

# Rht13- Drought resilient wheat gene

December 1, 2022

**In news**— A team of researchers, discovered the new 'reduced height' or semi-dwarf gene called Rht13.

## **About Rht-13-**

- **A new drought-resilient semi-dwarf wheat gene which can be grown in drier soil conditions** and it has given new hopes of sowing the crop in water-limited environments.
- **Reduced height gene means that seeds can be planted deeper in the soil, giving access to moisture**, without the adverse effect on seedling emergence seen with existing wheat varieties.
- Since the 1960s and the Green Revolution, reduced height genes have increased global wheat yields because the short-stemmed wheat they produce puts more investment into the grains rather than into the stems and has improved standing ability.
- However, these genes bred into wheat also have a significant disadvantage of not working in drought-like conditions.
- When these varieties are planted deeper to access moisture in water-limited environments, they can fail to reach the surface of the soil, the authors said.
- **The newly discovered gene overcomes this problem of seedling emergence because the gene acts in tissues higher-up in the wheat stem.**
- So, **the dwarfing mechanism only takes effects once the seedling has fully emerged.** This gives farmers a significant advantage when planting deeper in dry conditions.
- Researchers have found a new mechanism that can make reduced-height wheat varieties without some of the

disadvantages associated with the conventional semi-dwarfing genes.

- The discovery of the gene, its effects and exact location on the wheat genome, means that they can give breeders a perfect genetic marker to allow them to breed more climate-resilient wheat.
- Experiments testing the effects of the gene in a range of transgenic wheat plants confirmed that the Rht13 variation represents a new class of reduced height gene—more commonly associated with disease resistance as opposed to widely used Green Revolution genes (Rht-B1b and Rht-D1b) which are associated with hormones and therefore affect overall growth.
- Additionally, the study found that the new semi-dwarfing gene may be able to withstand stormier weather too.