



2,4-D and Sensitivity in Small Grains

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Calendar of Events

Wednesday, March 25

9 am-2pm

Small Grains Meeting

Oldham County Barn
Vega

Thursday, March 26

8:30 am- 1pm-

Sorghum Management Conference

Castro County Expo Bldg.,
Dimmitt

Tuesday, April 14

8 am-4 pm-

Hale/Swisher Crops Conference

Justice Center Assembly Room,
Plainview

Tuesday, April 21

8:30 am-4:00 pm

Swisher County Spring Ag Conference,
County Barns, Tulia, Texas

The growth regulator type herbicide, 2,4-dichlorophenoxyacetic acid, or 2,4-D, has a long history of versatile weed control in U.S. agriculture for many crops. Two main formulations exist for 2,4-D: 1) “esters”, which tend to have a higher level of chemical activity on weeds, but more potential injury for small grains, especially on jointing stage through near boot stage; 2) “amines”, which are softer than ester formulations, with a slightly reduced injury potential, and are less prone to vapor drift. Purdue University’s “Amine or Ester, Which is Better?”,

<http://www.btny.purdue.edu/weedscience/2004/articles/amineester04.pdf>, explains well these key differences between the two formulations.

Vapor drift is a concern with nearby sensitive crops, and the “low volatility” formulations of the ester form, LV4 and LV6, are commonly used to reduce the potential for off-target movement of the chemical.

Texas A&M AgriLife Extension has for a long time has taken a conservative approach to the use of 2,4-D products as well as MCPA (2-methy-4-chlorophenoxyacetic acid) in wheat due to injury concerns. Former state extension small grains specialist Dr. Travis Miller discusses 2,4-D in relation to wheat growth and development in “Growth Stages of Wheat: Identification and Understanding Improve Crop Management,” <http://varietytesting.tamu.edu/wheat/docs/mime-5.pdf>

In this wheat growth guide, Dr. Miller notes that by Feekes growth stage 6.0—first node visible (which means jointing is occurring (Figures 1 & 2)—all applications of phenoxy herbicides like 2,4-D, MCPA, and dicamba should have been applied. These chemicals can be translocated to the growing point (developing head) and cause potential injury. In contrast, sulfonyleurea herbicide products are labeled to initial boot stage or even initial flag leaf emergence.

However, most 2,4-D labels as well as MCPA state that wheat can be treated up to just prior to boot stage. Texas A&M AgriLife Extension’s “Weed Control Recommendation in Wheat,” (2008) (<http://varietytesting.tamu.edu/wheat/otherpublications/B-6139%202008%20Weed%20Control.pdf>)

repeats label directions for 2,4-D and MCPA with these prolonged application windows. Several of these labels caution, however, that producers should either refrain from 2,4-D applications or reduce the rate if injury is not acceptable. AgriLife weed scientists and chemical company representatives suggest that MCPA ester is much safer on small grains than either 2,4-D formulation and is a thus a safer choice if using a phenoxy for later applications (but also slightly less effective).

By Calvin Trostle (ctrostle@ag.tamu.edu)

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Grain Sorghum and Resistance to Sugarcane Aphids

Sugarcane aphids were a major pest in grain sorghum during 2014, affecting most production regions of Texas. While direct yield loss was not an issue for many growers, excessive honey production resulted in reduced harvest efficiency for some growers. Aphids located in the upper canopy and grain heads before harvest are a concern (Figure 1). As growers look for options to manage sugarcane aphids, planting hybrids with genetic resistance to the sugarcane aphid will be a major component of an integrated pest management program. As information on resistant grain sorghum hybrids becomes available, it is important to understand the terminology related to resistance and what results growers should expect from hybrids with various forms of resistance. Resistant hybrids have genetic traits that result in one or more of the following:

- Less damage than a plant without the resistant trait
- Yields more than a susceptible hybrid when confronted with pest invasion
- Suppressed insect pest abundance
- Elevated tolerance level



Figure 1. Sugarcane aphids found in grain sorghum post flowering.

