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Research and Extension

Extension Agronomy

eUpdate

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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. Pre-plant herbicide applications for kochia control..... | 3 |
| 2. World of Weeds: Stinging nettle..... | 9 |
| 3. 2019 Kansas Performance Tests with Corn Hybrids report now available | 12 |
| 4. Prescribed burning workshops scheduled for 2020 | 14 |
| 5. Don't miss the inaugural Great Plains Cotton Conference, Feb. 25-26 in Wichita..... | 16 |
| 6. 2020 Kansas Seed and Crops Conference, February 18-19..... | 18 |

1. Pre-plant herbicide applications for kochia control

Now is the time to finalize plans for kochia control. Major flushes of kochia emerge in late February and continue through early April, resulting in dense populations that make adequate herbicide coverage difficult (Figure 1). In addition, glyphosate-resistant kochia is prevalent across western Kansas, making kochia control even more challenging. For these reasons, it is important to apply pre-emergence herbicides in late winter or early spring to control this weed before it emerges.

The choice of herbicides for effective pre-emergence control of kochia in February and early March will vary depending on subsequent cropping intentions. Various cropping scenarios are discussed below.

Note: All graphs in this article were created by Curtis Thompson (retired Extension Weed Science Specialist) based on data from irrigated plots at the K-State Southwest Research-Extension Center at Tribune, and with populations of kochia that are susceptible to triazine herbicides. The kochia at this site is a mixed population of glyphosate-resistant and susceptible plants.



Figure 1. Untreated kochia seedlings amid residue. Photo by Curtis Thompson, K-State Research and Extension.

Components of the herbicide program to effectively manage kochia at germination.

Each herbicide program needs two components. First, a very soluble and effective herbicide that can be incorporated with very little precipitation, such as dicamba. Second, an herbicide that has longer residual activity, which will require perhaps 0.75 inches or more precipitation for adequate incorporation, such as atrazine. Precipitation events during late winter are often too small to activate longer residual herbicides, but dicamba may control kochia for 4 to 6 weeks until the longer residual herbicide is incorporated and. Included below are herbicides by crop that have longer residual control.

The best timing for this application is January through the first week of March but **prior** to kochia emergence, which can vary depending on weather conditions. Later applications, for example, at the time of burndown, are more likely to occur after kochia emergence, which increases the risk of control failure (Figure 2). Fall-applied treatments can help ensure timely application. For example, application of one pound of atrazine can be effective through mid-June in fields planted to corn (Figure 3).



Figure 2. EPP/POST herbicides applied March 10, 2015 for kochia control at Tribune, KS. Kochia at cotyledon stage.

