17th Annual Crop Clinic

Sorghum Performance Trials,

Update on Inzen/Zest Weed Control

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Sorghum Variety Trials

OKLAHOMA COOPERATIVE EXTENSION SERVICE CR-2162 Rev. 0116

Current Report

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: osufacts.okstate.edu

Grain Sorghum Performance Trials in Oklahoma, 2015

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Trial Objectives and Procedures

Each year, grain sorghum hybrid performance trials are conducted by the Oklahoma Cooperative Extension Service. These trials provide producers, Extension educators, industry representatives and researchers with information for grain sorghum hybrids marketed in Oklahoma. Five performance trials were conducted at four locations in 2015. Four dry-land trials were planted at Apache, Goodwell, Tipton and Tonkawa, and one irrigated trial at Goodwell. Only full-season trials were planted in 2015. Yields are reported here for the medium-maturity hybrids at Apache, for the medium- and full-maturity hybrids at Goodwell, for medium-maturity hybrids at Tipton, and for all maturity groups at Tonkawa. All locations included early, medium and full-season varieties and all trials and maturity groups were harvested. However, the yields were highly variable in some groups and therefore are not reported.

Highlights

The Oklahoma Grain Sorghum performance trials passed through a transition in 2015 with Rick Kochenower's move to a position in the sorghum industry and Roger Gribble's retirement. The authors thank them for the development of these trials and reports from 1999 through 2014.

Precipitation and soil moisture during the growing season in 2015 were unusually high across the state, compared to 15-year averages. Sugarcane aphids decreased sorghum yields across much of the state. The Tonkawa medium-maturity group was the star of 2015, with an average of 106 bushels per acre while the medium-maturity group in the OPREC dryland trial produced the second-highest average yield at 98 bushels per acre.

Google: "CR-2162" and "OSU"

