Issue 703

K-STATE
Research and Extension

Extension Agronomy

eUpdate

07/20/2018

These e-Updates are a regular weekly item from K-State Extension Agronomy and Kathy Gehl, Agronomy eUpdate 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 Dalas Peterson, Extension Agronomy State Leader and Weed Management Specialist 785-532-0405 dpeterso@ksu.edu.

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1. Mid-summer control of volunteer wheat

Where volunteer wheat has emerged, producers should begin control measures as soon as possible, rather than waiting until closer to wheat planting time. This is especially important on fields where wheat was hailed out and volunteer wheat emerged at the time of harvest, or shortly afterward.

Controlling the first flush of volunteer wheat now may require one more field pass than normal later in the summer to control later volunteer, but will help prevent bigger problems down the road. Producers should note that grazing volunteer wheat is not an effective option because there is green wheat material left that will enable wheat curl mite survival.

Where wheat suffered hail damage after heading, volunteer wheat often emerges even before harvest – as much as two to three weeks earlier than it would normally emerge. This volunteer wheat is especially likely to become infested with wheat curl mites and lead to problems later in the season if left uncontrolled.

Figure 1. Thick stand of volunteer wheat after wheat harvest. Photo by Stu Duncan, K-State Research and Extension.

Wheat curl mites move off wheat at or near harvest time, and need to quickly find green tissue on a suitable host plant or they will soon die of desiccation. The mites can live quite a few hours off the plant, and up to 24 hours under low temperature conditions, so significant numbers of mites may disperse on winds for greater distances than previously thought. Young, volunteer wheat growing in close proximity to current wheat harvest will be easily infested by the mites.

If volunteer has emerged and is still alive shortly after harvest in hailed-out wheat, wheat curl mites can build up rapidly and move from there to other volunteer that emerges later in the season. Eliminating this early-emerging volunteer shortly after harvest will help break the green bridge. However, if more volunteer emerges during the summer, follow-up control will still be needed.

Volunteer wheat is not the only host of the wheat curl mite. Recent research has evaluated the suitability of wild grasses as hosts for both the curl mite and the wheat streak mosaic virus. Barnyardgrass topped the list of suitability for both virus and mites, but is fortunately not that common in wheat fields. In contrast, green foxtail, although a rather poor host, could be an important disease reservoir simply because of its abundance. Take note of significant stands of these grasses in marginal areas and control them as you would volunteer wheat.

If volunteer wheat and other hosts are not controlled throughout the summer and are infested with wheat curl mites, the mites will survive until fall and could infest newly planted wheat at that time. Wheat curl mite infestations are the cause of infections of wheat streak mosaic, High Plains mosaic virus, and triticum mosaic virus. Wheat varieties with the wsm2 gene for resistance to wheat streak mosaic (Oakley CL, Joe, and Clara CL) remain susceptible to High Plains mosaic virus and triticum mosaic virus, so controlling volunteer wheat is still important even if you plant one of those varieties.

Figure 2. Volunteer wheat on the edges of a sunflower field were infested with wheat curl mites and caused a wheat streak mosaic infection in the adjacent wheat crop that fall. Photo by Stu Duncan, K-State Research and Extension.

Figure 3. Close-up of wheat showing symptoms of a wheat streak mosaic virus infection in the fall. Photo by Jeanne Falk Jones, K-State Research and Extension.

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2. Liming prior to fall seeding of alfalfa

Correcting acid soil conditions through the application of lime can have a significant impact on crop yields, especially for alfalfa. Since seeding alfalfa is expensive and a stand is expected to last for several years, getting lime applied and acidity corrected before seeding is critical. Liming is one of the most essential, but often overlooked, management decisions a producer can make for alfalfa production. Acid soils can significantly reduce nodule establishment and activity in alfalfa, affecting nitrogen status and overall nutrient and water uptake (Figure 1).

Unfortunately, lime is not always available close to where it may be needed. In many cases, trucking and spreading costs may be more than the cost of the lime itself. Lime quality can also vary widely and no one wants to apply more than is necessary. So to make the best decisions on how much and what kind of lime to apply, it is useful to know how lime recommendations are made.

