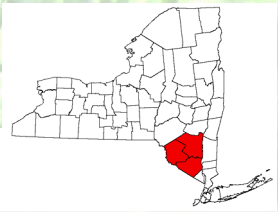
SUMMER 2019

Livestock 360



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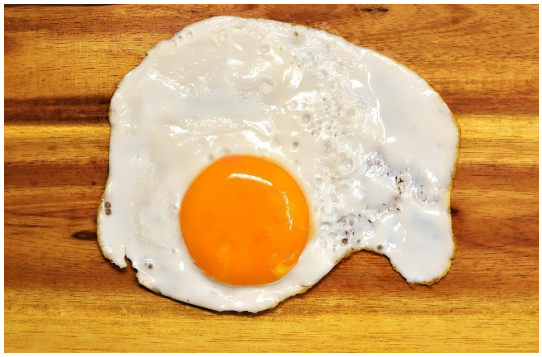
There is a big debate on whether to wash eggs, with both sides making good arguments. The state you live in largely determines whether to wash all eggs. Some states require that you wash eggs, while others do not. Even poultry specialists cannot agree, with some strongly recommending washing, while others say that eggs should not be washed. Internationally, the United States requires commercial eggs to be washed, while the European Union does not allow any shelled eggs to be washed, but it also does not allow dirty eggs to be sold as shelled eggs. As the number of eggs produced in extensive management systems (which increases the number of eggs laid outside the nest box) increases in the European Union, EU regulators reassessed their position on egg washing. A recent multi-year study came to the same conclusion as Brant and Starr (1962) that egg washing should be strongly considered, but Europe decide to leave their regulations unchanged.

Historically, Japan did not allow egg washing, but when the number of food-borne illnesses caused by salmonella increased, that country recently implemented egg washing, building on the experiences of the United States. Egg washing was just one of a range of measures taken to reduce the number of salmonella cases in Japan. Vaccination of flocks against Salmonella enteritidis has also been implemented. Fewer than one in 20,000 eggs now carry salmonella on the shell at the farm gate, and the incidence in the egg contents is even lower.

Research on egg washing done in the early 20th century was used by both the United States and Europe to develop their egg-handling requirements, with dramatically different conclusions. The egg-washing method used in these studies consisted of a wire basket that could hold 50 to 60 eggs being lowered into a rotating washing machine. The water was about 120ºF and contained a sanitizing agent. The eggs were submerged for about three minutes. In commercial settings, eggs could be washed for different lengths of time and in water that could be dirty, or at the wrong temperature or without sanitizer. As a result of this possibility, Britain prohibited the washing of Class A table eggs. There was a price penalty for dirty eggs, and dry cleaning was encouraged when necessary. Around the same time, the U.S. Department of Agriculture (USDA) published a 34-page report titled *Improved Methods, Techniques, and Equipment for Cleaning Eggs*. Based on this report, several key recommendations were made for egg cleaning in commercial egg-processing facilities in the United States:



· Do not attempt to clean excessively dirty eggs.
· Avoid the use of wash water containing more than 2 ppm of iron.
· Do not recirculate the wash water.
· Use odorless cleaning materials.
· Wash eggs as soon as practical after they are laid.
· Maintain wash water at a temperature that is at least 20ºF (~11ºC) higher than that of the eggs through all washing operations (wetting, cleaning, and rinsing).
· Moisten eggs with stained shells and adhering dirt before eggs are submitted to cutting-spray wash and brushes.
· Have water spray with sufficient force to cut away loose dirt before brushing.
· Use abrasive materials in brush bristles to increase the abrasive power of ordinary brushes.
· Maintain an accurate control of the sanitizer-detergent level within the wash water.
· Use a final rinse for the washed eggs.
· Dry washed eggs completely before packing them.

Egg washing can reduce the number of microorganisms on the shell of an egg. Egg washing does have its risks, however, if not done properly. In an early egg survey in Hawaii (1991), of the 106 dozen eggs tested for salmonella, 10 cartons were positive and seven of the 10 were traced back to a processor with a faulty egg-washing process. In addition, washing eggs using immersion type washers is not allowed in commercial egg-processing facilities in the U.S..

