

Extension Agronomy

eUpdate

01/12/2017

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. Breeding for rust resistance in wheat

Traditionally, wheat breeders have been selecting for leaf rust resistance by finding lines with strong resistance to one or more races of leaf rust. The problem has been that other races of leaf rust inevitably come along that can overcome that strong, but narrow source of resistance. If that different race of leaf rust becomes widespread in the Southern Plains, the resistant variety rapidly becomes susceptible to leaf rust. That has happened to most wheat varieties in Kansas over the years – a variety starts out being resistant to leaf rust then becomes susceptible after a few years or so.



Figure 1. Leaf rust in wheat. Photo by K-State Research and Extension.

For the past several years, we have been working on a different approach, similar to the methods used for 20 years or more by wheat breeders at CIMMYT (International Maize and Wheat Improvement Center in Mexico) to develop leaf rust resistance. This approach involves combining 3 or more minor genes for leaf rust resistance into a durable, effective, non-race-specific, slow-rusting form of resistance.

There are several of these so-called minor genes for leaf rust resistance. Two of the better known to plant pathologists and wheat breeders are "Lr34" and "Lr46."

Most of our new crosses in the wheat breeding program in Manhattan now include minor gene resistance to leaf rust. When several of these genes are present in a line, we prefer to call this "non-race-specific resistance" because if conveys a moderate level of resistance to a wide range of known races of leaf rust, rather than strong resistance to just one or a few specific races of leaf rust.

Varieties with minor gene resistance will be susceptible to leaf rust in the seedling stage, but have durable, non-race-specific resistance in the adult stage. Varieties with a combination of at least three minor genes for leaf rust resistance will usually not be entirely free of leaf rust pustules if leaf rust is

present in the area. But the leaf rust will typically occur late in the season and with only light to moderate severity – causing relatively little, if any, yield loss. The best thing is that this type of resistance is effective against all known races of leaf rust, making it durable from year to year. Varieties with minor gene resistance should maintain a good level of leaf rust resistance year after year, without becoming fully susceptibility.

None of the newest varieties released by K-State has this kind of leaf rust resistance yet, with the possible exception of KanMark. We expect to have lines with non-race-specific, durable leaf rust resistance in advanced stages of development, or possibly ready for release, within about five years or so.

At least some of the minor genes for leaf rust resistance are also effective against stripe rust. We initially thought that varieties with minor gene, non-race-specific leaf rust resistance would also provide the same level of resistance for stripe rust. This has not turned out to be the case as these genes are somewhat less effective against stripe rust. These genes do keep stripe rust from developing as rapidly after the initial infection, but stripe rust eventually is able to become moderate to severe on these varieties. While there is some benefit to having a variety on which stripe rust develops more slowly, we believe we will need to either increase the number of minor genes used to combat stripe rust or combine them with traditional major-gene, strong resistance to specific races of stripe rust in our varieties.

Allan Fritz, Wheat Breeder <u>akf@ksu.edu</u>

2. Winter/spring options for winter annual broadleaf control in wheat

There are several herbicide options for controlling winter annual broadleaf weeds in wheat. Generally, fall applications will provide the best control of winter annual weeds with any herbicide, as long as the weeds have emerged. The majority of winter annual weeds usually will emerge in the fall, although you can still have some emergence in the spring, especially if precipitation after planting is limited in the fall. However, winter annual weeds that emerge in the spring often are not very competitive with the crop, at least in years when there is a decent crop.

Some herbicides can work well even when applied during the dormant part of the season, while others perform best if the crop and weeds are actively growing. The key difference relates to the degree of soil activity provided by the herbicide. Herbicides that have good residual activity, such as Glean, Finesse, Amber, and Rave can generally be applied in January and February when plants aren't actively growing and still provide good weed control, assuming you have proper conditions for the application. Most other herbicides, which depend more on foliar uptake, will not work nearly as well during the mid-winter months, when the wheat and weeds aren't actively growing, as compared to a fall or early spring application. This may be especially true this year due to the colder temperatures and dieback of foliage this winter.

Spring herbicide applications can be effective for winter annual broadleaf weed control as well, but timing and weather conditions are critical to achieve good control. Spring applications generally are most effective on winter annual broadleaf weeds soon after green-up when weeds are still in the rosette stage of growth, and during periods of mild weather. Once weeds begin to bolt and wheat starts to develop more canopy, herbicide performance often decreases dramatically.

