

Extension Agronomy

eUpdate

02/16/2023

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. Late winter kochia control in fields going to corn or grain sorghum

Last week, we shared some general information about applying pre-emergence herbicides for kochia control. This week, we are going to focus on specific recommendations for fields going to corn or grain sorghum this growing season. Next week, we'll discuss fields going to soybean, sunflower, and wheat.

Kochia control in fields going to corn

Kochia starts emerging in mid-February to early March and continue its emergence through spring into summer (Figure. 1). Any effective kochia control plan for fields going to corn should include early spring application of a burndown herbicide with an effective soil-residual herbicide for controlling early flushes. For example, an application of dicamba alone can control susceptible kochia; however, a combination of 1 to 2 pints of atrazine and 8 to 16 oz. dicamba will control existing broadleaf and grass weeds and provide extended residual activity, often into late spring. This combination will address dicamba-resistant biotypes, but other options are needed for triazine-resistant biotypes.



Figure 1. A young kochia seedling in wheat residue. Photo by Sarah Lancaster, K-State Research and Extension.

A study published in 2019 by weed scientists from across the Great Plains reported excellent control (99%) of glyphosate-resistant kochia can be attained in corn by Degree Xtra followed by Impact, Verdict followed by Status, or Balance Flexx followed by Laudis + atrazine. Adding atrazine to group

27 herbicides like Balance Flexx or Laudis is likely to improve control. Data from Hays, KS are shown in Figure 2. All of the treatments evaluated provided acceptable control, except for Acuron applied pre-emergence followed by Liberty + Status + Atrazine. Corn yields ranged from 88 to 111 bushels/acre with the greatest yields obtained in Verdict + atrazine pre-emergence followed by: Liberty + Atrazine, Roundup + Armezon Pro + atrazine, Liberty + Status + atrazine, or Roundup + Status + atrazine; Resicore + atrazine applied pre-emergence followed by Durango + atrazine; and Acuron applied pre-emergence followed by Roundup + atrazine. Pre-emergence programs based on Verdict plus atrazine could also be considered for fields going to grain sorghum.



Figure 2. Kochia control in field studies conducted at Hays, KS. PRE, EPOST, and LPOST treatments were applied on April 23, June 11, and June 23, respectively. Similar letters indicate similar weed control.

Kochia control in fields going to sorghum

As sorghum planting in western Kansas generally resumes in mid-May, conserving soil moisture by controlling kochia and other weeds prior to sorghum planting is utmost important. Just like corn, kochia control in fields going to sorghum can be achieved with tank-mix application of dicamba (8 to 16 oz/a) with atrazine (1 to 2 pints/a) in early spring. If fields are infested with glyphosate-, triazine, and/or dicamba-resistant kochia, Sharpen (2 oz/a) or Gramoxone (2 to 4 pints/a) can also be used to control resistant kochia biotypes. An application of PRE herbicides such as DegreeXtra (64 to 96 oz/a) or Lexar (96 oz/a) at planting can help controlling kochia in sorghum for 4-5 weeks.

Reference: Sbatella et al. 2019

Sarah Lancaster, Weed Management Specialist slancaster@ksu.edu

2. Native grasses: Management factors during and after stand establishment

Overgrazing and weed control are the two most important management considerations during establishment. Grazing should be avoided during the first and possibly the second growing season depending on stand establishment. Short periods of grazing (flash grazing) for weed control early in the first growing season are encouraged to stimulate tillering in the new seedlings. For example, graze for 1 day with enough animals to harvest the weeds without damaging the grass seedlings.

Haying in the year of seeding may be beneficial if there is enough forage produced, but set the mower to at least 4-inch height to ensure the plants can readily regrow. As a general rule, hay most native species after the first week of July. This will allow time for the plants to develop tiller buds for the following year and to build reserves for early growth.



Figure 1. Native prairie a few weeks after hay harvesting. Photo: Bruno Pedreira, K-State Research and Extension.

