Wisconsin Fast Plants™

Seed Stock Profile

Rosette-Dwarf

Single, recessive trait: *ros/ros*

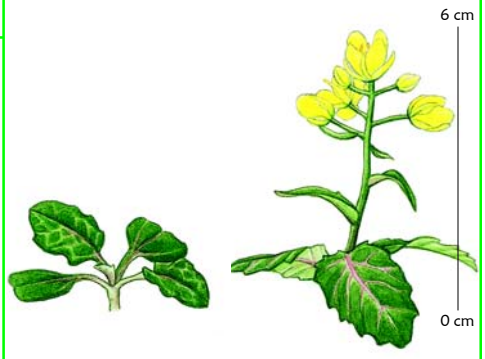
Rosette-Dwarf plants produce 4-10 times less gibberellic acid (GA, a plant hormone) than Standard Wisconsin Fast Plants™. The GA deficiency prevents the stems from elongating, so the leaves remain near soil level and the plants appear dwarfed. The leaves are a deep, green color.

Rather than the hypocotyl lifting the cotyledons above the soil 1-2 days after the seeds are sown, the cotyledons push their way out, emerging up to 4 days after planting.

Leaf development and flowering are delayed by a few days. Flowers are densely clustered on the short stems. With care, they can be pollinated. The resulting seed pods are short and stubby because the carpels do not elongate normally.

The Rosette-Dwarf stock originated from a naturally occurring mutation, discovered early in the history of Wisconsin Fast Plants™. The phenotype is conditioned by a single recessive gene (*ros*). In the homozygous, recessive condition, (*ros/ros*), gibberellic acid production is greatly reduced.

Length of life cycle: 35-45 days
Days to flowering: 16-18
Average plant height at day 16: 6 cm



7-day-old plant
Rosette-Dwarf
(*ros/ros*)

16-day-old plant
Rosette-Dwarf
(*-/ROS*)

Growing Tips

- 24-hour fluorescent light, water, and fertilizer are essential for Wisconsin Fast Plants™. Refer to *Growing Instructions* for more details.
- Germination in freshly harvested Rosette-Dwarf seeds is inhibited by the lack of GA. To encourage germination, either store seeds in a cool, dry place for 6+ months, or soak newly harvested and dried seeds for 1-2 minutes in a 100 ppm solution of GA. GA treatment produces a seedling with a rosette atop an elongated hypocotyl. Seeds purchased from Carolina Biological Supply Company are already stored to overcome the dormancy.
- Prior experience with growing Standard Wisconsin Fast Plants™ is useful for comparison with Rosette-Dwarf.

Challenging the Vertically Challenged: The Effect of a Plant Growth Hormone

Objective: Explore the effect of gibberellic acid (GA), a plant growth hormone, on Rosette-Dwarf Wisconsin Fast Plants™.

Time Required: 7-40 days, depending on experimental design.

Procedure:

1. Predict how the plants will respond if GA is applied to the leaves. How will the plants respond to various concentrations of GA? (The recommended concentration of GA is 100 ppm.)

2. Think about what plant responses you plan to measure.
   Ideas: Plant height, internode length (distance between leaf or flower axils), development time (for leaves, flowers, or seed pods), seed pod length, seed number, or seed size. (Keep in mind that you'll have to pollinate the plants with a beestick if you plan to produce seeds.)

3. Plant several Rosette-Dwarf seeds, following the *Growing Instructions.*

4. Apply a single drop of GA to the top of the first true leaf (not the cotyledons) at days 7 and 10.

5. Record your measurements at days 7, 10, and 17 (or other appropriate days).

6. How did your plants respond to different levels of GA treatment? Describe your observations.