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Grain Sorghum Requires Season-Long Management

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LUBBOCK -- Grain sorghum was the catch crop of choice for many South Plains farmers who had to replant failed cotton acres this year, noted a Texas Cooperative Extension agronomist.

“We have quite a few grain sorghum producers on the South Plains this year,” said Calvin Trostle, Extension agronomist based at Texas A&M’s Agricultural Research and Extension Center here. “With some care, consideration and good management, grain sorghum can be a profitable crop that works well in rotation with other crops, including cotton -- if we keep a few basics in mind.”

Growers in the Lubbock area who plant medium maturity hybrids by about June 30, and early maturity hybrids by about July 10, have a high level of confidence in making a crop without a significant risk of a cool fall or an early killing frost. These recommended planting dates should be earlier by about five days as you go north toward Muleshoe and Dimmitt, Trostle said.

“If you don’t have any cotton herbicide carryover concerns to consider, a good dryland population to shoot for is 30,000 to 35,000 seeds per acre if you have good soil moisture,” he added. “This rate allows good upward yield potential if summer conditions are favorable, and helps manage risk if conditions turn very dry.

“Seeding rates for irrigated ground typically peak around 80,000 to 90,000 seeds per acre for full irrigation. Some producers bump that to 100,000 to 110,000 seeds per acre to compensate for reduced tillering on late planted sorghum.”

A common mistake is to seed at irrigated rates and then convert to minimal irrigation or even dryland production, due to high energy prices or some other situation. This handicaps a hybrid that was seeded at a higher irrigated rate, and which may not be bred to perform well under minimal or zero irrigation. In this scenario, the crop will need as much water as is affordable in order to reach its yield potential, the agronomist said.

Yield potential hinges on conditions at three distinct growth stages: growing point differentiation; booting/flowering; and grain fill.

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“We need good moisture conditions during growing point differentiation -- when the growing point shifts its energy from producing leaves towards reproductive growth. You can confirm this growth stage by splitting a stalk lengthwise with a sharp pocketknife,” Trostle said. “You should find a small primordial grain ‘head’ about one-sixteenth inch long.

“A timely irrigation at the boot/flowering stage will help reduce heat and moisture stress that can reduce the number of grains in the head. That is why we recommend planting dates that keep the boot/flowering stage outside of July 5 to August 15. Irrigation during grain fill also helps reduce yield limiting moisture stress, even though the crop isn’t as thirsty as it was earlier in the season.”

Tillering also boosts yield, but lower tillering hybrids often perform best under dry or dryland conditions.

A Kansas State University publication, *How a Sorghum Plant Develops*, details sorghum growth and development. It is available on the Internet at: <http://lubbock.tamu.edu/sorghum>.

University research indicates that about six inches of soil moisture, rainfall or irrigation water is needed to bring a sorghum crop to the point of grain production. But this water can only do its job if the crop is well-nourished.

“A good rule of thumb for High Plains sorghum is two pounds of actual N per acre for every 100 pounds of yield goal. The nitrogen can be soil residual N, applied fertilizer or available N credits,” the agronomist said. “Nitrogen can be applied mid-season through irrigation systems, or knifed in rather than broadcast in dryland crops. It’s best to do the knifing before the plants are 10 to 12 inches tall, in order to minimize root pruning and loss of soil moisture.”

“Remember that the crop is going to absorb and assimilate 70 percent of its total nitrogen requirement by the mid-bloom growth stage.”

Herbicide options in grain sorghum include 2,4-DB, atrazine, Clarity, Banvel, and Peak. 2,4-DB is risky because improper application can damage sorghum and any neighboring cotton. Atrazine is an effective post-emergence broadleaf weed control and works well in many tank mixes, but should be used at lower label rates if the ground is to go back to cotton in the future.

Clarity and Banvel are best applied when plants are between three and 15 inches tall. Drop nozzles are recommended once plants are more than eight inches tall. Any leaf rolling that results will usually disappear in 10 to 14 days, the agronomist said. Peak herbicide can be applied to sorghum when plants are five to 30 inches tall, but prior to head emergence.

The *2003 Texas High Plains Grain Sorghum Weed Control Guide*, by Extension agronomist Brent Bean, provides a summary of herbicides for broadleaf weed control. It is available on the Internet at <http://lubbock.tamu.edu/weeds/othercrops.php>. Click on the title link.

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Insects that threaten sorghum are greenbugs, sorghum midge and sorghum headworm (cotton bollworm). Greenbugs normally reach damaging levels in the late boot to heading growth stages. Sorghum hybrids that flower after August 1 are most susceptible to sorghum midge. Controlling Johnsongrass around fields helps minimize midge, Trostle added.

Managing Insect and Mite Pests of Texas Sorghum and Sorghum Development and Key Growth Stages outline insect scouting and control options. They are on the Internet at <http://lubbock.tamu.edu/ipm/AgWeb/sorghum/insect/sorghumindex.html> and at <http://lubbock.tamu.edu/sorghum>, respectively.

A final consideration is how to use the stubble from your 2003 crop to enhance your 2004 crops, Trostle said.

“Leave it standing if you can. Conservation tillage studies demonstrate that it reduces erosion, aids water infiltration, and can protect young plants in next year’s crop. Several of our cotton studies at Lubbock and Halfway were salvaged from total loss because grain sorghum stubble protected young cotton plants from the weather in 2003,” he concluded. “We saw the same protection effect from small grains stubble.

“If you want to hasten decomposition of heavy stubble, you can sling about 20 to 30 pounds of N per acre on the field. This helps microbial breakdown of the stubble, in lieu of potential N tie-up at the expense of subsequent crop growth.”

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