

River Valley District

K-STATE RESEARCH AND EXTENSION NEWS

rivervalley.ksu.edu

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Extension District

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Women in Agriculture Farm Management Educational Series



Thursdays
February 13th – March 26th
5:00 pm–9:00 pm
PrairieLand Partners Meeting Room
1181 18th Rd Clay Center, Ks

Who: Women in the agriculture industry who would like to advance their business and management skills to become more involved in a farming or ranching operation.

What: Women in Agriculture is a six-session course with participation limited to 25 people.

When: Classes are held each Thursday afternoon February 13th to March 26th from 5:00 pm to 9:00 pm. Dinner will be provided each session.

Where: PrairieLand Partners Meeting Room, 1181 18th Rd Clay Center

Cost: \$50.00

Contact the River Valley Extension Clay Center Office

Sign up is open Phone: 785-632-5335

River Valley Extension District Women in
Agriculture is brought to you by the following sponsors:



Session One - February 13th

- What type of gal are you?
- Telling Your Ag Story

Session Two - February 20th

- Risk Management
- EPD Basics
- Livestock Photography

Session Three - February 27th

- Global Ag Economy
- Crop Insurance
- FSA Programs

Session Four - March 5th

- Quick Books for Farm Record-keeping

Session Five - March 12th

- Beef Nutrition
- Sheep & Goat Basics

Session Six - March 19th

- Precision Ag & Cover Crops
- Marketing and Risk Management
- Horticulture Production

Session Seven - March 26th

- Developing Equitable Leases
- Farm Succession

Family is invited to attend last session!

K-STATE Research and Extension River Valley District

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Search: Women In Ag

Kansas State University is committed to making its services, activities and programs accessible to all participants. If you have special requirements due to a physical, vision, or hearing disability, contact John Forshee, Director, River Valley Extension District. Phone 785-632-5335. Kansas State University Agricultural Experiment Station and Cooperative Extension Service. K-State Research and Extension is an equal opportunity provider and employer.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

CALVING SCHOOLS SCHEDULED ACROSS KANSAS

In anticipation of calving season, the Kansas State University Department of Animal Sciences and Industry and K-State Research and Extension will be hosting a series of calving schools between November and January.

The program will outline the normal calving process as well as tips to handle difficult calving situations. A.J. Tarpoff, extension beef veterinarian, said the purpose of the event is to increase knowledge and practical skills and increase the number of live calves born.

Experts will also share tips on when and how to intervene to assist the cow and how those times may be different when dealing with young heifers. Presenters will also demonstrate proper use of calving equipment on a life-size scale.

“Our goal is for producers to leave better prepared for calving season,” Tarpoff said. “We will discuss timelines on when to examine cows for calving problems, and when to call for help if things are not going well. It’s an excellent program regardless of experience level.”

The list of meetings include:

Tuesday, Dec. 10 in the evening

Alfalfa County Fairgrounds, Cherokee, Oklahoma
RSVP to Barber County Extension Office at 620-659-2149, or email Martin Gleason at mgleason@ksu.edu

Thursday, Jan. 9 in the evening

Edwards County Fair building, Kinsley, Kansas
RSVP to Edwards County Extension Office at 620-659-2149, or email Martin Gleason at mgleason@ksu.edu

Tuesday, Jan. 14 in the evening

Franklin County Fairgrounds - Celebration Hall, Ottawa, Kansas
RSVP to Marais des Cygnes Extension District Office at 913-294-4306, or email Katelyn Barthol at kbarth25@k-state.edu

Thursday, Jan. 16, Midday

Lane County Fair Building, Dighton, Kansas
RSVP to Walnut Creek Extension District Office at 785-222-2710, or email Jared Petersilie at jaredp11@ksu.edu

Thursday, Jan. 16

Trego County Fairgrounds, Commercial Building, Wakeeney, Kansas
RSVP to Golden Prairie Extension District Office at 785-743-6361, or email Clint Bain at bainc@ksu.edu

Thursday, Jan. 23

KSU Polytechnic College Center, Salina, Kansas
RSVP to Central Kansas Extension District Office at 785-309-5850, or email Cade Rensink at crensink@ksu.edu

More detailed information will be posted on KSUBeef.org as it is available.

