



K-STATE
Research and Extension

Extension Agronomy

eUpdate

02/23/2018

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy e-Update Editor. All of the Research and Extension faculty in Agronomy will be involved as sources from time to time. If you have any questions or suggestions for topics you'd like to have us address in this weekly update, contact Kathy Gehl, 785-532-3354 kgehl@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

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1. Optimal time to remove cattle from wheat pastures: First hollow stem

What is the first hollow stem (FHS) stage of wheat development?

Before the wheat leaf sheaths become erect after spring greenup, the developing growing point, which is below the soil surface, will soon begin to form a tiny head. Although the head is quite small at this point, it has already established some important yield components. At this stage, the maximum potential number of spikelets is determined. Sufficient nitrogen (N) should already be available in the root zone at this growth stage to maximize the potential number of seeds per head.

Once the embryo head has developed, the first internode will begin to elongate, pushing the head up through the leaf sheaths. This first internode will be hollow. This will be visible before you can actually feel the first node (joint, located just above the first internode).

FHS is the point at which a 1.5 cm (about half-inch) length of hollow stem can first be identified below the developing head (Figure 1). This length is roughly equivalent to the diameter of a dime, which makes its identification in the field easier. FHS occurs when the developing head is still below the soil surface. This means that producers have to dig plants out of the ground to measure it.

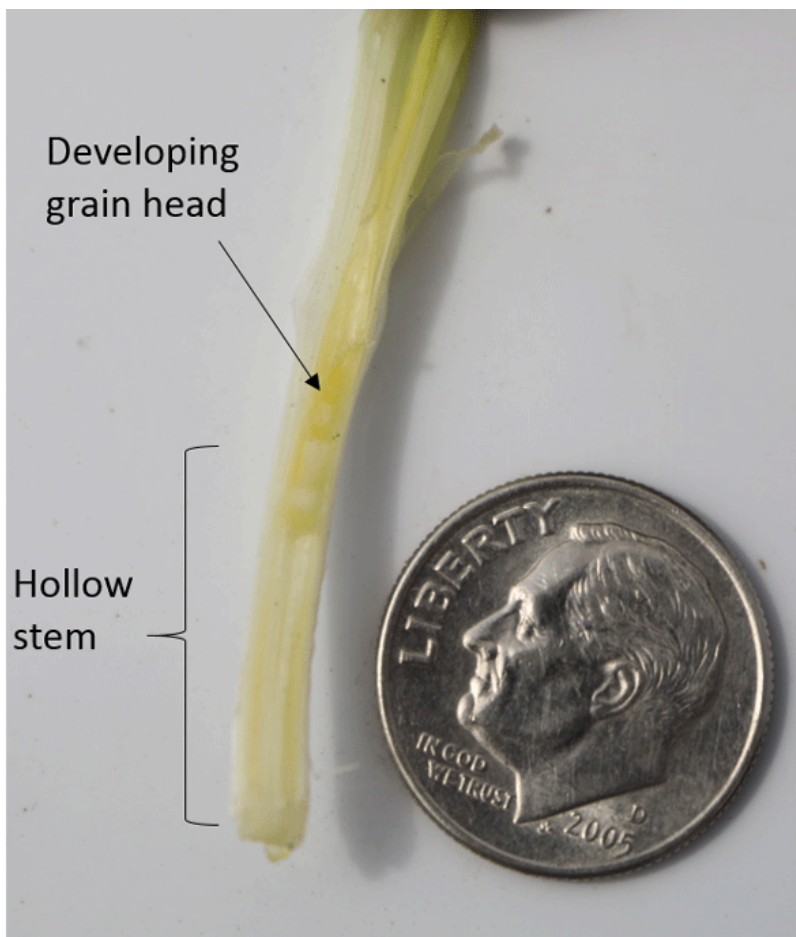


Figure 1. Wheat plant reaching the first hollow stem stage of growth, characterized by approximately 1.5 cm (or roughly the diameter of a dime) of hollow stem underneath the

developing grain head. Photo by Romulo Lollato, K-State Research and Extension.

How to look for first hollow stem

To look for FHS, start by digging up some plants from fields or areas that have not been grazed, such as field corners or just outside the electric fence. Date of FHS is variety- and field-specific, so it is important to sample each individual field. Select the largest tillers to examine, and slice the stem open from the crown area up. Look for the developing head, which will be very small. Next, see if you can find any hollow stem between the developing head and the crown area. If there is any separation between the growing point and crown, the hollow stem is elongating. If that separation is 1.5 cm, the wheat plant is at FHS. FHS occurs between a few days to a week or more prior to jointing, depending on temperatures.

