



K-STATE
Research and Extension

Extension Agronomy

eUpdate

04/04/2017

These e-Updates are a regular weekly item from K-State Extension Agronomy and Steve Watson, 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 Steve Watson, 785-532-7105 swatson@ksu.edu, or Curtis Thompson, Extension Agronomy State Leader and Weed Management Specialist 785-532-3444 cthompso@ksu.edu.

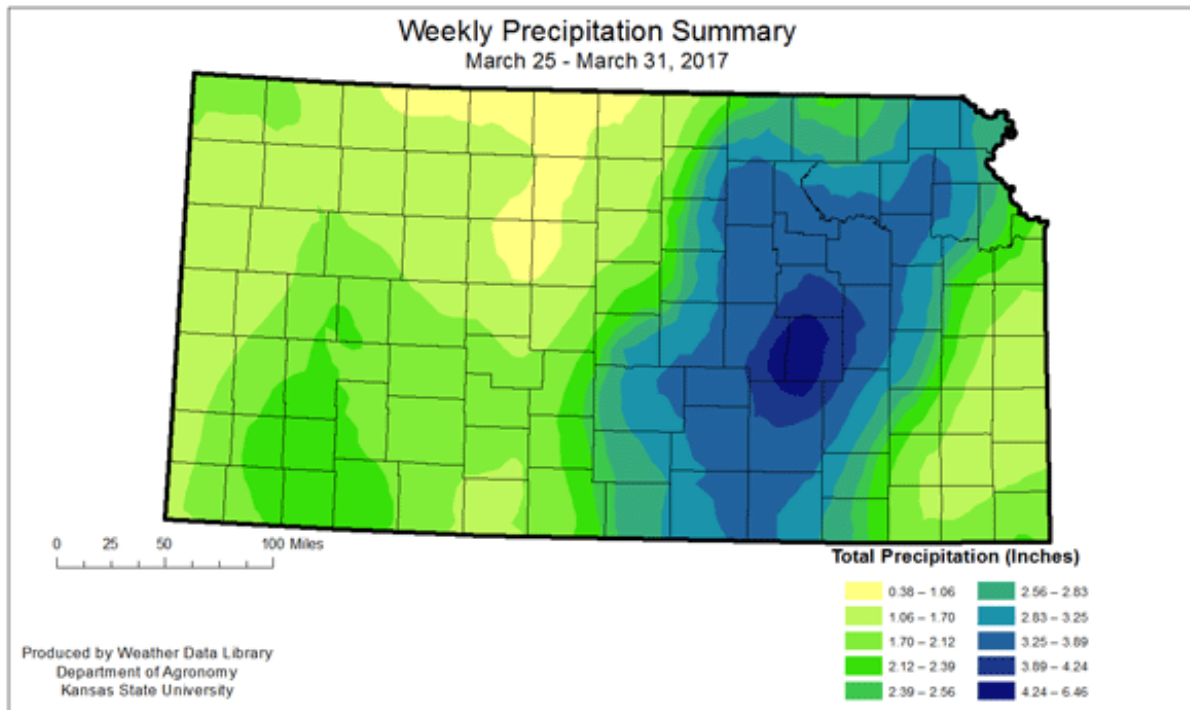
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1. Wheat update April 4, 2017: Precipitation, diseases, and overall condition

Total precipitation during the March 25-31 period ranged from less than one inch in portions of north-central Kansas to over 6 inches in east-central Kansas (Fig. 1). These totals ranged from normal in southeast Kansas to more than 10 times the normal in portions of southwest and east central Kansas (Fig. 1). The entire state received some level of precipitation, which is definitely helpful for the winter wheat crop.



