Rice variety guide 2019–20
a compilation of Primefacts from the DPI website

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Research & Development Agronomist, NSW DPI, Yanco
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Introduction

NSW DPI rice variety Primefacts
David Troldahl,
Research & Development Agronomist, Yanco
NSW Department of Primary Industries (NSW DPI) has, for many years, played a major role in independent agricultural research in NSW including all aspects of rice growing. For the past few years the rice partnership between NSW DPI, Sunrice and Agrifutures Australia has funded the rice breeding and rice quality side of research, but NSW DPI also researches the agronomy, water, nutritional and pest and disease management aspects of the rice crop through separately funded projects. The department has identified these projects as needing research and have been supported by Agrifutures Australia and other funding bodies.
NSW DPI research and development teams conduct applied, scientifically sound, independent research to advance the profitability and sustainability of our farming systems.

This publication is a collection of Primefacts that the department has published as outputs from the agronomy, crop nutrition and water use research projects. They cover variety selection for their agronomic and quality attributes as well as crop nutrition. Each variety has an individual Primefact and they are all collated in this book to allow growers to make an informed choice of what to grow.
NSW DPI also has two flagship publications for Australian rice growers: The Rice crop protection guide and the Rice growing guide, which are published each year along with the NSW DPI’s Rice field guide to pests, diseases and weeds in southern New South Wales. These are all part of the ongoing support to the local rice industry from NSW DPI.
All these publications can be found on the NSW DPI website (http://www.dpi.nsw.gov.au).
Important management practices

- Plant a mix of varieties over a range of sowing dates and sowing methods to minimise the risk of a cold event reducing grain yield across all your crops.

- Sowing on time provides the best chance of avoiding sterility from cold at microspore and helps maximise whole grain yields with maturity occurring during mild temperatures.

- Use the NIR Tissue Test Service at panicle initiation (PI) to determine nitrogen topdressing requirements.

- Use red edge imagery, yield maps or cut/fill maps to target sampling in different zones. NDVI (normalised difference vegetation index) can only detect differences where PI nitrogen levels are below 80 kg N/ha.

- Start increasing water depth after PI so that 25–30 cm is achieved on the high side of the bays at microspore. Microspore occurs approximately 14–18 days after PI.

- For maximum whole grain millout consider grain development stage, field layouts and forecast weather conditions to determine the appropriate time for draining.

Table 1. Summary of rice yields (t/ha) 2018–19 season compared with five-year weighted averages by region.

<table>
<thead>
<tr>
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<td>11.5</td>
<td>9.9</td>
<td>9.9</td>
<td>9.6</td>
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<td>—</td>
<td>—</td>
<td>10.6</td>
<td>9.8</td>
<td>10.1</td>
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<tr>
<td>Opus</td>
<td>—</td>
<td>—</td>
<td>9.8</td>
<td>10.0</td>
<td>9.6</td>
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<tr>
<td>Langi</td>
<td>9.4</td>
<td>7.9</td>
<td>9.0</td>
<td>9.8</td>
<td>8.9</td>
</tr>
<tr>
<td>Topaz</td>
<td>9.1</td>
<td>9.2</td>
<td>8.1</td>
<td>8.5</td>
<td>8.7</td>
</tr>
<tr>
<td>Doongara</td>
<td>11.4</td>
<td>12.2</td>
<td>9.7</td>
<td>10.9</td>
<td>10.0</td>
</tr>
<tr>
<td>Koshihikari</td>
<td>—</td>
<td>—</td>
<td>7.8</td>
<td>8.2</td>
<td>7.0</td>
</tr>
<tr>
<td>Illabong</td>
<td>—</td>
<td>—</td>
<td>7.1</td>
<td>9.1</td>
<td>7.0</td>
</tr>
<tr>
<td>Viand</td>
<td>9.8*</td>
<td>11.8</td>
<td>9.2*</td>
<td>9.5</td>
<td>9.1</td>
</tr>
<tr>
<td>YRKS</td>
<td>—</td>
<td>—</td>
<td>7.1*</td>
<td>9.1</td>
<td>6.7</td>
</tr>
<tr>
<td>All varieties</td>
<td>11.0</td>
<td>11.4</td>
<td>9.6</td>
<td>9.9</td>
<td>9.9</td>
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</table>

*Less than five years of commercial data. © Plant Breeder’s Right granted by IP Australia. Yield data provided by SunRice Grower Services.
Table 2. Rice variety agronomic characteristics 2019–20

<table>
<thead>
<tr>
<th>Variety</th>
<th>Yield potential %</th>
<th>Maturity (days different to Reiziq(^a))</th>
<th>Seedling vigour 1 = weak 5 = strong</th>
<th>Tolerance to cold stress 1 = weak 5 = strong</th>
<th>Lodging susceptibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reiziq(^a)</td>
<td>100</td>
<td>Standard</td>
<td>4</td>
<td>3</td>
<td>Resistant</td>
</tr>
<tr>
<td>Sherpa(^a)</td>
<td>105</td>
<td>−3</td>
<td>3</td>
<td>5</td>
<td>Resistant</td>
</tr>
<tr>
<td>Langi(^a)</td>
<td>95</td>
<td>−2</td>
<td>3</td>
<td>3</td>
<td>Moderately resistant</td>
</tr>
<tr>
<td>Topaz(^a)</td>
<td>85</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Resistant</td>
</tr>
<tr>
<td>Doongara</td>
<td>95</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>Resistant</td>
</tr>
<tr>
<td>Koshihikari</td>
<td>80</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>Susceptible</td>
</tr>
<tr>
<td>Illabong</td>
<td>105</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>Moderately resistant</td>
</tr>
<tr>
<td>Viand(^a)</td>
<td>95</td>
<td>−10</td>
<td>4</td>
<td>4</td>
<td>Moderately susceptible</td>
</tr>
<tr>
<td>YRK5</td>
<td>85</td>
<td>−10</td>
<td>4</td>
<td>3</td>
<td>Susceptible</td>
</tr>
</tbody>
</table>

**Yield potential** – is based on results from experiments conducted in commercial fields. Yield as compared with Reiziq\(^a\) at recommended sowing time and average growing conditions.

