



# *Virtual* **#SUPERSORGHUM** **INDUSTRY FORUM**



## **SEED TECHNOLOGY ADVANCES**

Brent Bean

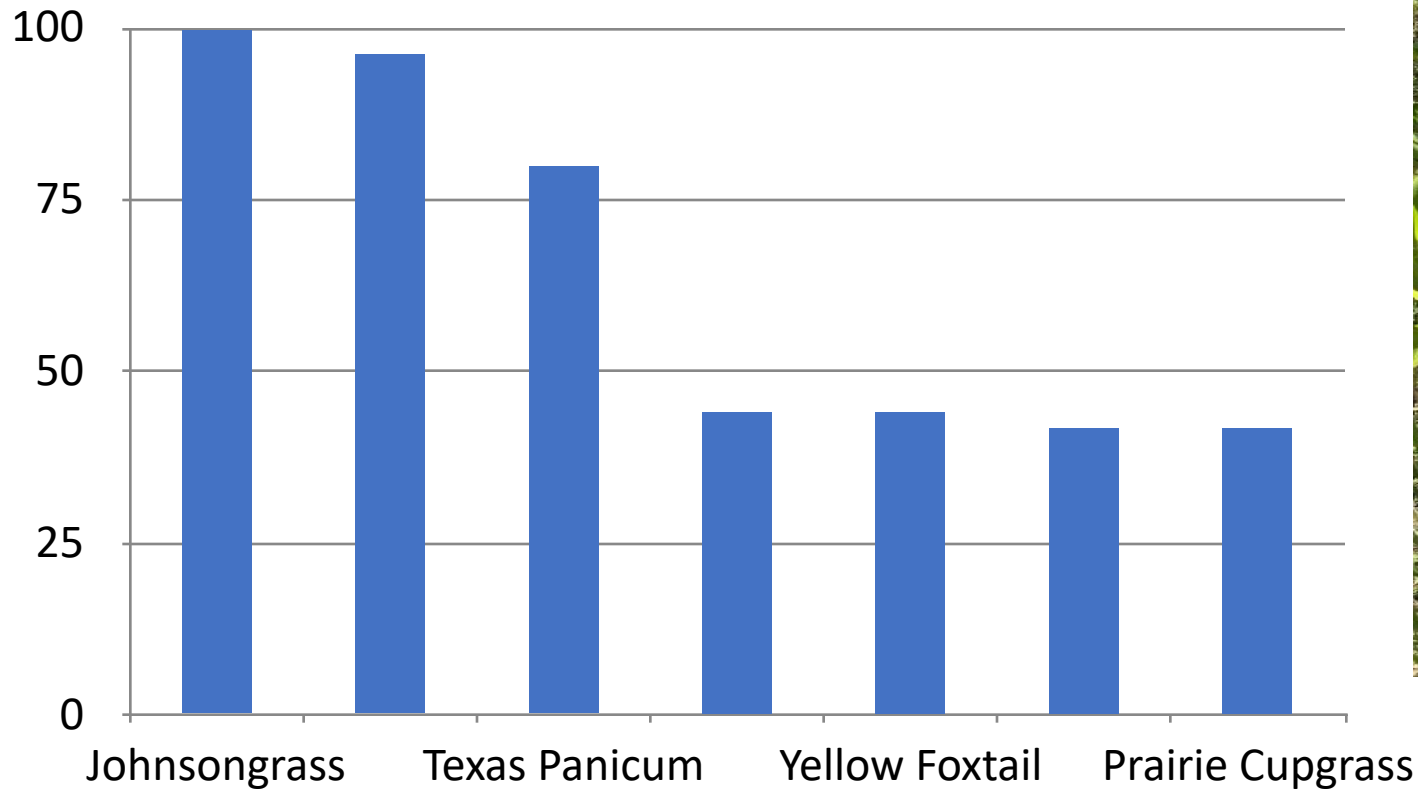
United Sorghum Checkoff Program

Director of Agronomy



# Documented yield losses due to grass competition in sorghum

% Yield Reduction



Grain sorghum yield loss associated with competition from grassy weeds.  
2020. <http://sorghumcheckoff.com>