Weed control

Weed control helps reduce competition for moisture, nutrients, and sunlight in new seedings. When weed control is necessary, the main methods are mowing and herbicides. Dense shade created by annual grasses is the greatest concern, the most commonly encountered are downy brome,

Japanese brome, crabgrass, and foxtail. Weed control is most beneficial during May and June with little benefit in August. Preplant or preemergence herbicides are labeled for some species and situations. Consider using an herbicide wipe-on applicator if weeds are 6 inches taller than the desirable grass or spot spray if the weeds are not spread throughout the whole field. Consult the *Chemical Weed Control for Field Crops, Pastures, Rangeland, and*

Noncropland (<u>bookstore.ksre.ksu.edu/pubs/CHEMWEEDGUIDE.pdf</u>) for current herbicide recommendations for products, rates, and timing.

Mow before weedy plants produce seeds. Generally, broadleaf weeds should be mowed before they are 8 inches tall. Annual grasses should be mowed to prevent seed production. Herbicides may be used to reduce annual or perennial broadleaf weeds after the grass plants have become established. Consult the label for application restrictions and instructions.

Chemicals must be federally and state registered. They also must be applied in accordance with authorized registered uses, directions, and cautions on the label and all other federal and state policies and requirements.

Management after establishment

After establishment, seeded areas should be managed to promote tillering and to keep the soil covered. A great forage stand reduces erosion and runoff, contributing to minimized soil loss, providing high forage production, and improving wildlife habitat.

New stands must be grazed following appropriate stocking rates, good grazing distribution, and proper season of use. Proper management of a seeded grass stand is a must with the investment of time, money, and labor involved in establishing it.

Haying should be done in early July to harvest the highest combination of forage accumulation and nutrient value. A minimum cutting height of 4 inches is recommended to ensure plants have adequate opportunity to regrow and build reserves for the following season.

Prescribed burning should be done in late spring, just as the seeded grasses are starting growth (less than 1½inches). Burning at this stage stimulates tillering, removes the last year's dead forage, and increases forage quality. Prescribed burning can be done as early as one growing season after seeding.

Related KSRE Publications

- Managing Kansas Grazinglands for Multiple Benefits (MF2086)
- Rangeland and Pasture Grasses of Kansas (C567)
- Prescribed Burning: Safety (L565)
- Prescribed Burns: Planning and Conducting (L664)
- Prescribed Burning as a Management Practice (L815)
- Prescribed Burning: Equipment (L876)
- Grazing Distribution (MF515)
- Stocking Rate and Grazing Management (MF1118)

This article originated from the recently released KSRE publication *Establishing Native Grasses* (*MF2291*) and can be viewed online at <u>bookstore.ksre.ksu.edu/pubs/MF2291.pdf</u>

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3. New sorghum growth and development poster now available

An updated version of the poster *Sorghum Growth and Development*, has been published by K-State Research and Extension. It is available online at: <u>http://www.bookstore.ksre.ksu.edu/pubs/MF3234.pdf</u>

The full-color poster is 20x30 inches, and describes nine stages of growth of the sorghum plant. New features for this version include key management practices associated with each growth stage, updated graphics, and the dry-down progression of the grain until physiological maturity.

Ignacio Ciampitti, Farming Systems Specialist in the Department of Agronomy, is the lead author, with assistance from Ana Carcedo, post-doctoral fellow in Dr. Ciampitti's research group. This poster is based on information from KSRE publication *How a sorghum plant develops* – S3 by Dr. Richard Vanderlip, emeritus professor.

Sponsors for this publication include K-State Research and Extension, the Kansas Grain Sorghum Commission, the Center for Sorghum Improvement, and the Sorghum Checkoff.

A limited number of free print versions of the poster will be available soon and can be ordered at the KSRE Bookstore at: <u>https://bookstore.ksre.ksu.edu/Item.aspx?catId=281&pubId=19219</u>

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Sorghum Growth and Development

Stage 0 - Emergence

The plant breaks through the soil surface; early plant gro between planting and emergence depends on soil temp cover and distribution, soil moisture planting death and

Flag Leaf Visible

Adjust planting time so emergence occurs in warm soil with g conditions. Early planting delays emergence. Treat seed before Preplant or preemergent herbicide is critical. Scout for proper

Stage 1 - Three-Leaf

Three leaves are fully expanded with a visible collar (leaf tissue at the junction of the leaf blade and sheath). This stage occurs 10 to 20 days at envergence. Because the growing point is uside the soil sarchace much the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) without killing the plan the leaf area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set area can be removed (e.g., hall damage) setther the set

Management Scout for insects, diseases, weeds, and other production issues. Poor control can significantly reduce yields.