**Maturity** – days to flowering data is from experiment measurements located in commercial fields across sowing methods, regions and at commercial nitrogen rates.

**Seedling vigour** – Topaz\(^a\) and Illabong have weak seedling vigour, so extra care is required at sowing to ensure good establishment.

**Tolerance to cold stress** – variety tolerance to cold at the reproductive stage. Rating is based on a variety’s inherent cold tolerance and plant height. Tall varieties gain less protection from deep water (25–30 cm) at microspore. Excess nitrogen increases susceptibility to cold-induced sterility.

**Lodging** – lodging varies between seasons. In some seasons most varieties will lodge to some extent. Semi-dwarf varieties are most resistant to lodging, whilst tall-strawed varieties such as Koshihikari and YRK5 are susceptible and should only be drill sown.

Aerial sowing increases lodging potential in all varieties compared with drill-sowing.

Lodging due to ‘haying-off’ is a result of draining rice too early before harvest and reduces yield and wholegrain millout.

**Ideal sowing time** – planting within the recommended sowing window (Table 3) allows fast, uniform crop establishment, highest probability of limited cold stress at microspore, and high grain quality at harvest.

The sowing windows are based on the performance of each variety in previous seasons and long-term average temperatures. Sowing before the recommended window can increase cold risk even more than sowing later.

The longer a crop grows before permanent water is applied, the slower the crop develops. It is important that crops planned for delayed permanent water are sown earlier than conventional drill crops to account for the delay. Aerial sown and dry broadcast crops should be sown later as they develop the fastest (Table 3).
Table 3. Recommended sowing/first flush dates for rice varieties, regions and sowing methods.

<table>
<thead>
<tr>
<th>Variety</th>
<th>MIA/CIA – Ideal sow/first flush time</th>
<th>Murray Valley – Ideal sow/first flush time</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / dry broadcast</td>
<td>Drill</td>
</tr>
<tr>
<td>Koshihikari Illabong</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>YRK5</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

# Do not aerial sow or dry broadcast Koshihikari or YRK5 as this will increase lodging potential

**Recommended sowing rates**

Rice growers should aim to achieve plant populations between 100 to 200 plants/m². Research shows that plant populations between 40 and 400 plants/m² achieve similar grain yields. Rice plants increase tillering and the number of grains per panicle to compensate for low plant density.

**Rice should not be sown at rates higher than 150 kg/ha for any variety or sowing method.**

To establish 200 plants/m² requires a maximum sowing rate of 150 kg/ha at a seed establishment percentage of 40–60%.

As little as 20% establishment will result in 100 plants/m², which is sufficient to achieve maximum grain yield.

Recommended sowing rates are based on seed size and varietal establishment percentages (Table 4). Smaller seeded varieties, such as Opus<sup>ª</sup>, have more seeds per kilogram, so using a lower sowing rate will achieve the same plant population.

Increasing sowing rates to compensate for poor field layout, unsatisfactory seedbed preparation or unreliable sowing method is rarely successful and not recommended.

Research has shown that lodging is increased by high plant populations in varieties with a high lodging potential.

Sowing rates may be decreased by 15–20% in reliable establishment conditions without compromising yield. Variety characteristics

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

<table>
<thead>
<tr>
<th>Variety</th>
<th>Sowing rate (kg/ha)</th>
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</thead>
<tbody>
<tr>
<td>Reiziq&lt;sup&gt;ª&lt;/sup&gt;, Illabong &amp; Topaz&lt;sup&gt;ª&lt;/sup&gt;</td>
<td>150</td>
</tr>
<tr>
<td>Sherpa&lt;sup&gt;ª&lt;/sup&gt;, Langi, Viand&lt;sup&gt;ª&lt;/sup&gt; &amp; YRK5</td>
<td>130</td>
</tr>
<tr>
<td>Opus&lt;sup&gt;ª&lt;/sup&gt;, Koshihikari &amp; Doongara</td>
<td>120</td>
</tr>
</tbody>
</table>
Reiziq\textsuperscript{a} – A semi-dwarf medium grain variety that has elongated grain length and high yield potential. It has strong establishment vigour and is resistant to lodging, but is moderately susceptible to cold temperatures during the reproductive period. Early harvest is recommended as it is a loose threshing variety with potential for shedding if left to stand in the field. Wholegrain yields are relatively high.

Sherpa\textsuperscript{b} – 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\textsuperscript{b} is a hard threshing variety with good straw strength and is resistant to lodging.

Opus\textsuperscript{c} – A semi-dwarf short grain sushi variety that is only grown in the Murray Valley. Local experience generally indicates good yields, but it can occasionally be unpredictable. It has moderate establishment vigour, is resistant to lodging, but is 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 (Murrumbidgee Irrigation Area) and CIA (Colleambally Irrigation Area). It has moderate establishment vigour, cold stress tolerance and is moderately resistant to lodging. Early harvest is recommended, as it is a loose threshing variety with the potential for shedding if allowed to stand in the field.

Topaz\textsuperscript{b} – A semi-dwarf fragrant long grain variety that is only grown in the MIA and CIA. It has weak establishment vigour and care should be taken to ensure good establishment. Topaz\textsuperscript{b} is resistant to lodging, but is susceptible to cold temperatures during the reproductive period, which can significantly reduce grain yield. It must be sown at the correct time and deep water applied during the microspore period. It is also susceptible to straighthead.

Illabong – A semi-dwarf Arborio-style medium grain variety that has a high grain yield potential. It has moderate establishment vigour and sowing rates should be increased if the germination percentage is reduced due to post-flowering conditions experienced by the seed crop (you will be notified at seed issue). It has moderate cold stress tolerance and is moderately 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 and must be sown at the correct time and have deep water applied during the microspore period. It is also susceptible to straighthead.