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When it comes to hay production, most of the intense labor happens when it's time to harvest. With up to four passes through the field required just to cut, rake, bale, and move alfalfa, and four to five harvests during a typical season in the Midwest, producing hay is not for the faint of heart.

Hay has the potential to bring good money that makes it competitive with other crops, University of Nebraska-Lincoln extension forage specialist Bruce Anderson says, you just have to take the right management steps and hope for accommodating weather. Here are seven steps to help you produce a quality alfalfa yield:

1. CHOOSE AN APPROPRIATE FIELD.
Soil pH should be in the 6.5 to 7 range for vigorous alfalfa growth, Anderson says. Ideally, you'd choose a field that you already know hasn't struggled with weed issues in the past. If you must use a weed-prone site, you'll need to consider different alfalfa varieties and herbicide options.

2. PLANT THE RIGHT SEED VARIETY.
Anderson suggests choosing an alfalfa variety that's more digestible and low-lignin for a better chance at a healthy, abundant crop.

3. SCOUT REGULARLY.
Getting out into the fields twice a week should be enough in most alfalfa fields. Be looking closely for signs of disease or pests like the alfalfa weevil and potato leaf hopper.

4. CUT ALFALFA AT THE BEST TIME.
Timing mowing to line up ahead of multiple dry days is tricky enough, but there's also crop maturity to consider. Cut before blooming, at a relatively young maturity level, so the feed value is as high as possible. If the crop goes too long without being cut, the coarse stem will become less digestible for livestock, Anderson says.

5. SET YOURSELF UP FOR DRYING SUCCESS.
When mowing the hay, run it through a properly adjusted conditioner and lay the hay out into wide windrows. This will give the hay the most possible exposure to sunlight to help it dry down quickly.

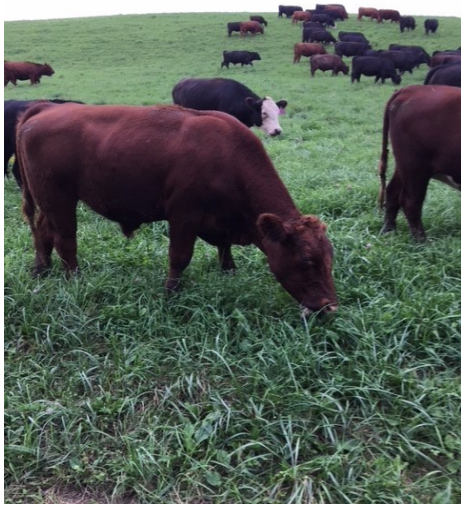
6. LEAN ON MOISTURE LEVELS.
Leaves are the most valuable part of alfalfa but can be easily lost if the crop is handled at the wrong moisture level. "When raking the hay, do so while the hay is still relatively moist to avoid serious leaf loss," says Anderson. The window is narrow to rake hay without shaking off leaves. Anderson recommends moisture levels of 14-15% for large square bales, 17-18% for big round bales, and 18-20% for small square bales.

7. BE SMART ABOUT BALE STORAGE.
Bales need protection from the weather to avoid loss. If at all possible, store bales in a shed or under tarps. "If stored exposed to weather conditions, make sure they're on well-drained sites with bales oriented in north-south type rows to allow sunlight to hit on both sides of (round) bales," says Anderson.

https://www.agriculture.com/machinery/hay-and-forage-equipment/7-tips-for-growing-quality-hay

BUYING HIGH PERFORMANCE ANIMALS OR RACECARS, IT'S ALL THE SAME BY JASON DETZEL

Way in the back of most Agriculture magazines is the classified section. This area is important for a couple of reasons. First and foremost it is where many of the auction notices are listed. These listings are indicative of the current state of farming in the United States in that it features businesses that are shuttering. These farms, and usually the properties, are going to be auctioned off piece by piece while the memories and knowledge of their former operators are lost to the ether.



