2023 Grain Sorghum: 1) Over-the-top Grass Control in Herbicide Tolerant Sorghums 2) Common Tips

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Texas High Plains

Grain Sorghum Pricing

- March 6, 2023—Dec23 corn futures is ~$5.70/bu.
- How will 2023 grain sorghum be priced relative to Dec23 corn?
- Call regional elevators for difference vs. Dec2023
  - For example: Attebury Hereford : -$0.30/bu below Dec2023 corn, hence sorghum at $5.40/bu or $5.40/0.56 = $9.64/cwt.

New Herbicide Technologies

Grass control in grain sorghum!

- ALS - SU (*Inzen*), limited availability since 2022
  - Corteva (Pioneer)
  - Zest (nicosulfuron)
- ALS - IMI (*igrowth*), somewhat available since 2021
  - Advanta (Alta)
  - UPL
    - Imiflex (imazamox)
- ACCase – (*Double Team*) limited availability in 2022
  - S&W (Sorghum Partners)
  - ADAMA
    - FirstAct (quizalofop)

All non-GMO

Herbicide Tolerant Sorghums

- Each has a specific grower stewardship agreement that must be signed.
- You must use the designated herbicide, not a similar herbicide with the same active ingredient.
- A natural question: Is there any yield data on these three hybrid systems yet in Texas A&M AgriLife testing? Very limited, if any yet.

Precautions

- Pollen-mediated gene flow to nearby Johnsongrass and shattercane can increase development of resistance in those weeds.
- Control of these nearby weeds is recommended when they are also flowering.
- Consult the label for last recommended timing on application for weeds of specific size.

Summary

Sorghum New Herbicide Tolerant Technologies			
	igrowth®	Inzen™	Double Team™
Seed Company/ Herbicide Company	Advanta/UPL	Pioneer/Cortev a	S&W/ADAMA
Herbicide	ImiFlex™	Zest™	FirstAct™
Mode-of-Action	ALS (imi subclass)	ALS (SU subclass)	ACCase (Fop subclass)
PRE Use	Yes	No	No
POST Use	Yes	Yes	Yes
Broadleaf Activity	Moderate	A little	None
Crop Rotation Concerns	Check label for wheat restrictions	Minimal	Minimal
Seed per Bag	600,000	50 lbs	600,000

Summary courtesy Dr. Brent Bean, United Sorghum Checkoff Program, March 2, 2023

Inzen (Corteva)

- Companion herbicide Zest (nicosulfuron) is best as a POST application coupled with an effective broadleaf herbicide, following a PRE program.
- Zest has good activity on grasses, but limited effectiveness on broadleaves.
- What is Zest most similar to? Accent in corn.
- Contact a Pioneer dealer about 2023 hybrids.
- Do not apply to sorghum >20” tall (this serves as the pre-harvest interval).

Inzen (Corteva)

- Selected Zest label rotation restrictions—no soil pH limitations:
  - General sorghums, 10 months
  - ALS-resistant sorghums, 18 months
  - Corn, anytime
  - Cotton, 10 months
  - Winter wheat, oats, rye, barley, 4 months
  - Soybeans, 15 days
  - Dry beans & peas, 10 months
- Zest label rotation restrictions—soil pH dependent:
  - Sunflower: pH 7.5 or less, 11 months; pH > 7.5, 18 months.

igrowth (Advanta/Alta)

- Companion herbicide **Imiflex (imazamox)**.
- Available in four medium or medium-early hybrids. (Two hybrids listed as high tolerance to sugarcane aphid.)
- Also one forage sorghum igrowth hybrid
- Imiflex has both PRE & POST beyond grasses to include some broadleaves.
- Has longer residual activity that the other two.
- What is Imiflex most similar to? Raptor in soybeans

igrowth (Advanta/Alta)

- Sorghums (all types, including igrowth), 18 months
- Corn (non-Clearfield), 8.5 months
- Clearfield crops including corn winter canoa, sunflower, wheat, anytime
- Cotton, 9 months
- Non-Clearfield wheat, 3 months; rye, 4 months; oats and barley, 9 months
- Soybeans, most beans & peas, anytime
- Sunflower, 9 months.