Koshihikari – A tall-strawed short grain premium Japanese variety. It is susceptible to lodging if high rates of nitrogen are applied pre-permanent water and should not be aerial sown. It is lower yielding, but a premium is paid to compensate. Reduce total applied nitrogen by 50% compared with Reiziq\textsuperscript{b} and apply no more than 60% of total nitrogen pre-permanent water to minimise lodging. It is a very pubescent variety and is susceptible to straighthead with symptoms present as floret sterility.
Viand<sup>®</sup> – A short-season semi-dwarf medium grain variety, which has a similar yield potential to Reiziq<sup>A</sup> and provides a rice cropping option when late water allocations are announced or after a canola or barley crop harvest. It has strong establishment vigour and is moderately resistant to cold temperatures during the reproductive period but is moderately susceptible to lodging. Viand<sup>®</sup> is better suited to drill sowing and nitrogen application split between pre-permanent water and PI to reduce lodging in high yielding crops.

YRK 5 – A short-season, short grain sushi variety that is only grown in the Murray Valley. It is susceptible to lodging if high rates of nitrogen are applied pre-permanent water and should not be aerial sown. Reduce total applied nitrogen by 50% compared with Reiziq<sup>A</sup> and apply no more than 60% of total nitrogen pre-permanent water to minimise crop lodging. It has strong establishment vigour and moderate resistance to cold temperatures during the reproductive period.

District variety experiment results

All new varieties are tested across a range of years and locations within southern NSW before they are released. The performance of new varieties is compared with that of standard commercial varieties over a number of years and each variety’s response to different agronomic and commercial growing conditions is measured. The agronomic recommendations for each variety at release are based on the results of these district experiments.

Before release, each variety must also be assessed in the cereal chemistry laboratory and in taste testing trials to meet the strict quality characteristics and taste requirements of our customers in the marketplace. On the basis of their yield performance and the grain quality assessments from these experiments, a very small number of varieties ‘pass the grade’ to be new releases for growers.

Each year all the recommendations for all the varieties are reviewed to incorporate commercial experience and responses to different climatic and growing conditions.

Acknowledgements

We acknowledge the input provided by the SunRice Grower Services team in updating this publication.

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Reiziq® growing guide

June 2018, Primefact 1644, First edition

Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Reiziq® is a semi-dwarf medium grain variety that has elongated grain length.

Yield potential

The grain yield potential of Reiziq® is high.

Table 1. Grain yield of Reiziq® from research experiments and commercial fields

<table>
<thead>
<tr>
<th>Variety</th>
<th>5 year experiment average yields (t/ha)</th>
<th>5 year grower average yields (t/ha)</th>
<th>Top 20% of growers 5 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reiziq®</td>
<td>12.3</td>
<td>11.0</td>
<td>13.5</td>
</tr>
</tbody>
</table>

Establishment vigour

Experiments show Reiziq® to have strong establishment vigour.

Sowing method and date

All sowing methods are suitable for growing Reiziq®.

The recommended sowing windows for Reiziq® are listed in Table 2. Sowing earlier or later than recommended will increase the risk of exposure to low temperatures during microspore which can reduce grain yield.

Table 2. Target sowing and first flush dates for Reiziq® across different sowing methods and regions

<table>
<thead>
<tr>
<th>Variety</th>
<th>MIA/CIA - Ideal sow/first flush time</th>
<th>Murray Valley – Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
<td>Drill</td>
</tr>
</tbody>
</table>
**Sowing rate**

It is recommended that Reiziq\(\text{R}^0\) be sown between 120 and 150 kg/ha for all sowing methods. The lower rate can be used in reliable establishment conditions without compromising yield.

**Cold tolerance**

Reiziq\(\text{R}^0\) has a moderate tolerance to cold stress during the reproductive period.

**Plant height**

Reiziq\(\text{R}^0\) is on average 81 cm in height at commercial nitrogen rates.

**Lodging potential**

Reiziq\(\text{R}^0\) is resistant to lodging.

**Nitrogen management**

Reiziq\(\text{R}^0\) is a durable variety with a long yield plateau before grain yield declines or lodging becomes a problem from excess nitrogen application (Figure 1).

In warm seasons maximum grain yield can be achieved by applying all the required nitrogen pre-PW but in seasons where low temperatures occur during the reproductive period excess pre-PW nitrogen can increase sterility and reduce grain yield.

It is recommended to apply between **200 and 350 kg/ha urea** at pre-permanent water (PW) to Reiziq\(\text{R}^0\) crops. Some fields with a history of legumes may require less pre-PW nitrogen and some continuous cropped fields with heavy clay soils may require more pre-PW nitrogen (Figure 1).

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**Figure 1.** Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 221 plots in 17 experiments conducted over 3 seasons and a range of soil types and fertility levels.
Soil type also has a large influence the amount of nitrogen required pre-PW. Self-mulching clay soils can often have a higher nitrogen requirement than the lighter textured red-brown earth soils (Figure 2).

Figure 2. Grain yield of Reiziq\(b\) over a range of pre-PW nitrogen rates from two experiments on different soil types. Both soil types had an intensively cropped history.

![Graph showing grain yield of Reiziq\(b\) over a range of pre-PW nitrogen rates.](image)

Panicle initiation nitrogen

Applying higher than required rates of nitrogen prior to permanent water increases a rice crops susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

As it is difficult to determine exactly how much nitrogen should be applied pre-PW, it is better to aim for applying 80 to 90% of the total required nitrogen pre-PW and top up nitrogen at PI if required.

For maximum grain yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

Harvest

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Reiziq\(b\) is a loose threshing variety with potential for shedding if left to stand in the field.

Acknowledgements

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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Sherpa\textsuperscript{A} growing guide

June 2018, Primefact 1645, First edition

Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Sherpa\textsuperscript{A} is a semi-dwarf medium grain variety that has high cold stress tolerance.

**Yield potential**

The yield potential of Sherpa\textsuperscript{A} is 105\% of Reiziq\textsuperscript{B}.

