# Sioux Valley Ag

March 7, 2024
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Sioux Valley News

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# Last Spring Frost Dates

***Updated February 20, 2024***
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***Written collaboratively by Laura Edwards and Bret Lang.***

The last occurrence of frost in the spring is a notable date for both agriculture and horticulture. Around this date, soils are warming in preparation for spring planting, perennials will emerge, and buds will burst on trees. Most importantly, after this date is when we avoid the risk of frost damage for vegetation that is above ground.

There is a lot of variability in the date of the last spring frost from year to year. For example, an otherwise warm spring could have one clear, calm night with rapid cooling below 32 degrees Fahrenheit in late May. Or an early warm-up in March and a steady string of warm temperatures through April and May could see the last frost occur much earlier than typical.

Overlay this variability with the long-term trend of warming temperatures and, as a result, the date of the last spring frost is generally trending towards earlier dates. Additionally, the frost-free season (the number of days between the last spring frost and first fall frost) is getting longer.

The map in Figure 1 uses a recent period of 30 years of daily climate data (1991-2020) from stations across South Dakota. Using a minimum of 30 years ensures that the statistics are solid. Using the most-recent three decades captures the changes in temperature that have occurred.

The last date of a minimum temperature of 32 degrees Fahrenheit or below was noted. The map below shows the median (50th percentile) or typical last date for 32 degrees Fahrenheit or colder in the spring season. On the Mesonet at SDState website, there are maps of 10th percentile (very early dates of last frost) to 90th percentile (very late dates of last frost).

For some plants, trees, or crops, a critically cold temperature threshold may be warmer or colder than 32 degrees Fahrenheit. In that case, there are also maps on the frost/freeze website for the temperatures of 24, 28, 36, and 38 degrees Fahrenehit.

