

Sorghum Management Considerations



Mother Nature continues to bring plenty of rainfall to the area. This much-needed moisture is feeling ponds and making the grass green! However, it also slowed the work in farm fields. While there is still some down time and waiting to get back in to plant, if you plant sorghum, here are some management considerations to think about for when you do make it back to the field! The following information is taken from the latest KSU Agronomy newsletter by Ignacio Ciampitti, Farming Systems Specialists and Ana Carcedo, Postdoctoral Fellow.

There can be considerable environmental variation across the state during the growing season of grain sorghum, with a high probability of drought after flowering when moving toward the west. Tailoring the right management strategy to every site is critical to increase productivity and reduce the impact of abiotic stressors. The most critical planting practices affecting yields in sorghum are: row spacing, row arrangement, seeding rate/plant population, planting date, and hybrid maturity.

Sorghum plants can compensate and adjust to diverse environmental conditions through modifications in the number of tillers, head size, and final seed weight. For sorghum, the final number of seeds per head is the plant component that varies the most; and thus has more room for adjustment than the other plant components (seed weight and number of tillers).

Seeding rates and plant populations: Sorghum population recommendations range from a desired stand of 23,000 to more than 100,000 plants per acre depending on average annual rainfall. Grain sorghum recommended seeding rate, plant population and row spacing based on average annual rainfall. You can find the table with the average rainfall and recommended plant populations at: <https://www.bookstore.ksre.ksu.edu/pubs/MF3046.pdf>. Because of sorghum's ability to respond to the environment, final stands can vary at least 25 percent from the values listed above, depending on expected growing conditions, without significantly affecting yields. Lower seeding rates minimize the risk of crop failure in dry environments. Sorghum can compensate for good growing conditions by adding tillers and adjusting head size, but yields can be reduced in a dry year if populations are too high. For a high-yielding environment (>150 bu/acre), under narrow rows, high plant populations can be a critical factor for improving sorghum yields.

Higher seeding rates also should be used when planting late. Increase rates by 15-20 percent if planting in late-June or later. Late planting will restrict the amount of time that sorghum plants will have in the season for producing productive tillers, thus decreasing the plants' ability to compensate for inadequate stands.

Recent research in Kansas has confirmed these long-term recommendations. In these studies, sorghum yields were maximized at 25,000 plants per acre (optimum between 20,000 to 30,000 plants per acre) in western Kansas at 17 inches annual precipitation; 40,000 in central Kansas at 30 inches annual precipitation; and 50,000 in eastern Kansas at 32 inches annual precipitation. For western Kansas, final stands of about 20,000 to 30,000 plants per acre can attain yields of 60 to 80 bushels per acre or more. For central and eastern Kansas, final stands of 50,000 to 70,000 plants per acre can maximize yields, with the final objective of having an average of 1 to 1.5 heads per plant.

Having more than the recommended number of plants per acre results in fewer fertile and productive tillers and thinner stems, which will reduce yield in the drier environments and increase susceptibility to drought. On the other side, thin stands can compensate for better-than-expected growing conditions somewhat by producing more and/or larger heads. However, under high-yielding environments, a higher final plant population will be needed to increase yields as much as possible.

Planting date: A summary of research data performed in the last several years has confirmed that the optimum planting date for maximizing yields will be around early June. Still, the decision related to the optimum planting date should be timed so plants have the best possible chance of avoiding hot, dry weather at the flowering stage, but can still have sufficient time to mature before the first frost.

For more information and the remainder of the article visit: https://eupdate.agronomy.ksu.edu/article_new/sorghum-management-considerations-planting-practices-496