

'Paddock to plate' value chain for high rainfall zone noodle wheat

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INTRODUCTION

Project Purpose:

1. To prove that the High Rainfall Zone (HRZ South) can produce high quality Udon Noodles and increase the continuity of supply in an exclusive market. *The MRZ and LRZ of Western Australia have to date been the exclusive Udon Noodle supply areas to international markets. WA is the only external source of wheat grain for Udon Noodle manufacture for Japan and Korea.*
2. To provide greater longer-term diversity and options for crop rotations in the southern HRZ. NOTE: the current dominant rotation of YIYO canola: barley is under threat with more disease and chemical resistance.

Key findings from the 2016 and 2017 trials and grower experience:

Growing Noodle wheat has been perceived as high risk by growers in the High Rainfall Zone (HRZ) due to the risk of not making ANW1 grade. There are specialist noodle wheat growers in the HRZ who consistently grow higher yields with the latest noodle varieties, and achieve ANW1 for most grain produced, compared to current APW varieties. This is guiding the development of the HRZ Noodle wheat production package.

- **Effect of location:** A 30km distance North from the south coast within the HRZ, proposed as the 'Chillinup Line,' appears to be a critical agronomic cut off point for where the risk of downgrade or failure to meet specification is manageable. Noodle Wheat can be grown more successfully North of the 'Chillinup line', 30 km inland from the South Coast and East and West of the Stirling Ranges yet still in the HRZ.
- **Yield potential:** In the High Rainfall Zone (HRZ) of southern WA, some specialist growers are consistently able to achieve ANW1 and some can grow Zen at a higher yield than the standard variety options for APW and AH even with seasonal rainfall >450mm. Many specialist noodle wheat growers achieved a premium of \$60 per ton over APW in 2017.
- **Seeding rate:** The new varieties Zen, Ninja and IGW-8048 yielded significantly more when sown at a higher sowing rate (150Kg/Ha). Further testing of seeding rates in 2018 will aim to fine tune optimum sowing rates for particular soil types between 80-150kg/ha in the HRZ.

- **Effect of harvest timing on grain yield:** There were significant differences in harvest yields when comparing the two different times of harvest (TOH). TOH1(all varieties) mean = 6.44b and TOH2 (all varieties) mean = 6.76a. However, in trials in 2016 the reverse result occurred. The impact of delayed harvest on end-product performance (Udon Noodles) is being tested. A major consideration in the HRZ is whether to harvest noodle wheat early and dry the grain.
- **The newer noodle wheat varieties are out-yielding Calingiri in the HRZ:** The small plot trials suggested there are now superior yielding varieties. The next line of varieties may also have improved end-product performance and premiums are being proposed.
- **Noodle wheat yields superior to Trojan and comparable to Scepter:** Trial results in NVT's and SCF project. Scepter (AH) is yielding the same as Ninja (ANW), Zen (ANW) and IGW-8048 (ANW) at 80kg/ha. The price of ANW is usually higher than AH. This means that revenue per hectare will be higher growing ANW wheat based on these trial results.
- **Price:** Grower groups have recognised that differentiated products aid price stability in times of relative grain oversupply and higher competition. Grain for Udon Noodle wheat markets are less affected by downward price pressures than undifferentiated grade wheat prices however supply variation is an issue. Premiums remain project priority.

SUMMARY:

The SCF variety specific HRZ Noodle Wheat production package has been developed. This HRZ package increases quantity and quality produced while reducing the risk of not meeting ANW specifications:

- Intergrain and AEGIC are undertaking end-product testing of trial plot samples from each treatment to refine our HRZ production package to better meet market specifications for noodles and other alternative products for out-of-specification noodle wheat being tested in a separate project by AEGIC. The testing will also provide a comparison between noodle wheat grown in our region compared to the Kwinana Port Zone to help demonstrate the comparable quality of APZ noodle wheat to Japanese customers who currently show bias against noodle wheat from this region.
- Grower groups recognize that in times of oversupply of grain and higher competition, differentiated products ➤

- such as the Udon Noodle wheat markets and other specialist product markets are likely to be less affected by downward pressures than the standard grades (APW2 and AH) of wheat. Premiums remain the key in consultation with the market leaders.
- Intergrain has moved a major test site for advanced breeding lines (Stage 2 & 3) into the SCF region as part of the project agreement between Intergrain and SCF.

TRIAL RESULTS

Table 1: Combined yields for Time of Harvest (TOH) one and two, for each variety in the plot trial located at West Kendenup in 2017. Means followed by same letter do not significantly differ (P = 0.05, LSD)

Wheat Variety	Seeding rate (kg/ha)	Yield (t/ha)
IGW-8048	150	7.194a
Ninja	150	7.101a
Zen	150	7.006ab
Ninja	80	6.684bc
IGW-8048	80	6.662bc
Zen	80	6.523c
Scepter	80	6.483c
Trojan	80	5.916d
Calingiri	80	5.821d
LSD P = 0.05		0.408
Standard Deviation		0.501
CV		7.59

- Calingiri the lowest yielding noodle wheat:** Table 1 shows that each of the new noodle varieties can yield significantly more than Calingiri. Calingiri has been a very popular variety for growers but less so for the noodle manufacturers. The small plot trials suggested there are now superior yielding varieties to grow in the HRZ. However, the data in the broad-scale trials indicated the new noodle varieties need more specific agronomy. More in 2018 trials.

