

# Primefact

## Doongara growing guide

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Rice Research Agronomy Team\*, NSW DPIRD

Doongara is a semi-dwarf, long grain, hard cooking (high amylose) variety with a low glycaemic index (GI) and resistance to lodging.

### Yield potential

The yield potential of Doongara is 88% of Matilda<sup>Ⓢ</sup> (V071; Table 1), although it is highly susceptible to low temperatures during the reproductive period.

Table 1. Average grain yield of Doongara and Matilda<sup>Ⓢ</sup> from experiments and commercial fields over 5 seasons.

| 5 year average yield (t/ha) | Doongara | Matilda <sup>Ⓢ</sup> |
|-----------------------------|----------|----------------------|
| Experiment average          | 11.3     | 12.8                 |
| Grower average              | 10.8     | 12.3                 |

### Establishment vigour

Experiments show Doongara to have moderate establishment vigour.

### Sowing method and date

All sowing methods, i.e. aerial, dry broadcast (DB), drill and delayed permanent water (DPW), are suitable for growing Doongara and have the same grain yield potential when managed appropriately.

The recommended sowing and first flush windows for Doongara are shown in Table 2.

Table 2. Target sowing first flush dates for Doongara with different sowing methods in the Murrumbidgee Irrigation Area (MIA) and Coleambally Irrigation Area (CIA).

| Aerial/dry broadcast | Drill     | Delayed permanent water |
|----------------------|-----------|-------------------------|
| 20 Oct–5 Nov         | 15–31 Oct | 5–20 Oct                |

Sowing date recommendations for Doongara aim to ensure the critical microspore and flowering phases align with the period of least risk of low temperatures (Figure 1).

Sowing earlier or later than recommended increases the risk of exposure to low temperatures during microspore and flowering, which can reduce grain yield.

|           |        | October |             |    |             |        | November |   |    | December |  |  | January |   |   |    |    | February |    |    |    |        |   |   |   |    |    |    |
|-----------|--------|---------|-------------|----|-------------|--------|----------|---|----|----------|--|--|---------|---|---|----|----|----------|----|----|----|--------|---|---|---|----|----|----|
|           |        | 5       | 10          | 15 | 20          | 25     | 31       | 5 | 10 |          |  |  | 3       | 6 | 9 | 12 | 15 | 18       | 21 | 24 | 27 | 31     | 3 | 6 | 9 | 12 | 15 | 18 |
| MIA & CIA | Aerial |         |             |    |             | Sowing |          |   |    |          |  |  |         |   |   |    |    |          |    |    |    |        |   |   |   |    |    |    |
|           | Drill  |         |             |    | First flush |        |          |   |    |          |  |  | PI      |   |   |    |    |          |    |    | MS | Flower |   |   |   |    |    |    |
|           | DPW    |         | First flush |    |             |        |          |   |    |          |  |  |         |   |   |    |    |          |    |    |    |        |   |   |   |    |    |    |

MIA = Murrumbidgee Irrigation Area, CIA = Coleambally Irrigation Area, DPW = delayed permanent water, PI = panicle initiation, MS = microspore.

Figure 1. Recommended sowing and first flush dates for Doongara and the subsequent panicle initiation (PI), microspore (MS) and flowering timing when sown in the recommended period for each district and sowing method. The hatched area shows the time of least risk of low temperatures.

### Sowing rate

Doongara should be sown at 130 kg/ha for all sowing methods, aiming to establish between 100 and 200 plants/m<sup>2</sup>. Sowing rates can be reduced by 10–20% when drill sowing if the seed is placed at a consistent depth and in good establishment conditions. Sow a compound fertiliser containing phosphorus and zinc with the seed when drill sowing.

### Cold tolerance

Doongara has **low tolerance to cold stress** during the reproductive period and must be sown in the recommended window with particular attention paid to water management. Water levels should be kept low during tillering to encourage shorter plants, and then increased to at least 25 cm deep after panicle initiation until mid-flowering.

### Plant height

Doongara has an average height of 81 cm, 1 cm taller than Matilda<sup>Ⓢ</sup>.

### Lodging potential

Doongara is resistant to lodging due to its short height and strong stem.

### Grain shattering

Doongara has moderate susceptibility to shedding grain once the crop is mature.

### Straighthead susceptibility

Doongara is susceptible to straighthead, which reduces grain yield. Symptoms present as floret sterility, particularly in low nitrogen areas. Severe straighthead has the characteristic parrot-beaking symptoms and missing florets (refer to Primefact 1346, *Straighthead in Australian rice crops*).

### Nitrogen management

Doongara nitrogen applications should be **split 70:30 between pre-PW and PI** to reduce cold susceptibility risks.

It is recommended to apply between **180 and 260 kg/ha urea at pre-PW** to Doongara (Figure 2). Fields with a history of legumes might require less nitrogen pre-PW and some continuous-cropped fields with heavy clay soil might require more nitrogen. The yield of Doongara with a range of pre-PW urea rates compared to Matilda<sup>Ⓢ</sup> is shown in Figure 3.

Applying higher than required rates of nitrogen pre-permanent water (PW) increases a rice crop's susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

Any major field variability in nitrogen should be amended pre-PW. Nitrogen uptake maps of previous rice crops grown in the field are a good resource for identifying soil nitrogen variability.