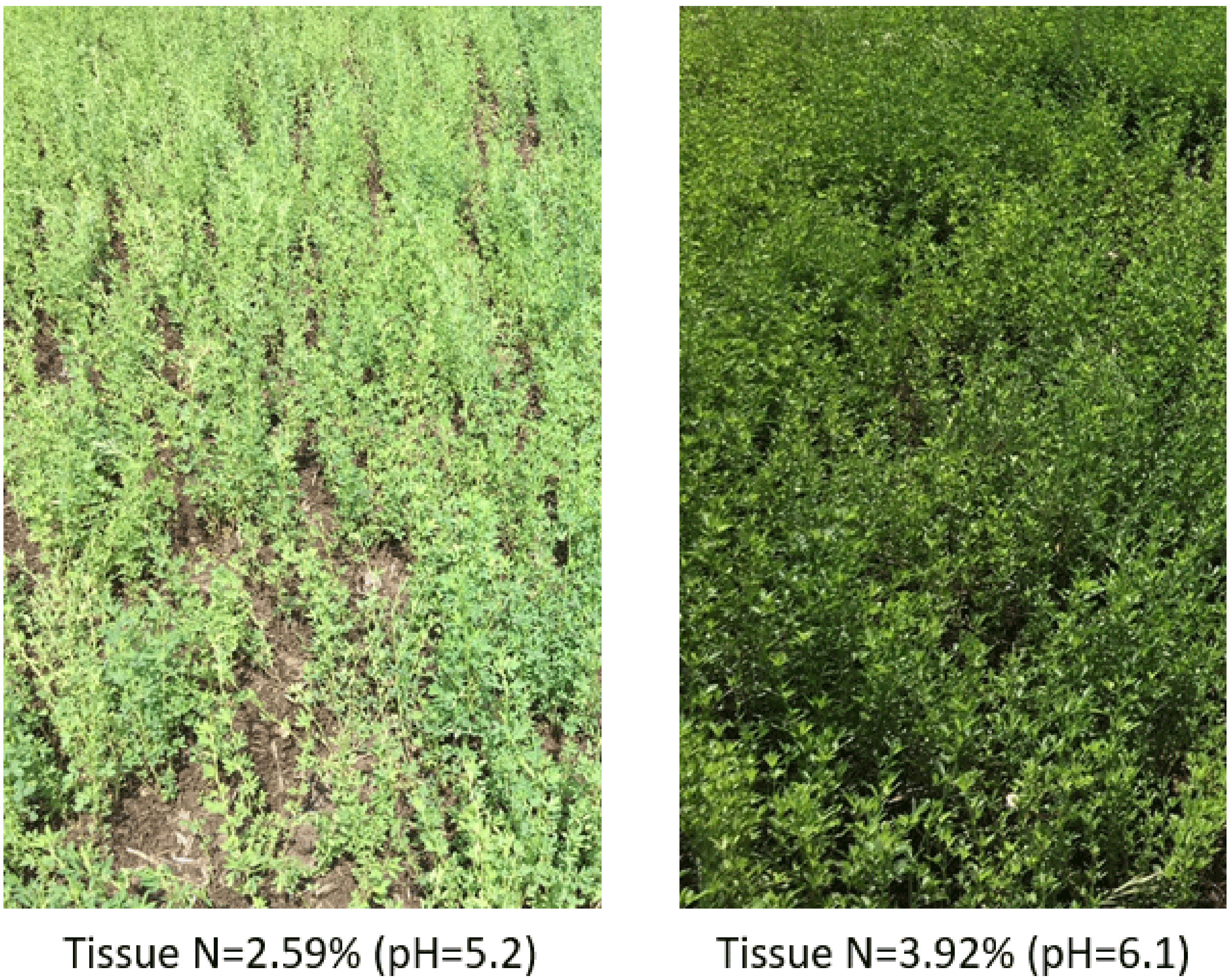

Figure 1. Soil pH affects nodule formation and activity for N fixation in alfalfa, in addition to nutrient availability and uptake. Photo by Dorivar Ruiz Diaz, K-State Research and Extension.

How lime recommendations are made by K-State

A routine soil test will reveal the pH level of the soil, and this will determine whether lime is needed on the field. Generally, east of the Flint Hills, lime is recommended for alfalfa if the pH drops below 6.4, with a target pH for liming of 6.8. In the Flint Hills and west, lime is recommended for alfalfa and all other crops when the pH drops below 5.8, with a target pH of 6.0. Target pH is simply the pH goal once the lime reacts with the soil.

Why is the target pH different for the two areas of Kansas? They differ because of the pH of the subsoil. East of the Flint Hills, especially south of the Kansas River, the subsoil tends to be acidic, and a higher target pH is used to assure adequate pH conditions in the root zone, and provide sufficient amounts of calcium and magnesium. From the Flint Hills west, most soils have high-pH, basic subsoils that can provide additional calcium and magnesium to meet crop needs.

Determining the soil pH is the first step in determining if lime is needed. However, it does not tell you the amount of lime you need to apply. Soils with more clay and organic matter will have more acidity at a given pH, and will require more lime/ECC (effective calcium carbonate) to reach a target soil pH, than will a sandy soil. This is why two soils may have the same soil pH but have quite different buffer pHs, and different lime requirements.

To make that rate determination quickly in the lab, we use a buffer solution and measure the soil's buffer pH. A buffer is simply a strong salt solution designed to resist change in pH. The buffer is added at a high pH, 7.5, and calibrated so that when it reacts with an acid soil, the pH drops. The lower the buffer pH goes, the more lime will be needed to bring the pH up to the required target pH.

Calculating lime rates

Lime rates are given in pounds of effective calcium carbonate, ECC, per acre. How does that relate to agricultural lime and how much lime to apply? Lime materials can vary widely in their neutralizing power. All lime materials sold in Kansas must guarantee their ECC content and dealers are subject to inspection by the Kansas Department of Agriculture.

The two factors that influence the neutralizing value of aglime are the chemical neutralizing value of the lime material relative to pure calcium carbonate, and the fineness of crushing, or particle size, of the product. The finer the lime is ground, the greater the surface area of the product, the faster it will react, and the faster the neutralizing of the acidity will occur. These two factors are used in the determination of ECC. Expressing recommendations as pounds of ECC allows fine-tuning of rates for variation in lime sources, and avoids under- or over-applying lime products.

Lime sources

Research has clearly shown that a pound of ECC from agricultural lime, pelletized lime, water treatment plant sludge, fluid lime, or other sources is equal in neutralizing soil acidity. Therefore, under most circumstances, the cost per pound of ECC applied to your field should be a primary factor in source selection. Other factors such as rate of reaction (fineness), uniformity of spreading, and availability should be considered, but the final pH change, and subsequent alfalfa growth, will depend on the amount of ECC applied.

Application methods

All lime sources have a very limited solubility. When planting alfalfa, the best performance occurs when lime is incorporated and given time to react with and neutralize the acidity in the soil. When surface-applied and not incorporated, as in no-till systems, the reaction of lime is generally limited to only neutralizing the acidity and raising the pH in the top 2 to 3 inches of soil. Surface applications are adequate in slightly acidic soils, but may not provide as good a soil environment for nodulation and nitrogen fixation in the extremely acid soils.

In no-till or limited-till systems, where no incorporation of lime is planned, lower rates of lime application are normally recommended to avoid over-liming and raising the pH higher than needed in the surface 2-3 inches of soil. Over-liming can also reduce the availability of micronutrients such as zinc, iron, and manganese, and trigger deficiencies in some soils. Current K-State lime recommendations suggest that "traditional" rates designed for incorporation and mixing with the top 6 inches of soil should be reduced by 50 percent when surface-applied in no-till systems, or when applied to existing grass or alfalfa stands.