Yield losses from grazing past first hollow stem

If the wheat has reached FHS, cattle should be removed to prevent grain yield loss. Yield losses from grazing after FHS can range from 1 to 5% per day, depending on grazing intensity and the weather following cattle removal (Figure 2). If cattle removal is followed by cool, moist weather, yield losses will often average about 1% per day grazed after FHS; if weather is hot, dry, and harsh, yield losses of 5% per day or more can be expected. In fact, as much as 1.25 bushels per day yield decrease can occur according to data from Oklahoma State University. It is easy for producers to be late by a few days in removing livestock as they wait for obvious nodes and hollow stems to appear, and even the first few days can be significant.

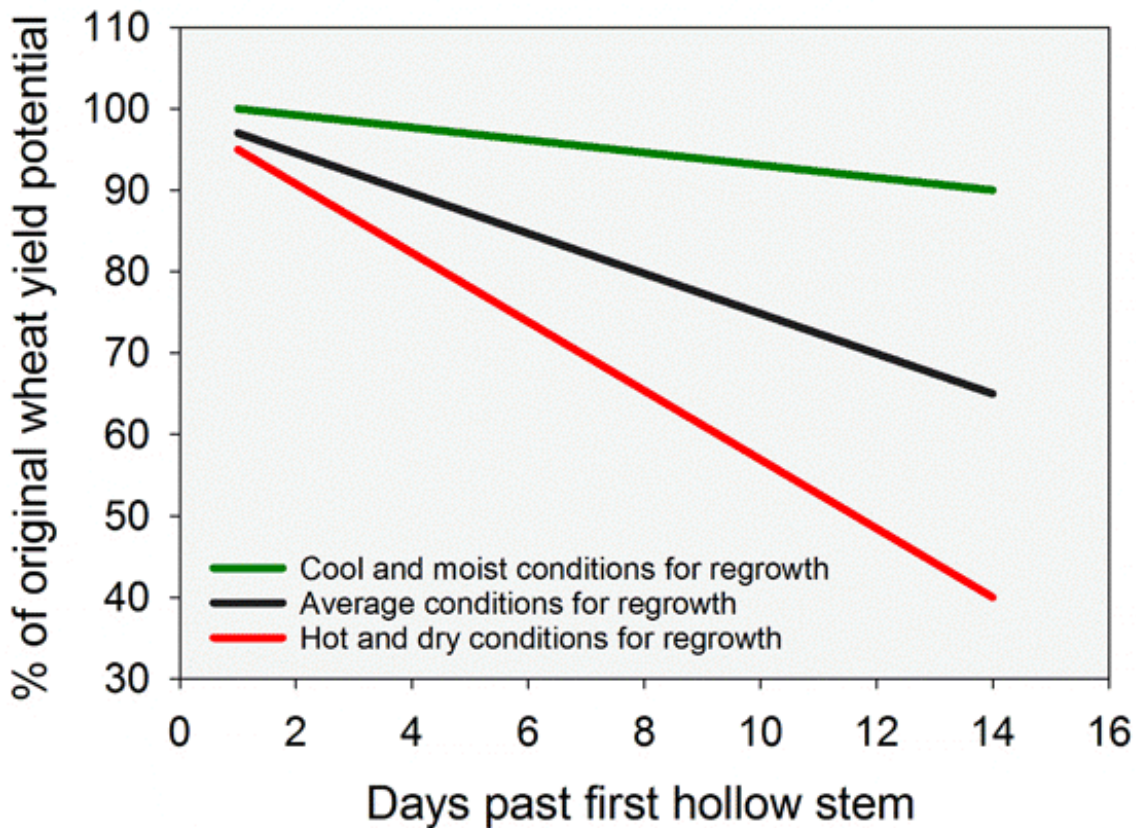


Figure 2. Percent of original wheat yield potential as affected by days of grazing past first hollow stem and weather conditions following grazing termination. Average yield losses by grazing for 14 days past first hollow stem ranged from 10% under favorable conditions to 60% under non-favorable conditions. Research conducted by Oklahoma State University (OSU) and published as K-State publication MF3375 and OSU publication PSS-2178.

Two things are observed when wheat is grazed too long: 1) fewer heads per acre because the primary tiller has been removed, and 2) smaller and lighter heads than expected because leaf area has been removed. As cattle continue grazing, the wheat plant is stressed and begins to lose some of the tillers that would produce grain. A little later, if there is not enough photosynthate, the plant begins aborting the lower spikelets in the head or some of the florets on each head. Finally, if there is not enough photosynthate during grain filling, the seed size will be reduced and if the stress is severe enough, some seed will abort.