# ABBREVIATED HISTORY OF KEY EVENTS

- 1999 – ACCase resistant sudangrass found in Bolivia at KSU research facility
- 2003 – ALS resistant shattercane in KS
- Approx. 2007 -- KSU moves traits into sorghum lines and license to Pioneer
- 2010 Bolivia challenges ownership of ACCase trait
- 2016 Dupont/Pioneer receive EPA approval for Zest herbicide for use in Inzen sorghum
- 2018 Advanta made first sales of igrowth sorghum in Australia and Argentina (planted in 2019)
- 2018 S&W files ACCase tolerant sorghum patent
- 2021 Commercially available products

# THREE SEED TECHNOLOGIES

## Inzen

- ALS – SU (sulfonylurea)
- Corteva

## igrowth

- ALS – IMI (imidazolinone)
- Advanta

## Double Team

- ACCase – FOPs
- S&W



All non-GMO



# CORTEVA AGRISCIENCE

**Inzen™**

herbicide tolerance trait for sorghum

**Zest™ WDG herbicide**

Nicosulfuron – growers are familiar with this  
as Accent used in corn

Technology approved in 2016

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## HERBICIDE

Use Zest WDG herbicide on sorghum with Inzen™ herbicide tolerance trait:

Use Zest WDG as part of a program with an effective broadleaf herbicide

For best results, apply postemergence following Preemergence herbicide

## Weeds controlled in Inzen grain sorghum

Grasses	Max. Height or Diameter
Barnyardgrass†	4"
Broadleaf signalgrass	2"
Crabgrass (large)*	2"
Foxtails (bristly, giant†, green†, yellow†)	4"
Itchgrass	6"
Panicum (Texas, browntop)	3"
Panicum 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. If weed escapes occur, treat with an herbicide having a mode of action other than Group 2 and/or use non-chemical methods to remove escapes, as practicable, with the goal of preventing further seed production.

