

GR-27 (Bhim): A High Yielding Rice Variety Suitable for Value Addition in Gujarat State

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Abstract

Navsari Bhim (JGL 3655 x Z-31, IET-29918) is a medium duration white kernel rice variety suitable for value addition released from Main Rice Research Centre, NAU, Gujarat for the whole state. The variety has maturity duration of 125-130 days with an average grain yield of 5700-5800 kg/ha with a very good poha recovery. The Bhim is developed by crossing JGL-3855, a high yielding variety of MH and Z-31, a fine grain variety of Gujarat. It has long bold grain, medium maturing and more productive tillers per plant. NVSR-687 produce good quality poha and puffed rice with high poha recovery (57.4 %) and puffed rice recovery (61.8 %). NVSR-687 is moderately resistant against bacterial leaf blight, grain discoloration, sheath rot and leaf blast. It showed tolerant reaction against brown plant hopper whereas moderately resistant reaction against stem borer, leaf folder and sheath mite. Navsari Bhim (GR-27) was released by 58th State Seed committee meeting of the Government of Gujarat, suitable for the whole state in *kharif* season.

Keywords: GR 17 (Bhim), high yielding, value added, puffed rice and medium duration variety

Introduction

Rice is the staple food and main source of nutrition for about 50% world and 70% of the Indian population. In the Gujarat, rice occupies about 5 % of the gross cropped area and it is being grown on about 7.8 to 8.0 lakh hectares, of which about 60-70 % is under a low land (Transplanted) and remaining 30-35 % under upland rice (drilled) situation. More than 90 % of the area under rice is confined to South and Middle Gujarat.

Value added products helps farmers to get better price of their produce. Beaten rice (Poha) and puffed rice are the value added products of bold grain rice. Large number of beaten rice (Poha) and puffed rice industries are present in Gujarat state. About 50% of rice area in our state is under bold grain varieties.

Very few choices are available for farmers under bold seeded rice varieties in Gujarat. Hence, there is an urgent need to develop such rice variety which is suitable for beaten and puffed rice preparation of superior quality, so that the farmers can have a viable option of variety. This will also lead to multi-culture combination of rice varieties.

In this context, the proposed Variety Navsari Bhim derived from a cross JGL-3855 x Z-31 was bulked from the advanced generation in the year 2018. The proposed variety was evaluated 20 trials/locations in various categories of trial from 2019 to 2024 in Gujarat. The variety, Navsari Bhim performed very well in Gujarat with an average yield of 5781 kg/ha which was 13-23% higher as compared to previously released bold grain type rice variety *viz.*, GNR-3, GNR-5 and Jaya.



Table 1: Mean grain yield of Navsari Bhim in various yield Trials

Name of variety	Grain yield (kg/ha)	% Increase over
Navsari Bhim	5781	
GNR-3	5057	14.31
GNR-5	4640	24.59
Jaya	4685	23.39

The proposed variety was evaluated under All India Coordinated Research Project on Rice during *kharif*-2021 under IVT-L trial. On pooled basis in Zone-VI (Western zone), it recorded 6227 kg grain

yield per hectare with yield increment of 8.4 per cent, 24.2 per cent, 13.5 per cent over the checks Swarna (NC), NDR-8002 (ZC) and Local check (LC), respectively.

The artificial and natural screening for the various diseases and pests was conducted at Main Rice research Centre, NAU, Navsari and the results were presented in **Table 2**. Where it showed moderately resistant against bacterial leaf blight, grain discoloration, sheath rot and leaf blast, whereas, it showed tolerant reaction to pest like brown plant hopper and moderately resistant reaction against stem borer, leaf folder and sheath mite.

Table 2: Reaction of Navsari Bhim to pest and diseases

Variety	Score							
	Blast	BLB	Sheath Rot	GD	SB	LF	Sheath Mite	BPH
Navsari Bhim	0	3	5	5	0	1	1	0
GNR-3	0	3	5	5	3	1	3	0
Jaya	0	3	7	5	5	3	5	1

The proposed variety Navsari Bhim contains intermediate amylose (23.51%) and high head rice recovery (61.70 %) as compared to checks *viz.*, GNR-3, GNR-5 and Jaya. (**Table 3**). The proposed strain, NVSR-687 possesses 7.55 mm kernel length with the kernel width of 2.71 mm having the L/B ratio of 2.79

which is more than enough to categorize it into Long Bold grain group (**Table 3**). The traders' opinion was also obtained, which indicated that it is superior in terms of economic return, beaten rice and puffed rice quality over the checks GNR-3, GNR-5 and Jaya.

Table 3: Quality characteristics of proposed variety with checks during 2024

Sl. No.	Name of the culture	Protein content (%)	Zinc content (ppm)	Iron content (ppm)	Vol. Exp. Ratio	Water uptake (ml)	Amylose content (%)	Hulling Recovery (%)	Milling recovery (%)	HRR (%)
1	Navsari Bhim	6.48	15.30	7.49	4.30	320	23.51	78.30	69.20	61.70
2	GNR-3	6.52	14.25	5.96	3.92	335	25.74	78.02	69.06	60.50
3	GNR-5	5.29	14.47	7.68	4.01	308	22.84	75.60	68.20	61.40
4	Jaya	5.74	13.95	6.45	4.23	340	26.20	78.00	68.40	60.00