# LOW PHOSPHOROUS TOLERANT RICE VARIETIES

- DRR Dhan 60 (IET – 28061)
- DRR Dhan 65 (IET – 27641)
- DRR Dhan 66 (IET – 28066)
- DRR Dhan 73 (IET – 30242)
- DRR Dhan 74 (IET – 30252)
- DRR Dhan 78 (IET – 30240)
- DRR Dhan 87 (IET – 31110)
- DRR Dhan 88 (IET – 28070)
- DRR Dhan 97 (IET – 31108)
- DRR Dhan 98 (IET – 31102)



# DRR Dhan 60

## IET 28061

### Low Soil Phosphorous Tolerant Fine Grain Variety

DRR Dhan 60 is the **first low soil phosphorous tolerant variety**. It possesses low soil phosphorous **tolerance QTL, Pup1** along with **three major bacterial blight resistance genes Xa21, xa13 and xa5** and exhibited **good tolerance to low soil phosphorous** and **high level of resistance to bacterial blight**.

**LOW SOIL PHOSPHOROUS TOLERANT**

**BACTERIAL BLIGHT RESISTANT**

### AGRONOMIC SPECIFICATIONS

| | |
|---|---|
| Pedigree: | RP BIO 226*2/Swarna |
| Ecology: | Irrigated Early |
| Grain type: | Medium Slender |
| Duration: | 125-130 days |
| Yield: | 5.0 t/ha under 40 kg P2O5 |
| Notification No: | S.O. 4065 (E) \| 31/08/2022 |
| PPV & FRA No: | 2022/0023 |
| Plant height: | 88 cm |
| 1000 grain weight: | 19.45 g |

### GRAIN & COOKING QUALITY

| | |
|---|---|
| HRR: | 64.5% |
| L/B ratio: | 2.52 |
| ASV: | 7.0 |
| AC: | 23.23% |
| GC: | 22 mm |



HUSKED GRAIN | MILLED RICE

### RECOMMENDED STATES

Andhra Pradesh, Telangana, Tamil Nadu, Karnataka, Odisha, Chhattisgarh, Jharkhand, Bihar, Gujarat and Maharashtra.


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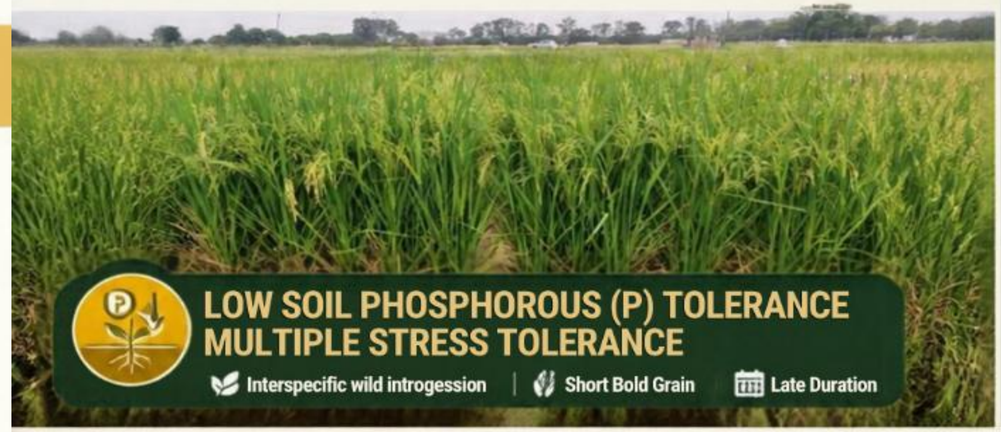
# DRR Dhan 65

## IET-27641

**A high-yielding, low soil phosphorous (P) tolerant, late duration rice variety with multiple stress tolerance**



**LOW SOIL PHOSPHOROUS (P) TOLERANCE**
**MULTIPLE STRESS TOLERANCE**
Interspecific wild introgression | Short Bold Grain | Late Duration



### DESCRIPTION

DRR Dhan 65 is an interspecific wild introgression line with short bold grains which is high yielding under both normal and low soil phosphorous conditions. It gives an average yield of 6.5 t/ ha (under normal conditions; 60 kg/ha of P, i.e. recommended dose) and 4.7 t/ ha (under low Phosphorus; 40 kg/ha of P).