Calcium and magnesium contents

What about the calcium and magnesium contents? Most agricultural limes found in Kansas contain both calcium and magnesium, with calcium exceeding magnesium. The exact ratio of these two essential plant nutrients will vary widely. Dolomitic lime (magnesium-containing) and calcitic lime (low-magnesium, high-calcium) provide similar benefits for most Kansas soils.

For more information, see K-State publication *Soil Test Interpretations and Fertilizer Recommendations*, MF-2586: http://www.bookstore.ksre.ksu.edu/pubs/MF2586.pdf

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3. Stressed corn: Formula for estimating corn yield potential

With the ongoing heat and drought conditions in much of Kansas, many corn growers are trying to decide if their corn crop is worth keeping for grain harvest or if it should be harvested for silage or left in place for residue benefits.

Where tassel, silking, and pollination are complete, or nearly complete, producers can begin to get some idea of what the potential yield might be. To get a reasonable yield estimate, corn should be in the milk, dough, or dent stage. Before the milk stage, it is difficult to tell which kernels will develop and which ones have been aborted.

Producers can get some estimate of the success of pollination by examining ear silks. With successful pollination, the exposed silks should be turning brown and should easily separate from the ear when the husks are removed. Silks that have not been successfully pollinated will stay green, possibly growing to several inches in length (Figure 1). Unpollinated silks also will be connected securely to the ovaries (the undeveloped kernels) when the husks are removed.

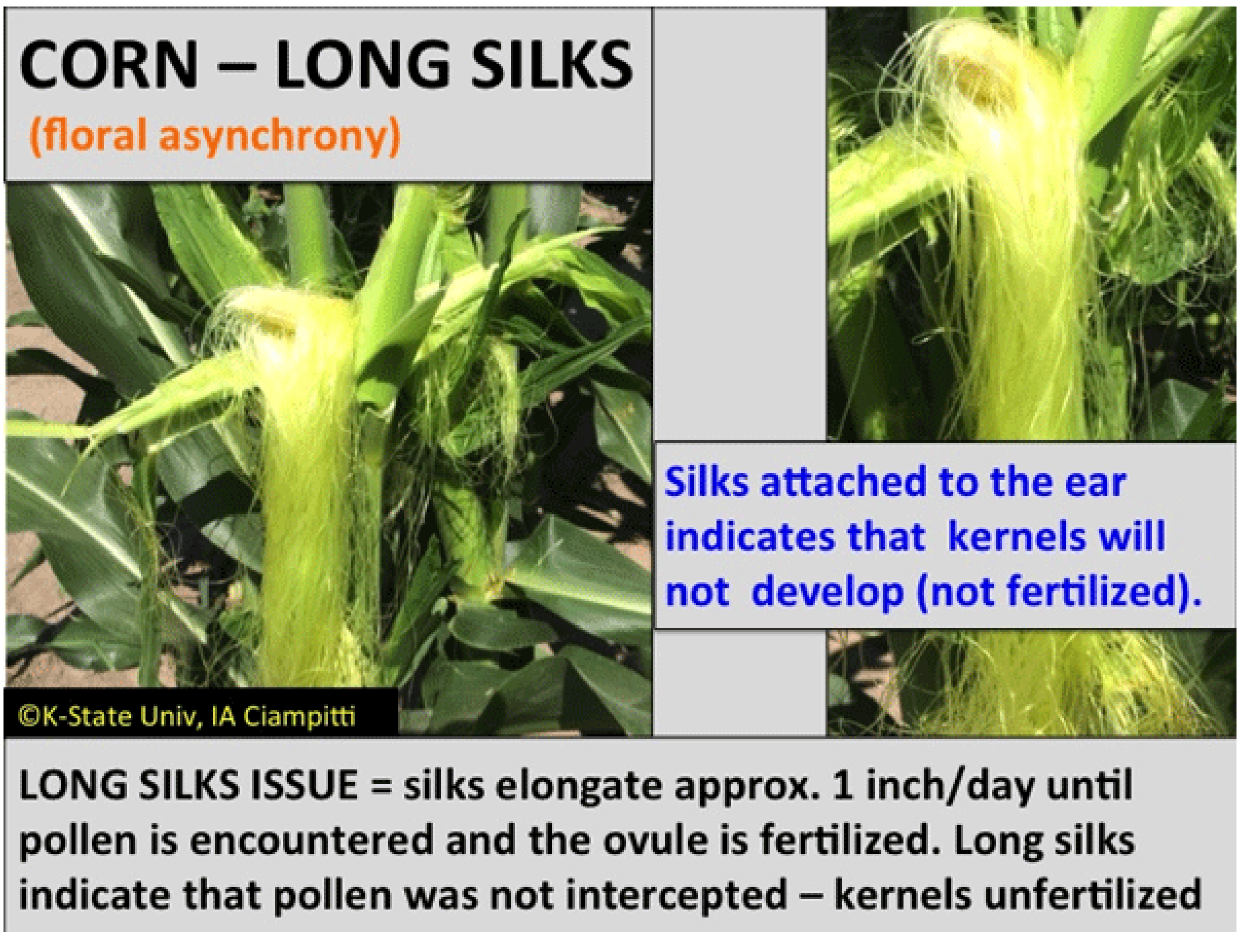

Figure 1. Long silks primarily reflecting floral asynchrony. Silks that have not been successfully pollinated will stay green. Infographic by Ignacio Ciampitti, K-State Research and Extension.

Estimating corn yield

Yield estimates can be made using the yield component method. This method uses a combination of known and projected yield components of corn to calculate an estimate of the potential yield. It is "potential" yield because one of the critical yield components, kernel size, will not be known until physiological maturity. Before then, one can use only an estimate of predicted yield based on what you think the grain filling period might be like (e.g. favorable, average, or poor). Estimating potential corn yield using yield components uses the following elements:

- **Ears per acre**: This is determined by counting the number of ears in a known area. With 30-inch rows, 17.4 feet of row = 1,000th of an acre. This is probably the minimum area that should be used. The number of ears in 17.4 feet of row x 1,000 = the number of ears per acre. Counting a longer length of row is fine, just be sure to convert it to the correct portion of an acre when determining the number of ears per acre. Make ear counts in 10 to 15 representative parts of the field or management zone to get a good average estimate. The more ear counts you make (assuming they accurately represent the field or zone of interest), the more confidence you have in your yield estimate.

