

Adoption of Climate-Resilient Paddy Varieties

Climate-change-induced extremities, such as erratic weather patterns, prolonged droughts, floods, and shifting growing seasons, are affecting the agriculture and allied sector. In Odisha, 93% of farmers are small and marginal and depend on agriculture as their primary livelihood, making them highly vulnerable to climate variability. According to the Agricultural Statistics at a Glance 2024-25 report, paddy is the major crop cultivated in Odisha, covering 3.83 million hectares (about 60% of total cultivated land), followed by pulses, oilseeds, and vegetables. Paddy is cultivated under irrigated and rainfed conditions across the state's diverse land types, such as upland, lowland, and medium land. In this context, climate-resilient paddy crop varieties are amongst the most promising solutions that can ensure sustainable production and food security, especially in rainfed agriculture. These varieties withstand climatic stresses and provide stable yields under adverse conditions

Characteristics of climate-resilient paddy varieties

Paddy varieties that can adapt to different weather conditions have been developed using advanced breeding methods and biotechnology. These include

Flood and lodging tolerant

These varieties survive better when the fields are waterlogged due to continuous rainfall, reducing pre-harvest crop losses and maintaining yields.

Salt tolerant

In coastal areas, due to frequent cyclones, coastal inundation contaminates soil with saltwater, affecting crops and crop yields. Salt-tolerant varieties can help reduce such impacts.

Drought resistant

Dry spells during the monsoon season impact soil moisture and crop water availability, affecting crop yields. Drought-resistant varieties can maintain yields despite low rainfall.

Pest and disease resistant

Dry spells, humid conditions, changing rainfall patterns, and extreme heat are linked to increased incidence of pest attacks and diseases. Pest-resistant varieties can help farmers maintain their crop yield.

Short-duration paddy varieties (110 to 120 days)

These can be cultivated when the monsoon is delayed and help conserve irrigation water.

Climate-resilient paddy varieties



Flood tolerant

CR Dhan 201, CR Dhan 202, CR Dhan 203, CR Dhan 205, CR Dhan 207, CR Dhan 209, CR Dhan 801, Varshadhan, Swarna-Sub 1, Pratiksha, CR 500, and CR 1009 Sub-1



Salt tolerant

Luna Suwarna, CARI Dhan 4, SR-26B, Usar Dhan 3, Jarava, CSR 36, CR Dhan 405 (Luna Sankhi), and CR Dhan 403



Drought resistant

CR Dhan 40, Sahbahgi Dhan, Phalguni, CR Dhan 100, CR Dhan 101, CR Dhan 801, Swarna Shreya, Jogesh, GB-I, Anjali (IET-16430), and MTU-1153



Pest and disease resistant

Chandrama (blast and seedling blight), CR Dhan 311 (Mukul; seedling blight and bakanae), Khira (seedling blight and bakanae), Lunishree (blast and seedling blight), Neela (false smut, seedling blight, and bakanae), Sadabahar (seedling blight and bakanae), Samalei (gall midge, blast, and seedling blight), Sarasa (blast, seedling blight, and bakanae), Savitri (blast and seedling blight), and Swarna-Sub1 (false smut, bakanae, and seedling blight)



Short-duration varieties

CR Dhan 309, Bina Dhan 17, BRRI Dhan 75, CR Dhan 207 (Srimati), CR Dhan 209 (Priya), DRR Dhan 46, Tarangini, Bina Dhan 11, CO 51, DRR Dhan 44, BRRI Dhan 71, CR Dhan 101, CR Dhan 201, CR Dhan 202, CR Dhan 203, CR Dhan 204, CR Dhan 205, CR Dhan 303, CSR 43, DRR Dhan 42, CR Dhan 300, CR Dhan 100, CR Dhan 200, CR Dhan 405, Mandakini, Sahbhagi Dhan, Jogesh, Naveen, Udayagiri, and Khandagiri

Benefits

Climate-resilient paddy varieties reduce

Crop losses and improve crop yield stability under adverse climatic conditions, which ultimately helps in stabilising farm incomes;

The impact of floods, droughts, and other climate shocks, along with the effects of associated pests and diseases on crops;

The need for chemical pesticides, supporting soil health and local biodiversity; and

Labour and irrigation water application (with short duration varieties; 110–120 days against 130–150 days).

Recommendations for farmers

- Farmers should follow the recommended crop variety selection and package of practices in consultation with krishi vigyan kendras, the Department of Agriculture and Farmers' Empowerment, or Indian Council of Agricultural Research institutes.
- Farmers should select the varieties suited to their local ecosystem (lowland, medium land, or upland).



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