



Veratin

**Impact of Nitrogen Content in Verigrow on
Wheat Yield Trial**

Katanning

2022

TC2022-5 Veratin Verigrow RF Wheat

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Abstract

This trial was conducted on the TrialCo Research Farm 5 km north of Katanning to evaluate the impact of three levels (20%, 27% and 35%) of nitrogen content in Verigrow on crop vigour wheat yield and grain quality, and to determine the appropriate nitrogen content in Verigrow required to achieve similar wheat yield results to other commonly used nitrogen fertilisers (Flexi-N and Urea).

The trial was established as a randomized complete block of 9 treatments and 4 replicates in a quadruple bank with each plot 10 m long by 2 m wide.

On the 3rd of June 2022 the trial plot was sown to Scepter wheat at a rate of 96kg/ha to a depth of 3cm and the following treatments applied:

- Knockdown pre-seeding herbicide treatments of Glyphosate 450 (3L/ha), Trifluralin (2L/ha) and Mateno (750ml/ha) were incorporated by sowing (IBS);
- Uniform (400ml/ha) and Cruiser 350FS (200ml/ha) in furrow;
- Chlorpyrifos 500EC (1L/ha) post sowing pre-emergent (PSPE);
- Seeding fertilizer Mono-Ammonium Phosphate (MAP) was applied at 80kg/ha.

On 13th of August 2022 post emergent treatments of Velocity (800ml/ha), Axial Xtra (400ml/ha) and Hasten (0.5% v/v) were applied. On the 5th of September 2022 further post emergent treatments of Amistar Extra (400ml/ha), Alpha Forte 250 (50ml/ha) and Chlorpyrifos 500EC (150ml/ha) were applied.

Trial applications of Veratin Verigrow were administered via liquid banding in furrow at seeding, and spray application via hand boom at 6 weeks after sowing (6 WA-S).

Crop vigour assessments using vigour ratings compared to the UTC and NDVI readings, were taken on the 9th of August, 67 DA-S and the 13th of September, 102 DA-S.

The crop was plot harvested for yield and grain quality comparisons on the 20th December 2022, 200 DA-S.

All data collected was statistically analysed through a t-test two sample assuming equal variances at a confidence limit of 95%. All statistically significant differences contained within this report are referred to as being statistically different. Any other references to results are only referring to trial outcomes and are not significantly different.

The Verigrow applications containing higher levels of nitrogen generally delivered better yields, and the treatments that included follow-up applications all produced higher yields than those treatments where only a single application of nitrogen at seeding was delivered. There were no statistically significant variance between treatments across any yield or grain quality results

Treatments that included follow-up applications also delivered higher protein levels and lower screenings but also lower spec weights than treatments that only included a single application at seeding.

The Verigrow treatment containing 27% nitrogen and 35% nitrogen most closely replicated the Urea and Flexi-N treatments, however all yield and grain quality results were contained within a tight range across the treatments, hence no definitive conclusions can be drawn from this trial.

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Trial Aim

1. Evaluate impact of the three levels of nitrogen content in Veratin Verigrow product on wheat crop vigour plus grain yield and quality.
2. Determine the appropriate nitrogen content required in Verigrow to achieve similar wheat yield and quality results to other commonly used nitrogen fertilisers (Flexi-N and Urea).

Site Details

| | | |
|-----------|---------------------|-----------------------|
| Location | Katanning | TrialCo Research Farm |
| GPS (101) | -33.64021 117.50827 | |

Soil Analysis

| | |
|--------------------------|------------|
| Date | 19/08/2022 |
| Depth | 0-10 |
| Colour | BR |
| Gravel % | 5 |
| Texture | 2.5 |
| Ammonium Nitrogen mg/kg | 4 |
| Nitrate Nitrogen mg/kg | 15 |
| Phosphorus Colwell mg/kg | 48 |
| Potassium Colwell mg/kg | 104 |
| Sulfur mg/kg | 9.5 |
| Organic Carbon % | 1.73 |
| Conductivity dS/m | 0.078 |
| pH Level (CaCl2) | 4.7 |
| pH Level (H2O) | 6 |

Trial Design

| | | | |
|--|----|-------------------|----|
| Randomised complete block (replicate 1 in treatment order) | | | |
| Number replicates | 4 | Number treatments | 9 |
| Plot length (m) | 10 | Plot width (m) | 2 |
| Trial depth (m) | 48 | Trial width (m) | 30 |

Sowing Details

| | | | |
|---------------------|-----------------|---------------------|-----|
| Sowing Date | 3/06/2022 | | |
| Crop / CV | Wheat / Scepter | Sowing rate (kg/ha) | 96 |
| Sowing width (m) | 1.788 | Sowing depth (cm) | 3.0 |
| Tyne row width (cm) | 25.4 | Tynes per plot | 7 |

