

Have you ever wondered if corn and grain sorghum were planted side by side in a dryland situation at their optimum planting dates and seeding rates, which crop would yield the most?

A 3-year, 2-location study was established at the North Central Experiment Field near Belleville, KS and the North Agronomy Farm near Manhattan, KS to address this question. The Belleville site was a Crete silt loam, while the Manhattan sites were a Reading-Kahola silt loam and Wymore silty clay loam. The study included two sorghum hybrids and two corn hybrids and five nitrogen rates (0, 40, 80, 120, and 160 pounds N per acre). Over the study, corn was planted on April 22-25 at 24,000 seeds per acre and grain sorghum was planted late May to early June at 60,000 seeds per acre.

Averaged over the three years at Belleville and the two grain sorghum and corn hybrids, grain sorghum out-yielded corn by 37 bushels per acre (77 bu/a vs 40 bu/a, respectively). At Manhattan, averaged over the three years and two grain sorghum and corn hybrids, grain sorghum yielded 12 bushels per acre more than corn ( 63 bu/a vs 51 bu/a, respectively).

Let's look a little closer at these data. At Belleville, yield of one corn hybrid was 20 bushels per acre lower than the other hybrid. Thus, if the two grain sorghum hybrids, which had similar yields, were compared to the one corn hybrid, grain sorghum out-yielded corn by 22 bushels per acre. In all three years, grain sorghum yielded significantly more than corn.

In the first year at Manhattan, the average corn yield was 41 bushels per acre, while the grain sorghum yield was only 21 bushels per acre. Because grain sorghum was planted later than corn and it rained very little after that date, sorghum had poor stands and it was extremely dry during grain-filling , thus the poor yield. However, in the second year grain sorghum averaged 111 bushels per acre, while corn averaged 63 bushels per acre. In the third year, grain sorghum yielded 58 bushels per acre and corn yielded 50 bushels per acre.

What's the bottom line?

These studies were conducted during three hot, dry years which favored grain sorghum. Corn yields were low due to excessive heat during pollination which negatively affects the number of kernels that develops. Grain sorghum, which is a native of the harsh savannahs of Africa, is better adapted to dry conditions because of its ability to reduce transpiration by rolling its leaves and virtually stop growth in a short dry period and resume growth later. Sorghum has an extensive root system which helps it absorb more moisture.

Based on this study and other information, in environments where corn yields consistently yield over 125 bushels per acre, corn is the better option. However, in less productive environments where corn yields less than 125 bushels per acre, grain sorghum is the better choice.

For more details about this research see:

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