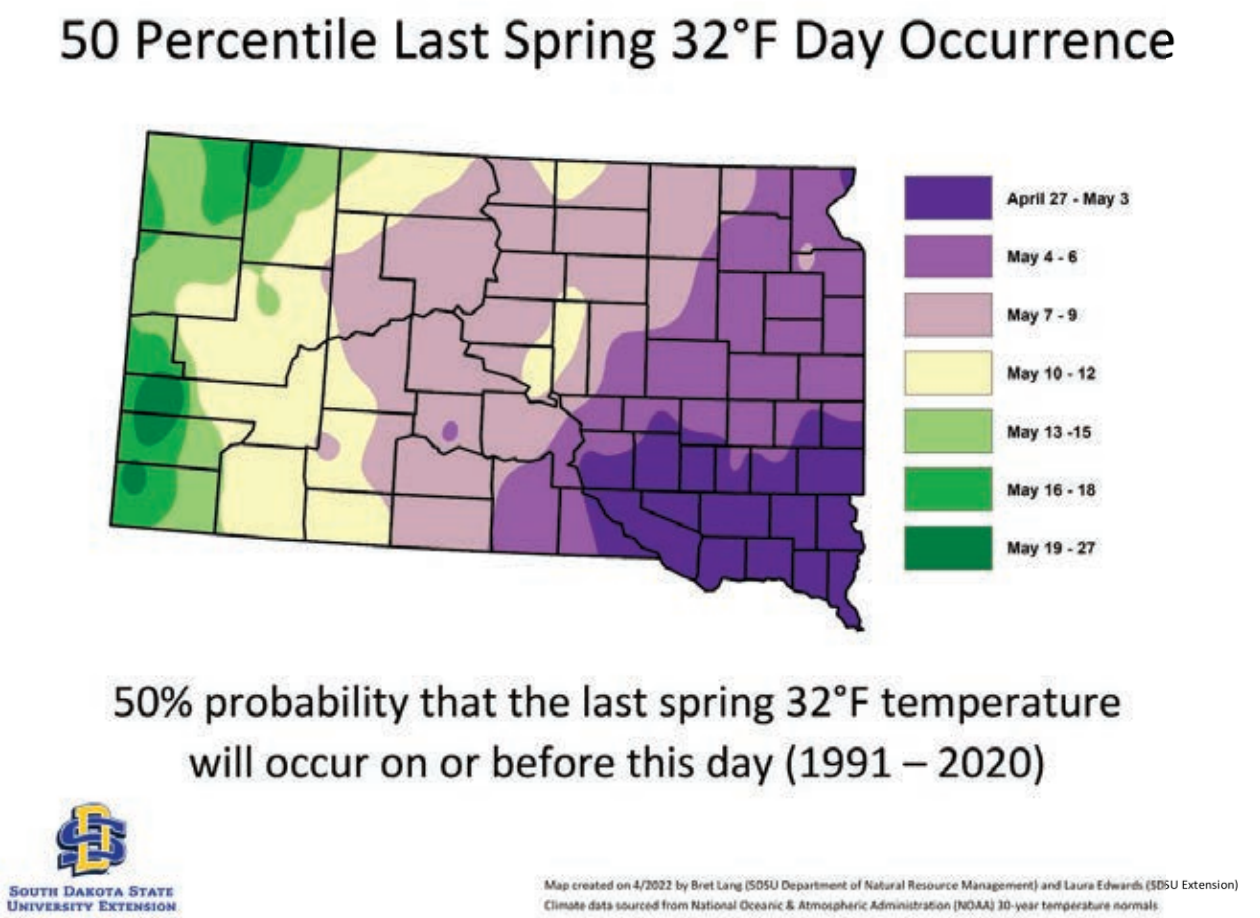


Figure 1. Map of typical date of last minimum temperature of 32 degrees Fahrenehit. This and other maps are available at the Mesonet at SDState website.

# Kochia Preplant Burndown Management for 2024

*Updated February 16, 2024*
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Kochia is a weed that is found in most crops throughout South Dakota. If kochia is not effectively controlled, crop yield can be reduced significantly. Control complexity of kochia is due to the biology of the plant and herbicide resistance. Globally, kochia is resistant to ALS-inhibiting herbicides (such as imazethapyr [Pursuit] and thifensulfuron [Harmony]), synthetic auxin herbicides (such as dicamba [Banvel, Clarity, others] and fluoxypyr [Starane, others]), PSII-inhibiting herbicides (such as atrazine), glyphosate (such as Roundup), and PPO-inhibiting herbicides (such as carfentrazone [Aim] and saflufenacil [Sharpen]). Currently in South Dakota, kochia populations have documented resistance to ALS-inhibiting herbicides and glyphosate.

Kochia can germinate under cooler temperatures early in the season. If early germinating kochia cannot be controlled with tillage due to production practices, then a burndown herbicide application should be made prior to crop planting. Dicamba (Banvel, Clarity, others) and saflufenacil (Sharpen) are commonly applied burndown herbicides in South Dakota to control kochia. However, caution should be made before applying these herbicides this season. Several kochia populations in North Dakota and Saskatchewan have recently been confirmed to be carfentrazone-and-saflufenacil-resistant due to overreliance on these herbicides. Additionally, dicamba-resistant kochia has been confirmed in states and Canadian provinces near South Dakota.

## Management Tactics

### Chemical Control

Preplant burndown herbicides should be applied under relatively high-light conditions and when temperatures are at least 55 degrees Fahrenheit. Applying burndown herbicides under overcast and low temperature conditions can result in control reductions on all weeds.

While control failures with dicamba or saflufenacil have not been reported in South Dakota, proactive decisions should be made to extend the effectiveness of these herbicides. Adding different herbicide groups to the tank for the burndown application can reduce selection pressure on resistant weeds and increase the control spectrum for other weed species. Applying different PPO-inhibiting herbicides (including tiafenacil [Reviton] and pyraflufen [Vida]) will not reduce selection pressure on resistant weeds. If applying dicamba or a similar synthetic auxin herbicide (including halauxifen methyl [Elevore]), refer to the label to determine if there are any planting interval restrictions to a specific crop. Refer to herbicide labels to determine if herbicides can be tank-mixed before purchasing and applying products.

