Department of Primary Industries
and Regional Department

Primefact

Matilda$^{\phi}$ (V071) growing guide

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Matilda$^{\phi}$ is a semi-dwarf, bold, medium grain rice variety with high grain yield potential and cold tolerance, and moderate shatter resistance.

Yield potential

Matilda$^{\phi}$ has a high grain yield potential (Table 1). Matilda$^{\phi}$ has replaced Reiziq$^{\phi}$ as the industry yield standard.

Table 1. Average grain yield of Matilda$^{\phi}$ from experiments and commercial fields over 5 seasons.

5 year average yield (t/ha)	MIA/CIA	Murray Valley
Experiment average	13.6	13.5
Grower average	12.3	11.1

MIA = Murrumbidgee Irrigation Area, CIA = Coleambally Irrigation Area.

Establishment vigour

Experiments have shown Matilda$^{\phi}$ to have strong emergence and establishment vigour. Matilda$^{\phi}$ development does not slow during low temperatures, which is beneficial in cool seasons.

Sowing method and date

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

The recommended sowing and first flush windows for Matilda$^{\phi}$ are shown in Table 2.

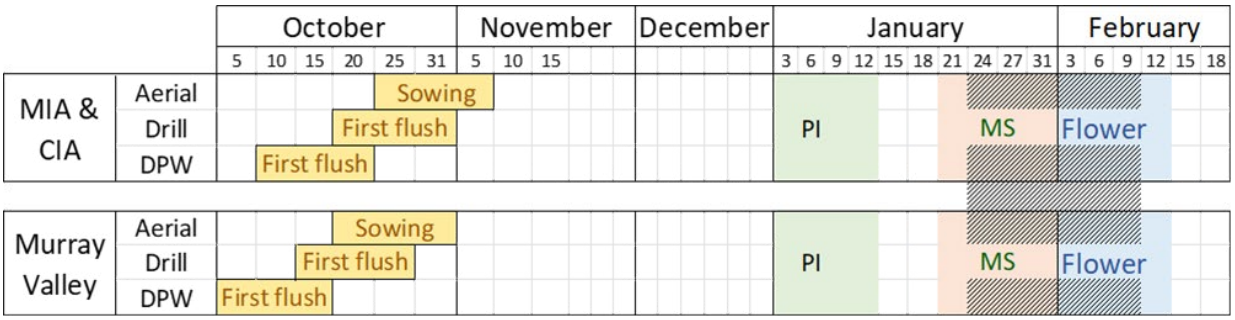
Table 2. Target sowing first flush dates for Matilda$^{\phi}$ for different methods in different regions.

MIA/CIA			Murray Valley		
Aerial/DB	Drill	DPW	Aerial/DB	Drill	DPW
20 Oct–5 Nov	15–31 Oct	5–20 Oct	15–31 Oct	10–25 Oct	1–15 Oct

MIA = Murrumbidgee Irrigation Area, CIA = Coleambally Irrigation Area, DB = dry broadcast, DPW = delayed permanent water.

Sowing date recommendations for Matilda$^{\Phi}$ 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.



PI = panicle initiation, MS = microspore.

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

Sowing rate

It is recommended that Matilda$^{\Phi}$ be sown at 130 kg/ha for all sowing methods, aiming to establish between 100 and 200 plants/m^2. 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

Matilda$^{\Phi}$ has a high level of tolerance to cold stress during the early pollen microspore and flowering reproductive periods, similar to Sherpa$^{\Phi}$.

Plant height

Matilda$^{\Phi}$ has an average height of 80 cm.

Lodging potential

Matilda$^{\Phi}$ has moderate resistance to lodging, but it can be induced by applying excessive nitrogen pre-permanent water (PW).

Grain shattering

Matilda$^{\Phi}$ is ranked as moderate for grain shattering, similar to Sherpa$^{\Phi}$ and Viand$^{\Phi}$.

Nitrogen management

It is recommended to apply between **220 and 380 kg/ha urea pre-PW** to Matilda$^{\Phi}$ (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 pre-PW nitrogen.

Matilda$^{\Phi}$ is a durable variety with a long yield plateau before grain yield declines due to sterility or lodging becomes a problem from excess nitrogen applications (Figure 2).

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.

Aim to apply 80–90% of the total required nitrogen before PW and then top up at PI if required.

Adequate nitrogen must be applied pre-PW to achieve maximum grain yield, as PI applied nitrogen is limited in how much it can increase yield (Figure 3).