<table>
<thead>
<tr>
<th>Variety</th>
<th>5 year experiment average yields (t/ha)</th>
<th>5 year grower average yields (t/ha)</th>
<th>Top 20% of growers 5 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sherpa\textsuperscript{A}</td>
<td>12.8</td>
<td>10.6</td>
<td>12.6</td>
</tr>
</tbody>
</table>

**Establishment vigour**

Experiments show Sherpa\textsuperscript{A} to have moderate establishment vigour.

**Sowing method and date**

All sowing methods are suitable for growing Sherpa\textsuperscript{A}.

The recommended sowing windows for Sherpa\textsuperscript{A} are listed in Table 2. Sowing earlier or later than recommended will increase the risk of exposure to low temperatures during microspore.

<table>
<thead>
<tr>
<th>Variety</th>
<th>MIA/CIA - Ideal sow/first flush time</th>
<th>Murray Valley – Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
<td>Drill</td>
</tr>
</tbody>
</table>

**Sowing rate**

It is recommended that Sherpa\textsuperscript{A} be sown between 110 and 130 kg/ha for all sowing methods. The lower rate can be used in reliable establishment conditions without compromising yield.
Cold tolerance
Sherpa\textsuperscript{a} has a high tolerance to cold stress during the reproductive period.

Plant height
Sherpa\textsuperscript{a} is on average 84 cm in height, 3 cm taller than Reiziq\textsuperscript{a}.

Lodging potential
Sherpa\textsuperscript{a} is resistant to lodging.

Nitrogen management
Sherpa\textsuperscript{a} has similar nitrogen requirements to Reiziq\textsuperscript{a} to reach its maximum yield potential. It is a durable variety with a long yield plateau before grain yield declines or lodging becomes a problem from excess nitrogen application (Figure 1).

In warm seasons maximum grain yield can be achieved by applying all the required nitrogen pre-PW but in seasons where low temperatures occur during the reproductive period excess pre-PW nitrogen can increase sterility and reduce grain yield.

It is recommended to apply between 200 and 300 kg/ha urea at pre-permanent water (PW) to Sherpa\textsuperscript{a} crops. Some fields with a history of legumes may require less pre-PW nitrogen and some continuous cropped fields with heavy clay soils may require more pre-PW nitrogen (Figure 1).

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 167 plots in 12 experiments conducted over 3 seasons and a range of soil types and fertility levels.
Panicle initiation nitrogen

Applying higher than required rates of nitrogen prior to permanent water increases a rice crops susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

As it is often difficult to determine exactly how much nitrogen should be applied pre-PW, it is better to aim for applying 80 to 90% of the total required nitrogen pre-PW and apply extra nitrogen at PI if required.

An experiment at Coleambally in 2017/18 season showed that the 260-130 and 290-0 kg/ha urea treatments both produced similar grains yield (Figure 2) with minimal lodging.

For maximum grain yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

Figure 2. Grain yields for Reiziq® and Sherpa® from an aerial sown experiment conducted in Coleambally in the 2017/18 season. The nitrogen split between pre-PW and PI (260-130 kg/ha urea) produced equal highest grain yield to all nitrogen applied pre-PW (390 kg/ha urea) for both Reiziq® and Sherpa®.

Harvest

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

Acknowledgements

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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Opus® growing guide

June 2018, Primefact 1646, First edition

Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Opus® is a semi-dwarf short grain sushi variety only grown in the Murray Valley.

Yield potential

The yield potential of Opus® is the same as Reiziq®.

Table 1. Grain yield of Opus® from research experiments and commercial fields

<table>
<thead>
<tr>
<th>Variety</th>
<th>4 year experiment average yields (t/ha)</th>
<th>4 year grower average yields (t/ha)</th>
<th>Top 20% of growers 4 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opus®</td>
<td>11.9</td>
<td>9.8</td>
<td>11.6</td>
</tr>
</tbody>
</table>

Establishment vigour

Experiments show Opus® to have moderate establishment vigour.

Sowing method and date

All sowing methods are suitable for growing Opus®.

The recommended sowing windows for Opus® are listed in Table 2. Sowing earlier or later than recommended will increase the risk of exposure to low temperatures during microspore which can reduce grain yield.

Table 2. Target sowing and first flush dates for Opus® across different sowing methods in the Murray Valley

<table>
<thead>
<tr>
<th>Variety</th>
<th>Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
</tr>
<tr>
<td>Opus®</td>
<td>20 Oct to 5 Nov</td>
</tr>
</tbody>
</table>

Sowing rate

It is recommended that Opus® be sown between 100 to 120 kg/ha for all sowing methods. The lower rate can be used in reliable establishment conditions without compromising yield.
Cold tolerance

Opus has a moderately high tolerance to cold stress during the reproductive period.

Plant height

Opus is a similar height to Reiziq, on average 81 cm at commercial nitrogen rates.

Lodging potential

Opus is moderately resistant to lodging.

Nitrogen management

Opus has similar nitrogen requirements to Reiziq to reach its maximum yield potential. It is a durable variety with a long yield plateau before grain yield declines or lodging becomes a problem from excess nitrogen application (Figure 1).

In warm seasons maximum grain yield can be achieved by applying all the required nitrogen pre-PW but in seasons where low temperatures occur during the reproductive period excess pre-PW nitrogen can increase sterility and reduce grain yield.

It is recommended to apply between **200 and 300 kg/ha urea** at pre-permanent water (PW) to Opus crops. Some fields with a history of legumes may require less pre-PW nitrogen and some continuous cropped fields with heavy clay soils may require more pre-PW nitrogen (Figure 1).

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 136 plots in 11 experiments conducted over 3 seasons and a range of soil types and fertility levels.
**Panicle initiation nitrogen**

Applying higher than required rates of nitrogen prior to permanent water increases a rice crops susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

As it is difficult to determine exactly how much nitrogen should be applied pre-PW, it is better to aim for applying 80 to 90% of the total required nitrogen pre-PW and top up nitrogen at PI if required.

An experiment at Jerilderie in 2017/18 season showed the 260-0, 130-260 and 260-130 kg/ha urea treatments all produced a high grain yield with minimal lodging (Figure 2).

