

Ds Notes
01/25/21

Winning-The-Game

“Winning-The-Game” is a grain sorghum marketing workshop being held on Wednesday, February 10th, 2021 from 9:30 a.m. – 2:30 p.m. at the St. Nicholas Parish Center, 720 East 6th Street, in Kinsley, KS

The focus of the workshop includes:

- Developing **Pre-harvest Marketing Strategies** for the **2021 Sorghum crop**
- Using cost of production for price strategy targets
- Seasonal price trend-based pre-harvest strategies
- Using seasonal *flexibility* in 2021 Sorghum Marketing Plans
- Pre-harvest Marketing Tools
 - o Forward Contracts
 - o Basis Contacts
 - o Hedge-to-Arrive (HTA) contracts
 - o Futures Hedge (short / sell)
 - o Buying Put/Call Options

Please register so meals can be provided. Cost of the program (\$10 pre-register or \$12 walk-in) includes the meal. Registrations can be made at Edwards County Extension Office (620-659-2149) or Hodgeman County Extension Office (620-357-8321.)

This program is being sponsored by KS Farm Bureau and its local agents, K-State Research and Extension, and the Extension Councils from Edwards and Hodgeman, and North Central Extension Risk Management Education.

2021 wheat variety fall forage yield comparison

Fall forage yield is an important aspect of dual-purpose wheat production. In this system, wheat is typically sown earlier than for grain only production, at higher seeding rates and with additional nitrogen fertilizer to maximize forage production.

The weather experienced during the fall is crucial to determine average level of forage yield, with warm and moist weather typically resulting in greater forage yield than cool and dry weather conditions. Management practices that also maximize forage yield are early sowing, higher seeding rates, placement of in-furrow phosphorus fertilizer with the seed at sowing, and fall nitrogen fertilization.

While the weather is typically the largest player in determining fall forage production, followed by management, there are also differences among wheat varieties in forage production potential. Thus, every year, the K-State Wheat Production Group compares the forage yield of several commonly grown wheat varieties and upcoming lines. This test is usually performed in the South Central Experimental Field near Hutchinson, Kansas (Figure 1), and the forage sampling occurs sometime in December (Table 1).



Figure 1. Dual-purpose wheat trial near Hutchinson, KS. The trial was sown on September 17, 2020, with 50 lbs DAP/acre applied in furrow, and 90 lbs N/acre broadcast incorporated prior to sowing. Photo by Romulo Lollato, K-State Research and Extension.

At the sampling conducted on December 22, 2020, there were no significant differences in fall forage yield among the 34 wheat varieties tested. Average forage yield was low, ranging from 470 to 1,058 pounds of dry matter per acre and averaging 737 pounds of dry matter per acre. While the numerical differences between some varieties seem large, we highlight that these differences were not significant. This low forage production was a function of the combination of an extremely dry fall, which had enough moisture for a good germination and crop establishment (Figure 1) however with limited subsequent moisture (total of ~3 inches between sowing and forage measurement) and low temperatures (average 49°F). The dry and cool conditions experienced during the fall did not allow for much forage biomass production, which was reflected in the measurements shown in Table 1.

Another important aspect of dual-purpose wheat production is how long each variety can be grazed in the spring. This is measured as the date for *first hollow stem*, and varieties can differ in as much as 20-30 days in achieving first hollow stem in the spring. The Wheat Production Group at K-State uses this very same trial to measure first hollow stem during

late February and early March, so stay tuned to the eUpdate for updates on first hollow stem progression among our wheat trials.

Table 1. Fall forage yield of wheat varieties sown under a dual-purpose system near Hutchinson, KS. Forage biomass was collected on December 22, 2020. Data is shown in pounds of dry matter per acre (lbs DM/ac). There were no statistically significant differences among the varieties evaluated. Varieties are ordered alphabetically.

Variety	Forage dry matter (12/22/2020)
	----- lbs DM/ac --- ----
10BC329-17-5	714
AP EverRock	733
AP Roadrunner	858
Buckhorn AX	1058
Canvas	782
Crescent AX	704
High Country	789
KS12DH0156-88	851
KS13DH0041-35	773
KS Dallas	601
KS Hamilton	758
KS Hatchett	829
KS Silverado	664
KS Western Star	720
LCS Atomic AX	532
LCS Helix AX	679
LCS Julep	952
LCS Photon AX	735
LCS Revere	833
Long Branch	723
MS Maverick	729
NUSAKA15-3	808
OCW04S717T-6W	751
OK12912C-138407-2	739
OK16D101089	952
OK Corral	839
Paradise	470
Rock Star	745

Showdown	548
Smiths Gold	711
WB4269	654
WB4401	554
WB4699	642
Zenda	620
Average	737
Minimum	470
Maximum	1058

Romulo Lollato, Extension Wheat and Forages Specialist, lolato@ksu.edu

Roberta Rebesquini, Visiting Undergraduate Scholar, rbr@ksu.edu

World of Weeds: Marestalk

Marestalk (*Erigeron canadensis*), known as horseweed to weed scientists, is a troublesome weed in several cropping systems in Kansas and beyond. It is classified in the Aster family, which is a very large group of plants that also includes several marestalk “look-alikes”. Table 1 briefly compares marestalk with one of those look-alikes, dwarf fleabane.

Table 1. Key features that distinguish marestalk from dwarf fleabane

	Marestalk	Dwarf fleabane
Distribution	Throughout Great Plains	Eastern and Central Great Plains
Height	Generally 1.5 to 3 feet; up to 6 feet or more	1 foot
Stem	Bristly hairs, unbranched from base through flowers	Hairs pressed upward, branches near base

Ecology and identification of marestalk

Marestalk is native to North America and grows throughout the Great Plains. It can be found in fields, rangeland, lawns, and other disturbed sites. There is considerable variation in identifying features among marestalk populations, which can make identification troublesome.