Air and soil temperatures during 2018

Crop development is mostly a function of available water, nutrients, and temperature. While nutrient availability is field specific and water has been limited since the fall for the majority of the wheat growing of the state, temperatures will be the focus of this discussion. Average temperatures across the entire state of Kansas were cooler-than-normal for the time period between January 1 and February 23 (Figure 3), which will likely delay the achievement of first hollow stem as compared to most years. The warm spell during February 17-23 elevated air and soil temperatures, especially in south central and southwest Kansas (Figure 4). These recently elevated temperatures could indicate

that the crop will greenup and start developing soon. As temperatures increase and wheat begins growing more rapidly closer to the spring, producers should start thinking about when to pull cattle off pasture to protect grain yields.

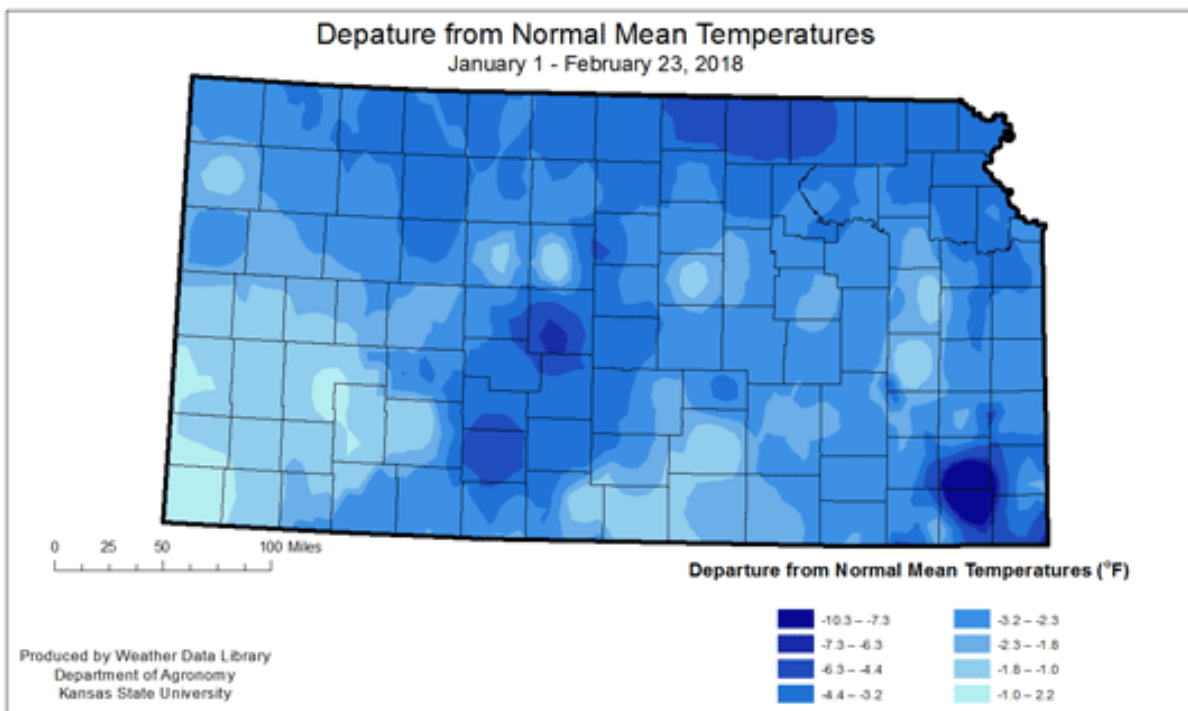
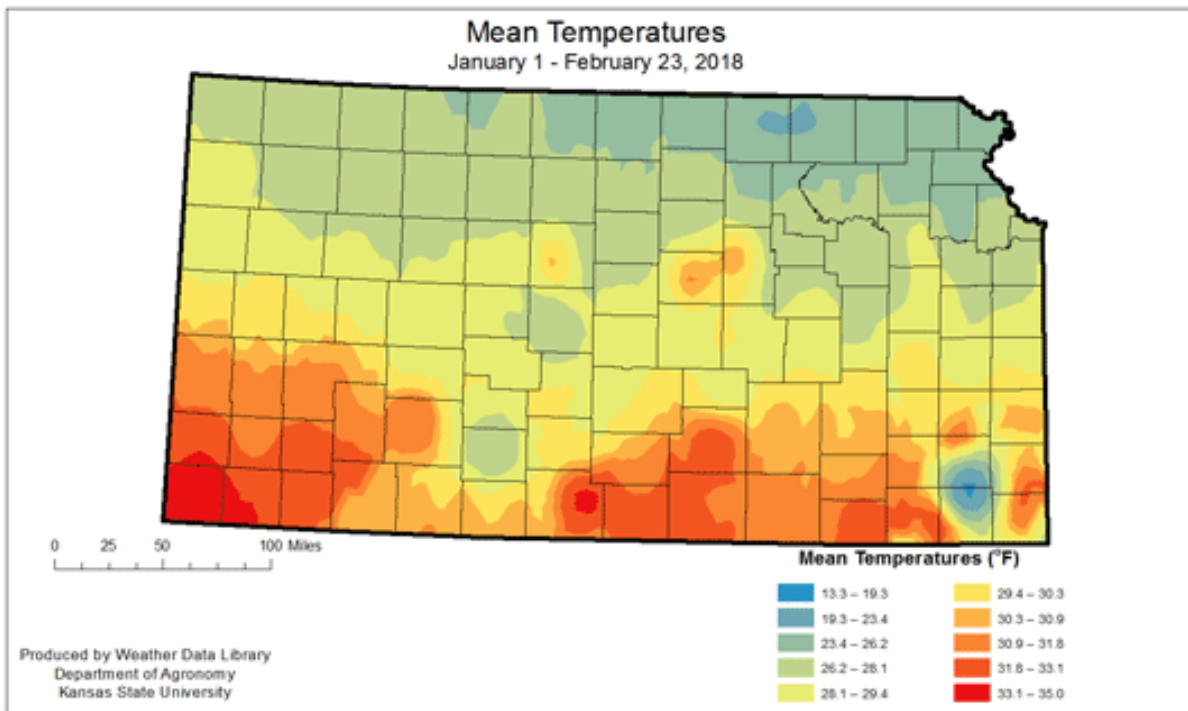


