

# Rice variety guide 2021-22

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## Choosing a rice variety

- This rice variety guide provides information to help growers and agronomists decide which variety to grow. Each field and growing situation has specific characteristics, making some varieties more suitable than others.
- It is important to consider all the agronomic characteristics of each variety when selecting those best suited to your field and situation.
- To minimise the risk of cold reducing grain yield across all crops, grow a mix of varieties over a range of sowing dates and using different methods.

Table 1. Summary of rice yields (t/ha) in the 2020–21 season compared with 5-year averages by region.

VARIETY	REGION									
	MIA		CIA		EMV		WMV		All Regions**	
	2017–21 avg	2021	2017–21 avg	2021	2017–21 avg	2021	2017–21 avg	2021	2017–21 avg	2021
Reiziq <sup>(b)</sup>	11.4	11.4	9.1	8.0	9.2	8.4	9.6	8.8	10.4	9.9
Sherpa <sup>(b)</sup>	-	-	-	-	10.4	10.3	10.1	10.8	10.2	10.5
V071 <sup>(b)</sup>	13.9*	13.9	-	-	11.1*	11.1	13.0*	13.0	12.6*	12.6
Viand <sup>(b)</sup>	9.5	9.1	8.8	7.7	7.4	5.4	5.8	7.9	8.6	7.6
Opus <sup>(b)</sup>	-	-	-	-	10.1	9.8	10.1	-	10.1	9.8
Langi	9.1	9.2	8.8	10.0	-	-	-	-	9.0	9.2
Topaz <sup>(b)</sup>	9.1	8.3	7.9	6.9	-	-	-	-	8.8	8.2
Doongara	11.5	11.0	9.1	6.6	-	-	-	-	11.1	10.3
Koshihikari	-	-	-	-	7.5	7.8	7.1	8.8	7.4	8.1
All Varieties	10.8	10.9	9.0	7.9	9.5	8.3	9.6	8.9	10.0	9.7

\*Less than 5 years of commercial data. <sup>(b)</sup> Plant Breeder's Right granted by IP Australia. Yield data provided by SunRice® Grower Services.

\*\* Whole industry average.

Tables 2a and 2b. Variety grain yields relative to Reiziq<sup>(b)</sup> (%) from agronomy experiments conducted in commercial rice fields in the Murrumbidgee (a) and Murray (b) Valleys. Average of aerial, dry broadcast, conventional drill and delayed permanent water (DPW) growing methods.

### a. Murrumbidgee Valley

Grain yield relative to Reiziq<sup>(b)</sup> (%)

Harvest year	2015	2016	2017	2018	2019	2020	2021	Average
Avg Reiziq <sup>(b)</sup> yield (t/ha)	12.60	13.34	12.58	12.02	11.09	13.23	12.64	12.50
Reiziq <sup>(b)</sup>	100	100	100	100	100	100	100	100
Sherpa <sup>(b)</sup>	105	96	104	110	110	105	108	105
V071 <sup>(b)</sup>						114	104	109
Viand <sup>(b)</sup>		104	98	95	95	98	111	100
Langi	95	91	92	95	98	89	90	93
Topaz <sup>(b)</sup>	91	82	86	88	84	87		86
Doongara		90	93	102	109	100		99
Number of experiments	6	6	5	4	5	6	5	
Colours represent yield ranges:		<89	90-96	97-104	>105			

### b. Murray Valley

Grain yield relative to Reiziq<sup>(b)</sup> (%)

Harvest Year	2015	2016	2017	2018	2019	2020	2021	Average
Avg Reiziq <sup>(b)</sup> yield (t/ha)	11.82	11.43	11.66	11.66	11.75	11.13	11.00	11.49
Reiziq <sup>(b)</sup>	100	100	100	100	100	100	100	100
Sherpa <sup>(b)</sup>		114	113	108	107	122	116	113
V071 <sup>(b)</sup>						121	117	119
Viand <sup>(b)</sup>			89	94	106		93	96
Opus <sup>(b)</sup>	104	100	106	102	91	111	96	102
Koshi	85	90	91	86	88	92	94	89
Illabong			114	102		109	85	102
Number of experiments	3	5	3	3	2	3	3	
Colours represent yield ranges:		<89	90-96	97-104	>105			

Table 3. Rice variety agronomic characteristics.