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Trial Maintenance

| Date | Product | Rate | Timing/Notes |
|-----------|---------------------|-----------|----------------------------|
| 3/06/2022 | Paraquat 250 | 2 L/ha | knockdown pre-seeding |
| | Trifluralin 480 | 2 L/ha | |
| | Mateno | 750 mL/ha | |
| | Evergol Prime | 320 mL/ha | Liquid in-furrow at sowing |
| | Impact 200 | 200 mL/ha | |
| | Cruiser 350FS | 200 mL/ha | |
| | MAP | 80 Kg/ha | In furrow at sowing |
| 13/8/2022 | Chlorpyrifos 500EC | 1 L/ha | Post Sowing Pre Emergent |
| | Velocity | 800 mL/ha | post emergent |
| | Axial Xtra | 400 mL/ha | |
| | Hasten | 0.5 % v/v | |
| 5/09/2022 | Amistar Extra | 400 mL/ha | post emergent |
| | Chlorpyriphos 500EC | 150 mL/ha | |
| | Alpha Forte 250 | 50 mL/ha | |

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Treatment List

| Treatment number | Treatment Name | Rate | Rate Unit | Application Method | Application Timing | |
|------------------|----------------|------|-----------|---|--------------------|----------|
| 1 | Nil | | | | | |
| 2 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3/06/2022 | |
| 3 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3/06/2022 | |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | 17/07/22 |
| 4 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3/06/2022 | |
| 5 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3/06/2022 | |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | 17/07/22 |
| 6 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3/06/2022 | |
| 7 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3/06/2022 | |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | 17/07/22 |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 3/06/2022 | |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | | 17/07/22 |
| 9 | Urea | 36.7 | kg/ha | Topdressed and incorporated by seeding | 3/06/2022 | |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | | 17/07/22 |

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Product Information

| Product Name | Active Constituent | Concentration | Manufacturer |
|--------------|--------------------|-----------------|--------------|
| Verigrow | Organic nitrogen | 12% w/v total N | Veratin |
| | Inorganic nitrogen | | |

Trial Layout

| | | | | | | | | | | |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| B | 1 401 | 8 402 | 3 403 | 4 404 | 2 405 | 7 406 | 9 407 | 6 408 | 5 409 | B |
| B | 6 301 | 7 302 | 5 303 | 9 304 | 1 305 | 4 306 | 2 307 | 8 308 | 3 309 | B |
| B | 2 201 | 7 202 | 3 203 | 1 204 | 6 205 | 5 206 | 4 207 | 9 208 | 8 209 | B |
| B | 1 101 | 2 102 | 3 103 | 4 104 | 5 105 | 6 106 | 7 107 | 8 108 | 9 109 | B |

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Results and Discussion

Table 1. Results and Analysis of Variance for Vigour Ratings (UTC = 100) - 67 DA-S, 102 DA-S

| Treatment number | Treatment Name | Rate | Rate Unit | Application Method | Crop Vigour | | | |
|------------------|----------------|------|-----------|---|-------------|--------|------------|--------|
| | | | | | 9/08/2022 | P=0.05 | 13/09/2022 | P=0.05 |
| 1 | Nil | | | | UTC | | UTC | |
| 2 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 113.00 | ab | 109.25 | b |
| 3 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 113.00 | ab | 114.75 | ab |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 4 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 111.50 | ab | 106.50 | b |
| 5 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 113.25 | ab | 112.00 | ab |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 6 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 107.50 | b | 107.25 | b |
| 7 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 111.50 | ab | 112.50 | ab |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 109.75 | ab | 113.00 | ab |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 9 | Urea | 36.7 | kg/ha | Topdressed and incorporated by seeding | 118.00 | a | 116.50 | a |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | | | | |

Means followed by same letter or symbol do not significantly differ (P=.05)

All plots were assessed for crop vigour at 67 DA-s and 102 DA-S, with all plots scored against the untreated control (UTC) of 100. All vigour ratings were higher than the UTC plots for all treatments.

The highest rating at both 67 DA-S and 102 DA-S was treatment 9 which consisted of 36.7 kg/ha of Urea topdressed and incorporated by seeding, plus 91.7 kg/ha of Urea topdressed by hand at 6 WA-S. Excluding the control plot, the lowest rating at 67 DA-S was treatment 6 which consisted of Verigrow containing 20% nitrogen applied at 48.2 L/ha liquid banded in furrow at seeding with no follow up application. Excluding the control plot, the lowest rating at 102 DA-S was treatment 4 which consisted of Verigrow containing 27% nitrogen applied at 48.2 L/ha liquid banded in furrow at seeding with no follow up application.

The only statistically significant difference in treatments was treatment 9 delivering significantly higher vigour ratings than treatment 6 at 67DA-S, and treatment 9 delivering significantly higher vigour ratings than treatment 2 (Verigrow

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at 35% nitrogen at 48.2 L/ha liquid banded in furrow at seeding, with no follow up application), treatment 4 and treatment 6. The significantly lower treatments were all the treatments that only had one application of nitrogen at seeding with no post emergent nitrogen applied throughout the season.

Table 2. Results and Analysis of Variance for NDVI Ratings - 67 DA-S, 102 DA-S

| Treatment number | Treatment Name | Rate | Rate Unit | Application Method | Crop NDVI | | | |
|------------------|----------------|------|-----------|---|-----------|--------|------------|--------|
| | | | | | 9/08/2022 | P=0.05 | 13/09/2022 | P=0.05 |
| 1 | Nil | | | | 0.55 | b | 0.61 | b |
| 2 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 0.57 | ab | 0.65 | bc |
| 3 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 0.52 | b | 0.72 | ac |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 4 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 0.52 | b | 0.63 | b |
| 5 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 0.56 | ab | 0.68 | bc |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 6 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 0.50 | b | 0.63 | b |
| 7 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 0.57 | ab | 0.69 | bc |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 0.59 | ab | 0.68 | bc |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | | | | |
| 9 | Urea | 36.7 | kg/ha | Topdressed and incorporated by seeding | 0.62 | a | 0.77 | a |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | | | | |

Means followed by same letter or symbol do not significantly differ (P=0.05)

All plots were assessed for Normalised Difference Vegetation Index (NDVI) readings on 67 DA-S and 102 DA-S.