NOW IS THE TIME TO MARK PASTURES INFESTED WITH OLD WORLD BLUESTEM

Old world bluestems are continuing to spread and cause issues for pastures in the Midwest. During a meeting in Manhattan, Kansas this summer, there was discussion of implementing a plan that would quarantine old world bluestem grasses. There is much debate around the quarantine and other plans were proposed such as adding them to the noxious weed list, but this shows how big of a problem these grasses have become.

During the winter months, old world bluestems are easy to spot as they are much lighter in color (like straw) compared to our native grasses. If you see areas that do contain a grass that is lighter in color, it would be wise to take a closer look to identify the grass. Once you have identified the grass as an old world bluestem, treatments need to be done in the spring. However, now is the time to prepare for spring treatments.

My recommendation for these old world bluestem patches are to mark them after cattle are removed either with flags or posts. The reason for this is that once spring comes back around and you go out to spray these patches, you may not find them as easily. The grasses can be identified in the spring, but is more difficult.

There are two chemical treatments that have been shown to work on old world bluestems in Kansas. The first is with glyphosate and the second is with imazapyr. When using glyphosate, apply 1 to 2 pound per acres when the plants has around 4 or 5 leaves. A second application of 1 to 2 pounds per acres needs to be done 8 weeks later or when the plant begins early heading. The same timing needs to be applied when using imazapyr products, but it only needs to be applied at a quarter-pound to a half-pound per acre. Prior to application of these chemicals, it’s a good idea to burn, mow, or intensively graze these areas to get new plant growth which will aide in the herbicide treatment.

Keith Harmony at Kansas State Agriculture Research Center in Hays says, “To mitigate the likelihood of getting old world bluestem, if reseeding an area to grass, you should ensure the seed company you use is a dealer that keeps track of the plant,” Harmony said. It is important that companies are free of these old world bluestem seeds in their production systems; seed contamination is a form of spreading the grass when reseeding the ground.

Another possible point of contamination is feeding hay. Harmony warned against feeding hay with old world bluestem in pastures without the grass. Hay produced from grasses that grow along the ditches often contains old world bluestem.

Hay from some states have a higher likelihood of having old world bluestem as well. Southern states such as Texas and Oklahoma are more likely to have traces of the plant.

If you need help identifying old world bluestems, please contact Brett Melton at the Concordia office at 785-243-8185 or by email, bmelton@ksu.edu.

“FARM FINANCIAL SKILLS FOR WOMEN IN AG” WORKSHOP SERIES

On farms large and small across the United States, the number of women making the decisions is growing. Against that backdrop and especially in view of the current struggling farm economy, Kansas State University and the River Valley Extension District will host a four-part series of workshops focused on helping women sharpen their farm financial management skills.

More than 25,500 women are decision makers on Kansas farms. They farm more than 14 million acres, according to the U.S. Department of Agriculture’s Census of Agriculture. Overall, in 2017, 36% of all agricultural producers across the country were women, up from 31.5% in 2012. Fifty-six percent of farms had at least one female decision maker.

“Women in agriculture will be specifically targeted for these workshops,” said Robin Reid, a farm economist with K-State Research and Extension. “They tend to be an underserved demographic, but many times are doing the books or record-keeping for the operation. By teaching them skills necessary to turn farm records into financial statements, and then using those statements to make assessments and management decisions, farm women can increase the profitability and sustainability of their operations.”

The K-State Research and Extension program will run as a series, so each evening session builds on material from the previous sessions. Participants register at a cost of \$40 for the entire four-session series. The fee covers all meals and program materials. The sessions, all on Wednesdays, are Jan. 15, Jan. 22, Jan. 29 and Feb. 5, 5:30 to 8:30 pm at the Republic County 4-H Building, 901 O Street, Belleville, will include a combination of broadcasted keynote and local speakers.