Paraquat (Graxomone and others) is a viable option for preplant burndown. Kochia plants should be less than 4 inches in height at the time of application. Paraquat has no soil residual activity; consider adding a preemergence herbicide to the tank mix or applying the preemergence herbicide at the time of crop planting. Some herbicides, such as atrazine and metribuzin (Sencor, Tricor, other), can increase paraquat activity and provide residual control when tank mixed. Refer to the atrazine and metribuzin labels to determine if these herbicides are safe for the crop to be planted.

Glufosinate (Liberty) should not be used as a burndown herbicide. Glufosinate requires high heat, humidity, and light to effectively control weeds; these environmental variables can be limited in the early season. Additionally, glufosinate should be saved for in-season postemergence applications to control later-emerging kochia and other weeds. While glufosinate is effective on kochia and other weeds, this herbicide needs to be stewarded correctly to ensure there is minimal selection pressure on resistant biotypes.

While glyphosate-resistant kochia is common in South Dakota, the herbicide still has utility in controlling other weeds present (including prickly lettuce and dandelion). Scout fields prior to application to determine if select fields have weeds that can effectively be controlled with glyphosate.

Preemergence herbicides should be utilized even if a burndown herbicide application is made. If the burndown herbicide is tank-mixed with a herbicide with residual activity, use an herbicide from a different group. Preemergence kochia control when planted into soybean or sunflower can be achieved with sulfentrazone (Spartan, Authority products, others); again, do not rely solely on one herbicide. The HPPD-inhibiting herbicides (including mesotrione [Callisto, component of Acuron, and others], isoxaflutole [Balance]) will control kochia when applied preemergence in a corn crop. However, these herbicides mixed with atrazine will likely improve kochia and other weed control.

Kochia plants growing in a field.
(photo by Phil Westra, Colorado State University, Bugwood.org)

Additionally, there are more-effective herbicide options to control kochia in grass crops compared to broadleaf crops. Fields that are heavily infested with kochia could be planted with grass crops for more effective herbicides. Again, herbicides should be applied in tank mixes, and other non-chemical management tactics should be utilized where feasible.

A comprehensive list of herbicides labeled for kochia control in South Dakota crops can be found in the latest South Dakota Pest Management Guides.

### Cultural Control

Crop rotation can influence kochia control. Winter wheat can suppress early germinating kochia. Other grass crops (including corn, sorghum, and spring wheat) can suppress kochia with canopy closure if the early germinating plants are effectively controlled. Broadleaf crops (soybean and sunflower) may not provide as much suppression due to later canopy closure. Broadleaf crops can be planted in narrow row spacing to increase the time to canopy closure for increased suppression.

### Mechanical Control

Kochia surviving burndown applications should be removed to ensure that any offspring possessing any potential herbicide resistance traits does not enter the soil seedbank. Removal can be accomplished with hand weeding smaller, isolated areas or with mowing on larger areas prior to crop planting. Strategic, prescription-deep tillage can be implemented to control emerged kochia plants and bury seeds deeper into the soil profile to inhibit germination. Shallow tillage can stimulate kochia germination. This tactic can be strategically implemented prior to a pre- and/or postemergence herbicide application to increase control by depleting the soil seedbank.

## In Summary

Kochia should be managed with an integrated approach utilizing chemical, cultural, and mechanical tactics. While herbicides are likely the most-effective and efficient tactic to control kochia (and other weeds), recurrent and intensive use will eventually select for resistant plants. Utilizing integrated tactics can reduce selection pressure on resistant plants and improve weed management. If kochia control failures occur, be sure to report the incident to SDSU Extension personnel so further testing can be conducted.

# How Early Is Too Early to Plant Row Crops?

*Updated February 08, 2024*
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Corn and soybeans are considered warm-season crops, and just like it sounds, they prefer to grow during the warmest part of the year. With the recent cold snap much of the state experienced, row crop germination comes to mind (Figure 1). In an effort to get ahead of the game, many farmers will plant their corn earlier than recommended, and the following question may arise: "How early is too early?"

**Soil Temperature Guidelines**

Research has shown that the three-day average soil temperature for corn to germinate must be at least 50 degrees Fahrenheit. However, temperatures of 60–70 degrees typically allow for more-uniform germination across a given field. If corn is planted before soil temperatures reach a minimum of 50 degrees Fahrenheit, it may be much slower to germinate and come up less uniformly.