Stage 2 - Five-Leaf

Five leaves are fully expanded with a visible collar 20 to 25 days after emergence. The growing point is still below the soil surface. The plant begins tapid growth and the sost system expands tapidly. If leaf area to scorast, negrowth is more vigorous than at the three-leaf stage.

Management Scout for insects, diseases, weeds, and other production issues. Minin weed competition from planting through this growth stage is critical



engence Three-Leaf

Stage 3 - Growing Point Differentiation

Potential leaf number is defined 30 to 40 days after emergence. The growing point is above the soil surface and changes from producing to to forming heads. Maximum placing growth and matcheret uptake not a advanced. Following growing point differentiation, rapid stem elongat and half development occur.

Management Scout for weeds, insects, and diseases. Sorghum plants are now more competition against weeds. Adequate supplies of nutrients and water are critical to maximize growth.

Stage 4 - Flag Leaf Visible

stage + - rag Lecel visione the final leaf, the flag leaf is visible in the whort. The head is developing, apid stem elongation and increases in leaf area occur. All except the nail three to four leaves are fully expanded. Light Interception is clove to seasoning, and growth and nativer upstake continues at a ragid size.

Management

Management: Adequate supplies of nutrients and water are key to provide maximum growth. While only about 20% of the total growth has occurred, the nutrient uptake is far groater with more than 40% potassiam uptake completed, more than 30% of the nitrogen, and more than 30% of the phosphoru stuken up by the plant.

Stage 5 - Boot

The bread has developed to rearly full size and is enclosed in the flag-less theath. The upper table, known as the "peductic" begins to elongate. Nammun potential head size and seed number has been set. This stage occurs 50 to 60 days after emergence. Maximum leaf area has been indeved. It is important to protect the leaf to ensure light interception suring grain filling.

Management Severe moistane stress or herbicide injury during this stage may prever the head from eventing completely from the flag leaf sheath. From this point onward, heaf area should be protected against any stressors.



Maturity Differences within the Head

Because the sorghum panicle does not go through growth stages sample grains from the bottom. The first grains to develop and ma in the top of the panicle. The lower grains are the last to mature.

Management When sampling in the bottom of the panicle, the upper grains have already been through that stage.

Soft-Dougl

Stage 6 - Half-Bloom

Stage 7 - Soft-Dough

Full exertion of the head occurs at this stage, with 50% of the plants in a field blooming. Total growth is 50% complete. Compared to final nutrient content at maturity, nutrient accumulation is 60% for phosphorus, 70% for inflogen, and more than 80% for potassium.

Management Grain formation begins. Any limitation in plant size, leaf area, or plant number: can no longer be corrected; however, if environmental conditions are favorable, the songhum plant can still compensate for seed number per head and seed weight. Choose a hybrid maturity and planting take so this stage will not cocur under severe head or dy weather.

Grain formation begins immediately after flowering and the grain fill and/or 100m dry weight. The term loses weight due to a semobilizati process from stem to grain. Grains are the main priority for the plan influent a good balance between teasers (source) and grain filling duration of grain filling can be shortened.

Management Seven stress at this stage can result in "blasting" and poor head filling lighter and chaffy gazins's in normal souphore production scenario in layers remain green (stary green) until the end of the seasor, so yield reducing leaf loss is uncommon.







ches 75% of its final dry weight and nutrient uptake is almo Lower leaves lose functionality due to remobilization of to grains or senescence. Final yield depends on the rate of re accumulation and duration, with longer duration usually dated in greater yiel

Management A severe stress at this growth stage can still reduce grain weight, but not to the extent possible in the soft-dough stage. Freeze can negatively impact width if the can draw not auch matrixing hefrom this average accurs.



Stage 9 - Physiological Maturity

s achieve maximum dry weight and are physiologically mut er grain is identified by looking for the dark spot, the black ottom of the kernel (blocking the movement of dry matter nets to grains). Grain moisture tanges from 25% to 35%.

Management Harvest time depends on the environmental conditions. Drying can be promoted using desiccants without affecting yield when applied after

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n How a Sorghum Plant Develops, 53, 6-State R owers: Richard L. Vanderlip and PX Vara Press



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www.agronomy.ksu.edu | www.facebook.com/KState.Agron | www.twitter.com/KStateAgron

4. Kansas Ag-Climate Update for January 2023

The Kansas Ag-Climate Update is a joint effort between our climate and extension specialists. Every month the update includes a brief summary of that month, agronomic impacts, relevant maps and graphs, 1-month temperature and precipitation outlooks, monthly extremes, and notable highlights.