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At 67 DA-S, the highest NDVI rating was treatment 9 (Urea treatments at seeding and 6 WA-S) whilst the lowest NDVI rating was treatment 6 (Verigrow at 20% nitrogen applied at 48.2 L/ha at seeding).

Treatment 9 delivered a statistically significant higher NDVI rating than treatment 1 (UTC), treatment 3 (Verigrow at 35% nitrogen applied at 48.2 L/ha at seeding, and 120 L/ha at 6 WA-S), treatment 4 and treatment 6. There were no other statistically significant variances at 67 DA-S.

At 102 DA-S, the highest NDVI rating was treatment 9, whilst the lowest rating was the control plot that had no treatments. Treatment 9 delivered a statistically significant higher NDVI rating than all treatments apart from treatment 3 at 102 DA-S.

Also at 102 DA-S, treatment 3, the highest nitrogen rate of Verigrow applied twice had a significantly higher NDVI reading than treatments 1, 4 and 6 all the treatments which only had a single application of Verigrow.

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Table 3. Results and Analysis of Variance for Yield and Grain Quality 20/12/2022

| Treatment number | Treatment Name | Rate | Rate Unit | Application Method | Yield 20/12/2022 | |
|------------------|----------------|------|-----------|---|---------------------|--------|
| | | | | | T/ha | P=0.05 |
| 1 | Nil | | | | 2.81 | a |
| 2 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 2.92 | a |
| 3 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.13 | a |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 4 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 2.92 | a |
| 5 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.35 | a |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 6 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 2.98 | a |
| 7 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.02 | a |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 3.11 | a |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 9 | Urea | 36.7 | kg/ha | Topdressed and incorporated by seeding | 3.36 | a |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | | |

Means followed by same letter or symbol do not significantly differ (P=0.05)

| Treatment number | Treatment Name | Rate | Rate Unit | Application Method | Protein 20/12/2022 | |
|------------------|----------------|------|-----------|---|-----------------------|--------|
| | | | | | % | P=0.05 |
| 1 | Nil | | | | 7.55% | a |
| 2 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 7.88% | a |
| 3 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 7.85% | a |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 4 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 7.53% | a |
| 5 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 7.80% | a |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 6 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 7.60% | a |
| 7 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 7.98% | a |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 7.53% | a |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 9 | Urea | 36.7 | kg/ha | Topdressed and incorporated by seeding | 7.88% | a |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | | |

Means followed by same letter or symbol do not significantly differ (P=0.05)

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| Treatment number | Treatment Name | Rate | Rate Unit | Application Method | Screenings 20/12/2022 | |
|------------------|----------------|------|-----------|---|-----------------------|--------|
| | | | | | % | P=0.05 |
| 1 | Nil | | | | 2.74% | a |
| 2 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.54% | a |
| 3 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.07% | a |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 4 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 2.83% | a |
| 5 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.03% | a |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 6 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.87% | a |
| 7 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 3.57% | a |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 3.60% | a |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 9 | Urea | 36.7 | kg/ha | Topdressed and incorporated by seeding | 3.28% | a |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | | |

Means followed by same letter or symbol do not significantly differ (P=0.05)

| Treatment number | Treatment Name | Rate | Rate Unit | Application Method | Spec Weight 20/12/2022 | |
|------------------|----------------|------|-----------|---|------------------------|--------|
| | | | | | kg/hL | P=0.05 |
| 1 | Nil | | | | 78.30 | a |
| 2 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 77.11 | a |
| 3 | V1 (35% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 76.69 | a |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 4 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 77.17 | a |
| 5 | V2 (27% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 76.46 | a |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 6 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 76.16 | a |
| 7 | V3 (20% N) | 48.2 | L/ha | Liquid banded in furrow at seeding | 75.58 | a |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 75.01 | a |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | | |
| 9 | Urea | 36.7 | kg/ha | Topdressed and incorporated by seeding | 75.91 | a |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | | |

Means followed by same letter or symbol do not significantly differ (P=0.05)

All plots were assessed for yield and grain quality at harvest on 20th December 2022.

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The highest yielding treatment was treatment 9 (Urea applications), closely followed by treatment 5 (Verigrow at 27% nitrogen applied at 48.2 L/ha at seeding, and the same again applied at 120 L/ha 6 WA-S). The lowest yielding treatment was the control plot. There was a 0.55 T/ha difference between lowest and highest yields, and all treatments that included a second application 6 WA-S delivered higher yields than those treatments that did not include a follow-up application. However, there was no statistically significant variance across any yield readings.

Similarly to the yield data, there were no statistically significant differences between the treatment in terms of grain quality.

The highest protein levels were delivered by treatment 7 (Verigrow at 20% nitrogen applied at 48.2 L/ha at seeding, and the same again applied at 120 L/ha 6 WA-S), and the lowest protein levels delivered by treatment 4.