Figure 3. Mean (upper panel) and departure from long-term average (lower panel) temperatures during the January 1 – February 23, 2018 period. Graph generated by the K-State Weather Library.

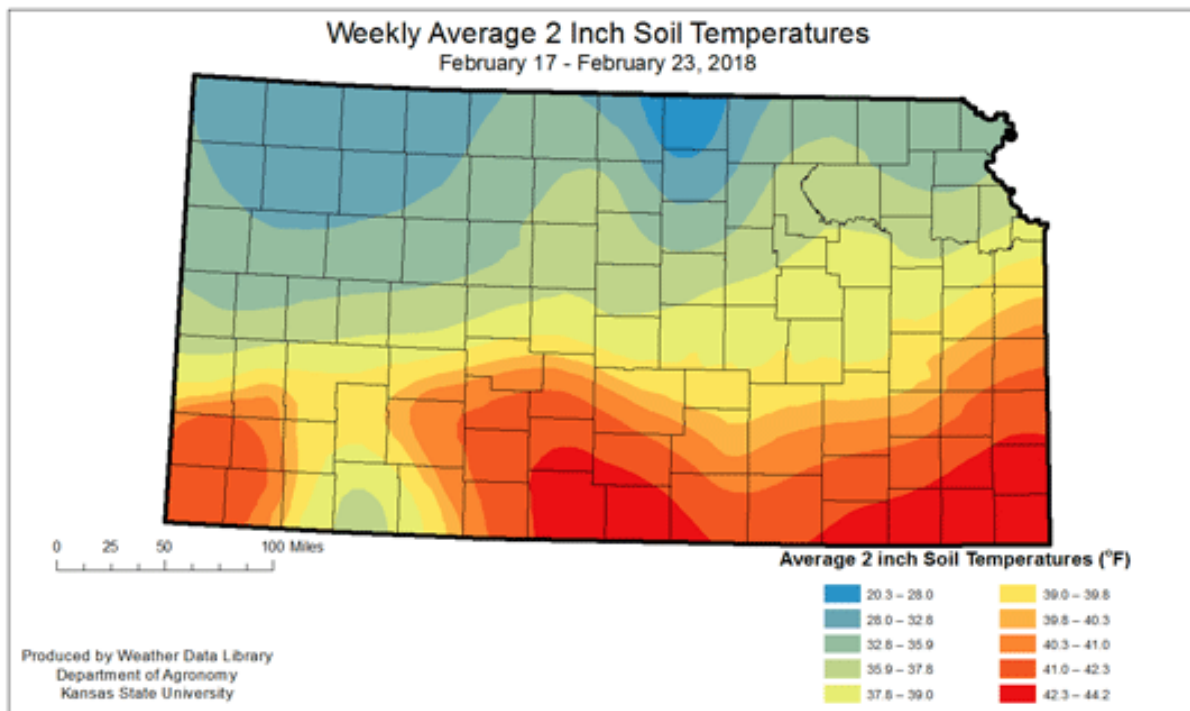


Figure 4. Weekly average soil temperatures at the 2-inch depth during the February 17 – 23, 2018, period. Graph generated by the K-State Weather Library.

