



# The North Dakota Sheep Industry Newsletter

A joint publication brought to you by the North Dakota Lamb and Wool Producers Association and the NDSU Extension Service

## Editor's Comments

By Reid Redden, Sheep Specialist  
NDSU Extension Service

My family celebrated a birthday with grilled lamb chops last week. What is very interesting to note is the change in preference for lamb during the past few years.

I grew up on a sheep ranch, but we did not eat lamb because my father always said it was too expensive. My wife was not a lamb eater and grew up in a family that had a very negative perception of lamb. In my current position, we promote lamb on a regular basis; therefore, to avoid being called hypocritical, we make a point to have lamb on a regular basis.

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I always have had an open mind because I have a passion for raising sheep, so a preference for lamb came naturally. Initially, my wife would have a bite or two but was turned off by the least bit of lamb flavor. Now five years into our marriage, she is a big fan of lamb, especially off the grill. My son has grown up eating lamb and it always has been one his favorite meals.

A positive note for the industry is the fact that at the last BBQ Boot Camp, we served lamb kabobs and almost everyone was impressed at how good the lamb was. Even more impressive was the fact that almost half of the audience had had lamb in the past year. Try to attend one of the BBQ Boot Camps this summer.

See the BBQ Boot Camps schedule on the back page.

The other interesting fact from having lamb chops last week was that they were the same price (\$15.99/pound) as last year at this time. However, many of you are well aware that the price of lamb is much lower now than last year at this time. The driving factor that is contributing to this depressed lamb market appears to me to be the failure to harvest the 2011 lamb crop in a timely manner.

Reports indicate the lamb processing facilities could not keep up with the supply of lambs. If that was the case,



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the fact that a lamb-processing facility in Iowa was not operating to help reduce that burden is unfortunate.

Reports also have indicated that lambs were fed to heavier weights than normal because of ideal growing conditions and the lamb livestock risk protection (LRP) program. Lambs were insured and fed longer than normal, which increased the number and size of lamb that needed to be harvested this winter and spring. The backup of lambs needed to be harvested pushed old crop lambs into the summer of 2012.

What also is unfortunate is that the lamb LRP has been implicated in the problem, when the original intent of the program was to protect the

industry from price swings such as this. I am still a huge supporter of the lamb LRP program. but something may need to be modified so that lambs are harvested in a timely manner.

Regardless, I am confident that the lamb prices will rebound once the old-crop lambs are all harvested and their lamb meat distributed to the consumer. I hope this is done in a very timely manner for the industry to return to a sustainable pricing structure. One thing is

certain: Lower prices are the last thing that the industry needed to support the national "Let's Grow with 2Plus" campaign.

[www.growourflock.org/twoplus](http://www.growourflock.org/twoplus)

On a lighter note, this summer is packed full of exciting sheep-related functions, so make sure that you pay particular attention to the upcoming events section of this newsletter.

## Update for OPP Society Members and Friends

*By Judy Lewman, Board Member  
OPP Society*

This new genetic test to determine the risk level for infection from the ovine progressive pneumonia virus (OPPV) is now available from GeneSeek, a Neogen Corp. company based in Lincoln, Neb.

It can be run on a sample of whole blood (1 to 2 cc in a lavender-topped EDTA tube) or on a FTA blood-spot card (cards available from GeneSeek for \$1 each). Cost of the test is \$12, and GeneSeek's test submission form can be found on the OPP Society's "Library" page: [www.oppociety.org/Library\\_.html](http://www.oppociety.org/Library_.html).

Eradication remains the end goal, so it's important to understand that animals at lowest risk (those coding 1,1 on this new test) still can become infected with the OPP virus. However, removing the most susceptible animals (those reported as 2,2 - 2,3 and 3,3) should be beneficial in efforts to reduce the overall level of OPPV in an infected flock.