Marestalk is an annual plant that typically emerges in late fall or early spring and flowers throughout the summer. Marestalk begins as a rosette, and the stem elongates to about 1.5 to 3 feet prior to flowering, although some plants may reach heights of greater than 6 feet (Figure 1). Stems are covered with coarse hairs. Leaves are oblong in shape with margins that range from entire in the rosette to toothed as the stem elongates. Leaf surfaces range from smooth to covered with coarse hairs and are lighter in color on the lower surface. Leaves are generally crowded together on the stem in an alternate arrangement, but they are less crowded near the top of the stem. Leaves may be attached by a short petiole or may be attached to the stem without a petiole.



Figure 1. Left to right: Marestail rosette, plant during stem elongation, marestail leaf showing toothed margins and bristly hairs, and marestail inflorescence. Photos by Sarah Lancaster and Dallas Peterson, K-State Research and Extension.

Marestail flowers are found in a branched inflorescence at the top of the plant that is said to resemble a mare’s tail (Figure 1). They have white to pinkish ray florets that surround yellow disk florets. Each inflorescence is about ¼ to 1/3 inch in diameter and surround by leaf-like bracts. Each seed is enclosed in an achene, appearing somewhat like a small dandelion seed with white bristles at one end.

Marestail possesses a strong, pungent smell and may cause skin irritation in humans and livestock. Marestail is known to be allelopathic, inhibiting the germination and growth of some plant species.

Management

Marestail is most problematic in reduced or no-tillage fields. Marestail populations in Kansas have developed confirmed resistance to glyphosate and ALS-inhibiting herbicides. In addition, application timing is key. Marestail plants that are approximately 4 inches tall are better controlled by herbicides than either rosettes or 8-inch plants. Some herbicides that effectively control marestail are listed in Table 2. Be sure to consult herbicide labels for use rates appropriate for your crop and application timing.

Table 2. Effective herbicides for the control of marestail.

Herbicide (Group)	Timing relative to weed emergence
Sonic (2+14)	PRE
Fierce XLT (2, 14, 15)	PRE
Authority Supreme (14, 15)	PRE
Fierce MTZ, Kyber (5, 14, 15)	PRE
Lexar (5, 15, 27)	PRE
Trivence (2, 5, 14)	PRE, POST
Canopy EX (2)	PRE, POST
Envive (2+14)	PRE, POST
Sharpen (14)	PRE, POST
Acuron (5, 15, 27)	PRE, POST

Expert (5, 9, 15)	PRE, POST
2,4-D (4)	POST
Scorch (4)	POST
XtendiMax, Clarity (4)	POST

The use of trade names is for clarity to readers and does not imply endorsement of a particular product, nor does exclusion imply non-approval. Always consult the herbicide label for the most current use requirements.

For more information on controlling marehail, please consult the [2021 Chemical Weed Control for Field Crops, Pastures, Rangeland, and Noncropland](#), K-State publication SRP-1162. **References:** McCauley et al., 2019
 Sarah Lancaster, Extension Weed Science Specialist, slancaster@ksu.edu

Emergency measures to control wind erosion

Cropland can be quite susceptible to wind erosion under some conditions, particularly through the winter. Cooler-than-normal temperatures and drought conditions may limit vegetative growth and cover. Burning, tillage, and little crop residue can create a particularly serious hazard. Care should be taken to maintain crop residue through reducing tillage and careful to not remove too much residue through grazing or haying, such as leaving strips unharvested (Figure 1a) or capturing forage sorghum regrowth to occur (Figure 1b).



Figure 1a. Strips of unharvested corn stalks to prevent snow and soil blowing. Photo by John Holman, K-State Research and Extension.



Figure 1b. Forage sorghum regrowth after harvest. Photo by John Holman, K-State Research and Extension.

Winter wheat and other fall-planted crop fields also may be susceptible during periods of low cover in the winter and early spring. This can result in fields blowing out (Figure 2). This is particularly true during drought. Marginally productive cropland may not produce sufficient residue to protect against wind erosion. In addition, overgrazed or poorly vegetated rangeland may also be subject to wind erosion. Recent wind conditions have been conducive to erosion (Figure 3a), reduced visibility making for dangerous driving conditions (Figure 3b), given the peak wind gusts that have been recorded in Kansas over the last few days (Figure 4).





Figure 2. Winter wheat stand blown out by wind erosion. Photos by John Holman, K-State Research and Extension.



Figure 3a. Blowing soil in Colby on October 11, 2020. Photo taken by Lucas Haag, K-State Research and Extension.



Figure 3b. Blowing soil reducing visibility. Photo by John Holman, K-State Research and Extension.