### YIELD COMPARISON

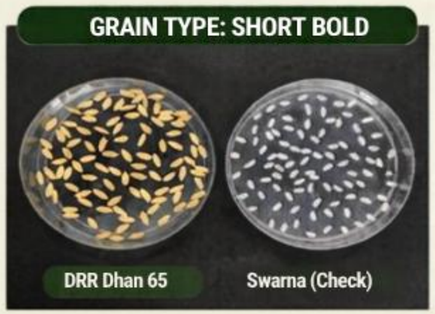
| NORMAL CONDITIONS 60 kg/ha of P (Recommended dose) | LOW PHOSPHORUS 40 kg/ha of P |
|---|---|
| 6.5 t/ ha | 4.7 t/ ha |

**YIELD (Field)**

**6.0 t/ha (Normal)**

**4.7 t/ha (Low P)**

### GRAIN TYPE: SHORT BOLD



DRR Dhan 65 | Swarna (Check)

### AGRONOMIC SPECIFICATIONS

| | |
|---|---|
| Pedigree | KMR 3 / *O rufipogon* |
| Ecology | Low phosphorous |
| Grain type | Short Bold |
| Duration | 130-135 Days |
| Yield | 6.0 t/ha (Normal) and 4.7 t/ha (Low P) |
| Notification No | 4065 (E) \| 31/08/2022 |
| Plant height | 123 cm |
| 1000 grain weight | 23.8 g |

### GRAIN & COOKING QUALITY

| | |
|---|---|
| L/B ratio: | 2.16 |
| HRR: | 97.5% |
| ASV: | 5 |
| AC: | 25.88% |
| GC: | 45 mm |

### SALIENT FEATURES

It recorded average grain yield advantage of **(in terms of weighted average) over the Positive check Swarna (late duration) under** 100% and 50% application of phosphorous.



### RECOMMENDED STATES



- Telangana
- Andhra Pradesh
- Karnataka
- Chhattisgarh
- Jharkhand
- Maharashtra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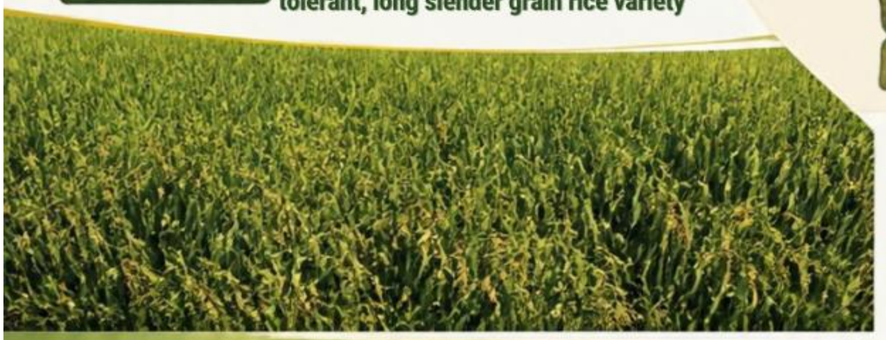
# DRR Dhan 66

**IET-28066** A high-yielding, low soil phosphorous (P) tolerant, long slender grain rice variety

**MAS DERIVED**
**LOW SOIL PHOSPHOROUS (P) TOLERANCE**

Major QTL/GENE
**Pup1**
(Located on chr.12)





## DESCRIPTION

DRR Dhan 66 is a MAS derived low soil phosphorous (P) tolerant rice variety developed in the genetic background of a very popular rice variety, MTU 1010 (Cotton Dora Sannalu). It is possessing a major QTL/gene associated with low soil phosphorous tolerance, Pup1 (located on chr.12) and gives a maximum yield of 4,3 t ha$^{1}$fat 60 kg/ha Phosphorous, 4,2 t ha$^{1}$ at 40 kg/ha Phosphorous and 3,9 t ha$^{1}$at 20 kg/ha Phosphorous.