The lowest screenings resulted from the control plot, perhaps due to the nitrogen content included in all other treatments. The highest spec weight also came from the control plot, with the Flexi-N applications (treatment 8) delivering the lowest spec weight.

All grain quality results were contained within a tight range across the treatments. The protein results were all within 0.45%, screening within 1.13% and spec weight 3.29 kg/hL.

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Conclusion

The Urea treatment delivered in the highest crop vigour results within the trial. This translated into the highest yielding treatment, closely followed by Verigrow at 27% nitrogen applied at seeding and follow-up at 6 WA-S.

The treatments that included follow-up applications all produced higher yields than those treatments where only a single application at seeding was delivered.

Treatments that included follow-up applications also delivered higher protein levels and lower screenings but also lower spec weights than treatments that only included a single application at seeding.

The Verigrow treatment containing 27% nitrogen and 35% nitrogen most closely replicated the Urea treatment, however all yield and grain quality results were contained within a tight range across the treatments, hence no definitive conclusions can be drawn from the trial.

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Treatment Application Details

| Application Description | Seeding | 6 WAS |
|---------------------------------|----------------------------|---------------------------|
| Application Date | 3/6/2022 | 17/7/2022 |
| Application Method | Injection/ Topdress IBS | HANDBOOM/Topdress |
| Application Timing | Sowing | 6 Weeks After Seeding |
| Application Placement | IBS | Post Emergent |
| Air Temperature Start, Stop | 10-12 | 9 - 13 |
| % Relative Humidity Start, Stop | 70% | 80% |
| Wind Velocity+Dir. Start | 13kph | 10kph |
| Wind Velocity+Dir. Stop | 12kph | 11kph |
| Wind Velocity+Dir. Max | 13kph | 12kph |
| Wet Leaves (Y/N) | N/A | N/A |
| Soil Moisture | N/A | N/A |
| Soil Surface Condition | N/A | N/A |
| % Cloud Cover | N/A | N/A |
| Water Quality | | |
| Water Temperature | N/A | N/A |
| Water Hardness | N/A | N/A |
| Application Equipment | Seeding | 6 WAS |
| Appl. Equipment | Injection/Topdress IBS | Handboom/Hand Spreader |
| Equipment Type | N/A | N/A |
| Operation Pressure | N/A | N/A |
| Nozzle Model | N/A | N/A |
| Nozzle Type | N/A | N/A |
| Nozzle TradeName | N/A | N/A |
| Nozzle Tip Size, Color | N/A | N/A |
| Nozzle Spacing | N/A | N/A |
| Nozzles/Row | N/A | N/A |
| Band Width | N/A | N/A |
| Boom Height | N/A | N/A |
| Ground Speed | N/A | N/A |
| Carrier | N/A | N/A |
| Application Amount | N/A | N/A |
| Mix Overage | N/A | N/A |
| Mix Size | N/A | N/A |
| Propellant | N/A | N/A |
| Treatment Application Comments | | |
| | | |

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Replicated Data

Table A1. Vigour ratings (UTC = 100) 67 DA-S, 102 DA-S

| TRT No | Treatment | Rate | Unit | Application Method | Plot | 9/08/22 | 13/09/22 |
|--------|------------|------|------|---|------|------------------------|-------------------------|
| | Name | | | | | 67 DA-S Crop Vigour | 102 DA-S Crop Vigour |
| 1 | UTC | | | | 101 | UTC | UTC |
| | | | | | 204 | UTC | UTC |
| | | | | | 305 | UTC | UTC |
| | | | | | 401 | UTC | UTC |
| 2 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 102 | 120 | 105 |
| | | | | | 201 | 117 | 117 |
| | | | | | 307 | 110 | 110 |
| | | | | | 405 | 105 | 105 |
| 3 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 103 | 120 | 115 |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 203 | 117 | 114 |
| | | | | | 309 | 112 | 117 |
| | | | | | 403 | 103 | 113 |
| 4 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 104 | 125 | 112 |
| | | | | | 207 | 106 | 105 |
| | | | | | 306 | 112 | 105 |
| | | | | | 404 | 103 | 104 |
| 5 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 105 | 125 | 118 |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 206 | 115 | 108 |
| | | | | | 303 | 108 | 112 |
| | | | | | 409 | 105 | 110 |
| 6 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 106 | 115 | 112 |
| | | | | | 205 | 105 | 105 |
| | | | | | 301 | 105 | 105 |
| | | | | | 408 | 105 | 107 |
| 7 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 107 | 115 | 115 |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 202 | 115 | 115 |
| | | | | | 302 | 108 | 110 |

Veratin: Nitrogen Content in Verigrow Trial - Katanning

| | | | | | | | |
|---|---------|------|-------|---|-----|-----|-----|
| | | | | | 406 | 108 | 110 |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 108 | 105 | 108 |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | 209 | 111 | 112 |
| | | | | | 308 | 115 | 115 |
| | | | | | 402 | 108 | 117 |
| 9 | Urea | 37 | kg/ha | Topdressed and incorporated by seeding | 109 | 115 | 117 |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | 208 | 125 | 118 |
| | | | | | 304 | 120 | 115 |
| | | | | | 407 | 112 | 116 |