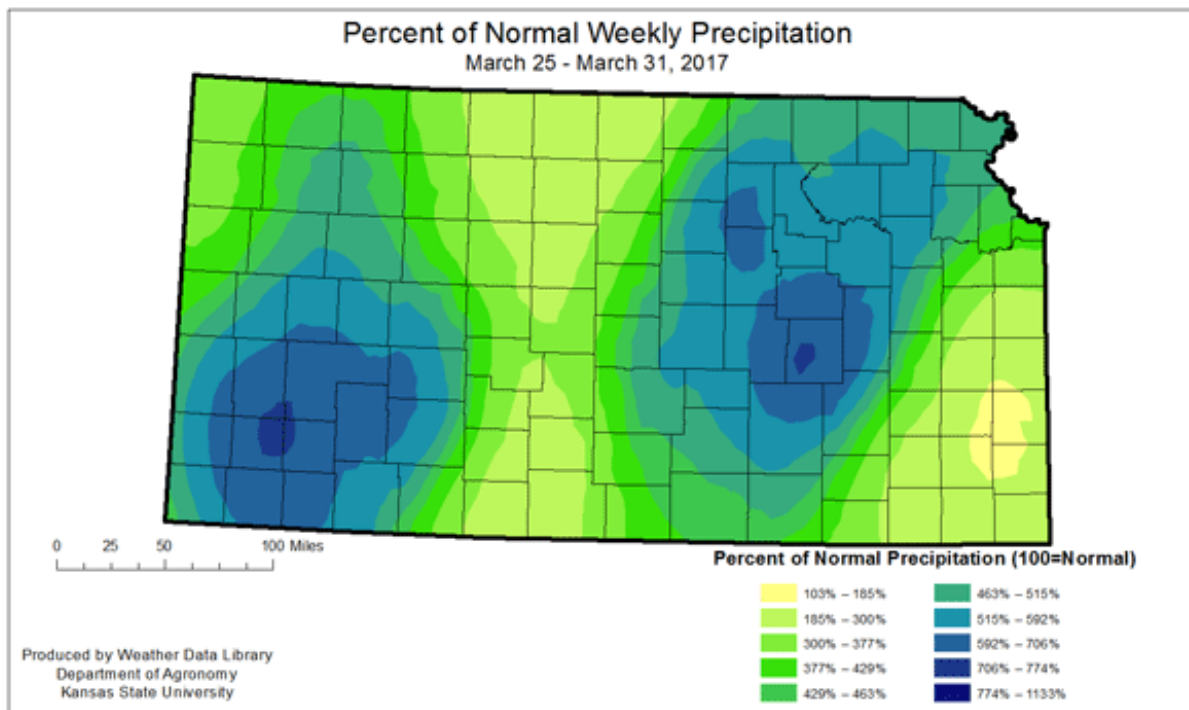


Figure 1. Total (upper panel) and percent of normal (lower panel) weekly precipitation for the period March 25-31, 2017.

Air temperatures

Mean air temperatures during the March 25 – 31 period ranged from approximately 40°F in northwest Kansas, to close to 60°F in southeast Kansas (Fig. 2). This is about 1 to 3°F less than normal mean temperatures for the same period in the western tier of counties and 6 to 12°F higher than average in portions of southeastern Kansas.

The majority of the state had near-normal temperatures (Fig. 2). As a consequence of good available moisture and above-average temperatures in the south-central portion of the state, some early sown fields are very advanced and reaching heading stage already (Fig. 3), which is at least 2-3 weeks earlier than normal. That is not the case for the entire state, though, as most fields in the south central and central portions of Kansas are about at first and second node this point in time (Fig. 4).