## YIELD PERFORMANCE ACROSS PHOSPHOROUS LEVELS

| P-LEVEL 40 KG/HA PHOSPHOROUS | P-LEVEL 40 KG/HA PHOSPHOROUS | P-LEVEL 20 KG/HA PHOSPHOROUS |
|---|---|---|
| + 4.3 | + 4.2 | + 3.9 |

## KEY HIGHLIGHTS

- It is comparable to its current parent **MTU 1010** in physico-chemical characteristics and quality traits.
- It possesses **long slender grain type** with High HRR and has good cooking Quality.

## VARIETY IDENTITY

| | |
|---|---|
| Pedigree | MTU 1010 *2/ Swarna |
| Ecology | Low Phosphorous |
| Grain type | Long Slender |
| Duration | 120 - 125 days |
| Yield | 5.0 t/ha |
| Notification No | S.O. 4065 (E) \| 31/08/2022 |
| Plant Height(cm) | 83-85 cm |
| 1000 Grain Weight(g) | 24.3 g |




## GRAIN AND QUALITY

| | |
|---|---|
| L/B Ratio: | 2.55 |
| HRR: | 7.8% |
| AC: | 23.70% |
| GC: | 64 mm |
| ASV: | 4.0 |

## CULTIVATION GUIDANCE

- Irrigated low-land
- soil pH between 5 to 8
- 15 kg seed is sufficient for per acre of transplantation and gives a maximum yield of 4,3 t ha$^{1}$
- Spacing (during transplanted): row to row 20 cm and plant to plant 15 cm.

## RECOMMENDED STATES

Telangana and Andhra Pradesh.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# DRR Dhan 74

## IET 30252 | Low Soil Phosphorus Tolerant Variety

DRR Dhan 74 is a high yielding, low soil phosphorus tolerant medium duration variety. It is an inter-specific wild introgression line possessing short bold grains. It is well suited for low phosphorus soils with superior yield.









## LOW-PHOSPHORUS ADAPTATION

Ecology: Irrigated Low Phosphorus conditions

Grain Yield: 4.5 t/ha

**It is well suited for low phosphorus soils with superior yield.**

## PERFORMANCE HIGHLIGHTS

Plant height (cm): 115-120 cm

Duration (days): 130-135 days (seed to seed)

Head rice recovery (%): 62.2%

## RESISTANCE

Disease and Pest Resistance:
Moderately resistant to leaf blast, neck blast, sheath rot, brown spot, sheath blight, RTV, plant hoppers and stem borer

| | |
|---|---|
| Rice Variety: | DRR Dhan 74 (IET 30252) |
| Variety Type: | Low Soil Phosphorus Tolerant Variety |
| Grain Type: | Medium Slender |
| Grain Yield: | 4.5 t/ha |
| Parentage: | KMR 3/ Oryza rufipogon |
| Notification No: | S.O. 4388 (E) \| 08/10/2024 |
| Ecology: | Irrigated Low Phosphorus conditions |
| Plant height (cm): | 115-120 cm |
| Duration (days): | 130-135 days (seed to seed) |
| 1000 grain weight (g): | 24.2 g |
| L/B ratio: | 2.2 |
| Head rice recovery (%): | 62.2% |
| Alkali spreading value: | 7 |
| Amylose content (%): | 23.7% |
| Recommended States: | Karnataka, Maharashtra, Telangana and Jharkhand |

Disease and Pest Resistance:
Moderately resistant to leaf blast, neck blast, sheath rot, brown spot, sheath blight, RTV, plant hoppers and stem borer


