



एक कदम स्वच्छता की ओर



CR Dhan 801 and CR Dhan 802 Climate-Smart Rice Varieties of NRRI



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Emerging threats of climate change to rice

Rice is the most important staple food crop playing a vital role in global food and nutrition security. India is the largest rice growing country in the world but the production environments are extremely diverse and challenging. The rainfed ecologies comprising about 50% of the rice area, located mostly in the eastern part of the country are highly affected by abiotic (submergence, drought) and biotic (pest and diseases) stresses. The stresses are intensifying with the emerging threats of climate change. Climate-smart varieties are, therefore urgently needed to address these challenges to make rice farming sustainable.

Climate-smart rice varieties of NRRI

ICAR-National Rice Research Institute (NRRI) has developed CR Dhan 801 and CR Dhan 802 possessing submergence as well as drought tolerance ability in the background of mega-variety 'Swarna'. Globally these varieties are unique and developed first time in rice research. These have been notified for release by the Government of India on 19th February, 2019.

The varieties contain *Sub1* gene for submergence tolerance and *qDTY1.1*, *qDTY2.1* and *qDTY3.1* yield QTLs for drought tolerance, which were stacked in the background of Swarna variety using marker-assisted backcross breeding. Genome recovery of recipient parent was more than 95%. They are weakly photosensitive with average maturity duration of 140-145 days.



The varieties are resistant to stem borer (both dead heart and white ear), leaf folder, plant hoppers and case worm while moderately resistant to bacterial blight, sheath rot and rice tungro virus. They have good hulling, milling and head rice recovery as like the recipient parent Swarna and possess intermediate amylose content, short bold grain and other desirable grain quality parameters.

Cultivation practices, pest and disease control as well as harvesting and processing of these varieties are similar to other commonly grown high-yielding varieties of rice.

Climate-smart Rice Variety CR Dhan 801 (IET 25667)

The variety was developed from the breeding materials of cross IR81896-B-B-195/2* Swarna-Sub1 // IR91659-54-35. The variety has been released for the states of Odisha, West Bengal, Uttar Pradesh, Andhra Pradesh and Telangana. It has short bold grain with a test weight of 20.5 g. It gives about 6.3 t ha⁻¹ yield under normal condition and 4 t ha⁻¹ under submergence while 2.9 t ha⁻¹ under drought conditions.

Climate-smart Rice Variety CR Dhan 802 (Subhas: IET 25673)

The variety was developed from the breeding materials of cross Swarna-Sub1*4/IR81896-B-B-195. This has been christened 'Subhas' after Cuttack-born freedom fighter and illustrious son of India Netaji Subhas Chandra Bose. The variety has been released for the states of





Madhya Pradesh and Bihar. It has short bold grain with a test weight of 19.0 g. It produces an average yield of 6.5 t ha⁻¹ under normal condition and 4.3 t ha⁻¹ under submergence while 2.3 t ha⁻¹ under drought conditions.

Characteristics of CR Dhan 801 and CR Dhan 802.

Character	CR Dhan 801	CR Dhan 802
Plant height	87	102
Flowering	112	110
Maturity duration	140	139
1000-grain weight (g)	20.7	19.0
Lodging	Non-lodging	Non-lodging
Panicle type	Intermediate	Intermediate
Panicle exertion	Well-exerted	Well exerted
Awn	Awnless	Awnless
Hulling (%)	79.6	77.85
Milling (%)	69.9	70.2
Head rice recovery (%)	66.2	64.25
Kernel length (mm)	5.15	5.0
Kernel breadth (mm)	2.22	2.16
L/B ratio	2.31	2.31
Grain type	SB	SB
Grain chalkiness	VOC	VOC
Alkali spreading value	4.0	4.5

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