As noted earlier, USMARC (Roman L. Hruska U.S. Meat Animal Research Center) also has identified a very small number of animals (4,4 'knockouts') with a rare deletion-mutant variant that may confer resistance to infection. Research is ongoing to breed more of these possibly resistant animals and then see how much OPPV exposure they can withstand without becoming infected. For now, however, the recommendation is to simply increase the frequency of 1's by avoiding 2's and 3's to the extent possible.

## NDLWPA President's Comments

*By Wyman Scheetz, NDLWPA President*

Hello, everyone. I hope your summer is going well.

In our part of the state, we have been blessed with about the perfect amount of rain. It seems impossible, but as I write this, the time of daylight will be getting shorter (some people say that the days get shorter, but in our part of the state, it has been holding steady at 24 hours for four years).

As we enter into summer, the county and state fair season is here, and this is a great way to see what the young people in your area are doing to promote the agriculture industry. It is also a great time to promote the starter flock program. The information for this program is available on the website.

On Aug. 4, the NDLWPA will sponsor their annual Jamestown Ram and Ewe Lamb Sale, which will be held at the fairgrounds in Jamestown. There will be free lunch at noon, and the sale will start at 1:30.

The sale will start with the ewe lambs, followed by the rams. This is the fifth year for this sale and the third year at Jamestown. This will be a chance to purchase some high-quality ewe lambs as well a ram from some of the best seedstock producers in the region. Watch for details on the website. Hope to see you there.

Hope you have a great summer.



# Internal Parasite Control in Sheep

By Reid Redden, Sheep Specialist  
NDSU Extension Service

Parasitism (specifically round worms and coccidia) is one of the most damaging diseases for sheep. Almost all sheep have some level of parasitic infection. Environmental conditions, nutritional status, genetic background, previous parasitic exposure and flock management are all factors that affect the level of parasitic infection that sheep experience.

The best control programs prevent parasitism prior to outbreaks. Most often, the use of deworming drugs (anthelmintics) enhances these control programs; however, misuse of anthelmintics can lead to resistant parasites. Overcrowding, overgrazing and improper use of anthelmintics typically leads to parasitism in sheep.

The most damaging round worm is the *Haemonchus contortus* (barberpole worm). The adult round worms attach to the lining of the abomasum, feed on blood of the host and lay thousands of eggs that are spread onto pasture. Eggs develop into larvae in the feces, and rain transports larvae from feces to plants.

Larvae density on plants is greatest near the ground (less than 4 inches in height), so overgrazing can accelerate parasitism. Larvae development can

vary from five days to many months, depending on weather conditions. Infection rates in sheep spike during the spring and summer rainy season because larvae thrive in warm, wet conditions. Dry, hot conditions substantially reduce larvae numbers.

Recent reports show that some larvae can survive through the winter, indicating that persistently grazed pastures are rarely free of larvae.

To complete the life cycle, larvae must be eaten by sheep and develop into adults. Development from larvae to adult round worms takes two to three weeks. To survive adverse weather conditions, parasites can stop development and go dormant (hypobiosis). In the spring or at lambing, a sudden resumption of development occurs.

## Symptoms and Diagnosis

Anemia (low red blood cells) is the most damaging result of parasitism. Symptoms include paleness of gums and lining of the eye, bottle jaw, weight loss, weak wool and death. Diarrhea can occur when the larvae develop in the glands of the stomach; however, rarely do high *Haemonchus*-infected sheep have diarrhea. It is more common

with other parasite problems (*Ostertagia* or *Trichostrongylus*).

Parasitism can be diagnosed by examining the feces for the presence of eggs. This can be used to identify what parasites are present and at what relative rates. Postmortem exams can determine if parasites are present in the digestive tract.

Pasture forage samples can be taken to identify the level of parasite larvae, but such tests are not common. The FAMACHA (anemia test) scoring system can be used to assess parasite problems and suggest methods for management. Worms that can be seen in the feces with the naked eyes typically are tapeworms, which do not affect productivity adversely.