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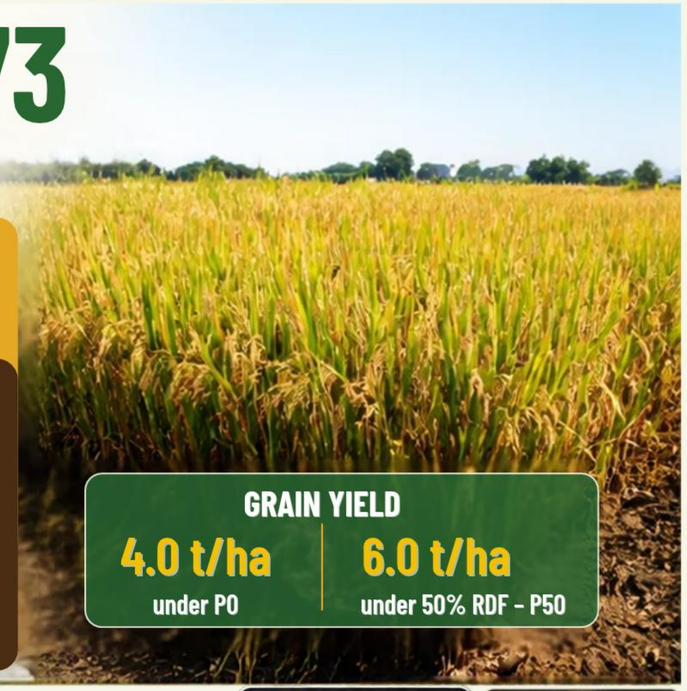
# DRR Dhan 73

## IET 30242

### Low Soil Phosphorous Tolerant Variety

- Thrives in **low phosphorous soils**
- **High yielding** potential
- **Early maturing** variety



**GRAIN YIELD**

| 4.0 t/ha | 6.0 t/ha |
|---|---|
| under P0 | under 50% RDF – P50 |

DRR Dhan 73 is an induced mutant derived from Samba Mahsuri using ethyl methane sulfonate. It is a high yielding early maturing variety suitable for low phosphorus soils.

| | |
|---|---|
| Parentage | EMS Mutant of Samba Mahsuri |
| Notification No | S.O. 4388 (E) \| 08/10/2024 |
| Disease and Pest Resistance | Resistant to false smut, and moderately resistant to neck blast, brown spot and leaf blast |





### FIELD PROFILE

Ecology:
Irrigated Low Phosphorus conditions

Season: Kharif & Rabi

Grain Type: Long Slender



### GRAIN AND COOKING QUALITY

**Plant height (cm):** 95 cm
**Duration (days):** 120-125 days
**1000 grain weight (g):** 24.8 g
**L/B ratio:** 3.11
**Head rice recovery (%):** 62.05%
**Alkali spreading value:** 4
**Amylose content (%):** 23.1%
**Gel Consistency (mm):** 22 mm

### RECOMMENDED STATES

Karnataka, Odisha, Telangana

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# DRR Dhan 78

## IET 30240 | High Yielding Low Phosphorus Tolerant Variety



**DRR Dhan 78**
with enhanced efficiency in phosphorus uptake, when grown under low P soils. It is low soil phosphorus tolerant variety with medium slender grain of cross Swarna / MTU 1001.



### LOW-PHOSPHORUS PERFORMANCE

Ecology:
Irrigated Low Phosphorus conditions

Grain Yield:
5.85 t/ha

DRR Dhan 78 is A high yielding variety with enhanced efficiency in phosphorus uptake, when grown under low P soils.

### GROWTH & YIELD CHARACTERISTICS

Plant height (cm):
98-105 cm

Duration (days):
138-142 days
(seed to seed)

Head rice recovery (%):
67.55%

### DISEASE & PEST RESISTANCE

Disease and Pest Resistance:
Moderately resistant to leaf blast, neck blast, sheath rot and BLB.