Local K-State Research and Extension agents, Monica Thayer, Kelsey Hatesohl, and Brett Melton will serve as hosts for the program and facilitate the hands-on activities and discussions. Dinner will be served at each location to start each of the four sessions.

For more information, including a list and contact information for all participating sites, visit www.AgManager.info under the Events page. Registration is available [online](#) or by contacting the River Valley District-Belleville Office at 785-527-5084.

“The downturn in the farm economy in recent years has highlighted a need for more education in farm financial management, specifically focusing on debt/asset relationships, cash flow management, financial analysis and benchmarking,” said Winsor, a farm analyst for K-State Research and Extension and farm wife.

There are many Women in Agriculture programs across the state, she said, but none that combine a state-level program with the convenience of 31 locations where networking and small group learning can occur. As many as 500 are expected to participate.

The workshop series was inspired by a similar program at Washington State University’s Women in Agriculture Conference where Reid and Winsor delivered the keynote address in 2018 to nearly 500 women across five states.

“The model of having webinar components mixed with local activities to reach a wider range of farm women was a wonderful idea for farm financial risk management education here in Kansas,” Reid said.

The program is supported by the USDA’s National Institute of Food and Agriculture through North-Central Extension Risk Management Education.

HEALTH INSURANCE AVAILABLE THROUGH THE MARKETPLACE

The Marketplace is a service provided by the federal government that helps people shop for and enroll in health insurance. Individuals and families may also be eligible for premium tax credits and other savings to make insurance more affordable.

Open enrollment on the Marketplace ends on December 15th. If you are interested in seeing your options, schedule an appointment with Monica Thayer, Family Resource Management Extension Agent, as she is a Certified Application Counselor.

Monica will be in the four counties of the River Valley District on the following days:

- Belleville (RVD Extension Office, 1815 M Street, Belleville, KS 66935), December 4 & December 10
- Clay Center (RVD Extension Office, 322 Grant Avenue, Clay Center, KS 67432), December 3 & December 9
- Concordia (RVD Extension Office, 811 Washington, Concordia, KS 66901), December 2 & December 11
- Washington (Washington County Health Department, 104 E 2nd St, Washington, KS 66968) December 6 & December 13

Call your local River Valley Extension District Office to schedule an appointment.

- Belleville 785-527-5084
- Clay Center 785-632-5335
- Concordia 785-243-8185
- Washington 785-325-2121

Contact Monica Thayer, Family Resource Management Extension Agent, at 785-527-5084 or mthayer@ksu.edu for more information.

River Valley District Lease Survey Summary Meeting

**Monday, January 6, 2020
4-H Building
Fairgrounds, Belleville, KS**

**Presenters: Dr Mykel Taylor
John Forshee & Brett Melton**

POLLORUM TESTING RESUMES FOR POULTRY SHOWS, TRADES, & SWAPS

The Kansas Department of Agriculture Division of Animal Health has announced that Kansas will once again require Pullorum testing for all places poultry are brought together after a new supplier has made the testing agent available. As before, this testing requirement does NOT apply to waterfowl or meat-type broilers.

Persons who desire to test poultry and sign the Federal form must be licensed by the state of Kansas. For information about becoming a testing agent, go to <https://www.asi.k-state.edu/research-and-extension/poultry/npip-testing-program/> for a short video, reading material, and a quiz. After passing the quiz, names can be passed to The Division of Health for license approval (\$20 annually at last notice). For more information about testing, contact the Kansas Division of Animal Health at 785-564-6601.

To order stained antigen, contact Charles River Labs at 1-860-885-0477. Ask for Pullorum-Typhoid Plate Antigen, product number 10105346. Packaging is similar to before which requires the purchase of 1000 tests. It's only 14 cents per test, but the entire bottle will cost \$136 plus significant shipping cost. At this time we do not know how far out the date of expiration will be so be sure to ask that question before ordering a bottle to test a small number of birds.