If one were to look further into these dispersal sales they would notice that many of the farms were dairy or a combination of dairy and beef and that the farmers were most likely at or beyond retirement age. At the ripe age of 38 I have a difficult time comprehending giving up the farming life-style, but the loss of my favorite tools and contraptions is palpable and heartbreaking. These men and women helped shape this land and they will always be farmers even if they now utilize their well-worn hands to hold a putter or new grandchild.

The other common thing that can be found in the back of the magazine is advertisements for various sorts of fancy animals and fowl. Expensive and high performing blood lines are the order of the day. These advertisers utilize every technique in the book to show that they are selling the best for the most. This is enticing and promising for new producers who feel that they want the highest performing animals, registered heritage breeds, or animals that produce unbelievable daily milk numbers or gains.

These animals and their breeders are fine and good, however, it is important to stress to the beginning farmers and ranchers that these are not the animals they will learn the most from. Farming traverses a steep learning curve and those bends are going to be filled with injuries, losses, and basic mistakes. One way to mitigate this risk is to start the business with animals that are more basic. The run of the mill breeds will give the farmer the satisfaction of learning how to raise animals while producing a lower risk.

Another reason to exercise restraint when purchasing beginning stock is because these animals are often reared in the best environment possible. Meaning, they are fed the most nutritious and tested feeds, housed in the best facilities, monitored by vets, and might even get the occasional mani-pedi! This makes sense when the farmer is expecting to earn top dollar for the animal. However, when this animal is taken away from their accustomed lifestyle, may just fall apart.

Let's look at this another way. One day you decide you are interested in learning about driving racecars and decide to buy one! There is a local track that you are able to use but unfortunately it has some potholes, poor drainage, and rough edges. Since you were just learning how to drive, you were unable to maneuver the car around the rougher parts of the track. Your brand new racecar is now beat up and is in need for repair. Looking back on your decision to buy a new racecar now seems like the wrong choice. You wish that you had purchased a used, more basic model car to learn from. Once you successfully learned how to drive the older car you could have worked up to a fancier, more expensive car. Then the more expensive car would then be less exposed to the mistakes of learning and would have lasted much longer.

While raising livestock is not the same as driving a racecar, the idea is the same. Start slow, start simple. Once you learn the basics you can begin moving forward. Once you begin , there is nowhere to go but up!

Heat stress occurs when a cow's heat gain is greater than her ability to lose it. Balancing heat gain and loss over a 24 hour period is the goal.

Productive dairy cows may experience heat stress when the Temperature Humidity Index (THI) is 68 or greater. In 'more humid' climates this can occur at temperatures as low as 72°F. Heat stress can be reduced by slowing heat gain to the cow, and improving heat transfer rate from the cow. Basic heat stress abatement techniques include **S**hade, **A**ir, and **W**ater – or **SAW**.

Shade: Protecting cows from direct solar radiation helps lower their body temperature and respiration rate. Shade can be provided by trees, buildings, or shade structures. Roofs and shade structures should be at least 12 feet high and oriented properly. Buildings and covered outside feeding areas are typically placed east–west to minimize sunlight intrusion throughout the day. Placing pasture or dry lot shade structures north-south allows shade to move from west to east, helping to keep the resting area drier.

Air Exchange: An air exchange every minute or less during the summer months is essential to remove moisture, gases, heat, and other pollutants from the animal space. Without a proper air exchange other heat stress abatement techniques will not work effectively. Mechanically ventilated dairy buildings use exhaust fans and properly sized and placed inlets throughout the animal space. Tunnel ventilation can provide a rapid air exchange – typically less than 45 seconds - in tie stall barns.

Naturally ventilated buildings depend primarily on wind speed and direction to drive the air exchange. Buildings with high, side and end walls fully open to resting cow level create a preferred 'pavilion-like' design during the summer.

When the warm weather exchange rate in naturally ventilated buildings is challenged by topography, up wind obstacles, or building limitations, well designed tunnel or cross ventilation systems can be used provide the necessary air exchange.

Air Circulation: Turbulent air movement around cows increases convective heat transfer, enhances evaporation, and minimizes 'hot spots'. Air speeds of 3.5 to 5 miles per hour (mph) are preferred in resting, feeding, and holding areas.