For maximum grain yield it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

Figure 2. Grain yield results for Opus from a nitrogen rate by timing experiment conducted at Jerilderie in 2017/18. The pre-PW and PI nitrogen split treatments (130-260 and 260-130 kg/ha urea) produced equal highest grain yield to 260 kg/ha urea all nitrogen applied pre-PW. There was no lodging in the experiment.

**Harvest**

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

**Acknowledgements**

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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Langi growing guide

June 2018, Primefact 1647, First edition

Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Langi is a semi-dwarf long grain variety that has soft cooking (low amylose) properties.

**Yield potential**

The yield potential of Langi is 95% of Reiziq®.

Table 1. Grain yield of Langi from research experiments and commercial fields

<table>
<thead>
<tr>
<th>Variety</th>
<th>4 year experiment average yields (t/ha)</th>
<th>4 year grower average yields (t/ha)</th>
<th>Top 20% of growers 4 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Langi</td>
<td>12.1</td>
<td>9.3</td>
<td>11.5</td>
</tr>
</tbody>
</table>

**Establishment vigour**

Experiments show Langi to have moderate establishment vigour.

**Sowing method and date**

All sowing methods are suitable for growing Langi.

The recommended sowing windows for Langi are listed in Table 2. Sowing earlier or later than recommended will increase the risk of exposure to low temperatures during microspore which can reduce grain yield.

Table 2. Target sowing and first flush dates for Langi across different sowing methods and regions

<table>
<thead>
<tr>
<th>Variety</th>
<th>MIA/CIA - Ideal sow/first flush time</th>
<th>Murray Valley – Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
<td>Drill</td>
</tr>
</tbody>
</table>
**Sowing rate**

It is recommended that Langi be sown between 110 to 130 kg/ha for all sowing methods. The lower rate can be used in reliable establishment conditions without compromising yield.

**Cold tolerance**

Langi has a moderate tolerance to cold stress during the reproductive period.

**Plant height**

Langi is 6 cm taller than Reiziq.

**Lodging potential**

Langi is moderately resistant to lodging.

**Nitrogen management**

Langi has similar nitrogen requirements to Reiziq to reach its maximum yield potential, however it requires different timing of the nitrogen inputs. Applying more nitrogen than is needed by the crop, either prior to permanent water (PW) (Figure 1) or at panicle initiation (PI), will increase cold susceptibility and lodging.

It is recommended to only apply between 150 and 250 kg/ha urea to Langi pre-PW to reduce lodging potential and cold susceptibility. Some fields with a history of legumes may require less nitrogen pre-PW and some continuous crop fields with heavy clay soils may require more nitrogen.

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 95 plots in 7 experiments conducted over 3 seasons and a range of soil types and fertility levels.
Panicle initiation nitrogen

Applying higher than required rates of nitrogen prior to permanent water increases a rice crops susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

Langi nitrogen applications should be split **70:30 between pre-PW and PI** to reduce lodging and cold susceptibility risk. Langi produces a high grain yield with less lodging and reduced cold susceptibility when nitrogen is split between pre-PW and PI.

In Coleambally in 2017/18 season the 260-130 and 390-0 kg/ha urea treatments produced a similar grain yield with minimal lodging (Figure 2). This was a warm season with deep water at microspore, in a cool season you would expect the split treatment to yield higher.

For maximum grain yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

![Figure 2. Grain yields for Reiziq® and Langi from an aerial sown experiment conducted in Coleambally in the 2017/18 season. The nitrogen split between pre-PW and PI (260-130 kg/ha urea) produced equal highest grain yield to when all the nitrogen was applied pre-PW (390 kg/ha urea) for both Reiziq® and Langi.](image)

Harvest

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

Acknowledgements

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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Topaz® growing guide

June 2018, Primefact 1483, Second edition

Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Topaz® is a semi-dwarf fragrant long grain variety that is only grown in the MIA and CIA.

**Yield potential**

The yield potential of Topaz® is around 85% of Reiziq®.

<table>
<thead>
<tr>
<th>Variety</th>
<th>4 year experiment average yields (t/ha)</th>
<th>4 year grower average yields (t/ha)</th>
<th>Top 20% of growers 4 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topaz®</td>
<td>11.2</td>
<td>8.8</td>
<td>10.9</td>
</tr>
</tbody>
</table>

**Establishment vigour**

Experiments show Topaz® to have the poorest establishment vigour of all varieties. Care must be taken with seed placement to ensure adequate establishment.

**Sowing method and date**

All sowing methods are suitable for growing Topaz®. It requires a similar number of days to reach flowering as Reiziq® and has the same recommended sowing window (Table 2).

Sowing earlier or later than the recommended window will increase the risk of exposure to low temperatures during microspore which can severely reduce grain yield.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
</tr>
<tr>
<td>Topaz®</td>
<td>25 Oct to 5 Nov</td>
</tr>
</tbody>
</table>

**Sowing rate**

It is recommended that Topaz® be sown between 130 and 150 kg/ha for all sowing methods. The lower rate can be used in reliable establishment conditions without compromising yield.
Although Topaz® has a small grain size and more seeds per kg than Reiziq®, the same sowing rate as Reiziq® is required to account for the varieties poor establishment vigour.

**Cold tolerance**

Topaz® 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 a depth of at least 25 cm after panicle initiation through until mid-flowering.

**Plant height**

Topaz® has a similar height to Reiziq®.

**Lodging potential**

Topaz® is a moderately resistant to lodging.

**Nitrogen management**

**Pre-permanent water nitrogen**

Topaz® has a similar nitrogen requirement to Reiziq® to achieve its maximum yield potential. However, due to its high susceptible to low temperature induced sterility, nitrogen management of Topaz® is a trade-off between high yield and increased risk of cold damage.

It is recommended to apply between 200 and 250 kg/ha urea to Topaz® pre-permanent water (PW). Fields with a history of legumes may require less pre-PW applied nitrogen and some continuous cropped fields with heavy clay soils may require more nitrogen (Figure 1).