Grain Type:
Medium Slender

Recommended States:
Karnataka and Telangana.

| | |
|---|---|
| Rice Variety: | DRR Dhan 78 (IET 30240) |
| Variety Type: | High Yielding Low Phosphorus Tolerant Variety |
| Parentage: | Swarna / MTU 1001 |
| Notification No: | S.O. 4388 (E) \| 08/10/2024 |
| Ecology: | Irrigated Low Phosphorus conditions |

### GRAIN QUALITY & PHYSICAL ATTRIBUTES

| | |
|---|---|
| 1000 grain weight (g): | 21 g |
| L/B ratio: | 2.77 |
| Head rice recovery (%): | 67.55% |
| Alkali spreading value: | 4.5 |
| Amylose content (%): | 23.74% |
| Gel content (mm): | 26 mm |


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# DRR Dhan 87

**IET 31110 | Low Soil Phosphorus Tolerant Rice Variety**

**Designer, High-Yielding, Climate-Resilient Variety with Superior Haplotype Combinations of the Target genes Developed through Sub-Species Hybridization**




**LOW SOIL PHOSPHORUS TOLERANCE**

**CLIMATE RESILIENCE**

Engineered for productivity under low P soils and variable climates

## Overview

DRR Dhan 87 is an NPT & NUE cultivar, derived in the background of Swama with introgression of NPT traits from Tropical japonica germplasm. It is a Stay-green type with broad flag leaf - delayed leaf senescence, prolonged photosynthetic activity and improved source-sink dinamics. It possesses favourable alleles for key stress-responsive traits: Anaerobic germination (AG1, AG3, Blast (Pi54), BPH (BPH32), and Bacterial blight resistance (x44, Posssess superior haplotype (Wx) for grain quality.

## STAY-GREEN PERFORMANCE & SOURCE-SINK DYNAMICS

- Broad flag leaf with delayed leaf senescenc
- Prolonged photosynthetic activity
- Improved source-sink dynamics

## SUPERIOR HAPLOTYPE COMBINATIONS OF TARGET GENES



GT MS: High HRR (71.8%); Intermediate AC: 22.99; soft GC: 49 mm

High photosynthetic efficiency

Tolerance to bacterial blight

Tolerance to sheath blight



## Key Highlights

- **Higher Grain Number** 368–422
- Possesses three weeks dormancy – an essential trait to prevent pre-harvest sprouting
- Lodging resistant with strong culm and robust root system

## AT-A-GLANCE

| | |
|---|---|
| Ecology: | Intigated medium duration ecology with low soil P tolerance |
| Grain Type: | Medium Slender with straw colored grains |
| Duration: | 135 days, earlier than Swarna by 10–15 days |
| Yield: | 6.0–6.5 t/ha |

## QUALITY



- High Head Rice Recovery (71.8%)
- Intermediate amylase content (AC): 22.9%
- Soft gel consistency: 69 mm;
- ASV-4.0

## SALIENT FEATURES

Moderately resistant to leaf blast, neck blast, BLB, Sheath blight and field tolerance to Plant hoppers.

## PEDIGREE

**Swarna*1/IRGC 4105**

## RECOMMENDED STATES

Odisha, Bihar, Jharkhand, Telangana, Andhra Pradesh, Karnataka


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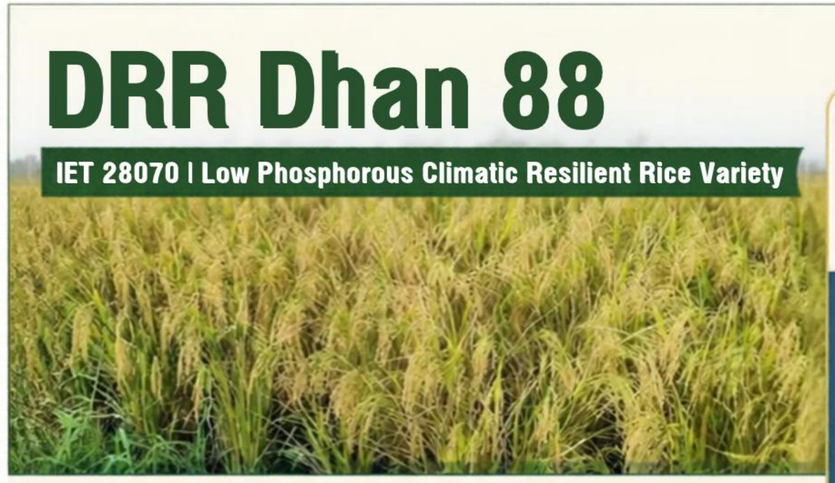
# DRR Dhan 88