Soybeans tend to like temperatures a bit warmer than corn, with a required three-day average soil temperature of 55 degrees Fahrenheit or higher for uniform germination. That being said, the recent trend toward earlier soybean planting has shown that soybeans may germinate in soils as cool as 50 degrees Fahrenheit, but it is not ideal and may cause stands to be less uniform than desired. The ideal soil temperature for soybean germination is actually much higher at 77 degrees Fahrenheit.

**Early Planting Risks**

One of the biggest concerns for row crops planted into cool soils is chilling injury. Corn and soybeans both go through an imbibition period, which occurs when moisture hits the seed right after planting. They tend to be quite susceptible to cold, wet soils during this time. If that initial water is colder than 50 degrees Fahrenheit, seeds may become swollen and non-viable due to cell rupture, and roots and shoots may also be aborted. This risk is heightened when seeds are planted into dry, cool soils, and a cold rain occurs afterward. Corn that is seeded into wet soils with temperatures above 50 degrees Fahrenheit within the first 48 hours following planting should germinate just fine. Soybeans have a shorter imbibition period, and soil temps above 50 degrees Fahrenheit for 24 hours are usually long enough for acceptable germination.

If crops are planted early and germinate as expected, of course, there are still a few temperature-related risks to consider. If the air temperature drops into the 40s for several days, emergence will likely be significantly slowed, meaning crops may take two weeks or longer to emerge depending upon accumulated growing degree days. When seeds sit in cool, wet soils, soil pathogens have an opportunity to affect seedlings as well. These types of situations are when seed treatments become important. Other early-season soil and environmental conditions, such as crusting, compaction and herbicide injury, can also compound with pathogens, creating more issues.

**Monitoring Soil Temperatures**

Checking soil temperatures and developing a three-day average can be a challenging job, so that's why the SD Mesonet weather station network collects this data for growers across South Dakota. Soil temperatures are measured at five depths, with the shallowest depth being four inches (under bare soil). The Mesonet is updated every 10 minutes and also provides daily averages. To find the Mesonet station nearest you, visit the Mesonet at SDState website. On the website, there is an interactive map where you can select '24-hr Soil Temp, 4" Bare' to view the bare soil temperatures across the state.

**In Summary**

It's still too early in the season to predict row crop yields, but making sound planting choices and scouting for injury and signs of disease or pest infestations is always a good decision. Although it can be tempting to get a head start with row crops, be mindful of soil temperatures and the associated risks with planting early.

# Career Opportunities In The Agricultural Sector

Individuals approach their careers in various ways. Some may aspire to climb the corporate ladder, while others may pursue a career that affords them ample personal time to spend how they see fit. Many individuals look for careers that afford them ample opportunities to work in the great outdoors, which could make the agricultural sector an appealing industry.

Talented individuals with an array of diverse skills dot the agricultural sector landscape, and the following are just a few of the many careers to consider within this vital industry.

• **Equipment technician**: Data from the career experts at Indeed indicates agricultural equipment technicians earn an average salary around $65,000 per yar. Agricultural equipment technicians maintain and repair existing machines and install new ones, among their many responsibilities.

• **Purchasing agent:** An agricultural purchasing agent buys products and raw materials at wholesale. Indeed notes that purchasing agents often must meet specific purchasing quotas for processors and work with various clients who supply an array of agricultural products. The national average salary for agricultural purchasing agents is around $51,000 annually.

• **Warehouse manager:** The receiving, shipping and storage of agricultural materials is overseen by a warehouse manager. Indeed notes that these professionals now routinely utilize artificial intelligence products to manage inventory. Warehouse managers must know and adhere to safety procedures and guidelines that dictate how materials and products are stored. The average salary of a warehouse manager is around $52,000 per year.

• **Sales:** Like every industry, the agricultural sector requires talented sales personnel. Agricultural sales reps sell materials and products and identify the needs of potential customers. Agricultural sales reps may spend ample time on the road at trade shows. Doing so allows them to identify customers as well as their needs and wants, and promote their own products and services. An ability to foster strong and trusting interpersonal relationships is invaluable for agricultural sales reps, who Indeed reports earn an average of about $60,000 per year.