- **Kernels per ear**: This is determined by counting the number of ear rows and number of kernels in each row. Multiply those two items to arrive at kernels per ear (number of rows x kernels per row). Do not count aborted kernels or the kernels on the butt of the ear; count only kernels that are in complete rings around the ear. Do this for every 5th or 6th plant in each of your ear count areas. Avoid odd, non-representative ears.

- **Kernels per acre** = Ears per acre x kernels per ear

- **Kernels per bushel**: This will have to be estimated until the plants reach physiological maturity. Common values range from 75,000 to 80,000 for excellent, 85,000 to 90,000 for average, and 95,000 to 105,000 for poor grain filling conditions. The best you can do at this point is estimate a range of potential yields depending on expectations for the rest of the season.

<u>Examples:</u>

Ears per acre: (30-inch rows)

- 10 different 17.4-foot lengths of row provided counts of 25, 24, 22, 21, 24, 26, 20, 21, 22, 20
- average of these counts is (25 + 24 + 22 + 21 + 24 + 26 + 20 + 21 + 22 + 20)/10 = 225/10 = 22.5
- scaling up to an acre gives 22.5 x 1,000 = **22,500 ears per acre**

Kernels per ear:

- The 4 or 5 ears from each 17.4-foot area had an average of 14 rows and 27 kernels per row
- 14 x 27 = **378 kernels per ear**

Kernels per acre:

- 22,500 ears per acre x 378 kernels per ear = **8,505,000 kernels per acre**

Kernels per bushel:

- Given that this field has been exposed to 100° F and above with no significant precipitation for the past couple of weeks and the prediction for the next 7-10 days is for triple digits every day and no rain, it may not hurt to assume below-average fill conditions and use a fairly large number of kernels per bushel (because kernels will be small). Based on the ranges mentioned above, a reasonable value might be **105,000 kernels per bushel.**

Bushels per acre:

- 8,505,000 kernels per acre ÷ 105,000 kernels per bushel = about **81 bushels per acre**

If these estimates are close to correct, the field in this example is probably worth taking to grain harvest provided it is still living and likely to keep filling grain. Past experience indicates that this method of estimating yield usually provides fairly optimistic estimates. Use a larger number for kernels per bushel if you want the process to be a bit more "pessimistic."

See the June 25, 2018 Agronomy e-Update Issue 699 , "Management options for stressed corn", for the range of yields that might lead to a decision to chop the crop for forage or maybe even leave it in place for the value of the residue.

More information on stressed corn and related topics:

- Nitrate toxicity in drought-stressed corn
- Effect of high night temperatures on corn yield
- EP169 "Abnormal corn ears" https://www.bookstore.ksre.ksu.edu/pubs/EP169.pdf

Further details on corn growth and development can be found at: http://www.bookstore.ksre.ksu.edu/pubs/MF3305.pdf

Links with further discussions on the yield estimation:

- http://www.ca.uky.edu/agc/pubs/agr/agr187/agr187.pdf University of Kentucky
- http://www.agry.purdue.edu/ext/corn/news/timeless/yldestmethod.html Purdue University

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4. Updated publication on abnormal corn ears now available

The following is an abbreviated version of the newly updated Kansas State Research and Extension publication, EP169 "Abnormal Corn Ears". Learn the causes of various corn ear deformities and how to identify them in the field with this 16-page publication containing many full-color photos. The author is Ignacio Ciampitti, Associate Professor and Crop Production and Cropping Systems specialist.

The entire publication can be found online at: https://www.bookstore.ksre.ksu.edu/pubs/EP169.pdf

Introduction to abnormal corn ears

Abnormalities in corn ears affect corn yield and quality. In most cases, abnormalities in corn ears originate from environmental conditions such as heat, drought, nutrient deficiencies, insects, and diseases, or through the misapplication of chemicals. Often, not much can be done to correct these issues, but proper diagnostics can prevent future issues.

Over the last decade, several factors have been identified as being responsible for ear abnormalities. The answer for each specific situation is yet to be determined. This document provides guidance regarding the potential causes for these issues and how to identify the abnormalities.

Potential factors affecting ear development

Some of the factors described by previous studies are:

- Application of herbicides (some weeks before flowering)
- Application of fungicides
- Environmental conditions around silking time (heat, drought, and nutrient deficiencies, among several other factors)
- Insect damage in exposed ears
- Disease pressure
- Hail damage, flooding, and other miscellaneous biotic or abiotic factors.

If the problem is associated with the weather, there is not much farmers can do to fix the problem. The environment influences ear development well before the silking period (R1 stage, flowering). In corn plants, the ear shoot is initiated by V5 or V6 (five- or six-leaf stages). Final row and kernel numbers, two main critical components for corn yield, are determined when the potential number of kernels is finalized around V15 (around 2 weeks before silking, depending on the environment, hybrid, and management practices).

Final ear size is a critical component in the determination of the final number of kernels in corn plants. These factors can be influenced by environmental conditions from the V5 to V15 vegetative growth stages.

The types of corn ear abnormalities discussed in detail in the publication include:

- Arrested ears (Figure 1)
- Banana-shaped ears
- Bouquet ears (Figure 1)
- Disease problems in corn ears
- Ear stunting (Figure 1)
- Exposed ears
- Kernel red streak
- Poor kernel set
- Tassel ears
- Tip dieback (Figure 1)

Figure 1. Selected photos that illustrate some of the corn ear abnormalities discussed in the updated publication. Photo credits to K-State Research and Extension.

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Abnormal Corn Ears

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

July 2018

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https://www.bookstore.ksre.ksu.edu/pubs/EP169.pdf

5. Importance of post-wheat harvest weed control in dryland cropping systems

The 2018 Kansas wheat crop faced several challenges, including drought and hail, resulting in less than desirable yields and thin stands in many areas. Thin stands, coupled with recent rains, are especially favorable to weed growth. However, to maximize the benefit of the remaining stubble in no-till dryland cropping systems, weeds must be controlled.