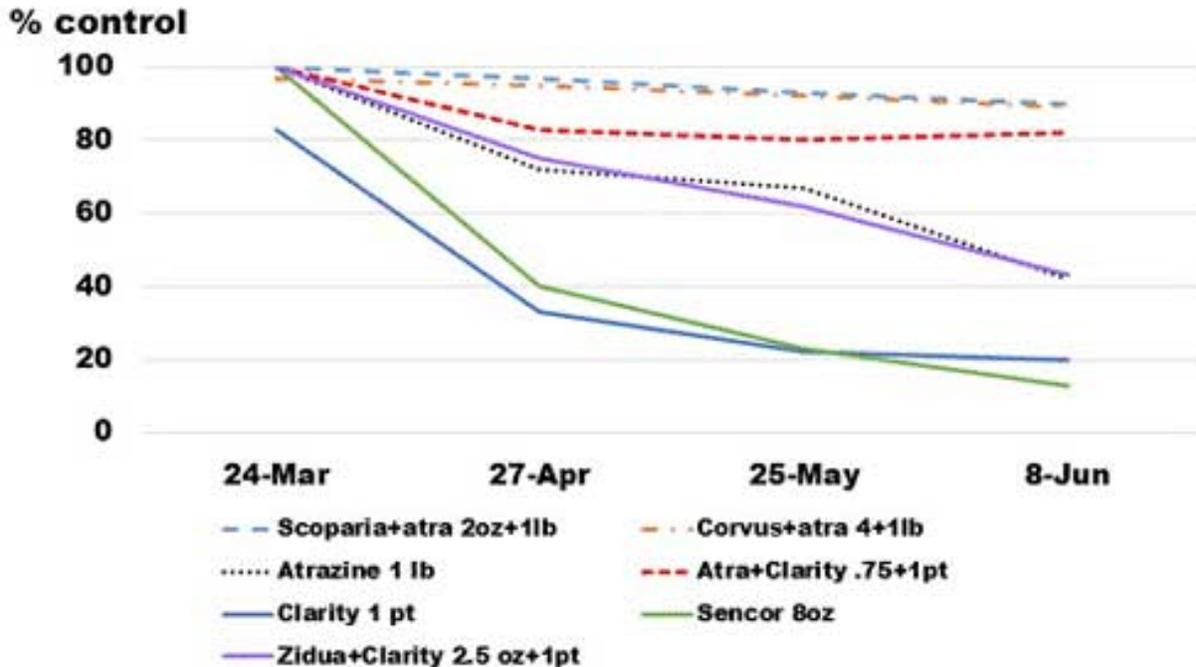


Figure 3. December 20th applied herbicide treatments for kochia control at Tribune, KS during 2015-16.

Fields going to sorghum or corn

A combination of glyphosate (using a minimum of 0.75 lb ae per acre) with herbicides that have PRE and POST activity on kochia is most valuable. Tank mixing 8 to 16 oz of dicamba with 1 to 2 pints of atrazine will control existing broadleaf and grass weeds, and will provide extended pre-emergence control of kochia often into May. An application of dicamba alone can control kochia; however, a combination of atrazine and dicamba is better than dicamba alone (Figure 4).

Corvus or Balance Flexx are good residual herbicides, but should be mixed with atrazine. Corvus+atrazine, Scoparia+atrazine, and atrazine+dicamba (Clarity) were among the best treatments in the experiment shown in Figure 5. Scoparia contains isoxaflutole, as do Corvus and Balance Flexx; however, Scoparia is not labeled ahead of corn planting. The 24c Special local need label for use of Scoparia to control kochia in fallow or ecofallow has a 4-month plant-back restriction to corn and a 6-month plant-back restriction to sorghum.

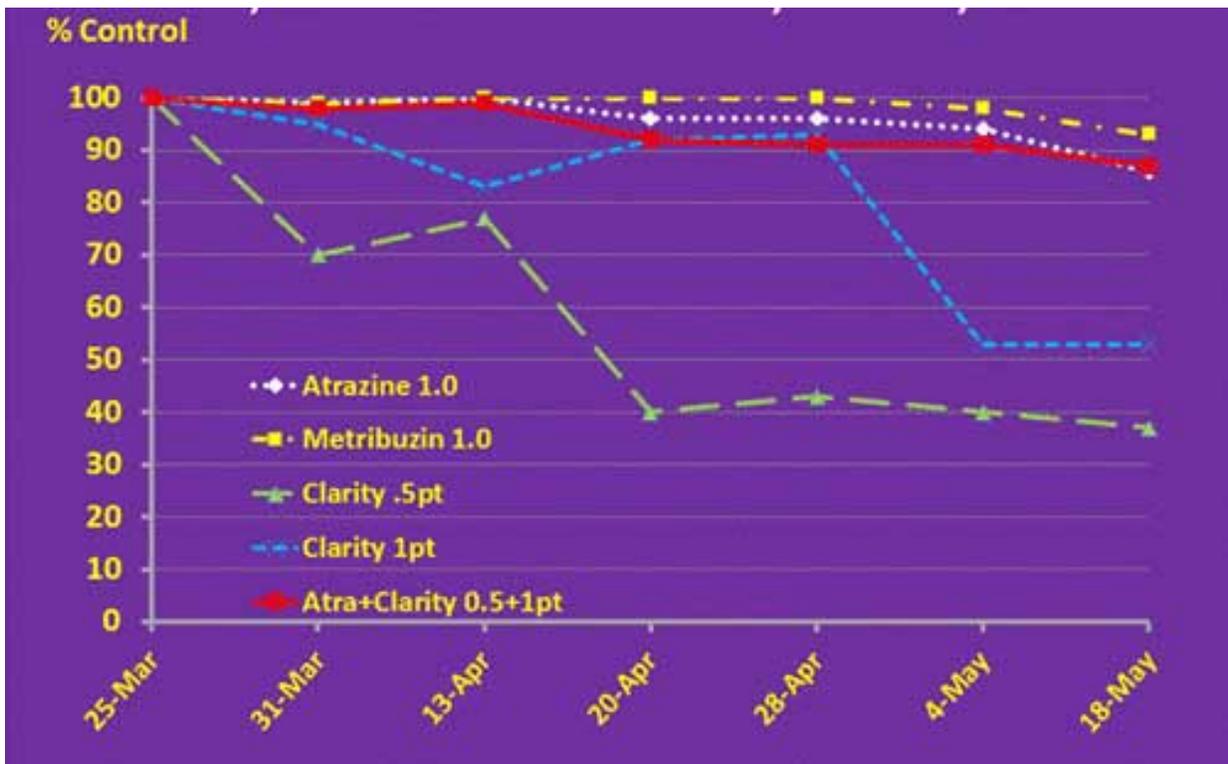


Figure 4. Early preplant herbicides applied March 16, 2012 for kochia control at Tribune, KS