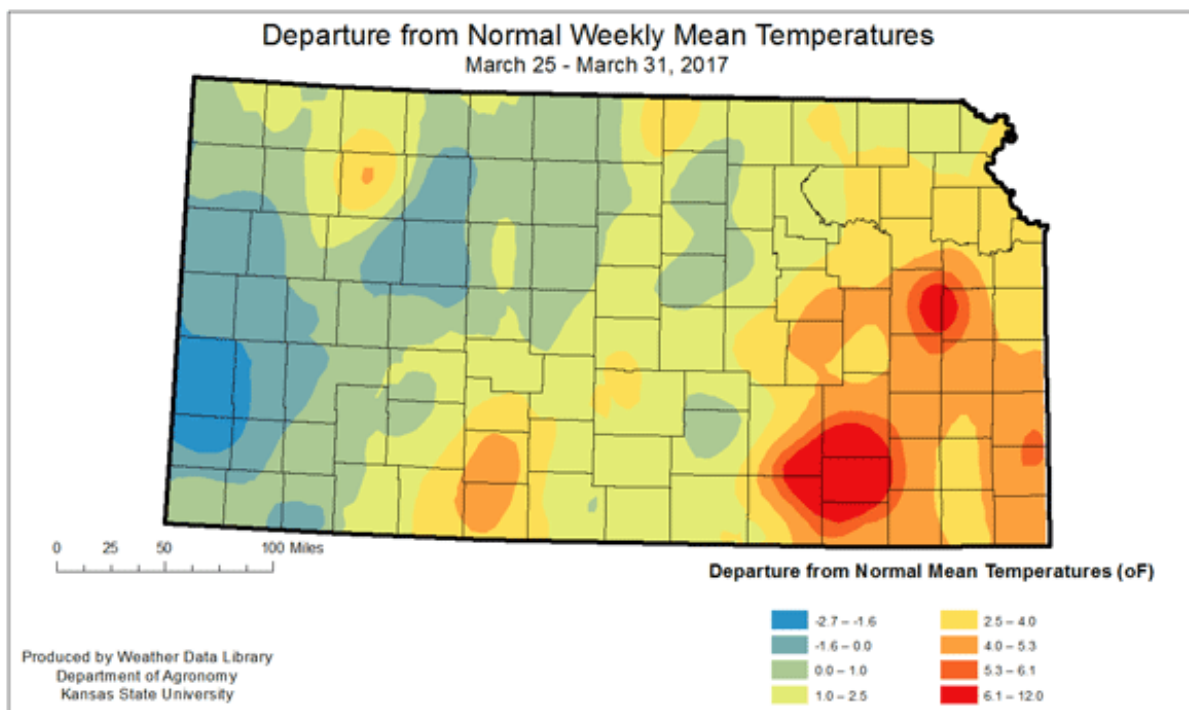
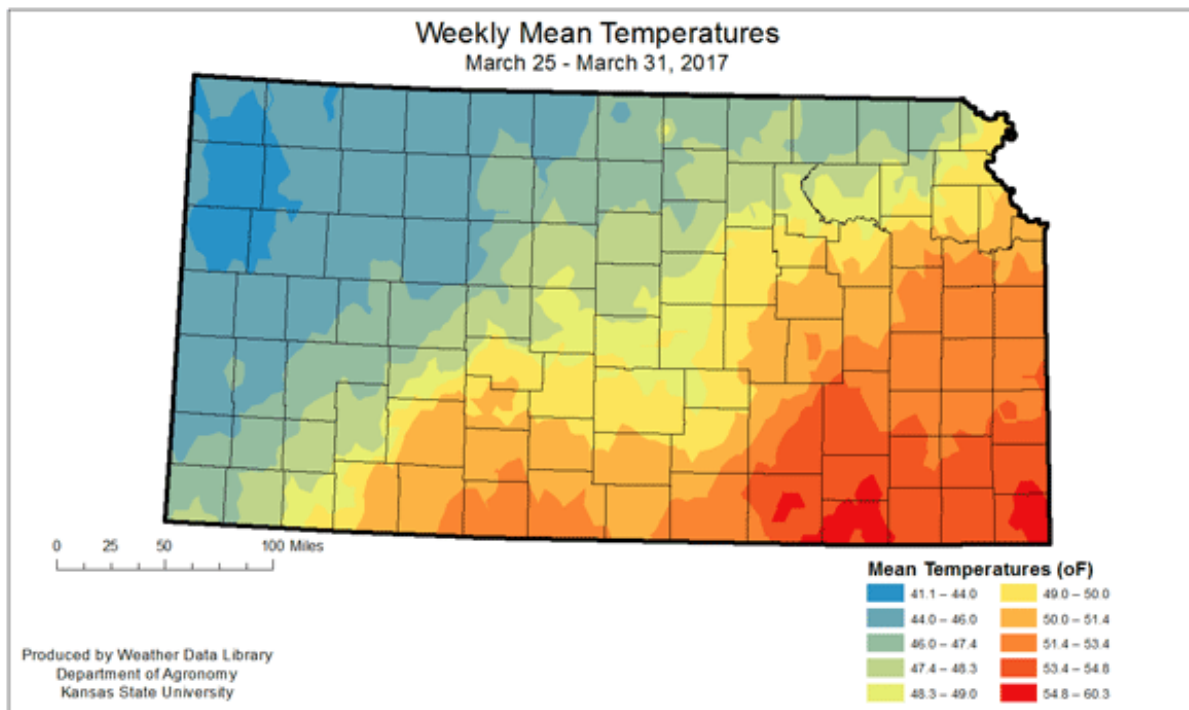