Source: Dr. Scott Beyer, K-State Poultry Specialist

KAMS

Kansas Agricultural Mediation Services

1-800-321-FARM (3276)

Call toll-free to discuss options that may be available for farms financial issues.



CHOOSING AND CARING FOR YOUR CHRISTMAS TREE

I know we are still a few weeks away from selecting your Christmas trees, but I wanted to give you some helpful tips and tricks to pick out the best, longest lasting tree before you start looking.

When choosing an already cut Christmas tree there are a few things you should check to make sure the tree isn't too far gone, before purchasing the tree. If the needles on the tree are a dull, grayish-green color or feel stiff and brittle you should not purchase that tree. The needles are telling you the tree has been cut for a while and has lost too much moisture. If the needles pull off the tree easily that is also a sign of too much moisture lost. You want to find a tree that is green and the needles hold strong when you try and pull them off. The needles on a freshly cut tree should ooze a little if you break them apart.

Once you have brought your tree home, you want to recut the trunk. Make a new cut about one inch above the original cut. Making this fresh cut will open up any clogged water-conducting tissues. Once you have made the cut, place the trunk immediately in warm water. This will make sure the tree is taking up water right away – to be nice and green throughout the season.

When deciding on where to place your tree, you want to place it in the coolest spot as possible. I know it can be hard to find the perfect place, that isn't in the middle of the room, but you want to keep it away from as much heat as possible. Avoid places near a fireplace, wood-burning stove, heat duct, and the television set. The heat put off from places like these will cause excess water loss from your tree, causing it to die quicker. To make sure your tree stays healthy you will want to make sure the water reservoir for your tree stays filled. If the reservoir loses enough water to expose the bottom of the trunk you will have to recut the trunk again to expose new tissue.

I hope these tips and tricks will help you keep your Christmas tree green and healthy for the holidays. If you have any questions feel free to stop by or contact me in the in the Washington office by calling 785-325-2121 or emailing khatesohl@ksu.edu.

POINSETTIA CARE

Poinsettia varieties will stay attractive long into the new year if given proper care. Here are some important tips to keeping your poinsettia thriving. Place your poinsettia in a sunny window or the brightest area of the room, but be sure to not let it touch any cold window panes. The day temperature of the room should be 65 to 75°F with 60 to 65°F at night. When temperatures get above 75°F it will shorten the bloom life, and below 60°F may cause root rot. You will want to move plants away from drafty windows at night or draw drapes between them to avoid damage from the cold.

Poinsettias are somewhat finicky in regard to soil moisture. You want to avoid overwatering because poinsettias do not like "wet feet", which means they don't like to sit in water. On the other hand, if the plant is allowed to wilt, it will

drop some leaves. So how do you maintain the proper moisture? You should examine the potting soil daily by sticking your finger about one-half inch deep into the soil. If it is dry to this depth, the plant needs to be watered. When it becomes dry to the touch, water the plant with lukewarm water until some water runs out of the drainage holes in the bottom of the pot, then discard the drainage water. I hope these tips will help keep your poinsettia thriving into the new year. If you have any questions feel free to stop by or contact me in the Washington office by calling 785-325-2121 or emailing khatesohl@ksu.edu.

CHOOSING A PLANT SAFE ICE MELT

After an icy winter, have you ever noticed the plants around your walkways or driveways looking burnt or are patches dying out? If so, it's time to look at the deicer you are using and find a more plant safe material to use. Keep in mind deicers can damage concrete surfaces as well as the plants and grass. There are five main materials that are used as chemical deicers; calcium chloride, sodium chloride, potassium chloride, urea, and calcium magnesium acetate.

Calcium chloride is the traditional ice-melting product. Though it will melt ice to approximately -25 degrees F, it will form a slippery/slimy surface on concrete and other hard surfaces. Plants are not likely to be harmed unless excessive amounts are used.

