2014 Sorghum Pointers for use of Huskie Herbicide

(Updated Label—October, 2013)

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The needed disclaimer: This summary of Huskie herbicide for grain sorghum is not a label substitute. For specific label questions or where there is possible uncertainty, contact your local or regional Bayer CropScience rep.

Weed Management in Grain Sorghum—New in 2012

Huskie® Herbicide
Bayer Crop Science

The needed disclaimer: This summary of Huskie herbicide for grain sorghum is not a label substitute. For specific label questions or where there is possible uncertainty, contact your local or regional Bayer CropScience rep

Sources of Label Information
& AgriLife Extension Weed Scientists

- Labels for herbicides, insecticides, fungicides, seed treatments, growth regulators, etc.—access through **http://www.cdms.net**, click 'Services' then 'Labels' then enter Brand name
  - After 'Labels' you can also search by active ingredient (looking for a generic?) through "Other Search Options" but will need to register for a free password
- Texas High Plains—Dr. Pete Dotray, Lubbock, (806) 746-6101, pdotray@ag.tamu.edu
- Central & South Texas—Dr. Paul Baumann, College Station, (979) 845-3041, pbaumann@ag.tamu.edu

Huskie Herbicide for GS (2014)

- Selective Post-emerge, including Palmer amaranth, redroot pigweed, kochia, species of morningglory, devil's claw, henbit, marestail; partial control on bindweed, puncturevine
- Best weed control from label suggests spray by 4" tall weeds
  - The larger the weeds the more likely you get incomplete control & some weeds will recover

Huskie in Cotton Production Regions

- Huskie appears to be a much better all around option than 2,4-D or dicamba in regions where cotton is grown, particularly where these chemicals can severely injure cotton due to drift
  - Huskie does not volatilize, but must physically drift
  - 2,4-D amine is better for minimizing drift, but may give up to 10% less weed control than ester formulations (Brent Bean, TX AgriLife, Amarillo)
- Huskie cost relative to 2,4-D or dicamba may be a concern for some dryland farmers

Huskie Herbicide for GS (2014)

- Apply over-the-top, 3-leaf stage to **30" tall or flag leaf emergence, whichever comes first (new; but no atrazine after 12" tall)**
  - Label from 2013 & earlier: Apply up to 12" tall (about 7-8 leaf stage, or 4-5 weeks after planting)
- Pyrasulfotole + 2 active ingredients similar or same as Buctril (bromoxynil)
  - Buctril is already labeled in grain sorghum
- Many tank mix options, but for grain sorghum the key is **atrazine**: 0.25-1.0 lbs. (0.5-2.0 pints) atrazine per acre to 'strengthen and expand weed control' (from the label)
  - This atrazine rate is somewhat lower than for straight atrazine applications (~1/4 to 1/2 less)

Huskie & Sorghum Injury Potential (from the label)

- Transitory leaf burn will occur after a Huskie herbicide application in grain sorghum.
- Stunting and yellowing can also occur.
- These early symptoms generally dissipate within 21 days and do not affect yield.
- Crop injury will be greater when Huskie herbicide is applied to small grain sorghum (to include grain and forage), that is stressed by unfavorable growing conditions.
- Environmental conditions such as high temperatures and humidity will amplify crop response.

Atrazine with Huskie #1

Especially in Sandy Soils

- Sandier soils especially Lubbock and south require reduced atrazine rates (1.0 to 1.5 pints/A), thus the strong suggestion to include atrazine with Huskie for improved control may elevate atrazine rates too much for sandier soils or raise concerns about rotation to cotton
- Some producers switch to propazine for Pre-plant or Pre-emerge (not labeled POST) due to coarse soil or potential carryover concerns (specifically cotton)

Atrazine with Huskie #2

- Should atrazine applied either pre-plant/pre-emerge be delayed to instead couple with Huskie?
- Probably not—It is always good to do what we can to minimize weeds from establishing in the first place (using PP, PRE), so maintaining early atrazine applications, if that has been your practice is advised (or see other options below, which may include mixes with reduced PP/PRE atrazine rates)