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 105 plots in 8 experiments conducted over 3 seasons and a range of soil types and fertility levels.
It is important not to apply excessive nitrogen pre-permanent water to Topaz$^*$ and to plan on a split nitrogen strategy also applying nitrogen at panicle initiation (PI).

**Panicle initiation nitrogen**

Applying higher than required rates of nitrogen prior to permanent water increases a rice crops susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

Topaz$^*$ produces a consistently higher grain yield with lower susceptibility to cold when nitrogen is **split 70:30 between pre-PW and PI**.

The experiment conducted at Coleambally in 2017/18 season shows that the 260-130 kg/ha urea pre-PW and PI split treatment produced the highest grain yield (Figure 2).

For maximum grain yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates.

Figure 2. Grain yields for Reiziq$^*$ and Topaz$^*$ from a dry broadcast experiment conducted in Coleambally in the 2017/18 season. The nitrogen application treatment split between pre-PW and PI (260-130 kg/ha urea) produced the highest grain yield for Topaz$^*$.

**Harvest**

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

**Acknowledgments**

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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Illabong growing guide

June 2018, Primefact 1650, First edition
Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Illabong is a semi-dwarf Arborio style medium grain variety with high yield potential.

Yield potential

The yield potential of Illabong is 105% of Reiziq™.

Table 1. Grain yield of Illabong from research experiments and commercial fields in Murray Valley

<table>
<thead>
<tr>
<th>Variety</th>
<th>2 year experiment average yields (t/ha)</th>
<th>2 year grower average yields (t/ha)</th>
<th>Top 20% of growers 2 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illabong</td>
<td>12.6</td>
<td>11.1</td>
<td>12.3</td>
</tr>
</tbody>
</table>

Establishment vigour

Experiments show Illabong to have weak establishment vigour. Care must be taken with seed placement to ensure adequate establishment.

Sowing method and date

All sowing methods are suitable for growing Illabong.

The recommended sowing windows for Langi are listed in Table 2. Sowing earlier or later than recommended will increase the risk of exposure to low temperatures during microspore which can reduce grain yield.

Table 2. Target sow and first flush dates for Illabong across different sowing methods in the Murray Valley

<table>
<thead>
<tr>
<th>Variety</th>
<th>Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
</tr>
<tr>
<td>Illabong</td>
<td>20 to 30 Oct</td>
</tr>
</tbody>
</table>

Sowing rate

Illabong should be sown between 130 and 150 kg/ha. Sowing rate may vary from year to year depending on the germination percentage of the seed, check with SunRice for details.
Cold tolerance
Illabong has a moderate tolerance to cold stress during the reproductive period.

Plant height
Illabong is on average 85 cm in height, 4 cm taller than Reiziq.<sup>o</sup>

Lodging potential
Illabong is moderately resistant to lodging.

Nitrogen management
Illabong has similar nitrogen requirements to Reiziq<sup>o</sup> to reach its maximum yield potential, however it requires different timing of the nitrogen inputs. Applying more nitrogen than is needed by the crop, either prior to permanent water (PW) or at panicle initiation (PI), will increase cold susceptibility and lodging.

With data available from only 3 experiments (Figure 1) the nitrogen recommendations for Illabong should be considered preliminary at this stage.

It is recommended to only apply between 150 and 250 kg/ha urea to Illabong pre-PW to reduce cold susceptibility. Some fields with a history of legumes may require less nitrogen pre-PW and some continuous crop fields with heavy clay soils may require more nitrogen.

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 36 plots in 3 experiments conducted over 2 seasons.
Panicle initiation nitrogen

Applying higher than required rates of nitrogen prior to permanent water increases a rice crops susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

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

An experiment at Wakool in the 2017/18 season showed the 130-0, 130-130 and 260-0 kg/ha urea treatments all produced a similar high grain yield with minimal lodging (Figure 2). This was a warm season with deep water at microspore, in a cool season you would expect the split treatment to yield higher.

For maximum grain yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

Figure 2. Grain yield and lodging score results from Illabong nitrogen rate by timing experiment conducted at Wakool in 2017/18.

Harvest

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

Acknowledgements

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.
Doongara growing guide

June 2018, Primefact 1587, Second edition

Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Doongara is a semi-dwarf long grain hard cooking (high amylose) variety that has a low glycaemic index (GI) and is resistant to lodging.

**Yield potential**

The yield potential of Doongara is around 95% of Reiziq®.

Table 1. Grain yield of Doongara from research experiments and commercial fields in MIA and CIA

<table>
<thead>
<tr>
<th>Variety</th>
<th>3 years experiment average yields (t/ha)</th>
<th>3 year grower average yields (t/ha)</th>
<th>Top 20% of growers in 2017/18 yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doongara</td>
<td>11.6</td>
<td>11.3</td>
<td>13.3</td>
</tr>
</tbody>
</table>

**Establishment vigour**

Experiments show Doongara to have moderate establishment vigour.

**Sowing method and date**

All sowing methods are suitable for growing Doongara.

It requires a similar number of days to reach flowering as Reiziq® and therefore has the same recommended sowing window (Table 2).

Sowing earlier or later than the recommended window will increase the risk of exposure to low temperatures during microspore which can severely reduce grain yield.

Table 2. Target sowing and first flush dates for Doongara across different sowing methods in the MIA and CIA

<table>
<thead>
<tr>
<th>VARIETY</th>
<th>Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
</tr>
</tbody>
</table>

**Sowing rate**

It is recommended that Doongara be sown between 100 and 120 kg/ha. The lower rate can be used in reliable establishment conditions without compromising yield.
**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 a depth of at least 25 cm after panicle initiation through until mid-flowering.

**Plant height**

Doongara has a similar height at 81 cm to Reiziq.

**Lodging potential**

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

**Straighthead susceptibility**

Doongara is susceptible to straighthead. Symptoms present as floret sterility, particularly in low nitrogen areas. Severe straighthead shows the characteristic parrot beaking symptoms and missing florets (See Primefact 1346; Straighthead in Australian rice crops).