• **Environmental engineer:** Environmental engineers play pivotal roles within the industry, and could become even more vital in the decades ahead as the effects of climate change become more apparent. Environmental engineers design and implement solutions that occur on agricultural sites, helping to address issues such as unhealthy soil, insufficient drainage and inefficiencies, among other concerns. A career as an environmental engineer within the agricultural industry can be rewarding and lucrative, with Indeed noting that the average annual salary for this position is a little more than $77,000.

These are just some of the career paths individuals can consider as they explore the agricultural sector.

# 3 Challenges Facing The Agricultural Sector

Since the World Health Organization declared a global pandemic in early 2020, businesses big and small have faced significant challenges. Though the pandemic has ended, many sectors, including the agricultural industry, are facing familiar and unfamiliar challenges.

The agricultural sector is crucial to the survival and health of billions of people across the globe. Though it's obvious that modern agriculture is vital to feeding a global population that was greater than eight billion people at the dawn of 2024, the United Nations notes that agriculture also boosts prosperity and economies by providing jobs. That reality only underscores the notion that the challenges facing the agricultural sector are facing everyone, even those whose livelihoods are not directly linked to the industry. According to Earth.org, an organization that offers environmental news, data analysis, research, and policy solutions, the following are three sizable challenges facing modern agriculture.

**1. Climate change:** Perhaps no challenge is greater for humanity in the twenty-first century than climate change, and the agricultural sector is no exception. Climate change has caused shifting weather patterns marked by unpredictability and potentially disastrous developments like prolonged drought. Estimates from NASA indicate corn yields may decrease by 24 percent by the end of this century, a potentially dangerous development linked to a host of factors, including a shifting climate and elevated surface carbon dioxide concentrations that can be traced to human-caused greenhouse gas emissions.

**2. Population growth:** The booming global population is attributable to numerous factors, including longer life expectancies in developed nations due to medical advancements. How to keep the global population fed at a time when the climate is adversely affecting crop yields is a significant challenge facing both humanity and the agricultural sector. As the population grows, so, too, does the demand for water, which also must be used to grow crops. Navigating this challenge will be significant, and how it's managed could affect the economic stability of the agricultural industry in the decades to come.

**3. Investment:** Perhaps no industry is more vital to human survival than agriculture. Earth.org notes that countries with strong agricultural sectors often boast higher standards of living and health than nations with a less productive agricultural industry. Despite that, Earth.org notes that investment in the agricultural sector is not commensurate with the growing population. Supporting measures to invest more heavily in the agricultural sector could reduce food shortages in the decades to come and ensure the agricultural sector is better positioned to address the many challenges it is already confronting in the twenty-first century.

The challenges facing the agricultural sector affect those who work in the industry but also the global population as a whole. Recognition of that reality may compel more people to support measures designed to ensure the agricultural sector can thrive and help the world to overcome potentially devastating challenges in the decades ahead.

# Tips For Safer Farming

Tractor accidents, grain entrapment and injuries from ornery livestock are just some of the dangers agricultural workers face every day. In fact, the National Institute for Occupational Safety and Health says agriculture is one of the most hazardous industries in the United States.

In 2016, the agricultural industry had a rate of 21.4 deaths per 100,000 workers, and each day agricultural workers experienced 100 non-fatal, lost-work-time injuries.

Agricultural dangers are not limited to North America. In Ireland, farm accidents have increased by 13 percent in the last five years and by 31 percent in the last decade, according to a national survey of farm accidents conducted by the Teagasc National Farm Survey. Furthermore, 97 percent of all farm accident victims required medical treatment.

Farms are dangerous places, and while carelessness can and does contribute to many incidents, accidents also take place during routine, seemingly safe activities. These farm safety guidelines can help lower the risk of injuries.

• Know farm equipment. Read and follow all instructions in the equipment operation manuals. In addition, attend local farm safety workshops to learn more about specific equipment and products.

• Conduct routine safety checks. Look around buildings and grounds for obvious hazards, such as fire hazards and hazardous materials, including farm chemicals that are not stored correctly.

• Practice cleanliness. Maintain clean and neat work areas with tools stored properly and out of the way after use.