Figure 2. Mean (upper panel) and departure from normal (lower panel) weekly temperature during March 25-31, 2017.





Figure 3. Upper panel –Everest sown September 28th already at Feekes GS 10.1, with the first heads escaping through a split in the sheath (photo taken March 29 by Josh Coltrain, K-State Extension agent in Wildcat Extension District, SE Kansas). Lower panel – Wheat field at Feekes GS 6-7, representative of the majority of the fields in central and south central Kansas. Inset shows the developing head with the number of meshes already determined. Photo taken March 28 near Lorraine, Kansas, by Romulo Lollato, K-State Research and Extension.

Risk of freeze injury

All of Kansas is still within the window of the last spring freeze of the year. The average last date for freezing (32°F) temperatures in Kansas ranges from early April in southeast Kansas to early May in northwest Kansas (Fig. 4). Thus, fields that have already headed are at risk of injury if temperatures reach freezing thresholds again. If the crop is at jointing, low air temperatures can also be harmful if they fall below 20°F and remain there for a few hours.

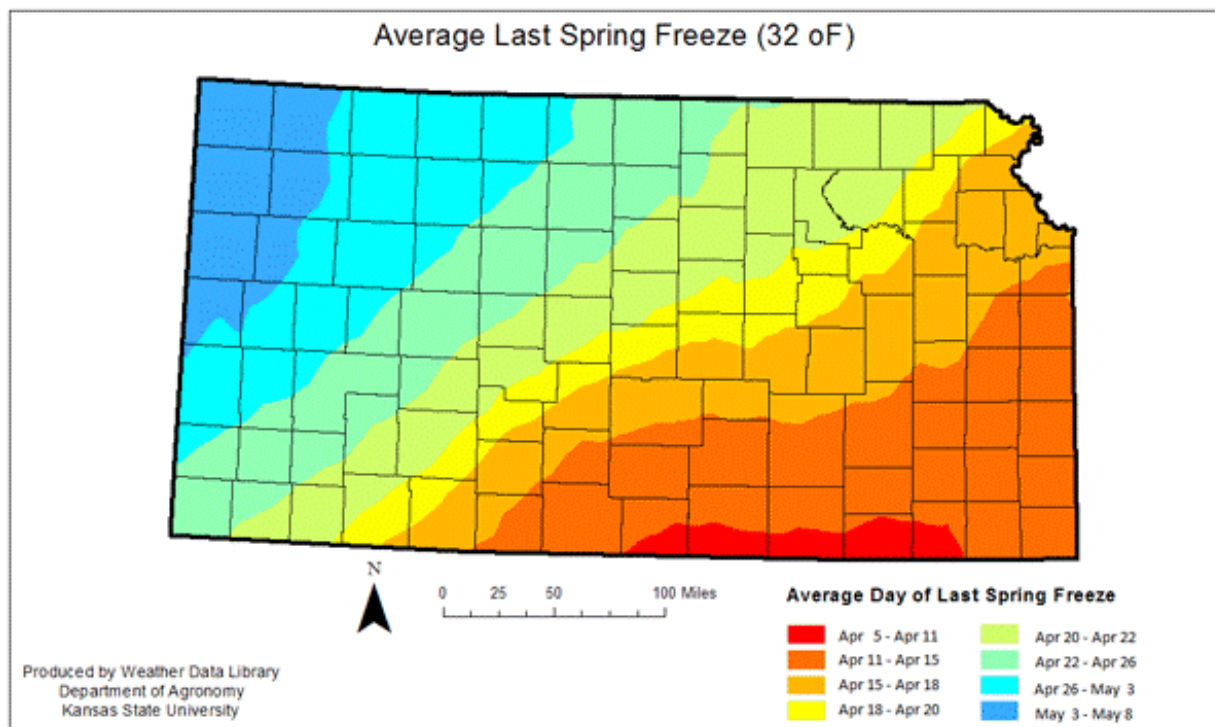


Figure 4. Average last spring freeze in Kansas. Map developed by the Kansas Weather Data Library.

Crop water use

With the available moisture throughout the state, producers should expect rapid growth by the wheat crop in the following weeks. With spring growth, water use will increase considerably. During the winter, the wheat crop uses less than 0.1 inches of water per week. Crop water use increases directly as a function of the increase in biomass led by spring growth, so that daily water use can reach as much as about 0.25 inches per day from the jointing to boot stage periods, and as much as 0.3 inches per day during anthesis and early grain fill.

Nitrogen and sulfur nutrient deficiencies

Many wheat fields in south central Kansas were showing symptoms of nutrient deficiency (nitrogen and/or sulfur in most cases, which are both mobile in the soil), even after spring fertilizer was applied (Fig. 5). The most likely reason for these symptoms is that the applied nutrients never solubilized into the root zone due to the dry conditions experienced until mid-March. The precipitation that occurred during March 25-31 will help alleviate these deficiency symptoms, provided adequate nutrition was applied prior to the precipitation events.



