Health, Milk Yield and Composition of Sahiwal Cows." Effect of Supplementation of Vitamin E, Copper and Zinc around Peripartum on Udder Health, Milk Yield and Composition of Sahiwal Cows. N.p., 2 Dec. 2012. Web. 12 Sept. 2016.

[4] http://www.sites.ext.vt.edu/newsletter-archive/livestock/aps-97_12/aps-851.html

Hall, John B., PhD. "The Cow-Calf Manager: Winter Feeding and Supplements." The Cow-Calf Manager: Winter Feeding and Supplements. Virginia Cooperative Extension, Dec. 1997. Web. 12 Sept. 2016.

Gearing up for Lambing and Kidding Seasons

By Jessica Dercks, B.S.

Preparing for healthy kids and lambs starts long before kidding and lambing seasons begin. It is vital for gestating animals to have a well balanced ration that provides the appropriate minerals and vitamins not only for their own health, but for their developing young as well. Because sheep and goats have different nutrient requirements, Crystal Creek® offers both a Goat and a Sheep Mineral. Both formulas are packed with readily bioavailable vitamins and minerals specifically balanced for each species. The purchase of either mineral comes with custom ration balancing services that ensure quality, cost effective diets.

As goats and sheep get ready to give birth, it is important to be familiar with the physical and behavioral signs associated with the onset of labor. Just prior to birth, does and ewes will typically decrease their feed intake and begin to isolate themselves from the herd. They will show signs of restlessness and discomfort and the vulva may become swollen. Once the water bag is visible, the young should be born within thirty minutes.

Be prepared for the arrival of the young with the following materials:

- **A weigh scale and bucket:** These can be used to weigh each individual youngling. A recorded birth weight is necessary to calculate the amount of colostrum that should be fed and to determine rate of gain.
- **Ear tags and tagger:** Immediately after birth is a good time to tag the animals that will need identification. Be sure to check your state's regulations regarding Scrapie identification, as they may provide tags or require animals to be tagged a specific way.
- **Iodine:** It is important to dip the navel with a 7% iodine solution right away to prevent a navel infection.

- **Towels:** Rub the young dry, paying special attention to cleaning the face and nose. This will help them breathe easier and keep them warmer. A heat lamp may also be necessary, depending on climate. Take caution to ensure the young cannot play with or be harmed by the heat lamp.
- **Feeding tube and 60 ml dosing syringe:** It is important to know how to tube feed a kid or lamb in case of an emergency. A 60 ml dosing syringe holds 2 ounces of colostrum which can flow freely down a feeding tube (do not use the syringe plunger to force colostrum down tube). For step by step instruction, reference Washington State University's publication "Tube Feeding Neonatal Small Ruminants"[1].
- **Colostrum replacer:** This is necessary in cases of emergency when there is no available fresh or frozen colostrum. Make sure it is a true colostrum replacement and not a supplement. Crystal Creek's Genesis Plus™ is a true colostrum replacement that contains all the necessary ingredients for a nutrient-dense first meal.
- **BO-SE® shot:** Producers in selenium deficient areas should consult a veterinarian to determine if this step is necessary.

After the birthing process, strip the dam's teats to remove the wax plug. Allow the kid/lamb to nurse, or milk the dam and feed via either a bottle and nipple or a feeding tube and syringe. Each youngling should receive 10% of its birth weight in colostrum within the first 12-24 hours. Colostrum should be fed at 102-103°F in 2-4 ounce quantities every 3-4 hours.

For example, a 5 lb. kid should consume a half pound of colostrum, or about a half pint (8 oz), within the first 12-24 hours.

Bovine colostrum can be used as a colostrum replacement, but lambs will need one third more than what they would normally require because sheep colostrum has a higher fat density than cow's. The best doe and ewe colostrum will come from the 2nd+ lactation animals that are CD&T vaccinated. It is advised to save and freeze excess colostrum, which is especially likely to come from dams with only one youngling. Freezing colostrum in ice cube trays containing about one ounce quantities is a convenient way to store and thaw colostrum efficiently. Colostrum should not be refrozen once it has been allowed to thaw.

Disease Management: Colostrum should not be used or saved from dams positive for Ovine Progressive Pneumonia (OPP) or Caprine Arthritic Encephalitis (CAE), as these diseases can be transmitted to the young through the colostrum and milk. If using bovine colostrum, it is best to ensure it is coming from a cow that is Johne's negative.