Sorghum Variety Trials, 2015

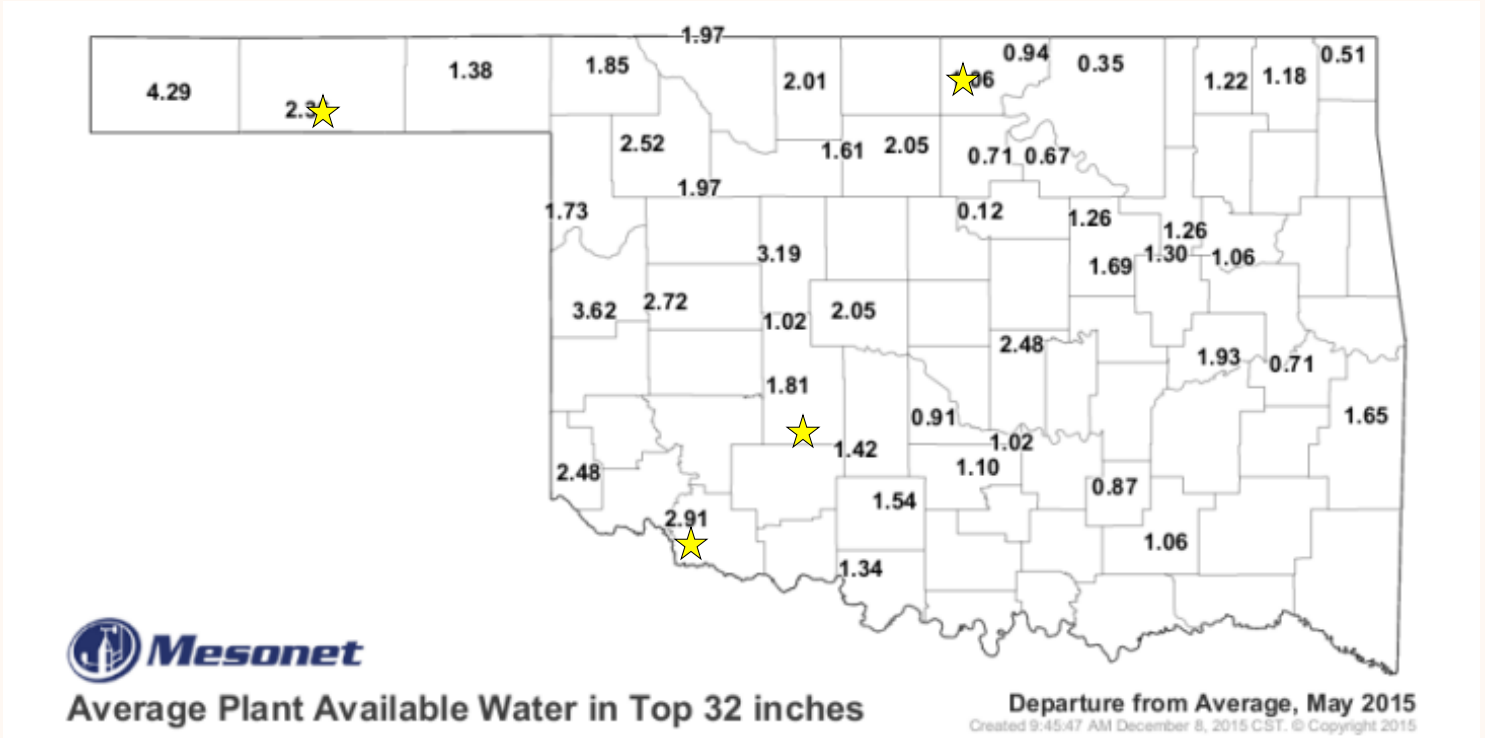


Figure 3. Departure from average for plant-available water in soil to 32 inches of depth for Oklahoma in the month of May 2015.

Sorghum Variety Trials

Location	Maturity	Avg. Yield	LSD	Yield Range	Avg. Test Wt.	Precip. Apr.-Sept.	SCA
Apache	medium	84	26	106-58	52	29	sprayed
OPREC(d)	medium	98	25	131-41	59	17	no
OPREC(d)	full	84	20	108-67	60	17	no
Tipton	medium	64	19	108-42	53	22	sprayed
Tonkawa	early	87	14	112-73	54	26	sprayed
Tonkawa	full	91	27	112-71	55	26	sprayed
Tonkawa	medium	106	21	135-92	58	26	sprayed

Sorghum Variety Trials

Rank	Apache	OPREC (dry)	Tipton	Tonkawa
1	AG 3201	AG 3201	86G32	Myc 737
2	KS 585	XG 02008	86P20	85P05
3	86G32	Myc 737	GS 623	DKS 41-50
4	AG 1203	DKS 38-88	AG 1203	DKS 38-88
5	AG 2105	DKS 41-50	Myc 737	86G32
6	XG 30001	AG 2115	85P05	AG 2105
7	AG2115	KS 585	AG 3201	AG 3201
8	92123	86G32	DKS 41-50	GS 693
9	DKS 38-88	JSG-65	KS 585	AG2103
10	JSG-65D	AG 1203	JSG-65D	XG 30001

Medium maturity hybrids

Sorghum Variety Trials

Rank	OPREC (full)	Tonkawa (full)	Tonkawa (early)
1	1G741	1G741	DKS 37-07
2	84P80	84P80	DKS 28-05
3	84P72	84P72	GW-1160
4	941531	941531	11043
5	GS 725	96173	SP3825
6	XG30003	GW-9320	99773