Veratin: Nitrogen Content in Verigrow Trial - Katanning

Table A2. NDVI scores, 67 DA-S, 102 DA-S

| TRT No | Treatment Name | Rate | Rate Unit | Application Method | Plot | 9/08/22 67 DA-S NDVI | 13/09/22 102 DA-S NDVI |
|--------|----------------|------|-----------|---|------|----------------------------|------------------------------|
| 1 | UTC | | | | 101 | 0.56 | 0.50 |
| | | | | | 204 | 0.61 | 0.63 |
| | | | | | 305 | 0.53 | 0.66 |
| | | | | | 401 | 0.49 | 0.63 |
| 2 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 102 | 0.61 | 0.60 |
| | | | | | 201 | 0.60 | 0.72 |
| | | | | | 307 | 0.58 | 0.67 |
| | | | | | 405 | 0.48 | 0.59 |
| 3 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 103 | 0.62 | 0.68 |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 203 | 0.52 | 0.75 |
| | | | | | 309 | 0.47 | 0.74 |
| | | | | | 403 | 0.45 | 0.71 |
| 4 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 104 | 0.58 | 0.62 |
| | | | | | 207 | 0.51 | 0.58 |
| | | | | | 306 | 0.55 | 0.65 |
| | | | | | 404 | 0.45 | 0.65 |
| 5 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 105 | 0.58 | 0.70 |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 206 | 0.58 | 0.60 |
| | | | | | 303 | 0.59 | 0.72 |
| | | | | | 409 | 0.47 | 0.70 |
| 6 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 106 | 0.58 | 0.57 |
| | | | | | 205 | 0.53 | 0.59 |
| | | | | | 301 | 0.46 | 0.69 |
| | | | | | 408 | 0.43 | 0.65 |
| 7 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 107 | 0.60 | 0.66 |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 202 | 0.59 | 0.71 |
| | | | | | 302 | 0.56 | 0.67 |
| | | | | | 406 | 0.51 | 0.70 |

Veratin: Nitrogen Content in Verigrow Trial - Katanning

| | | | | | | | |
|---|---------|------|-------|---|-----|------|------|
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 108 | 0.62 | 0.62 |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | 209 | 0.60 | 0.70 |
| | | | | | 308 | 0.62 | 0.70 |
| | | | | | 402 | 0.52 | 0.70 |
| 9 | Urea | 37 | kg/ha | Topdressed and incorporated by seeding | 109 | 0.64 | 0.77 |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | 208 | 0.59 | 0.73 |
| | | | | | 304 | 0.62 | 0.81 |
| | | | | | 407 | 0.63 | 0.77 |

Veratin: Nitrogen Content in Verigrow Trial - Katanning

Table A3. Harvest yield data – T/ha

| TRT No | Treatment Name | Rate | Rate Unit | Application Method | Plot | 20/12/2022 Yield T/ha |
|--------|--------------------------|------------|----------------|---|--------------------------|------------------------------|
| 1 | UTC | | | | 101 204 305 401 | 2.06 3.39 3.27 2.52 |
| 2 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 102 201 307 405 | 2.25 2.70 3.81 2.93 |
| 3 | V1 (35% N) V1 (35% N) | 48 120 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 103 203 309 403 | 2.62 3.14 3.46 3.32 |
| 4 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 104 207 306 404 | 2.83 3.03 3.43 2.39 |
| 5 | V2 (27% N) V2 (27% N) | 48 120 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 105 206 303 409 | 3.36 3.42 3.21 3.42 |
| 6 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 106 205 301 408 | 2.63 3.43 2.65 3.19 |
| 7 | V3 (20% N) V3 (20% N) | 48 120 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 107 202 302 406 | 2.89 3.23 3.02 2.93 |
| 8 | Flexi-N Flexi-N | 40 100 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 108 209 308 402 | 2.58 2.82 3.65 3.39 |
| 9 | Urea Urea | 37 91.7 | kg/ha kg/ha | Topdressed and incorporated by seeding 6 WA-S top dressed by hand | 109 208 304 407 | 2.55 3.45 3.57 3.89 |

Veratin: Nitrogen Content in Verigrow Trial - Katanning

Table A4. Grain protein data – %

| TRT No | Treatment Name | Rate | Rate Unit | Application Method | Plot | 20/12/2022 Protein % |
|--------|--------------------------|------------|----------------|---|--------------------------|----------------------------------|
| 1 | UTC | | | | 101 204 305 401 | 7.30% 8.00% 7.50% 7.40% |
| 2 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 102 201 307 405 | 7.40% 8.40% 8.20% 7.50% |
| 3 | V1 (35% N) V1 (35% N) | 48 120 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 103 203 309 403 | 7.70% 8.10% 8.10% 7.50% |
| 4 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 104 207 306 404 | 7.50% 7.80% 7.40% 7.40% |
| 5 | V2 (27% N) V2 (27% N) | 48 120 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 105 206 303 409 | 8.10% 8.00% 7.50% 7.60% |
| 6 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 106 205 301 408 | 7.30% 8.10% 7.20% 7.80% |
| 7 | V3 (20% N) V3 (20% N) | 48 120 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 107 202 302 406 | 7.70% 8.30% 8.00% 7.90% |
| 8 | Flexi-N Flexi-N | 40 100 | L/ha L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 108 209 308 402 | 7.40% 7.40% 7.80% 7.50% |
| 9 | Urea Urea | 37 91.7 | kg/ha kg/ha | Topdressed and incorporated by seeding 6 WA-S top dressed by hand | 109 208 304 407 | 7.60% 7.80% 7.70% 8.40% |