The 2017 trial data will be used to further improve the 'Noodle Wheat HRZ Production Package'. The HRZ Noodle Wheat industry working group (specialist growers, Farmanco and DIPRD)



Buffer | Zen | Trojan | Calingiri | Zen | Ninja | Trojan | Ninja | Calingiri | Zen | Buffer

Figure 1: Chris Tomlinson's broad-scale noodle wheat trial East Tenterden: drone image by Jake McGuire

Table 2: Grain yields of 2017 noodle wheat trials

TRIAL HOSTS	Anthony Hall Small plots	Tony Slattery broad scale	Chris Tomlinson broad-scale	Brian Aylemore broad-scale
LOCATION	Kendenup - West	Gnowellen	East Tenterden	Tambellup South
SOIL TYPE & COMMENTS	Forest Gravel Non-wetting Rhizoctonia	Loamy Duplex	Gravel Duplex Non-wetting	Sandy Duplex Non-wetting
RAINFALL	Decile 1 rain during Autumn	Decile 8 rainfall in Spring	Decile 2 rainfall at start	Decile 1 rainfall at start
Rainfall Apr 1. to Oct 31.	361.6mm	339.7mm	330.7	233.1mm
GRAIN QUALITY	Ok for noodle segregation	Ok for noodle segregation	Ok for noodle segregation	Ok for noodle segregation
VARIETY & YIELD (t/ha)				
Zen	6.52c	4.61	5.50*	2.28
Zen 150kg/ha	7.01ab			
Ninja	6.68bc	4.91*	5.29	2.23
Ninja 150kg/ha	7.10a			
Calingiri	5.82d	4.55	5.26	2.28
IGW-8048	6.66bc			
IGW-8048 150kg/ha	7.19a			
Trojan	5.92d	4.49	5.96*	2.66
Scepter	6.48c			



Figure 2: Noodle wheat plots at West Kendenup on 4 October 2017. During the dry start to the season (49mm for April, May and June) the trial site did not have a very high yield potential until 118.2mm of rain in July.

► WA Noodle Wheat Industry International Forum

**Report by John Blake SCF & Jon Beasley
SCF Board member**



Grower Panel members included Jon Beasley (Frankland and SCF Board). Jon was able to highlight the potential for HRZ Noodles to address the continuity of supply issue. Jon initiated the ongoing Forum discussions on a base premium being set to guide plantings and ultimate supply.

John Blake (SCF) spoke about the SCF HRZ Noodle wheat project that is developing HRZ Noodles agronomic management packages to manage the challenges. Industry and Japanese MAFF and Flour millers were invited to come and meet SCF in 2018 and see the progress being made. This was thanks to our partners in Intergrain, Farmanco – Brent Pritchard, DIPRD and CCDM and specialist SCF Noodle growers. The message of our project on HRZ Noodles on improving continuity of supply and quality got a lot of support and contacts in Japan: contact details via Richard Talbot of the Japanese consulate.

CONCLUSIONS:

Planned action and market development

The 'cliff-face' price drop for out of specification noodle wheat has been at the core of the problem of lack of supply. There is a reputational bias against noodle wheat from the HRZ by grain buyers for the Japanese flour mills. This region can develop long-term relationships with buyers in Japan in particular. Part of the strategy is to work with Intergrain, GIWA and AEGIC to develop market opportunities in South Korea, which does not have the same bias against HRZ suppliers. The biggest opportunity for us is also our biggest challenge – the Japanese market. Opportunities do exist for WA HRZ growers to obtain premiums for high quality noodle wheat by developing market opportunities, obtaining specific

trade agreements and MOUs undertaken in collaboration with professional marketing bodies such as GIWA, AEGIC and Intergrain.

The following market development work is ongoing as part of this project:

- SCF is investigating alternative local uses for 'out of specification' noodle wheat. In July 2017, SCF was successful in gaining GGRD2 funding to investigate a multi-purpose grain processing facility in the Great Southern region.
- Concurrently, AEGIC has made some good progress in developing market information on alternative export grain markets for 'out of specification' noodle wheat.
- In January 2018, SCF developed a new research proposal to use out of specification noodle wheat as a supplementary feed for local livestock. This work is ongoing in partnership with the Sheep CRC.
- In September 2017, SCF was represented by John Blake (SCF agronomist) and John Beasley (SCF board member and noodle wheat grower) at the WA Noodle Wheat Industry International Forum held in Perth (see report attached). The focus was on i) continuity of supply and ii) product quality iii) market premiums. This aligns with this project's focus on market activities in 2018.
- With Intergrain launch the new noodle wheat variety IGW-8048 in Albany in May 2018.
- SCF will undertake further product testing in 2018 to demonstrate that noodle wheat from our region is equal in quality to noodle wheat from the northern wheat-belt areas.
- SCF with GIWA is to host a Japanese delegation to our region to highlight our production capabilities and contribution to future continuity of supply of high quality noodle wheat.

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