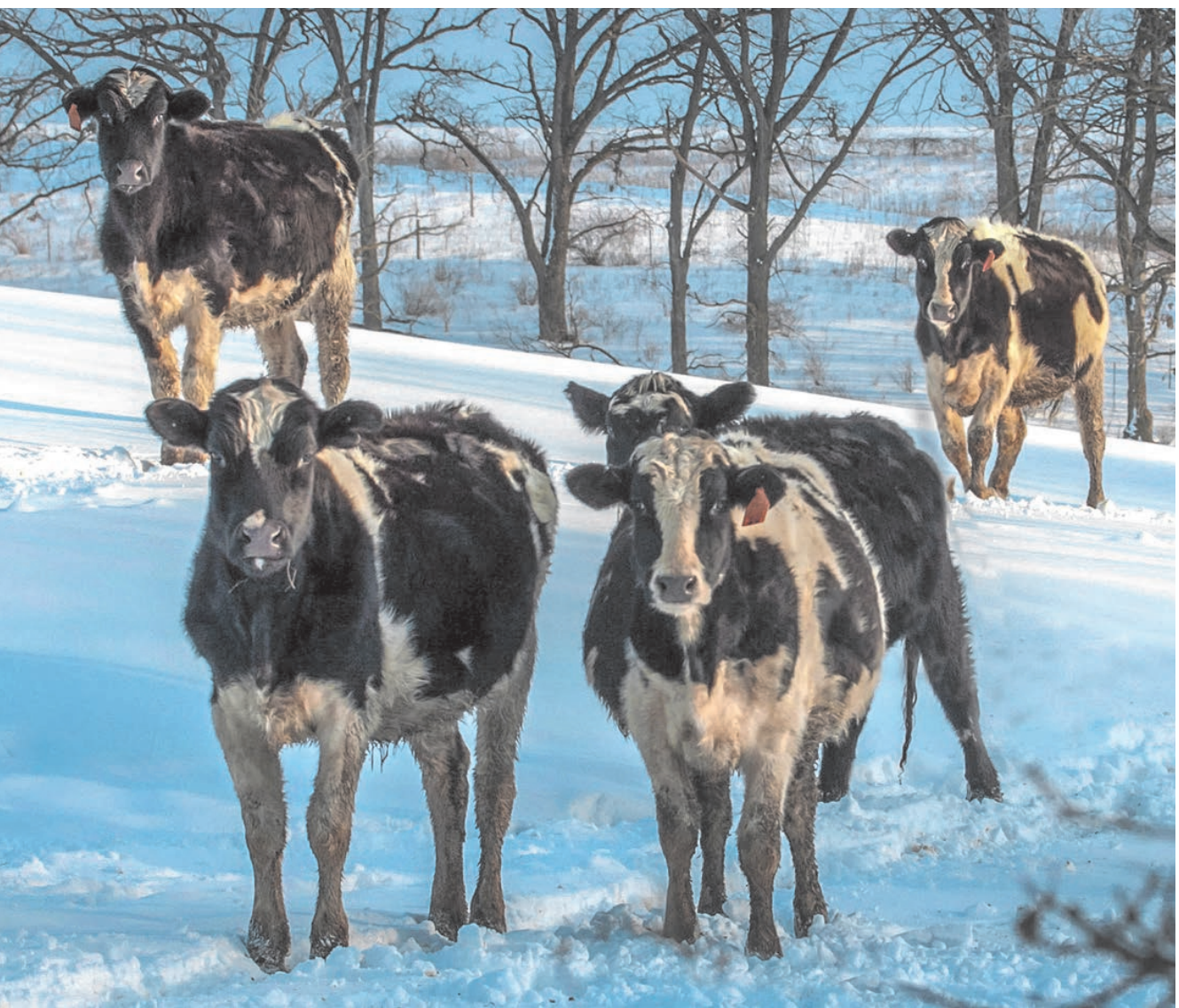
Agriculture Guide

February 2025



Winterizing Your Cowherd- Managing Cows Through Cold Stress

November 26, 2024
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Understanding Cold Stress in Cows

Cattle are naturally adapted to cold weather, but their ability to stay warm depends on factors such as their winter coat, body condition score (BCS), nutrition, and staying dry. Managing cows properly during winter is crucial to maintaining health and productivity. Cold stress increases their energy needs, and without sufficient energy intake, this can lead to weight loss and decreased body condition.