Rock salt is sodium chloride and is the least expensive material available. It is effective to approximately 12 degrees F, but can damage soils, plants and metals.

Potassium chloride can cause serious plant injury when washed or splashed on foliage. It is effective to approximately 25 degrees F. Both calcium chloride and potassium chloride can damage roots of plants.

Urea is a fertilizer that is sometimes used to melt ice. Though it is only about 10% as corrosive as sodium chloride, it can contaminate ground and surface water with nitrates. Urea is effective to approximately 21 degrees F.

Calcium magnesium acetate (CMA), a newer product, is made from dolomitic limestone and acetic acid (the principal compound of vinegar). CMA works differently than the other materials in that it does not form a brine like salt but rather helps prevent snow particles from sticking to each other or the road surface. It has little effect on plant growth or concrete surfaces, and is effective to approximately 20 degrees F.

Limiting amounts and usage of these products will decrease the chance of injury to plants. Problems can occur when they are used excessively and there isn't any rainfall to wash/leach the material away from the area. When applying deicers use them in moderation. Don't over apply to make sure all the ice and snow melts away. These products are meant to help break up the ice so it can be removed, not dissolve it completely. So when using chemical deicers remember to use them in moderation to protect your concrete and your plants. If you have any questions feel free to stop by or contact me in the Washington office by calling 785-325-2121 or emailing khatesohl@ksu.edu.

CONTROLLING VOLUNTEER TREES

Trees are a vital part of our landscapes, but there are situations where trees need to be controlled. Volunteer trees often come up in the wrong place, whether that is in a pasture or in your flowerbed. Sometimes control measures are needed to control the spread of volunteer trees.

Volunteer trees can be difficult to control because some species resprout after cutting and some species will not resprout. Of the species that do not resprout, cutting is an effective control method. For example, eastern redcedar is a very common species that will not resprout after cutting. Some of those species that do resprout after cutting are Siberian elm, hackberry, Osage orange (hedge tree), oak, ash, aspen, cottonwood, maple, and sycamore, but these are just a few of the trees that resprout. If you are trying to eliminate any of these trees, either they need to be dug out or the cut stump will need to be treated with a herbicide after cutting.

When I say volunteer trees, I mean those that come up from a seed, not suckers that originate from the roots of an existing tree. The recommendations given in the remainder of this article are designed to kill volunteer trees not suckers. Using herbicides on suckers will damage and possibly kill the original tree. Trees that commonly produce suckers include honeylocust, black locust, hackberry, crabapple, and cottonwood. It is also possible for larger trees of the same species to become root-grafted. Even though root-grafted trees are not suckers, they do share materials between the individual root systems and therefore herbicides used to treat one tree can be passed along to its neighbor.

Let's say you have a tree that you want to control that is a volunteer and there is no other tree of the same species close enough to be root-grafted, what should be done? Well, if the tree is too large to be dug out and moved, then you should cut the tree down and use a herbicide on the cut stump.

The next question is what herbicide should be used on the stumps. Triclopyr and glyphosate are the herbicides most commonly available to homeowners. Triclopyr is found in many brush killers and glyphosate is found in Roundup as well as numerous other products. Read the label before purchasing to make sure that a cut stump treatment is listed.

Most often the undiluted product is applied to the stump immediately after cutting. A paint brush is often used for the application if the stump is close to other plant material. It is important that the stump is treated immediately or at least within 5 minutes of being cut.

Trees do not need to be actively growing to be controlled. Actually, this time of year is a very good time to treat as long as the applications are made when the temperature is above freezing. If you have any questions feel free to stop by or contact me in the Washington office by calling 785-325-2121 or emailing khatesohl@ksu.edu.