A multi-year study conducted at the Southwest Research-Extension Center at Tribune to evaluate the effects of weed control timing after wheat harvest. In this study, weeds were terminated after harvest in mid-July, and the third week of August.

Timing of post-wheat harvest weed control affected plant-available soil water at the October fallow, corn planting, and July in-season measurements. A numerical trend was evident, starting with the August fallow measurement (Figure 1).

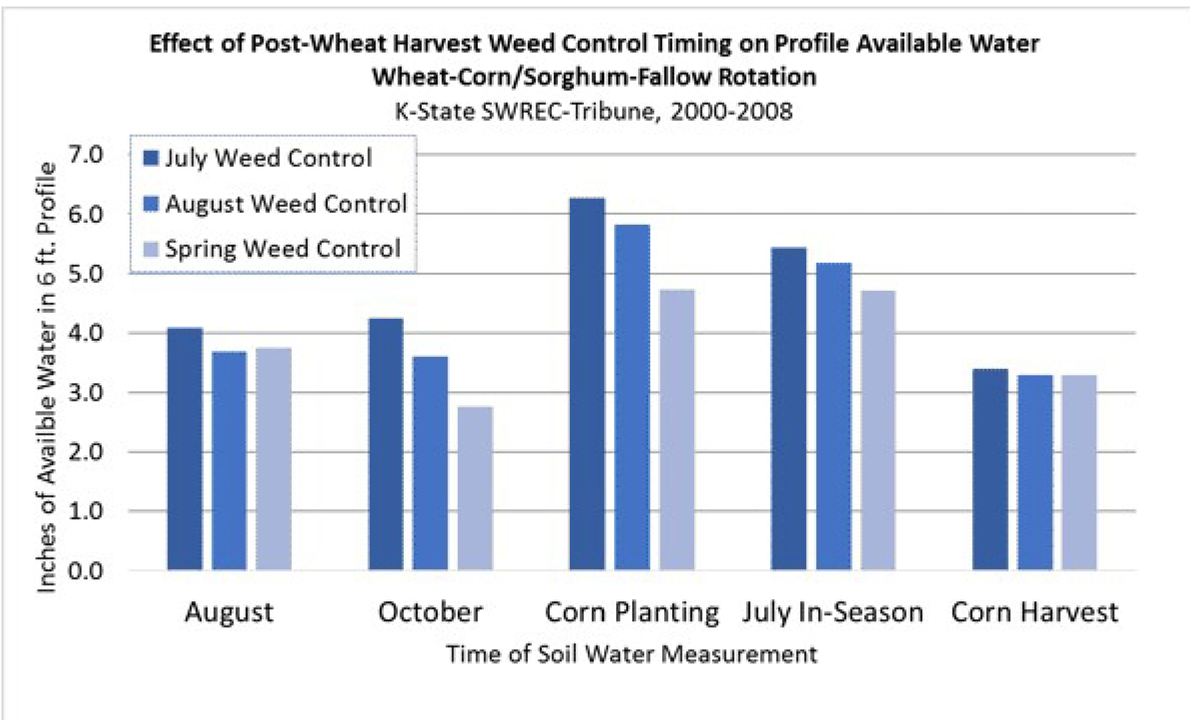

Figure 1. Effect of post-wheat harvest weed control timing on profile available water in a wheat-corn -fallow rotation, Tribune.

Depletion of soil water by weeds allowed to grow from July through August was evident at the August sampling, at which the July control treatment had an average of 0.4 inches of additional soil water. The effect of growing weeds was evidenced by the greatest depletion of soil water occurring from the surface through the 1.5=-foot depth (Figure 2, Panel A). During this time period, the July control treatment had a fallow efficiency of 25.2%, whereas the August and spring control treatments produced efficiencies of 14.7 and 14.6% respectively.

Allowing weed growth through October in the spring control treatment resulted in further soil water depletion as evidenced by a profile soil water advantage for the July control of 0.6 inches over the August control and 1.4 inches over the spring timing treatment. The difference among weed control timings when measured in October was evident to a depth of 4 feet (Figure 2, Panel B). Within the August to October fallow period, fallow efficiencies for the July and August control timings were both positive at 19.4 and 16.3%, respectively, whereas the spring treatment with uncontrolled weeds produced a fallow efficiency of -24.0%.