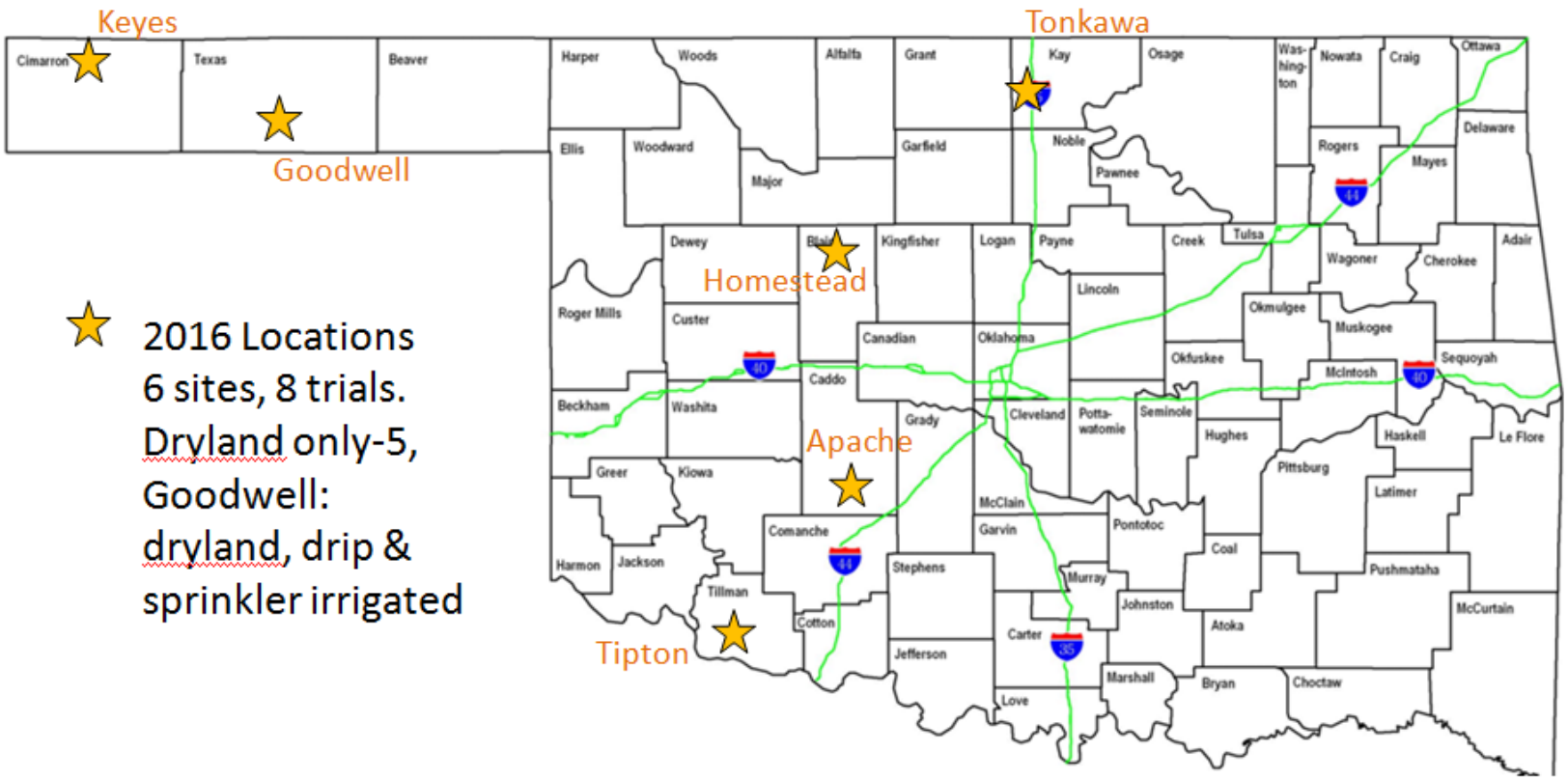
Sugarcane Aphids and Yields, 2014

Location	AG1203	DK 37-07	SP6929	Mycogen 1G688
Apache	88/104	124/100	---	141/104
Blackwell	143/136	149/118	---	149/136
Cherokee	---	109/104	---	103/104
Homestead	---	45/59	---	60/59
Keyes	90/88	113/77	---	86/88
Morris	---	73/61	---	61/61
OPREC (irr)	126/127	142/113	---	132/127
Tipton	---	53/73	---	---