Thirty-six to fifty-two inch diameter axial circulation fans can provide excellent animal space air movement. To be effective, fans placed in-line must be no further than 10 times their diameter apart. For side-by-side applications, place fans two to three times their diameter apart.

Large high volume, low speed (HVLS) fans can also provide air movement at cow level, but they must be placed over the animals, and usually no more than twice their diameter apart.

Drinking Water: Increased respiration and urination during hot weather may increase drinking water intake by 20 percent or more. Watering stations need to be located conveniently, allow multiple cows access, and keep up with water demand.

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It was not long before I had my first scare on the farm. My first summer on the farm, I headed out to check on the cattle. It was not long before my worst nightmare had come true. One of the cows and her new born calf had gotten through the high tensile fence (it was not powered on back then because we had never had a problem with the cattle going through it). I then began panicking. At this time I was still learning and did not know that cows prefer to be in a herd and the pair would most likely come back on their own. Rather than waiting it out, my first reaction was to try to chase them back into the pasture. I had little knowledge of how to properly handle cattle and I was doing nothing more than making the situation worse.

While I was deciding what my next tactic would be, a storm snuck up on me. The sky quickly blackened and a strong, warm breeze picked up. In the air I could smell rain accompanied by an almost tropical electric scent. I could see lightening in the distance and knew this was going to be a dangerous storm. It was quickly moving towards the field and I had no time to get back to the safety of the barn.

I watched as the herd began to amass beneath a large tree next to the fence. As I watched the herd gather, I realized that they are in not looking to move to shelter away from lightening. They were only looking to get out of the rain.

I then had to act fast. Where is the safest place to go when stuck without shelter in a storm? The safest place would be in a shelter or in a vehicle. I did have a jeep on the farm but it was too far away for me to safely reach. The second best choice was my stock trailer (this is also the one of the safest places for your animals as it will redirect the strike and keep the animals safe for the duration of the storm) but the trailer was attached to the jeep on the other side of the property.

So at this point I was resigned to being exposed to elements. My next thought was to go and loaf with the cattle to get out of the elements. As I gave it more thought I decided it was a bad idea. The cows had gathered right under a group of tall trees and within a few feet of the fence. The trees are a natural attractant to the lightening because of their height and the high tensile fence is able to conduct a lighting strike along its entire length in seconds. The cows had chosen poorly and I was determined not to make the same mistake.

At this point my only option became clear. I did not want to the tallest object in the pasture so I decided to come down from the top of hill to the middle of the pasture. I was sure to stay away from the fence and the trees. It would be ideal for me to sit on a nonconductive material and get into the lightening position.

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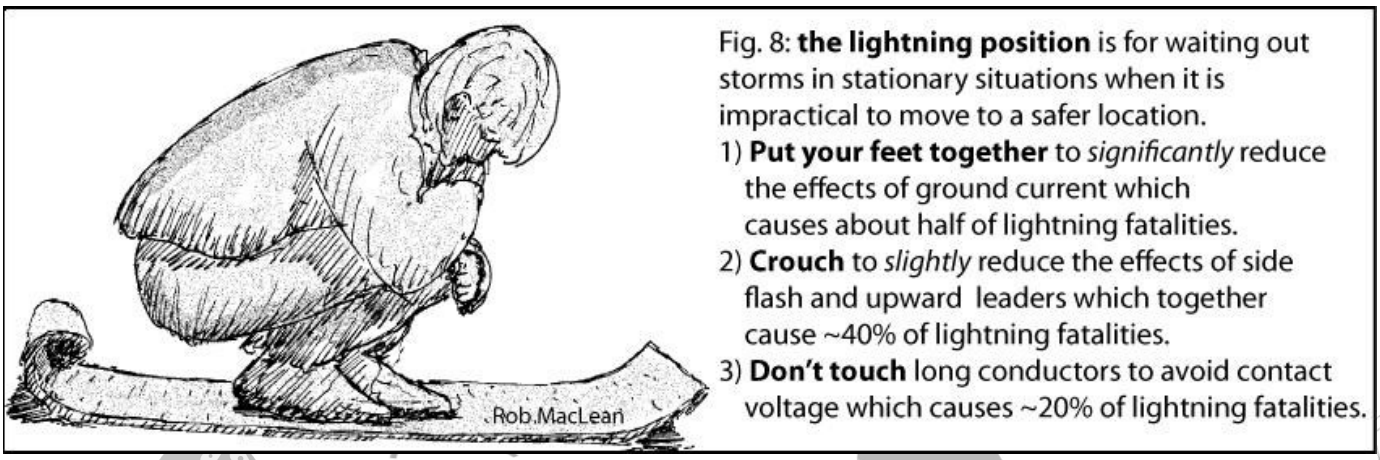