Variety	Maturity (days different to flower than Reiziq <sup>(A)</sup> )	Establishment vigour 1 = weak 5 = strong	Cold stress tolerance 1 = weak 5 = strong	Shattering tolerance 1 = prone 5 = resistant	Lodging tolerance 1 = prone 5 = resistant
Reiziq <sup>(b)</sup>	Standard	5	3	1	5
Sherpa <sup>(b)</sup>	-3	4	5	3	4
V071 <sup>(b)</sup>	0	5	4	3	5
Viand <sup>(b)</sup>	-12	4	3	3	2
Opus <sup>(b)</sup>	0	3	4	4	3
Langi	-2	2	3	2	2
Topaz <sup>(b)</sup>	2	1	1	4	5
Doongara	3	3	1	3	5
Koshihikari	3	3	4	5	1

**Yield potential:** the grain yield of each variety is compared with the standard variety Reiziq<sup>Ⓛ</sup> (Tables 2a and b). The data are derived from experiments conducted in commercial fields at recommended sowing times using different sowing methods and different nitrogen rates.

**Maturity:** days to flowering data are collected from experiments in commercial fields in different regions and seasons, using different sowing methods at commercial nitrogen rates.

**Establishment vigour:** all varieties are compared for establishment vigour in field and laboratory experiments. Topaz<sup>Ⓛ</sup> has the weakest establishment vigour and requires extra care to ensure good establishment.

**Tolerance to cold stress:** each variety is ranked for tolerance to cold temperatures at microspore and flowering. Susceptibility to cold-induced sterility is increased with excess pre-PW nitrogen but is less affected by nitrogen applied at PI in each variety.

**Shattering tolerance:** tolerance to shattering is a vital trait when harvest is delayed. It is important to give the highest harvest priority to varieties prone to shattering.

**Lodging:** lodging varies between seasons. In some seasons most varieties will lodge to some extent. Aerial sowing increases lodging potential compared to drill sowing, therefore Koshihikari should only be drill sown. Lodging due to haying off is a result of draining rice too early before harvest; this will reduce yield and wholegrain millout.

## Ideal sowing time

Sowing in the recommended window provides the highest probability of warm temperatures during microspore and flowering (Table 3).

Sowing before or after the recommended sowing window increases the risk of cold-induced sterility, which can reduce grain yield.

Sowing method and water management influence crop development; the longer a crop grows before permanent water is applied, the slower it develops. Therefore, crops planned for delayed permanent water should be sown earlier than conventional drill sown crops, and aerial sown crops should be sown last as they develop faster (Table 3).

**Table 3. Recommended sowing/first flush dates for rice varieties, regions and sowing methods.**

Variety	MIA/CIA – Ideal sow/first flush time			Murray Valley – Ideal sow/first flush time		
	Aerial/dry broadcast	Drill	Delayed permanent water	Aerial/dry broadcast	Drill	Delayed permanent water
Reiziq <sup>Ⓛ</sup> V071 <sup>Ⓛ</sup> Opus <sup>Ⓛ</sup> Topaz <sup>Ⓛ</sup>	25 Oct–5 Nov	15–31 Oct	5–25 Oct	15–31 Oct	10–25 Oct	1–15 Oct
Sherpa <sup>Ⓛ</sup> Langi	25 Oct–10 Nov	20 Oct–5 Nov	10–30 Oct	20 Oct–5 Nov	15–30 Oct	5–20 Oct
Koshihikari* Doongara	20 Oct–5 Nov	10–25 Oct	1–15 Oct	15–31 Oct <sup>#</sup>	5–25 Oct	1–15 Oct
Vian <sup>Ⓛ</sup>	10–25 Nov	5–20 Nov	25 Oct–10 Nov	5–20 Nov	1–15 Nov	20 Oct–5 Nov

\*Do not aerial sow or dry broadcast Koshihikari as this will increase lodging potential.

## Recommended sowing rates

Aim to achieve plant populations between 100 to 200 plants/m<sup>2</sup>. Research shows that plant populations between 40 to 400 plants/m<sup>2</sup> achieve similar yields. The rice plants increase tillering and the number of grains per panicle to compensate for low plant density.

To establish 200 plants/m<sup>2</sup> requires a maximum sowing rate of 140 kg/ha at a seed establishment percentage of 40 to 50%. As little as 25% establishment will result in 100 plants/m<sup>2</sup>, which is enough to achieve maximum grain yield.

Recommended sowing rates are based on seed size and varietal establishment percentages (Table 4). Varieties with smaller seed size, such as Opus<sup>ϕ</sup>, have more seeds per kilogram, so require a lower sowing rate to achieve the same plant population.