January 2023: Despite January Precipitation, Continued Exceptional Drought Conditions Remain in Kansas

The average temperature for the month was 33.1°F, or 2.2°F above normal. This ranks as the 25th warmest January on record out of 129 years of records, dating back to 1895. Northwest and west central Kansas were below normal thanks to persistent snow cover for most of the month, while all other divisions were above normal. It was the 10th warmest January on record in southeast Kansas and ranked in the top 20 warmest in northeast, east central and south central Kansas.

Average precipitation for January was 1.06", or 0.34" above normal. This ranks as the 25th wettest on record. Southwest Kansas was the only division below normal, but only by 0.02". The three northern climate divisions all had top 15 wettest, as did west central Kansas. Snowfall at Goodland for January was 16.4", their 4th snowiest January on record out of 113 years of records.



View the entire January 2023 Ag-Climate Update, including the accompanying maps and graphics (not shown in this eUpdate article), at <u>http://climate.k-state.edu/ag/updates/</u>

Xiaomao Lin, State Climatologist xlin@ksu.edu



The dates and locations have been set for two Wheat Rx Schools to be held in early March. The first event will take place on March 7 in McPherson. The second seminar is scheduled for March 8 in Russell. Wheat Rx is a partnership between Kansas Wheat Commission and K-State Research and Extension to disseminate the latest research recommendations for high-yielding and high-quality wheat to Kansas wheat farmers.

These two Wheat Rx schools will have speakers sharing the most up-to-date wheat research information on how to manage your wheat crop not only for yield but also for quality and sustainability, as well as industry partners sharing how growers can capitalize on high protein wheat. Detailed agendas for each school are being finalized and will be shared soon.

Registration for the event is \$110 for non-members of the Kansas Association of Wheat Growers. However, members (including new members) will receive one free registration. Lunch and meeting materials are included with the registration fee.

Online registration is open at https://kswheat.com/wheat-rx-registration-page

2023 Wheat Rx Schools

- March 7
 McPherson Opera House Grand Ballroom
 216 S Main Street
 McPherson, KS 67460
- March 8
 Fossil Creek Hotel and Suites 1430 South Fossil Street Russell, KS 67665

Romulo Lollato, Wheat and Forages Specialist lollato@ksu.edu

6. K-State to host Whole Farm Health series beginning Feb. 23

K-State Research and Extension will host three upcoming workshops to address issues facing Kansas farm families. The series, Whole Farm Health: Building Resilience from the Field to the Farmer, will be held on three upcoming Thursday evenings:

- February 23 Regenerating Soil Health One Field at a Time
- March 2 Increasing Farm Financial Resiliency
- March 9 Sustaining Personal Mental Health and Wellness

All three sessions will be held at the Grace Community Church in Overbrook, Kansas from 5:30 p.m. to 8:30 p.m. Admission is free and a meal will be provided.

More information and registration is available online at <u>https://whole-farm-health.constantcontactsites.com</u>.

These workshops offer an opportunity to pull together as a farm community and address strategies for building more resilient farm systems through diversified cropping systems, incorporating cover crops, and grazing, as well as simple methods to identify indicators of mental health in ourselves or our loved ones who are suffering.

In addition to K-State Research and Extension, workshop sponsors include the Kansas Farm Bureau, Kansas Soil Health Alliance, Frontier Farm Credit, Kansas Alliance for Wetlands and Streams, the U.S. Environmental Protection Agency, Douglas County Conservation District and the Kansas Watershed Restoration and Protection program.

More information is also available by contacting Kaltenekker at 785-843-7058, or <u>mkaltenekker@ksu.edu</u>.

Whole Farm Health

Building Resiliency from the Field to the Farmer Series Grace Community Church Overbrook, KS 5:30 – 8:30 PM





February 23 Regenerating Soil Health One Field at a Time <u>March 2</u>

Increasing Farm Financial Resiliency

March 9

Sustaining Personal Mental Health and Wellness





7. Crop Talk webinar series will continue through the end of February

The popular K-State Crop Talk webinar series kicked off on February 7. This year, Crop Talk will be focused on agronomic topics for producers across the state of Kansas. Topics include spring annual forages, climate-smart agriculture, alternative weed control research, and the latest on corn tiller research. Continuing education credits have been applied for and 1 credit will be available for each session.