## Sheep Resistance

Sheep have the ability to prevent larvae development, expel adult worm and inhibit egg production. However, the ability to resist parasitic infection can vary greatly among sheep. Resistance depends on prior exposure to parasites and genetic background. In many cases, the small percentage of sheep in a flock that lack the ability to resist parasitic infection spread large number of eggs onto pastures that all the sheep share.

Experts in the field often disagree on whether only sheep presenting symptoms should be drenched individually or all sheep should be drenched when a few sheep are expressing symptoms. Treating individual sheep reduces the chances of developing wormer resistance. In addition, animals that do not get treated then can be used in genetic selection programs as being more resistant. Treating the entire



group promotes better flock parasite management and prevents some sheep from experiencing parasitism.

When nutrient demands are greatest (last two weeks of gestation and first eight weeks of lactation), sheep lose the ability to defend themselves against parasites. Similarly, young growing lambs are more susceptible to parasitic infections than adult sheep. Sheep that are deficient in protein lack the ability to properly defend themselves against parasites.

## Control Programs

Each farm must develop its own management plans. No single program is appropriate for all sheep operations. Most management plans should include an application of dewormer two weeks prior to lambing or just after lambing. Be sure to use a drench that controls hypobiotic parasites (Ivermectin and Levamisole). Resistance to parasitic infection is moderately heritable and can be selected for effectively by taking fecal egg counts during periods of high parasitic infection.

Parasites cannot be spread in dry-lot conditions; therefore, shepherds should use dry lots to hold sheep 24 to 48 hours after worming so the animals can drop all the eggs. Immediately returning ewes to the same pasture after drenching them only provides two weeks of relief from parasitic infection. Similarly, moving sheep to a new pasture immediately after drenching provides extended relief from heavy parasitic infection; however, this approach infects the new pasture with parasitic eggs.

Reducing the parasite infestation on pastures is crucial to a management program. Methods to accomplish this goal can include the following: Maintain low stocking rates to avoid grazing in areas of high fecal

defecation and reduce grazing grass down close to the ground. Divide and rotate among pastures after pastures have been grazed down.

If parasites are problematic, worm ewes between pasture rotations and hold the animals in a dry lot for 24 to 48 hours. Haying pastures before or after grazing with sheep can help reduce parasite problems. Graze pastures with horses or cattle before or after sheep.

## Coccidiosis

Coccidia are very common in sheep intestinal tracts. Infections typically affect young animals after they were stressed from shipping, handling and adverse weather conditions. Coccidia are single-cell protozoa that damage the lining of the small intestine and cause severe diarrhea that may be smeared with blood and/or mucous. Feeders and waters that are contaminated with feces increase the rate of coccidiosis in sheep. Anticoccidial drugs administered prior to anticipated outbreaks (weaning) can reduce or eliminate outbreaks of coccidia.

## Summary

Prevention of parasitism that leads to reduction in animal productivity is the primary goal for all parasite management programs. Understanding the actions and life cycle of internal parasites provides the basis for more effective control programs.

Treatment protocols will differ from farm to farm based on environmental conditions, type of sheep, flock management and past experiences with parasitism. Work with your local veterinarian and Extension agent to develop the best parasite management protocol for your farm.

## Call for Starter Flock Applications

Once again, we are accepting applications for the Starter Flock Program. We hope that you find youth in your area who are interested in animal agriculture and encourage them to apply.

This program is designed to increase awareness about raising sheep as a viable agricultural enterprise, so look for youth who may not have a particularly keen interest in sheep yet.

More information and applications can be found at the North Dakota Lamb and Wool Producers Association's website ([www.ndlwpa.com](http://www.ndlwpa.com)).

If you need a hard copy of an application, please contact Reid Redden at (701) 231-5597 and we will have one mailed to you.

# Updates on Feeding Dried Distillers Grains With Solubles to Sheep

Megan Van Emon, Graduate Research Assistant  
NDSU Hettinger Research Extension Center and Department of Animal Sciences

Historically, dried distillers grains with solubles (DDGS) have been a commodity that is heavily utilized by the beef industry but seldom used in the sheep industry, largely because of a lack of knowledge on its effect on feeding in sheep.