Spring-germinating summer annual weeds often are not a serious problem for a good healthy stand of wheat coming out of the winter. However, if wheat stands are thin and the wheat is very late developing, early-germinating summer annual weeds such as kochia, Russian thistle, and wild buckwheat may be a problem, especially at harvest time. Many of these weeds may be controlled by residual herbicides applied earlier in the season. If not, postemergence treatments should be applied soon after weed emergence and before the wheat gets too large in order to get good spray coverage and achieve the best results.

Another important consideration with herbicide application timing is crop tolerance at different application timings. For example, 2,4-D should not be applied in the fall or until wheat is fully tillered in the spring. On the other hand, any herbicide containing dicamba can be applied after wheat has two leaves, but should not be applied once the wheat gets close to jointing in the spring, Herbicides containing dicamba include Banvel, Clarity, Rave, Pulsar, Agility SG, and several generic dicamba products. Dicamba is one of the most effective herbicides for kochia control, but if the wheat is starting to joint, it shouldn't be applied. At that point, Starane Ultra or other herbicides containing fluroxypyr would be a safer option and could still provide good kochia control. Most other broadleaf herbicides in wheat can be sprayed from the time that wheat starts tillering until the early jointing stages of growth, but the label should always be consulted to confirm the recommended treatment stages before application.

The best advice regarding crop safety with herbicide-fertilizer combinations and application timing is to follow the label guidelines. We generally see minimal crop injury and no yield loss from topdress

fertilizer/residual herbicide applications during the winter months. However, these combinations can often cause considerable burn to the wheat if applied when the crop is actively growing and with warmer weather. The foliar burn is generally temporary in nature and the wheat usually will recover if good growing conditions persist, but the risk of serious inury increases after wheat starts to joint.

Dallas Peterson, Weed Management Specialist dpeterso@ksu.edu

3. Cover Your Acres Conference, January 17-18 in Oberlin

Current State of Weed

Learning from Long-Term

(A Schlegel & L Hazz)

Managing Bin Stored

Grain¹ (K. Moore)

CHS

SureFire Ag Systems

DuPont Pioneer

1:50 2:40 Tillage/Rotation Studies1

240 3:10

4.10 5:00

Platinum Sponsors:

12:50 1:40 Resistance^{1,2} (P. Stahlman) age Economics¹ (D. O'Brios)

K-State Research and Extension is teaming up with the Northwest Kansas Crop Residue Alliance to host the 14th annual Cover Your Acres Winter Conference for crop producers and consultants Jan. 17-18 at the Gateway Center in Oberlin, Kansas. The same program will be offered both days of the conference.

<u>*(</u>	Cover Yo Wint Presented by Kansas St	ur Acres er Conference ate University and Nort	January 17 and 1 The Gateway ir hwest Kansas Crop R	18, 2017 18, 2017 10 Oberlin, KS esidue Alliance	Like to Attend? <u>Early-Bird Registr</u> Due January II. Online:
	Rooml	Room 2	Room 3	Room 4	Mailin
7:45 8:15	6	Registra	tion		Circle when you wou
8:15 8:20		Welcon	ne		Tuesday, Jan 17
8.30 9.20	Profitability in NWKS Operations ¹ (M Wood)	Current State of Weed Resistance ¹² (P. Stahlman)	Forage Sorghum and Cover Crops ¹ (J. Holman)	Surflower Update (Natl. Surflower Assoc.) (1)	Cost \$40.00
9:30 10:20	Marketing Grain and Storage Economics ¹ (D. O'Brien)	Managing Bin Stored Grain ¹ (K. Moore)	Learning from Long-Term Tillage/Rotation Studies ¹ (A. Schlepd & L. H. aag)	Industry Session (Dupont Pioneor) (l)	Both days - J Cost \$
10-20 10-50		View Exh	ibits		1 data
10:50 II:40	Weed Management Strategies ¹² (C. Thompton)	Soil Biology: Who and What is Living In Our Soil (P. Fordinson) ¹	Building Strong Business Dynamics in Tough Times ¹ (C. Griffin)	Plant Nutrition (CPS) (1)	Address:
11:50 12:40	Economics of Soil Fertility ¹ (D. Ruiz-Diaz)	Forage Sorghum Cover Crops ¹ (J. Holman)	In	ch	City, State Zip:

Strategies¹² (C. Ihompson) Fertility¹ (D. Ruiz-Diaz)

View Exhibits

Lang Diesel

PacLeader Technology

Marketing Grain and Stor

Weed Management

(C.Griffin)

Profitability in NWKS

Operations¹

(M. Wood)

Building Strong Business Soil Biology: Who and 310 400 Producer Discussion Panel Dynamics in Tough Times¹ What is Living In Our

Crop Production Services Natl. Sunflower Assoc.

