



DONALD DANFORTH  
PLANT SCIENCE CENTER

*Integrated Plant Growth Facility*  
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Updated: June 2016 by Derek Allen

## WHEAT PROTOCOL

*Triticum spp.*

### Wheat from Seed

1. Place 1801 deep inserts into holding trays, and fill pots with *Berger 35% Bark* till the media is level with top of pot. Tap pot on the bench or with your hand to settle the media. This will help with aeration. Do not fill cells that are not going to be planted.
2. Place the 18 count holding trays in flats with holes. Wheat prefers a well-drained root zone.
3. Water the media thoroughly from the top. Do not bottom water trays.
4. Sow seeds into pots (1-2 seeds per pot), cover with a thin layer of media, and lightly water to moisten top layer.
5. Place flats on the top shelves in the multi-user, cool weather greenhouse that is currently designated for new seedlings.

### Watering

1. The plants are checked twice a day for watering needs. Established plants should be allowed to dry down between watering.
2. Regular watering will continue until at least half of the seed pods have turned brown, at which point plants will be allowed to dry down more before watering again. Watering will stop once all pods are brown.
3. The current fertilizer regimen is Monday, Wednesday, and Friday with Jack's 15-16-17 peat lite at an E.C. of 1.0 + the E.C. of the water.
4. On Tuesdays, Thursdays, and the weekend all plants are watered with reverse osmosis (RO) water as needed.

### Harvesting

1. It is the researcher's responsibility to harvest plants and should be done as soon as possible to prevent seed loss. Cut off seed head just below the base of last kernel and place in a bag, along with the label from the pot.
2. To clean the seed, crush seed heads above one of the sieves. Seeds will fall through to the bottom. This may need to be repeated several times to remove all plant waste.

### Pest Management

The most common pests on Wheat are thrips, aphids, and powdery mildew. Pests are generally able to be controlled with beneficial insects and the occasional chemical pesticide spray. Powdery mildew will need to be sprayed with fungicides. Researchers and staff moving from one greenhouse to the next will increase the chance of spreading pests amongst the houses. **If you need to enter multiple greenhouses throughout the day, it is always best to enter the youngest greenhouse first and then move to the next greenhouse in terms of plant maturity.** Please assist the greenhouse staff in controlling pests by planning your day accordingly.



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Do not move plants from one house to another without first consulting with the greenhouse staff.

**Growing Conditions**

Temp: Constant 20° to 21°C, but day temps will raise as much as 4° to 5°C above set point in hot sunny weather.

Humidity: 40-60%

Light: Supplemental lights turn on when the sunlight is below 300 W/m<sup>2</sup> between 6am-8pm (14 hours) from September-May and between 6-10am May-September.

The shade curtain automatically pulls to 50% when the sunlight is over 700 W/m<sup>2</sup> and it pulls to 100% when the sunlight is over 800 W/m<sup>2</sup>.

Dry Down: When all plants in a greenhouse have reached the drying down stage the temperature in the house will be raised and the humidity will be dropped to zero to speed dry down time.

**Winter Wheat**

If planting a winter wheat cultivar, the plants will need to be vernalized in order to induce flowering. After the plants have germinated and produced one to two tillers, move the plants to a vernalization chamber for 30 to 60 days at a temperature of 0° to 5° C. Once they are moved back to the greenhouse they will begin their reproductive development. The length of time and temperature of vernalization can vary based on the specific cultivar, so if you have any questions ask the Integrated Plant Growth Facility staff.