**IET 28070 | Low Phosphorous Climatic Resilient Rice Variety**



## LOW PHOSPHOROUS TOLERANCE & NUTRIENT USE EFFICIENCY

- Thrives with 50% Phosphorous application in irrigated conditions
- Enhanced nutrient use efficiency for sustainable and profitable farming

**DRR Dhan 88 is high yielding nutrient use efficient variety which is suitable for cultivation in 50% of Phosphorous application in transplanted irrigated conditions for both *Kharif and Rabi* seasons. It has acceptable grain and cooking quality.**



## KEY FEATURES

- Higher Grain Number 368-422
- Possesses three weeks dormancy– an essential trait to prevent pre-harvest sprouting
- Lodging resistant with strong culm and robust root system

## AT-A-GLANCE

- **Ecology:** Irrigated Low Phosphorous
- **Grain Type:** Short Bold
- **Duration:** 125 days
- **Yield:** P50: 5.745 t/ha, P100: 5.988 t/ha

## QUALITY

HRR: 58.6% | AC: 22%
GC: 22 mm | ASV: 4.0

## GRAIN & COOKING QUALITY



## SALIENT FEATURES

Moderate Resistant to Leaf Blast.

## PEDIGREE

KMR3/IC 22015

## RECOMMENDED STATES

Maharashtra (Zone VII); Telangana, Andhra Pradesh, Karnataka (Zone VIII).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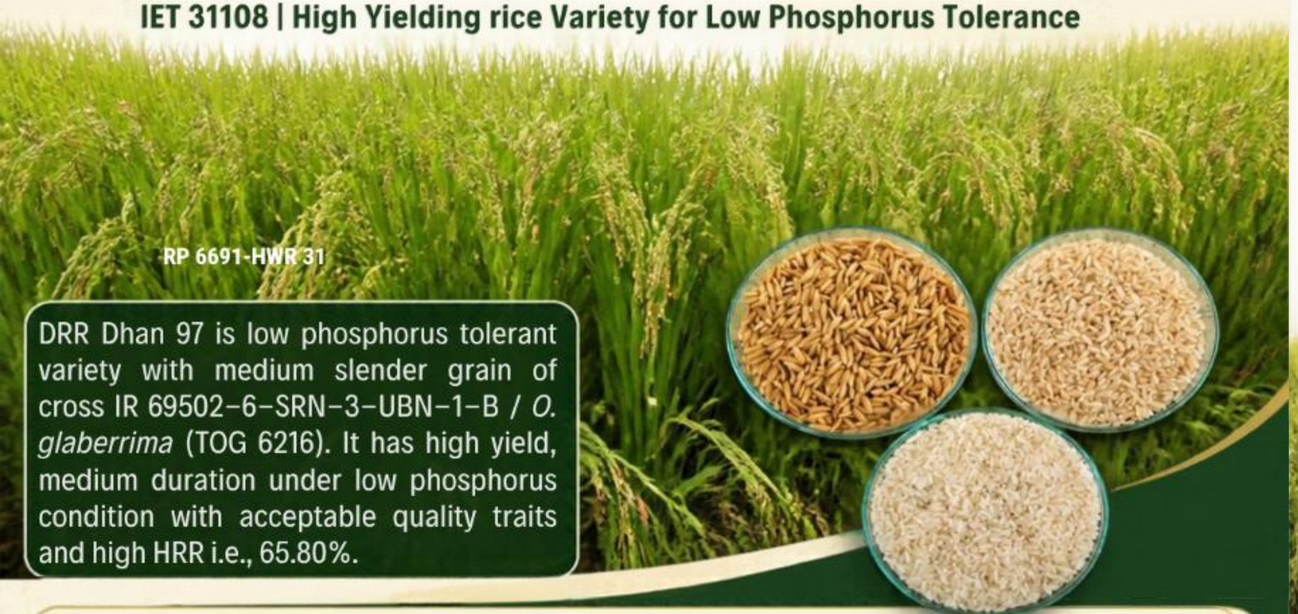
# DRR Dhan 97