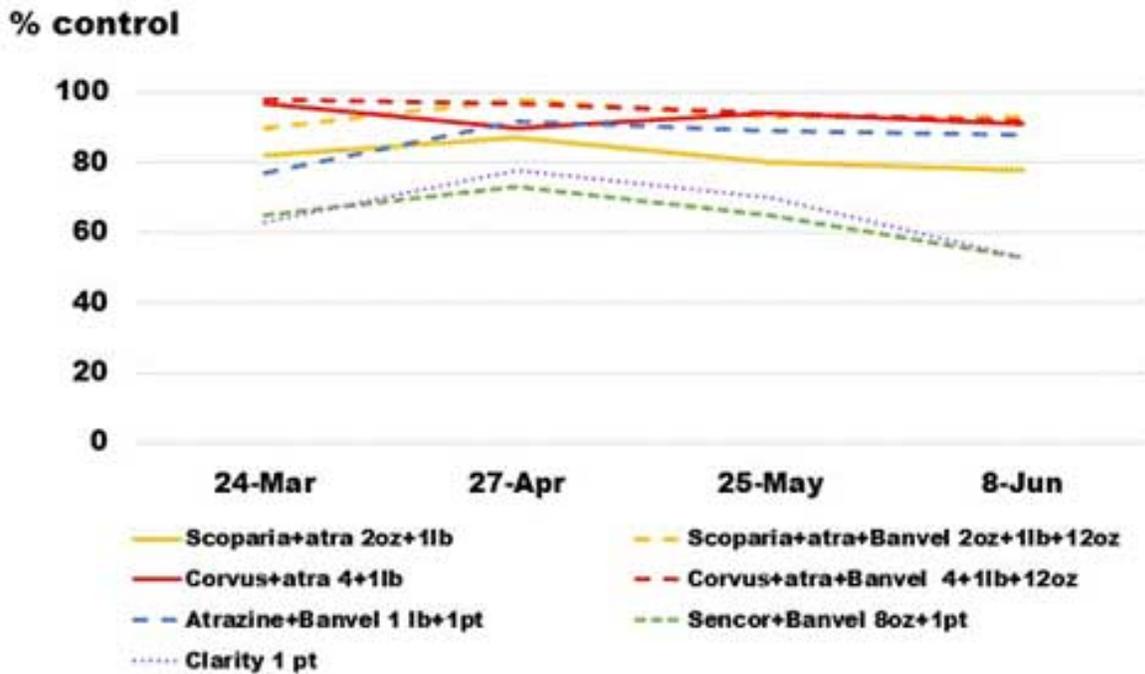


Figure 5. Herbicide treatments applied February 15 for kochia control at Tribune, KS in 2016.

Fields going to sunflowers

Planting sunflower into a clean seedbed is a key step to achieving good season-long control of all broadleaf and grassy weeds. But it is especially important for getting good control of any weed populations, such as kochia, that are resistant to glyphosate or ALS-inhibitor herbicides and cannot be controlled with POST applied herbicides in sunflower.

The best approach to kochia control in sunflower is to start in February/early March with a tankmix of glyphosate (using a minimum of 0.75 lb ae/are) and Spartan (sulfentrazone), Spartan Charge (sulfentrazone+Aim), Broadaxe or Authority Elite (sulfentrazone+Dual Magnum), or Authority Supreme (sulfentrazone+Zidua) before kochia begin to germinate. Figure 6 indicates that 6 oz of Spartan controlled kochia very effectively in the Tribune experiments up to early June. Select pre-emergence products that are effective on kochia and apply at planting to extend control of kochia and other weeds. Dicamba is not an option in these applications, due to label restrictions. Monitor fields closely as additional glyphosate or Gramoxone SL treatments may be required prior to sunflower planting.