Dried distillers grains with solubles are a coproduct of the ethanol industry and a valuable feed resource to livestock producers. Dried distillers grains with solubles are produced once the starch is removed from the corn in dry-milling ethanol production. These distillers grains then are dried with the condensed distillers solubles to produce DDGS. The condensed distillers solubles are the liquid portion removed after centrifugation.

Each bushel of corn produces about 17 pounds of DDGS.

Before feeding DDGS, here are facts every sheep producer should know:

- DDGS contain almost three times the amount of crude protein (CP) as corn.
- DDGS contains a little more than two times the amount of fat as corn.
- The CP fraction is mainly made up of undegradable intake protein, meaning less protein is available for the rumen bacteria.
- The calcium-to-phosphorus ratio (2-to-1) needs to be balanced properly to prevent urinary calculi (water belly).
- DDGS also have a high sulfur content, which could cause polioencephalomalacia.

- Quality is highly variable within a single ethanol plant and across ethanol plants. The quality of DDGS mainly is discerned by appearance and smell. A good-quality DDGS product will have a golden color, sweet smell and a ground, uniform appearance. A poor-quality product will appear brown, smell burned and contain BB-sized pellets of DDGS that were not dried properly.
- Other considerations include high fiber and essential mineral content. Constant monitoring of these parameters is required when feeding DDGS to minimize health issues and maximize feedlot lamb growth.

The majority of DDGS research has been conducted in cattle, but recently more research has occurred in sheep. Including DDGS at up to 60 percent of the ration has been evaluated in two studies and may not have caused negative impacts on lamb health, performance or carcass characteristics in those studies. These research conditions were strictly controlled and were not completely representative of actual flock conditions.

The data available suggests that feedlot performance was maximized when DDGS were included in the diet between 20 and 30 percent. Therefore, the current recommendation is to limit inclusion levels to 25 percent of the total ration unless the producer has plenty of experience feeding DDGS and the quality (sulfur content) of the water and forage is known.

Feeding excessive amounts – more than 30 percent of the ration – may produce harmful effects such as polioencephalomalacia, also known as “polio” or “blind staggers.” Polio occurs when sulfur reaches toxic levels, above 0.40 percent of the ration. The three main signs of polio are depression, incoordination (blind staggers) and blindness. Sulfur toxicity impairs thiamin (vitamin B1) production and absorption, and causes brain damage. Therefore, a thiamin supplement often is fed in the diet to prevent the potential negative effects caused by sulfur toxicity.

Minimal information is available on how DDGS affect breeding flocks. Recent research conducted at the Hettinger Research Extension Center on growing rams concluded that when DDGS are included at 30 percent of the diet, ram spermatozoa concentrations may be reduced, which could lead to a reduction in ram breeding performance.

To our knowledge, there no DDGS research has been conducted on breeding ewes and how DDGS may affect breeding performance. However, ewes fed DDGS at 25 percent of the diet during lactation had improved triplet lamb growth, but singleton and twin growth was not affected. Therefore, due to the lack of research, no current recommendations are available for including DDGS in breeding stock rations, other than limiting intake to less than 25 percent of the total ration to prevent possible sulfur toxicity.

# Getting Ready for Breeding Season

Reid Redden, Sheep Specialist  
NDSU Extension Service

Breeding season is an exciting time for many shepherds, probably second only to lambing. However, you have many things you need to do before breeding that can improve your lambing season greatly.

First of all, you have to decide on what rams will be used this breeding season and how many rams you need. I recommend using one mature ram for every 30 to 50 ewes or one ram lamb for every 20 to 25 ewes, depending on the ram and breeding environment.

When selecting a ram, we often rely too heavily on the look of the ram to making breeding decisions.

Past experience is a better predictor of future performance. Therefore, I suggest that shepherds utilize production data from the ram's offspring and/or the ram's parentage in addition to the phenotype of the ram.