Hoxie Implement Co. Plains Equipment Group

d Registrations ary II. west.ksu.edu/CoverYourAcres n you would like to attend. Jan 17 Wednesday, Jan 18 0.00 Cost \$35.00 th days - Jan 17 & 18 Cost \$50.00 Zipt Phone Email: Please include information for all attending. After January 11 \$50.00 per day

Mail registrations to: Kansas State University NW Area Extension Office PO Box 786 Colby, KS 67701 For questions, call (785) 462-6281.

Program will be held regardless of weather. No refunds will be given.

Kansas State University is an equal opportunity employer and provider.

www.northwest.ksu.edu/CoverYourAcres

Lunch

High Resolution Imagory

(CH 5) (I)

Improve Your Bottom Line

(Sims Fo tilizo) (1)

Industry Section

(EGE Products) (I)

Tuesday: Bull session with

hors d'œurves begins at 5:00

¹CCA CEUs applied for.

²Commercial Applicator

(I) indicate industry sessions.

CEUs applied for.

Economics of Soil

Soil (P. Iomlinson)1

Industry Session

(Green Cover Seed) (1)

Cover Your Acres is a producer-driven meeting focused on new ideas and research-based updates in crop production in northwest Kansas and the central High Plains region.

The conference, which typically draws more than 600 attendees from Kansas and other states, highlights the latest technology, methods and conservation practices to improve crop production in the region. This year it will feature university specialists and industry representatives discussing the following topics:

Building Strong Business Dynamics in Tough Economic Times: What Does it Take to Succeed? **Current State of Weed Resistance Economics of Soil Fertility Management** Forage Sorghum and Cover Crop Management Learning from Long-Term Rotation and Tillage Studies Managing Bin-Stored Grain

Marketing Grain and Storage Economics Profitability in Northwest Kansas Operations Soil Biology Weed Management Strategies Producer Panel Discussion

The same programs will be offered both days of the conference. Registration will begin at 7:45 a.m., with educational sessions ending at 5:00 p.m. followed by a "bull session" on Tuesday evening, where attendees can visit with industry and university specialists.

Early registration is due by Jan.11. The fee is \$40 for Jan. 17, \$35 for Jan. 18 or both days for \$50. After Jan. 11, the cost is \$50 per day. The conference fee includes lunch and educational materials. Continuing education unit credits are available for commercial applicators and certified crop advisors.

Mail your registration, with a check payable to KSU, to the Northwest Area Office, ATTN: Cover Your Acres, P.O. Box 786, Colby, KS 67701. To view the conference details and for online registration, visit <u>www.northwest.ksu.edu/coveryouracres</u>. For questions, call 785-462-6281.

Major sponsors of the conference include CHS, Crop Production Services, Decatur Coop Association, DuPont Pioneer, Hoxie Implement Co., Lang Diesel, National Sunflower Association, PacLeader Technology, Plains Equipment Group, and SureFire Ag Systems. CCA and Commercial Applicator CEU's have been applied for.

Lucas Haag, Northwest Area Crops and Soils Specialist <u>lhaag@ksu.edu</u>

4. Canola College 2017 in Enid, January 19, 2017



Once again, the Great Plains Canola Association, Oklahoma State University, Kansas State University, USDA-RMA, and partners from the canola industry are teaming up to conduct Canola College.

Canola College 2017 will be held January 19, 2017 at the Chisholm Trail EXPO Center, 111 W. Purdue, Enid, OK.

This will be the premier canola education/training event in the region in 2017. Canola College 2017 is for anyone with an interest in the canola industry including: experienced and first time growers, crop insurance agents, members of agricultural governmental agencies, and canola industry service and product providers. Attendees will hear from canola experts on a variety of key topics and will have the opportunity to visit with industry members who provide the goods and services needed to produce, handle, and market the crop.