• Be mindful of your clothing and hair. Many accidents involve a power take-off system, or PTO, which is a common component of large rotary mowers, tractors and forage choppers. Clothing can easily get caught in an engaged but unguarded PTO

stub. It's easy for laces or coveralls to become wrapped around a spinning stub shaft. The PTO driveline and other protrusion points also can be dangerous if people do not pay attention.

• Use rollover protection structures. ROPS can be used on tractors and other equipment to prevent injuries. In addition, wear seat belts and employ other safety equipment as advised.

• Avoid extra passengers. It can be tempting to take the kids for a spin, but do not allow additional passengers to ride on agricultural equipment.

• Exercise caution when handling chemicals. Take extra precautions when handling any chemicals, including pesticides.

• Wear protective gear. Wear appropriate gear and equipment as outlined by NIOSH or the Mine Safety and Health Administration. Make sure the skin, feet, ears, eyes, and hands are protected at all times.

• Employ lock out/tag out control. This is a process where one can work on equipment only after every energy source has been controlled, such as hydraulic, pneumatic, mechanical, and electrical, according to Rural Mutual Insurance Company. Turning off equipment and using certain controls or locks on devices can prevent equipment from restarting before it is safe to do so.

Farm safety should be a priority for owners, their families and employees so that agricultural injuries can be reduced.

# Agricultural Producers Have Until March 15 to Enroll in USDA's Key Commodity Safety Net Programs for the 2024 Crop Year

## South Dakota Enrollment Currently At 53% of Expected Contracts

Huron, South Dakota, Feb. 26, 2024 – Agricultural producers who have not yet enrolled in the Agriculture Risk Coverage (ARC) or Price Loss Coverage (PLC) programs for the 2024 crop year have until March 15, 2024, to revise elections and sign contracts. Both safety net programs, delivered by USDA's Farm Service Agency (FSA), provide vital income support to farmers who experience substantial declines in crop prices or revenues for the 2024 crop year. In South Dakota, producers have completed 30,574 contracts to date, representing 53% of the more than 57,954 expected contracts.

"Agriculture Risk Coverage or Price Loss Coverage programs provide excellent risk protection, for market declines, at no cost to the producer. While we always hope for strong markets, anyone involved in production agriculture knows, the only thing certain is uncertainty," said Steve Dick, State Executive Director for FSA in South Dakota. Many producers may be holding off on making your program elections pending planting decisions or maybe you're working with a local advisor to consider how changes in the effective reference price might impact your election decisions. Please contact your local FSA county office as soon as possible to set an appointment so you're on the books well in advance of the March 15 deadline."

Producers can elect coverage and enroll in ARC-County or PLC, which provide crop-by-crop protection, or ARC-Individual, which protects the entire farm. Although election changes for 2024 are optional, producers must enroll, with a signed contract, each year. If a producer has a multi-year contract on the farm, the contract will continue for 2024 unless an election change is made.

If producers do not submit their election revision by the March 15, 2024, deadline, the election remains the same as their 2023 election for eligible commodities on the farm. Also, producers who do not complete enrollment and sign their contract by the deadline will not be enrolled in ARC or PLC for the 2024 year and will not receive a payment if one is triggered. Farm owners can only enroll in these programs if they have a share interest in the commodity.

Producers are eligible to enroll farms with base acres for the following commodities: barley, canola, large and small chickpeas, corn, crambe, flaxseed, grain sorghum, lentils, mustard seed, oats, peanuts, dry peas, rapeseed, long grain rice, medium and short grain rice, safflower seed, seed cotton, sesame, soybeans, sunflower seed and wheat.

**Web-Based Decision Tools**

Many universities offer web-based decision tools to help producers make informed, educated decisions using crop data specific to their respective farming operations. Producers are encouraged to use the tool of their choice to support their ARC and PLC elections.

Crop Insurance Considerations

Producers are reminded that enrolling in ARC or PLC programs can impact eligibility for some crop insurance products offered by USDA's Risk Management Agency (RMA). Producers who elect and enroll in PLC also have the option of purchasing Supplemental Coverage Option (SCO) through their Approved Insurance Provider, but producers of covered commodities who elect ARC are ineligible for SCO on their planted acres.