Remember that the number of lambs born and weaning weight consistently have been the best predictors of flock profitability. We have made an effort to get production data from all ram consignors. Please ask your ram consignors about their ram's data and how that information can best improve your flock's productivity. If you have any questions or concerns about this topic, please feel free to contact me.

After you have identified the rams you are going to use this breeding season, you need to conduct a breeding soundness exam to determine if they are going to be able to breed. Breeding soundness exams should include a body condition score, hoof trimming and testicle palpation.

Semen testing can be done, but remember that many rams may test

poorly in the summer due to seasonality. Regardless, rams should be fertile and producing high-quality semen 30 days prior to the breeding season. Heat can have a negative effect on semen quality, so provide ample shade for rams.

Early in the breeding season, rams have a large impact on the ewe reproductive cycle. This is called the "ram effect" and is most evident when ewes are not fully cyclic (July to September). Exposed ewes will short cycle and normally do not show a standing heat. However, roughly two weeks later, most all the ewes will return to estrus.

In my opinion, teaser rams, harnessed ram lambs or fence line exposure are the best and least costly methods to synchronize ewes for fall or winter lambing.

Flushing ewes with additional feed two weeks prior to breeding also can improve the lambing rate by roughly 20 percent. Typically, shepherds will provide 1 pound of grain for two weeks prior to breeding; however, flushing also can be accomplished by worming, trimming feet and moving the ewes to a new pasture. Shepherds also have commented that molasses-based lick tubs are another good method to flush ewes.

The critical component to achieving a good flush is improving ewe body condition. If ewes are in really good condition prior to breeding, then flushing is not likely to be effective.

If you have further questions regarding flock management, contact your local county agent or me at (701)231-5597. We are here to help!



## "Make It With Wool" Seeks Contestants

Entries are being sought for the 2012 North Dakota Make It With Wool contest.

The contest will be held Aug. 11 at Rheault Farm, 2902 25th St. S., Fargo, in conjunction with the Fargo Park District's Fiber Arts Festival.

The purpose of the contest is to promote the beauty and versatility of wool fabrics and yarns. All of those entering the competition must select, construct (sew, knit or crochet) and model the garments they enter. The material must be 100 percent wool or a wool blend (minimum of 60 percent wool or specialty wool fiber) for each fashion fabric used.

The contest is open to all North Dakota residents or those who go to school in North Dakota.

Four divisions are offered: preteens (age 12 and younger), juniors (age 13 to 16), seniors (age 17 to 24) and adults (25+). State winners in the junior and senior division will earn the chance to represent North Dakota in the national contest in San Antonio, Texas, in January 2013.

The registration fee is \$20. Each contestant will receive wool fabric and other prizes. Full contest rules are available at [www.makeitwithwool.com](http://www.makeitwithwool.com).

For more details and/or registration forms, contact North Dakota Make It With Wool director Becky Harrington at (701) 238-1788 or [rmharrington@juno.com](mailto:rmharrington@juno.com). The registration deadline is July 27.

# North Dakota Lamb and Wool Producers – April 12, 2012, Minutes

The North Dakota Lamb and Wool Producers Board of Directors met at the Seven Seas in Mandan at 12:00 noon on April 12, 2012. The following members were present: Dean Swenson, Reid Redden, Todd Sears, Wyman Scheetz, Burton Pfliger, Julie Mangnall, Terry Mangnall, Brad Gilbertson, Lyle Warner, Nathan Robbins, Josh Saunders, Rick Schmidt and guests, Bill Kist, Mike Herman (Kist Livestock) and Sandy Clark (ND Farm Bureau).

Bill Kist discussed having sheep sales at Kist Livestock. The first sheep sale at Kist Livestock will be June 13 with sales being held the second Wednesday of each month. During the large runs of feeder cattle, adjustments will be made to the sheep sale schedule. Kist has hired Lee Malard. The board of directors discussed some recommendations to make the sale barn more conducive to handling sheep.

Lyle moved to accept the minutes as read, second by Jerry. Motion carried.

Josh moved to accept the Treasurers Report until audit, which showed a balance of \$37,096.77 of cash on hand, second by Jerry. Motion carried.

