



Managing to Maximize Your Yield:

How to Get More Crop per Drop

By: Mackenzie Gregory

Knowing when it's best to water grain sorghum can be a confusing subject. Understanding water needs during critical growth stages of the crop can help most farmers produce higher sorghum yields.

Thinking About Water Differently

"We used to think about water as being an unlimited, untapped natural resource," says Dr. Jeff Dahlberg, Research Director for the National Sorghum Producers. "With the demands from urban areas, rising pumping costs, and water regulations, we need to better understand how to use this limited resource to maximize our yields."

Knowing the different growth stages of sorghum is important. They take place in the following order: seed germination and emergence, vegetative growth, panicle initiation, flag leaf, boot, heading, flowering, grain fill, and dough.

If You Only Read One Thing, Read This

Scott Staggenborg is an agronomist and physiologist at Kansas State University. He says that the most important time to water sorghum, especially if there has not been adequate early season moisture, is approximately 35 to 45 days after planting. This stage is called panicle differentiation, when sorghum is setting seed number and determining yield potential. However, if a producer has had excellent early season moisture and the plant has not been under water stress, then 55 to 65 days after planting would be the optimum time to water. This is when sorghum is entering early boot and it ensures that final head formation will occur, as well as head exertion.

"The important thing to remember is that these are just averages," says Dr. Staggenborg. "And it is really important to understand hybrid maturity to better optimize your irrigation water."

Staggenborg said he has seen plenty of proof that watering before heading is critical. "I've seen irrigation studies where they didn't irrigate during grain fill, and it only affected yields by about 10 percent," he said. "When they withheld the water from sorghum prior to heading, it cut yields in half."

Glenn Schur is a sorghum farmer from Plainview, Texas, and he agrees it is important for producers to water early, when the plant is in the pre-boot stage. "You don't want to let the sorghum plant stress at that time because you're entering one of the yield potential time frames," he explained. "You need to get that water somehow, through rainfall or irrigation, either one."

"The most important time to water sorghum is approximately 30 to 45 days after planting."

Helping Your Crop Achieve

Dan Krienke, a sorghum producer from Perryton, Texas, said he normally applies a herbicide to his sorghum when he is starting the crop, which leads to another critical need for water.

"We put a herbicide on that kills annual weeds and grasses and needs to be watered in to activate it and get the crop going," he said. "After we plant, we try to water up to an inch and a half to get the sorghum growing and activate the herbicide."

Krienke said that at the five or six leaf stage, he likes to water again, using liquid nitrogen in his sprinkler system to water and fertilize simultaneously. "I'm a big believer in synergies," he explained. "If you get a certain amount of growth from water and a certain amount of growth from fertilizer, when you add the two together, you get a bigger yield."

"I'm a big believer in synergies. If you get a certain amount of growth from water and a certain amount of growth from fertilizer, when you add the two together, you get a bigger yield."

Monitoring Your Moisture

Krienke also said he makes assessments and a water budget each year to keep track of watering needs throughout the growing season.

He explained that one important water monitoring tool used today is the High Plains Evapotranspiration Network (PET Network). According to Krienke, this network is a system of weather stations that helps producers schedule irrigation.

"The stations track rainfall, wind speed, wind direction, humidity, and several other weather factors," he said. "They report data every day that you can plug in for a crop. Anytime through the growing season, producers can look and see how much the sorghum has used over a certain period of time."

According to its web site, the PET Networks (North Plains and South Plains networks) were established in the 1990s to provide convenient and timely access to agriculturally based meteorological data for use by producers, agricultural researchers, and others interested in agriculturally relevant meteorological data.

Schur said he also uses the PET network. "It gives me an idea on how much water we're losing through evaporation," he explained. "You need some guide to help you meet critical demands for water. Anything that helps meet those demands will help in making an above-average yield. There are other options out there for monitoring water, like soil probes and soil blocks."

Another Time to Water

Staggenborg brought up one more advantageous time sorghum can be watered. He mentioned that keeping water in sorghum during grain fill can prevent lodging. Lodging occurs when the plant is forced to pull stored carbohydrates out of its stem.

The most critical time to water grain sorghum is 30 to 45 days after planting if producers have not had exceptional rainfall or early season moisture. Optimal watering time if there has been adequate early season moisture is 55 to 65 days after planting. Should producers focus on making sure their crop gets plenty of moisture during these times, they will afford their crop the opportunity to utilize its advantage as a drought-tolerant crop and make use of timely moisture to help maximize yield with less water and less cost. 🌾

On the Web: <http://txhighplainset.tamu.edu>

When Should I Water My Sorghum Crop?

If you have had not had exceptional early-season rainfall or moisture:

Water between 30 and 45 days after planting.

If you have had adequate early-season rainfall or moisture:

Water between 55 and 60 days after planting.