Effects of Body Condition Score (BCS)

Body condition score, based on the cow's external fat layer, is a critical factor in a cow's ability to handle cold stress. A healthy cow with a body condition score of 5 (on a scale from 1 to 9) has a good layer of fat that helps insulate her body and reduce the amount of energy needed to stay warm. In such cows, the lower critical temperature (LCT)—the temperature at which they begin to use extra energy to maintain body heat—is around 19°F, when they have a dry, thick winter coat. Cows in good condition can handle cold temperatures without needing additional energy supplementation until the wind chill falls below their lower critical temperature (LCT).

Since cows will lose weight due to winter conditions on low quality feeds, producers may consider adding extra external fat to cows in the fall, to achieve body condition scores 5.5 or 6. If cold or blizzard conditions happen, cows can lose one full condition score in two weeks. By starting with "fleshier" cows in BCS 5.5 or 6, producers can avoid cows turning thin (BCS 4).

The lower critical temperature (LCT) changes depending on the cow's body condition and the weather conditions. A thin cow (body condition score of 4) has a higher LCT of about 27°F, meaning she will need to start using additional energy to stay warm at higher temperatures than a well-conditioned cow. If thin cows are exposed to cold weather, they will lose body condition more quickly and may not have enough stored fat to keep them warm. This can be particularly problematic during late gestation or calving, as cows in poor condition may give birth to weaker calves, or face difficulties during the breeding season.

The fall of 2024 has been relatively mild in Nebraska, but winter storms are due to sweep across the Plains. Due to the unseasonably warm weather this fall, cows may also have lighter hair coats. This makes managing cattle even more important, as cows might already be in thin condition due to drought-related pasture shortages. A thin cow with a body condition score of 4, for example, could require 8% more energy than a cow in good condition (BCS 5) just to maintain body temperature at 21°F. Consider feeding thin cows slightly more energy to gain condition during the fall to early winter, so that they have less energy needs during the rest of the winter.

Wet Hair

Wet hair significantly increases the lower critical temperature (LCT), raising the critical temperature to 53°F for a cow in good condition. In wet winters, especially with freezing rain, maintaining body condition becomes challenging as cows expend extra energy to stay warm.

Wind Protection

Wind increases heat loss, raising energy requirements. Providing windbreaks reduces energy needs by minimizing heat loss, helping cows maintain condition. For cows with wind protection, the ambient temperature can be used to estimate energy needs. Without wind protection, the wind chill temperature should be used to estimate energy needs.

Feeding Your Cows During Cold Weather

To meet the energy needs of cattle during cold stress, it's important not to make drastic changes to their daily rations, but to provide consistent, high-energy feed during extended cold spells. Instead over a week or two, feed more of the same ration or supplement with higher-quality hay, grains like corn, or energy-rich feeds like distillers grains. Good quality forage/hay can also help, as the fermentation in the rumen adds internal heat to the animal.

When feeding lower quality hay, dormant range grazing or corn stalk grazing, additional feed will be needed. One option is to feed a higher quality hay source with higher total digestible nutrients (TDN), if available. Free choice high quality hay (58 to 60% TDN) can work down to temperatures of 34°F below the LCT of the cow (-15°F for cows in good condition with dry hair or 19°F with wet hair). If cows are grazing cornstalks or winter range, then supplementation with a high energy feed may be desirable. While corn can be used to provide more energy, it comes with risk.
Feeding more than 2 to 3 pounds per head can decrease forage digestion, especially if the forage is lower in protein. Feeding corn with some alfalfa on low protein forages can mitigate this issue.

For corn supplementation, 3 pounds of corn (82% TDN) provides 2.5 pounds of TDN, which can offset energy requirements for a cow (BCS 5) down to 5°F with a dry coat or 38°F with a wet coat.
Distillers grains are another excellent

choice-both high in energy and protein. Distillers grains can reduce forage substitution effects. Compared to corn, the decision to feed distillers grains lean more towards cost than digestion limitations. In the case of distillers and gestating cows, the pounds of TDN needed to account for energy used due to cold stress would be equal to the pounds of dry distillers that would need to be fed daily.