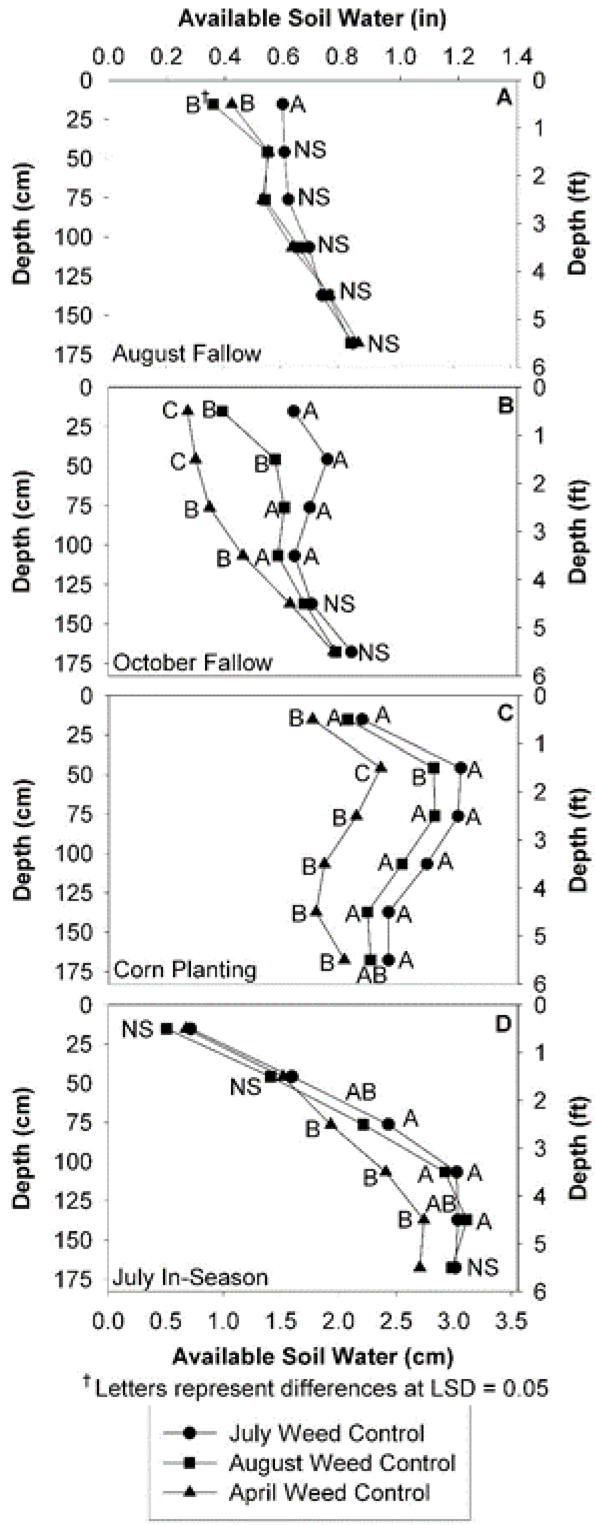

Figure 2. Effect of post-wheat harvest wheat harvest weed control timing on available soil water by depth and time of measurement in a wheat-corn-fallow rotation, Tribune.

Weed control timing resulted in available soil water differences at corn planting (Figure 1). At corn planting, the July and August control treatments had 1.6 and 1.1 inches, respectively, additional available soil water than when weed control was delayed until the spring. Over the entire wheat harvest to row-crop planting period, fallow accumulations were 3.47, 3.09, and 1.89 inches when weed control was performed in July, August, and spring, respectively. This translated into fallow efficiencies ranging from 30.1% for July control to 16.4% for spring control.

July, August, and spring weed control timings resulted in row-crop grain yields of 51, 47, and 36 bu/acre, respectively, when analyzed across years (Figure 3). Both the July and August treatments produced higher grain yields than the spring treatment.

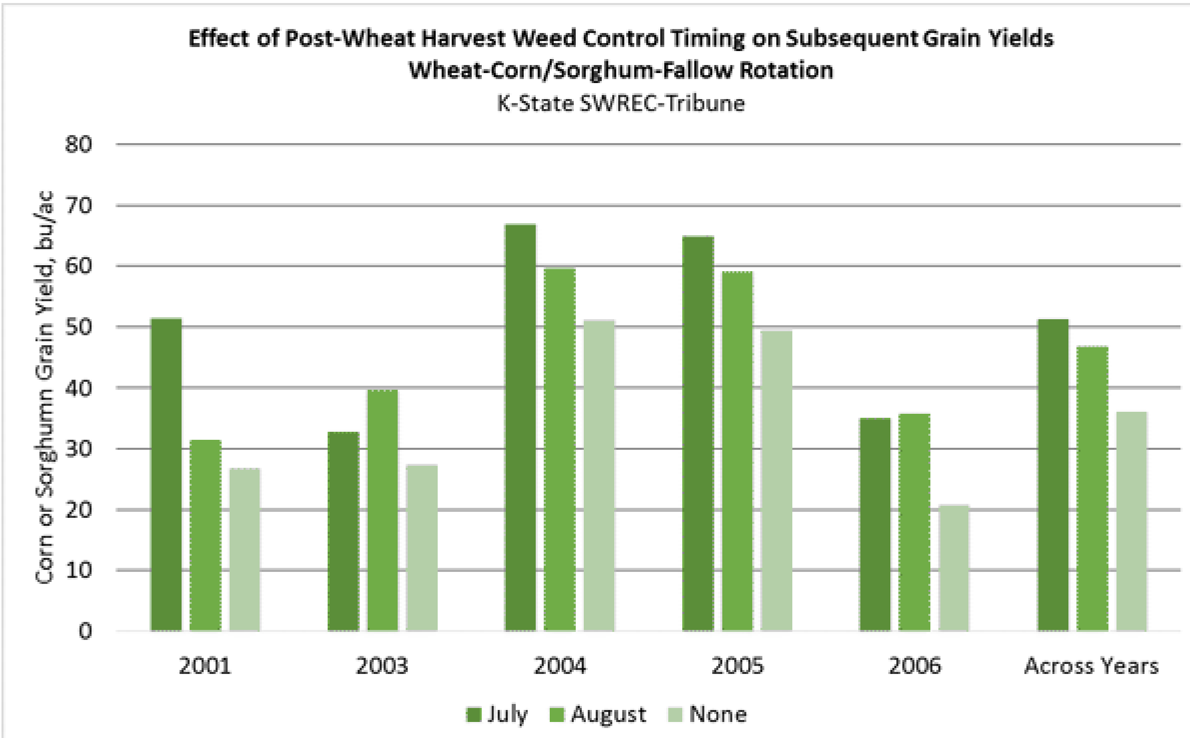

Figure 3. Effect of post-wheat harvest weed control timing on subsequent corn yields (2004 crop is grain sorghum) in a wheat-corn-fallow rotation, Tribune.

In the subsequent corn crop, plant stands were unaffected by weed control timing, whereas the ears per acre yield component declined with delayed weed control, indicating increased barrenness. Spring timing of weed control resulted in the lowest values for water use and water use efficiency. The reduced plant-available water in the spring weed control timing was evident at row-crop planting and this shortfall continued to be present even at the July in-season measurement (Figure 2, Panel D), obviously limiting water use and grain yield potential. By using the differences in plant-available water at planting and grain yields among the treatments in this study, 1 inch of plant-available water was worth an average of 9.4 bu/acre in corn grain yield.