Unlike SCO, RMA's Enhanced Coverage Option (ECO) is unaffected by participating in ARC for the same crop, on the same acres. You may elect ECO regardless of your farm program election.

Upland cotton farmers who choose to enroll seed cotton base acres in ARC or PLC are ineligible for the stacked income protection plan, or STAX, on their planted cotton acres.

**More Information**

For more information on ARC and PLC, producers can visit the ARC and PLC webpage or contact their local USDA Service Center. Producers can also prepare maps for acreage reporting as well as manage farm loans and view other farm records data and customer information by logging into their farmers.gov account. If you don't have an account, sign up today.

USDA touches the lives of all Americans each day in so many positive ways. Under the Biden-Harris administration, USDA is transforming America's food system with a greater focus on more resilient local and regional food production, fairer markets for all producers, ensuring access to safe, healthy and nutritious food in all communities, building new markets and streams of income for farmers and producers using climate smart food and forestry practices, making historic investments in infrastructure and clean energy capabilities in rural America, and committing to equity across the Department by removing systemic barriers and building a workforce more representative of America. To learn more, visit usda.gov.

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# Being Vigilant of Livestock Property Security and Surveillance

*SDSU Extension*

***Written by Heidi Carroll, former SDSU Extension Livestock Stewardship Field Specialist & Beef Quality Assurance Coordinator.***

Livestock producers have many daily responsibilities when it comes to caring for and protecting their animals. One responsibility is to remain vigilant regarding individuals that oppose the use of animals for food or other purposes. Animal rights activists have tried many tactics over time to eliminate any use of animals for food, fiber, or entertainment. Some of these tactics include initiating stronger local and state animal abuse legislation, releasing or stealing animals from private property, becoming farm employees to create undercover videos, protesting, and billboards or media campaigns. Many of these tactics are still being used, but activist's tactics are advancing as new technologies, such as mapping and artificial intelligence from satellite images or drones to identify properties with animal production, become available.

This article shares some tips and reminders of how to prepare for or respond to opposition and keep your family, employees, and animals safe.

**Security and Surveillance Tips**

Know what farm information is available electronically on public platforms and monitor social media pages for potential threats. Remember, the goal is to remain transparent about the high-quality care animals receive while being raised for food. Not everyone with interest in where their food comes from can physically visit your farm or ranch, and those platforms can provide that information.

Practice good hiring practices. Review applicant materials thoroughly and briefly research individuals through Internet searches and calling references. Ask existing employees for recommendations on people to hire. Implement strict supervision or on-the-job training with a partner for a set number of days or weeks after hiring. Meet with new employees regularly within the first days/weeks and use an employee evaluation form to discuss strengths and weaknesses in job performance. This is especially important for employees with intensive animal care responsibilities. Learn more on hiring practices in the Resources below.

Discuss visitor policies with all family members and employees. Communicate the importance of having visitors check-in at an office or central location to ensure everyone's safety and to practice good biosecurity. Empower each employee or family member to greet and escort all visitors respectfully and ask a few questions about the purpose of their visit. Ensure that all employees and family members have the direct phone number of the supervisor or owner designated to assist visitors or unwelcome guests. Visitor logs can be a simple way to track visitors and gives you time to have a conversation with people to learn more about their intentions for visiting.

Ensure security and biosecurity policies are followed. Posting signs at property entrances or pastures communicates your biosecurity and no-trespass expectations. These signs can communicate that animals are on the property and a phone number for people to call if they have questions or concerns. Identify restricted areas and post them. Lock offices and cabinets. Maintain or increase lighting around facilities.

Create a phone, camera, or other technology use policy and enforce it. Employees need ways to communicate around the farm or ranch but ensure expectations are verbalized and agreed upon by all. If your farm or ranch welcomes tours and visitors, create a waiver, or use agreement, and have all visitors sign it when they arrive. At a minimum, verbally discuss photo use expectations during introductions. Another strategy to allow pictures is to determine one or two locations around the operation that are the "photo op stops" (Figure 1). When you get to these locations, announce to visitors that they may take pictures.