ASI report by Dean. There were over 400 people in attendance at the convention. Major topics included the Big Horn Sheep, Super wash purchase and several political issues relating to ASI. Dean also gave an update on the "Grow your own Flock" program.

Burton talked about the importance of supporting the Wool LDP, Livestock Indemnity Program and LRP. ASI donated \$750,000 to purchase the Super wash system. This investment

washes and prepares the wool for fabrication without the need to send it to China for proper cleaning.

Wyman encouraged mentors to visit with the Starter Flock recipients. The board is grateful to the donor of the starter flock and will include a thank you in the next newsletter.

Sandy Clark – North Dakota Farm Bureau – was present to discuss measures that will affect North Dakota Agriculture. Jerry moved to go on record that the North Dakota Lamb and Wool Producers support the "Feeding Families – Today, Tomorrow and Forever" measure. Second by Nathan. Motion carried.

Sandy also updated the board on the animal cruelty petition that is being circulated and the conservation/wild-life measure which is seeking revenue from the oil industry.

Rick gave an update on the Extension Director position. The search committee will be interviewing one candidate from the second round of applicants.

Wyman updated the board on the Ag Coalition.

Reid visited about the NDSU BBQ Boot Camp. Lyle will assist in filling out the American Lamb Board matching grant application. The board will encourage David Newman to include locations to obtain lamb product in his brochures. The NDLWPA would also like to have more of a variety of lamb products served at the BBQ Boot Camps. Motion by Julie to be a \$2,000 sponsor for the 2012 BBQ Boot Camp and request matching funds from the American Lamb Board as well as ask Superior to donate lamb product.

Motion was second by Brad. Motion carried. Dean will follow through with contacts to Superior to donate legs of lamb.

Reid discussed a new genetic test for OPPV, a sheep program scheduled in Dickey Co. in June, and mentioned that there is still a large demand for ewes, which are difficult to locate.

The Jamestown Ram Sale will be August 4 and the Hettinger Ram Sale is scheduled for September 19. Wyman will visit with the Jamestown Sale Committee about offering more ewes in that sale.

Lyle talked about the Beginners Sheep School. Chris Schauer is willing to work with kids the day before the shearing school. This will be scheduled for more discussion at the July meeting.

The Board encouraged Reid to make another attempt to schedule a sheep tour. One suggestion would be at the same time as the Sheep Symposium at the end of July or in the winter.

Motion by Lyle to have the NDLWPA bank accounts transferred to the First State Bank of Oakes, second by Jerry. Motion carried.

Terry gave an update on Harvest North Dakota.

The next meeting will be August 3 in Jamestown.

Meeting adjourned.

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County Commissions, NDSU and U.S. Department of Agriculture Cooperating. This publication will be made available in alternative formats for people with disabilities upon request, (701) 231-7881.

## Events

- **NSIP Symposium and Sale – July 27-28**  
[www.aep.iastate.edu/sheep/homepage.html](http://www.aep.iastate.edu/sheep/homepage.html)  
(Spencer, Iowa)
- **Jamestown Ram Sale – Aug. 4**  
(Stutsman County Fair Grounds)
- **Fargo Fiber Arts Festival and Make It With Wool Contest – Aug. 11-12**  
[www.fiberartsfest.com](http://www.fiberartsfest.com)
- **NDSU Sheep Barn Open House and Field Day – Aug. 16**  
[www.ag.ndsu.edu/ansc/ndsu-sheep-program](http://www.ag.ndsu.edu/ansc/ndsu-sheep-program)
- **NDSU BBQ Boot Camps**  
June 20 – Fargo      July 16 – Bismarck  
June 28 – Williston      July 18 – Minot  
[www.ndsu.edu/bbqbootcamp](http://www.ndsu.edu/bbqbootcamp)
- **Hettinger Ram Sale – Sept. 19**
- **Northern Plains Sheep Symposium – Sept. 28-29**  
(Lead, S.D.)