Summary

Delaying weed control in a wheat-corn/sorghum-fallow rotation until spring resulted in soil water depletion that was evident at the first measurement in August. This additional depletion due to weed growth was never recovered, resulting in reduced available soil water at corn planting and persisting throughout the growing season. Differences in plant-available water were clearly reflected in grain yields. Delaying weed control resulted in reductions in grain yields, biomass production, water use, and water use efficiency.

For more information on controlling weeds after wheat harvest, see the article "Post-harvest weed control in wheat stubble" in eUpdate No. 700, July 2, 2018.

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6. Updated Wheat Variety Disease and Insect Ratings publication

Many farmers are evaluating the performance of their current varieties and considering if they should grow new varieties in the future. Clearly, the yield potential of wheat variety is a top priority, but other traits are also important to consider when selecting a variety.

Wheat Variety Disease and Insect Ratings 2018, from K-State Research and Extension, has now been released for this year. Agronomic characteristics and disease resistance information is included, as well as a brief description of some of the more commonly grown and upcoming wheat varieties in the state.

Genetic resistance to diseases and insect pests is usually the most effective, economical, and environmentally sound control method. Resistance ratings represent results from field and greenhouse evaluations by public and private wheat researchers at multiple locations over multiple years. These ratings can help producers select wheat varieties and minimize potential for serious yield losses.

Electronic versions of the *Wheat Variety Disease and Insect Ratings 2018* publication MF991 can be found at: https://www.bookstore.ksre.ksu.edu/pubs/MF991.pdf

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7. 2018 Demonstration Plot Tour will be held July 25 in Grantville

Come join K-State crop and soil specialists for a 2018 Demonstration Plot tour hosted by the KSRE Meadowlark District and Bigham farms. The event takes place on Wednesday, July 25 and the tour will begin at 4:30 p.m. Stay afterwards for a light meal sponsored by Kansas Corn and Tarwater Farm and Home. The tour is located at Bigham Farms, SE corner of Barton Road and South Street in Grantville, KS.

Topics to be covered include:

- In-Season corn N management
- Aerial imagery in corn/soybean production
- Late-Season soybean management
- Nitrogen strip plots for 2018

Presenters for the tour will be:

- Dorivar Ruiz Diaz, K-State Soil Fertility Specialist
- Ignacio Ciampitti, K-State Crop Production and Cropping Systems Specialist
- Stu Duncan, K-State Northeast Area Agronomist
- Emily Coop, Kansas Corn
- Dan Bigham, Plot cooperator

Please RSVP to allow for an accurate meal count by **Monday, July 23** by calling 785-863-2212 or by email at dhallaue@ksu.edu

We'll talk In-Season Corn N Management, Aerial Imagery in Corn/Soybean Production, Late Season Soybean Management and this year's Nitrogen Strip Plots.

Join us for the tour at 4:30 PM. Stick around for a light meal sponsored by Kansas Corn and Tarwater Farm & Home!

Presenters:

- Dr. Dorivar Ruiz-Diaz, KSU Soil Fertility Specialist
- Dr. Ignacio Ciampitti, KSU Cropping Systems Specialist
- Dr. Stu Duncan, KS NE Area Agronomist
- Emily Koop, Kansas Corn
- Dan Bigham, Plot Cooperator

Meal count RSVP requested by Monday, July 23rd.
Call (785) 863-2212 or
e-mail dhallaue@ksu.edu

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8. Southwest Research-Extension Center Fall Field Day, August 23 in Garden City

Kansas State University's Southwest Research-Extension Center will host its Field Day 2018 on Thursday, Aug. 23 at 4500 E. Mary St. in Garden City. The day features field tours, indoor seminars, and seed, implement and farm supply company displays.

Registration and vendor exhibits open at 8 a.m. with the program highlighting K-State research updates at 9:15 a.m. A complimentary lunch will be provided.

Field tours include:

- Weed control in irrigated corn – Randall Currie
- Weed control in irrigated grain sorghum – Vipan Kumar and Randall Currie
- Update on mobile drip irrigation – Jonathan Aguilar
- Diversified annual forage crop rotations – John Holman
- Perspectives on forbs in Kansas grasslands: Who they are, what they do, and why they are important – Bob Gillen and Anthony Zukoff

Seminars include:

- Insect research update – Sarah Zukoff
- Pesticide safety update – Sarah Zukoff
- Core hour for commercial pesticide license – Shawn Rich, Kansas Dept. of Ag.

More information is available at www.southwest.k-state.edu or email rscurrie@ksu.edu.

K-STATE
Southwest Research-Extension Center
FIELD DAY 2018

Thursday, August 23, 2018
4500 E. Mary St. • Garden City, KS
Registration 8:00 a.m., Program 9:15 a.m.
Lunch Provided

Field Tours

Weed Control in Irrigated Corn
Randall Currie
Weed Control in Irrigated Grain Sorghum
Vipan Kumar and Randall Currie
Update on Mobile Drip Irrigation
Jonathan Aguilar
Diversified Annual Forage Crop Rotations
John Holman
Perspectives on Forbs in Kansas Grasslands: Who they are, what they do, and why they're important
Bob Gillen and Anthony Zukoff

Seminars

Insect Research Update
Sarah Zukoff
Pesticide Safety Update
Sarah Zukoff
Core Hour for Commercial Pesticide License
Shawn Rich with the Kansas Department of Agriculture

Displays

Local Seed, Implement, and Farm Supply Representatives

For More Information Contact
rscurrie@ksu.edu

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9. Kansas River Valley Fall Field Day - August 14

All crop producers are invited to attend the **2018 Kansas River Valley Experiment Field Day** on **Tuesday, August 14 at 5:00 p.m**. The field day will be held at the Rossville field located 1 mile east of Rossville on Hwy. 24 on the south side of the road.