There are two methods by which younglings can be raised on milk: natural milk feeding and artificial milk feeding. Research shows that there is no difference in weight gain between the two methods[2]. In instances of a high lambing or kidding percentage, it is best to leave the stronger, bigger younglings on the dam and to artificially rear the smaller, weaker younglings. Another option could be to cross foster the smaller, weaker younglings to dams that only have one offspring.

When choosing natural milk feeding, the young can be left on the dam and are free to feed whenever they can. Make sure that both halves are efficiently being used and that the dam is being milked out sufficiently.

When artificially feeding milk, whole milk (cow, goat, or sheep) or milk replacer can be fed. Milk should be fed cold (43-50°F, 6-10°C) to prevent overeating, bloat, and diarrhea. Kids and lambs grow the best when milk is fed free choice around the clock, so feed as often as time and economics permit. Producers commonly construct bucket feeders with several nipples for group pens or choose to individually bottle feed if they only have a few younglings. During the first few days of life, feedings should occur frequently and then be reduced as needed. Generally, younglings will consume 10-15% of their body weight every day. If cases of diarrhea do occur, administer electrolytes such as Replena-Lytes® to restore lost energy and electrolyte balance.

Creep feed should be introduced at about three weeks of age. A coarsely ground 18-20% crude protein texturized feed is best. Producers are challenged with constructing feeders that younglings cannot play or stand in. If housed with the dams, creep pens will encourage the younglings to consume solid feed.

All kids and lambs should be vaccinated for *Clostridium perfringens* type C + D and tetanus with a CD&T vaccine. Talk to your veterinarian about implementing a proper vaccination protocol.

Weaning strategies vary, but the most common method is to wean abruptly. Weaning decisions should be made based upon weight rather than age. Lambs should be 2.5-3x their birth weight and kids should be 2-2.5x their birth weight. If choosing to wean early, such as three weeks of age, the weaning period should be a stepwise process to ensure that younglings are consuming at least 30 grams of dry feed per day. After the weaning period, supplemental feed can be reduced from the 18-20% crude protein to a 16% formula.

In conclusion, preparing for new lambs and kids begins long before their birth. It is important to pay close attention to the diets of gestating animals to ensure that they are consuming all of their required nutrients. Once the lambs and kids arrive it is equally important to maintain proper nutrition as they continue to grow and develop. Call us at 1-888-376-6777 to talk with the knowledgeable staff at Crystal Creek® about raising healthy kids and lambs through quality nutrition.

Sources:
1. Kerr, Susan. "Tube Feeding Small Ruminants." Washington State University Extension: Farming the Northwest EB 1998 (2005). Web.
2. A. Louca, A. Mavrogenis, and M. J. Lawlor. "The Effect of Early Weaning on the Lactation Performance of Damascus Goats and the Growth Rate of the Kids." Animal Production 20.02 (1975): 213-18. Web.