⊙ Additional rotational restriction comments for soil pH, rainfall + irrigation, and tillage are listed for barley and non-Clearfield wheat.

igrowth (Alta)

- See the full Imiflex label for specific instructions on crabgrass control.
- Selected Imiflex label rotation restrictions for Texas depend on east/west from U.S. Highway 83 (Canadian-Childress-Abilene-Junction-Uvalde).
- Applications recommended for broadleaves ≤3” tall, and grasses no more than 4-5 leaf stage.
- Do not apply on grain sorghum >20” tall.
- Imiflex has no preharvest interval for any igrowth sorghum crop.

Double Team (S&W/Sorghum Partners)

- Companion herbicide FirstAct (quizalofop).
- Less information available.
- Grass resistance to ACCase herbicides is relatively low compared to ALS herbicides.
- Little to no residual activity with FirstAct
- What is FirstAct most similar to? Assure II in wheat.

Double Team (S&W/Sorghum Partners)

- Selected FirstAct label rotation restrictions:
- Double Team sorghums—do not plant in the same field the following year
- Safe to rotate shortly after application (label actually implies 0 days restriction) to cotton, dry beans, peas, canola, sesame, soybeans, sunflower, quizalofop tolerant field corn and several small-acre specialty crops (see label).
- All other crops minimum 120 days after application.

Double Team (S&W/Sorghum Partners)

- Apply to young, actively growing weeds in 4-20” tall sorghum for best weed control and crop tolerance.

Herbicide Tolerant Grain Sorghum

- Grass control: Johnsongrass, shattercane, Texas panicum, barnyardgrass, foxtails, etc. can reduce sorghum yields 40-90%.
- Weed resistance to ALS is more common than ACCase (Double Team).
- Do not use Inzen or igrowth where ALS-resistant johnsongrass, shattercane, etc. are known.

Herbicide Tolerant Grain Sorghum

- Good stewardship includes that these chemistries are still rotated with other herbicides to reduce potential for resistance development.
- Rotations of all three are OK for cotton the next year.

What is your most important weed control decision in grain sorghum?

- Many chemicals for mid-season use in an existing grain sorghum crop
- But your decisions on pre-plant/pre-emerge weed control are still the most important!
  - For many High Plains farmers from Plainview north, this is often atrazine (likely no rotation with cotton) + Group 15 products (*s*-metolachlor/Dual products, acetochlor, or dimethenamid-P)
- This decision is for **preventive** weed control.
- Your later decisions should be to catch and control escapes, not a rescue operation.

TEXAS A&M AGRILIFE EXTENSION

Grain Sorghum

- A quick summary of the most relevant topics for sorghum production in the Lamb Co. region.

Asking about Past Sorghum

- Comment farmer comment: '**Sorghum hasn't done all that well**' for several of their production years.
- I ask, "Tell me about your crop, what do you think you could have done better?"
- Two common responses…

Asking about Past Sorghum

- '**Sorghum hasn't done all that well**'
- "What do you think you could have done better?"

- Two common responses…
  - "Well, I probably planted more seed than I should have."
  - "I probably didn't fertilize my grain sorghum the way I should have."

Asking about Past Sorghum

- Two common responses…
  - "Well, I probably planted more seed than I should have" *(and they are probably right)*

    "Trostleism": If you are thinking about increasing your grain sorghum seeding rate, ***don't do it****."*
  - "I probably didn't fertilize my grain sorghum the way I should have" *(in many cases they never fertilized with* **any** *N at all)*