When wind chill temperatures are extremely cold or the cow has a wet hair coat, a lot of supplement would be needed to make up the greater energy needs and maintain body condition. For instance, if the wind chill was -10°F and the cows had a wet hair coat, then 8.9 pounds of dry distillers would be needed to account for the increased energy requirement.

However, feeding these levels can be impractical. A better approach would be to provide a smaller amount of supplemental feed and to continue to feed the extra
feed after the weather has moderated to allow cows to regain energy lost during the storm.

It is also important to remember that lactating cows have a much greater energy requirement than pregnant cows [http://extensionpublications.unl.edu/assets/pdf/g2268.pdf].
Given this, the combination of cold stress and lactation can pull down BCS quickly.

For lactating cows, the energy demand is even greater, and cold stress can have a more immediate impact on their body condition. Ensuring that these cows have adequate nutrition before they start losing condition is key to preventing further complications, particularly during the harshest months of winter.

How to Calculate Extra Energy Needs for Cows

You will need to gather this information to figure the extra energy needs:
-the cow's lower critical temperature (based on her body condition score)
-the outside temperature (ambient temperature) if a windbreak is provided or
-the windchill temperature if no windbreak is provided.

Using a cow's lower critical temperature (LCT), you can figure the percent increase in energy based on the outside temperature. Use the windchill temperature if there is no wind protection. If there is wind protection, use the ambient temperature in the formula.

There is a 1% increase in energy needs for every 1° below the LCT.

Let's assume a cow is in body condition score 5, which means the BCS 5 cow's lower critical temperature (LCT) is 19°F. For this example, let's assume the ambient temperature is 21°F, and the wind speed is 10 mph, which makes it feel like 11°F (the wind chill index).

No windbreaks:
• Lower Critical Temperature – Wind Chill Index = Percent increase in energy requirements
• For our example: 19 – 11 = 8 percent increase in energy requirements for a cow ingood condition (BCS 5) with a dry winter coat.

If a windbreak is provided:
• Lower Critical Temperature – Ambient Temperature = Percent increase in energy requirements
• For this example: 19 – 21 = No increase in requirements for a good condition cow (BCS 5) with a dry winter coat.

The energy needs of various classes of cattle can be found here . A 1200-pound dry cow in late gestation has an energy requirement of 13 pounds total digestible nutrients (TDN).
The cold described above in the no-windbreak situation increased this need by an additional 8% which is equal to 1 pound of TDN, for a total of 14 pounds TDN per day.

Cattle are naturally adapted to cold weather, but their ability to stay warm depends on factors such as their winter coat, body condition score (BCS), nutrition, and staying dry. Photo by Troy Walz.

Conclusion

Proactive management during cold weather is essential to reduce cold stress in cattle. Monitor body condition, provide wind and moisture protection, and adjust feed to meet increased energy needs. Ensuring cows are in good condition before winter and supplementing their diets as necessary will help maintain herd health and productivity through the cold months.

Bedding Cattle Yards and Managing Bed Packs

TUESDAY, December 3, 2024

Alfredo DiCostanzo, Nebraska Extension Educator

Although one could write volumes regarding how cattle cope with cold temperatures, suffice it to say that keeping cattle as dry and comfortable as possible is key. The following scenarios are outlined here with suggestions on how to best manage yards when winter conditions threaten to reduce performance and affect health.

Precipitation with intermittent dry spells

Other than a dry winter, this may be the next easiest scenario to manage; the operator has two choices: 1) proactively bed if they expect that a cold spell will follow or that the 10-day forecast calls for additional precipitation or 2) do nothing.

Generally, manure is permitted to accumulate during dry spells, yet, during precipitation events, dry manure in high-traffic areas will rapidly absorb moisture. This will lead to rapid accumulation of muck on concrete surfaces (feed and water troughs, aprons and cattle alleys) resulting in difficult situations for cattle, horses, humans and machinery to get around the pen. Therefore, some operators and many cattle feedlot consultants recommend removal of dry manure shortly before precipitation is expected. This action needs not be confined to concrete surfaces. The base of yard mounds or other sloping areas of the pen may also be scraped to remove dry manure.

What might one do with manure that is scraped? Although there is a temptation to haul it away and apply it to fields before the precipitation event, some might consider keeping and piling manure into 2- to 4-foot-high mounds (32 square feet per head is ideal) onto loafing areas (concrete or dirt; away from feed and water troughs). These mounds will serve as high and "dry" areas for cattle to get away from rapidly forming muck and away from traffic patterns in the pen.