Atrazine with Huskie #3

- Could PP or PRE atrazine rates be reduced to 0.5 lb./A (1 pint/A) in order to permit at least 0.25 lb./A (0.5 pint/A) to use with Huskie for synergism in control?
- But other PP or PRE options may be more appropriate…

Atrazine with Huskie #4

Early Pre-plant or Pre-emerge options…

- Using other Pre-plant or Pre-emerge options (including propazine) may be better to provide preventive weed control and "save" atrazine for pairing with Huskie
- These options include:
  - Propazine (Milo-Pro) as PP or PRE
  - Individually, s-metolachlor (Dual Magnum), alachlor (Micro-Tech, Intrro), or acetochlor (Warrant)
  - s-metolachlor or alachlor in combination with reduced rates of atrazine (e.g., Bicep II Magnum, Cinch ATZ, Bullet, Lariat, etc.)
  - Also dimethenamid (Outlook), possibly mixed with atrazine (Guardsman Max)
  - Saflufenacil (Sharpen), possibly mixed with dimethenamid or reduced atrazine rates

Current Bayer Suggestion

Texas High Plains & All Other Texas Regions

- For optimization of weed control:

  1 pint/A (16 fl. oz.) of Huskie

  + 1 pint/A (16 fl. oz. or 0.5 lb. a.i.) of atrazine*

  + 1 lb./A of Ammonium Sulfate

  - *Also a new 2014 label comment on possibly using NIS or HSOC*
  - *Atrazine only if grain sorghum ≤12" tall*

- Growers on loamy and clayey soils with 2 pints/A rates of atrazine can split the atrazine into two 1 pint/A applications.

Further Huskie Label Info.

Texas High Plains & All Other Texas Regions

- Labeled rate is 12.8 to 16.0 oz. of Huskie per acre, but likely use full rate
- 32 oz. per acre allowed season-long in a total of two applications
- Two sprays a minimum of 11 days apart
- With wider application window then there is more time for a potential second spray
  - Still use atrazine in 2nd spray for enhanced control? NO! ATZ only through 12" tall.

Additional Label Change/ Comment for 2014 (#1)

- Why AMS?—"When Huskie Herbicide is applied <u>under challenging conditions</u>, the addition of 1 lb./A of ammonium sulfate (AMS) is recommended to optimize herbicidal activity."

Additional Label Change/ Comment for 2014 (#2)

- Why NIS or HSOC?—"For optimal weed control in grain sorghum in arid environments, Huskie herbicide + 1 lb./A AMS can also be combined with 0.25% v/v NIS or 0.5% v/v HSOC
  - Use NIS for sure if tank mix partner requires it
  - At least 80% of the NIS surfactant product must be active non-ionic surfactant. Avoid products that do not accurately define their ingredients.
  - HSOC, a new category of adjuvant: High-Surfactant-Oil Concentrate (50% oil & 25-50% surfactant).
  - HSOC products can be used in spray-mix combinations of glyphosate and ACCase (post graminicide) herbicides to control volunteer glyphosate-resistant corn, etc.

Huskie Herbicide for GS (2014)

- Other tank mixes for broadleaf control: includes Ally, dicamba, 2,4-D, Peak, Starane
- Label suggests spray grade ammonium sulfate (AMS) at 0.5-1.0 lbs./A
- NIS (non-ionic surfactant) if tank mix partner requires it
- TX AgriLife has noted only minor to ~15% leaf burn/injury at 4-leaf sorghum, essentially all disappears by 3 weeks; similar to none at 8-leaf stage
- No maturity delay or reduced yield due to Huskie has been observed in TX AgriLife trials, 2009-2011

Huskie Control of P. Amaranth

Hale County, Texas

A

B

Credit: Dr. Pete Dotray

(A) Non-treated control, and (B) good Palmer Amaranth control with Huskie + atrazine.