Veratin: Nitrogen Content in Verigrow Trial - Katanning

Table A5. Grain screenings data – %

| TRT No | Treatment Name | Rate | Rate Unit | Application Method | Plot | 20/12/2022 Screenings % |
|--------|----------------|------|-----------|---|------|-------------------------|
| 1 | UTC | | | | 101 | 2.83% |
| | | | | | 204 | 2.87% |
| | | | | | 305 | 2.76% |
| | | | | | 401 | 2.52% |
| 2 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 102 | 2.75% |
| | | | | | 201 | 5.35% |
| | | | | | 307 | 2.05% |
| | | | | | 405 | 4.00% |
| 3 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 103 | 2.59% |
| | V1 (35% N) | 120 | L/ha | | 203 | 3.45% |
| | | | | | 309 | 2.35% |
| | | | | | 403 | 3.90% |
| 4 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 104 | 2.45% |
| | | | | | 207 | 2.14% |
| | | | | | 306 | 2.68% |
| | | | | | 404 | 4.04% |
| 5 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 105 | 2.06% |
| | V2 (27% N) | 120 | L/ha | | 206 | 2.41% |
| | | | | | 303 | 3.00% |
| | | | | | 409 | 4.65% |
| 6 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 106 | 2.98% |
| | | | | | 205 | 3.32% |
| | | | | | 301 | 3.22% |
| | | | | | 408 | 5.95% |
| 7 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 107 | 2.65% |
| | V3 (20% N) | 120 | L/ha | | 202 | 3.95% |
| | | | | | 302 | 3.10% |
| | | | | | 406 | 4.57% |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding Spray application at 6 WA-S via hand boom | 108 | 4.92% |
| | Flexi-N | 100 | L/ha | | 209 | 3.67% |
| | | | | | 308 | 2.80% |
| | | | | | 402 | 3.02% |
| 9 | Urea | 37 | kg/ha | Topdressed and incorporated by seeding 6 WA-S top dressed by hand | 109 | 3.56% |
| | Urea | 91.7 | kg/ha | | 208 | 2.06% |
| | | | | | 304 | 3.42% |
| | | | | | 407 | 4.09% |

Veratin: Nitrogen Content in Verigrow Trial - Katanning

Table A6. Grain spec weight data – kg/hL

| TRT No | Treatment Name | Rate | Rate Unit | Application Method | Plot | 20/12/2022 Spec Weight kg/hL |
|--------|----------------|------|-----------|---|------|------------------------------------|
| 1 | UTC | | | | 101 | 79.72 |
| | | | | | 204 | 77.48 |
| | | | | | 305 | 79.06 |
| | | | | | 401 | 76.94 |
| 2 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 102 | 78.46 |
| | | | | | 201 | 74.00 |
| | | | | | 307 | 79.02 |
| | | | | | 405 | 76.94 |
| 3 | V1 (35% N) | 48 | L/ha | Liquid banded in furrow at seeding | 103 | 78.04 |
| | V1 (35% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 203 | 77.06 |
| | | | | | 309 | 74.80 |
| | | | | | 403 | 76.84 |
| 4 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 104 | 76.78 |
| | | | | | 207 | 77.64 |
| | | | | | 306 | 79.00 |
| | | | | | 404 | 75.24 |
| 5 | V2 (27% N) | 48 | L/ha | Liquid banded in furrow at seeding | 105 | 77.58 |
| | V2 (27% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 206 | 77.12 |
| | | | | | 303 | 76.66 |
| | | | | | 409 | 74.48 |
| 6 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 106 | 76.50 |
| | | | | | 205 | 78.38 |
| | | | | | 301 | 76.50 |
| | | | | | 408 | 73.26 |
| 7 | V3 (20% N) | 48 | L/ha | Liquid banded in furrow at seeding | 107 | 77.68 |
| | V3 (20% N) | 120 | L/ha | Spray application at 6 WA-S via hand boom | 202 | 74.96 |
| | | | | | 302 | 76.12 |
| | | | | | 406 | 73.54 |
| 8 | Flexi-N | 40 | L/ha | Liquid banded in furrow at seeding | 108 | 73.16 |
| | Flexi-N | 100 | L/ha | Spray application at 6 WA-S via hand boom | 209 | 73.54 |
| | | | | | 308 | 77.76 |
| | | | | | 402 | 75.58 |
| 9 | Urea | 37 | kg/ha | Topdressed and incorporated by seeding | 109 | 73.52 |
| | Urea | 91.7 | kg/ha | 6 WA-S top dressed by hand | 208 | 79.80 |
| | | | | | 304 | 76.00 |
| | | | | | 407 | 74.30 |