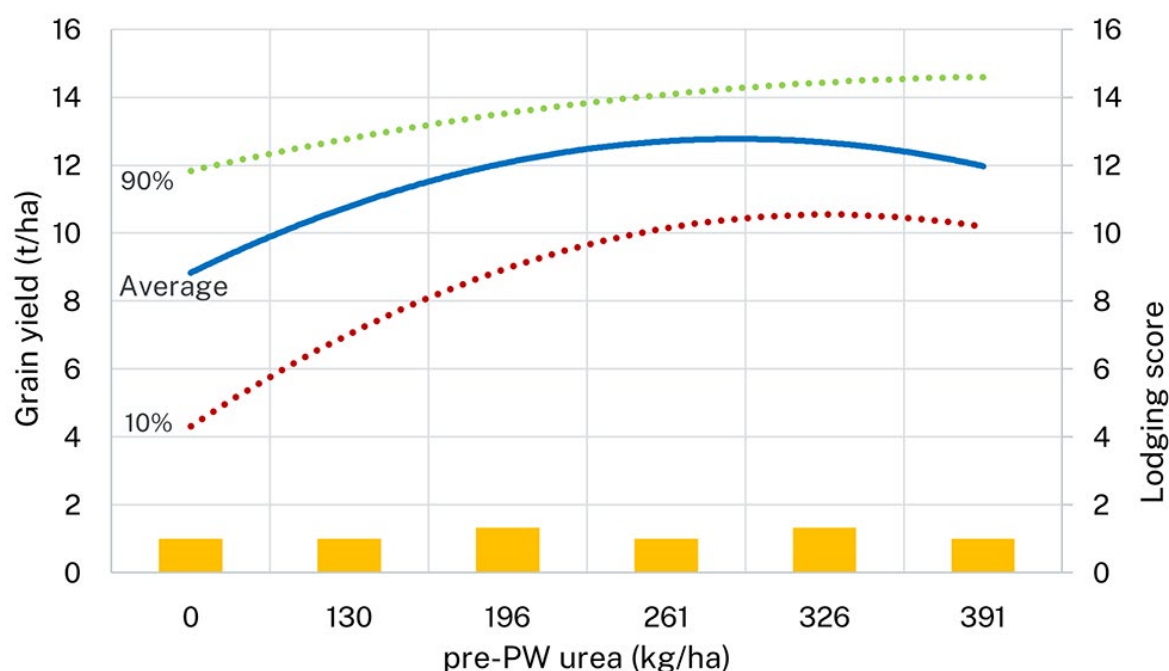


Figure 2. Doongara grain yield (average, 10 and 90 percentiles) and average lodging score (orange bars, 1 = standing, 10 = flat) results for pre-PW (permanent water) nitrogen application rates (no panicle initiation (PI) applied nitrogen). Results are from 114 plots in 17 experiments conducted over 9 seasons with a range of soil types, fertility levels and sowing methods.

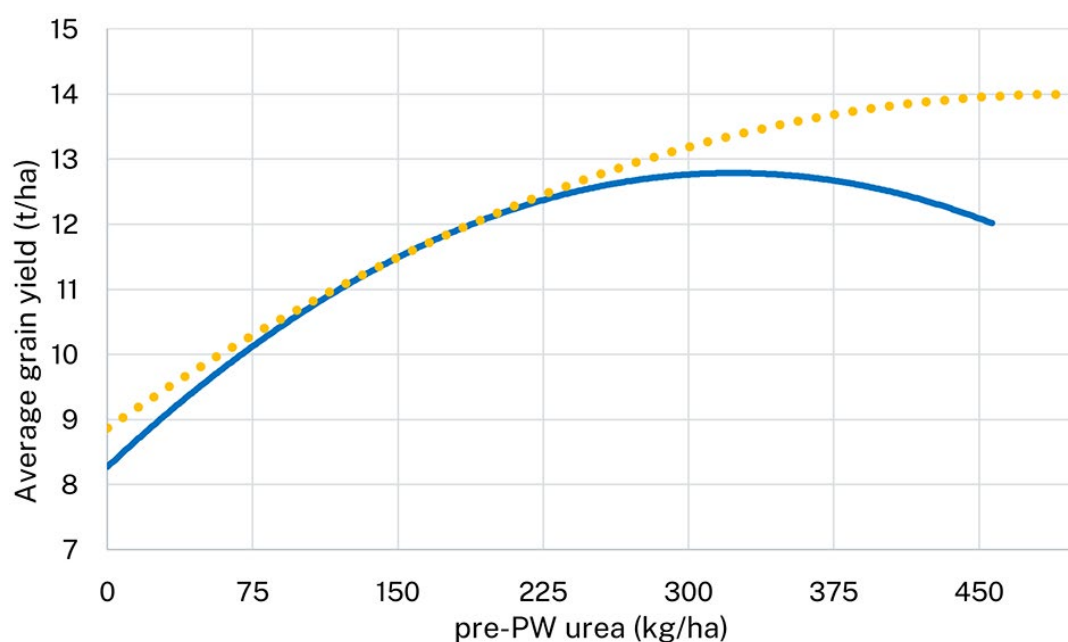


Figure 3. Average grain yields for Doongara (solid line) compared to Matilda<sup>®</sup> (dashed line) with a range of pre-permanent water nitrogen applications (no panicle initiation (PI) applied nitrogen).

### Panicle initiation nitrogen

Doongara produces a consistently high grain yield with lower susceptibility to cold when nitrogen is split between pre-PW and PI.

For maximum grain yield with reduced lodging, it is important to use nitrogen uptake maps and the NIR tissue test to determine PI nitrogen top-dressing rates. Higher than required nitrogen rates applied at PI can reduce profitability.

## Harvest

Be prepared to start harvesting Doongara as soon as the grain moisture drops to 22%. Delaying harvest after the crop is mature will increase the risk of grain shedding and lodging and reduce grain quality.

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\* Written in 2023 by Brian Dunn, Research Agronomist and Tina Dunn, Technical Officer (Yanco). Revised in 2025 by Josh Hart, Research Officer (Yanco); Jo Pianca, Technical Officer (Yanco); and Alexander Schultz, Research Development Officer (Deniliquin).

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