Huskie Herbicide for GS (2014)

- The overarching advantage of Huskie over 2,4-D or dicamba is reduced sorghum plant injury.
- 2,4-D or dicamba might be considered as a tank mix with Huskie in two possible circumstances:
  - #1: Weeds have moved beyond the 4" tall growth stage (harder to control)
  - #2: If you are dealing with triazine or glyphosate resistant weeds you may need to consider a stronger level of control to further minimize escapes and kill existing weeds

Huskie—TX AgriLife Results

Dr. Brent Bean, Bushland, TX (2009-2010)

- 91%+ control 7 & 42 DAT (days after treatment) of 3-4" Palmer amaranth when applied alone at 13-16 oz./A
- 95%+ Palmer amaranth control when applied with 0.5 lb. (1 pint) atrazine at 13 oz./A
- Adding 4 oz./A dicamba did not improve control
- 80% control on 18" tall pigweed
  - Remember label recommends application at ≤4" tall weeds even if sorghum is now labeled for much taller application window

Huskie—TX AgriLife Results

Dr. Pete Dotray, Halfway, Hale Co. (2010-2011)

- 2010: Huskie + atrazine, 97% control of 2-4" Palmer amaranth at 41 DAT; 96% control of 6-8" weeds @ 37 DAT
- Slight sorghum injury for all POST treatments, but ≤5% at 37-41 DAT unless 2,4-D included
- Tank mix with 2,4-D or dicamba reduced yield
- 2011: Huskie + atrazine controlled P. amaranth 94% or more at 21 DAT though control decreased with time (hot, hot year).

16 oz./A Huskie + 1 pint/A Atrazine + AMS - Day 0
2012—Nazareth, TX

Photo series courtesy
Bayer CropScience

16 oz./A Huskie + 1 pint/A Atrazine + AMS - Day 5
2012—Nazareth, TX

16 oz./A Huskie + 1 pint/A Atrazine + AMS - Day 7
2012—Nazareth, TX

16 oz./A Huskie + 1 pint/A Atrazine + AMS - Day 14
2012—Nazareth, TX

Two Considerations— Delayed Huskie Applications

- Now that Huskie labels grain sorghum applications up to 30” tall (no ATZ after 12” tall) or flag leaf emergence, potential uses include:
  - 1) Mid-season rescue treatment: Though this may be appealing, view this only as a last resort and do not rely on late application if it should be made 1-3 weeks sooner due to weed size. Waiting until 30” tall or near flag leaf emergence means that pigweed and other problem weeds are likely larger and much harder to kill. Weed control will more likely be incomplete and a new round of pigweed seed may be generated.
  - 2) If Pre-emerge weed control is good but has some escapes, then a later mid-season application may be needed to clean these up. Good PRE weed control will provide the opportunity to delay mid-season Huskie applications to taller sorghum, enabling control of later emerged weeds (label guidelines are still ≤4” tall weeds) and/or extend the opportunity for preventive weed control with atrazine.

Huskie in Crop Rotations

- 1 month: Small grains
- 4 months: alfalfa*, millet, grain sorghum (to include grain & forage), soybean
  - **Alfalfa: Thorough tillage AND ≥12" rain/irrigation*
- 9 months: corn, sunflower, canola, dry beans, safflower
- 2013 note: High Plains AgriLife weed science staff observed some carryover injury to peanuts and cotton from Huskie for the first time.
  - This will be examined further.

Huskie in Cotton Rotations

- Cotton? "Field Bioassay" for reduced restriction *(does not say 18 months although that is what Bayer staff say verbally)*
  - Prior to 2103 Texas A&M AgriLife & Bayer staff had not yet observed any problem rotating to cotton the next year after a Huskie application;
  - 2013—some rotation injury was observed in the High Plains to cotton and peanuts for the first time.
  - Label considerations in future may state rotation to cotton in terms of months—research is being conducted now

Huskie & Weed Resistance

- From the label (Oct., 2013): "Huskie Herbicide may be an effective tool in the management of weed populations containing resistance to ALS, phenoxy or glyphosate herbicide modes of action.