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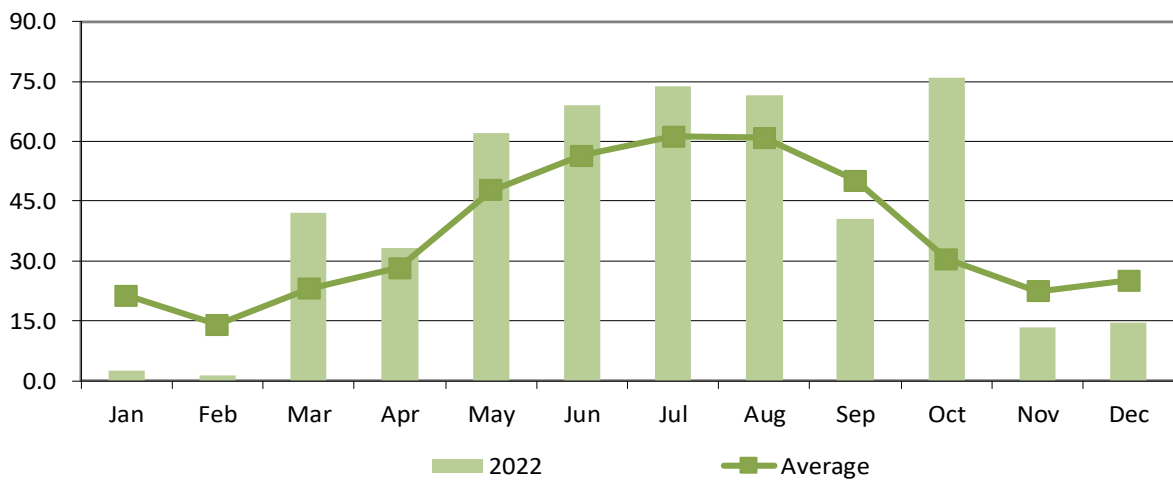
Weather Data

DPIRD Station Katanning KA004

2022 Daily Rainfall (mm)

| Date | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 |
| 2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 0.0 | 17.6 | 0.0 | 2.8 | 1.0 | 0.0 |
| 3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.2 | 6.2 | 1.2 | 0.4 | 0.0 | 0.0 |
| 4 | 0.0 | 0.0 | 0.0 | 16.8 | 0.2 | 0.0 | 0.2 | 3.0 | 0.4 | 0.0 | 0.0 | 0.6 |
| 5 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.4 | 0.0 | 0.2 | 22.4 | 0.6 | 0.0 | 0.6 |
| 6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.8 | 0.4 | 0.0 | 0.6 | 1.0 | 0.0 | 0.4 |
| 7 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 9.4 | 0.2 | 2.8 | 0.2 | 0.0 |
| 8 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | 0.4 | 0.2 | 0.0 | 1.4 | 13.2 |
| 9 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 7.6 | 0.0 | 5.2 | 0.0 | 0.0 | 0.2 | 0.0 |
| 10 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 | 10.4 | 0.4 | 0.0 | 0.8 | 0.0 | 0.0 |
| 11 | 0.0 | 0.0 | 0.0 | 3.8 | 0.0 | 15.8 | 0.2 | 0.8 | 0.0 | 1.4 | 4.0 | 0.0 |
| 12 | 0.0 | 1.2 | 11.2 | 7.6 | 13.4 | 0.6 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.0 |
| 13 | 0.0 | 0.0 | 2.4 | 0.6 | 19.2 | 3.8 | 0.0 | 0.0 | 5.4 | 0.0 | 0.4 | 0.0 |
| 14 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 0.8 | 0.0 | 5.6 | 1.4 | 0.0 | 0.0 | 0.0 |
| 15 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 | 7.2 | 0.2 | 0.6 | 0.0 | 0.0 | 0.0 |
| 16 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.6 | 0.2 | 10.6 | 1.4 | 0.0 | 0.0 | 0.0 |
| 17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 9.8 | 0.0 | 0.0 | 0.0 | 0.0 |
| 18 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 21.4 | 16.6 | 0.8 | 0.0 | 0.0 | 1.4 | 0.0 |
| 19 | 0.0 | 0.0 | 0.8 | 0.0 | 5.2 | 3.0 | 0.4 | 0.0 | 2.8 | 0.0 | 3.8 | 0.0 |
| 20 | 0.0 | 0.0 | 0.6 | 0.0 | 0.4 | 0.8 | 0.0 | 0.0 | 2.4 | 0.0 | 0.4 | 0.0 |
| 21 | 0.0 | 0.0 | 0.2 | 0.0 | 0.2 | 1.6 | 11.6 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 |
| 22 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.8 | 0.2 | 0.8 | 0.0 | 0.0 | 0.0 |
| 23 | 0.0 | 0.0 | 0.0 | 0.2 | 5.0 | 0.8 | 0.6 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 |
| 24 | 0.0 | 0.0 | 0.0 | 0.0 | 8.2 | 3.0 | 13.2 | 0.0 | 0.0 | 49.6 | 0.0 | 0.0 |
| 25 | 2.6 | 0.0 | 0.0 | 0.0 | 5.4 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| 26 | 0.0 | 0.0 | 7.2 | 1.4 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| 27 | 0.0 | 0.0 | 1.4 | 0.0 | 0.2 | 0.0 | 3.6 | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 |
| 28 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 1.0 | 0.4 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| 29 | 0.0 | | 12.0 | 0.6 | 0.8 | 0.4 | 5.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 |
| 30 | 0.0 | | 0.2 | 0.0 | 1.2 | 0.0 | 1.0 | 0.0 | 0.0 | 13.2 | 0.0 | 0.0 |
| 31 | 0.0 | | 6.0 | | 0.4 | | 0.6 | 0.0 | | 0.8 | | 0.0 |
| 2022 | 2.6 | 1.4 | 42.0 | 33.2 | 62.2 | 69.0 | 73.6 | 71.4 | 40.6 | 75.8 | 13.4 | 14.8 |
| 2022 GSR Apr-Oct: 425.8 | | | | | | | | | | | | |
| Cum. | 2.6 | 4.0 | 46.0 | 79.2 | 141.4 | 210.4 | 284.0 | 355.4 | 396.0 | 471.8 | 485.2 | 500.0 |
| Average | 21.4 | 14.1 | 23.1 | 28.4 | 47.8 | 56.4 | 61.2 | 60.9 | 50.1 | 30.5 | 22.5 | 25.2 |
| Ave GSR Apr-Oct: 335.3 | | | | | | | | | | | | |
| Cum. | 21.4 | 35.5 | 58.6 | 87.0 | 134.8 | 191.2 | 252.4 | 313.3 | 363.4 | 393.9 | 416.4 | 441.6 |