Sugarcane Aphids and Yields, 2015

Location	AG1203	DK 37-07	SP6929	Mycogen 1G688
Apache	92/84	---	---	---
OPREC (dry)	89/98	60/76	67/84	---
OPREC (irr)	59/57	139/139	---	---
Tipton	63/64	101/91	67/67	---
Tonkawa	107/106	112/87	---	---

Sorghum Variety Trials, 2016



Inzen (ALS)-Tolerant Sorghum Trait + Zest Herbicide

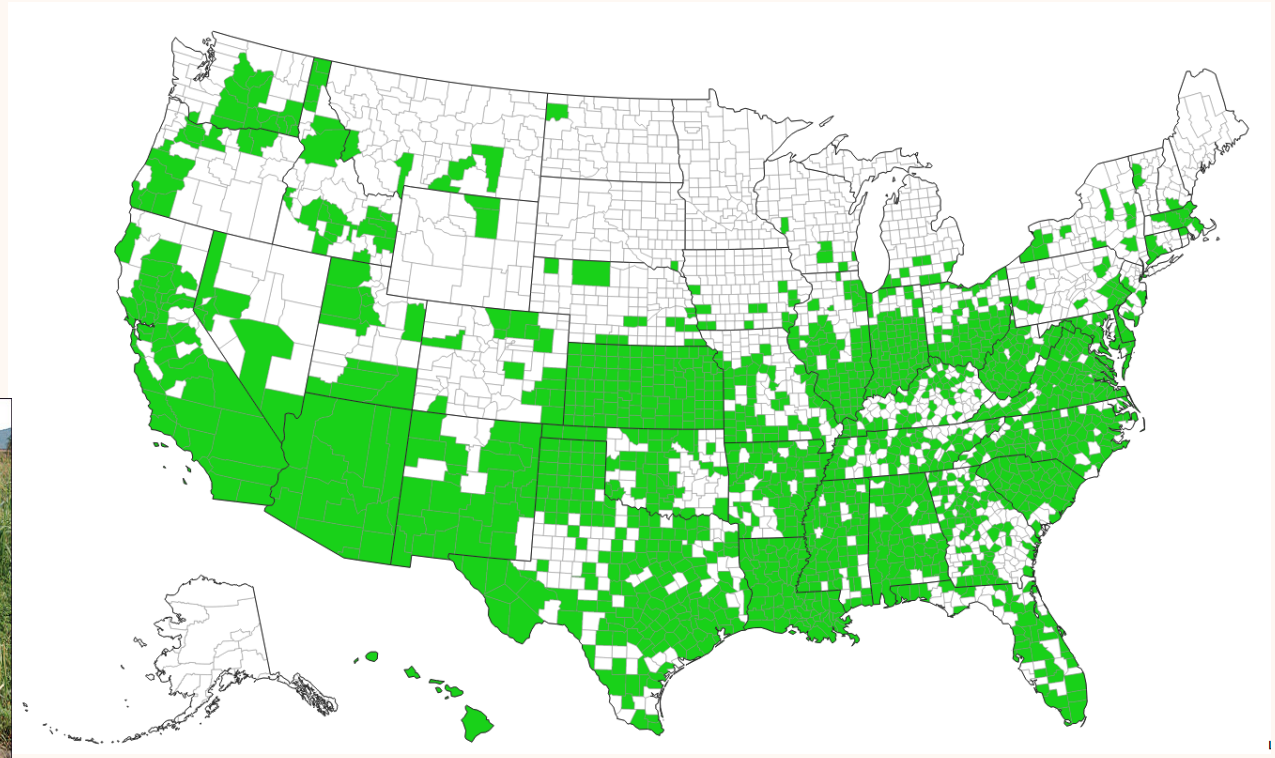
EPA announced on Feb. 10 the registration approval of the active ingredient nicosulfuron (the active ingredient in DuPont Zest herbicide) for sorghum.

This will complement the non-GMO Inzen-tolerance sorghum trait.