During tours, watch for individuals wandering away from groups without permission or continually focusing on other areas not being discussed or highlighted during tours. It is reasonable to give polite verbal reminders to tour participants and guests to stay with the group.

Use cameras (i.e., security cameras and game cams) strategically. Many producers already incorporate camera technologies to assist with the observation of animals, but also consider placement of cameras around perimeters of barns, fence lines, or ranch entrances. Another strategy may be to move cameras around to various entrances or areas of the facilities periodically if you have a limited number of cameras. On days when intense animal movements occur (i.e., weaning, branding, transporting, breeding, processing) consider placing cameras closer to the areas being used or along entrance/exit roads to the location(s).

**Keep detailed records.**

**Including, but not limited to:**

- video footage or pictures,
- annual employee animal care agreements,
- annual employee training documents,
- animal welfare audits or evaluation reports,
- environmental/natural resource compliance records,
- other certificates or awards demonstrating proactive participation in livestock well-being programs.

Pay attention to unfamiliar vehicles or out-of-state license plates. Be polite if you choose to engage people. After all, sometimes people make wrong turns or want to view nature.

If protests occur at your farm, ranch, or event you are attending, do not engage people. Immediately call local authorities and remain calm.

Maintain positive community and neighbor relationships to ensure local support is established before a crisis. Notify neighbors if you observe unfamiliar vehicles or suspicious activities around their property.

Get to know your local law enforcement and emergency responders. Share the concerns you have and ask for advice or protocol suggestions. Share a copy of facility maps and animal locations with them and consider inviting them out for a tour to become familiar with the location and layout of barns, pens, and pastures.

Be aware of suspicious activity (i.e., a dishonest person looking to be hired, people trespassing, or drones flying over the property) and immediately report incidents to local authorities. Notify state commodity associations and the state veterinarian; consider notifying the Animal Agriculture Alliance.

Identify a crisis response team and create a crisis communication action plan. This team should consider responses and actions to take in the event undercover videos are released, food safety emergencies occur, a manure spill happens, or if protests or other potential threats develop. Information on how to create this team and communication plan is in the Resources below. Many livestock commodity associations provide additional training and resources to prepare people for a crisis.

Another way to stay prepared is to understand where activists may be gathering information. There are many publicly available ways to gather addresses or contact information, yet farmers and ranchers should realize that additional strategies exist. To learn more about a tool released for identifying animal facilities in the United States, view this article. Reach out to state commodity associations and Animal Agriculture Alliance with questions or concerns.

**In Summary**

People's perceptions on animal care practices and where food comes from continue to change. People are curious and seek honest information. Remain vigilant and proactive in preparing for potential emergencies or incidents involving livestock. Make the time to create a crisis response team and plan. Thoroughly discuss it with all family members and employees to ensure both people's safety and animal well-being is protected.

# ON THE FARM WORD SEARCH

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| I | Y | I | A | B | I | D | I | A | N | H | I | E | N | L | E | C | D | K | C |
| C | O | T | L | M | M | C | M | S | F | P | E | E | Y | D | I | K | C | M | F |
| N | E | R | R | L | S | N | F | T | I | D | C | L | E | S | Y | D | A | M | E |
| S | A | A | V | M | N | O | I | T | A | V | I | T | L | U | C | I | S | Y | A |
| L | F | C | V | L | C | A | L | V | E | S | D | I | L | G | A | P | T | E | R |
| G | B | I | R | U | B | P | H | U | E | D | I | C | I | T | S | E | P | F | K |
| P | V | V | A | E | R | I | A | L | U | S | B | Y | P | C | H | L | U | F | P |

**Find the words hidden vertically, horizontally, diagonally, and backwards.**

ON THE FARM
WORD SEARCH

ACRE
AERIAL
AEROPONICS
AGRICULTURAL
AGROECOLOGY
BALE
BIODYNAMIC
BORDER
BROADCAST
BUCKING
BUSHEL
CALVES
CARRYOVER
COMPOST
CULTIVATION
CYCLE
FARMING
FIELDS
GRAINS
IRRIGATION
LAND
ORGANIC
PESTICIDE
SEEDING