For more information on managing wheat in dual-purpose systems, check K-State Research and Extension publication MF3375 [PSS-2178 from Oklahoma State Extension], “Dual-purpose wheat: Management for forage and grain production” at <https://www.bookstore.ksre.k-state.edu/pubs/MF3375.pdf>.

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2. New eUpdate monthly series for 2018: "Kansas Soil of the Month"

Did you know that according to Jeff Hellerich, State Soil Scientist with the NRCS, there are more than 430 different soil series (species if you will) in Kansas? The soils that make up Kansas, a "breadbasket" state, are some of the most fertile soils in the world. In fact, many consider soil as Kansas' most valuable natural resource. The rich soil is the medium for our state's incredible capacity to grow crops and provide grazing land. The rate of soil formation is so slow as to consider soil a non-renewable resource in terms of our life span. An appreciation and understanding of our soils is the aim of this new eUpdate series, "Kansas Soil of the Month". Inspiration for this series didn't strike until recently, therefore the kickoff article will feature two soils, one each for January and February.

January and February Soils of the Month: Colby and Ulysses – Sister soils of western Kansas

Each soil in Kansas is unique and distinctive from one another in different ways. Soils are classified into several different categories and the narrowest one is called the 'soil series' or name. No two soils have the same soil series name. How do soils get their names? Soil series are usually named after a geographic place near where they occur, like a town or landmark.

Since we are highlighting two soils for this issue, let's compare and contrast their similarities and differences:

How are these soils similar to each other?

Colby and Ulysses are two very common soil series in western Kansas, encompassing over 5 million acres between them (Figure 1). These soils have a lot of similarities. They both formed under short-grass prairie vegetation. Today they are excellent for producing crops and are commonly irrigated, as these soils occur in the part of western Kansas that receives 18 inches or less annual precipitation. These soils might be [flatter than a pancake](#), as they have slopes of only 0.5 to 1%.