Fields going to soybeans

The best management strategy for controlling kochia in soybeans is similar to the control strategy for sunflower, but there are more herbicide options for soybeans. Start in February or early March with a tankmix of glyphosate (using a minimum of 0.75 lb ae/acre) and 8 to 16 oz/acre of Clarity prior to kochia emergence. The use of Clarity requires a minimum accumulation of 1 inch of rain and then 28 days prior to planting soybeans. As indicated in the label, Clarity cannot be used as a preplant treatment in soybeans in areas with less than 25 inches of annual rainfall. Paraquat tank-mixed with metribuzin (Dimetric, Metribuzin, Sencor and others) will provide extended residual control of kochia, as long as the population of kochia is susceptible to triazine herbicides. Be aware of rate restrictions for metribuzin in western KS, as soil and environmental characteristics influence the potential for soybean injury following metribuzin. Sulfentrazone-based products could also be considered for use prior to kochia emergence to manage an early flush of kochia and may provide control into June. However, it's important to note the crop rotation restrictions on these products. Zidua also has activity on kochia, although more rain is required for activation. For adequate kochia control with Zidua, use maximum labeled rates for your soil type. Flumioxazin (Valor)-based products have not provided adequate control of kochia (Figure 6).

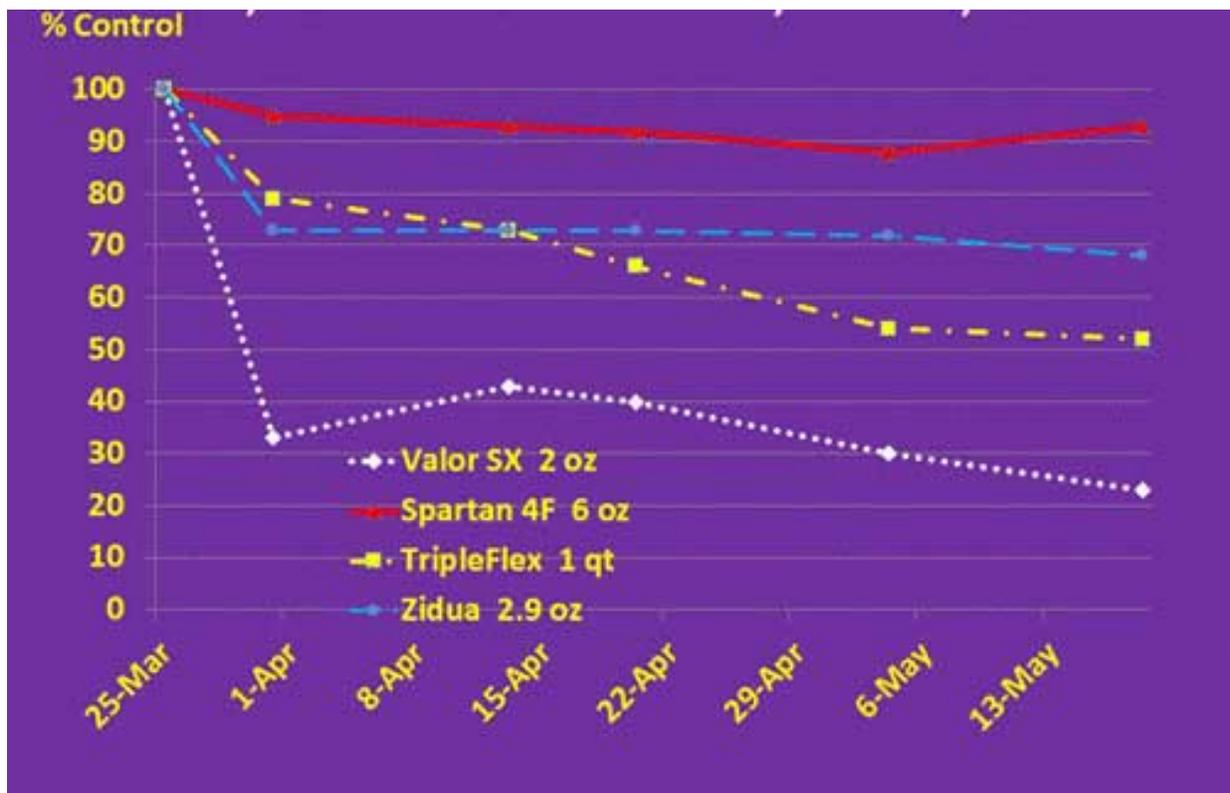


Figure 6. Early preplant herbicides applied March 16, 2012 for kochia control at Tribune, KS.

