Genetic Determinants of Rice Quality and Resilience

Source: TH

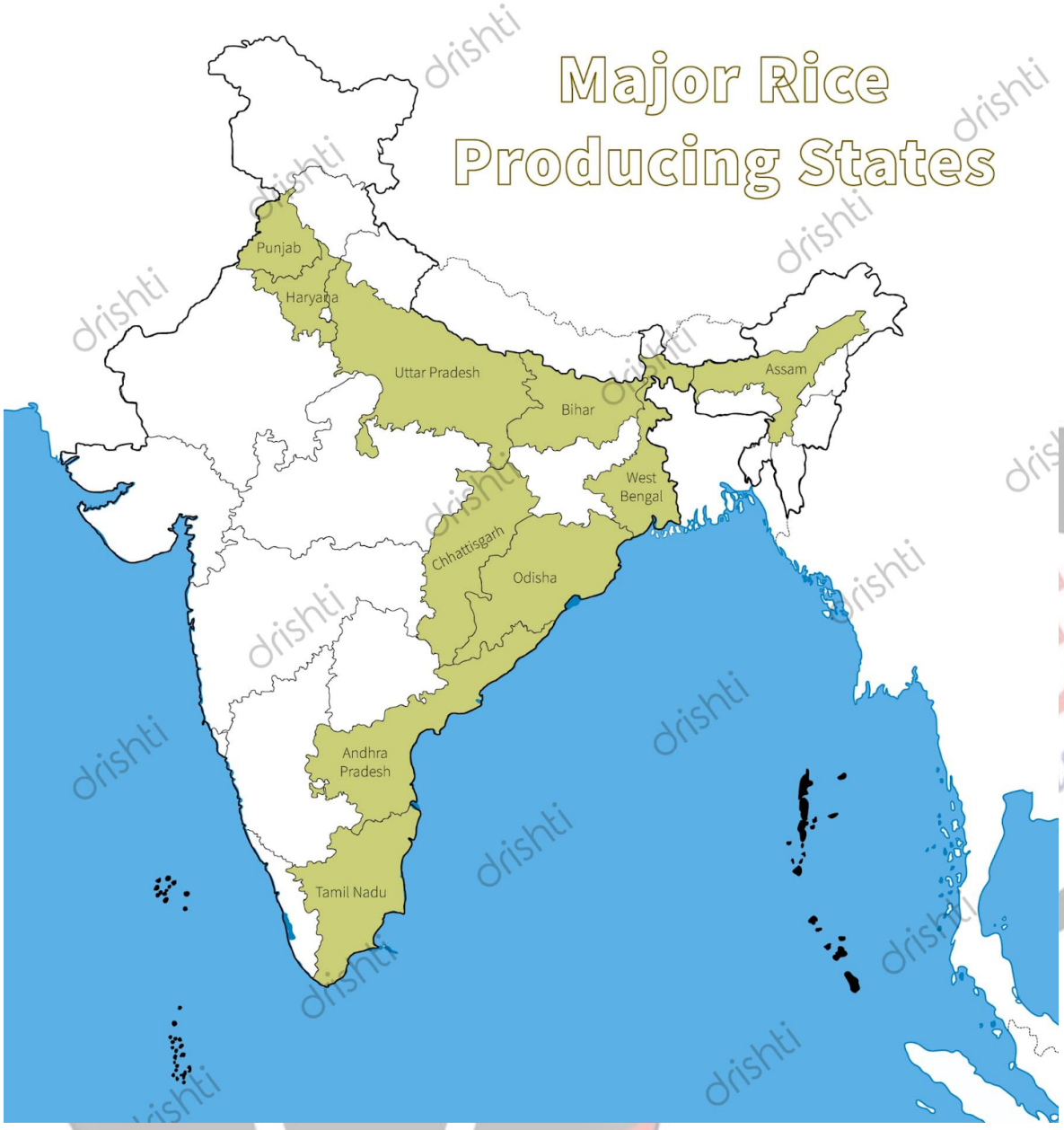
Scientists in China have discovered the **Chalk9 gene** responsible for **rice chalkiness**, a trait that makes **grains brittle and opaque** during milling, **lowering yield and commercial value.**

Other Key Genetic Determinants of Rice Quality and Resilience:

Gene/Quantitative Trait Locus	Function	Trait Significance
Pi54, Pi9	Blast disease resistance	Used in **breeding for broad, durable disease tolerance**
BADH2	Aroma regulation	Unique to **fragrant rice,** marker for premium varieties
Sd1	Plant height (semi-dwarfing)	Central to **Green Revolution,** boosts yield, reduces lodging
Saltol QTL	Salt tolerance (seedling stage)	Important for **coastal & saline areas**, key for **stress-resilient breeding**

Rice:

- Rice is the staple food for most Indians, cultivated on about **25% of the total cropped area,** and **India** ranks as the **second-largest producer** globally after China & is also the **largest exporter of rice globally.**
- It is a **kharif crop** needing **high temperature (>25°C), high humidity, 75–125 cm rainfall**, and **adequate sunlight**; optimal **30°C day / 20°C night**, tolerating **up to 40°C briefly**.
    - Grows best in **soils pH 5.5–6.5** with **good water-holding capacity and drainage**.
- **Leading producers: West Bengal, Uttar Pradesh, Punjab**.



Read More: [Direct Seeding of Rice]