Canola College 2017 topics will include:

- **Canola Basics** Mike Stamm, K-State Canola Breeder and Heath Sanders, OSU SW Area Extension Agronomy Specialist
- **Canola Planting Technology** Josh Bushong, OSU NW Area Extension Agronomy Specialist and Kraig Roozeboom, K-State Cropping Systems Agronomist
- Advanced Production Practices Bob Schrock, Grower, Kiowa, KS and Jeff Scott, Grower, Pond Creek, OK
- Risk Management Francie Tolle, Director, USDA-RMA, Oklahoma City
- Canola Economics Trent Milacek, OSU Extension Area Economist, NW District
- Weed Control Misha Manuchehri, OSU Extension Weed Scientist
- Insect Management Kris Giles, OSU Regents Prof of Entomology
- **Canola Plant Health Management** John Damicone, OSU Extension Plant Pathologist and Paul De Laune, Assoc Prof, Texas A&M
- Canola Learning Lab Coordinated by Josh Lofton, OSU Cropping Systems Specialist

The very popular **Canola Learning Laboratory** will be continued in 2017. Attendees will see demonstrations and gain experience with: canola biology, canola production equipment, and the latest in spray technology. Participants will have the opportunity to learn to identify common canola

production pests.

Individuals can register for *Canola College 2017* at <u>www.canola.okstate.edu</u>. For more information on Canola College, contact Ron Sholar, Executive Director, GPCA, at <u>Jrsholar@aol.com</u> or Josh Lofton, Extension Cropping Systems Specialist, OSU, at josh.lofton@okstate.edu.

Mike Stamm, Canola Breeder mjstamm@ksu.edu

5. Kansas Agricultural Technologies Conference, January 19-20 in Junction City

The 20th Annual Kansas Agricultural Technologies (KARTA) Conference will be held January 19-20, 2017 in Junction City at the Courtyard by Marriott & Geary County Convention Center, 310 Hammons Dr.

This annual event brings hundreds of agricultural producers and industry leaders together for a twoday interactive workshop on the ever-changing precision agriculture industry. There will be presentations on a wide variety of topics dealing with precision agriculture. The two-day event also includes vendor displays, the KARTA Annual Meeting, research presentations from grant recipients, and an interactive evening discussion that is always an attendee favorite.

-	Twentieth Annual Kansas Agricultural	450 5:45	KARTA Annual Business Meeting Dinner & Social	2016 RESEARCH PROJECTS	REGISTRATION FORM
10	chhologies Conference	7:00	Big Data Implications for Precision Ag	Possible Research Presentation Topics	Name:
	Courtyard by Marriott &		Jointly Presented by Dr.Terry Griffin, KSU and Dr. Stannon Ferrell, OSU	Ascend in Winter Wheat	Organization
	310 Hammons Dr.			Grain Sorghum Seeding Rates	Address
	Junction City, Kansas	E	DIDAY LANULARY 20th	Havey Soil Test Fertilizer Rates	Co. D. T.
	January 19-20, 2017		RIDAT JANOART 2001	Gypsum as a Soil Amendment	City, st, Lipi
The	e following schedule of events is subject to	800 Coffee & Rolls		Long Term Impact of Canola in Crop Rotation	Phone
cher	nge Visit www.KARIAonline.org for updates.	830	Ag UAV's - Where Are WeAt? John Novetski, NDSU	Grain Sorghum Seeding Rates in NE OK AgBoost NutriPlant in Irrigated Corn	Email:
TH	IDCDAY IANILIADY ION	9:30	Vendor Presentations	Comparison of Soil Sampling Methods	Please make the appropriate registration selection. Fees include lunch both days, dimer on Thursday
10	OKSDAT JANOART 1701	10:00	Break	Row Spacing in Corm	and refreshments during the breaks for one person.
8:00	Registration/Coffee & Rolls	10:15	K-State Precision Ag Rapid Fire Session Several KSJ Faculty	Vegetable Production Tunnel Comparison Using Yield History to Predict Soil P	No refunds after January 10, 2017.
8:45	Welcome & Announcements Matt Watters KARTA President	11:30	KARTA Research Presentations		5225 5225 Conference Registration
*-00	20 Years of KARTA		2016 Grant Recipients	BOARD NOMINATIONS	& Technology Association (KARTA)
	A Look Back and a Charge Forward	12:15	Lunch		The Diversity Designed and have
	Randy Taylor & Lee Scheufler	1:15	Vendor Presentation	If you would like to nominate yourself or	January 10, 2017
10,00	Vendor Presentations	1:30	Fully Autonomous Electric Tractors -	another KARTA member to serve as a	11 11 11 11 11 11 11 11 11 11 11 11 11
10:30	Break		Has the Future Arrived? Krain Schult Autonomous Tractor Corp.	volunteer member of our Board of Directors	If you would like to obtain or renew a KARIA Membership, please mark the following:
10:45	Project SENSE - On Farm Triah to	230	Break	with their name, phone number email address.	
	Joel Crowther & John Parrish	245	KARTA Research Presentations	and mailing address if possible. Board members	+ \$100 2017 KARTA Membership
11:45	Vendor Presentation		2016 Grant Recipients	meet virtually a few times per year, and conduct	\$50 Discount for KARTA Members
12:00	Lunch	400	Conference Wrap-Up & End Statement	most business by email. Get involved, and make a	Total Enclosed
1:00	Vendor Presentation			difference in the future of agriculture!	
1:15	Collecting Data that Matters Brent Myers with DuPont Pioneer			COMMECTIVITUUS	KARTA KARTA
2:15	Break			CONNECTWITHUS	Ness City, KS 67560
sation Rese	sarch Reports Journals Kansas State			We exist to help ensure a bright future for	
/		-		the agricultural industry, and we need YOU	
3243	VENUOF Presencacions		CCA CREDITS	to join the conversation.	
4:15	Break			🖂 kartaonine@vahoo.com	OR use our ONLINE REGISTRATION at
4:30	2017 Research Planning Session		CCA credits will be applied for:	www.KARTAonline.org	www.KARTAonline.org

