

Fertilizer management for high yielding grain sorghum

Nitrogen is the main building block of plants and is used to make amino acids, proteins and then biomass.

Fertilizer recommendation (Yield goal – soil test value)

1. 1.2 lbs. N/bu. of yield goal
2. 2.0 lbs. N/100 lbs. of yield goal
3. 40 lbs. N/ton of yield goal

Phosphorous is utilized in plants for complex energy transformations (energy source of plants).

Phosphorous fertilizer recommendations, based on soil test results, are as follows.

1. 30 ppm or 65 index sufficient
2. 20 ppm or 40 index apply 25 - 30 lbs. P_2O_5
3. 15 ppm or 30 index apply 35 - 40 lbs. P_2O_5
4. 10 ppm or 20 index apply 45 – 50 lbs. P_2O_5

Potassium serves as catalyst for enzymes, regulates stomata opening, and helps regulate production of adenosine triphosphate (ATP). Potassium fertilizer is generally required in area with high rain-fall areas.

Potassium fertilizer recommendations, based on soil test results, are as follows.

1. 125 ppm or 250 index sufficient
2. 100 ppm or 200 index 30 to 40 lbs. K_2O
3. 75 ppm or 150 index 40 to 50 lbs. K_2O
4. 50 ppm or 100 index 50 to 60 lbs. K_2O

Iron, Zinc, Manganese: Availability is generally driven by soil pH; availability is higher when pH is between 6 – 7. These nutrients can be managed in most cases by including them in a starter or popup fertilizer application.

Soil pH: Ideally soil pH should be between 5.5 and 7.5. Research at Oklahoma State University has shown when pH is below 5.5 stands sorghum stands can be reduced up to 50 % when pH is 4.7 or lower. Therefore liming is required to raise pH above a minimum of 5.5 but preferably above 6.0. When pH is above 7.5 micronutrient deficiencies may appear (iron, zinc, manganese). Iron and manganese deficiencies are very similar and difficult to distinguish between, both will appear as yellowing of leaves. Zinc deficiency is distinguished by interveinal chlorosis that is white in color. There are no cost effective ways to lower soil pH.