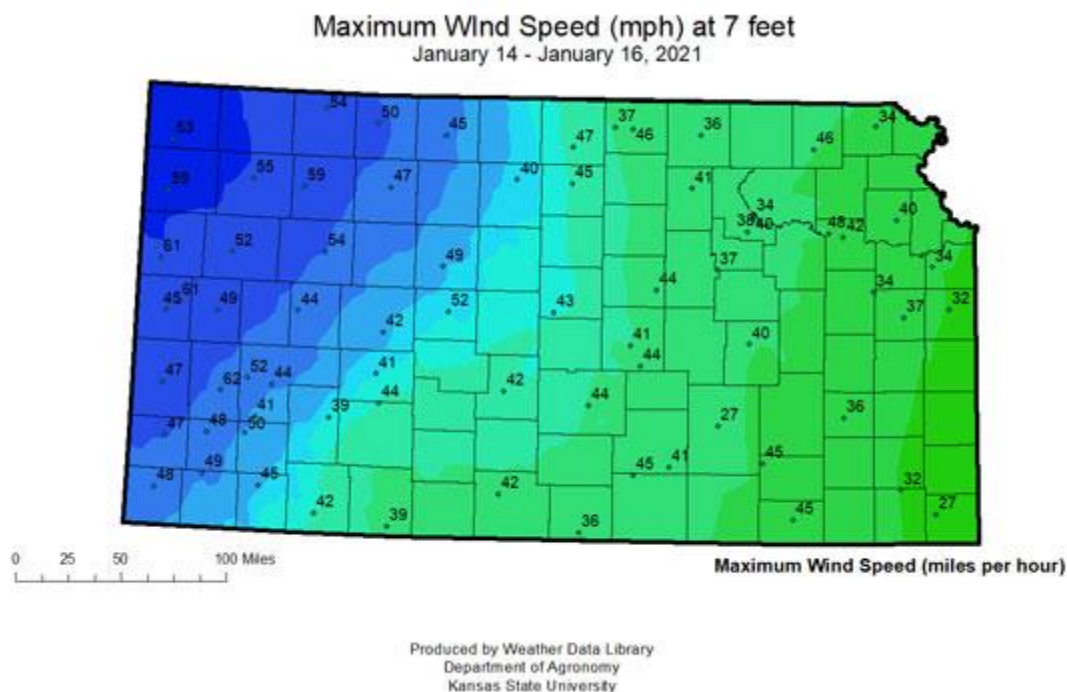


Figure 4. Peak 24-hour wind gusts measured at 2 meters (7 feet) between January 14 and January 16, 2021. Map by Kansas Weather Data Library.

It is important to monitor field conditions and identify fields that are in a condition to blow. Such conditions include low vegetation cover and a high proportion of erodible-sized clods (less than 1 mm in size, or about the thickness of a dime). It is better to be proactive and treat potential problems before they occur than to try to react and catch up once a field is actively eroding. Once soil movement has started, it is difficult to completely stop further damage. However, prompt action may prevent a small erodible spot from damaging an entire field or adjacent fields.

Emergency control measures

Mulching. If wind erosion has already started, it can be reduced by mulching with manure or other anchored plant materials such as straw or hay. To be effective, at least 1.5 to 2 tons per acre of straw or grass or 3 to 4 tons per acre of corn or sorghum stover are needed to control areas of erosion, and the straw or hay must be anchored. Residue can be spread by hand, spreader or other mechanical equipment.

A stubble puncher or disk set straight may be used to anchor residue and prevent it from being blown away. Wet manure application should be 15 to 20 tons/acre and not incorporated into the soil. Care should be taken to not add wheel paths parallel to the wind direction as the mulch is applied. Traffic areas and wheel paths can contribute to wind erosion.

Generally, mulches are practical only for small areas, so mulching is most effective when applied before the soil starts to move. Producers should scout fields to identify areas that might be susceptible to wind erosion (low vegetation cover and a high proportion of erodible-sized clods less than the thickness of a dime) if they plan to use mulch or manure to controls.

Emergency tillage. Emergency tillage is a last-resort method that can be effective if done promptly and with the right equipment. The goal of emergency tillage is to make the soil surface rougher by producing resistant clods and surface ridges (Figures 5 and 6). A rough surface reduces wind speed. The larger clods and ridges resist movement and provide traps to catch the moving soil particles.

Chisels with single or only a few tool ranks are frequently used to roughen the soil surface. The combination of chisel point size, speed, and depth that produces the roughest surface with the firmest, most resistant clods should be used for emergency tillage.

Research has shown that a narrow chisel (2 inches wide) on 24- to 54-inch spacing, operated 3 to 6 inches deep will usually bring enough resistant clods to the surface to control erosion on fine-textured (clay-based) soils. A medium shovel (4 inches wide) can be effective for medium-textured soils (loamy soils). Spacings should typically be narrower where there is no cover and wider in areas of partial cover, such as a growing crop or plant residue.

If the erosion conditions recur or persist, a second, deeper chiseling should split the first spacing. Tillage passes should be made perpendicular to the direction of the prevailing wind causing the erosion. First tillage passes should be made on the upwind side of blowing soil to stop the advancing front, and slow the time the furrows are filled in with blowing soil (if tillage is done on the downwind side the furrows will fill rapidly).



Figure 5a. Emergency tillage across 50 percent of the field. Photo courtesy of USDA-ARS Engineering and Wind Erosion Unit, Manhattan, Kansas.



Figure 5b. Emergency tillage perpendicular to wind direction and angled to last tillage operation. (photo by John Holman).



Figure 5c. Tillage to roughen soil surface (photo by John Holman).



Figure 6. Widely spaced shanks used for emergency tillage, making clods to roughen the soil surface. Photo courtesy of University of Nebraska.

If emergency tillage is to be used in growing crops that are covered by crop insurance, producers should check with their crop insurance providers regarding emergency tillage insurance rules. Emergency tillage does not significantly reduce wheat yields of an established crop. Studies in southwest Kansas and Manhattan demonstrate that the use of a chisel on 40-inch spacing reduced wheat yields by 5.5 bushels per acre on the emergency tillage area, due to direct injury caused by the tillage action. Since the entire field is rarely tilled when performing emergency tillage, the overall yield reduction for the field will be less than 5.5 bushels per acre. In fact, yields in the untilled portion of the field actually can be increased by the use of emergency tillage since that tillage will reduce the amount of damage to wheat caused by wind erosion. The overall reduction in yield for fields that have received emergency tillage has been as little as 1 bushel per acre in the studies mentioned above.