Fields going to fall-planted wheat

If kochia is emerging in field to be planted to wheat this fall, atrazine cannot be used. Metribuzin can substitute for atrazine and has a 4-month plant-back restriction to wheat. Additional products include Scoparia or Authority MTZ and products containing sulfentrazone or isoxaflutole. Zidua also has good activity but requires significant rainfall for activation, so it should be applied with dicamba.

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2. World of Weeds: Stinging nettle

The focus of this month's article is on stinging nettle and is in response to a request from an eUpdate subscriber.

Ecology of stinging nettle

Stinging nettle (*Urtica dioica*) is a slow-growing perennial plant native to North America (Figure 1). There are other types of stinging nettle in the U.S. and around the world. All of the stinging nettle species have hairs on the stem and leaves that cause discomfort and inflammation to humans. Stinging nettle species were once classified in the same botanical as hemp, but botanists now consider hemp and nettles to be different families.



Figure 1. Typical growth habit of stinging nettle. Photo credit: R. Gardner and D. Cappaert, Bugwood.org.

Some identifying features of stinging nettle are its 4-angled, ridged, hairy stem (Figure 2-top photo). It can grow up to nine feet tall with an extensive system of rhizomes. Leaves are oval-shaped, toothed, and oppositely arranged on the stem (Figure 2-bottom photo). Both sides of the leaves are covered in hairs; leaves on the upper surface tend to be appressed, or flattened, while the bristly, stinging hairs occur mostly along the three main veins on the lower leaf surface. Stinging nettle

flowers are inconspicuous and produced at the base of leaves on the upper branches. Male and female flowers grow on separate plants. Stinging nettle is typically found in disturbed, shady sites with moist but well-drained soils having high fertility.



Figure 2. Upper photo: Stinging nettle stem. Bottom photo: Stinging nettle leaf. Photo credit: R. Gardner and D. Cappaert, Bugwood.org.

The chemicals in the stinging hairs that cause the irritation are acetylcholine, histamine, and serotonin. Some suggest that applying rubbing alcohol to the affected area can relieve irritation.

Large doses of these chemicals can cause respiratory distress and irregular heartbeat. Records from the 1500s suggest that stinging nettle was considered a cure for maladies ranging from tuberculosis to rheumatism to baldness.

Stinging nettle was farmed in Europe to provide fibers during World War I. Today, extracts are used in some antidandruff shampoos and have been proposed as a dietary supplement for farmed fish. In fact, there are far more research papers published about beneficial uses of stinging nettle than weed management!

Management

Research reports suggest that fall or spring applications of glyphosate or applications of oxyflurofen (Colide, Galigan, Goal, and others) to small, actively growing plants will control stinging nettle. Other research suggests that vigorous turfgrass will outcompete stinging nettle. Because stinging nettle is adapted to disturbed areas, population increases were observed after burning rangeland.

References:

Weeds of the Great Plains by Stubbendieck et al., *Weeds of the Midwestern United States and Central Canada* edited by C.T. Bryson and M.S. DeFelice, *Weeds of the West* edited by T.D. Whitson, *Weeds by Muenscher*, Ivins, 1952, Travnicek et al 2005, Murphy and Marren, 1998; Mitich, 1992.

Previous World of Weeds articles

If you missed the first two installments of this series, you can view them at the links below.

[World of Weeds: Mistletoe – Issue 778, December 20, 2019](#)

[World of Weeds: Kochia – Issue 781, January 17, 2020](#)

Stay tuned for the next World of Weeds article coming out in March – the common sunflower! Feel free to send Dr. Lancaster or Kathy Gehl (kgehl@ksu.edu) an email if you have a special request for a future article.

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3. 2019 Kansas Performance Tests with Corn Hybrids report now available

The *2019 Kansas Performance Tests with Corn Hybrids* report is now online and in print form. In this report, you will find a review of the 2019 corn crop, with a detailed discussion summarizing the statewide growing conditions and impacts from diseases and insects. More importantly, the results of the 2019 corn hybrid performance tests are also shown. Corn performance tests are conducted each year by the Kansas Agricultural Experiment Station. The results from these tests provide producers, extension agents, and industry professionals with unbiased agronomic information on many of the corn hybrids marketed in Kansas.

Producers and crop consultants can use this resource to help select corn hybrids for their operation by checking for varieties that show a consistently good performance in their region.