There are three kinds of resistance that will alter the relationship between insect pests and the host plant. This includes antibiosis, antixenosis and tolerance. Antibiosis is a type of resistance where the host plant causes injury,

death, reduced longevity or reduced reproduction of the pest. Antibiosis will reduce pest numbers and damage to the plant. This is what many associate with true resistance. Antixenosis, also known as non-preference, is when the pest does not desire this plant due to color, odor, texture, etc. Tolerance is the final form of resistance where the plant is able to withstand or recover (repair) from damage caused by the pest. A tolerant plant will remain healthy and yield well despite presence of pest. Although, there may not be a reduction in pest (aphid) numbers or honeydew production. The main difference between resistance (as antibiosis or antixenosis) and tolerance is that resistance causes an insect response and tolerance results in a plant response. A hybrid that reduces aphid numbers and damage to the plant under field conditions, especially when the pest is present during critical growth periods, is resistant. As seen in Figure 2, the resistant breeding line on the left shows little evidence of aphid damage compared to the susceptible breeding line on the right that failed to produce a head. Tolerance to late season aphid infestations may show reduced plant damage and reduced honeydew levels but should not be interpreted as resistance. Furthermore, whether planting resistant or tolerant grain sorghum hybrids, growers should scout fields as usual to monitor occurrence and changes in aphid populations.



Figure 2. A grain sorghum breeding line that is resistant (left) to sugarcane aphids and a breeding line that is susceptible to sugarcane aphids (right). From Dr. Bill Rooney, taken at Weslaco, TX in October 2013.

By Ronnie Schnell, Assistant Professor and State Cropping Systems Specialist, College Station

AgriLife Extension hosting sorghum meetings in Dimmitt and Levelland

Sorghum Education: Soil, Irrigation and Weed Management will be the focus of two regional sorghum meetings planned for March 26 and April 6 in Dimmitt and Levelland, respectively, by the Texas A&M AgriLife Extension Service. "These programs were planned to provide in-depth education towards issues identified as important to producers," said Danny Nusser, AgriLife Extension regional program leader in Amarillo. "Our speakers will provide the best, unbiased and most relevant information that is out there." Both programs will begin with registration at 8 a.m., with Dimmitt's at the Castro County Expo, 405 S.E. 4th St., and Levelland's at Mallet Event Center and Arena, 2320 U.S. Highway 385. The event is free and lunch will be provided at both locations. Both meetings will offer two Texas Department of Agriculture continuing education units, one integrated pest management and one general, for private pesticide applicators. Sponsors for both programs are the High Plains Groundwater District and the Texas Sorghum Producers Association. Pre-registration for both meetings is encouraged for a lunch count. To preregister, attendees can contact their respective AgriLife Extension county office or by calling Danny Nusser at 806-677-5600 prior to the meeting. Both programs start with presentations concerning sorghum soil and water relationships, including water utilization in cotton/sorghum rotations, crop water requirements, irrigation timing based on crop needs, irrigation decisions based on soil type, soil water holding capacity, plant available soil water, and agronomic relationship to water use. Speakers during this section will be AgriLife Extension specialists Dr. Dana Porter, agricultural engineer in Lubbock; Dr. Jourdan Bell, agronomist in Amarillo; and Dr. Calvin Trostle, agronomist in Lubbock. The second segment will feature discussions on the new sorghum pest, sugarcane aphid, and its history, control measures and future considerations. AgriLife Extension entomologists Dr. Ed Bynum, Amarillo, will speak in Dimmitt, and Dr. Pat Porter, Lubbock, will speak at Levelland. A segment on resistant weed management will cover problem weeds and biology, how to plan for success and rotational considerations. AgriLife Extension personnel Kerry Siders, integrated pest management agent in Lamb, Hockley and Cochran counties, will speak in Dimmitt, and Dr. Peter Dotray, weed scientist in Lubbock, will speak at Levelland.

The Dimmitt program will feature a concurrent session during the second segment with emphasis on sorghum's nutritional value to the cattle and dairy industries. It will be led by AgriLife Extension beef cattle specialist Dr. Ted McCollum, Amarillo, and dairy specialist Dr. Ellen Jordan, Dallas, who will discuss the grain and forage feed value, sorghum's place in nutrition management programs, and its value for grazing and haying. Both meetings will wrap up with a panel discussion involving all the speakers prior to the lunch. For more information on the Dimmitt event, contact Nancy Andersen, AgriLife Extension agriculture and natural resources agent for Castro County, at 806-647-4115 or nancy.andersen@ag.tamu.edu. For the Levelland meeting, contact Wes Utley, AgriLife Extension agriculture and natural resources agent, at 806-894-3159 or fwutley@ag.tamu.edu.