This will provide the first over-the-top grass control for grain sorghum.

Good thing or bad?

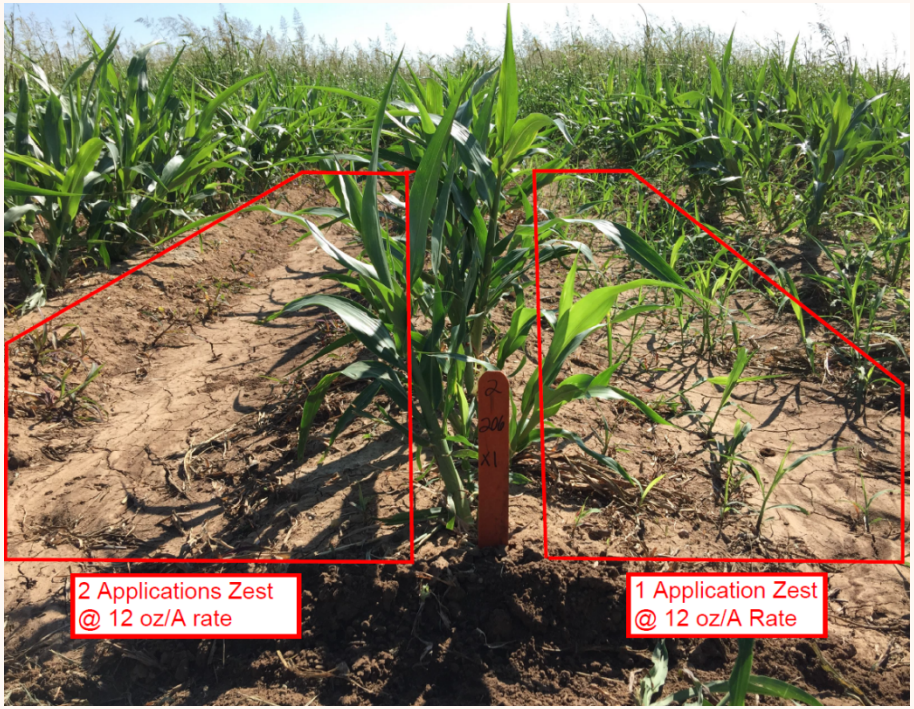
Inzen-tolerant sorghum + Zest Herbicide

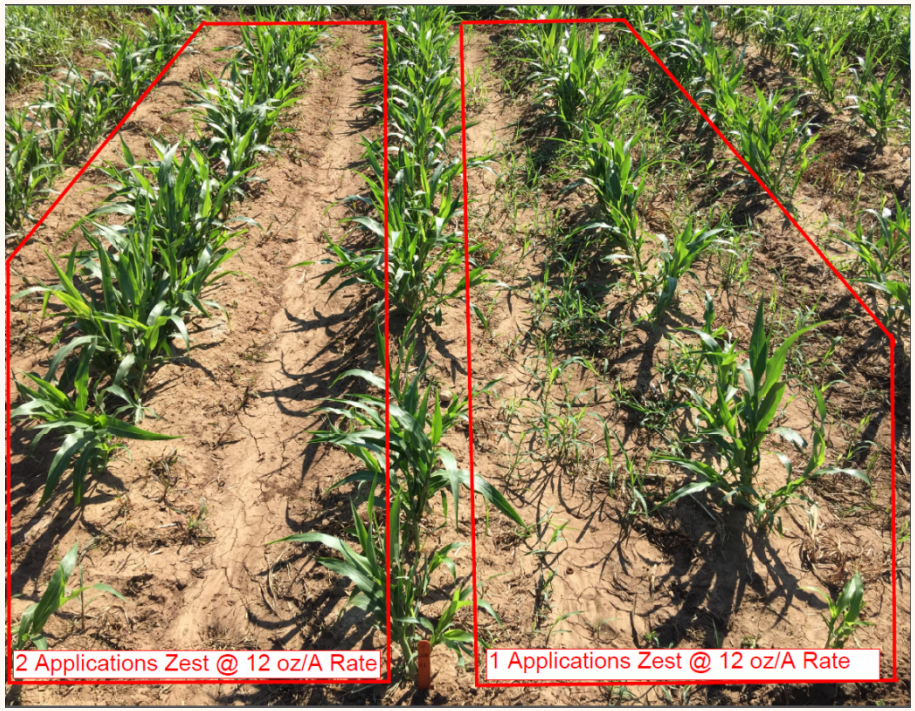


Map of Johnsongrass infestation by county
Invasive Plant Atlas, USDA

Inzen-tolerant sorghum + Zest Herbicide

Inzen trial in Stratford, Texas, 2015





Jourdan Bell, Texas A&M Agri-Life, Amarillo