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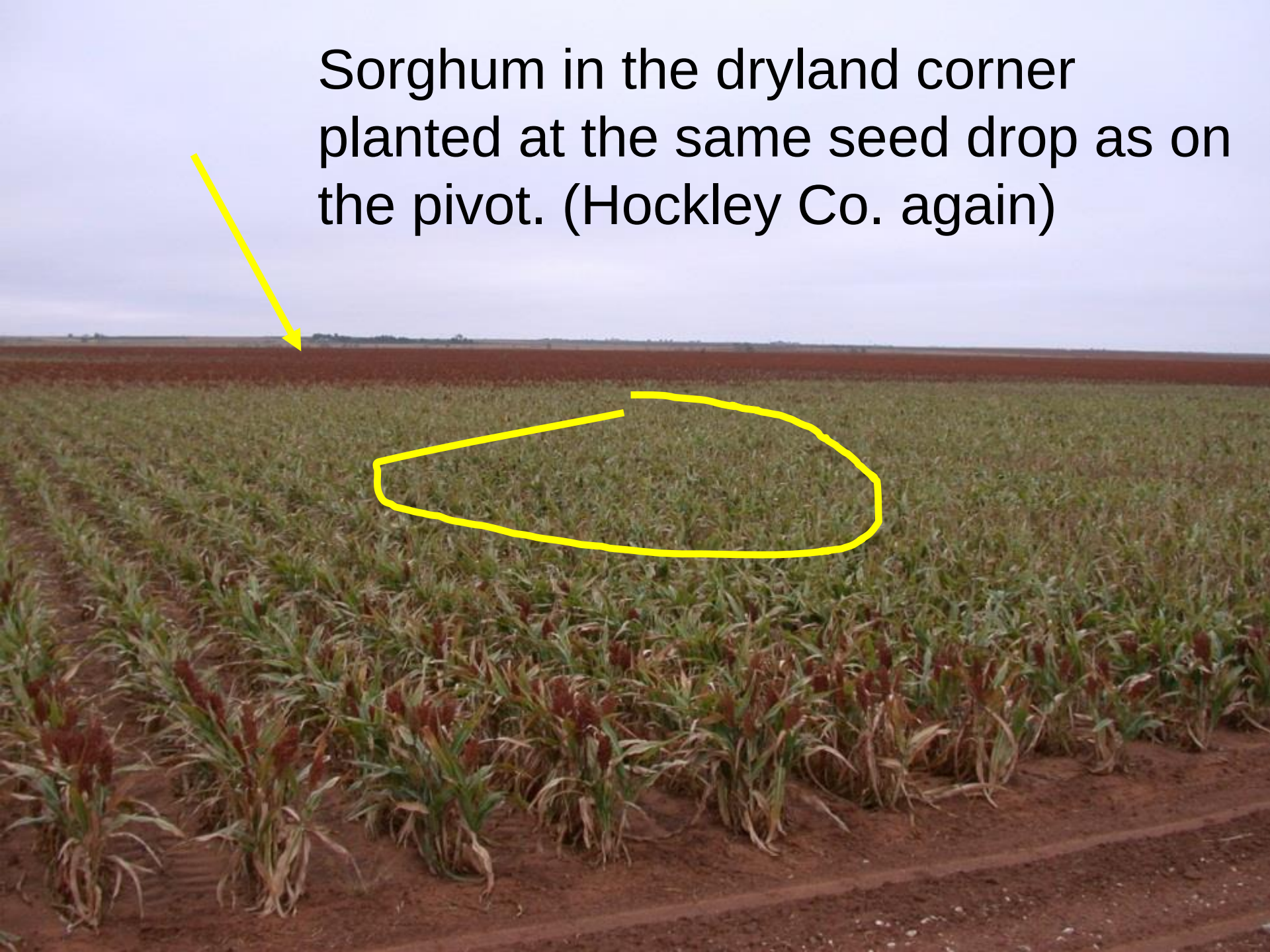
Southern High Plains—Dryland Seeding

- Adjust to deep soil moisture status
- **Seed drop** of **30,000-35,000** seeds/A to give 21,000 to 28,000 plants/A (~2 lbs./A), this is a general maximum
  - good results under a wide range of conditions
- High enough to not limit yield
- Low enough to significantly reduce potential to burn up during drought
- Adjust seed drop up only if you expect soil conditions will reduce stand establishment

Dryland sorghum planted at too high seeding rate on the right: poor heading. (Hockley Co.)