## NDLWPA Membership Form

This form is a membership application for the North Dakota Lamb and Wool Producers Association (NDLWPA) and American Sheep Industry (ASI) Association.



Please print clearly

Name \_\_\_\_\_

Street address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Phone (      ) \_\_\_\_\_ Fax (      ) \_\_\_\_\_

Email \_\_\_\_\_

Number of sheep/goats \_\_\_\_\_

Please check all that apply:     Commercial     Purebred     Club lamb     Dairy  
 Lamb feeder     Shearer     Allied industry     Business

Please check membership type:

- NDLWPA annual membership – \$20
- NDLWPA annual junior membership (under 18 years of age) – \$5
- ASI annual membership – \$.04/head or \$25 minimum (whichever is greater)
- Joint NDLWPA/ASI annual membership – \$40
- Printed copy of the ASI Weekly Newsletter – \$10

Note: ASI annual membership will entitle you to an email copy of the ASI Weekly Newsletter.

Total \$ \_\_\_\_\_ Please make checks payable to NDLWPA

Send this application and your payment to: NDLWPA  
9463 86th St. S.E.  
Fullerton, ND 58441

Thank you for taking  
an active interest in  
your industry!

For more information, call (701) 375-6971 or visit [www.ndlwpa.com](http://www.ndlwpa.com).



# Foot Health Planning, Treatment and Prevention

By Skip Anderson, Shepherd  
NDSU Sheep Unit

Historically, foot rot has been a “dirty word” in the sheep industry for quite some time. Many sheep producers have reached high levels of frustration and have liquated their entire flocks because of the disease.

The NDSU flock experienced an epidemic of foot rot and was placed under a State Board of Animal Health-issued quarantine in the fall in 2009. With the development of a great plan, hard work and patience, we were able to eradicate the disease from the flock. The quarantine was lifted in September 2010, and since cleaning up the issue, the foot health, along with the overall general health of the entire flock, improved greatly.

Developing a great plan for cleaning up foot rot or other foot issues such as foot scald is crucial. Taking a proactive approach is very beneficial. Cleaning up foot issues won't happen overnight, and they won't just go away with time.

As you develop your foot health plan, consult sheep books, online articles and your veterinarian. With a problem that has been so widespread, plenty of resources are out there.

Most sheep producers experience foot issues during the spring months, the time when the ground is starting to thaw, with wet, saturated soil and warmer temperatures, and usually when sheep are penned in the highest-concentration confinement areas.

The biggest contributor to foot rot and other issues is environment. If at all possible, allowing your sheep the ability to get out of the mud and wet, saturated areas will prove to make the biggest difference. These areas are hotbeds for the foot rot bacteria (*Dichelobacter nodosus*). Continuous exposure to these areas will increase the chances for the bacteria to enter the body. The wet areas also will diminish the structural integrity of the foot, thus allowing entry of the organism.

Something as simple as a straw pack or a building that sheep can enter to escape to higher and dry ground will make a difference. If you are feeding in areas that are wet, move your feeders every few days to limit areas from getting too muddy. The reduced exposure to mud helps!

Foot trimming might possibly be the worst job the sheep industry has to offer. However, to maintain great foot health, it's vital to the success of your sheep operation.

Depending on the area in which you live or breed of sheep you have, foot trimming should happen two to three times per year. Having the feet trimmed prevents the hoof from curling under. When a hoof becomes long and curled under, mud and other foreign substances such as rocks and gravel will become packed in these areas, causing irritation and, thus, an area for the bacteria to enter. Trimming is crucial!

A great time to trim feet is at shearing time. Each sheep needs to come through the chute and eventually is handled, so take the time to do it then. Also, so you don't have to do all the sheep at once; trim their feet when you move ewes and their lambs out of the lambing jugs. Before you move the ewe and her lambs, tip the ewe, trim her feet and move her out. By doing it at this time, you also can deworm and check your ewe's udder while you have her set up.