Fig. 8: **the lightning position** is for waiting out storms in stationary situations when it is impractical to move to a safer location.
1) **Put your feet together** to *significantly* reduce the effects of ground current which causes about half of lightning fatalities.
2) **Crouch** to *slightly* reduce the effects of side flash and upward leaders which together cause ~40% of lightning fatalities.
3) **Don't touch** long conductors to avoid contact voltage which causes ~20% of lightning fatalities.

The lightening position required you to crouch, keeping a very low profile, put your feet together to limit the difference in voltage between your two contacts on the ground should you be struck, put your head down, and try to relax and enjoy the fury of mother nature. If you are in a group, spread out. If one member of the group gets struck, the closer you are together, the more likely you are to also receive the voltage. You also do not want to lay down. This provides more surface area to be struck, and getting hit along the ground is the most common way to be hit.

So I sat in the lightening position, I watched the trees dance, I hoped the hail would not get any bigger and I waited. Within 5 minutes the storm abated enough that I could come out of the crouch and I was able to continue my own personal goal trying to get the little calf and his mother back into the fence.

So to review.

1. Do your best to avoid getting caught in bad weather; check your radar and watch the sky. With today's technology it is much easier to predict when a storm will likely pass over your location.
2. Seek shelter if a storm is approaching. If you can hear thunder you can be struck. Houses, vehicles, and trailers work the best. Try your best to avoid caves and rocky overhangs that may conduct electricity.
3. If you are caught out in the open, move to lower ground away from tall trees, fence posts, or rocky sites. Crouch with your feet close together, head down, and avoid letting anything other than your feet rest on the ground.

As for the cow calf pair on the other side of the fence, after the storm I began chasing the calf until I got it to slip through the fence. As I turned to see the mother's location, she was moving angrily towards me because she was unhappy that I was messing with her calf. I quickly launch myself through the fence to get out of the path of the aggravated cow. Safely away from the cow, I watched as she reunited with her calf and they both joined the rest of the herd. It was then that I realized it I had just left them alone, eventually they both would have moved back into the fence with the others and I never would have been stuck in the lightening storm after all.

Assuming that you are given a choice in your state, what should you do? Recent research from North Carolina State University would strongly recommend washing eggs. Regardless of the production system, an egg that appears clean will still have bacteria on the shell (reported as the number of colony-forming units growing from a swab of the surface; the higher the number, the more bacteria on the egg shell). These bacteria including many types, of which salmonella is only one. Unwashed clean eggs were found to have log(10) 4.5 colony-forming units. This can be reduced to log(10) 0.5 after proper washing. By comparison, unwashed eggs with fecal material will have log(10) 9.5 colony-forming units which is reduced to only log(10) 4.5 with proper washing.

Figure 1. Contribution of different food categories to estimated domestically-acquired illnesses and deaths, 1998-2008*