Southern High Plains—Irrigated Seeding

- Adjust to deep soil moisture status and projected irrigation
- **Seed drop** never to exceed 60,000 seeds/acre under the highest target irrigation
- At 6-8” irrigation, poor soil moisture, ~39K; good soil moisture, ~46K
- Bailey Co. farmers:
  - National irrigated yield winner @ 12,000+ lbs./A on 3.5 lbs./A = 45-48K seeds/A
  - Limited irrigation (6-8”) sharing water with peanuts: 6-8”, 24,000 seeds/A yielding 5,000+ lbs./A


Sorghum in the dryland corner planted at the same seed drop as on the pivot. (Hockley Co. again)

Trostle Opinion…

- 30+ years of grain sorghum experience and knowledge…
- What is the most important stage of grain sorghum growth & development you should know about?
- What do you think it might be?

Growing point of grain sorghum; the head is now developing, determining the number of spikelets and seeds per spikelet. (These are important components of yield potential.)

Management During Early Growth

- Growing Point Differentiation corresponds to 7-8 leaf growth stage (~12-15” tall), and growing point is now above soil surface
- Herbicide labels and growth stage
  - 2,4-D, dicamba (e.g., Banvel, Clarity, etc.), etc. should not be applied without using drop nozzles after about 5-leaf stage (~8-10” tall; some labels say up to 15”)
- Nitrogen sidedressing should be on by growing point differentiation
- Irrigate if you have it.

Nitrogen Fertility & Soil Testing

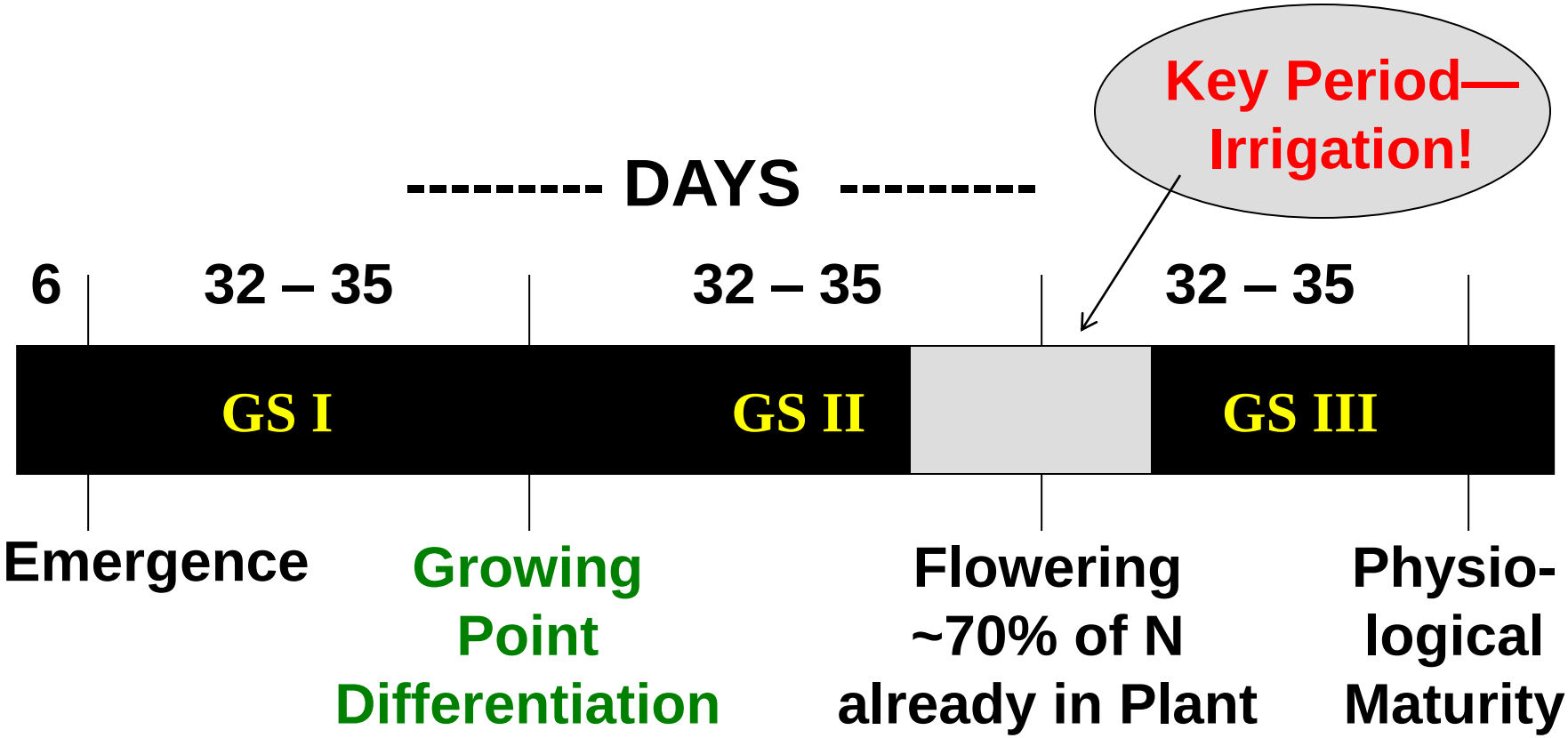
- You can't get something from nothing (at least not for very long)
- **Sorghum N fertility, ~2 lbs. N per 100 lbs. of yield goal—combined source from soil *and* fertilizer N**
  - Soil N value dependent upon depth of soil sample
  - Texas A&M lab calculation:
  - N = (yield goal X 2) - (2 X ppm N for 0-6")
  - N = (yield goal X 2) - (all profile N, 24+"deep)