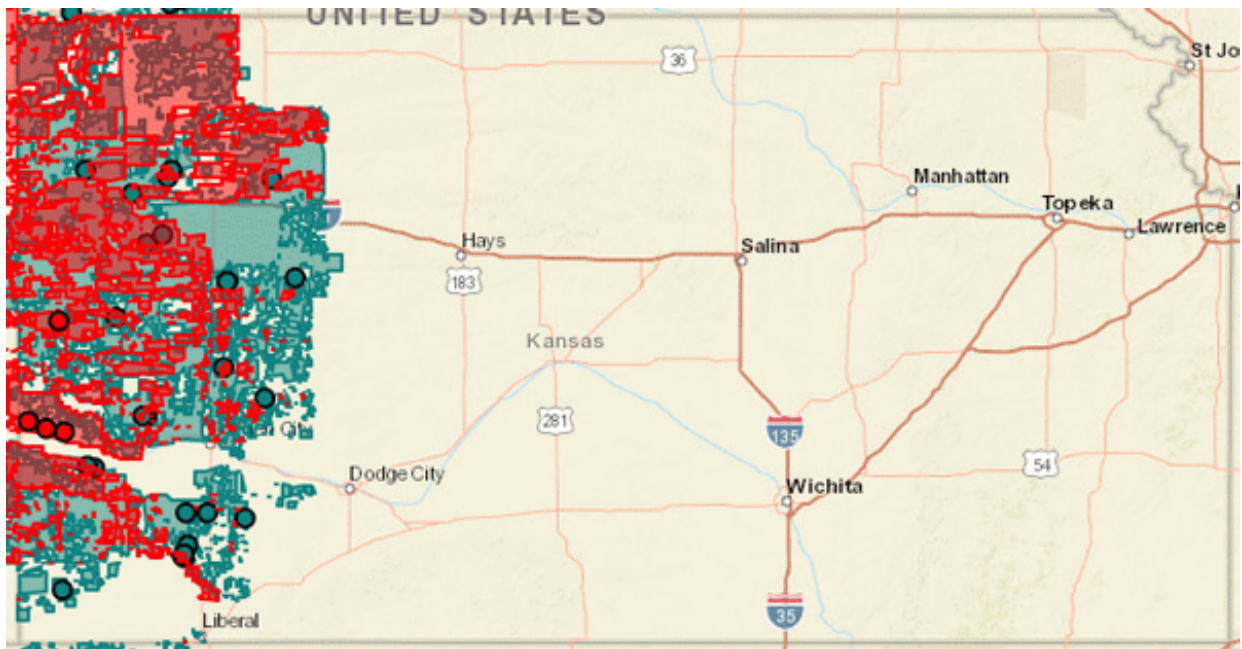


Figure 1. Soil series extent map in Kansas for Colby (red) and Ulysses (green). Map created using [USDA-NRCS Official Soil Series Description](https://www.nrcs.usda.gov/soils/soilseriesdescription/) website.

Windblown silty deposits, called “loess”, is the parent material of the soil. The word “loess” is of Swiss-German origin and means “loose.” The commonly accepted way to pronounce this in the U.S. is “luss,” rhyming with fuss or muss. As the word implies, loess-derived soils are not dense, but instead are very porous. Loess soils are high in silt, and silty soils are excellent for growing crops because silt can hold a lot of water at a tension that plants can use. Soils high in clay hold a lot of water but at a tension that plant roots have trouble using. Sandy soils drain and dry out quickly, but silty soils drain well and plant roots can take up the water easily.

Another important feature these two soil series have in common is the presence of calcium carbonate, or lime, which is common in dry parts of the world. Sometimes when these loess-derived soils in Kansas erode, they can result in high-pH soils very near the soil surface, which can cause problems with the availability of certain plant nutrients. Many plant nutrients are most available around a pH of 6.5, which is slightly acidic. However, the pH of the Colby or Ulysses soils can easily be about pH 8. Phosphorus and iron are the plant nutrients most affected by high-pH soils, as these elements are less available for plant uptake at a high soil pH.

Funny thing about loose, wind-deposited sediments: They erode. Silt particles are not as sticky as clay particles, so they can easily detach and become airborne. Silty soils are very erodible when left exposed to the wind or rain. It’s very important to keep these soils protected during the windiest months, which are November through April in Kansas. Conservation practices and structures are very necessary, including windbreaks and practices that maximize residue coverage. For more information on controlling wind erosion, see the KSRE publication “Principles of Wind Erosion and its control” at <https://www.bookstore.ksre.ksu.edu/pubs/MF2860.pdf>.

How are these soils different from each other?

One thing that really sets the Colby and Ulysses soils apart from each other is the organic matter content in the topsoil. The Ulysses series has about 9 inches of dark, organic matter rich soil on the surface, while the Colby series is a lighter brown color at the surface (Figure 2). Therefore, the Ulysses series classifies as a “Mollisol”, while the Colby soil is an “Entisol.” Just like you can classify plants, animals, etc., you can classify soils. The word “mollisol” comes from the Latin word “mollis” for soft, because it is rich in humus, which is decomposed organic materials from plants and microbes. For an Entisol, think “infant” and you’ll be close—the Colby soil only has A and C horizons, so it is a young soil with no development other than formation of the A horizon.



Figure 2. Side by side comparison of Colby and Ulysses soil monoliths. The Ulysses profile has a distinctively darker surface horizon that extends deeper in the profile compared to the Colby series. Photo by DeAnn Presley, K-State Research and Extension.

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3. Presentation videos available from the 2018 Cover Your Acres Winter Conference

Did you miss out on attending the Cover Your Acres winter conference this year? Videos of the presentations given at the 2018 Cover Your Acres Winter Conference are being added to the new [Cover Your Acres YouTube channel](#).

The first presentation added, and very timely as producers need to be making residual herbicide decisions this spring, is the talk on weed management strategies by Curtis Thompson. This presentation features the latest weed control information available for the Central Plains. Also available is a discussion of observations across farms of the High Plains on the role of crop rotation intensification on profitability, input use, and soil health. This work, presented by Meagan Schipanski of Colorado State University, provides a glimpse into how rotation decisions translate into long-term effects.