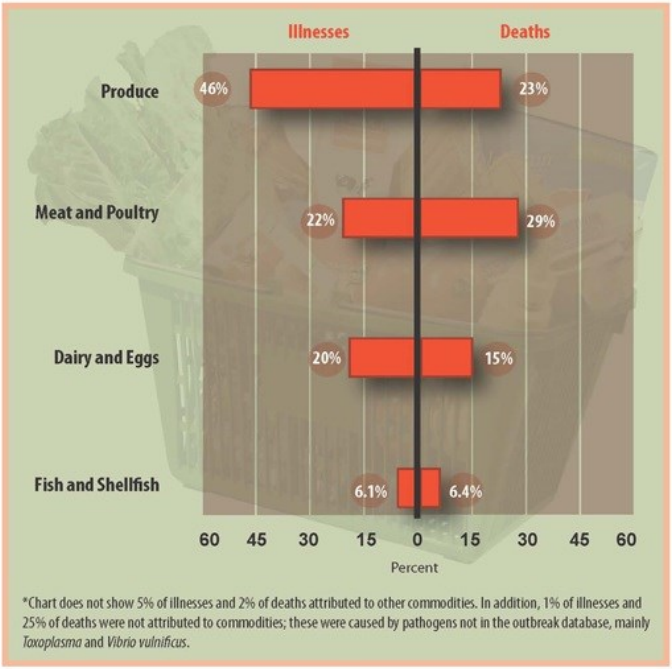

*Chart does not show 5% of illnesses and 2% of deaths attributed to other commodities. In addition, 1% of illnesses and 25% of deaths were not attributed to commodities; these were caused by pathogens not in the outbreak database, mainly *Toxoplasma* and *Vibrio vulnificus*.

Source: Painter JA, Hoekstra RM, Ayers T, Tauxe RV, Braden CR, Angulo FJ, Griffin PM. Attribution of foodborne illnesses, hospitalizations, and deaths to food commodities by using outbreak data, United States, 1998–2008. Emerg Infect Dis [Internet]. 2013 Mar [date cited]. http://dx.doi.org/10.3201/eid1903.111866

For a small layer flock, egg washing does not need to be as extensive as that recommended for larger commercial operations. The first recommendation, however, holds true for all egg operations, regardless of size: do not use eggs that are excessively dirty. Eggs should be washed before they are put in the refrigerator, with running water (no immersion) that is warmer than the temperature of the egg. Use a brush if necessary. If a detergent is used, rinse the eggs. Dry the eggs completely before packing them. Refrigeration – Important or Not

In the United States, all eggs must be stored at or less than 45ºF shortly after being laid and throughout the entire distribution system. As a result, you will find eggs in refrigerated displays, often near the milk and other dairy products. In many European countries, however, eggs are typically sold on an unrefrigerated shelf, often near the bakery supplies. Why the dramatic differences? Eggs are not refrigerated in Europe because of the concern for condensation that can form on eggs when they go from cold to warm environments as would occur when eggs are taken from a refrigerated display and transported home in a warm car. This condensation was speculated to facilitate the growth of bacteria on the shell, increasing the probability of bacteria making their way into the egg. The rules, therefore, stress that eggs should not be refrigerated before sale to the final consumer. However, there is no research to support this position. Recent research has shown that condensation, or "sweating," on egg has no influence on the internal microbial population of properly washed eggs.

In Europe, it is realized that eggs should be kept cool. The Chartered Institute of Building Services Engineers requires that supermarket temperatures should be 66.2º to 69.8ºF in the winter and 69.8º to 73.4ºF in the summer. Room temperature is considered to be between 68º to 77ºF. Britain recommends that once eggs are taken home, they be kept at less than 68ºF. This is considerably higher than the 45ºF required in the United States, possibly because Britain requires vaccination against Salmonella enteritidis, so it considers a lower storage temperature acceptable. Salmonellae reach the inside of the egg in two ways. The contamination of the shell is one way, but Salmonella enteritidis can settle in the reproductive tract and be shed with the eggs. Because of Britain's vaccination requirement against S. enteritidis, the likelihood of contaminating the eggs is considerably less. Britain estimates that it costs 14¢ per hen to vaccinate a flock. If each hen lays about 260 eggs, that works out to 0.05¢/egg or 0.65¢/dozen.https://articles.extension.org/pages/71048/safe-handling-of-eggs-from-small-and-backyard-flocks

Evaporative Cooling: Evaporative cooling uses water to increase heat transfer from cows. The evaporation of a pound (or pint) of water requires about 1,000 British thermal units (Btu) of energy, approximately the heat produced by 1,000 four inch wooden matches.

Direct evaporative cooling (DEC) systems intermittently apply and evaporate water from the cow's skin, drawing heat directly from her body. Indirect evaporative cooling (IEC) lowers the temperature of air surrounding the cow, increasing her heat transfer rate.