***Sorghum & Water Relations

- Rain (and irrigation): Catch it! Keep it! Reap it!
- It takes 6-8” of available water to get a crop of typical sorghum plants to the point of grain production
  - ~5” for low plant population dryland sorghum
- Once met, additional moisture has large effect on yield, 350-425 lbs./A per 1” (South Plains; Panhandle ~5% higher?)

Development of Grain Sorghum

Medium Maturity Grain Sorghum, 17 leaves



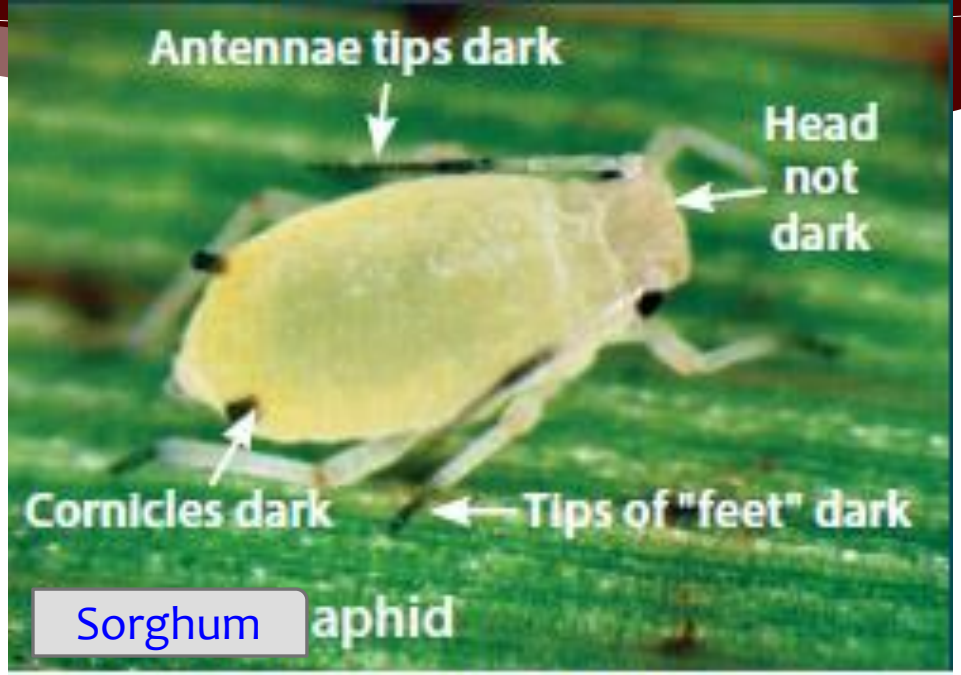
Spikelets & Potential Seed Number Set from GPD +10 Days for Each Head


Sorghum on the edge of the field shows the value of more area—and more moisture per plant—which achieves more yield.

