Department of Primary Industries
Department of Regional NSW

DPI Primefact

Topaz$^{\phi}$ growing guide

June 2023, Primefact 1483, fourth edition
Brian Dunn, Research Agronomist, NSW DPI, Yanco
Tina Dunn, Technical Officer, NSW DPI, Yanco

Topaz$^{\phi}$ is a semi-dwarf, fragrant, long grain variety only grown in the Murrumbidgee Irrigation Area (MIA) and the Coleambally Irrigation Area (CIA).

Yield potential: the yield potential of Topaz$^{\phi}$ is 88% of Reiziq$^{\phi}$ (Table 1), and it is highly susceptible to low temperatures during the reproductive period.

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

5 year average yield (t/ha)	Topaz$^{\phi}$	Reiziq$^{\phi}$
Experiment average	10.3	11.8
Grower average	8.9	10.6

Establishment vigour: experiments have shown Topaz$^{\phi}$ has the poorest establishment vigour of all commercial varieties. Care must be taken with seed depth to ensure adequate establishment.

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

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

Table 2. Target sowing and first flush dates for Topaz$^{\phi}$ using different sowing methods and regions.

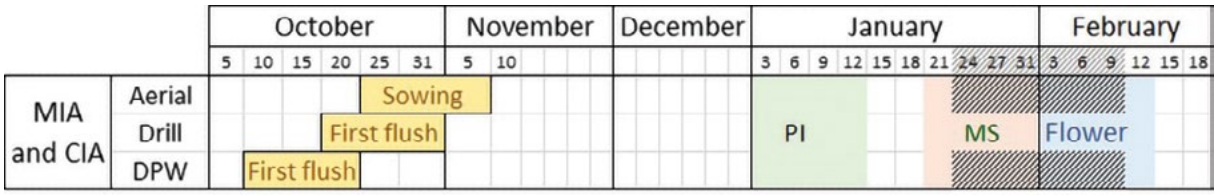
MIA/CIA		
Aerial/dry broadcast	Drill	Delayed permanent water
20 October–5 November	15–31 October	5–20 October

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

Sowing date recommendations for Topaz$^{\phi}$ aim to ensure the critical microspore (MS) and flowering periods align with the period of least risk of low temperatures (Table 3).

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

Table 3. Recommended sowing and first flush dates for Topaz$^{\Phi}$ 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.



MIA – Murrumbidgee Irrigation Area, CIA – Coleambally Irrigation Area, DPW – delayed permanent water.

Sowing rate: Topaz$^{\Phi}$ should be sown at 140 kg/ha for all sowing methods, aiming to establish between 100 plants/m² and 200 plants/m².

Although Topaz$^{\Phi}$ has a small grain size and more seeds per kilogram than Reiziq$^{\Phi}$, the same sowing rate is required to account for the variety's poor establishment vigour.

Sow a compound fertiliser containing phosphorus and zinc with the seed when drill sowing.

Cold tolerance: Topaz$^{\Phi}$ has a low tolerance to cold stress during the early pollen MS and flowering periods. It 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 a depth of at least 250 mm after PI through until mid-flowering.

Plant height: Topaz$^{\Phi}$ has a similar height to Reiziq$^{\Phi}$, which is, on average, 810 mm.

Lodging potential: Topaz$^{\Phi}$ is resistant to lodging, which can be induced by applying excessive nitrogen (N) pre-permanent water (PW) and delaying harvest until well past maturity.

Grain shattering: Topaz$^{\Phi}$ is moderately resistant to shedding grain once the crop is mature.

Nitrogen management: Topaz$^{\Phi}$ N applications should be **split 70:30 between pre-PW and PI** to reduce cold susceptibility risks.

It is recommended to apply between **180 kg/ha and 260 kg/ha urea** at pre-PW to Topaz$^{\Phi}$ (Figure 1). Fields with a history of legumes might need less N pre-PW, and some continuously cropped fields with heavy clay soils could need more N.

Applying higher than required rates of N pre-PW increases a rice crop's susceptibility to cold stress more than extra N applied at PI.

Any major field variability in N should be amended pre-PW. Red edge imagery of previous rice crops grown in the field is a good resource for identifying soil N variability.

Topaz$^{\Phi}$ has similar N requirements to Reiziq$^{\Phi}$ to reach its maximum yield potential (Figure 2), however, it requires different N input timing due to its high susceptibility to low-temperature-induced sterility.

Panicle initiation nitrogen (PI N): Topaz$^{\Phi}$ produces a high grain yield with lower susceptibility to cold when N is split between pre-PW and PI.

For maximum grain yield with reduced lodging, use red edge imagery and the PI tissue test to determine PI N top-dressing rates. Higher than required N rates applied at PI can increase lodging and reduce profitability.

Harvest: be prepared to start harvesting Topaz$^{\Phi}$ as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging, which can cause difficult harvesting conditions and reduce grain quality.