The conference is co-sponsored by K-State Research and Extension and the Kansas Agricultural Research and Technology Association, whose members are producers, university researchers, and industry professionals focused on learning about agricultural production and technological and informational changes on today's farms.

There is a fee for this conference, and you must register. More information, including online registration is available at <u>www.KARTA-online.org</u>

Information is also available by contacting Lucas Haag, K-State Research and Extension Northwest Area Crops and Soil Specialist, at 785-462-6281 or https://www.ucashibactuation.org https://www.ucashibactuation.org

6. Prescribed Burning Workshops scheduled for 2017

The first joint agency prescribed burning workshop for 2017 was held January 11 in Marysville. Seven

more workshops are planned at this time with the possibility of more upon request.

The agencies involved include K-State Research and Extension, USDA-NRCS, USDA-FSA, Kansas Department of Wildlife, Parks & Tourism, and the National Weather Service. Each workshop lasts about 4 hours. Topics include, reasons for burning, regulations, weather considerations, liability, burn contractors, equipment and crew, hazards, fuels, firebreaks, fire types and behavior, ignition techniques, and burn plans. Attendees have the opportunity to talk through specific burn scenarios with the presenters.

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

Workshop	Date (2017)	Location	Host	Agency	Phone	email
Haskell	Jan. 19	Haskell Campus	Megan Fisher	Haskell	785-840-4616	mfisher@hask ell.edu
Greenwood	Jan. 25	Eureka	Ryan Schaub	K-State	620-583-7455	<u>reschaub@ksu</u> . <u>edu</u>
Kingman	Feb. 3	Kingman	Jake Renner	K-State	620-532-5131	jwrenner@ksu .edu
Jeffrey Energy Center	Feb. 16	Jeffrey Energy Center	J.R. Glenn	Westar	785-575-6518	jr.glenn@west arenergy.com
Edwards	Feb. 21	Kinsley	Jess Crockford	KPFC	620-664-4882	<u>jbcrock@sbcgl</u> obal.net
Frontier District	Feb. 22	Ottawa	Rod Schaub	K-State	785-828-4438	<u>rschaub@ksu.</u> edu
Southwind District	March 1	Uniontown	Chris Petty	K-State	620-223-3720	cgp@ksu.edu



Figure 1. Dusty Schwandt, USDA-NRCS, presenting information on equipment and crew considerations at the Marysville Prescribed Burning Workshop. Photo by Walt Fick, K-State Research and Extension.

Walt Fick, Range Management Specialist whfick@ksu.edu

7. K-State Soybean Schools scheduled for late January 2017



A series of three K-State Soybean Production Schools will be offered in late January 2017 to provide in-depth training targeted for soybean producers and key stakeholders. The schools will be held at three locations around the state.