\* Refer to Specific Weed Instructions Section of the Label





Untreated – Hastings, NE 2018  
Crabgrass, Giant Fox, Waterhemp, Puncturevine

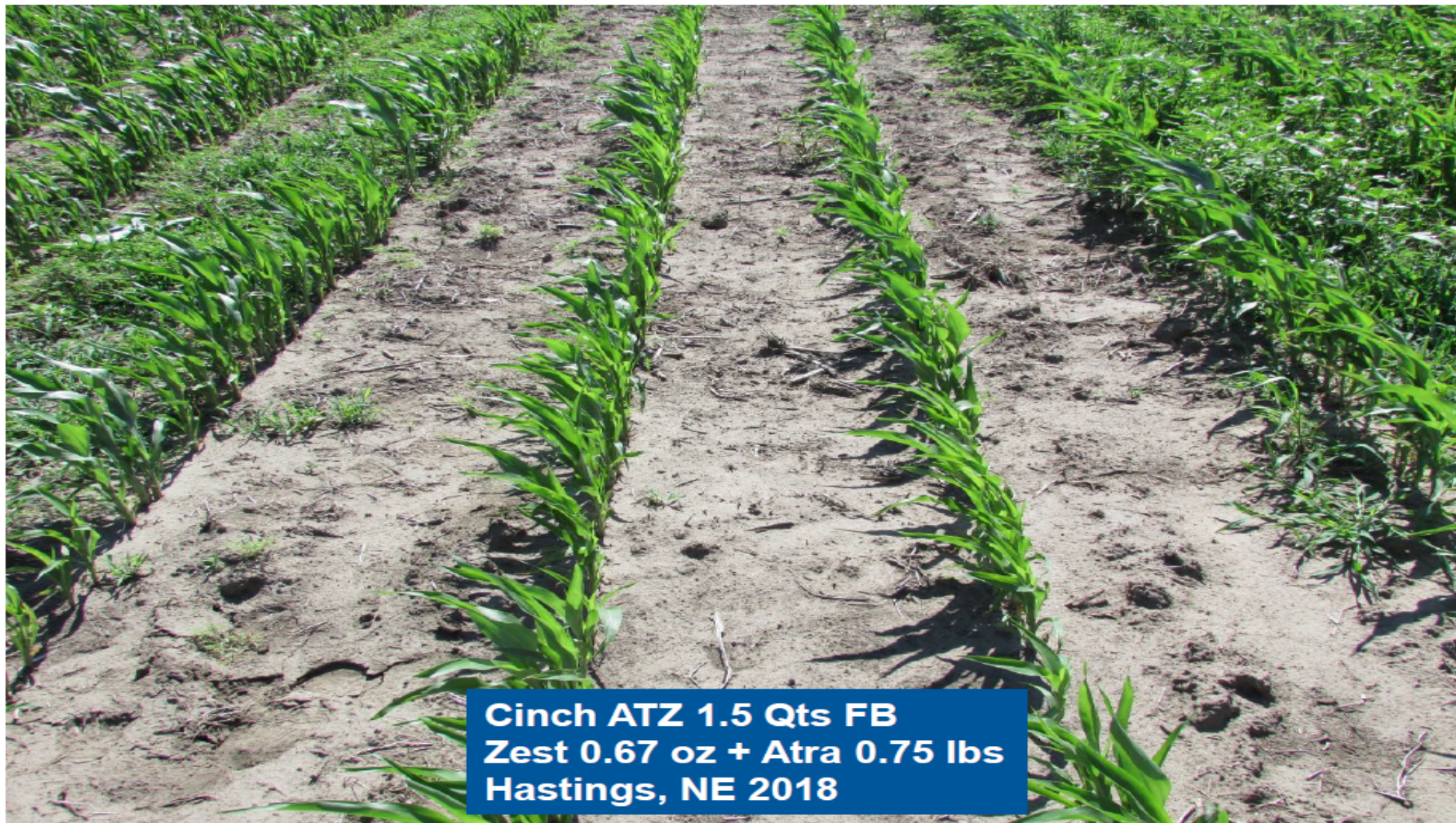
Source: Corteva – Jeff Krumm





Source: Corteva – Jeff Krumm







# INZEN/ZEST – MY THOUGHTS

Technology has been fully approved by EPA

Zest (nicosulfuron) we have experience with the product

Very good activity on grass species, but limited broadleaf activity

SU grass resistance may be present in some fields

Corteva has had a lot of time to develop competitive hybrids with strong herbicide tolerance

Corteva has lots of regional personnel to advise and help growers







## **igrowth® Weed Control Program**

Imidazolinone (IMI) tolerant sorghum

Commercialized in Australia and Argentina in 2018

## **ImiFlex™ imazamox herbicide sold by UPL**

Growers familiar with as Raptor in soybeans  
Grass and broadleaf activity



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# IGROWTH/IMIFLEX – MY THOUGHTS

Successful launch in other countries

Received label in December of 2020

Five hybrids available ranging from medium-early to medium maturity

Imiflex will have both pre and post activity

Decent broadleaf activity

Imiflex is an ALS herbicide but in the IMI subclass

Longer residual than the other two technologies





## Double Team™ Sorghum Cropping Solution

ACCase tolerant sorghum

Sorghum Partners

## FirstAct™ – Sold by ADAMA

Quizalofop

Proven grass control in broadleaf crops

Expected EPA label for the herbicide prior to the 2021 growing season

Canadian PNT late 2021



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## DOUBLE TEAM – MY THOUGHTS

Quizalofop is a proven over-the-top grass herbicide

Grass resistance to ACCase is relatively low compared to ALS herbicides

Very little soil activity and no broadleaf activity

S&W and ADAMA will be fine tuning how to safely use the technology to avoid crop injury and maximize grass control in 2021



# EXPECTATIONS FOR 2021

## **Inzen Sorghum**

Very limited sales in 2021. Mostly large block (80 acres) demonstrations in the High Plains region.

## **igrowth Sorghum**

Advanta is actively selling seed throughout the sorghum belt.

## **Double Team Sorghum**

Limited sales in 2021. Mostly large block demonstrations with specific growers.  
Hybrid choice will be limited.

Restrictions on how FirstAct should be applied.

Canada PNT is not expected until late 2021. All harvested grain will need to be 'channeled' to a domestic end user.

# GRASS/WEED CONTROL EXPECTATIONS





# GRASS CONTROL COMPARISONS

Product	State	BNYD-Grass	Crab-grass	Fall Panicum	Foxtail	J Grass	Sandbur	Shatter-cane
<b>Zest</b> (Nicosulfuron) (based on Accent)	KS	G-E	F	G	G-E		G	E
	NE	G	P-F	G	G		G	E
	AR	G	F-G	F-G	G	G		E
<b>Imiflex</b> (Imazamox) (based on Raptor)	KS	G	G		G	F		E
	NE	G	F-G	E	G		F-G	E
	TN		F-G		F-G			
<b>FirstAct</b> (Quizalofop) (based on Assure II)	KS	G-E	G-E	E	E	E	G-E	E
	NE	G-E	G-E	G-E	F-G	F-G	G-E	E
	AR	G	G-E	G-E	G-E	G-E	G-E	G-E