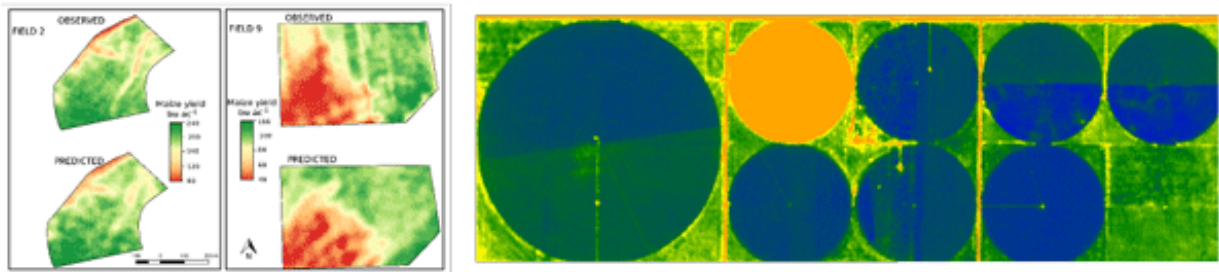
You can access the videos at www.northwest.ksu.edu/CYAVideos and be sure to follow our YouTube channel.

Stay tuned for additional videos from the 2018 Cover Your Acres conference to be added in the coming weeks!

Lucas Haag, Northwest Area Crops and Soils Specialist
lhaag@ksu.edu

4. On-Farm Research meeting to held on March 2 in Salina

On-Farm Research Meeting



Friday, March 2, 2018

- **Speaker:** Ignacio Ciampitti, K-State Crop production & Cropping Systems specialist
- **9:00 a.m. – noon-** American Ag Credit basement meeting room, 925 W. Magnolia, Salina, KS.
- **Topics:** On-Farm Research results from local farms; field information that satellite imagery can provide, and processing satellite imagery for practical use in Ag.

On-farm research funding made possible by Kansas Corn Commission checkoff.



Interested individuals are asked to RSVP for the meeting by contacting:

Tom Maxwell, CKD-Salina
tmaxwell@ksu.edu
785-309-5850

5. Soil health workshop planned for February 28 in Oswego

K-State Research and Extension is hosting a soil health workshop on February 28. The workshop, “Managing your soils to improve productivity and profitability”, will focus on using cover crops to improve soil health and also as a grazing resource.

The workshop is being held at Falkenstien Farm, 8080 Pratt Road, Oswego, KS (37° 6'58.71"N, 95°14'58.30"W). Meet at the shop located behind the house. Presentations will begin at 9:00 a.m. with a barbeque lunch to follow.

Topics to be covered include: Cover crops for grazing, Forage production and quality, Soil health and economics, and Practical experiences with cover crops.

Speakers include:

- Jaymelynn Farney, Beef Systems Specialist, KSU
- Doug Spencer, Rangeland Management Specialist, NRCS
- Rich Falkenstien, Producer

Please RSVP for the workshop by Monday, February 26 by contacting Gretchen Sassenrath at either gsassenrath@ksu.edu or 620-820-6131

Managing Your Soils to Improve Productivity and Profitability

Feb. 28, 2018

Cover Crops, Soil Health, and Grazing

Falkenstien Farm

8080 Pratt Rd., Oswego, KS

Meet at the shop behind the house

(37° 6'58.71"N, 95°14'58.30"W)

Presentations begin at 9:00 followed by lunch

TOPICS

Cover Crops for Grazing, Forage Production, and Quality, Soil Health and Economics, and Practical Experiences with Cover Crops

Contact/RSVP: Gretchen Sassenrath,
gsassenrath@ksu.edu or 620-820-6131



Speakers Include:

Jaymelynn Farney—Kansas State University,
Asst. Prof., Beef Systems Spec.

Doug Spencer—Natural Resources
Conservation Service

Rangeland Management Specialist

Rich Falkenstien—Practical experiences with cover crops



J.S. Department of Agriculture

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6. Canola informational meeting to be held in Great Bend, March 6

K-State Research and Extension is presenting a canola informational meeting on March 6, 2018 from 9:30 to 11:00 a.m. in Great Bend. The meeting will be held at the American Ag Credit Building, 5634 10th Street, Great Bend, KS.

According to Mike Stamm, K-State canola breeder, "We've seen some new interest in canola production around Great Bend so it is important to bring growers up to speed on varieties, seeding, and harvest methods. We hope to draw interest from surrounding counties as we feel canola can provide benefits in crop rotation here in central Kansas."

The meeting will highlight the basics of growing canola all the way from planting to harvest. Speakers for the event include:

- Mike Stamm, KSU Canola Breeder
- Lucas Haag, Northwest Area Extension Agronomist

Archer Daniels Midland representatives will also be present to discuss canola marketing.

Complimentary rolls, coffee, and juice will be provided by the Great Bend Coop and American Ag Credit. The Cottonwood Extension District is hosting the event. Please RSVP no later than **12:00 pm, March 5** either by phone at (620) 793-1910 or by email at bwalton@ksu.edu.