**IET 31108 | High Yielding rice Variety for Low Phosphorus Tolerance**




DRR Dhan 97 is low phosphorus tolerant variety with medium slender grain of cross IR 69502–6–SRN–3–UBN–1–B / *O. glaberrima* (TOG 6216). It has high yield, medium duration under low phosphorus condition with acceptable quality traits and high HRR i.e., 65.80%.

**Yield:** 4.5–5.0 t/ha | **Duration:** 115–120 days | **HRR:** 65.80%

| | |
|---|---|
| **Rice Variety:** | DRR Dhan 97 (IET 31108) |
| **Variety Type:** | High Yielding rice Variety for Low Phosphorus Tolerance |
| **Pedigree:** | IR 69502–6–SRN–3–UBN–1–B / *O. glaberrima* (TOG 6216) |
| **Ecology:** | Low Phosphorus Tolerance |
| **Grain Type:** | Medium Slender |
| **Duration:** | 115–120 days |
| **Yield:** | 4.5–5.0 t/ha |
| **HRR:** | 65.80% |
| **L/B Ratio:** | 2.54 |
| **ASV:** | 4.0 |
| **AC:** | 22.38% |
| **GC:** | 22 mm |

## LOW PHOSPHORUS ADAPTATION

**Low Phosphorus Tolerance** Medium duration under low **phosphorus condition** with acceptable quality traits and high HRR i.e., 65.80%.

## SALIENT FEATURES

Moderate resistance to Leaf Blast, Brown Spot, Bacterial Leaf Blight, Sheath Blight, Neck Blast and Moderate Tolerance to Leaf Folder and Plant Hoppers.

**Recommended States:**
Karnataka, Telangana and Andhra Pradesh.

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# DRR Dhan 98

**IET 31102 | Low Soil Phosphorus Tolerant Variety**

DRR Dhan 98 is a low soil phosphorous tolerant variety RP 6690-MASC-12-46 derived from an interspecific cross WB 9/BPT 5204. It has high yield, medium duration with long slender grain, acceptable cooking quality with high HRR i.e., 59.30.




**Yield:** 5.0 t/ha | **Duration:** 125-130 days | **HRR:** 59.30%

| | |
|---|---|
| **Rice Variety:** | DRR Dhan 98 (IET 31102) |
| **Variety Type:** | Low Soil Phosphorus Tolerant Variety |
| **Pedigree:** | WB 9 / BPT 5204 |
| **Ecology:** | Low Phosphorus Tolerance |
| **Grain Type:** | Long Slender |
| **Duration:** | 125-130 days |
| **Yield:** | 5.0 t/ha |

**Low Phosphorus Adaptation**
Low Phosphorus Tolerance
DRR Dhan 98 is a **low soil phosphorous tolerant variety**

**Salient features:**
Moderate resistance to Leaf Blast, Brown Spot, Sheath Blight, Neck Blast and Moderate Tolerance to Leaf Folder and Plant Hoppers.

## GRAIN & COOKING QUALITY

| HRR: | L/B Ratio: | ASV: | AC: | GC: |
|---|---|---|---|---|
| 59.30% | 2.54 | 4.0 | 24.40% | 22 mm |

**Recommended States:**
Karnataka, Telangana and Andhra Pradesh.

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