

Trombay Konkan Mahan Rice Variety Suitable for Lowland Rice Growing Areas of Maharashtra

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Abstract

Trombay Konkan Mahan (TKR- 35) is high yielding rice variety having semi dwarf stature (105-110 cm) with long slender grain type, good grain quality and late duration (140-145 days) released for commercial cultivation in lowland rice growing areas of Maharashtra state during 2025. This variety is developed by Regional Agricultural Research Station, Karjat in collaboration with Bhabha Atomic Research Centre (BARC), Trombay, Mumbai which recorded an average yield of 5.0 to 5.5 t/ha. Trombay Konkan Mahan is developed from a cross between the PB1 Mutant and Ratnagiri 24. Trombay Konkan Mahan is high milling (69.55%), head rice recovery (61.25%) and translucent kernel type indicating superior grain quality of rice variety with acceptable amylose content (24.8).

Keyword: Trombay Konkan Mahan, high head rice recovery, long slender grains, lowland rice variety.

Introduction

In Maharashtra, rice is the second most important crop of the people, which is grown over an area of 15.25 lakh hectares with an annual rough rice production of 52.03 lakh tonnes. The average productivity of the state is 3.30 t/ha. The average productivity of the state is low as compared to other rice growing states viz., Punjab (5.80 t/ha) and Tamil Nadu (4.90 t/ha).

Konkan region is the major rice producing area of Maharashtra. Nearly 3.31 lakh ha area of Konkan is under rice crop with a production of 14.20 lakh tonnes rough rice. The average productivity of rough rice in Konkan region is 4.28 t/ha. The Konkan region contributes 21.73% in area under rice crop and produce 32.14% rough rice at Maharashtra state level (Maharashtra State Statistics Department, Pune 2023-24 report).

The rice cultivation in Konkan region is carried out on three types of soils classified as upland, midland and lowland requiring early, mid-late and late varieties respectively. The proportion of area under early, mid-late and late varieties is about 40, 40 and 20 per cent respectively. There is a need for long slender grain type and late duration rice variety for *kharif* season in Konkan region of Maharashtra state with higher yield. Accordingly, efforts were made to develop and release the TKR-35 to fulfill the requirement of long slender grain type, late duration, high yielding rice variety for the farmers of the Maharashtra state in collaboration with BARC, Mumbai. Pest and disease reactions of Trombay Konkan Mahan (TKR-35) in Initial Variety Trial Late and Advance Variety Trial (M) - Mid-late and Late conducted during *Kharif* 2020-2022 in Maharashtra State Coordinated Multilocation trials are given (Table 1).

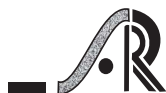


Table 1: Yield (Kg/ha) summary performance of rice culture Trombay Konkan Mahan TKR-35 from Kh-2018 to 2024

Name of Trial	Year	Locations	Grain yield (kg/ha)		
			TKR-35	KJT-2 (Local Check)	% increase over checks
1. Station Trial					
IVT-Late	2018	01	7145	4589	55.7
AVT-Late	2019	01	6328	4423	43.1
Weighted mean		01	6737	4506	49.51
2. Maharashtra Trial					
IVT-Late (Maharashtra)	2020	11	4693	3875	17.4
AVT-Late (Maharashtra)	2021	11	4624	4248	8.9
AVT-Late (Maharashtra)	2022	11	5855	4721	23.9
Weighted mean		11	5089	4276	19.01
3. AICRIP Trial					
IVT-Late (AICRIP)	2024	33	5775	5650	-
Swarna (NC)				5733	-
Salivahana (ZC)				5941	-
IVT-Late (AICRIP-Maharashtra)	2024	04	6312	5017	25.8
Swarna (NC)				6621	-
Salivahana (ZC)				5616	12.4
4. Agronomical trial					
	2025	1	5220	4450	17.3
5. Adaptive trials					
Adaptive	2024	34	4771	4117	15.9

Trombay Konkan Mahan (TKR-35) is a semi dwarf stature (105-110 cm), non-lodging, late duration (140-145 days), long slender grain type, 49.5% increase over best variety check Karjat-2 in station trial, 19.01% yield advantage on overall mean of three years over check Karjat-2 in Maharashtra State under Maharashtra state coordinated mid-late and late trial. The growth, yield attributing characters

and yield of TKR-35 were found to be statistically significant over Karjat-2 rice variety. The plant height (106 cm), number of panicles per sq. m (241), number of spikelets per panicle (207) and test weight (21.06) were also observed to be statistically significant over Karjat-2 rice variety (**Table 2** and **Figure 1**).

