

**DRRH - 5 (IET 27847) - World's First Coastal Salinity Tolerant Rice Hybrid**

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### Abstract

DRRH-5 [IET 27847 (IIRRH-115)], stands as the world's first coastal salinity-tolerant rice hybrid, developed from APMS-6A × NH 12-124. It was evaluated in AICRIP multi-location Coastal Saline Tolerant Variety Trial (CSTVT) during wet seasons spanning from 2018 to 2022. DRRH-5 consistently out-performed the checks in West Bengal, Gujarat, Goa and Andhra Pradesh with a mean grain yield of 3.7 t/ha in saline conditions and 6.0 t/ha in irrigated conditions. In addition, it exhibited moderate resistance to leaf blast, neck blast, sheath rot and plant hoppers. DRRH-5 has a duration of 124 days (seed to seed) and possesses medium slender (MS) grain type with desirable grain and cooking quality parameters. It was released for cultivation in coastal saline ecosystems of West Bengal, Gujarat, Goa and Andhra Pradesh states through Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops vide S.O. 1560(E) dated March 26, 2024 [CG-DL-E-28032024-253429].

**Keywords:** Coastal salinity tolerant rice hybrid, Grain yield, Medium slender grains, Cooking quality.

### Introduction

Hybrid rice cultivation currently spans over 350,000 hectares and is projected to surpass the four million-hectare mark. However, amidst a backdrop of shifting climate patterns, over 80% of the rice hybrids released thus far are susceptible to abiotic stresses such as salinity, high-temperature, and drought. Given this scenario, the demand for tolerant rice hybrids becomes increasingly imperative, offering a vital solution for achieving substantial and consistent crop yields amidst changing environmental conditions. Indian Institute of Rice Research (ICAR-IIRR) has initiated the development of salinity tolerant rice hybrids suitable for coastal saline ecologies and a promising cross

combination, APMS-6A × NH 12-124 (IIRRH-115) was identified. The hybrid, IIRRH-115 was nominated in AICRIP CSTVT trail-2018. Subsequently, the entry performed well in all the four years and released as world's first coastal salinity tolerant rice hybrid, DRRH-5 through Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops vide S.O. 1560 (E) dated March 26, 2024 [CG-DL-E-28032024-253429]. It is suitable for cultivation in the states of West Bengal, Gujarat, Goa and Andhra Pradesh. The overall mean grain yield of DRRH-5 was 3.7 t/ha, which was 71%, 35% and 59% higher than CSR10 (Early

duration saline check), FL 478 (Saline Tolerant Check), and Pusa 44 (Sensitive Check), respectively. In Andhra Pradesh state, the weighted mean grain yield was 4132 kg/ha and it out yielded the

CSR 10 (85%), FL478 (17%) and Pusa 44 (44%). In GOA state, the weighted mean grain yield was 4532 kg/ha and out yielded the CSR 10 (70%), Bhuthnath (89%), FL478 (180%) and Pusa 44 (140%) (**Table 1**).

**Table 1: Yield performance of DRRH-5 in West Bengal, Gujarat, Goa and Andhra Pradesh**

States	DRRH-5 (IET 27847) (IIRRH-155)	Superiority over checks (%)		
		ED Saline Check CSR10	Saline Tolerant Check-FL478	Sensitive Check Pusa 44
West Bengal	5111	60	41	78
Gujarat	2829	63	29	47
Goa	4532	70	180	140
Andhra Pradesh	4132	85	17	44
Overall	3710	71	35	59

It exhibited moderate resistance to leaf blast, neck blast, sheath rot and plant hoppers. It has good hulling (79.20%), milling (69.87%) and head rice recovery (62.0%) in comparison with the checks and qualifying varieties. It possesses amylose content

(26.16%), alkali spreading value (5.0), gel consistency (49.67 mm), medium slender (MS) grain type (KL-5.85 mm; KB-2.11 mm) and other desirable grain and cooking quality parameters (**Figure 1A & B**). DRRH-5 is highly suitable for cultivation in coastal



**Figure 1A: Field view of DRRH-5**



**Figure 1B: Paddy, Brown rice and Polished rice of DRRH-5**



saline ecologies. Seed sowing is preferably during the second week of June to second week of July. Seed rate is 20-30 Kg/ha. Seedlings of 15-30 days old are pulled out from nurseries and transplanted with a spacing of 20 × 15 cm (2-3 seedling per hill). For weed management, apply Pendimethalin herbicide @ 1 kg per hectare at field capacity moisture within 3-5 days of transplanting. Use of rotary weeder from 15 DAT for every 10 days. Perform one to two rounds of hand weeding between 15 and 40 days after transplanting. Maintain water level of 2 cm

till 7 days of transplanting and 5 cm throughout the crop period. Timely irrigation should be provided at moisture sensitive period (Active tillering, panicle initiation, booting and grain-filling stages). DRRH-5 exhibits a maturity duration of 124 days (from seed to seed) and has the potential to achieve yields ranging from 3.7 to 4.0 t/ha under saline conditions and 6.0 to 6.5 t/ha under irrigated conditions, provided it is cultivated within the designated area of adoption and recommended climate conditions, and with the adoption of appropriate agricultural practices.