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

The dates and locations of the K-State Soybean Production Schools are:

Jan. 24th – Parsons, 25092 Ness Road

<u>Contact information:</u> Josh Coltrain, Wildcat Extension District, <u>jcoltrain@ksu.edu</u>, 620-724-8233 Jeri Geren, Wildcat Extension District, <u>jlsigle@ksu.edu</u>, 620-331-2690

Jan. 26th – Hesston, Dyck's Arboretum of the Plains, 177 W Hickory St. Contact information:

Ryan Flaming, Harvey County Extension, flaming@ksu.edu, 316-284-6930

Jan. 27th – Highland, Highland Community Building, 501 West Av <u>Contact information:</u> David Hallauer, Meadowlark Extension District, <u>dhallaue@ksu.edu</u>, 785-863-2212

Matthew Young, Brown County Extension, <u>mayoung@ksu.edu</u>, 785-742-7871

More information on the final program for each Soybean School will be provided in future issues of the Agronomy eUpdate.

Lunch will be provided courtesy of Kansas Soybean Commission. There is no cost to attend, but participants are asked to pre-register by Jan. 19.

Online registration is available at: K-State Soybean Schools

You can also preregister by emailing or calling the nearest local Research and Extension office for the

location you plan to attend.

Ignacio Ciampitti, Crop Production and Cropping Systems Specialist <u>ciampitti@ksu.edu</u>

Doug Shoup, Southeast Area Crops and Soils Specialist <u>dshoup@ksu.edu</u>

Stu Duncan, Northeast Area Crops and Soils Specialist <u>duncan@ksu.edu</u>

8. K-State Sorghum Schools scheduled for late January and early February 2017



A series of four K-State Sorghum Production Schools will be offered in late January and early February 2017 to provide in-depth training targeted for sorghum producers and key stakeholders. The schools will be held at four locations around the state. The one-day schools will cover a number of issues facing sorghum growers: weed control strategies; production practices; nutrient fertility; and insect and disease management.

The dates and locations of the K-State Sorghum Production Schools are:

Jan. 31st – Colby: City Limits Convention Center, 2227 S Range Ave Kurt Sexton, Thomas Co. Extension, <u>kurtsexton@ksu.edu</u>, 785-460-4582

Feb. 1st – Wichita: Sedgwick Co. Extension Center, 7001 W 21st St N Zach Simon, Sedgwick Co. Extension, <u>zsimon@ksu.edu</u>, 316-660-0100

Feb. 2nd – Concordia: Cloud County Community College, 2221 Campus Drive Kim Kohls, River Valley Extension District, <u>kclarson@ksu.edu</u>, 785-243-8185

Feb. 3rd – Iola Riverside Park New Community Building, 600 S. State St Carla Nemecek, Southwind Extension District, <u>cnemecek@ksu.edu</u>, 620-365-2242

More information on the final program for each Sorghum School will be provided in future issues of the Agronomy eUpdate.

Lunch will be provided courtesy of Kansas Grain Sorghum Commission. There is no cost to attend, but participants are asked to pre-register by Jan. 27. Online registration is available at: <u>K-State Sorghum Schools</u>

You can also preregister by emailing or calling the nearest local Research and Extension office for the location you plan to attend.

Ignacio Ciampitti, Cropping Systems Specialist ciampitti@ksu.edu

Pat Damman, Kansas Grain Sorghum Commission pat@ksgrainsorghum.org

9. Western Kansas Forage Conference planned Feb. 20 in Larned

Jeff Rasawehr, of Celina, Ohio, and co-founder of Cover Crop Ranch, will present "Making a Cover

Crop Your Most Valued Crop" at the Western Kansas Forage Conference on Feb. 20.

Sponsored by <u>K-State Research and Extension</u> and the <u>Kansas Forage and Grassland Council</u>, the conference will be at the J.A. Haas Building, 400 E. 18th St. in Larned, Kansas. Registration begins at 8:30 a.m., with the program from 9 a.m. - 3 p.m.

Cover Crop Ranch is a network of farms in Michigan and Ohio using sustainable farming practices of no-till, cover crops and a system called mob grazing to produce meat. Mob grazing involves moving cattle at least daily between small enclosures and split by electric fences. The plants in the enclosure are eaten, walked on and trampled, then allowed to rest for 60-120 days or more.

Rasawehr will share his knowledge and experience in using cover crops and making them valuable in a crop production system.

Other conference speakers and topics include:

- Soil Management with Cover Crops DeAnn Presley, K-State soil management specialist
- What Are We Learning from Integrating a Cover Crop into our Production Practice? Dale Younker, U.S. Department of Agriculture soil health specialist
- Pasture Weed Management Walt Fick, K-State range scientist
- Kansas Forage and Grassland Council Update Mark Jensen, KSFGC board member
- Animal Health Concerns When Grazing Cover Crops Jaymelynn Farney, K-State animal scientist
- Pasture Risk Insurance Monte Vandeveer, K-State agricultural economist
- Producer Panel

Registration is requested by Feb. 10. Lunch is included in the registration fee, which is \$25 for KSFGC members and \$55 for non-members. Online registration and more information are available at <u>www.southwest.ksu.edu</u>. More information is available by contacting Foster at 620-276-8286 or <u>anserdj@ksu.edu</u>.