**Nitrogen management**

Doongara nitrogen requirement to maximum yield potential is similar to Reiziq. However, due to its high susceptible to low temperature induced sterility, nitrogen management of Doongara is a trade-off between yield and increased risk of cold damage.

It is recommended to apply between 200 and 250 kg/ha urea to Doongara pre-permanent water (PW). Some fields with a history of legumes may require less pre-PW nitrogen and some continuous cropped fields with heavy clay soils may require more pre-PW nitrogen (Figure 1).
**Panicle initiation nitrogen**

Applying higher than required rates of nitrogen prior to permanent water increases a rice crops susceptibility to cold stress more than extra nitrogen applied at panicle initiation.

Doongara produces a consistently higher grain yield with lower susceptibility to cold when nitrogen is split 70:30 between pre-PW and PI.

The experiment conducted at Coleambally in 2016/17 season shows that the 260-130 kg/ha urea pre-PW-PI split treatment produced the highest grain yield (Figure 2). If cold temperatures had been experienced at microspore we would expect the difference between the all pre-PW and split nitrogen treatment to be greater.

For maximum yield with reduced lodging it is important to use the NIR Tissue Test to determine PI nitrogen topdressing rates.

**Harvest**

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

**Acknowledgments**

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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Koshihikari growing guide

June 2018, Primefact 1486, Second edition
Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Koshihikari is a short grain premium 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 80% of Reziq®.

Table 1. Grain yield of Koshihikari from research experiments and Murray Valley commercial fields

<table>
<thead>
<tr>
<th>Variety</th>
<th>4 year experiment average yields (t/ha)</th>
<th>4 year grower average yields (t/ha)</th>
<th>Top 20% of growers 4 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koshihikari</td>
<td>10.1</td>
<td>7.6</td>
<td>9.1</td>
</tr>
</tbody>
</table>

**Establishment vigour**

Establishment experiments show Koshihikari to have moderate establishment vigour.

**Sowing method and date**

Koshihikari should **only be drill sown** as it is prone to lodging.

Drill sown crops have better root anchorage and resistance against stem bending which reduces their lodging susceptibility. The recommended sowing windows for Koshihikari are listed in Table 2.

Table 2. Target first flush dates for Koshihikari across different management methods in the Murray Valley

<table>
<thead>
<tr>
<th>Variety</th>
<th>Ideal sow/first flush time</th>
<th>Aerial / Dry Broadcast</th>
<th>Drill</th>
<th>Delayed permanent water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Koshihikari</td>
<td>Do not aerial sow</td>
<td>10 to 25 Oct</td>
<td>1 to 20 Oct</td>
<td></td>
</tr>
</tbody>
</table>

**Sowing rate**

It is recommended that Koshihikari be sown between 100 and 120 kg/ha. The lower rate can be used in reliable establishment conditions without compromising yield.
**Plant height**

Koshihikari is 13 cm taller than Reiziq⁰.

**Lodging potential**

Koshihikari is susceptible to lodging. Koshihikari should only be drill sown with careful management of nitrogen to reduce lodging.

**Cold tolerance**

Koshihikari has a moderately high tolerance to cold stress during the reproductive period.

**Straighthead susceptibility**

Koshihikari is susceptible to straighthead. Symptoms present as floret sterility, particularly in low nitrogen areas. Severe straighthead shows the characteristic parrot beaking symptoms and missing florets (See Primefact 1346; Straighthead in Australian rice crops).

**Nitrogen management**

**Pre-permanent water nitrogen**

Nitrogen management of Koshihikari presents a trade-off between grain yield and lodging.

As pre-PW nitrogen application increases grain yield increases before levelling off above 200 kg/ha urea, but above 150 kg/ha urea lodging starts to increase (Figure 1).

It is recommended to only apply between **75 and 150 kg/ha urea** to Koshihikari pre-PW to reduce lodging potential. Some fields with a history of legumes may require less nitrogen pre-PW and some continuous crop fields with heavy clay soils may require more nitrogen.

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 88 plots in 6 experiments conducted over 3 seasons and a range of soil types and fertility levels.
Panicle initiation nitrogen

Data and experience show that Koshihikari produces a high grain yield with less lodging when nitrogen is **split at least 50:50 between pre-PW and PI**.

The experiment conducted at Jerilderie in 2017/18 season shows that the 90-175 kg/ha urea pre-PW-PI split produced a high grain yield with minimal lodging (Figure 2).

For maximum yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

![Figure 2. Grain yield and lodging score results from Koshihikari nitrogen rate by timing experiment conducted at Jerilderie in 2017/18. The green bars are grain yield (t/ha @ 14%) and the blue bars are the lodging score (1=standing, 10=flat) for the range on nitrogen treatments applied pre-PW and at PI.](image)

Harvest

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

Acknowledgements

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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Viand® growing guide

June 2018, Primefact 1484, Third edition

Brian Dunn, Research Agronomist, Yanco Agricultural Institute

Viand® is a semi-dwarf medium grain variety that is shorter in growth duration than our current medium grain varieties.

Yield potential

The yield potential of Viand® is 95% of Reiziq®.

Table 1. Grain yield of Viand® from research experiments and commercial fields

<table>
<thead>
<tr>
<th>Variety</th>
<th>2 year experiment average yields (t/ha)</th>
<th>2 year grower average yields (t/ha)</th>
<th>Top 20% of growers 2 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viand®</td>
<td>11.3</td>
<td>9.5</td>
<td>11.9</td>
</tr>
</tbody>
</table>

Establishment vigour

Experiments show Viand® to have strong establishment vigour.

Sowing method and date

It is recommended that Viand® be drill sown. Aerial and dry broadcast crops are more prone to lodging than drill-sown crops (see Primefact 1561: Lodging in rice).

Viand® is 10 days earlier to flower than Reiziq® and therefore needs to be sown later (Table 2) for microspore to occur during the period with the highest probability of warm temperatures.

Viand® is not recommended for December sowing, delayed maturity will result in a late harvest. Do not delay permanent water if sowing later than the recommended sowing window as this will slow crop development and increase the risk of a late harvest.

