

Growing *Setaria viridis* A10.1

Brutnell lab, 2014_DDPSC

Soil used for growing *S. viridis*: metro mix 360

Fertilizer used: Jack's 15-16-17, Hommert International, (Tel: 314-506-4500),

Seed harvest and treatment to release the dormancy:

S. viridis A10.1 seeds were kept at RT for 2 days after harvesting, **and then kept in seed dryer at 30°C for 2 days (optional)**. Seeds were then stored in the lab (T: 24.06 °C±0.13 °C, RH: 21.79±1.15%).

We have recently developed a new protocol by using wet moss treatment for 3-6 weeks to break seed dormancy (details in a separate document). In addition, Dinneny lab has developed a liquid smoke protocol to break the seed dormancy (details in a separate document).

Seeds sowing:

1. Fill flats with soil, and let them set in trays with no holes
2. Sprinkle the soil with water
3. Spread seeds on the surface of the soil, or dig a hole for seed sowing
4. Cover the seeds with a layer of soil (about 0.5mm)
5. Sprinkle the surface of the soil and also water the soil from bottom. Usually I would keep watering from the bottom after sowing.

High light growth chamber condition:

Temperature: 31oC/22oC (Day/night)

Humidity: 50%-60%

Photoperiod: 12h /12h (Day/night)

Light intensity: ~450 micromoles/m²/sec (scored by light reader)

Bulb used in high light growth chamber: HID 400W metalhalide bulb (come together with the chamber)

Under this short day condition (12h/12h, day/night), it usually takes about 3 weeks after seed sowing for *S. viridis* plants to start flowering, and it takes a total about 6-8 weeks from seed sowing to seed harvesting.

Low light growth chamber condition:

Temperature: 31oC/22oC (Day/night)

Humidity: 50%-60%

Photoperiod: 12h /12h (Day/night)

Light intensity: ~240 micromoles/m²/sec (scored by light reader)

Under this short day condition (12h/12h, day/night), it usually takes about 3 weeks after seed sowing for *S. viridis* plants to start flowering, and it takes a total about 6-8 weeks from seed sowing to seed harvesting.

Green house condition:

Temperature: 31oC/22oC (Day/night)

Photoperiod: 16h/8h (Day/night)

Relative humidity: 30%

Light intensity: ~250-400 micromoles/m²/sec (scored by light reader)(depending on weather and time of the day)

Under this long day condition (16h/8h, day/night), it takes about 4 weeks from seed planting to flowering, and it takes a total of about 8-9 weeks from seed planting to seed harvesting.

Watering and fertilization:

S. viridis plants were watered 1 times a day or every other day, which depends on the size of the plants and the soil condition. Soaking the soil in excess water is not good for plants growing, and may cause more pathogen problem. In general, if the flats were watered from bottom, about one hour after watering, excess water need to be dumped out from the flats.

S. viridis plants were fertilized twice a week. We run our fertilizer at 100ppm in our growth chambers and feed the plants twice a week (Tuesday & Friday).

Greenhouse rotation:

For thrips control, *S. viridis* plants were rotated in three green houses (or growth chambers).

Greenhouse A: for seed germination and growing young seedlings. Plants need to be moved out to Green house B at the 3-4 weeks after planting (immediately after flowering).

Greenhouse B: for growing *S. viridis* plants of 3-6 weeks old after planting. Plants need to be moved out at the 6 weeks after planting.

Greenhouse C: for growing *S. viridis* plants of 6 weeks and older after planting,

Panicle bagging:

Due to seed shattering, *S. viridis* panicles need to be bagged after seed set (1-2 weeks after flowering) to avoid seeds lost. We use plastic bread bags with Micro-Perforations for bagging. Either the individual panicle or the entire plants can be bagged until harvesting. We use sealer to customize the bread bags.

Time to stop watering for harvesting:

For *S. viridis* A10.1, seeds mature 2 weeks after flower opening. However, as the flower open sequentially on a panicle and it usually takes about one week for all the flowers on the main panicle to open. The time to stop watering for harvesting is usually 4-6 weeks after flower opening, or when the senescence of the flag leaf (leaf below the panicle) of the main panicle was observed. However, because *Setaria viridis* produce lots of tillers and branches, the time to stop watering was also dependent upon how many seeds you want to harvest.

Seed harvesting:

Seeds can be harvested 1 week after stop watering.

Order information:

Bread bags:

Europack Clear Polypropylene Micro-Perforated Crusty Bread Bags 6"x28"

Our Price: \$29.50

Manufacturer Number 19139

Pack: 1000

Product Code: 361001

<http://www.pjpmarketplace.com/Europack-Inc-Clear-Polypropylene-Micro-p/361001.htm>

For other size bags:

<http://www.pjpmarketplace.com/SearchResults.asp?Search=Europack+Polypropylene+Micro-Perforated+PERF-O-FILM%AE+Crusty+Bread+Bags&x=0&y=0>

Flats:

<http://toplastics.com/categories/horticulture/standard flats and inserts/>

We use cat. No. 715401C to grow *Setaria viridis*

Growth chamber:

<http://www.convion.com/products/bdw-series>

Our chamber model is: BDW 40

Pictures show bagging: (next two pages)



