Department of Primary Industries
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NSW GOVERNMENT

DPI Primefact

Koshihikari growing guide

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Koshihikari is a short grain Japanese variety that demands a high premium. It is a tall variety that is susceptible to lodging and should not be aerial sown.

Yield potential: the yield potential of Koshihikari is 90% of Reiziq$^{\Phi}$ (Table 1), but it is extremely susceptible to lodging at high yields.

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

5 year average yield (t/ha)	Koshihikari	Reiziq$^{\Phi}$
Experiment average	9.9	11.5
Grower average	7.8	10.6

Establishment vigour: experiments have shown Koshihikari to have moderate establishment vigour.

Sowing method and date: Koshihikari should only be drill sown as it is prone to lodging when aerial sown. Drill-sown crops have better root anchorage and resistance to stem bending, which reduces their lodging susceptibility.

The recommended sowing and first flush windows for Koshihikari are listed in Table 2.

Table 2. Target sowing and first flush dates for Koshihikari using different sowing methods.

Murray Valley		
Aerial/dry broadcast	Drill	Delayed permanent water
Do not aerial sow	10–25 October	1–15 October

Sowing date recommendations 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.

Sowing rate: Koshihikari should be sown at 100 kg/ha for all sowing methods, aiming to establish between 100 plants/m² and 150 plants/m². Sowing rates can be reduced by 10–20% when the seed is placed at a consistent depth and in good establishment conditions. Lower plant densities reduce lodging potential.

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

Table 3. Recommended sowing and first flush dates for Koshihikari 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.

		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
Murray Valley	Aerial	Do not aerial sow																								
	Drill			first flush							PI							MS			Flower					
	DPW	first flush																								

DPW – delayed permanent water.

Cold tolerance: Koshihikari has a moderately high tolerance to cold stress during the early pollen MS and flowering periods.

Plant height: Koshihikari is, on average, 940 mm tall, 130 mm taller than Reiziq[Φ].

Lodging potential: Koshihikari is highly susceptible to lodging, which is made worse by applying excessive nitrogen (N) pre-permanent water (PW), aerial sowing or sowing in high plant densities.

Grain shattering: Koshihikari is resistant to shedding grain after maturity.

Straighthead susceptibility: Koshihikari is susceptible to straighthead, which reduces grain yield. Symptoms present as floret sterility, particularly in low N areas. Severe straighthead shows the characteristic parrot-beaking symptoms and missing florets. See Primefact 1346: Straighthead in Australian rice crops.

Nitrogen management: Koshihikari N management presents a trade-off between grain yield and lodging. To maximise grain yield, reduce lodging and ensure grain protein is within required levels, plan for a **50:50 split between pre-PW and PI-applied N**. As Koshihikari is a variety used for making sushi, lower grain protein levels are required to access high value markets.

It is recommended to only apply between **100 kg/ha and 150 kg/ha urea** to Koshihikari pre-PW and top-dress at PI (Figure 1). Fields with a history of legumes might require less N pre-PW, and some continuously cropped fields with heavy clay soils could require more pre-PW N.

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

Koshihikari produces a high grain yield with reduced susceptibility to lodging and lower grain protein levels when N is split between pre-PW and PI. Results from a N rate × timing experiment conducted at Jerilderie show that high grain yields with reduced lodging and lower grain protein levels can be achieved for Koshihikari by using split N applications (Figure 2).

Panicle initiation nitrogen (PI N): for maximum grain yield with reduced lodging and lower grain protein, 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 significantly increase lodging and grain protein levels and reduce profitability.

Grain protein: Koshihikari is used to make sushi, which requires specific grain quality attributes. Grain protein levels of paddy grain below 6.9% are preferred, but high value markets require paddy protein levels below 6.4%.

Nitrogen management is vital for achieving maximum grain yield without unnecessarily increasing grain protein levels to access high value markets.