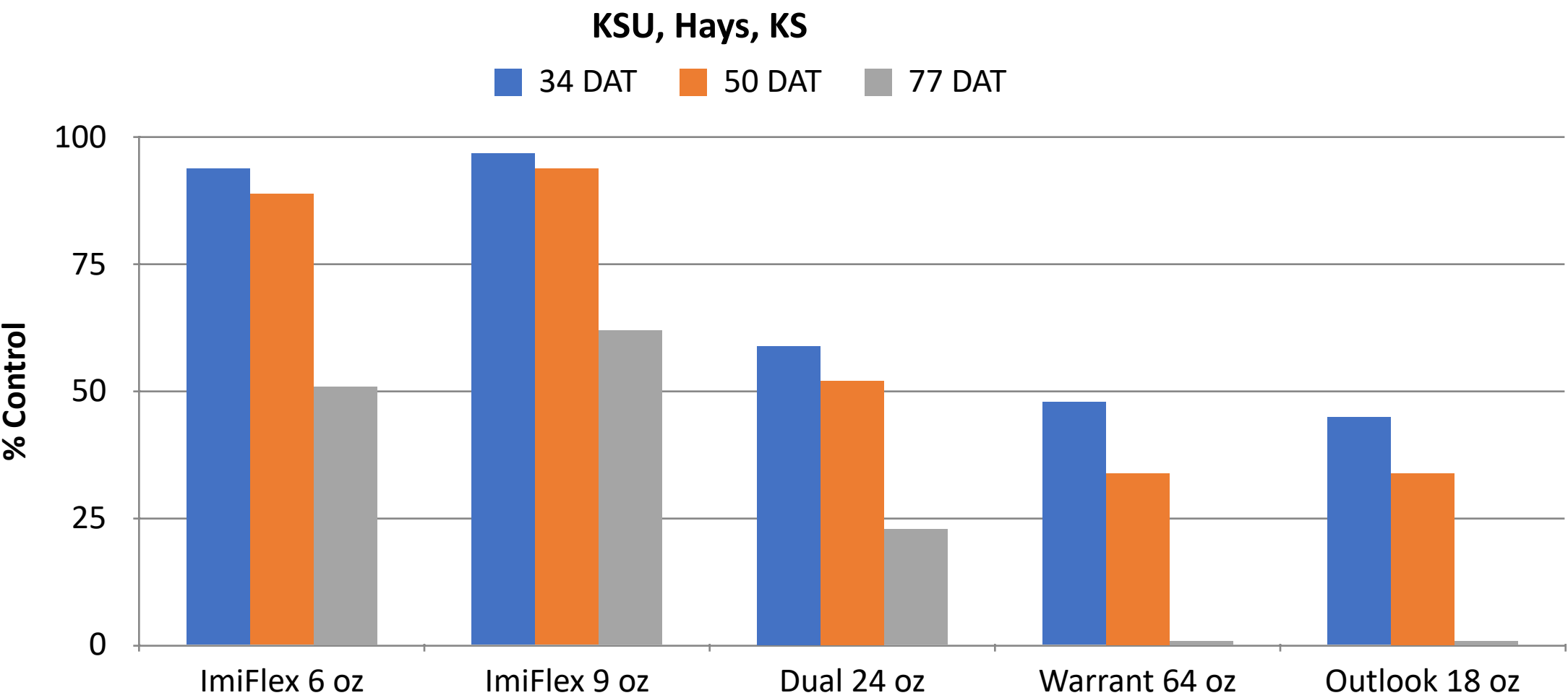
# 2020 TRIALS - USCP



KSU - Hays



# PRE Application – Green Foxtail Control



Source: KSU, Vipin Kumar

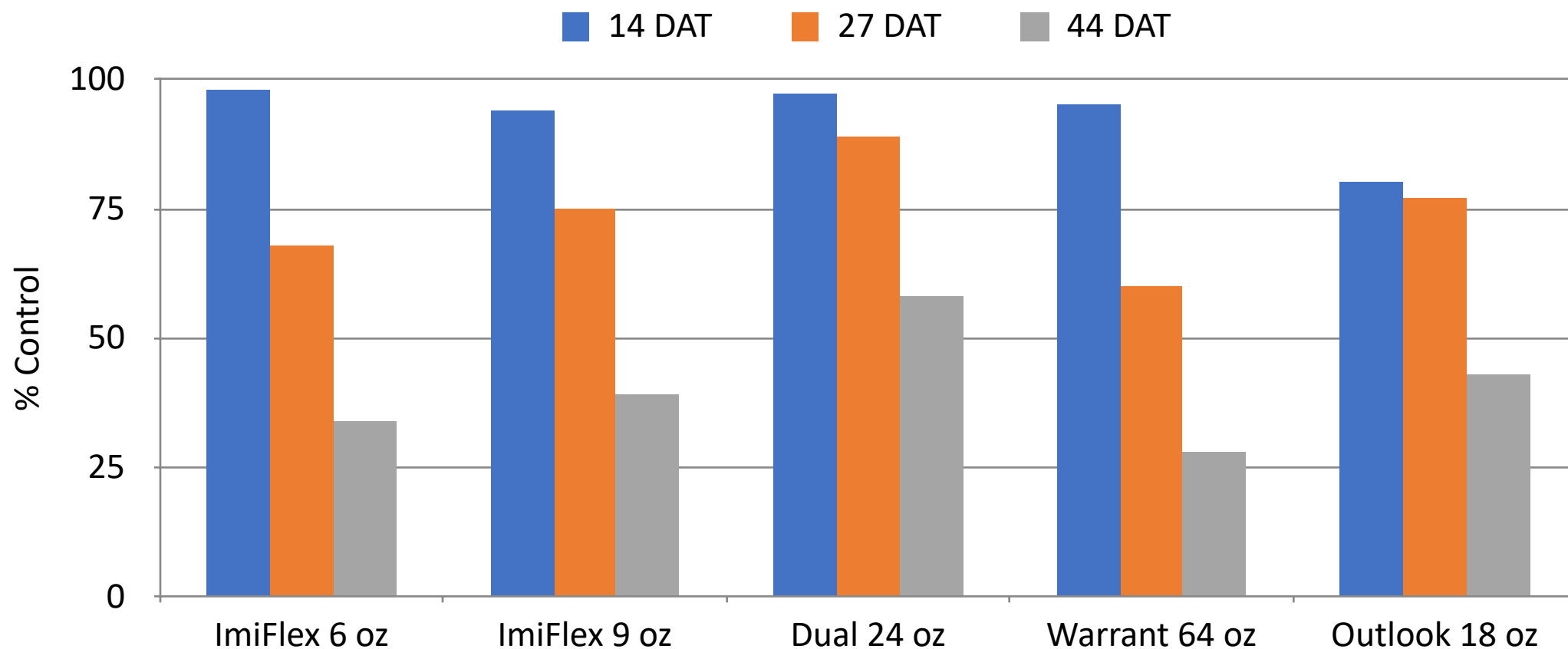
# ImiFlex 9 oz – PRE, Hays, KS 50 DAT





# PRE Application – Crabgrass Control

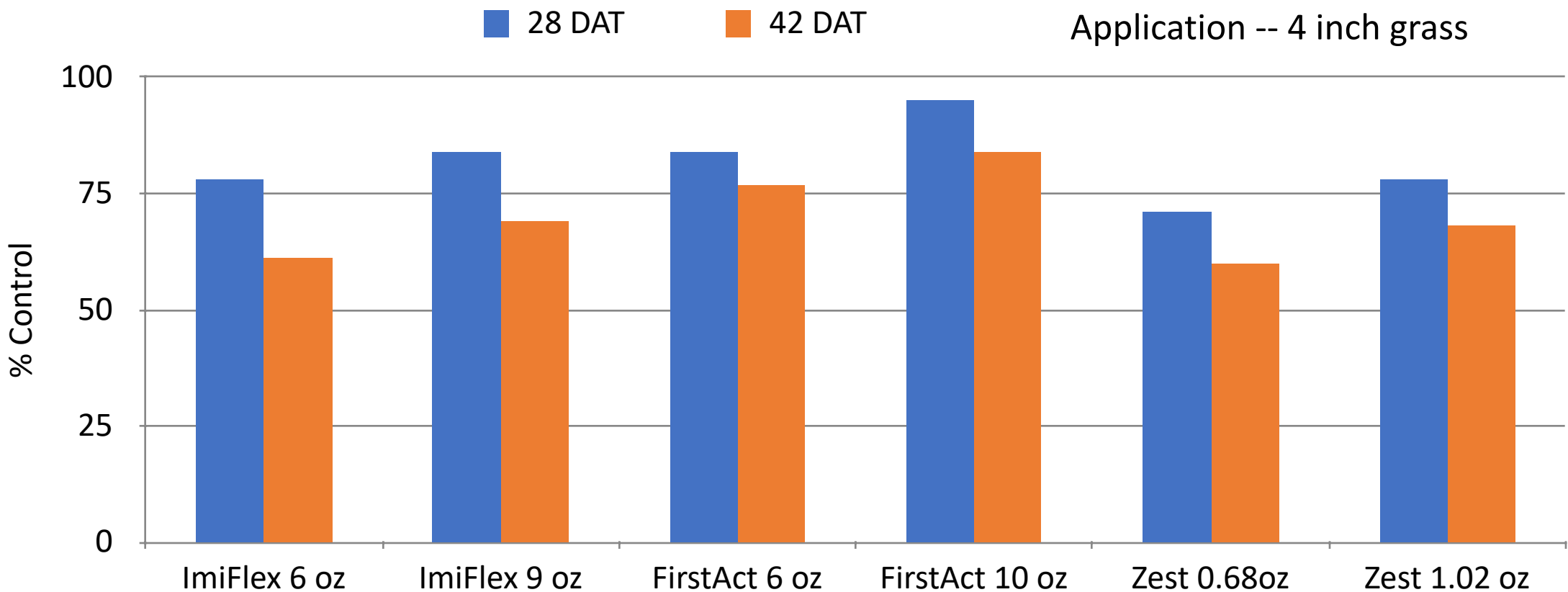
Ok-State, Bixby, OK



Source: Ok-State, Todd Baughman

# EPOST Application – Green Foxtail Control

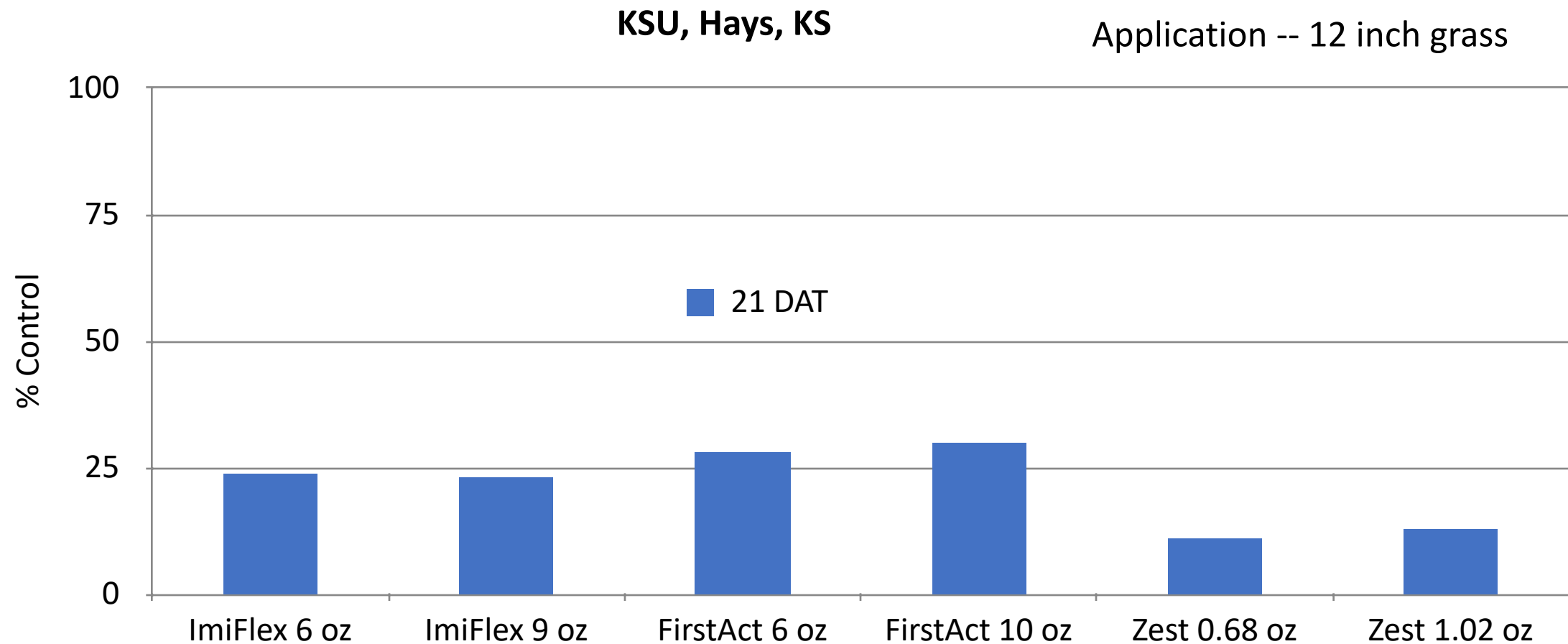
KSU, Hays, KS