**Table 4. Sowing rates (kg/ha) required to meet plant population recommendations based on seed size and establishment vigour.**

Variety	Sowing rate (kg/ha)
Reiziq <sup>ϕ</sup> , V071 <sup>ϕ</sup> and Topaz <sup>ϕ</sup>	140
Sherpa <sup>ϕ</sup> , Langi and Viand <sup>ϕ</sup>	125
Opus <sup>ϕ</sup> , Koshihikari and Doongara	110

Research has shown that lodging is increased by high plant populations in varieties with a high lodging potential. Sowing rates can be reduced by 10 to 20% in reliable establishment conditions without compromising yield.

## Variety characteristics

**Reiziq<sup>ϕ</sup>**: a semi-dwarf bold medium grain variety with high yield potential. It has strong establishment vigour and is resistant to lodging but is moderately susceptible to cold during the reproductive period. In cool seasons its development is delayed. Reiziq<sup>ϕ</sup> is a loose threshing variety with the potential for shattering if harvest is delayed after the crop is mature.

**V071<sup>ϕ</sup>**: a semi-dwarf bold medium grain variety with high yield potential. V071<sup>ϕ</sup> has outperformed Reiziq<sup>ϕ</sup> in grain yield in our district experiments. A potential Reiziq<sup>ϕ</sup> replacement, V071<sup>ϕ</sup> has superior cold tolerance and reduced shattering compared to Reiziq<sup>ϕ</sup>, it also has strong establishment vigour and is resistant to lodging. V071<sup>ϕ</sup> has a similar growth duration to Reiziq<sup>ϕ</sup>, but development is not delayed in cool temperatures like Reiziq<sup>ϕ</sup>.

**Sherpa<sup>ϕ</sup>**: a semi-dwarf medium grain variety that has high cold stress tolerance and moderate establishment vigour. It has high yield potential and maintains grain yield levels in cooler seasons, particularly in the Murray Valley. Sherpa<sup>ϕ</sup> is a hard threshing variety.

**Viand<sup>®</sup>**: a short-season semi-dwarf medium grain variety that has a similar yield potential to Reiziq<sup>®</sup>. It provides a rice option for double cropping or when late water allocations are announced. It has strong establishment vigour, is moderately resistant to cold during the reproductive period but is moderately susceptible to lodging. To reduce lodging, Viand<sup>®</sup> should only be drill-sown and nitrogen applications split between pre-PW and PI.

**Opus<sup>®</sup>**: a semi-dwarf short grain sushi variety that is only grown in the Murray Valley. It has moderate establishment vigour, is resistant to lodging and moderately resistant to cold temperatures during the reproductive period. It is a pubescent variety and is susceptible to straighthead with symptoms present as floret sterility.

**Langi**: a semi-dwarf long grain soft cooking (low amylose) variety that is only grown in the MIA and CIA. It has moderate establishment vigour and cold stress tolerance and is moderately resistant to lodging. Early harvest is recommended as it is a loose threshing variety with potential for shattering if left to stand in the field.

**Topaz<sup>®</sup>**: a semi-dwarf fragrant long grain variety only grown in the MIA and CIA. Topaz<sup>®</sup> has poor establishment vigour and care should be taken to ensure good establishment. Topaz<sup>®</sup> is highly susceptible to cold temperatures during the reproductive period, which can significantly reduce grain yield. It is susceptible to straighthead but resistant to lodging.

**Doongara**: a semi-dwarf long grain hard cooking (high amylose) variety that has a low glycaemic index (GI) and is resistant to lodging. It is susceptible to cold temperatures during the reproductive period, which can significantly reduce yield. It is also susceptible to straighthead.

**Koshihikari**: a premium short grain tall Japanese variety. It is lower yielding, but a premium is paid to compensate. It is very susceptible to lodging and should not be aerial-sown. Reduce total applied nitrogen by 50% compared to Reiziq<sup>®</sup> to minimise lodging. It is a pubescent variety and is susceptible to straighthead.

## Individual variety growing guides

Comprehensive rice growing guides are available for each variety on the NSW DPI website, <https://www.dpi.nsw.gov.au/agriculture/broadacre-crops/summer-crops>

## District variety experiments

All new varieties are tested over several years and locations before release. How new varieties perform is compared with standard commercial varieties and each variety's response to different agronomic and commercial growing conditions is measured.

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