A.J Foster, Southwest Area Crops and Soils Specialist <u>anserdj@ksu.edu</u>

10. Kansas weather summary for 2016: Wet to dry

At the start of 2016 only two percent of the state was in any drought category, and that category was just "abnormally dry." At the middle of September, the state was drought-free. However, a dry pattern developed after that time. With much-below-normal precipitation in September, abnormally dry conditions developed in southwest Kansas. The dry pattern continued and by the end of December almost 14 percent of the state, mainly in the Southwestern Division, had degraded to "severe drought" conditions. Conditions from abnormally dry to moderate drought expanded across much of the state. By the end of the year, only 17 percent of the state remains drought-free. Despite the short-term dryness, this year ranked as the 27th wettest since 1895.

Statewide average precipitation was below normal for the first 3 months, but switched to a wetter pattern in April. By May, only the East Central and Southeast Divisions were below average for the year-to-date. The Southwestern Division averaged 5.56 inches in April or 3.5 times the normal for the month. A wetter-than-average pattern in the late summer (August-September) allowed for drought conditions to disappear. However, the year ended on a dry note, which started in September in the southwest, and progressed to the rest of the state from October through December. December statewide average precipitation was 0.56 inches, just above half of the normal December total.

The greatest annual total for the year at a National Weather Service Cooperative station was 56.7 inches at Haysville 3SE in Sedgwick County. The greatest annual total for a CoCoRaHS station was 60.73 inches at Derby 2.9 N, also in Sedgwick County. The driest reporting station was 15.16 inches at Mingo 6SE in Thomas County. The greatest 24-hour precipitation total reported at a CoCoRaHS station was 9.32 inches at Clearwater 3.9 NNE in Sedgwick County on September 9th. The greatest 24-hour precipitation total reported at a Hiawatha 9ESE in Brown County, on September 14th.







Snow was not much of a factor in 2016. The greatest total for the year was 25.8 inches at Goodland Renner in Sherman County. Over half of that came in February. December provided a secondary round of snow across much of the northern half of the state. The biggest impact from that event was to provide some insulating effect in advance of the extremely cold air that followed the snow system. There was a tie for the greatest 24-hour total with 15 inches reported at both Selden 11NW (Decatur County) and Atwood 8SSE (Rawlins County) on February 2nd. The state average annual snowfall for 2016 was 6.6 inches, below last year's average of 8.6 inches, and well below 2014's average of more than 21 inches. The greatest snowfall totals were seen in the Northwestern Division, while several stations reported no snow at all in 2016. In the eastern third of the state, much of the moisture that ended the year came as rain, not snow.



Temperatures averaged above normal for the year. The statewide average temperature in 2016 was 56.6 degrees F, which places it as the 9th warmest on record. Only May and December averaged below normal. November had the greatest departure from normal, with an average of 49.4 degrees F, or 6.4 degrees warmer than normal. Temperatures fluctuated considerably during the year, ranging from 110 degrees F at Webster Dam (Rooks County) on July 24th to -24 degrees F at Oakley 19SSW (Logan County), December 20th. Despite being warmer than average, all divisions also had temperatures plunge below zero. Even the Southeast Division recorded sub-zero temperatures, the coldest of which was a -12 degrees F at Smileyberg, Butler County, on December 18th.





The average date for the last spring freeze was April 10th. The earliest start to the growing season was a last freeze on April 2nd at various locations. Syracuse 1NE, Hamilton County, had the latest freezing temperature with 30 degrees F reported on May 3rd. Unlike last year, there were no widespread freezing temperatures after the middle of April. The first fall freeze was mostly seasonal statewide. The average date was October 29th. The earliest first frost was reported on October 5th at Goodland, in Sherman County. The latest first frost was reported at Yates Center on November 19th when

temperatures dropped to 24 degrees F. The average length of the growing season was 201 days. The shortest growing season was at Goodland in Sherman County with 155 days. The stations with the longest growing season were Girard, Crawford County, and Marion Reservoir, Marion County, with a growing season of 230 days.