Each webinar will begin at 12:00 pm (CST) and last until 1:00 pm. Sessions are offered on each Tuesday in February.

Upon registration, participants will receive an email with instructions to attend via Zoom or YouTube. These webinars are open to all and there is no cost. Visit the K-State Northwest Research and Extension Center's website to register: <u>https://www.northwest.k-state.edu/events/crop-talk-series/index.html</u>.

Please contact your local KSRE extension office or the Northwest Research and Extension Center at 785-462-6281.

The remaining webinars, with dates, topics, and speakers, is detailed below.

February 21 – **Alternative Weed Control Research from Kansas** Sarah Lancaster, K-State Weed Science Specialist

February 28 – Corn Tillers: The Good, the Bad, and the Ugly

Rachel Veenstra, K-State Crop Science Agronomist

K-STATE Research and Extension CropTalk Webinar Series Spring Annual Forages To Fill the Gap in Cattle Feed February 7 John Holman, K-State Agronomist at Garden City February 14 Climate Smart Agriculture, What's All the Buzz? Peter Tomlinson, K-State Environmental Quality Agronomist Alternative Weed Control Research from Kansas February 21 Sarah Lancaster, K-State Extension Weed Specialist February 28 Corn Tillers: The Good, the Bad, and the Ugly. Rachel Veenstra, K-State Crop Science Agronomist Held from 12:00 – 1:00 pm CT Register to attend at www.northwest.ksu.edu/events Webinars will be broadcast via zoom and YouTube Links for joining will be sent after registration Certified Crop Advisor (CCA) Credits have been applied for 1 per session If you have questions, please contact your local Extension agent or the K-State Northwest Research and Extension Center at 785-462-6281.

K-State Research and Extension is an equal opportunity provider and employer.

8. K-State Soybean School scheduled for February 22 in Salina

K-State Research and Extension will be offering a one-day Soybean School on February 22 at Great Plains Manufacturing, 1525 E. North Street in Salina, KS. The school will start at 8:30 am with registration and presentations will begin at 9:00 am. The presentations will conclude at 2:30 pm with an optional tour of Great Plains Manufacturing immediately following the last presenter. A noon lunch will be provided thanks to sponsorship by the Kansas Soybean Commission.

This event will provide in-depth training targeted for soybean producers and key-stakeholders. Some topics that will be covered include crop production practices, soybean breeding update, Kansas Mesonet tools, insect and disease management, and market outlook.

There is no cost to attend this school. In addition, CCA credits have been applied for. For those interested in the Great Plains Manufacturing tour, please dress for the weather and wear closed-toed shoes.

Please register online at <u>https://bit.ly/soyschool</u>. You can also register by calling one of these contacts: Kansas Soybean at 877-577-6923; Jay Wisbey at 785-309-5850; or K-State Extension Agronomy at 785-532-0400



2023



Kansas Soybean School

February 22, 2023 (8:30 am - 2:30 pm, with a tour to the factory)



Central Location, Salina Great Plains Mfg. Inc. 1525 E North Street Salina, KS.

Register at: https://bit.ly/soyschool



Or by calling at K-State Research and Extension- Central Kansas District, 785-309-5850 Kansas Soybean Office – 877-577-6923

One-hour walking tour to the Great Plains factory will be available following the conclusion of the school. Please dress for the weather and wear closed-toed shoes (required). All other safety gear will be provided.



K-State Research and Extension is committed to providing equal opportunity for participation in all programs, services and activities. Program information may be available in languages other than English. Reasonable accommodations for persons with disabilities, including alternative means for communication (e.g., Braille, large print, audiotape, and American Sign Language) may be requested by contacting the event contact. Jay Wisbey two weeks prior to the start of the event or February 8, 2023, at (785)309-5850 or jwisbey@ksu.edu. Requests received after this date will be honored when it is feasible to do so. Language access services, such as interpretation or translation of vital information will be provided free of charge to limited English-proficient individuals upon request.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service. K-State Research and Extension is an equal opportunity provider and employer.

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