

SORGHUM PROTOCOL

Donald Danforth Plant Science Center
Plant Growth Facility
December 5, 2016

Planting

1. Put an 1801 insert into a flat with holes. If fewer than 18 plants are needed, break off extra pots.
2. Fill the pots with MetroMix 360 + Turface, Berger 7-35%, or ProMix BRK media. MM360 + Turface is recommended for germination. Do not compact media, and brush off excess so that media is level with top of pots.
3. Moisten media so that it is fully saturated.
4. Place two seeds into each pot. Push seed down 1/8" and cover with media.
5. Cover tray with tall, clear dome to increase germination rate.
6. After plants have germinated, thin plants to one per pot.

Transplanting

1. Sorghum plants are transplanted 2 weeks after planting. Fill a 2.5-gallon pot 3/4 full with Berger 7-35% or ProMix BRK soil.
2. Put 2/3 tsp of corn dry top dressing mix into pot. (See recipe below.)
3. Take plant out of 1801 pot and put into 2-gallon pot.
4. Fill pot with soil until it is almost to the rim. The top of the soil should be slightly above the top of the plant's root ball.
5. Sprinkle another 2/3 tsp of top dressing mix onto top of soil.
6. Place plants into the designated greenhouse space.
7. Water in the pots until soil is saturated. The soil should be at least 1 inch below the rim to allow space for water.

Watering

Plants are checked twice a day for watering needs. Sorghum is watered similarly to corn, but requires water less often. Plants will be allowed to dry until pots are light in weight. When plants are nearing the reproductive stages (when the flag leaf is present), they will be watered when the top layer of media is dry. Watering is cut back once seed is set and begins to harden.

Fertilizer

Sorghum plants are fertilized at every weekday watering since they dry down at different rates, using Jack's 15-5-15 with RO water. Clear RO is used on weekends. Plants are fertilized throughout their life cycle.

Common nutrient deficiencies:

- **Iron-** plants develop a yellowish-green striping on the leaf. Sprint is an excellent remedy for this issue. 1 tsp/pot should be applied when symptoms are noticed.
- **Calcium-** plants develop rippled edges and un-pigmented patches or lesions on the leaves. In severe cases the leaves whorl wrap tightly around each other and eventually rot. Plants can also be stunted. 15-5-15 fertilizer will usually help the

issue, however in extreme cases 1-2 Tbs. gypsum per pot may be applied. This is more commonly found from late fall to early spring in certain varieties.

Pollination and Growth

Sorghum is naturally self-pollinating, but if different varieties will be grown in the same greenhouse, it is recommended that the inflorescences be bagged just before anthesis. Bagging and pollination is the responsibility of the researcher, unless other arrangements have been made. Pollination usually occurs about two to three months after planting. If growing sorghum for seed, remove the bag after 2 weeks. When the seeds begin to lose their green color, watering frequency is reduced. Once the seeds are completely turned to tan (or red or brown, depending on variety), watering can stop. Seed is ready to harvest when you cannot break the grain by pinching it between the edge of your thumbnail and finger.

Corn Top Dressing

600ml (1 part) Osmocote (15-9-12)
600ml (1 part) Tomato Maker (4-2-6 ca mg)
50ml (1/12 part) Sprint
1 tbsp Ferrous Sulfate

Pest Management

Common pests:

- **Mites** - The main pest of sorghum and any **miticide** spray can be used. Oils like Triact may show some leaf burn.
- **Aphids** - Occasionally grain aphids (black) are present. **Endeavor** is an effective spray for aphids.

Systemic treatments:

- **Endeavor**- drench is used as a systemic for aphids.
- **Kontos** - 1-2 weeks after transplanting use ½ ml of Kontos per gallon of water. Water pots with drench when soil is slightly wet. May repeat treatment monthly.
- **Acephate** - 2-4 weeks after transplanting use 1/16 tsp per 2 gallon pot. Water in at next watering. May repeat treatment monthly.

Recommended Growing Conditions

Temp: 82°F day/ 73°F night (28°C/23°C)

Humidity: 30% minimum

Light: Supplemental lighting is provided when the sunlight is below 600 W/m² between 6am and 8pm (14 hours) from mid-September through mid-May and between 6am and 10am mid-May through mid-September.

Shading: The shade curtain automatically closes to 50% when the sunlight level is over 900 W/m² and it pulls to 100% closed when the sunlight is over 1,100 W/m².