**River Valley District Offices Will Be Closed
December 12 For Staff Training
December 24 & 25 For the Christmas Holiday
January 1 For the New Year Holiday**

INNOVATION IMPERATIVE TO OUR SUCCESS IN RURAL AMERICA

The Extension Agents of the River Valley District recently attended the Annual Conference of K-State Research and Extension at K-State where our theme was Innovate. Our Keynote Speaker was an Extension Director from Utah named Paul Hill, co-author of the book *Can Extension Change? The Innovation Imperative*.

The talk and book were both written specifically for an Extension audience but many of the concepts really apply to each of us as we provide leadership for our farms, businesses, and organizations. The Extension Task Force on Innovation identified five characteristics of an innovative leader that I think are worth sharing. Paul Hill and Keith L. Smith outline these five characteristics in their book as follows:

Risk Taker – An innovative leader learns from failure, both their own and that of others. The innovative leader creates an environment that accepts failures and risks as an important part of the process. The leader must be flexible and agile in order to creatively seek solutions to problems or challenges.

Visionary – An innovative leader has the ability to imagine a future state of the business or organization and has the ability to communicate that vision with others while understanding the current state of affairs. The leader possesses creativity and strategic thinking while inspiring those traits in others to accomplish a common goal or vision.

Collaborator – An innovative leader builds relationships with a diverse set of individuals. The leader navigates rules and regulations effectively while incorporating teamwork and the many talents of others. The leader provides opportunities for professional development, improvement of skills, and creativity. The leader utilizes the skillset of a diverse set of individuals in order to create and implement innovation.

Self-Aware – An innovative leader is self-aware and highly in-tune emotionally and relationally. A leader knows his or her own strengths and weaknesses and seeks input from those that counterbalance their own traits. A true leader recognizes and challenges assumptions and acknowledges he or she does not know all the answers.

Communicator – An innovative leader communicates early and often while encouraging others to identify any issues that may arise. The leader utilizes existing technology to find solutions to problems and is constantly striving for greater learning and understanding of emerging technology. The leader finds ways to connect the dots to find solutions and communicates that effectively to reach the greatest number of individuals.

In my professional roles I have had the honor to work with many top-tier ag producers and business owners as well as working with some outstanding leadership in organizations. As I reflect, I realize that that my best farm customers, my most successful business owners, and the most inspiring organizational leaders all shared these five traits! Would it not behoove us to analyze ourselves against these traits, determining where we excel and for which traits we will want to challenge ourselves to improve upon? As a farm owner with employees, we may recognize that we are not a great communicator and so we must make the decision to be direct and

intentional about conveying our vision of success each day to our employees. As a business owner, we may get so caught up in the day to day operation that we forget to step back and consider our strengths and weaknesses and determine who we might collaborate with to shore up those areas of weakness. As an organizational leader, we may get so caught up in the tradition of our group that we may not take time to envision an organization that is relevant and meets the needs of the next generation living within our community.

Finally, I would like to add one concept that I think the innovative leader always considers and this is to have a contingency and a succession plan. The innovative leader always considers and plans for the possible alternatives to their vision of success. In addition, the innovative leader understands that they are not immortal. They understand that a great plan always includes identifying, training, and supporting someone that will take the reins of the farm, business, or organization and continue forward with innovative leadership.

FACTORS TO CONSIDER IN WINTER SURVIVAL OF WHEAT

We have already had a taste of winter and questions begin to arise as to the survivability of late planted wheat. K-State Research and Extension Wheat and Forages Specialist, Romulo Lollato, shares these factors that may affect the survivability of wheat over the winter.

During the fall, winter wheat seedlings spend approximately the first month developing their first leaves, the crown, and a secondary root system. All the while, the seedlings are building and storing the energy needed to go through the cold acclimation process and survive the winter. Normally, seedlings will need a minimum of 4-5 leaves and one or two tillers to build up enough stored energy reserves to survive the winter. Ideally, the wheat plant would have 3 to 5 tillers prior to the onset of the winter. Seedlings will have a better chance of winter survival if their crowns are well developed, in firm soil, about one inch below the soil surface.