Performing emergency, clod-forming tillage across the field is effective in reducing wind erosion. The degree of success of emergency tillage is highly dependent on climatic, soil, and cover condition. It is often not necessary to till the entire field, but rather, it is very effective to perform emergency tillage passes across 50% of the field (till a pass, leave a pass, repeat). Narrow chisel spacing (20 to 24 inches) is best for this method. Emergency tillage is most effective if there is some subsoil moisture and clod formation.

If 50% of the area has been tilled and wind erosion persists, the omitted strips can be emergency-tilled in a second operation to make result in full-cover tillage. If a second tillage pass is needed, it should be at a greater depth than the first pass. Under some conditions 50% of the field may not need to be tilled, but 20-30% tilled might be effective if there is some residue cover and lower potential for erosion. Wide-chisel spacings are used in the full-field

coverage method. The space between chisel grooves can be chiseled later should wind erosion persist.

All tillage operations should be perpendicular or across the direction of the prevailing or eroding wind. For most of Kansas, this means that an east-west direction of tillage is likely best.

The best wind erosion control is created with maximum surface roughness when resistant clods cover a major portion of the surface. Research shows that lower travel speeds of 2 to 3 mph generally produce the largest and most resistant clods. However, speeds of 5 to 7 mph produce the greatest roughness. Because clod resistance is usually reduced at higher speeds, the effect may not be as long-lasting as at lower speeds. Thus, higher speeds are recommended where erosion is already in progress, while lower speeds might be a better choice in anticipation of erosion.

Depth of tillage usually affects clod stability more than travel speed, but optimum depth is highly dependent on soil conditions (such as moisture level) and compaction. Deeper tillage passes can produce more resistant clods than shallow passes.

If the problem is severe and the wheat has already been destroyed or the ground is bare, chisels 4 to 6 inches wide on a 24- to 30-inch spacing will generally provide enough clods to control erosion. Operating depth should be 4 to 6 inches.

Controlling wind erosion on sandy soils

Loose sandy soils require a different tillage approach to effectively control erosion. Clods cannot be formed at the surface that will be sufficiently resistant to erosion on sandy soils. Erosion resistance is achieved through building ridges and furrows in the field to provide adequate protection.

A 14-inch moldboard lister spaced 40 to 50 inches apart (or an 8-inch lister on 20- to 24-inch spacing) is needed to create sufficient surface roughness. The first listing pass should be shallow, not more than about 4 to 5 inches deep. Then, when additional treatment is needed, the depth should become progressively deeper. Alternatively, for the second treatment, the original ridge may be split.

The addition of manure to the ridged surface may also be beneficial in these situations.

Tips for effective emergency tillage

- Watch the weather forecast for periods of high winds, particularly when soils are dry.
- Assess residue and plant cover prior to the wind blowing, and take preventive action with emergency tillage. It is much easier to prevent the problem from starting than to stop erosion after it begins. If you wait, the soil only gets drier and some moisture is needed to form clods.
- Use the combination of tractor speed, tillage depth, and chisel point size that will produce the roughest surface with the most resistant clods. If wind erosion is anticipated, do some test tillage prior to an erosion event to see what tillage tool, depth, and speed will provide adequate clods and surface roughness.
- Always start at the upwind location when the field is blowing. A sufficient area upwind of the eroding spot should be tilled, in addition to the area presently blowing.

- Till in a direction perpendicular to the prevailing wind direction. For row crop areas it may be necessary to compromise direction and follow the row pattern. Maintain as much anchored stubble in the field as possible.

For more information, see K-State Research and Extension publication MF2206, *Emergency Wind Erosion Control*, at: <http://www.ksre.ksu.edu/bookstore/pubs/MF2206.pdf>

DeAnn Presley, Soil Management Specialist, deann@ksu.edu

John Holman, Cropping Systems Agronomist, jholman@ksu.edu

2021 Kansas Corn School webinar series - Feb. 4 and 11

Kansas Corn is partnering with K-State Research and Extension to offer winter learning sessions for Kansas corn farmers. Due to COVID-19 concerns, the Kansas Corn Management Schools will be held virtually in a series of webinars. There are still two sessions to come in February. Each webinar will start at 7 p.m. and include two presentations with a question-and-answer session. Participants will have the opportunity to hear the latest research and production information and hear updates on markets and corn policy issues. These sessions are free for farmers to attend.

Webinar dates and presentations:

- **Thursday, Feb. 4, 2021**
 - Weed Control, Dr. Sara Lancaster, K-State
 - Planter Technology—Lessons Learned for Corn, Dr. Ajay Sharda, K-State
- **Thursday, Feb. 11, 2021**
 - Markets and Futures Prices, Dr. Dan O'Brien, K-State
 - KCGA Policy Achievements and Ambitions – Josh Roe, Kansas Corn

“Despite today’s current challenges with COVID, participating online provides an opportunity for corn farmers to learn the latest research findings on key topics and what challenges to watch out for in agronomy, markets, and policy,” said Kansas Corn V.P. of Market Development and Policy Josh Roe.

“The schools will cover a number of issues facing corn producers including nutrient management, management practices, weed control, planter technology, markets, and policy. These events have a long-standing tradition and reputation in offering a solid set of topics of great relevancy to our corn growers in Kansas,” said Ignacio Ciampitti, associate professor in the K-State Department of Agronomy.

The webinars are offered at free for growers thanks to support from premier sponsor Pioneer Seeds, and supporting sponsor Compass Minerals. Participants are asked to pre-register online to receive the information and links to the webinar.

Get more information and register online at kscorn.com/cornscool or by phone by calling Kansas Corn at 785-410-5009.