Drought conditions have shifted over the year, with a short period in which the entire state was drought free. The year started with only a small percent of the state in any form of drought, with only 2 percent in abnormally dry conditions. Despite the overall wetter-than-average year, lack of moisture in the late fall resulted in deterioration. Conditions declined most quickly in the southwest, with severe drought conditions in that part of the state. Currently almost 14 percent of the state is in severe drought. The lack of moisture created problems with establishment of fall-seeded crops, such as winter wheat and winter canola. The continued dry weather, coupled with warmer than normal temperatures in November, resulted in abnormally dry conditions spreading into all areas except for parts of the Central, North Central, and Northeastern Divisions.

Currently, almost 52 percent of the state is in abnormally dry conditions, with an additional 17 percent of the state in moderate drought. Little change is expected during the winter, although the severe drought might continue to push north and eastward. Normal spring rains are critical for any improvement in drought conditions. The El Niño/Southern Oscillation (ENSO) is expected to be in the neutral phase as we move into the spring. This uncertainty gives little confidence in increased moisture across the region, and is expected to continue into the spring. The uncertainty of the continued El Niño provides little guidance for the summer seasonal outlook, although there is an increased chance of above-normal temperatures statewide for the May-to-July period. The Climate Prediction Center's outlooks don't indicate how much the temperatures might vary, nor how temperatures would be distributed over the three-month period.



January 5, 2016 (Released Thursday, Jan. 7, 2016) Valid 7 a.m. EST



Intensity:



D2 Severe Drought The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements. Author: Brian Fuchs National Drought Mitigation Center



http://droughtmonitor.unl.edu/



The severe weather season wasn't as active as 2015, nor as active as the 5-year average. Preliminary numbers from the Storm Prediction Center (SPC) show a total of 99 tornadoes in 2016, compared to a total of 178 tornadoes in 2015, and the five-year average (2008-2012) of 116 tornadoes. In contrast, hail and damaging wind reports were higher in 2016, with 569 hail report versus 519 hail reports in 2015 and 539 damaging wind reports versus 454 reports of damaging winds in 2015. Data on other severe weather events are available from the National Climatic Data Center (NCDC) storm database, but only through September. For the period from January to September, there were 228 flood or flash flood events affecting more than 69 counties. There were two fatalities from the flood events: one in Sedgwick County on August 19th and a second in Norton County on September 3rd. Preliminary damage reports total to property and crops from the floods was more than three million dollars. Generally, these property and crop damage reports are underestimated. In many cases, crop damage isn't immediately available and fails to be included in the storm total. Likewise, property damage that is from uninsured losses often is also missing in the overall total. There were no excessive heat events reported in 2016. There were 46 winter weather reports through September, with the bulk occurring the first week in February. This total does not include the winter weather with snow and extremely cold temperatures in December.

Annual Severe Weather Report Summary - 2016

* Data is preliminary and subject to revision



From Storm Prediction Center: http://www.spc.noaa.gov/climo/online/monthly/states.php?month=00&year=2016&state=KS

2016 Annual Summary

Kansas Climate Division Summary

		Precipitat	Precipitation (inches)			Temperature (°F)		
		2016 Jan through December					Extremes	
Division	Total		Dep. ¹	% Normal	Ave	Dep. ¹	Max	Min
Northwes t	19.42		-1.61	92%	54.1	1.9	106	-21
West Central	20.73		0.57	103%	55.5	2.1	107	-24
Southwes t	22.26		2.11	110%	57.5	2.5	107	-21
North Central	34.09		6.31	123%	56.7	3.3	110	-18
Central	34.09		5.20	118%	57.5	2.6	109	-16

South Central	37.26	7.80	126%	59.1	2.7	106	-16
Northeast	38.30	2.84	108%	56.7	3.3	106	-18
East Central	40.04	1.59	104%	58.2	3.2	106	-15
Southeast	43.74	2.88	107%	58.9	2.1	104	-12
STATE	32.21	3.20	111%	29.1	29.9	110	-24

1. Departure from 1981-2010 normal value

2. State Highest temperature: 110 oF at Webster Dam (Rooks County) on July 24th.

3. State Lowest temperature: -24 oF at Oakley 19SSW (Logan County), December 20th.

4. Greatest Annual rainfall: 56.7 inches at Haysville 3SE, Sedgwick County (NWS); 60.73 inches at Derby 2.9 N, Sedgwick County (CoCoRaHS).

Source: KSU Weather Data Library

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