Huskie & Grain Sorghum Injury

- Sourced from Russ Perkins, Bayer CropScience, Lubbock:
  - Full label rate applications across several grain sorghum nurseries in the Texas High Plains in 2009-2010 noted up to 10% of sorghum lines that demonstrated slightly higher leaf phytotoxicity (injury) at 15-20%, but symptoms were largely gone in < 14 days
  - Breeding staff noted no apparent delay in maturity or reduced yield due to Huskie

Additional Huskie Pointers

- Do not apply Lorsban (chlorpyrifos) with Huskie as unacceptable injury may occur
- Baythroid and Belt are acceptable tank mix insecticide partners
- Do not apply Huskie after mesotrione PRE herbicides (e.g. Callisto, Lumax, Lexar—most likely in corn production?)
- Bayer & crop consultant observations suggest that foliar iron chelate may reduce injury potential to sorghum, particularly for high pH soils (1 lb. of iron chelate per 1 pint of Huskie)
  - Uncertain if it is iron only (hence also Fe in other forms like iron sulfate) or chelation that may be helping reduce sorghum injury

Additional Huskie Pointers

- No aerial application or chemigation
- 10 gallons/A minimum carrier volume, but 15 gal/A recommended if weed/crop canopy is dense to get better coverage and penetration of this contact herbicide
- Medium size spray droplets
- No flood jet or air induction nozzles

Huskie & Sorghum Forages?

- Caution on sorghum/sudan, sorgo or sweet sorghum, sudangrass (forage sorghum not specifically noted)
- Some hybrid sensitivity? Label states 'not recommended' for use in above sorghum types (unless previously tested on a small area), so producer assumes risk of injury.
- Texas A&M AgriLife does not foresee major Huskie injury potential in any sorghum forage type.
- Bayer's Russ Perkins reports these forages have demonstrated higher leaf burn (20-30% in a few cases), but forage grew out of it.
- Note earlier comment on Fe chelate mix with Huskie

Huskie & Sorghum Seed Production?

- Huskie is acceptable for use in seed production
- This is in contrast to the restrictions for seed production using 2,4-D or dicamba, which can risk sharp reduction in seed production and seed viability

Problems with Huskie?

- Complaints and disappointment have been few
  - Most likely on dryland where weeds were hardened off
  - Weeds were already sizable and control was reduced
- "Best herbicide for grain sorghum in 30 years…"
  - Dr. Brent Bean, former Extension agronomist & weed scientist, Texas A&M AgriLife--Amarillo

Huskie & Weed Resistance

- +++ Glyphosate-resistant Palmer amaranth <u>is here</u> in the TX South Plains
  - Huskie will offer cotton producers a much needed means of diversifying chemistries
- - - - Kansas State reports (Jan. 2013) early Palmer amaranth resistance to Huskie (pyrasulfotole component) where mesotrione herbicides have been used in corn many years
  - HPPD inhibitors—mesotriones, pyrasulfotole
  - Resistance will be slower to develop where use is 1 year out of 3 or 4 years
  - Don't "abuse" the product or rely on it solely

A Final Thought

Huskie + Atrazine POST vs. Good PRE Program

- The advent of Huskie for Texas sorghum should not overshadow the fact that a farmer's weed control decision about sorghum pre-plant/pre-emergent weed control is more important than the option Huskie offers.
- **In fact, pre-emerge (or PRE) weed control is the most important weed control decision a farmer will make in grain sorghum production in Texas**.
- Dr. Wayne Keeling, AgriLife Research weed scientist, Lubbock, notes that although Huskie is a good asset, our priority effort should remain focused on effective PRE weed control. Our goal?—Prevent weeds in the first place, especially during sorghum emergence and early growth. Then post-emergent (POST) weed control (Huskie, dicamba, Ally, Permit, 2,4-D, etc.) can focus on controlling escapes as needed. Furthermore, if PRE weed control is good, producers may be able to delay needed POST control by 1 to 3 weeks (the Huskie label is now extended to 30" tall sorghum) to provide a longer window of either direct control of existing weeds or extending residual control further into the growing season.