

Name of Solution:

Trait specific germplasm of crops for direct use as variety or use in breeding programme for genetic enhancement, disease and insect resistance, abiotic stress tolerance, quality and climate resilience

Submitter: Indian Council of Agricultural Research (ICAR)

Solution Overview: *What is it, and what problem does it solve? Brief 2–3 sentence description.*

Trait specific germplasm of crops for direct use as variety or use in breeding programme for genetic enhancement, disease and insect resistance, abiotic stress tolerance, quality and climate resilience.

Key Features & Benefits: *Main components and why it is useful? Bullet points summarizing methods, tools, and value added.*

- India has 4.71 lakh accessions of around 2200 species in the national gene bank.
- Germplasm can be used as direct introduction and released as variety based on its performance for yield and other traits
- Germplasm is used in the hybridization programmes for development of high yielding varieties
- Crop wild relatives are used for transferring novel genes conferring resistance/ tolerance to various biotic and abiotic stresses and development of CMS/Restorer lines for hybrid development programme.
- Use of markers assisted selection/ genomic selection can be done for faster transfer of a trait from the potential donor(s).

Where It Works and Where It Can Work: *Existing and potential target regions, agroecologies, or farming systems. Include examples if available*

- Germplasm can be used for crop improvement activities in any region of the globe.

Evidence & Impact: *What results has it shown? Stats, pilot outcomes, or testimonials*

- Through the use of elite germplasm more than 3000 varieties have been bred in India since 2014. More than 85% of these varieties are having one of more traits for biotic and /or abiotic stresses.

Scalability & Adoption Support: *Why it can be scaled and what's needed to adopt it? Low-cost, adaptable, partner-ready, etc.*

- Scalability depends upon the use of germplasm in crop improvement which varieties from programme to programme.

Partners & Contact Info: *Who's involved and how to connect? List of key contact and partners + email / phone.*

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