Table 2: Ancillary characters of Trombay Konkan Mahan (TKR-35) in Advanced Variety Trial (M)- Mid-late and Late Trials conducted during *Kharif* 2022 in Maharashtra State

Sl. No	Designation	Yield (Kg/ha)	Days to 50% flowering	Plant height (cm)	Panicle/ sqm.	Spikelets / Panicle	Test weight (g)	Grain type
1.	TKR- 35	5855	110	106	241	207	21.06	LS
2.	Karjat-2 (Ch.)	4276	110	93	287	155	22.04	LS

Application of 100 per cent FYM and RDN and transplanting of rice variety Trombay Konkan Mahan (TKR- 35) at a spacing of 20 cm x 15 cm recorded significantly higher growth, yield attributing characters and yield of rice as compare to application of 50 per cent RDN and transplanting of rice variety Karjat 2 at a spacing of 20 cm x 15 cm. The pest and disease reaction of Trombay Konkan Mahan is given in (Table 3).

Table 3: Pest and disease reactions of Trombay Konkan Mahan (TKR- 35) in Initial variety trial late and Advance variety trial (M)- Mid-late and late conducted during *Kharif* 2020-2022 in Maharashtra State

Designation	Stem Borer		Gall midge		Leaf Blast		Bacterial Leaf Blight	
	Score	Reaction	Score	Reaction	Score	Reaction	Score	Reaction
Trombay Konkan Mahan (TKR-35)	1	R	4	MR	3.76	MR	4.6	MS
Karjat-2 (Ch.)	1	R	5	MR	4.70	MS	5.33	MS
TN 1 (Susceptible Check)	8.3	HS	8.3	HS	7.6	S	8.3	HS
EK 70 (Susceptible Check)	7	S	9	HS	8.7	HS	8.3	HS
Ajaya (Resistant Check)	1	R	0.3	HR	3.2	MR	2.1	R
Karjat-1 (Resistant Check)	1	R	0.6	HR	2.5	R	2.3	R

R: Resistant, S: Susceptible, MR: Moderately resistant, HS: Highly susceptible, HR: Highly resistant, MS: Moderately susceptible

Trombay Konkan Mahan (TKR-35) exhibited a 17.3 per cent higher grain yield compared to the check variety Karjat-2 in adaptive on-farm trials conducted during the *kharif* season of 2024. The variety demonstrated superior milling and grain quality attributes, recording a milling recovery of 69.55 per cent, head rice recovery of 61.25 per cent, and a translucent kernel type, along with an acceptable amylose content of 24.8 per cent (Table 4 and Figure 2). TKR-35 showed moderate resistance to stem borer infestation under field conditions. The variety recorded a mean grain yield ranging from 5.0 to 5.5 t ha⁻¹.

Table 4: Summary of grain quality characteristics of Trombay Konkan Mahan (TKR-35)

IET No.	Milling (%)	HRR (%)	KL (mm)	KB (mm)	L/B	Grain type	Grain chalk	VER	WU (ml)	ER (mm)	ASV	AC (%)	GC (mm)
TKR-35	69.55	61.25	6.18	1.98	3.17	LS	A	6.0	280	1.49	3.0	24.8	59
Karjat-2 (Ch.)	65.55	53.21	6.30	1.82	3.46	LS	A	4.5	290	1.46	3.0	25.4	67

HRR: Head Rice Recovery, KL: Kernel length, KB: Kernel Breadth, L/B: Length/breadth ratio, Grain chalk: Grain chalkiness, VER: Volume Expansion ratio, WU: Water uptake, KLAC: Kernel length after cooking, ER: Elongation ratio, ASV : Alkali spreading value, AC: Amylose content, GC: Gel consistency, SS : Short slender, A: Absent



Figure 1: Field view of Trombay Konkan Mahan Rice Variety



Rice



Paddy

Figure 2: Grain characters of Trombay Konkan Mahan Rice Variety