Once prepared, these manure mounds can also serve as the base where dry bedding is applied.

Precipitation followed by extended cold or additional precipitation periods

This scenario is expected to occur when at the start of winter. In the High Plains, deep winter freeze occurs after one or several heavy precipitation events followed by extreme cold temperatures. Thawing from cold temperatures is generally not expected until January, briefly followed by continued cold temperatures, high humidity and precipitation events in February and March.

These are the conditions that set up cattle (and cattle feeders) for performance below expectations and worse than breakeven closeouts.

When facilities managers consider using bedding on dirt or concrete, they generally refer to these conditions as the trigger for bedding cattle. This is when investing in bedding and managing bed packs makes sense.

How much bedding might be needed to establish the base of a pack in a feedyard?

The initial need to bed a given area surprises most operators. This is because a base must rise at least 1 foot above the existing surface (bare concrete or manure mound). This requires a minimum of 12 to 14 lb per head for the initial application; double this estimate if pen conditions are already deteriorating because of rain or snow. This is equivalent to 2 large round corn stalk bales for a 250-head pen (or 4 large round bales if it began to rain or snow).

Should the bedding be processed? For most applications where high traffic will occur (pens stocked heavier, concrete-surfaced pens, cattle nearing finishing weights, and, most importantly, unsurfaced pens), the answer is no. This is because processed bedding will incorporate itself (disappear) into the existing surface by hoof action.

Two key elements of building bed packs, even outdoors, are 1) to continue to keep the areas around the pack free of mud accumulation (it prevents cattle from tracking it onto the pack) and 2) to continue to add bedding to keep it dry.

Scraping around bed packs prevents manure from freezing onto large balls that prevent cattle access to the pack or to water and feed troughs. Adding bedding after scraping can be done with a bale processor or grinder if the base pack is built sufficiently or in pens where there is ample space or lightweight cattle. As a reference (for bedding inventory), prorated over a long period, one might expect to use 4 lb of bedding daily per head.

How often are operators expected to scrape and/or bed?

During most winters when cold spells set in, scraping should occur at least once weekly. Bedding should take place immediately after scraping.

If scraping stops during subzero temperatures, it cannot be resumed until at least 4 to 7 days of temperatures above freezing. This can create difficult conditions for cattle to get around. When scraping frozen chunks of manure, these can be added to the bed pack before adding dry bedding.

What to do if heavy snowfall is expected? Generally, scraping aprons and high traffic areas is recommended in anticipation of heavy snowfall (more than 3 inches) and immediately after it. Snow should be removed from pens as soon as possible after scraping (permitting freshly fallen snow or snow mounds to accumulate in the pen will contribute to ice formation creating slippery surfaces and exacerbating muddy conditions when snow melts). Bedding before the snow event is recommended. Bedding after scraping immediately after the snow event is highly recommended.

Clearing snow from the perimetry of water troughs should occur as soon after a snowfall as possible. Because of curbs and narrow pads surrounding water troughs, hand labor may be required for this effort.

Managing cattle in the yards for cattle comfort, like choosing how much to feed daily, is more of an art than science.

Does Investing More in Your Nursery Diets Pay Off?

WEDNESDAY, February 19, 2025

Pipestone Nutrition

The initial feed cost in early nursery diets is expensive. However, should we be thinking of them as an investment in lifetime pig performance?

Nursery diets encompass less than 20% of overall feed cost, however, we know that those first 6 weeks on feed have the biggest impact on overall performance. So, the question becomes, does investing more in your nursery diet pay off in the long run?

In 1992, Tokach et al. outlined the impact of the first week of postweaning performance on day 56 weight and market weight, which still stands true today based on recent trials. You can assume that for every additional pound coming out of the nursery, you'll see about a two-pound heavier market pig, highlighting the importance of nursery average daily gain (ADG) and getting pigs off to a good start.

As wean age has increased to 23 to 25 days of age, we often get the question from producers: How can we reduce nursery feed cost? This question was internally evaluated in 2019 on a 20-day-old pig versus 25-day-old pig feeding a high, standard, or low-complex diet. In general, complex diets have been shown to increase feed intake and average daily gain in nursery pigs. We saw those same results in the first 7 days of performance. Complex diets are characterized by alternative protein sources, higher lactose, and other specialty ingredients, that typically perform better in the face of a health challenge.