Spray cooling systems are low pressure DEC systems installed in feeding and holding areas that use a five to 15 minute wet-dry cycle. Spray nozzles emit a coarse droplet that penetrates the cow's hair coat soaking her skin for one to three minutes. Fans provide air movement for the remainder of the cycle to speed evaporation and draw heat away from her body. Studies show the respiration rate of a heat stressed cow decreases with the first wet-dry cycle. DEC seems to be the most effective evaporative cooling method for cows in more humid climates like Pennsylvania. However, it can require a significant water supply and good drainage.

Indirect evaporative cooling (IEC) uses heat in the air to evaporate water, lowering the dry bulb air temperature. The heat transfer rate increases when the difference in temperature between the cow body and surrounding air is greater. Heat transfer from within the body also improves as cows inhale cooler air.

Fogging and misting are examples of IEC systems that use pressure to force water through nozzles emitting very small droplets. High pressure systems emit finer droplets that have a better chance of evaporating before settling on the cows hair coat, resting surface, and floor. Nozzles for lower pressure systems emit larger droplets and typically installed on circulation fans so air movement can aid in evaporation. Pressurized IEC systems are popular in arid climates where the droplets are more likely to evaporate suspended in the air. These systems are prone to 'drift' in naturally ventilated buildings.

Evaporative pads are another method of IEC. Thick, water-soaked corrugated pads are installed at inlet opening(s) used with tunnel and cross ventilation systems. Outside air drawn through the pad evaporates as much moisture as the air conditions allow, lowering the dry bulb temperature. All air drawn through inlet is cooled and can only pick up as much moisture as the air conditions allow.

Since evaporative cooling systems incorporate adding water to the animal space air, ventilation systems that provide a good air exchange to remove moisture laden air, and circulation fans to enhance evaporation are essential.

The techniques for combating dairy cow heat stress currently available includes shade, an adequate air exchange, good air movement, drinking water, and evaporative cooling. Used properly these tools can help balance the daily heat gain and loss of dairy cows, minimizing heat stress effects, and improving cow health, production, and well-being during the summer

https://extension.psu.edu/heat-stress-abatement-techniques-for-dairy-cattle

UPCOMING EVENTS

For more upcoming events and information about our programs, contact your local county Cornell Cooperative Extension office (on front page)

June

20 **Dairy Risk Management Meeting:** 1pm-2:30pm, CCE Sullivan, 64 Ferndale Loomis Rd, Liberty, NY 12754. RSVP with FSA at 607-865-4005. Information about Dairy Margin Coverage and enrollment.

July

26-28 **2019 4-H Fair and Family Festival**: Friday, July 26, 2019, 3:00 PM - 10:00 PM, Saturday, July 27, 2019, 9:00 AM - 10:00 PM, Sunday, July 28, 2019, 9:00 AM - 3:00 PM, located at 4H Park and Education Center, 300 Finchville Turnpike, Otisville, NY 10963

31 **Field Meeting on Cattle IPM:** 11:30am-2:00pm, Weiss Dairy Farm 60 Deppa Rd, Swan Lake, NY 12783. This pro gram is free and LUNCH will be available. What's the Buzz? Flies on cattle? Learn the options available for con trolling fly pests affecting animals and what you should know about making insecticide use decisions.

August

15-18 **Sullivan County Youth Fair:** come out and enjoy all of the youth livestock shows, still exhibits and much more. Located at the Grahamsville Fairgrounds 8230 State Rte 55, Grahamsville, NY 12740

19 **Ulster County 4-H Fair**: Saturday, July 27– Friday, August 2, 2019 10:00 AM—9:00PM located at 249 Libertyville Rd, New Paltz, NY 12561.

September

10 **Twilight Farm Tour: Wild Russet Farm**: 5:30PM-7:30PM at Wild Russet Farm, 224 Eggler Rd, Jeffersonville, NY. Open to all who are interested in touring a new vegetable farm in Sullivan County and learning what its like to start from scratch.

Check out each Association's website for an updated events listing!

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