Inzen-tolerant sorghum + Zest Herbicide

Grasses	Maximum Height or Diameter
Barnyardgrass†	4"
Broadleaf signalgrass	2"
Crabgrass (large)*	2"
Foxtails (bristly, giant†, green†, yellow†)	4"
Itchgrass 6"	
Panicum (Texas, browntop)	3"
fall	4"
Ryegrass (Italian, perennial) †	6"
Sandbur (field, longspine)*	3"
Wild oats†	4"
Wild proso millet	4"
Witchgrass	6"

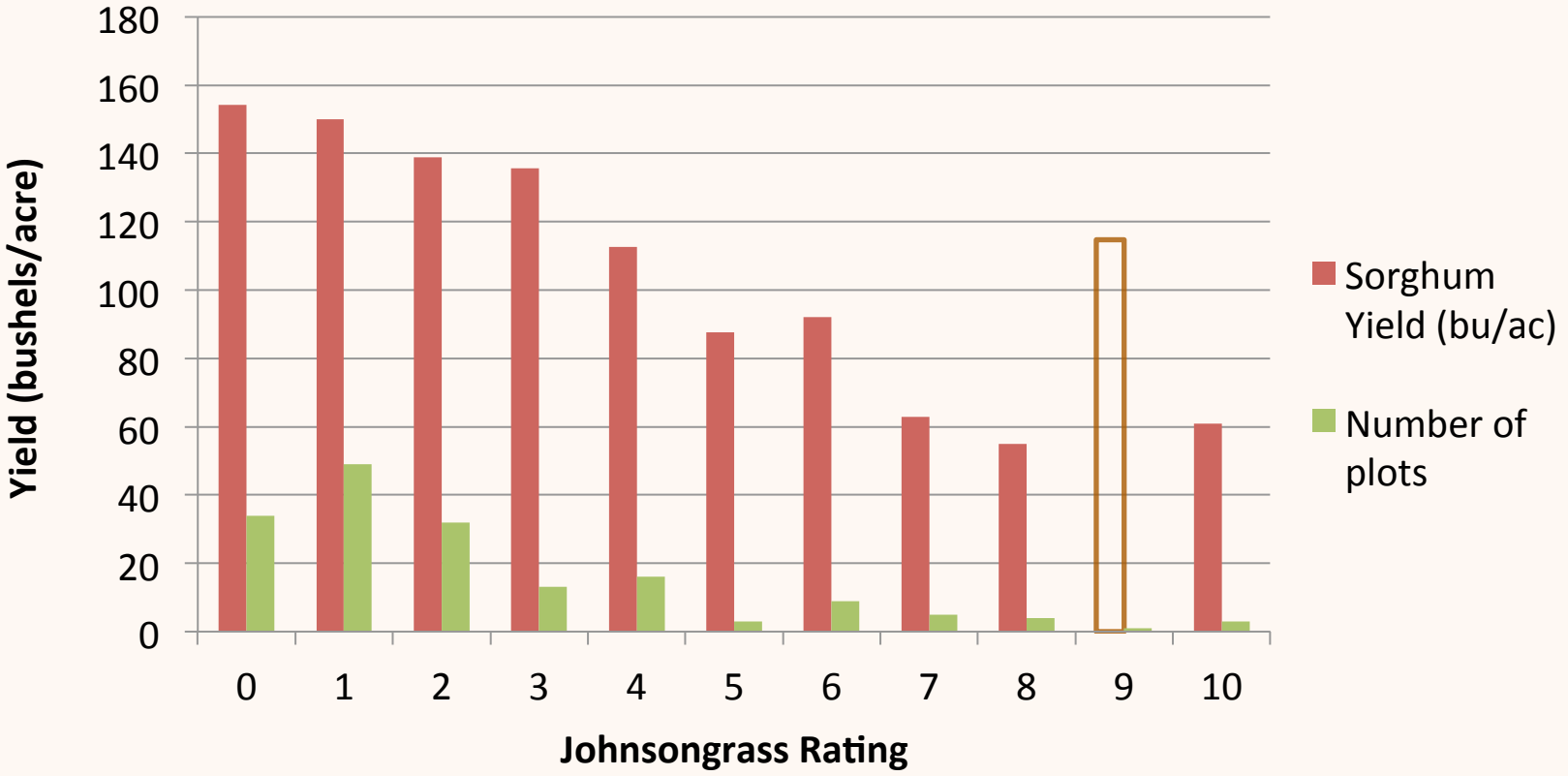
† Naturally occurring resistant biotypes are known to occur.