Women Managing the Farm Conference



**WOMEN MANAGING THE FARM
VIRTUAL CONFERENCE**

FEBRUARY 10-12, 2021

Creating Community
Online & At Home

womenmanagingthefarm.com

*Creating Community Online and At Home
2021 Virtual Conference for Kansas Women in Agriculture*

The Women Managing the Farm Conference, set for February 10-12, will go virtual for 2021. Since 2005, the event has brought together women farmers, rural business leaders and landowners. The Women Managing the Farm Conference will continue to offer a supportive setting in which women can develop the skills, resources and knowledge needed for success in a competitive agricultural environment.

Keynote speaker Matt Rush, inspirational speaker, author, and self-proclaimed Farm Boy, will motivate attendees to focus on “Planting the Seeds of Greatness”. Conference sessions are designed to keep women up to date on the latest advancements in agriculture and thriving within their rural communities. New to the conference in 2021 will be a resource library of videos and materials for attendees to utilize to maintain a healthy and sustainable home and business life.

Registration for the conference is available at womenmanagingthefarm.com([link is external](#)), the 2021 fee is \$50.00 and includes keynotes, breakout sessions and access to the Women Managing the Farm virtual resource library.

More information about speakers, programs, exhibitors, registration and scholarships can be found at the website, womenmanagingthefarm.com([link is external](#)), or by calling 785-532-2560. Keep up-to-date with the latest Women Managing the Farm news through [Facebook.com/WomenManagingtheFarm](https://www.facebook.com/WomenManagingtheFarm)([link is external](#)).

Fruit Trees and Frost

If you are considering purchasing fruit trees this spring, there are certain factors that should be considered for some of our fruit tree species. Spring in Kansas is often unsettled with apricot and peach tree flowers being very vulnerable to late frosts that can kill fruit buds. Of course, the tree itself will be fine but there will be no to little fruit for that year. Other species of trees can also be affected but apricots and peaches are by far the most sensitive. Also, the closer a tree is to full bloom, the more sensitive it becomes to frost.

Apricots are more likely to have frost kill flowers than peaches because they bloom a bit earlier. Though there are late-blooming apricot varieties, the differences between full bloom on early and late-blooming varieties appears to be slight. Research at Virginia Tech in the 90's showed a maximum of a 4-day difference between early and late varieties. However,

in some years that may be all that is needed. The trees in the study that were considered late blooming included Hungarian Rose, Tilton and Harlayne. Harglow was not included in the study but is also considered late-blooming. See <https://tinyurl.com/y35ntxau> for more info.

Peaches are next on the list for being likely to be caught by a late frost. With peaches, two characteristics become important when considering whether they will be damaged. Like apricots, bloom time is very important but fruit bud hardiness should also be considered. In this case, fruit bud hardiness refers to hardiness to late frosts rather than the ability to survive extreme low temperatures during the winter. Late bloomers included 'China Pearl', 'Encore', 'Intrepid', and 'Risingstar.' See <https://tinyurl.com/y35ntxau> . The 'Intrepid' cultivar also has shown excellent cold hardiness when in flower. See <http://www.google.com/patents/USPP12357>

So, are there other considerations when looking at possible frost damage? Location can be very important. Planting on a hill which allows cold air to drain to lower elevations can help. Also, a location in town will be more likely to have a warmer micro-climate than an exposed location. Some gardeners will add a heat source under a tree during cold nights if they are close to a building. Heat lamps and charcoal briquettes are sometimes used but safety should be the first consideration. (Ward Upham)

Dutch Elm Disease Resistant American Elms

Our John C. Pair Horticultural Center near Wichita established a National Elm Trial in 2007 with 18 cultivars. All of these are Dutch Elm Disease (DED) Resistant with 4 being true American elms. The cultivar 'Jefferson' would have been a fifth true American elm but proved to be the same cultivar as 'Princeton'. The remainder are either hybrids or other elm species. The four true American elms are 'Valley Forge', 'Princeton', 'New Harmony' and 'Lewis and Clark' (Prairie Expedition). All have shown excellent tolerance to DED. Characteristics listed below are primarily from our study at the John C. Pair Horticultural Center but storm breakage is from the University of Minnesota.

'Valley Forge'

Survival: 100%

Crown Shape: Vase

Lacebug damage to foliage: Minimal

European elm flea weevil damage: Minimal

Storm Breakage: Fair

Comments: Strong grower, broad spreading

'Princeton'

Survival: 100%

Crown Shape: Vase

Lacebug damage to foliage: Minimal

European elm flea weevil damage: Minimal

Storm Breakage: Fair

Comments: Impressive grower, upright habit, attractive tree

'New Harmony'

Survival: 100%
Crown Shape: Vase and round
Lacebug damage to foliage: Significant
European elm flea weevil damage: Minimal
Storm Breakage: Not in Minnesota study
Comments: Narrow, upright habit with strong, central axis

'Lewis and Clark' (Prairie Expedition)

Survival: 80%
Crown Shape: Broad oval
Lacebug damage to foliage: Minimal
European elm flea weevil damage: Minimal
Storm Breakage: Good
Comments: Strong grower with broad spreading habit, some wetwood.

Storm damage can be minimized by pruning when the tree is young. Maintain a central leader but prune out all lower branches as the tree grows and branches increase in diameter so that there is room to work under the tree. Also prune out branches attached with a narrow angle as these are most likely to give way in ice or wind storms. For more information regarding the study, see

<https://webdoc.agsci.colostate.edu/bspm/NationalElmTrial/AUF2017.pdf> For photos and information on hybrids and other species of elm, see <https://webdoc.agsci.colostate.edu/bspm/ElmKansas.pdf> .