Small grains meeting set March 25 in Vega

The 2015 small grains educational meeting in Oldham County has been scheduled for March 25 by the Texas A&M AgriLife Extension Service office there. "Our program will focus on dryland aspects of wheat and grain sorghum production, along with sorghum forage and silage," said Austin Voyles, AgriLife Extension agriculture and natural resources agent for Oldham County. "A lunch has been graciously sponsored by Capital Farm Credit, and during this lunch, we will discuss market outlooks and updates with Dede Jones." The meeting will be from 9 a.m. to 2 p.m. in Oldham County Barn, 305 Coke St. in Vega. Those planning to attend should RSVP by March 16 to 806-267-2692. This free meeting will be open to the public, and the AgriLife Extension office in Oldham County is also inviting producers from surrounding counties who might benefit from the information to be presented. Three Texas Department of Agriculture continuing education units will be offered. Topics will include: Sorghum Herbicide Use, Silage and Forage Options, Market Outlooks and Updates, and Green Bugs and Sugarcane Aphids. AgriLife Extension speakers include: Dr. Calvin Trostle, agronomist, Lubbock; Dr. Jourdan Bell, agronomist, Amarillo; Dr. Ed Bynum, entomologist, Amarillo; and Jones, risk management specialist, Amarillo. For more information, contact Voyles at 806-267-2692.

Soil Experts Recommend Cover-Cropping

Cotton harvest is over, and planting time for next season is months away. What should you do with your empty fields? Consider cover-cropping, say many soil experts. In contrast with a primary crop that's raised for harvest and then sold for a profit, a secondary "cover" crop is planted mainly for soil protection. "We want to keep it covered so we can keep the wind off it and keep it from eroding," Brandt Underwood said during a workshop Friday, March 6th. "To keep that soil covered we want to do it with either crop residue or possibly a living crop." Underwood, a conservation agronomist with the U.S. Department of Agriculture's Natural Resources Conservation Service, warned of heavy erosion risks with West Texas' wind and sandy soils. Cover-cropping is a helpful prevention method, he said. He also recommended rotating crops, such as switching between cotton and sorghum in the same field in alternating years. "To truly grace your soil health, no type of continuous cropping system is gonna work really well," he said. "We need that rotation." Jennifer Moore-Kucera, a Texas Tech associate professor of plant and soil sciences, described the benefits of a crop-mix. For instance, periodically growing legumes such as peanuts or guar can boost the soil nitrogen content. "As we increase diversity, we increase how the soils are behaving," she said during the workshop, which was hosted by Texas A&M AgriLife Extension. Soil contains a host of life forms, Moore-Kucera continued. A single teaspoon-size gram of soil contains about 100 million bacteria, 100,000 fungi, 10,000 algae, 1,000 protozoa and 100 nematodes, she said. "Soils are the most biologically diverse ecosystems on Earth," she said. "You name it, every kingdom of life is living underground." The activities of those microscopic creatures are valuable to the rest of the Earth — including above it — she said. "Life above the soil depends on life in the soil," she said. "What are these bacteria doing? They're decomposing plant matter." Underwood also recommends farmers use less tillage, which he said stops the decomposition process. "No-till won't fix everything, but it's a pretty good start," he said. Calvin Trostle, an AgriLife agronomist who specializes in grain crops, advised considering costs, obtaining landlord approval and staying patient when adopting a new soil-management system. Noticing a benefit can sometimes take years, he said. "Things don't change overnight," he said.

Two Local Crops Programs to Be Offered in April

April will be a busy month for farmers, yet there will be opportunities for education and CEUs in Plainview and Tulia in April.

The Hale/Swisher Crops Conference will be on Tuesday, April 14th in Plainview at the Justice Center Assembly Room (225 Broadway Ave.). The cost for the event is \$20 and you can RSVP for the program by calling the Hale County Extension Office at (806) 291-5267. The event runs from 8:00 a.m. to 4:00 p.m. Programs to be presented will be: Grain Crop Scheduling and PGR Use in Wheat, Saving and Investing in an Agricultural Business, Drought Tolerance Testing in Corn, Conservation Practices and Drift Management, Sugarcane Aphid Update, Managing Verticillium Wilt in Cotton, Area Sorghum Variety Trials and 2015 Alternative Crop Update, Practical Lessons from 2014 & Research Trials in Weed and Insect IPM, and Protecting Yourself From the Sun. Five CEUs will be given at this program.

Then, a week later on April 21st, the Swisher Spring Ag Conference and Swisher County Noxious Weed District Annual Meeting will be held at the Swisher County Show Barns, east of Tulia. You can RSVP by calling the Swisher County Extension Office by April 14th, at (806) 995-3726. This event will run from 8:30 a.m. to 4:00 p.m. The cost will be \$10.00. Educational presentations will be: Water Management Considerations in Integrated Pest Management, Managing Forages for Optimal Grazing, Wheat Diseases and Management, Noxious Weed District Annual Meeting/Lunch, Cotton/Wheat Rotational Systems, Sorghum Management as the Emphasis of Your Operation, Tank Boom Cleanout and Drift Management, and Cover Cropping Systems. 3 CEUs will be given at this meeting.