The Importance of Calf Bedding

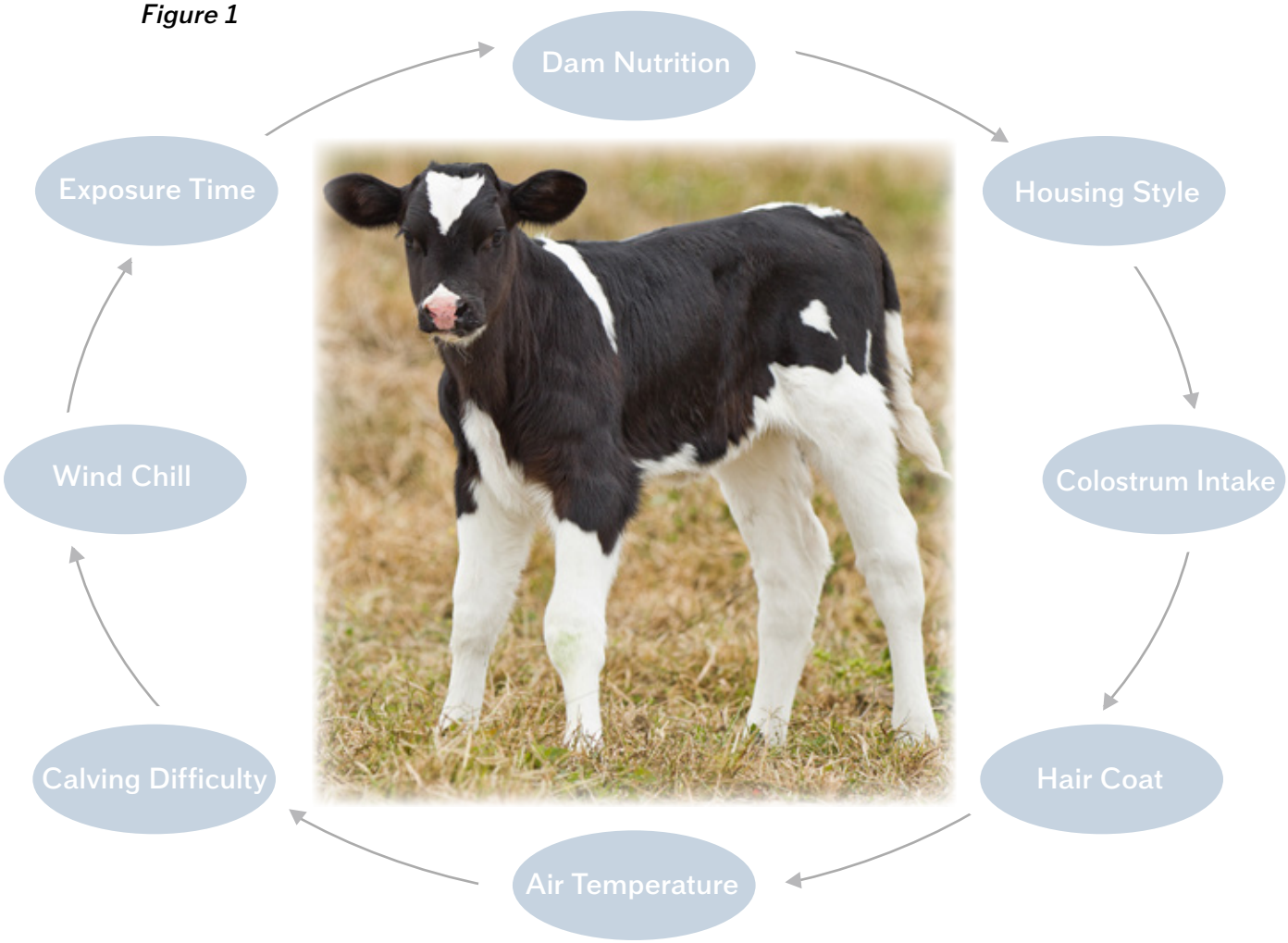
By Kaylee Viney
Livestock Specialist

The investment made in young stock and heifers sets the groundwork for future herd performance. There is new research in the industry on how calf bedding not only affects the health and growth of young calves, but its significant impact on future milk production. Bedding type and management have higher importance when faced with cold weather challenges.

Cold Stress in Calves:

The USDA estimates that 95,000 calves die each year due to cold stress and hypothermia[1]. Factors that predispose calves to cold stress include: calving difficulty, cow nutrition during gestation and colostrum intake[1]. Mild hypothermia is present when the calf's core body temperature drops below 100˚F. Signs of cold stress include: a hunched posture, shivering, increased heart rate over (70-100 beats per minute) and an increased breathing rate (over 20-40 breaths per minute)[1]. Behavioral symptoms such as confusion and clumsiness can also be evaluated to determine if cold stress is present[1]. Lots of dry, lofty bedding is a necessity to combat cold stress in newborn calves.

Figure 1



Bedding Type & Management:

Recently, researchers compared different types of calf bedding to the growth and health of young dairy calves. This study compared sand, wood shavings and long stem wheat straw.

The study found that the wheat straw bedding could absorb the most moisture and provided the most insulation for heat[2]. Calves on wheat straw bedding had the highest average daily gain and the lowest reported scour days of any bedding material evaluated.

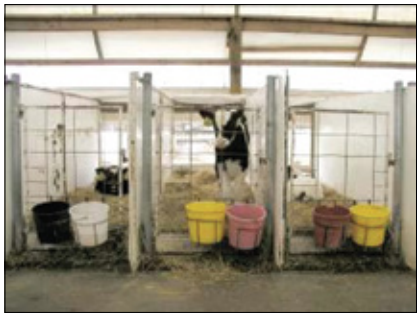
The University of Wisconsin-Madison has conducted studies on the correlation between respiratory disease and calf bedding[3]. A "Nesting Score" system was developed to compare results of different bedding volumes used. For a significant reduction in the prevalence of respiratory disease, it was found that a nesting score of 3 was desired[3]. It is recommended that for every 1,000 lbs. of calf body weight, 25 lbs. of long stem wheat straw be used daily in order to achieve this desired nesting score for calves.