Winter hardiness or cold tolerance is a physiological process triggered by gradually cooling temperatures in the fall. During the process of cold acclimation, certain genes within winter wheat begin to initiate the production of “anti-freeze” type substances to protect the cell membranes. The process of cold acclimation within a sufficiently developed wheat seedling begins when soil temperatures at crown depth fall below about 50 °F.

Below 50 °F, there is an inverse relationship between crown temperatures and cold acclimation, meaning that plants will acclimate twice as fast when crown temperatures are 32 °F as compared to 40 °F. Photoperiod also plays a role in the process of cold hardening, with shorter days and longer nights helping initiate the process. Winter survival depends on the crown remaining alive and the substances that produce cold acclimation are most needed within the crown.

It takes about 4 to 6 weeks of soil temperatures below 50 °F at the depth of the crown for winter wheat to fully cold harden. The colder the soil at the depth of the crown, the more quickly the plants will develop winter hardiness. However, cold hardiness is not a static state.

After the cold hardening process begins in the fall, wheat plants can rapidly un-harden when soil temperatures at the depth of the crown get above 50 °F. However, the plants will re-harden as crown temperatures cool below 50 °F again. By the time winter begins, winter wheat will normally have reached its maximum level of cold hardiness. Wheat in Kansas normally has its maximum level of winter hardiness from mid-December to mid-January, unless there are high temperatures during that period.

Even during the depths of winter, winter wheat is still respiring and roots may be growing – as long as the ground is not frozen. It is not unusual to find a much more developed crown root system in early February than existed in early December. It is also not unusual to see some green leaves intermingled with straw-colored or pale leaves in the winter. The fact that some of the leaves have some green color does not mean the wheat is not cold tolerant.

Once winter wheat has reached the level of full cold hardiness, it will remain cold hardy as long as crown temperatures remain below about 32 °F – assuming the plants had a good supply of energy going into the winter.

If soil temperatures at the crown depth rise to 50 °F or more for a prolonged period, there will be a gradual loss of cold hardiness, even in the middle of winter. The warmer the crown temperature during the winter, the more quickly the plants will start losing their maximum level of cold hardiness. Winter wheat can re-harden during the winter if it loses its full level of winter hardiness, but will not regain its maximum level of winter hardiness.

Even at its maximum level of winter hardiness, winter wheat can still be injured or even killed by cold temperatures if temperatures at the crown level reach single digits or if plants are subjected to long periods when soil temperatures approach the minimum survival temperatures. Thus, winter survival is affected by not only how cold it gets, but also the duration of cold temperatures. As soil temperatures at the crown level rise to 50 °F or more, usually in late winter or spring, winter wheat will gradually lose its winter hardiness entirely. Photoperiod also plays a role in this process, and there are varietal differences in winter hardiness. When the leaves switch from being prostrate to upright, the plants will have completely de-hardened.

Good top growth of wheat doesn't necessarily indicate good root development. Poor root development is a concern where conditions have been dry. Where wheat plants have a good crown root system and two or more tillers, they will tolerate the cold better. If plants are poorly developed going into winter, with very few secondary roots and no tillers, they will be more susceptible to winterkill or desiccation, especially when soils remain dry. Poor development of secondary roots may not be readily apparent unless the plants are pulled up and examined (Figure 3). If secondary roots are poorly developed, it may be due to dry soils, poor seed-to-soil contact, very low pH, insect damage, or other causes.

Soil temperatures at crown level depend on snow cover, moisture levels in the soil, and seedbed conditions. Winterkill is possible if soil temperatures at the crown level (about one-inch-deep if the wheat was planted at the correct depth) fall into the single digits. If there is at least an inch of snow on the ground, the wheat will be insulated and protected, and soil temperatures will usually remain above the critical level.