The online version of the corn hybrid performance test results can be found at: <https://bookstore.ksre.ksu.edu/pubs/SRP1152.pdf>. Paper copies can be ordered from the K-State Research and Extension Bookstore at www.bookstore.ksre.ksu.edu/.

4. Prescribed burning workshops scheduled for 2020

The first Prescribed Burning Workshop of 2020 was held on February 6 in Kingman, KS. A total of 34 people, including presenters, attended. K-State, in cooperation with other agencies, are conducting some additional Prescribed Burning Workshops during February and into early March.

Each workshop normally lasts about 5 hours. There may be a charge for materials and lunch. Please contact the person listed in the table below to ask about charges and to get registered.

| Date | Location | Address | Time | Contact |
|-------------|-----------------|-----------------------------|-------------|--|
| February 18 | Newton | Newton Courthouse | 10 a.m. | Ryan Flaming 316-284-6930 flaming@ksu.edu |
| February 26 | Hamilton | Hamilton Community Building | 10 a.m. | Lindsay Shorter 620-583-7455 lindsayshorter@ksu.edu |
| March 4 | Phillipsburg | 4-H Building | 10 a.m. | James Sweat 785-282-6041 Ext 112 james.sweat@ksnacdnet.net |
| March 5 | Fredonia | Wilson County Old Iron Club | 11:30 a.m. | Pam Walker 620-378-2128 pamela.walker@ksnacdnet.net Adaven Scronce 620-331-2690 adaven@ksu.edu |

These workshops bring together presenters from state and federal agencies, including the Kansas Dept. of Wildlife, Parks, and Tourism, Kansas Forest Service, Natural Resources Conservation Service, Farm Service Agency, Great Plains Fire Science Exchange, county conservation districts, local fire departments and emergency management staff, and Kansas State University.

The smoke dispersal model should be active starting March 1, 2020 (see <https://www.ksfire.org/>).



Figure 1. The start of a prescribed burn near Pomona Lake in Kansas. Photo by Walt Fick, K-State Research and Extension.

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5. Don't miss the inaugural Great Plains Cotton Conference, Feb. 25-26 in Wichita

Did you know...300,000 acres of cotton was planted in northern Oklahoma (including the panhandle) and southern Kansas in 2019? Interest and enthusiasm is high again heading into the 2020 growing season!

Have you harvested a cotton crop in the past? Are you interested in growing cotton this next crop season? What is that insect in my field and is it a beneficial, neutral, or a pest? What insect pest populations are considered at threshold levels to require spraying? If and when should I apply a growth regulator? How do I prepare the crop for harvest? What weed management programs may work best for me? If you have any of these questions or others, plan on attending the first Great Plains Cotton Conference February 25 and 26 in Wichita, KS.

The conference is sponsored by Cotton Incorporated, Oklahoma State University, and Kansas State University, and will be held at the Red Roof Inn and Conference Center, 6815 W Kellogg (US 54), Wichita. Sessions will be geared to inform experienced, new and potential growers, consultants, and industry personnel. The program will run from 12:00 p.m. until 5:30 p.m. on February 25, with a sponsored meal at 6:30 p.m. for all attendees who pre-registered. The sessions will begin again at 7:45 a.m. on the 26th and will wrap up at 12:30 p.m.

Event organizers are asking everyone to please pre-register to allow for an accurate meal count. You can pre-register by calling Penny Adams at the Northeast Region Extension Office at 785-532-5833 or emailing at padams@ksu.edu. CCA and CEU credits will be available for some of the sessions.

For a detailed agenda, you can view a previous eUpdate article from Issue 784 – February 7, 2020 (<http://bit.ly/2SpArJW>) or contact your local County or District Extension Office.



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6. 2020 Kansas Seed and Crops Conference, February 18-19

The annual business meetings of the Kansas Crop Improvement Association and Kansas Seed Industry Association will take place on February 18-19, 2020, at the Hilton Garden Inn Convention Center in Manhattan, KS.

The primary focus of the organizational meetings is certified wheat seed but there are planned keynote speakers and breakout sessions with K-State Extension and Research specialists on topics including sales, hemp, cover crops, and conflict resolution. In addition, there will be an exhibitor hall and a luncheon on Wednesday sponsored by the CoAxium Wheat Production System.

For more information on the program agenda and to register, please visit the website: <https://www.kscrop.org/AnnualConference-2020.html>. Registration is also available on-site on the first day of the meetings.

