

Yellow Rust and Stem Rust Resistant wheat

Rust-Resistant Wheat for a Flourishing Future

Rust-resistant wheat varieties use All-stage resistance (ASR) and Adult plant resistance (APR) genes to combat rust fungi. ASR provides strong protection but can be overcome by evolving fungi. APR offers partial, longer-lasting, broad-spectrum resistance. Combining ASR and APR enhances resistance.



Symptoms of yellow rust (left) and stem rust (right)

Science for resilient livelihoods in dry areas

International Center for Agricultural Research in the Dry Areas (ICARDA)

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This technology is **TAAT1 validated**.
 Scaling readiness: idea maturity: 7/9; level of use: 7/9

4.1 Ton/ha average grain yield
 440 USD Total farming operational costs

Problem

- Rust Epidemics:** Yellow and stem rust cause significant yield losses and devastate wheat crops in Sub-Saharan Africa.
- Rapid Spread:** These diseases spread rapidly through wind-borne spores, leading to massive losses.
- New Strains & Native Infections:** Continuous emergence of new strains and infections in native grasses make control and eradication challenging.

Solution

- ASR and APR Genes:** Provide strong and broad-spectrum protection against rust fungi at all plant stages.
- High Yield Potential:** Maintain high yield despite rust resistance.
- Robustness:** Exhibit resistance to other diseases and environmental stresses like drought.

Technology from **ProPAS**

Commodities: **Wheat**

Sustainable Development Goals:

Categories: Production, Improved varieties, Disease resistance, Yield improvement

Best used with:

- [Integrated Management of Insects, Diseases and Weeds in Wheat >](#)

Key points to design your business plan

For seed multipliers:

- Partnership & Training:** Collaborate with institutions and train staff on rust-resistant varieties.
- Selection & Multiplication:** Choose suitable varieties and plan multiplication.
- Quality Control & Distribution:** Ensure seed health and develop a distribution network.
- Assessment & Financial Planning:** Regularly assess performance and estimate costs.

For seed resellers:

- Partnership & Planning:** Collaborate with institutions and plan stock based on demand.
- Quality Assurance & Distribution:** Ensure seed health and develop a robust distribution network.
- Marketing & Support:** Develop a marketing strategy and provide agronomic advice.
- Cost Estimation:** Estimate costs and develop a financial plan.

For farmers:

- Education, Selection, & Procurement:** Understand benefits, select suitable varieties, and plan seed procurement.
- Field Management & Sales:** Plan cultivation and develop a sales strategy.
- Financial Planning:** Estimate costs for each step and develop a financial plan.

Tested/adopted in

■ Tested & adopted
■ Adopted
■ Tested

Where it can be used

This technology can be used in the colored agro-ecological zones.

Gender assessment 4

Climate impact 7