Over the last few years, higher incidences of E.coli breaks have resulted in higher death loss and poorer gains in the nursery. To help mitigate some of these enteric challenges we tend to focus on lower crude protein diets, different fiber sources, acids, and the use of zinc oxide. These formulation modifications can add up in cost, however, every 1% increase in nursery mortality costs the producer about $1/pig. Therefore, the producer and nutritionist need to decide how much nutritional intervention cost is added to offset the mortality.

In combination with nutritional

Every 1% increase in nursery mortality costs the producer about $1/pig. (National Pork Board and the Pork Checkoff)

modifications, water acidification has helped lower gut pH and limit bacterial growth in the gut. Two previous internal trials have shown an improvement in removals and mortalities with water acidification during the nursery period. We are still working to further understand ideal water pH and its impact at each stage in the nursery.

Although the initial feed cost in your early nursery diets is expensive, we have to think of them as an investment in lifetime pig performance. Of course, these diet improvements can fail without the help of the caretaker and production team. Getting the right feed to the right pig and ensuring the environment is comfortable will help get the pig off to the right start and maximize your margin over feed cost.

Pipestone. (2025, February 19). Does investing more in your nursery diets pay off?. Pork Business. https://www.porkbusiness.com/news/hog-production/does-investing-more-your-nursery-diets-pay

Keys for Corn Stalk Grazing

January 16, 2025
Aaron Berger, Nebraska Extension Beef Educator

Corn residue is a tremendous feed resource for cattle in Nebraska. With Nebraska's 9 million corn acres and 1.8 million beef cows, there is more than twice the number of corn stalk acres needed for grazing all of Nebraska's beef cows! The Nebraska Extension Circular Grazing Crop Residues with Beef Cattle [http://extensionpublications.unl.edu/assets/pdf/ec278.pdf] is an excellent resource on grazing corn stalks. The following are keys from that resource when planning for grazing cornstalks.

Keys to Consider

• Scout fields prior to grazing to determine the amount of corn present and to look for piles that could cause grain overload which can result in bloat or death in cattle. If there is more than 8-10 bushels of ears of corn per acre on the ground, a grazing strategy to control corn intake will need to be used.

• Stocking rate should be determined based on corn bushel yield per acre and the average weight of cattle that will be grazing. The Corn Stalk Grazing Calculator [https://cap.unl.edu/livestock/tools] is an Excel® spreadsheet that can be used to calculate this.

• A quick way to estimate grazing days per acre available for a 1200 pound nonlactating cow is to take corn bushel yield and divide by 3.5. For example, 180 bushel yield / 3.5 = 51 grazing days per acre.

• Quality of grazing starts high at approximately 70% total digestible nutrients (TDN) and then decrease to a low of 45% TDN at the end of the grazing period. The rate of quality decline is dependent on stocking rate and environmental factors such as moisture and field conditions.

• Mature non-lactating, spring calving cows in a body condition score 5 or better will not need protein supplement when grazed at recommended stocking rates according to University of Nebraska–Lincoln research.

• First-calf heifers in the 90 days prior to calving will need protein and energy supplementation to meet nutrient requirements. Feeding 3.5 lbs per head per day of dried distillers grains would meet this need.

• Fall-calving cows will need additional protein and energy to meet nutrient requirements. Cows less than three months after calving will need 4.5 lbs per head per day of a supplement that is at least 30% protein and 90% total digestible nutrients (TDN) on a dry matter basis. Feeding 5 lbs per head per day of dried distillers grains would meet this need.

• Weaned calves grazing corn stalks with a targeted gain of 1.0 lb per day will need to be feed an energy and protein supplement. Research has demonstrated that dried distillers grains fed at 2 lbs per head per day when calves are grazing corn stalks will usually meet this targeted gain.

• Deep snow and ice can severely limit the ability of cattle to graze corn stalks. Have a backup plan and other feed resources available to meet cattle needs when this occurs. Corn stalks can be an excellent, economical resource for late fall and winter grazing in many parts of the state.