Figure 5. Wheat field in Sumner County showing lighter green leaves due to nutrient deficiency despite fertilizer application. Deficiency symptoms are showing mostly on newer leaves, indicating likely sulfur deficiency (sulfur is immobile in the plant), although no tissue samples were collected to confirm this. Dry conditions until mid-March prevented fertilizer from getting into the root zone. These deficiency symptoms should dissipate within a few days after the precipitation event. Photo by Romulo Lollato, K-State Research and Extension.

Wheat pests and diseases

As of late-March, reports of pests and diseases included active brown wheat mites in many fields in Oklahoma as well as in some fields in southwest Kansas, symptoms of wheat streak mosaic in some counties in west central Kansas, barley yellow dwarf virus in central and south central Kansas, and tan spot in some fields in south central Kansas (Fig. 6).

There have been multiple reports of leaf rust in Texas since late February. There was a single report of stripe rust in Oklahoma about 7 days ago. Overall, the levels of stripe rust are much lower in Texas and Oklahoma compared to 2015 and 2016. The recent moist weather has been favorable to fungal diseases, such as tan spot, and can also bring rust spores from Texas and Oklahoma into Kansas, so producers should be actively scouting for these diseases from now on. An early fungicide application might be beneficial in situations where a susceptible variety is experiencing significant tan spot incidence early in the season. For most fields, however, growers should focus on evaluating the need

for a fungicide applications between flag leaf emergence and flowering.

The recent weather should help considerably with brown wheat mites, as rainfall greater than 0.25" will often reduce mite populations and plant stress. The precipitation will also reduce or eliminate the drought stress that was hastening the decline of fields infected with wheat streak mosaic in western Kansas. The problem with viral diseases will not go away, however, and symptoms of wheat streak mosaic and barley yellow dwarf are likely to intensify as temperatures warm at the end of the week. Fields showing symptoms of wheat streak mosaic prior to jointing are likely to experience significant reductions in yield.