In addition, if the soil has good moisture, it is possible that soil temperatures at the crown level will not reach the critical level even in the absence of snow cover. However, if the soil is dry and there is no snow cover, there may be the potential for winterkill, especially on exposed slopes or terrace tops, depending on the condition of the plants. During the 2019-20 growing season, most of the wheat growing region in the state has not received substantial precipitation for over 30 days and dry soils and loose seedbeds warm up and cool down much faster than moist or firm soils, contributing to winter injury.

If wheat is planted at the correct depth, about 1.5 to 2 inches deep, and is in good contact with the soil, the crown should be about one inch below the soil surface and well protected from the effects of cold temperatures. If the wheat seed was planted too shallow, then the crown will have developed too close to the soil surface and will be more susceptible to winterkill. Also, if the seed was planted into loose soil or into heavy surface residue, the crown could be more exposed and susceptible to cold temperatures and desiccation.

Damage from winter grain mites, brown wheat mites, aphids, and crown and root rot diseases can also weaken wheat plants and make them somewhat more susceptible to injury from cold weather stress or desiccation.

Fall armyworms and army cutworms may have fed on emerging wheat in the previous month, leaving bare patches. If the worms were fall armyworms, they have died by now. If the worms were army cutworms, they will overwinter where they are in the soil and continue to feed on wheat plants anytime the temperature is 45 °F or higher from now through April.

If you have bare patches now, it is a good idea to keep an eye on them and if they slowly expand over the winter, get out and check in the soil around the base of the plants to see if there are small worms curled up about an inch or two below the surface, especially in loose soils. A spot application of a registered insecticide on a warm (above 55 °F) winter afternoon will do a pretty good job of controlling the worms and allow the plants to come back in the spring as these worms only feed on the above-ground leaf tissue, and not on the roots or crown.

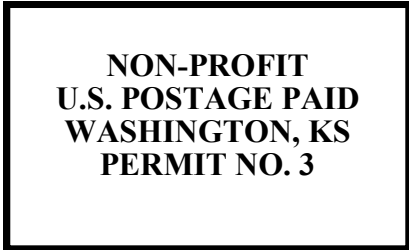
Symptoms of winterkill will be more apparent when the weather warms up and plants start to green up early spring. If plants are killed outright by cold temperatures, they will not green up next spring. But if they are only damaged, it might take them a while to die. In some cases, damaged plants will green up and then slowly go “backwards” and eventually die.

Direct cold injury is not the only source of winter injury. Under dry soil conditions, wheat plants may suffer from desiccation. This can kill or weaken plants, and is actually a more common problem than direct cold injury.

Ideally wheat plants should have at least 1-2 tillers and 3-5 leaves, as well as a good crown root system development, when going into the winter. However, many Kansas wheat fields were sown relatively late during the 2019-20 growing season, and has faced below-average temperatures, which slowed down crop development. A fall with open field conditions, gradually falling soil temperatures, and little snow cover until freeze-up, will contribute to winter hardiness development. During the winter, moist and firm soil, as well as at least an inch snow cover, will help buffer and insulate crown temperatures and increase the chances of winter survival.

River Valley Extension District

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Address Service Requested

RIVER VALLEY DISTRICT

“2019-2020 UP-COMING MEETINGS & EVENTS”

DATE	TIME	PROGRAM	LOCATION
Dec. 12		RVD Offices Closed for Staff Training	
Dec. 24 & 25		RVD Offices Closed for Christmas Holiday	
Jan. 1		RVD Offices Closed for New Years Day Holiday	
Jan. 6	7:00 pm	RVD Lease Survey Summary Meeting w/Mykel Taylor	4-H Building, Fairgrounds, Belleville
Jan.15, 22 , 29 & Feb5	5:30-8:30pm	Farm Financial Skills for Women in Ag Workshop Series (Wed.)	4-H Building, Fairgrounds, Belleville
Jan. 23		Calving School	KSU Polytechnic College Center-Salina
Feb 13-Mar 26	5-9pm	Women In Ag Series (Thursdays)	PrairieLand Partners Mtg. Rm-Clay Center