Growing Canola Informational Meeting

March 6, 2018

9:30-11am

American Ag Credit Building

5634 10th Street

Great Bend, KS



Topics:

Growing Canola Basics-From Planting to Harvest

Presenters:


Michael Stamm-Canola Breeder-Kansas
State University

Lucas Haag-NW Area Extension Agronomist

Complimentary rolls, coffee and juice will be
provided by Great Bend Coop & American
Ag Credit

**RSVP no later than 12 noon on March
5th. Call 620-793-1910 or
bwalton@ksu.edu**

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Cottonwood 
Extension District

601 Main, Suite A
Hays, KS 67601
785-628-9430
cottonwood.ksu.edu


K-STATE
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7. Don't miss the K-State Soybean School at Phillipsburg on March 21

It's not too late to attend a K-State Soybean School this year. Due to inclement weather, the Soybean School originally scheduled for January 22 in Phillipsburg was rescheduled for **March 21, 2018**.

The one-day school will cover a number of issues facing soybean growers including: weed control strategies, production practices, nutrient fertility, and insect management.

March 21 – Phillipsburg, KS

Phillips County Fair Building, 1481 US-183

Cody Miller, Phillips-Rooks District, codym@ksu.edu, 785-543-6845

Lunch will be provided courtesy of Kansas Soybean Commission (main sponsor of the schools). The schools will also be supported by Channel Seeds. There is no cost to attend, however participants are asked to pre-register by **March 19**. Please re-submit your registration if you had signed up for the original date.

Online registration is available at: [K-State Soybean Schools](#)

You can also preregister by emailing or calling the local K-State Research and Extension office listed above.



Ignacio Ciampitti, Crop Production and Cropping Systems Specialist
ciampitti@ksu.edu

Doug Shoup, Southeast Area Crops and Soils Specialist
dshoup@ksu.edu

Stu Duncan, Northeast Area Crops and Soils Specialist
duncan@ksu.edu

8. Prescribed Burning workshops still available for 2018

Some Prescribed Burning workshops are currently scheduled for the remainder of the winter in Kansas, with the possibility of more upon request. The agencies involved include K-State Research and Extension, USDA-NRCS, USDA-FSA, Department of Wildlife, Parks, and Tourism, National Weather Service, and the Kansas Prescribed Fire Council.

Each workshop lasts about 4-5 hours and includes topics on reasons for burning, regulations, weather considerations, liability, burn contractors, equipment and crew, hazards, fuels, firebreaks, fire types and behavior, ignition techniques, and burn plans.

Contact Walt Fick at 785-532-7223 or whfick@ksu.edu if you would like to host a prescribed burning workshop.

Workshop	Date	Location	Host/Contact	Agency	Phone	e-mail
Dickinson Co.	Feb. 26	Woodbine	James Coover	KSRE	785-263-2001	jcoover@ksu.edu
Saline Co.	Feb. 28	Salina	Tom Maxwell	KSRE	785-309-5850	tmaxwell@ksu.edu
Rooks Co.	Mar. 8	Stockton	Dorothy Heim	FSA	785-425-6302	dorothy.heim@ks.usda.gov

Walt Fick, Range Management Specialist
whfick@ksu.edu

9. Soil Health Workshop to be held on March 8 in Manhattan

A Riley County Soil Health Workshop will be held on Thursday, March 8, at Pottorf Hall, CiCo Park in Manhattan. The workshop will begin at 9:00 a.m. and conclude at 2:00 p.m.

The workshop is hosted by K-State Research and Extension and the Natural Resources Conservation Service. The workshop will discuss and highlight recent cover crop research and how cover crops relate to soil health.

Topics and speakers include:

- *Using cover crops as a tool for weed control*, Anita Dille – Weed Ecology
- *Cover crops and the nitrogen cycle in the rotation*, Peter Tomlinson – Environmental Quality
- *Sorghum response to cover crops in no-till systems*, Kraig Roozeboom, Crop Production
- *Protecting surface water with healthy soils, cover crops, and fertilizer management*, Nathan Nelson, Soil Fertility and Nutrient Management
- *Building better soils with cover crops*, DeAnn Presley – Soil Management
- *Cover crops in a soybean production system*, Doug Shoup – Southeast Area Crops and Soils
- *Covers for use by cattle*, Jaymelynn Farney – Southeast Area Beef Systems

Registration for the workshop is free and lunch will be provided. Participants are asked to register by **Monday, March 5**. Contact the Riley County Conservation District to reserve your spot by calling 785-537-8764 or at Aubrey.evans@ks.nacdnet.net

The event is limited to 200 people, so don't wait too long to register!