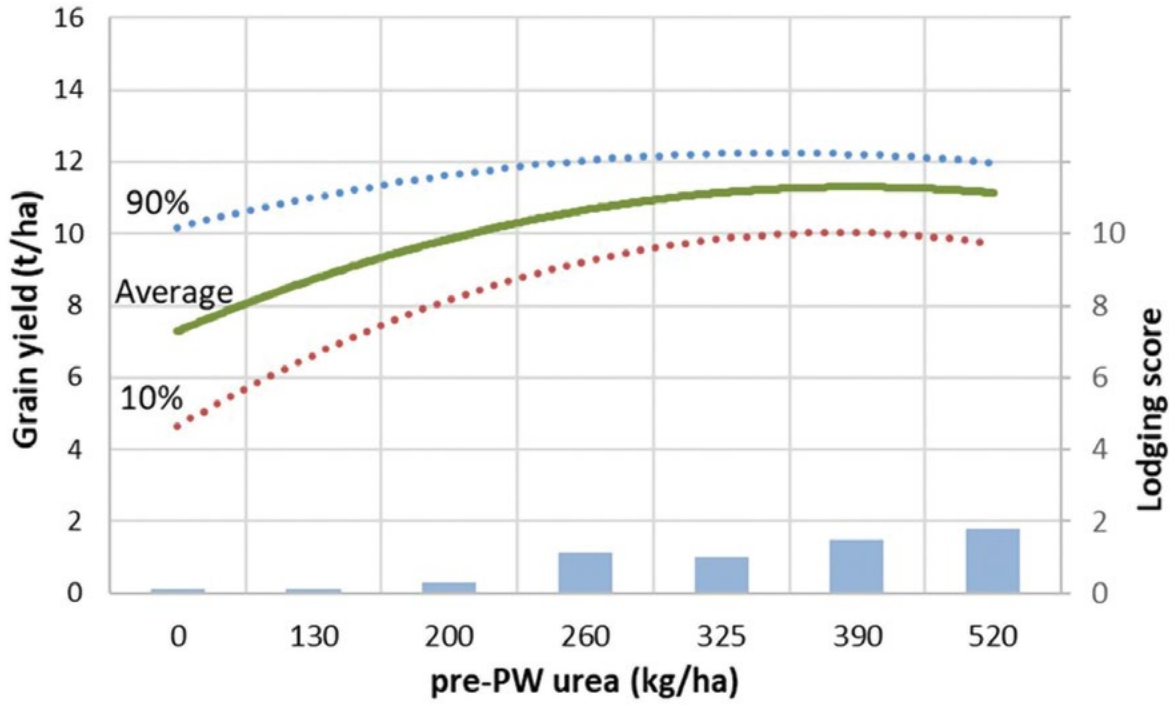


Figure 1. Topaz(ф) grain yield (average, 10 and 90 percentile) and average lodging score (0=standing, 10=flat) results for pre-permanent water (PW) nitrogen (N) rates (no panicle initiation (PI) applied nitrogen). Results are from 115 plots in 12 experiments conducted over 5 seasons with a range of soil types, fertility levels and sowing methods.

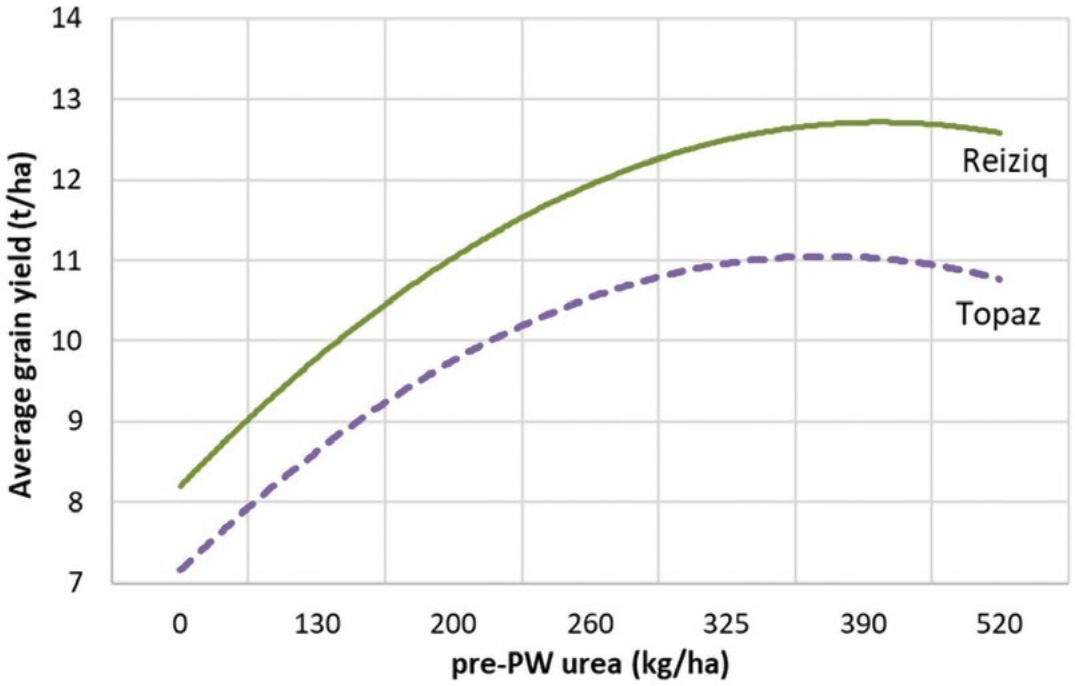


Figure 2. Average grain yields for Topaz(ф) compared with Reiziq(ф) for a range of pre-permanent water (PW) nitrogen (N) application rates.

Acknowledgements

The research used in this publication is a collaboration between NSW Department of Primary Industries and AgriFutures.