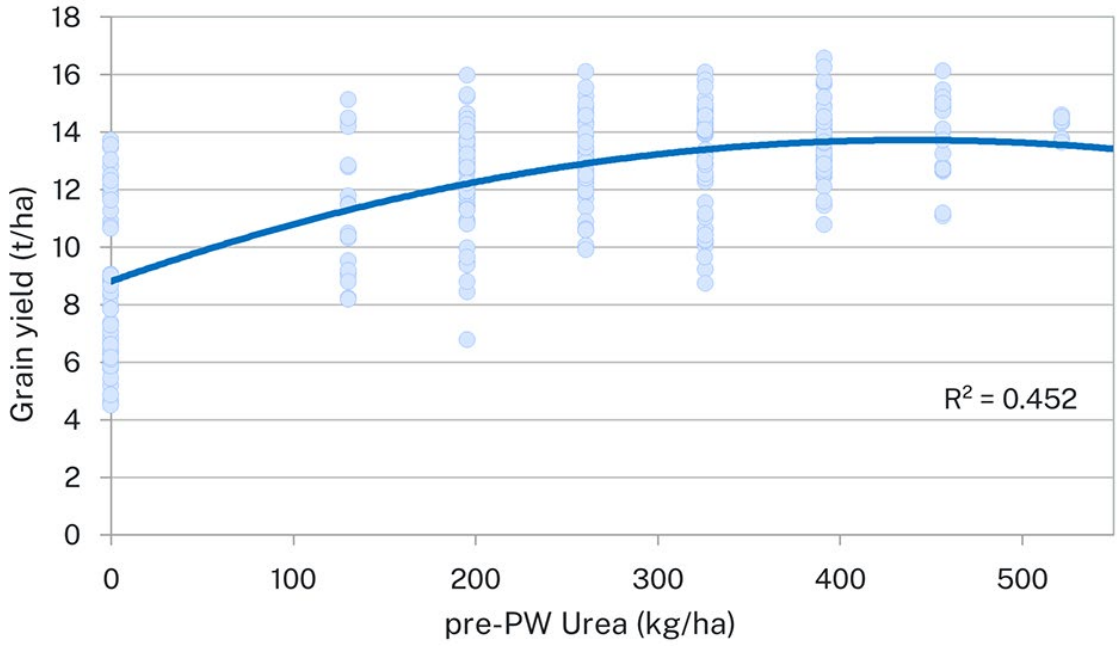


Figure 2. Matilda$^{\phi}$ grain yield results from pre-PW (permanent water) nitrogen application rates (no panicle initiation (PI) applied nitrogen). Results are from 288 plots in 34 experiments conducted over 6 seasons with a range of soil types, fertility levels and sowing methods.

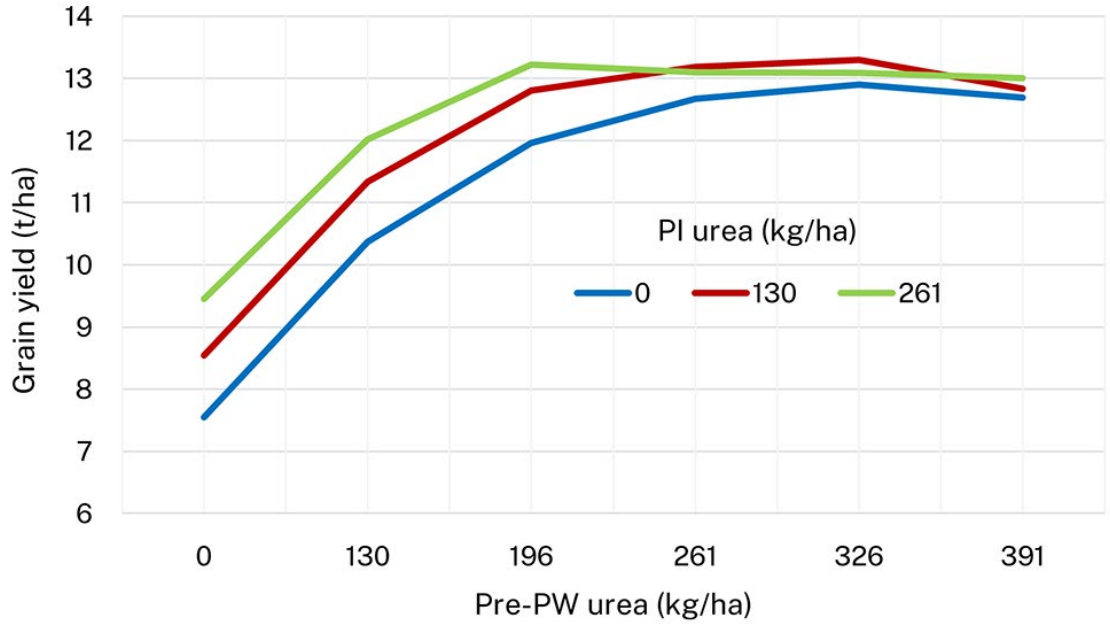


Figure 3. Grain yield of drill sown Matilda$^{\phi}$ from a range of pre-permanent water (PW) and panicle initiation (PI) urea rates in 2022–2023.

In warm seasons, maximum grain yield can be achieved by applying all the required nitrogen pre-PW. However, in seasons where low temperatures occur during microspore or flowering, excess pre-PW nitrogen can increase sterility and reduce grain yield.

Panicle initiation nitrogen

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

Extra nitrogen applied at panicle initiation does not increase a rice crop's susceptibility to cold stress as much as applying higher than required rates of nitrogen before permanent water.

Harvest

The leaves of Matilda(ф) remain greener as it matures, which can provide some visual confusion when determining drainage timing. It is important to use grain maturity (i.e. number of milky grains) and grain moisture when making the drainage decision.

Be prepared to start harvesting 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.

Acknowledgements

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