(Continued on Page 14)

Figure 2

Nesting Score 1
Legs entirely visible[6]

Figure 3

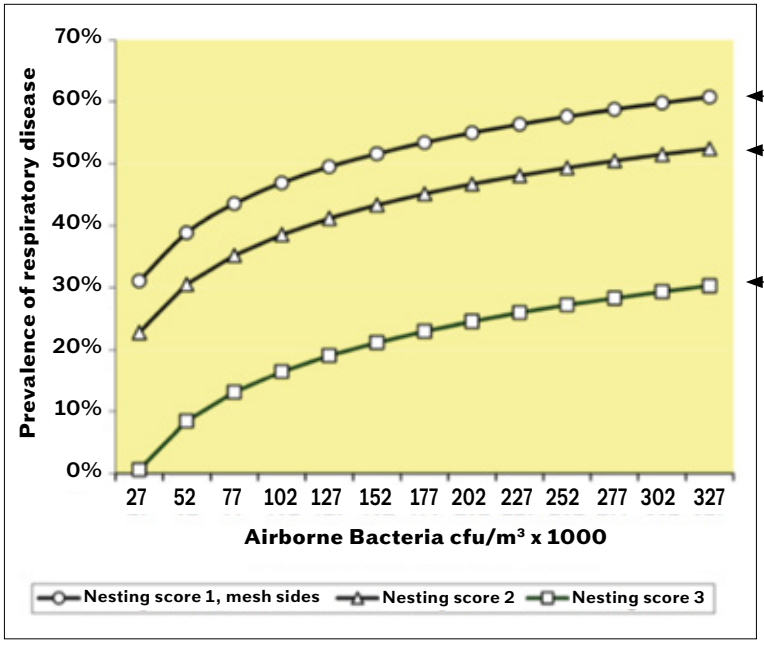


Nesting Score 2
Legs partially visible when laying[7]

Figure 4

Nesting Score 3
Legs generally not visible when laying[8]

Figure 5



(Nesting Score 1) minimal bedding

(Nesting Score 2) moderate bedding

(Nesting Score 3) deep bedding

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(CONTINUED FROM PAGE 13)

The Link to Production:

Bovine respiratory disease is costly, not only in treatment costs but also in reduced growth and future production potential. Research from 2012 estimates the average treatment cost of a single case of calfhood pneumonia to be $15.60[4]. When researchers added indirect costs such as reduced average daily gain, feed efficiency, and carcass value, the cost of a single case of calfhood pneumonia rose to $92.30[4]. Cows that required more than one calfhood pneumonia treatment produced 5% less milk during their first lactation and 10% less milk during their second lactation[5].

Overall Takeaway:

Survivors of respiratory disease cost the producer: treatment expense, premature culling, reduced growth, fertility and milk production. Deep bedding with long stem wheat straw has been proven to dramatically reduce the prevalence of bovine respiratory disease in young calves. When cold weather hits, bed calves aggressively to prevent cold stress and pneumonia. Crystal Creek® can help you with your calf needs and questions. Call 1-888-376-6777 today.

Sources:

[1] Butler, Lanette, Russ Daly, and Cody Wright. "Cold Stress and Newborn Calves." (n.d.): n. pag. I Grow. SDSU Extension. Web. <https://igrow.org/up/resources/02-2001-2013.pdf>.

[2] Quigley, Jim. "Growth and Health of Calves Housed on Different Bedding Types." Growth and Health of Calves. DeLaval, n.d. Web. 08 Sept. 2016. <http://www.milkproduction.com/Library/Scientific-articles/Calf-Management/Growth-and-health-of-calves/>.

[3] Nordlund, Ken, and Tina Kohlman. OPTIMIZING RESPIRATORY HEALTH IN CALF BARNS (n.d.): n. pag. UW Extension. University of Wisconsin. Web. <http://fyi.uwex.edu/dairy/files/2014/11/Optimizing-Calf-Repiratory-Health.pdf>.

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[5] Magnier, Sharon. "The Impact of Early Calfhood Disease." Veterinary Ireland Journal 4.4 (n.d.): n. pag. Veterinary Ireland Journal. Web. <http://www.veterinaryirelandjournal.com/files/Ia_may_2014.pdf>.

[6, 7, 8] Nordlund, Ken, and Tina Kohlman. Nesting Score 1, 2, 3. Digital Image. University of Wisconsin-Extension. University of Wisconsin, n.d. Web. 12 Sept. 2016.

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