Source: KSU, Vipin Kumar

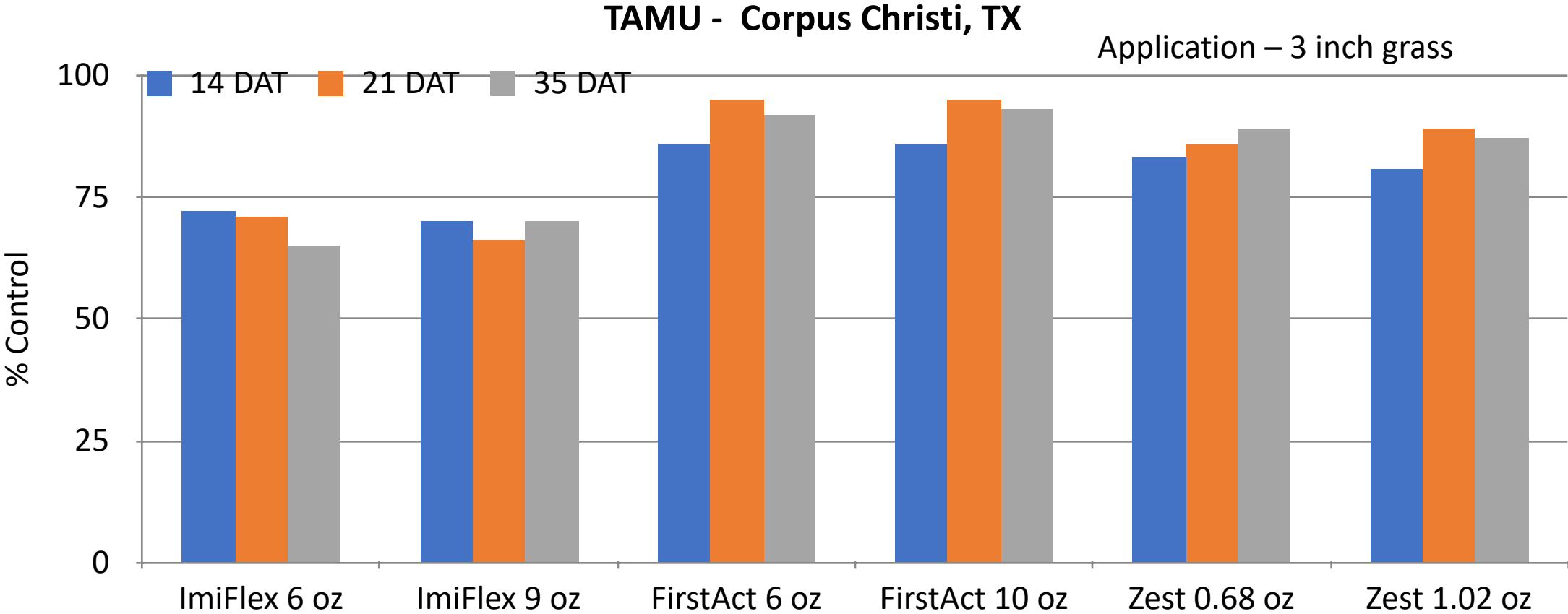


# LPOST Application – Green Foxtail Control



Source: KSU, Vipin Kumar

# POST APPLICATION – TEXAS PANICUM CONTROL



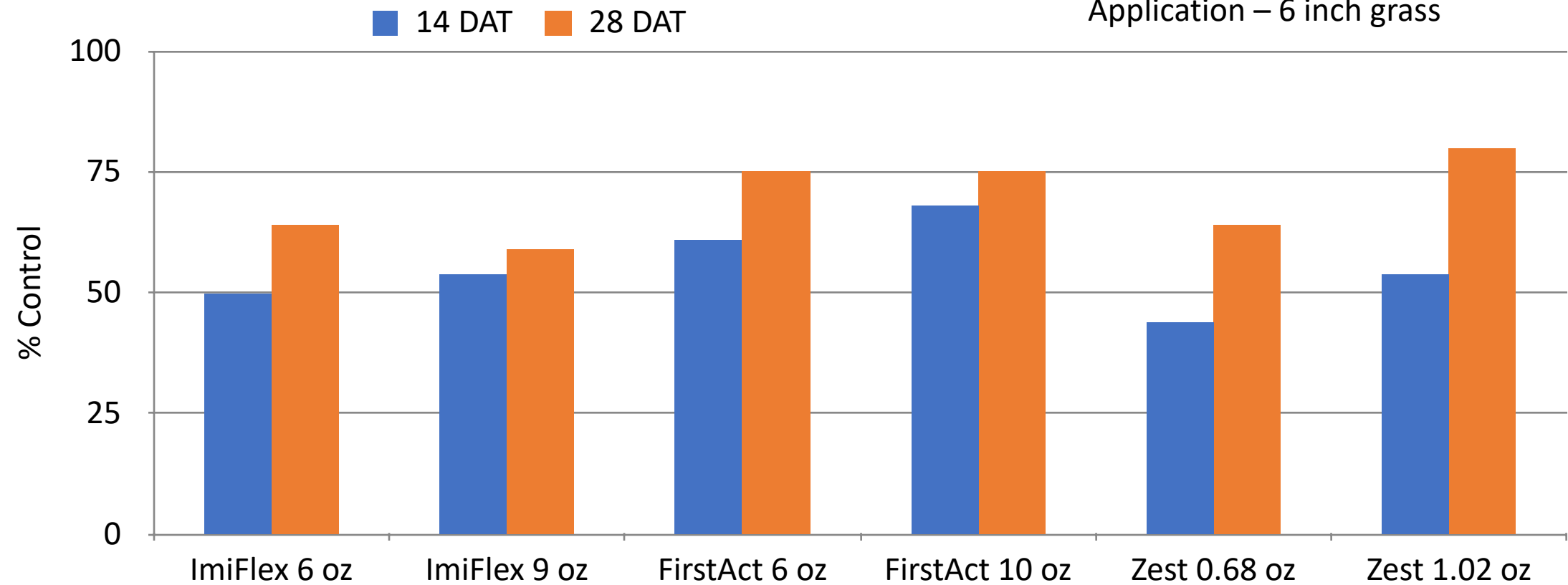
Source: TAMU – Josh McGinty



# POST APPLICATION – TEXAS PANICUM CONTROL

TAMU - Corpus Christi, TX

Application – 6 inch grass



Source: TAMU – Josh McGinty

# Rotational Restrictions

Product	Corn (Field)	Soybeans	Wheat (winter)	Cotton	Sorghum