Figure 6. Susceptible varieties showing symptoms of tan spot (upper panel, photo taken near Hutchinson, March 20, 2017) and barley yellow dwarf virus (lower panel, photo taken near Newton, March 28, 2017). Photos by Romulo Lollato, K-State Research and Extension.

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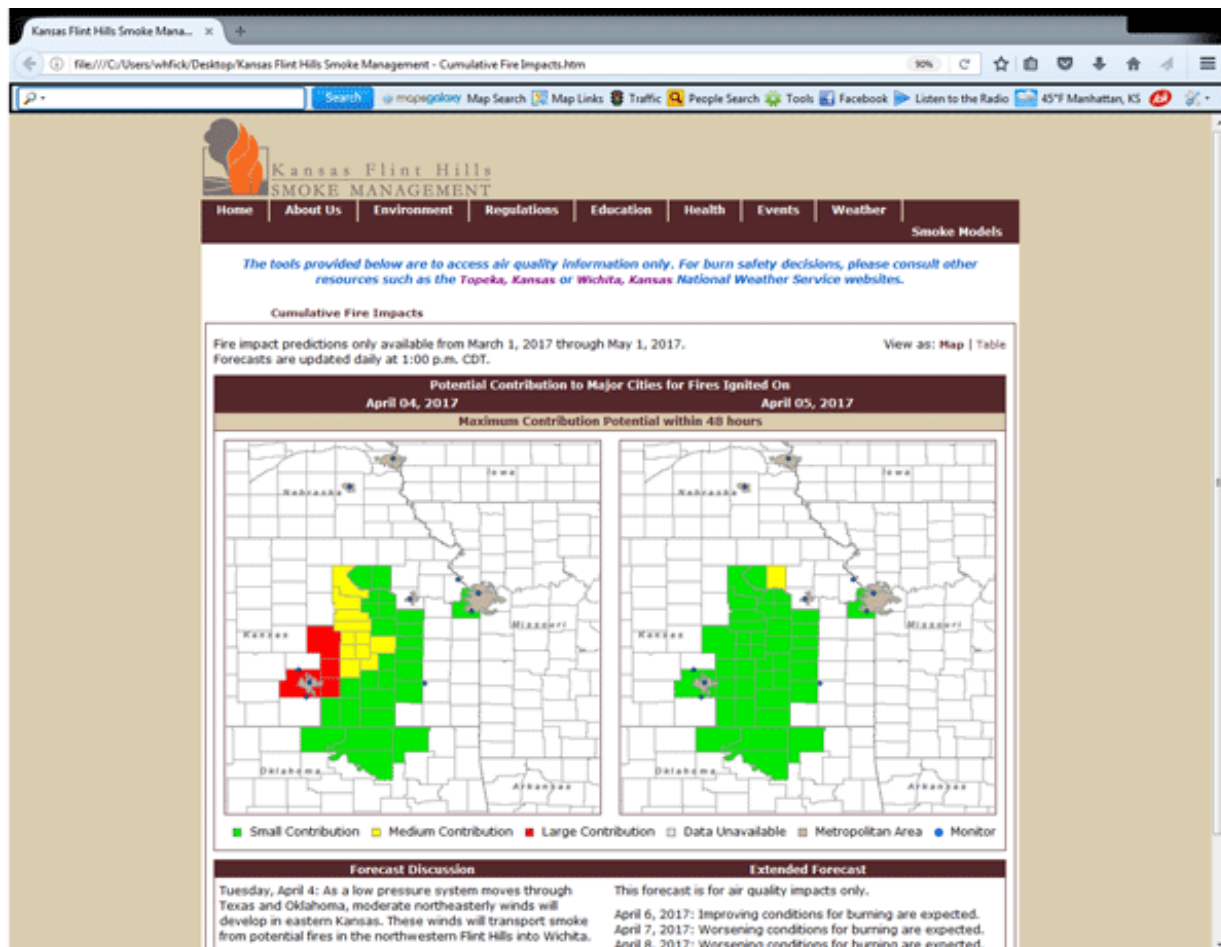
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2. Prescribed burning tips