Another great time to trim feet is just prior to sending the ewes to summer pasture. Many management practices, such as deworming, re-ear tagging, and body condition scoring, are done at this time; now add foot trimming to the list. That way, each ewe will hit the pasture with freshly trimmed feet.

By keeping the feet trimmed and allowing sheep to stay out of muddy, wet areas, you have won half the battle.

Soaking feet on a regular basis also will aid in combatting foot rot. At NDSU, regular soakings proved to help. Every sheep on the farm would have its feet soaked for an hour once a week for three straight weeks. The fourth week, the sheep were given a week off and then we went back to soaking for the next three weeks.

*continued*

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The biggest contributor to foot rot and other issues is environment.

Simply walking sheep through a footbath will not get you the results. Soaking is critical. An hour is a great amount of time to soak the feet, but a minimum of 15 minutes will help significantly.

A solution of zinc sulfate and water gave us the best results. Mixing the solution at a rate of 8 pounds of zinc sulfate to every 10 gallons of water is a strong concentration, but it is very effective.

Plus, if you have the space, a pen or pasture rotation schedule also will help. By limiting exposure to the bacteria, the instances of root rot will be reduced. Some veterinarians claim that the foot rot bacteria cannot live outside the body longer than seven days. Use this fact to your advantage.

For example a soaking schedule may include: On Monday, trim all the feet and then put the sheep into the footbath and allow for a good soak. Then upon removing the sheep from the bath, find a dry area the sheep can stand in to dry for another hour. Drying allows the solution to penetrate the foot. After drying time is complete, if possible, move the sheep to a pasture or pen that has not had sheep in it for at least seven days. On the next Monday, re-soak all the feet and move the sheep to another pen or pasture that has been vacant of sheep for a minimum of seven days.

By doing this, each time you move clean, freshly soaked sheep, you also are moving to a clean area semi-free of bacteria. Staying proactive is crucial!

By the third week, soak the feet again and allow time to dry. Then sheep can go back to the first pen or pasture with which you started. By doing so, you have allowed your pasture to rest and do a natural "clean out," and you will be sending "clean" sheep back to that pen or pasture.

This process does become labor-intensive, and the number of sheep and space you have can be limiting factors, but no matter the case, trimming the feet, keeping the sheep in dry areas and routine soaking have proven to be an effective three-pronged approach.

Footbaths can be purchased or you can custom make one based on your operation's setting. At NDSU, we built our own footbath. It is 12 feet wide, 20 feet long and 6 inches deep. We built it with 4- by 6-foot boards to make the frame, took a piece of rubber roofing that was a few feet bigger than 12 by 20 feet and laid that inside the frame. We used small pieces of lathe to tack the rubber roofing into place and then set up panels around it to keep the sheep in the footbath.

We could fit 60 to 65 head in this area to soak. We would soak for an hour, and while they were soaking, we could work on other projects that were near the footbath so we could keep an eye on the soaking sheep. Our footbath would hold approximately 550 gallons of water and took 10 bags of zinc sulfate to make our footbath solution.

This is expensive and is a timely process, but diligence will pay off. After two soakings, we saw a significant improvement. The general health of the hooves improved. We saw stronger, harder hooves and substantial improvement between the toes. Once the limping and pain were eliminated, the overall health of the flock improved.

If you have any questions about this process, please feel free to contact me. I would enjoy visiting with you about this process. Foot rot and other foot issues can be cleaned up; it simply takes planning, time and patience.

## Summary

- ✓ If possible, allow sheep to escape from wet, saturated and muddy areas.
- ✓ Trim feet two to three times per year.
- ✓ Routinely soak feet.
- ✓ Move sheep to clean pastures (vacant of sheep for a minimum of seven days).
- ✓ Record what sheep have had the most problems or show little improvement.
- ✓ Cull those sheep with recurring foot problems.
- ✓ Mix a zinc sulfate footbath solution at a rate of 8 pounds per 10 gallons of water.
- ✓ Make foot trimming a regular flock management practice.
- ✓ Consult your veterinarian before starting a foot health management plan.