(Ward Upham)

Start Trees Off Right

Research from K-State's John C. Pair Horticultural Center has quantified the effect of controlling grasses around newly planted trees. Jason Griffin, William Reid, and Dale Bremer conducted a study to investigate the inhibition of growth of transplanted, seedling trees when lawn grasses were allowed to grow up to the trunk. There were five treatments, including three with different species of grass:

1. Bare soil maintained with herbicides.
2. Area under tree mulched 3 inches deep.
3. Tall fescue allowed to grow under tree.
4. Bermudagrass allowed to grow under tree.
5. Kentucky bluegrass allowed to grow under tree.

All treatments were applied to Eastern redbud seedlings as well as to pecan seedlings. All trees were fertilized according to recommendations and watered during the growing season with up to 1 inch of water if rainfall was deficient. At the end of two years, trees were measured and harvested. Data was taken on caliper (diameter) 6 inches above the ground, weight of aboveground portions of the tree, leaf area, and leaf weight. There were no differences in any measure between the mulched treatment and the bare soil treatment for either tree species. All measures showed significant growth increases if lawn grasses were controlled around the tree.

Results include the following:

1. Caliper: Caliper measures 6 inches above the soil surface were twice as large for plots without grass than for those with either fescue or bluegrass, but only 50% larger when compared to the bermudagrass plots.
2. Top growth weight: Redbuds showed a 300% weight advantage for plots with grasses controlled than those without. Pecans showed a significant 200% increase.
3. Leaf area and leaf weight: Leaf areas were 200% larger in plots without grass competition and leaf weight showed a 300% increase.

The obvious conclusion from this study is that grasses must be controlled under a newly transplanted tree to get the best possible growth. Though there were no differences in growth whether mulch was used or not, you may still wish to mulch for aesthetic reasons or to help control weed growth. How far from the trunk should the grasses be controlled? Try a minimum of 3 feet. (Ward Upham)

Now is a Good Time to Design Your Landscape

The dark, cold days of winter are a good time to dream and plan for the upcoming growing season. Have you always wanted to landscape your home but didn't know where to start? We offer a number of publications available to help you accomplish your dream. This collection includes everything from general landscaping publications such as "Residential Landscape Design," to specific works such as "Naturalistic Landscaping" and "Low-Maintenance Landscaping."

You can download printed publications for landscaping free of charge from <http://hnr.k-state.edu/extension/publications/landscaping.html> . Information on plants recommended for Kansas can be found at <http://hnr.k-state.edu/extension/info-center/recommended-plants/index.html>

You may also request printed copies from your local K-State Research and Extension office. There may be a small charge for printed copies of larger publications.

If you need to know how to contact your local extension office, go to <http://www.ksre.ksu.edu/Map.aspx> and mouse over your county. (Ward Upham)

Bird Feeding

Severe winter weather is not only hard on people but can be a life and death struggle for birds. Though birds also require water and shelter, food is often the resource most lacking during cold weather. Many different bird food mixes are available because various species often prefer different grains. However, there is one seed that has more universal appeal than any other: black oil sunflower. If you are new to the bird-feeding game, make sure there is a high percentage of this seed in your mix. White proso millet is second in popularity and is the favorite of dark-eyed juncos and other sparrows as well as the red-winged blackbird.

As you become more interested in bird feeding, you may want to use more than one feeder to attract specific species of birds. Following is a list of bird species with the grains they prefer.

- Cardinal, evening grosbeak and most finch species – sunflower seeds, all types.

- Rufous-sided towhee – white proso millet.
- Dark-eyed junco – white and red proso millet, canary seed, fine cracked corn.
- Many sparrow species – white and red proso millet.
- Bluejay – peanut kernels and sunflower seeds of all types.
- Chickadee and tufted titmouse – peanut kernels, oil (black) and black-striped sunflower seeds.
- Red-breasted nuthatch – oil (black) and black-striped sunflower seeds.
- Brown thrasher – hulled and black-striped sunflower seeds.
- Red-winged blackbird – white and red proso millet plus German (golden) millet
- Mourning dove – oil (black) sunflower seeds, white and red proso plus German (golden)millet.

Extended cold periods can also make water unavailable. A heated birdbath can be a tremendous draw for birds during times when all other water is frozen. Energy use is usually less than what most people expect IF the heater has a built-in thermostat. If you would like more

information, Chuck Otte, Agriculture and Natural Resources Extension Agent for Geary County has a series of backyard birding guides at

<http://gearycountyextension.com/NRMW.htm> (Ward Upham)

Preventing Potatoes from Sprouting in Storage

Home gardeners have had to rely on proper storage conditions (cool and moist) to prevent potatoes from sprouting. But sprouting will eventually occur even if the gardener does everything right. Research by Mary Jo Frazier, Nora Olsen and Gale Kleinkopf from the University of Idaho have found products that should help home gardeners.

These researchers were looking for an organic method to control potato sprouts. They found essential oils from some herbs and spices to be effective sprout inhibitors. Specifically they found that spearmint oil, peppermint oil and clove oil suppressed sprouting by physically damaging rapidly dividing cells in the sprout. Each of these products is so safe that the FDA has approved them for addition to food.

Several application methods were considered though most were only suitable for commercial storage facilities. The only practical method for homeowners was one the researchers labeled a "low-tech" wick method. This was accomplished by placing a small piece of blotter paper saturated with spearmint or peppermint oil in a box with the potatoes. This method was not recommended for the clove oil. Though it was found that peppermint and spearmint oils were equally effective in suppressing sprouts, the peppermint oil was less likely to affect flavor of the potatoes. Reapplication at two- to three-week intervals will be needed for continued sprout suppression. Little to no residue was found on the potatoes from these products due to their high volatility. The first application should be done before sprouting occurs.