Zest	Anytime	15 days	4 months	10 months	<b>18 months</b>
IMIFLEX	8.5 months	Anytime	3 months	9 months	<b>18 months</b>
FirstAct	4 months	Anytime	4 months	Anytime	<b>4 months*</b>

\* Cannot plant Double Team Sorghum in consecutive years.







# STEWARDSHIP

Corteva, Advanta/UPL and S&W/ADAMA are all committed to promoting sound stewardship of these technologies

Each company will have a set of similar, but slightly different guidelines

Any grower who uses these technologies will be required to participate in stewardship training similar to those used in other crops

## STEWARDSHIP GUIDELINES – SPECIFIC TO SORGHUM

- Use preemergence group 15 herbicides
- Control weeds when they are small
- Do not use a particular technology if Johnsongrass or shattercane plants are present in the field that are known to be resistant to the particular technology
- To avoid potential outcrossing, control JG and shattercane plants not controlled by the herbicide application prior to flowering of the grain sorghum
- Manage JG and shattercane in road ditches, fence rows, etc so that flowering does not coincide with HT sorghum
- Control volunteer sorghum/off-types the following year prior to flowering
- Consider using a desiccant at the end of the season to control any escapes and minimize weed seed production
- In trucking HT grain from the field avoid spills along road sides – consider tarping trucks



# QUESTIONS?

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