Prescribed burning can be conducted at just about any time of the year, depending on your objectives. Until recently, dry conditions have contributed to wildfires and escapes from prescribed burns. Nearly all of Kansas has received significant rainfall during the last couple of weeks. Prescribed burns will become more frequent when the rains stop and the sun shines. As landowners plan to burn there are some available websites to consult to assist with conducting a safe burn and minimizing the impacts of smoke on populated areas.

Use the National Weather Service for forecasts. Go to <http://www.weather.gov> and click on Kansas. Select a site on the map near the location you plan to burn. Find the hourly weather forecast. Good conditions for conducting a prescribed burn and minimizing the impacts of smoke include: 45-70 F temperature, 40-55% relative humidity, 5-15 mph winds, >1800 feet mixing height, and 30-50% cloud cover.

Next, check out the website <http://www.ksfire.org> and use the smoke dispersion model to determine where the smoke from your fire will go. Click on the smoke model ("Click Here to Access Smoke Model").



A color-coded map showing the cumulative effects of burning in the Flint Hills area will appear.

Green indicates areas where the impact will be small, yellow is the area of medium impact, and red indicates a large impact of smoke from burning on major cities. To determine the direction the smoke from your fire is likely to move select "Your Fire Impacts," county, fuel load, size (acres to burn), and date. The model will present the likely smoke plume from your fire over a 48-hour period. The smoke model only predicts where the smoke is likely to travel. It doesn't mean environmental conditions are safe to burn.

Another consideration is to determine if the regional air quality is good or bad. To do that go to the website: <https://www.airnow.gov>. "Current AQI" gives the combined effects of ozone and PM (particulate matter) on the air quality index (AQI). By selecting the "More Maps" tab, current ozone and current PM can be seen.



Prescribed burning is an essential tool for maintaining the integrity of our prairies in Kansas. Plan well, burn safely, and remember that smoke from your fire can have negative impacts downwind.

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3. 2017 In-Depth Wheat Diagnostic School in Hutchinson, May 10-11



K-State Research and Extension will hold its 2017 Wheat In-Depth Diagnostic School on May 10 and 11 at the South Central Kansas Experiment Field, 10620 S. Dean Road, Hutchinson. On May 10, the hours are 9 a.m. to 6 p.m. On May 11, the hours are 8 a.m. to 1 p.m.

Topics will include:

- Wheat Growth and Development
- Managing Wheat for Forage and Grain
- Wheat Fertility
- Disease Management
- Weed Identification
- Weed Management
- Entomology
- Wheat Breeding and new Technologies
- Precision Agriculture
- Summer Cover Crops After Wheat

Speakers (K-State Research and Extension unless otherwise noted):

- Romulo Lollato
- Stu Duncan
- David Marburger, Oklahoma State University
- Erick DeWolf
- Dorivar Ruiz Diaz
- Kevin Donnelly

- Dallas Peterson
- Allan Fritz
- Ray Asebedo
- DeAnn Presley
- Jeff Whitworth
- Holly Schwarting

This school is tailored to be a hands-on learning opportunity for agronomy professionals, farmers, and anyone interested in wheat production. It has approval for Certified Crop Advisor and Commercial Pesticide Applicator credits. The cost is \$140 for both days for those who RSVP by May 2. After that date and for walk-ins, the cost is \$180 for both days. The registration fee includes access to all speakers and an extensive take-home field book. Breakfast and lunch both days is also included in the fee.

To register for the school, register online at <http://www.global.ksu.edu/wheat-diagnostic>

For more information, contact registration@ksu.edu or call 785-532-5569.

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