* Refer to Specific Weed Instructions Section of this Label

Tracy's observation: johnsongrass is not on this label, also that weed sizes are smaller than listed on the label for Accent(nicosulfuron).

Courtesy: Robert Rupp, DuPont

Inzen-tolerant sorghum + Zest Herbicide



Goodwell Limited Irrigation Sorghum Variety Trial, 2015

Inzen-tolerant sorghum + Zest Herbicide

If a 120-acre circle had the same johnsongrass infestation:

18 acres would have been rated 5 or greater and lost 62 bushels/ac

=> 1000 bushels of yield lost to the johnsongrass infestation.

At $3 per bushel…$3000/120 = $25/acre in lost yields.

Will Inzen-tolerant grain sorghum + Zest cost more than $25/ acre in lost yields from this field?

Inzen-tolerant sorghum + Zest Herbicide

What we don't yet know:

- Cost for the herbicide and the seed
- Potential yields of sorghum varieties with this trait
- We don't yet know if this would be cost-effective for most sorghum producers in Oklahoma.

Inzen-tolerant sorghum + Zest Herbicide

- What are the risks?
  - This gene was taken from ALS-tolerant shattercane, and producers run the risk of further spreading ALS-tolerant shattercane, and of passing the tolerance into johnsongrass.
  - All producers could lose a valuable tool if some of them do not take care in use of the new product.
  - Alta has enough seed to scatter plots across the sorghum belt on a wide variety of producers, however there is probably not enough to satisfy all demand.

Inzen-tolerant sorghum + Zest Herbicide

Proposed Restrictions:

- Do not plant Inzen™ sorghum in fields known to have ALS resistant shattercane/johnsongrass
- Do not plant sorghum in consecutive years following Inzen™ sorghum in the same field
- Do not use Zest™ herbicide to control johnsongrass or any other Group 2 (ALS) herbicide labeled for control if used the previous year.
- Do not use any Group 2 (ALS) herbicide to control johnsongrass the year after using Zest™ herbicide to control johnsongrass in Inzen™ grain sorghum.

Courtesy: Robert Rupp, DuPont

Inzen-tolerant sorghum + Zest Herbicide

Anticipated Stewardship:

- Stewardship requirements must be met to grow Inzen™ grain sorghum
- Growers must complete training on stewardship website to better understand resistance management within the Inzen™ system
- Growers will sign a stewardship agreement at the time of seed purchase
- Seed tags will contain instructional information (much like you see on corn or soybean seed tags)
- Growers should follow best management practices listed on the label

Robert Rupp, DuPont

Comments or Questions?