

## Karjat-184, an early rice variety for Konkan region of Maharashtra state

R.L. KUNKERKAR, B.D. WAGHMODE, P.B. VANAVE, S.R. KADAM AND B.B. JADHAV

### ABSTRACT

The rice variety Karjat-184 was evolved from the cross between T(N)1 and Kolamba 540 using former parent as female through pedigree method of selection. It is early in duration (105-120 days in *Kharif*), dwarf (80-85 cm plant height) with medium slender and translucent kernel. The variety showed 21.50 per cent higher yield over the checks in adaptive trials. It showed excellent milling (75.0 %), head rice recovery (55.6 %) and good cooking qualities. It has been observed moderately resistant to bacterial leaf blight and blast, tolerant to brown plant hopper and white backed plant hopper at endemic sites with an average yield potential of 3.0 to 3.5 t/ha. Therefore, the rice variety Karjat-184 was released for commercial cultivation in Konkan region of Maharashtra state in the year 2009.

**KEY WORDS :** Karjat-184, Early, Yield, Medium slender and resistant

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### INTRODUCTION

Rice (*Oryza sativa* L.) occupies pivotal place in Indian agriculture, as it forms the staple food for more than 70 per cent of the population, providing 20 to 25 per cent of agricultural income. Rice occupies largest area among all food crops in India. Rice is grown on 44.6 million hectares in India, which is largest in the world among all the rice growing countries with annual production around 90 million tonnes. The present production level of 93 million tonnes of rice needs to be increase up to 140 million tonnes by the year 2020 to meet the demand of increasing population and maintain self-sufficiency from the available land, water and human resources.

In Maharashtra rice is the second important crop of the people, which is grown over an area of 14.74 lakh hectares with an annual rice production of 25.97 lakh tones. The average productivity of the state is stable around 1.76 tonnes per ha which is low as compared to other rice growing states. There was a need for fine and early duration rice variety for Konkan region with higher yield and superior grain quality. The Karjat 184 rice variety is popular among the farmers since 1971. This variety was not notified, therefore, it did not come under seed

production chain. Looking in to the heavy demand for seed and popularity of this variety, efforts were made to test this variety in different trials and again released during 2009 for Konkan region of Maharashtra and submitted for notification.

### MATERIALS AND METHODS

A cross was made between T(N)1 and Kolamba 540 using T(N)1 as female parent at Regional Agril. Research Station, Karjat. The selections were made for fine and high yielding progenies from the segregating generations of above cross. Among the several selections in segregating populations of above cross, a promising pure line KJT-184 was further tested in various trials on station, state and national co-ordinated trials at various locations in the state and country during 2002-2007. The culture was screened for resistance to various insect pests and diseases at endemic sites and quality parameters. The yield data of various trials were statistically analyzed according to Panse and Sukhatme (1967). Based on yield data of various trials, superior grain quality, disease and insect pest reactions and stable yield performance at various test locations, Karjat-184 rice variety was released for commercial cultivation in Konkan region of Maharashtra state during the year 2009.

### RESULTS AND DISCUSSION

The yield performance of Karjat-184 (IET-19265) rice variety in various trials conducted during 2002 to 2007

#### Correspondence to:

R.L. KUNKERKAR, Regional Agricultural Research Station, Karjat, RAIGAD (M.S.) INDIA

#### Authors' affiliations:

B.D. WAGHMODE, P.B. VANAVE, S.R. KADAM AND B.B. JADHAV, Regional Agricultural Research Station, Karjat, RAIGAD (M.S.) INDIA

**Table 1 : Yield performance of Karjat-184 (IET-19265) in different trials and demonstrations**

| Particulars                                    | Year    | Average grain yield (t/ha) |       | Per cent increase over check |
|--|---------|----------------------------|-------|------------------------------|
|  |         | Karjat-184                 | Check |                              |
| Initial Station trial (1 location)             | 2002    | 3.2                        | 2.9   | 11.64                        |
| Advance Station trial (1 location)             | 2003    | 3.1                        | 2.6   | 17.22                        |
| Initial State Co-ordinated trial (8 locations) | 2002    | 3.2                        | 2.9   | 11.84                        |
| Advance State Co-ordinated trial (9 locations) | 2003    | 3.1                        | 2.7   | 14.13                        |
| Advance State Co-ordinated trial (8 locations) | 2004    | 2.8                        | 2.7   | 4.42                         |
| AICRIP trial- IME (3-TP locations)             | 2005    | 3.8                        | 3.2   | 16.28                        |
| Adaptive trial (15 locations <i>Rabi</i> )     | 2006-07 | 3.7                        | 3.0   | 25.24                        |
| Adaptive trial (25 locations <i>Kharif</i> )   | 2007    | 3.4                        | 2.8   | 21.50                        |
| Agronomical trial (1 locations)                | 2007    | 3.8                        | -     | -                            |
| Average  |         | 3.34                       | 2.85  | 15.28                        |

is presented in Table 1. Karjat-184 rice variety recorded 11.64 and 17.22 per cent increase in grain yield over check Karjat 4 in initial and advance variety trials (station) during *Kharif*-2002 and 2003, respectively at Regional Agril. Research Station, Karjat (Anonymous, 2002). The variety showed 11.84, 14.13 and 4.42 per cent increase in yield over check during *Kharif* 2002, 2003 and 2004, respectively in state co-ordinated trials conducted at eight locations in the Maharashtra state (Anonymous, 2004).