Table 2. Target first flush dates for Viand® across different management methods and regions

<table>
<thead>
<tr>
<th>Variety</th>
<th>MIA/CIA - Ideal sow/first flush time</th>
<th>Murray Valley – Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Drill</td>
<td>Delayed permanent water</td>
</tr>
<tr>
<td>Viand®</td>
<td>5 to 25 Nov</td>
<td>1 to 20 Nov</td>
</tr>
</tbody>
</table>
Sowing rate

It is recommended that Viand be sown between 110 and 130 kg/ha. The lower rate can be used in reliable establishment conditions without compromising yield.

Cold tolerance

Viand has a moderately high tolerance to cold stress during the reproductive period.

Plant height

Viand is 4 cm taller than Reiziq.

Lodging potential

Viand is moderately susceptible to lodging.

Nitrogen management

Viand has similar nitrogen requirements to Reiziq to reach its maximum yield potential, however it requires different timing of the nitrogen inputs. Applying more nitrogen than is needed by the crop, either prior to permanent water (PW) (Figure 1) or at panicle initiation (PI), will increase lodging and delay harvest.

It is recommended to only apply between 150 and 250 kg/ha urea to Viand pre-PW to reduce lodging potential. Some fields with a history of legumes may require less nitrogen pre-PW and some continuous crop fields with heavy clay soils may require more nitrogen.

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 149 plots in 10 experiments conducted over 3 seasons and a range of soil types and fertility levels.
**Panicle initiation nitrogen**

Viand® produces a high grain yield with less lodging when nitrogen is split between pre-PW and PI. An experiment at Jerilderie in 2017/18 season showed the 60-60, 120-0 and 60-120 kg/ha urea treatments all produced a high grain yield with minimal lodging (Figure 2).

Viand® nitrogen applications should be split 70:30 between pre-PW and PI to reduce lodging risk. Viand® produces a high grain yield with less lodging and reduced cold susceptibility when nitrogen is split between pre-PW and PI.

For maximum grain yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

**Harvest**

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

**Acknowledgements**

Rice Extension, SunRice Growers Services and Tina Dunn for contribution to this document.

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YRK5 growing guide

June 2018, Primefact 1485, Third edition
Brian Dunn, Research Agronomist, Yanco Agricultural Institute

YRK5 is a tall 'Japanese quality' short grain variety that is similar in grain quality characteristics to Opus\textsuperscript{A} but with shorter growth duration.

**Yield potential**

The yield potential of YRK5 is around 85% of Reiziq\textsuperscript{A}.

Table 1. Grain yield of YRK5 from research experiments and Murray Valley commercial fields

<table>
<thead>
<tr>
<th>Variety</th>
<th>2 year experiment average yields (t/ha)</th>
<th>2 year average grower yields (t/ha)</th>
<th>Top 20% of growers 2 year average yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YRK5</td>
<td>10.6</td>
<td>7.3</td>
<td>9.7</td>
</tr>
</tbody>
</table>

**Establishment vigour**

Establishment experiments show YRK5 to have strong establishment vigour.

**Sowing method and date**

As YRK5 is prone to lodging it should only be drill sown. Drill sown crops have better root anchorage and resistance against stem bending which improves their lodging susceptibility.

YRK5 is 10 days earlier to flower than Reiziq\textsuperscript{A} and therefore needs to be sown later (Table 2) for microspore to occur during the period of highest probability of warm temperatures.

YRK5 is not recommended for December sowing, delayed maturity will result in a late harvest. Do not delay permanent water if sowing later than the recommended sowing window as this will slow crop development and increase the risk of a late harvest.

Table 2. Target first flush dates for YRK5 across different management methods in the Murray Valley

<table>
<thead>
<tr>
<th>Variety</th>
<th>Ideal sow/first flush time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aerial / Dry Broadcast</td>
</tr>
<tr>
<td>YRK5</td>
<td>Do not aerial sown</td>
</tr>
</tbody>
</table>
Sowing rate

It is recommended that YRK5 be sown between 100 and 130 kg/ha. The lower rate can be used in reliable establishment conditions without compromising yield.

Cold tolerance

YRK5 has a moderate tolerance to cold stress during the reproductive period.

Plant height

YRK5 is 13 cm taller than Reiziq, similar height to Koshihikari.

Lodging potential

YRK5 is susceptible to lodging. YRK5 should only be drill sown with careful management of nitrogen to reduce lodging.

Nitrogen management

Pre-permanent water nitrogen

Nitrogen management of YRK5 presents a trade-off between grain yield and lodging.

As pre-PW nitrogen application increases grain yield increases before levelling off above 250 kg/ha urea (Figure 1). But below this level lodging starts to increase above 150 kg/ha urea.

It is recommended to only apply between 75 and 150 kg/ha urea to YRK5 pre-PW to reduce lodging potential. Some fields with a history of legumes may require less pre-PW applied nitrogen and some continuous crop fields with heavy clay soils may require more nitrogen.

Figure 1. Grain yield and lodging score results for pre-PW nitrogen application rates. Results from 125 plots in 8 experiments conducted over 3 seasons and a range of soil types and fertility levels.
Panicle initiation nitrogen

Data and experience show that YRK5 produces a high grain yield with less lodging when nitrogen is **split at least 50:50 between pre-PW and PI.**

The experiment conducted at Jerilderie in 2017/18 season shows that the 90-175 kg/ha urea pre-PW-PI split produced the highest grain yield with minimal lodging (Figure 2).

For maximum yield with reduced lodging it is important to use the NIR Tissue Test to determine PI topdressing rates, as high rates of nitrogen at PI can also increase lodging.

![Figure 2. Grain yield and lodging score results from YRK5 nitrogen rate by timing experiment conducted at Jerilderie in 2017/18. The green bars are grain yield (t/ha @ 14%) and the blue bars are the lodging score (1=standing, 10=flat) for the range on nitrogen treatments applied pre-PW and at PI.](image)

Harvest

Be prepared to commence harvest as soon as the grain moisture drops to 22%. Delaying harvest will increase the risk of lodging which can cause difficult harvesting conditions.

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