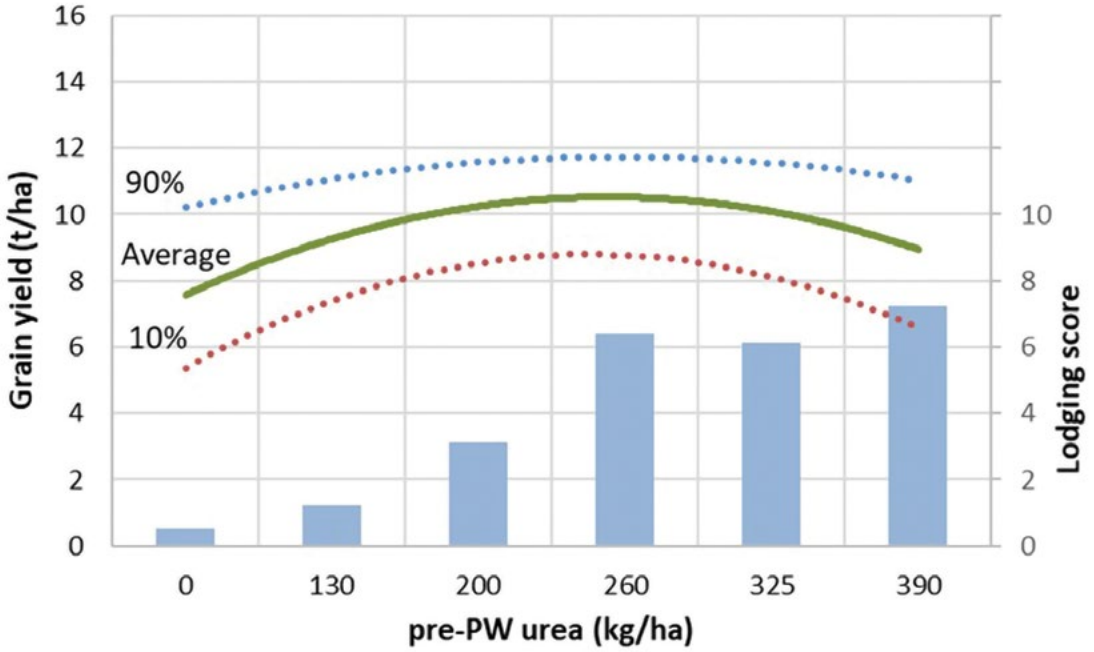

Figure 1. Koshihikari grain yield (average, 10 and 90 percentile) and average lodging score (0=standing, 10=flat) results for pre-permanent water (PW) nitrogen (N) rates (no panicle initiation (PI) applied nitrogen). Results are from 84 plots in 9 experiments conducted over 5 seasons with a range of soil types, fertility levels and sowing methods.

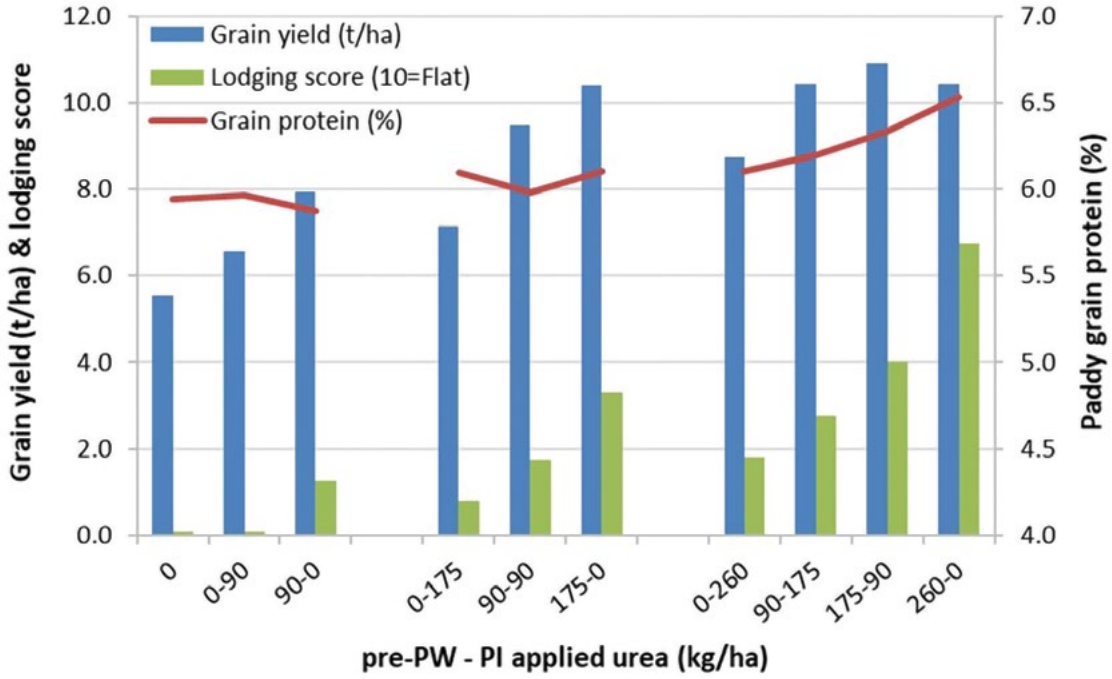

Figure 2. Grain yield results (blue bars), lodging scores (green bars, 10=flat) and grain protein levels (red lines) for Koshihikari from a nitrogen rate × timing experiment conducted at Jerilderie.

Harvest: be prepared to start harvesting Koshihikari 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.

Acknowledgements

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