This is free event for all and will included a barbeque meal sponsored by Wilbur-Ellis. Presentations will be geared to having a more profitable and efficient crop production operation. Topics and speakers will include:

- **Dr. Anita Dille – Integrating cover crops into your weed management plans**
- **Dr. Nathan Nelson – Utilizing cover crops for erosion control**
- **Dr. Stu Duncan – Early weed control strategies in corn and soybeans**
- **Dr. Ignacio Ciampitti – Evolution of production management practices for corn and soybeans**

To pre-register for the catered meal, please call Michelle Wilson at the Shawnee County Extension office at 785-232-0062, Ext. 100, by **5:00 p.m. on Monday, August 13**. Additional field day sponsorship includes the Kansas Corn Commission. Certified Crop Advisor and Commercial Pesticide Applicator credits have been applied for.

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Kansas State Research & Extension

KSU Agronomy

Kansas River Valley Experiment Field
2018 Fall Field Day

Tuesday, August 14 - **5:00 p.m. Sharp!**

Rossville Field — 1 mile east of Rossville on U.S. Highway 24 on the south side of the road

Dr. Anita Dille – Integrating cover crop into your weed management plans

Dr. Nathan Nelson – Utilizing cover crops for erosion control.

Dr. Stewart Duncan--Early weed control strategies in corn & soybeans.

Dr. Ignacio Ciampitti – Evolution of production management practices for corn & soybean crops.

To pre-register for the catered BBQ meal sponsored by Wilbur-Ellis, call Michelle Wilson at the Shawnee County Extension Office at 785-232-0062 — Ext. 100 by 5:00 p.m. on Monday, August 13. Additional Field Day sponsorship in-part by the Kansas Corn Commission. **Certified Crop Advisor and Commercial Pesticide Applicator Credits have been applied for.**

10. East Central Experiment Field fall field day - August 15

The East Central Experiment Field in Ottawa will host its fall field day on **Wednesday, August 15**. The event will begin at 9:00 a.m. with registration, coffee, and doughnuts. The field day program will begin at 9:30 a.m. A complimentary lunch will be served at noon to conclude the event.

Field day topics and speakers include:

- **Dr. Anita Dille – Integrating cover crops into your weed management plans**
- **Dr. Nathan Nelson – Utilizing cover crops for erosion control**
- **Dr. Stu Duncan – Early weed control strategies in corn and soybeans**
- **Dr. Ignacio Ciampitti – Evolution of production management practices for corn and soybeans**

The field day is located at the East-Central Experiment field near Ottawa. From I-35 at the Ottawa exit, go south 1.7 miles on Hwy 59, then east 1 mile, and south 0.75 mile.

Certified Crop Advisor and Commercial Pesticide Applicator credits have been applied for. Please contact the East-Central Research Station at 785-242-5616 at least two days prior to the event if accommodations are needed for persons with disabilities or special requirements. The field day is sponsored in part by the Kansas Corn Commission.

Kansas State Research & Extension

KSU Agronomy Ottawa Field Day

Wednesday, August 15th, 2018

East-Central Experiment Field

Ottawa, KS

From I-35 at Ottawa: South 1.7 miles on 59 Hwy, East 1.0 mile, South 0.75 mile

9:00 ....Registration, coffee, and doughnuts

9:30 ....Program begins

Dr. Anita Dille – Integrating cover crop into your weed management plans

Dr. Nathan Nelson – Utilizing cover crops for erosion control

Dr. Stewart Duncan--Early weed control strategies in corn & soybeans

Dr. Ignacio Ciampitti – Evolution of production management practices for corn & soybean crops

12:00 ....Lunch

Certified Crop Advisor and Commercial Pesticide Applicator Credits have been applied for. Please contact the East-Central Research Station at 785-242-5616 at least two days prior to this event if accommodations are needed for persons with disabilities or special requirements. Field Day sponsored in-part by the Kansas Corn Commission.

Kansas State University Research & Extension is an Equal Opportunity Provider and Employer

11. Don't miss the soil health summer tour - July 27

K-State Research and Extension and the Department of Agronomy, in conjunction with the Kansas Corn Growers Association and the Soil Health Partnership, is hosting a Soil Health Summer Tour on Friday, July 27th.

The tour will consist of a field day at two locations on July 27:

- **Glen Elder – 10:00 a.m. to noon**
  - Palen Family Farms, 1031 180 Road, Glen Elder, KS 67446

- **Spring Hill – 5:00 p.m. to 7:00 p.m.**
  - Guetterman Brothers Family Farms, 14633 West 239th Street, Spring Hill, KS 66083

The program will include a discussion of management practices to improve overall productivity and soil health to benefit farmers. Presenters on the tour include:

- Dr. Charles Rice, Soil Microbiologist
- Dr. Ignacio Ciampitti, Crop Production and Cropping Systems Specialist
- Dr. Dorivar Ruiz Diaz, Soil Fertility Specialist

A meal will be provided at each location courtesy of the sponsors. Please RSVP by July 20 for the location you plan to attend. You can send the RSVP to Troy Lynn Eckart at sprite@ksu.edu or 785-532-0400, or the individuals listed below.

Glen Elder, KS – Sandra Wick, Crop Production Extension Agent, Post Rock District, swick@ksu.edu, 785-282-6823

Spring Hill, KS – Katelyn Barthol, Agriculture and Natural Resources Agent, Marais des Cygnes District, kbarth25@ksu.edu, 913-294-4306.

Kansas State University
Department of Agronomy

K·STATE Research and Extension

Kansas Corn Growers Association

Soil Health Partnership

SOIL HEALTH SUMMER TOUR – Field Day

Friday, July 27th

Glen Elder, KS – 10 am to 12pm

1031 180 Rd, KS 67446
Palen Family Farms

Spring Hill, KS – 5 pm to 7pm

14633 West 239th St, KS 66083
Guetterman Brothers Family Farms

We will be discussing management practices to improve overall productivity and soil health to benefit farmers.

PRESENTERS

Dr. Charles Rice
Soil Microbiology

Dr. Ignacio Ciampitti
Crop Production

Dr. Dorivar Ruiz Diaz
Soil Fertility

* Lunch and dinner provided by sponsors