Grain Sorghum & the 500-lb.Gorilla…

SCA & YSCA

- Sugarcane aphid, beginning 2023 is now correctly called the ‘sorghum aphid’
  - It is actually a different species, not a biotype of SCA, but it is nearly identical
- Yellow sugarcane aphid (minor injury)
- Planting advice: in general consider sorghum aphid tolerant hybrids as standard.



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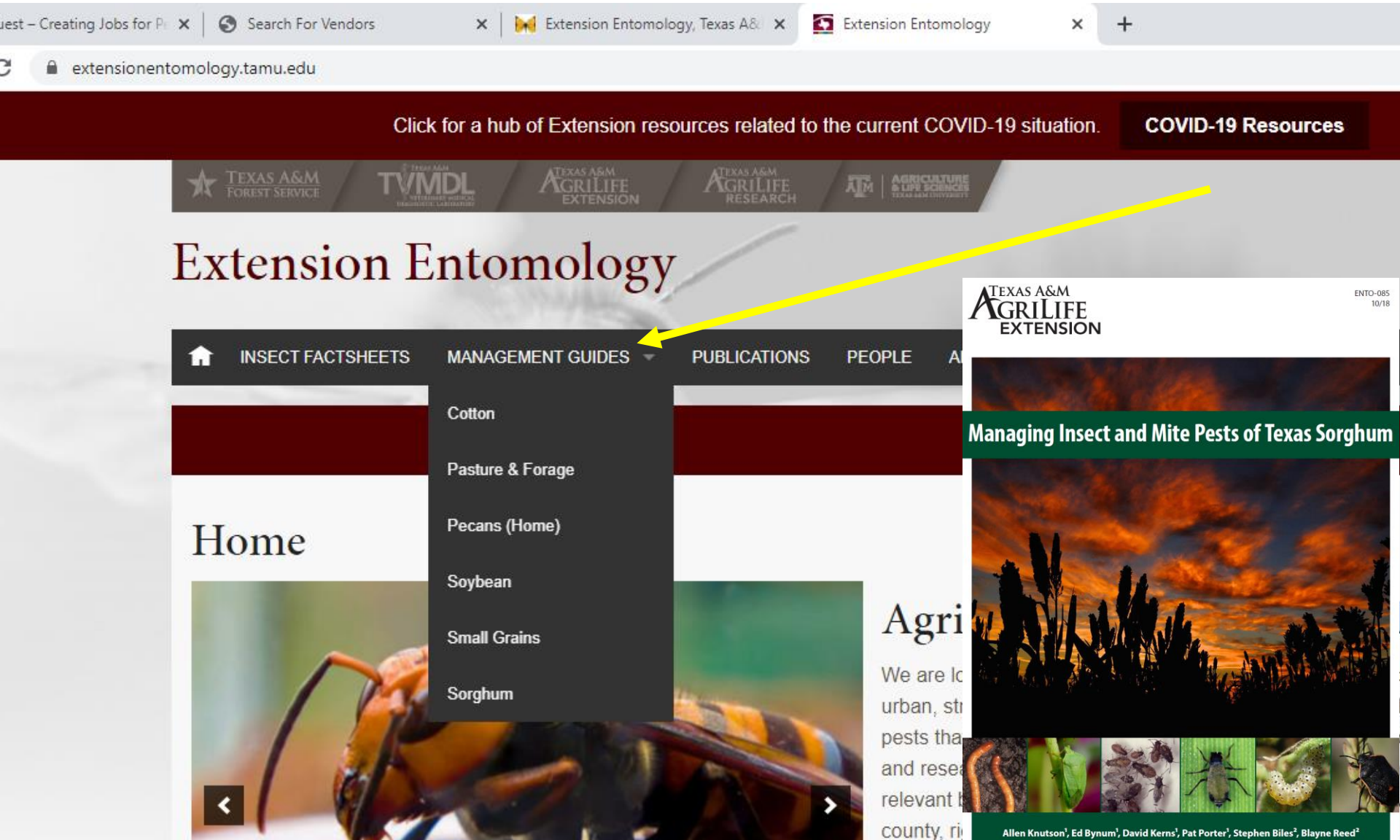

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- *“Information to help Texas farmers make management decisions.”*

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