Blotting paper is much more difficult to find than it was in the past and so you may want to substitute blank newsprint. However, if blotting paper is desired, try herbarium supply houses. Blotting paper is used to press plant specimens. (Ward Upham)

Saving Vegetable Seeds

If you wish to save vegetable seeds from one year to another, there are certain things that must be kept in mind. Seed from hybrid varieties will not come back true. In other words, the plants grown from seed from a hybrid variety will grow but will be quite variable and will not be like the parent. For example, if you save seed from a hybrid tomato, you will still get a plant that produces tomatoes but yield will likely be much less and the fruit will lack many of the good characteristics of the parent. If you want a plant just like the parent, you must use seed from an open-pollinated variety rather than a hybrid. Heirloom plants are open-pollinated. Any plant listed as an "F1" is a hybrid.

Not only must you use open-pollinated plants but you must prevent contamination from other plants of the same species. Note that contamination from other varieties has absolutely no effect on the current season's fruit characteristics. It only affects the fruit grown from seed of those contaminated varieties. Preventing cross-contamination can be done via several methods.

- **Distance:** make sure that your plants are far enough away from other varieties of the same species that the pollen from neighboring plants cannot reach yours. The distance varies considerably depending on species and whether the plant is wind or bee pollinated.
- **Mechanical:** This can be as simple as covering the unopened female flower of a bee pollinated plant with a bag and then hand pollinating with the male flower of the same variety. The bag is then placed back over the flower until the fruit starts to form. This is commonly used for the vine crops such as squash, muskmelon and watermelons as these produce separate male and female flowers and are bee pollinated. Another mechanical method is to place a screened-in cover over plants that are bee pollinated. This would work well for peppers.
- **Time of Flowering:** Commonly used for sweet corn. Many farmers will plant a small area of sweet corn in with their field corn even though sweet corn quality is much less if it crosses with field corn. The reason this can work is usually the sweet corn has finished pollination by the time the field corn tassels, thereby preventing contamination.

This seems way too complicated. Is there an easy way to start? Yes there is! Start with tomatoes. They will not cross-pollinate unless you grow a potato-leaved variety. Therefore, you can grow several different open-pollinated varieties in the same garden without worrying about contamination.

If you would like to save seed from other species, I would suggest you buy a good reference. The book I use is "Seed to Seed" by Suzanne Ashworth. (Ward Upham)

Cloning Apple Trees

We occasionally receive calls from gardeners who want to know how to treat an apple seed so it will germinate. Usually, the gardener is trying to reproduce an old apple tree that was special for some reason (good quality fruit, planted by grandparents, etc.) Unfortunately, apples grown from seed will not be like the parent. About 1 in every 80,000 apple trees grown from seed will be as good as the apples we are used to eating. Apple trees grown from seed usually have small and inferior quality fruit.

If you want a tree exactly like the parent, you must propagate that tree vegetatively. In the case of apples, this usually means grafting for homeowners. Apple trees are actually

quite easy to graft, even for novices. Don't be afraid to try even if you haven't grafted before. The step that needs to be done at this time of year is the choosing and cutting of scion wood or small branches that will be grafted on top of a rootstock. The rootstock is a separate tree that has good root characteristics and often disease resistance. Also rootstocks can have a dwarfing effect on the grafted tree. So our fruit trees are actually two trees spliced together. The roots and beginning of the trunk is the rootstock. The upper portion of the trunk and all the branches is called the scion. It is the "good" part of the tree. For example on apples, the scion might be a Jonathan, Winesap, Granny Smith or any other of a number of different cultivars. The rootstock for all of these varieties may vary or may be the same depending on the desires of the propagator. See the accompanying article in this week's newsletter for instructions on how to collect scionwood.

If you don't have an existing tree to graft onto, you will need to plant a rootstock this year for grafting onto next. Fruit trees are normally grafted (or budded) onto specially selected rootstocks. These rootstocks usually reduce tree size. For example, a tree that normally would reach 25 feet tall will only reach 10 feet if it is grown on a certain rootstock. Dwarfing rootstocks also allow apples to bear fruit a year or more earlier.

Note that rootstock reduces tree size, not fruit size. Therefore, a Golden Delicious tree that only reaches 8 feet tall due to a dwarfing rootstock, will bear the same size fruit as a Golden Delicious tree that is 25 feet tall.

A tree on its own roots normally takes 5 to 7 years before it will bear. Semi-dwarf trees bear in 4 to 5 years, and dwarf trees bear in 3 to 4 years. Unfortunately, not all dwarfing rootstocks are well adapted to Kansas conditions. Semi-dwarf trees usually are a better choice for us. Fully dwarfed trees often are uprooted or break at the graft during high winds. Semi-dwarf trees are usually more than 50% the size of a standard (non-dwarfed) tree.

So, where do you buy rootstocks to graft onto? Most nurseries only sell trees that are already grafted. A company that does sell rootstocks is Raintree Nursery, Morton, WA, (360) 496-6400. See <https://raintreenursery.com/collections/apple-rootstock> for apple rootstocks. Another is Cummins Nursery, (865) 233-3539, <http://www.cumminsnursery.com/rootstocks.htm> .

What rootstock is best? There are a several choices that should work well in Kansas. An old favorite is Malling-Merton (MM) 111 as it is well-adapted to Kansas conditions and can tolerate heavier soils. Trees will be 80% the size of a "standard" tree. Malling-Merton (MM) 106 is a good choice for well-drained soils. Trees will be about 70% the size of a standard tree. Other rootstocks can be used but make sure they are well-anchored and not described as brittle.

It is also possible to buy a tree from a local nursery and graft your clone onto a side branch. This will give you one tree that produces two different apples. One disadvantage of this method is that it is possible to prune off the special clone by mistake in later years.