The above rice variety was evaluated in All India Coordinated Initial Variety Very Early Trial (Transplanted) at 3 locations during *Kharif*- 2005 in the country. It showed an average increase of 16.28 per cent in grain yields over the check Vandana (Regional check) (Anonymous, 2005). The variety recorded 25.24 and 21.50 per cent more grain yield over check in 15 and 25 adaptive trials conducted on farmer's fields during *Rabi*-2006-07 and *Kharif* 2007. The field experiment on levels of nitrogen and spacing was conducted at Regional Agricultural Research Station, Karjat during *Kharif*-2007. Karjat-184 rice variety showed significant and highest yield at 150 kg N/ha (3.4 t/ha) during *Kharif* 2007 indicating responsive to cultural packages.

The salient features of Karjat-184 rice variety recorded at the research station are presented in Table 2. Karjat-184 is early in duration (100-105 days duration in *Kharif* and 110-115 days duration in *Rabi*/hot weather seasons), dwarf (80-85 cm plant height), medium slender kernel type (M.S.), average 1000 kernel weight of 18.5 g with an average grain yield of 3.0 to 3.5 t/ha. The variety is non-lodging and non-shattering type. The milling and cooking qualities of Karjat-184 rice variety was estimated at the Directorate of Rice Research, Hyderabad during the year-2005. It showed acceptable kernel quality features. The variety Karjat-184 showed higher milling (75.0 %) and head rice recovery (55.6 %). The kernel

length (5.41 mm), kernel breadth (1.83 mm), length : breadth ratio (2.95) and translucent kernel observed to be an inherited traits in this rice variety which contribute

**Table 2 : Salient features of the rice variety Karjat-184**

| Character                                   | Particulars  |
|---|--|
| Duration (days)                             | 100-105 days ( <i>Kharif</i> )<br>110-115 ( <i>Rabi</i> -hot weather season) |
| Plant height (cm)                           | 80-85  |
| Lodging                                     | Non-lodging  |
| Panicle length (cm)                         | 21.5   |
| Spikelets / panicle (nos)                   | 150-160  |
| Test weight (1000 kernel weight)            | 18.5   |
| Plant type                                  | Compact  |
| Awns  | Absent   |
| Panicle threshability                       | Easy   |
| Shattering                                  | Non-shattering   |
| Scent                                       | Absent   |
| Average grain yield (t/ha)                  | 3.0-3.5  |
| Potential yields (t/ha)                     | 5.5-6.0  |
| Milling (%)                                 | 75.0   |
| Head Rice Recovery (%)                      | 55.6   |
| Decorticated grain length (mm)              | 5.41   |
| Decorticated grain breadth (mm)             | 1.83   |
| Length and Breadth ratio                    | 2.95   |
| Kernel chalkiness                           | Absent (translucent)   |
| Grain type                                  | Medium Slender   |
| Kernel elongation length after cooking (mm) | 10.4   |
| Alkali spreading value                      | 7  |
| Amylose content (%)                         | 25.56  |
| <b>Reaction to disease and insect pests</b> |  |
| Bacterial leaf blight                       | Moderately resistant   |
| Leaf blast                                  | Moderately resistant   |
| Leaf folder                                 | Tolerant   |
| Stem bores                                  | Tolerant   |

to higher milling and head rice recovery in Karjat-184 (Bhattacharya, 1980). Karjat-184 recorded an intermediate amylose content (25.56 %) indicating better cooking qualities of kernels (Anonymous, 2005). The variety showed Alkali spreading value (7.0). The above observations indicated that the variety Karjat-184 meets the requirements of millers and consumers for higher monetary returns to farmers.

The rice variety Karjat-184 was screened for reaction to various diseases and insect pests at endemic locations in the state and country. The variety showed tolerant to leaf folder and stem bores. While, it recorded moderate resistance against bacterial leaf blight and blast under endemic test locations (Anonymous, 2004).

In view of higher yields, superior grain quality and field tolerance to major insect pests and diseases, the rice variety Karjat-184 (IET-19265) released for commercial cultivation in Konkan region of Maharashtra by State Variety Release Committee, 2009.

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