Pasture and Forage Minute: Winter Water Needs and Pasture Lease Considerations

FRIDAY, FEBRUARY 7, 2025

Ben Beckman - Extension Educator,
Jerry Volesky - Nebraska Extension Range and Forage Specialist

Winter Water Needs

By Ben Beckman

As the snow flies this winter, keeping a herd well-watered gets a bit harder. Power outages, frozen tanks and massive drifts can be roadblocks to a steady water source during cold temperatures. It might be tempting at these times to let animals fend for themselves — after all, snow has water, right?

First, we need to consider how much water animals need. As a rule of thumb, a dry cow or bull needs 1 gallon of water per 100 lbs. of body weight on an average day. Growing animals will require more. Lactating animals are usually near the top for need with 2 gallons of water daily per 100 lbs. of body weight.

Often some of an animal's water comes from its diet, but without fresh forage, almost all water needs must be met elsewhere. This means a cow needs to consume 30-40 lbs. of snow daily to meet its needs. When snow is crusted or trampled, consuming an appropriate amount is even more difficult.

The animal itself must also be considered. Eating snow is a learned behavior and doesn't just happen overnight. Having an experienced cow in the herd to teach others can help, but animals new to the technique can still take up to a week to learn. Additionally, thin cattle (body condition score of 3 or less) should not be forced to depend only on snow. Cattle should have at least a BCS of 4 and should be in good health.

While water demands in the winter may be less than summer, keeping water available can be difficult. Having animals eat snow may be tempting, but requires an experienced herd, plenty of fresh snow, and healthy animals.

Pasture Lease Considerations

By Jerry Volesky

As pasture grazing leases are getting finalized for the 2025 season, it is important to make sure that some of the key details are clear and in writing.

Traditionally, pasture leases are for five or six months from April or May through October. Specific starting and ending dates can be used, but there could be exceptions based on spring weather conditions or if there were drought conditions the previous year that might warrant delaying turn-out to allow some recovery of grasses.

A lease clause that provides details on what would happen if drought occurs during the season is a must. Most often, this is handled by reduced stocking rates or a shorter grazing period. Other situations that could affect the amount of pasture available includes severe hail, grasshoppers or wildfire. In fairness, of course, pasture rent owed should also be adjusted accordingly if the grazing period is shortened. Consider pricing leases based on grazing animal unit months (AUMs) rather than a flat rate per acre or cow-calf pair. This can make it easier when adjustments are made to the length of time grazing occurs. In some cases, an abundance of pasture growth might result in extra grazing.

Other pasture and grazing management details that could be part of a written lease agreement would include fence maintenance and repair, weed control, or any issues associated with the livestock water supply. Some landowners might also have specific preferences in how grazing rotations are done through several pastures.

Highly Pathogenic Avian Influenza Detected in Nebraska Poultry

January 30, 2025 • For Immediate Release
Contact: Christin Kamm • 402-471-6856

LINCOLN –The Nebraska Department of Agriculture (NDA), in conjunction with the United States Department of Agriculture (USDA) Animal Plant Health Inspection Service (APHIS) has detected the first cases of highly pathogenic avian influenza (HPAI) in 2025.

The first case was discovered in a backyard poultry flock in Kearney County and the second case was discovered in a backyard flock in Nance County.

State Veterinarian Dr. Roger Dudley reminds producers to practice good biosecurity with their flocks including minimizing exposure to wild birds and washing hands and changing clothes (including shoes) before and after coming into contact with poultry.

What is HPAI?

HPAI is a highly contagious virus that spreads easily among birds through nasal and eye secretions, as well as infected food, water, and manure. The virus can be spread in various ways from flock to flock, including by wild birds during migratory season, through contact with infected poultry, by equipment, and on the clothing and shoes of caretakers. Wild birds can carry the virus without becoming sick, while domesticated birds can become very sick and die.

What are the clinical signs of HPAI in birds?

Symptoms of HPAI in poultry include: a decrease in water consumption; lack of energy and appetite; decreased egg production or soft-shelled, misshapen eggs; nasal discharge, coughing, sneezing; incoordination; and diarrhea. HPAI can also cause sudden death in birds even if they aren't showing any other symptoms. HPAI can survive for weeks in contaminated environments.

Resources for poultry producers

Resources are available for poultry producers at nda.nebraska.gov/animal/avian/ and from the USDA at https://www.aphis.usda.gov/livestock-poultry-disease/avian/avian-influenza. Poultry experiencing signs of HPAI or unusual death should be reported to NDA at 402-471-2351 or the USDA at 866-536-7593