This information does not include the details of grafting or budding or subsequent care. The Missouri Extension Service has an excellent publication on grafting at <https://extension.missouri.edu/publications/g6971> as well as a second publication on budding at <https://extension.missouri.edu/publications/g6972> .

If you use a knife, be sure to practice your cuts on wood you prune off in March. After you do about 100 cuts, you will start to get the hang of it. A grafting tool can make this job even simpler as it makes the proper cut automatically. Do a search on "grafting tool" to see what is available. (Ward Upham)

Multiple Grafts on Apple Trees

Nurseries often sell apple trees that bear more than one variety of fruit. The secret is grafting. All apple trees are grafted, which is done by grafting the apple-producing variety (the scion) on a variety chosen for its dwarfing effects (the rootstock). A tree with more than one variety simply has more than one fruiting variety grafted onto a single rootstock. Grafting allows growers to have a single tree that could produce Jonathan, Red Delicious and Golden Delicious apples. These trees can be a unique attraction and a good conversation point in a fruit garden. If space is limited, a multiple grafted tree may allow growers to have a greater variety of fruit than with individual varieties on separate trees. However, there are some possible drawbacks. Whoever prunes the trees may not recognize the individual grafts and may unknowingly prune off one of the varieties. Also, varieties may vary in vigor, and stronger varieties can crowd weaker ones. There also may be a difference in susceptibility to disease among varieties and among different kinds of fruit. Some may have resistance to a disease and not require protection, but others are susceptible and do require protection. If the susceptible fruits are protected, the more resistant ones will be sprayed unnecessarily. (Ward Upham)

Collect Scion Wood Now

If you are planning on doing any grafting this spring, now would be a good time to collect scionwood. Following are tips on how to choose good scion wood.

- Scions should be cut from one-year-old wood.
- Buds should be prominent and widely spaced. Water sprouts work well for this. Water sprouts are twigs that grow straight up from a major branch.
- Inner bark should be light green and the wood creamy white.
- Best scions have more wood than pith; small diameter wood often has wide pith.
- Older bearing trees produce poor scions unless pruned heavily. The best scions are toward the top of the tree. You may need a pole pruner even for small trees.
- Cut shoot into 6-8 inch pieces having at least 3 buds per stick.
- The best scion is often the basal piece.
- Always discard the terminal (the end piece).
- Store in the refrigerator in a plastic bag with moist paper towels.

If you are unfamiliar with grafting but would like to learn, the University of Missouri has an excellent publication at <https://extension.missouri.edu/publications/g6971>.

Practice your technique on wood you pruned off in March. Try doing about 100 cuts. (Ward Upham)

Growing Your Own Firewood

In order to avoid energy costs, some homeowners are turning to wood for heat. Plant species is an important consideration as not all trees have the same density and therefore, heat value. The greater the dry weight, the better.

The highest value for trees commonly found in Kansas is osage orange (hedgeball tree) at 4,800 pounds per cord. Osage orange has a gnarly growth habit and a nasty set of thorns. This species also sparks which isn't a problem in a wood-fired boiler but certainly would be in an open fireplace.

Black locust is next with 4,200 pounds per cord. Black locust is a fast grower and also has excellent burning qualities and makes a nice bed of coals. However, it is hard to split, suckers, and has some relatively small thorns, especially on young trees.

Bur oak and red oak come in at 3,800 and 3,500 pounds per cord respectively but are not fast growers. Mulberry, however, has the same weight as red oak but grows more quickly. Silver maple has less heat value (3,000 pounds per cord) but is a very fast growing tree.

Black locust is a tempting choice for this purpose due to its heat value and fast growth. However, black locust suckers and is invasive and can spread to areas you don't want and so be careful if you choose this species. Another species, such as mulberry may work better for you. Or consider planting several different species in rows.

So, how do you set out your plantation? Dr. Wayne Geyer, our late forestry professor, did many woody biomass studies over a period of 35 years. Following are some recommendations that have come out of his studies.

- Plant on a close spacing, 4 to 6 feet apart. This maximizes yield and reduces side branching.
- Control weeds the first two years.
- Harvest every 5 years though slower growing trees will take longer. Most trees will resprout and can be reharvested.
- Plant about 1 acre per year for 5 years if you wish to supply the majority of the firewood needed to heat your home.

Trees mentioned above and available from the Kansas Forest Service include mulberry, osage orange, bur oak, red oak and silver maple. (Ward Upham)

Use a Planting Calendar

If you start vegetable plants indoors, it is often helpful to list seeding dates on a calendar so that plants are ready for transplanting at the proper time. To do this, choose your transplant date and count back the number of weeks necessary to grow your own transplants. For example, cabbage, broccoli, and cauliflower are usually transplanted in late March to early April. It takes 8 weeks from seeding to transplant size. Therefore, plants should be seeded in early February.

Information on how many weeks it takes to grow transplants is available in our January 7 newsletter at: https://hnr.k-state.edu/extension/info-center/newsletters/2021/Jan5_2021_01.pdf

Below are examples of some common vegetables grown for transplants and a recommended date for seeding. Dates are Saturdays as this is when many homeowners have the most free time. The dates are not set in stone, and a week earlier or later will not ruin the

plants. Also, you may want to seed a week or two earlier if you are in southern Kansas and possibly a week later if you are in northern Kansas. Calendars can be reused year after year by a slight reset of the dates. Also keep notes on how well the transplants did so you can tweak the planting schedule. Your conditions may result in plants that need a bit more or a bit less time.

Crop Seeding Date Transplant Date

Cabbage, Broccoli & Cauliflower January 30 March 27

Lettuce (if you grow transplants) January 30 March 27

Peppers March 13 May 8

Tomatoes March 20 May 1

(Ward Upham)