2022 Monthly Rainfall vs Long Term Average (mm)



Veratin: Nitrogen Content in Verigrow Trial - Katanning

DPIRD Station Katanning KA004

2022 Daily Temperature (°C)

| | Jan | | Feb | | Mar | | Apr | | May | | Jun | | Jul | | Aug | | Sep | | Oct | | Nov | | Dec | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Date | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| 1 | 7.3 | 28.3 | 12.8 | 26.5 | 14.3 | 29.8 | 15.1 | 31.2 | 5.0 | 23.8 | 2.8 | 16.1 | -0.8 | 15.6 | 5.8 | 15.6 | 1.3 | 18.1 | 5.2 | 22.6 | 8.9 | 20.2 | 10.7 | 30.1 |
| 2 | 11.2 | 31.7 | 12.9 | 29.5 | 13.4 | 24.5 | 16.2 | 28.6 | 7.5 | 20.6 | 9.0 | 18.0 | -0.3 | 15.6 | 7.0 | 12.6 | 6.7 | 17.2 | 9.5 | 17.0 | 10.7 | 20.8 | 11.2 | 30.5 |
| 3 | 14.1 | 33.2 | 14.7 | 33.4 | 7.4 | 25.7 | 18.0 | 28.0 | 8.2 | 17.5 | 4.4 | 15.4 | -1.3 | 15.3 | 5.3 | 13.7 | 9.1 | 13.9 | 4.5 | 18.1 | 10.1 | 27.5 | 14.1 | 29.1 |
| 4 | 16.1 | 29.5 | 16.6 | 39.4 | 11.1 | 27.7 | 14.6 | 20.9 | 5.2 | 17.6 | 8.4 | 16.8 | 2.2 | 15.2 | 6.9 | 14.0 | 9.5 | 14.1 | 0.4 | 21.1 | 11.2 | 24.8 | 12.8 | 18.5 |
| 5 | 16.0 | 34.3 | 15.8 | 41.7 | 12.2 | 30.3 | 8.1 | 21.8 | 6.7 | 18.6 | 6.1 | 16.8 | 6.1 | 13.9 | 3.3 | 13.7 | 10.1 | 16.9 | 9.8 | 17.5 | 6.3 | 23.3 | 12.4 | 21.4 |
| 6 | 14.3 | 36.7 | 19.9 | 39.1 | 14.6 | 33.1 | 6.9 | 23.5 | 1.5 | 20.1 | 5.6 | 12.4 | 2.1 | 15.5 | 6.5 | 14.4 | 2.0 | 17.0 | 4.3 | 15.8 | 6.8 | 20.0 | 12.8 | 25.5 |
| 7 | 15.4 | 33.2 | 10.7 | 23.8 | 16.1 | 28.9 | 10.3 | 27.8 | 2.0 | 22.3 | 4.8 | 15.2 | 2.0 | 13.2 | 8.3 | 15.4 | 6.4 | 8.8 | 2.7 | 19.5 | 10.1 | 22.7 | 9.5 | 26.2 |
| 8 | 13.3 | 35.8 | 12.1 | 28.8 | 14.3 | 30.2 | 15.1 | 28.0 | 5.3 | 24.5 | 6.3 | 16.4 | 1.5 | 19.3 | 6.7 | 15.1 | 1.6 | 14.0 | 2.6 | 22.3 | 11.9 | 18.1 | 12.4 | 29.8 |
| 9 | 10.4 | 25.9 | 10.5 | 30.5 | 12.2 | 32.8 | 8.5 | 19.2 | 6.9 | 24.0 | 8.4 | 12.9 | 9.0 | 15.8 | 4.8 | 11.0 | 6.9 | 20.5 | 3.8 | 20.0 | 10.3 | 24.4 | 12.4 | 27.9 |
| 10 | 8.6 | 28.1 | 12.9 | 37.9 | 12.5 | 34.4 | 6.9 | 20.0 | 5.7 | 27.5 | 8.6 | 17.1 | 7.1 | 15.2 | 3.6 | 14.7 | 2.9 | 21.2 | 8.9 | 16.4 | 11.2 | 19.5 | 8.3 | 23.3 |
| 11 | 13.3 | 33.1 | 14.7 | 42.4 | 12.9 | 36.9 | 10.1 | 19.7 | 7.3 | 21.8 | 11.5 | 17.2 | 2.6 | 15.7 | 5.4 | 16.6 | 3.4 | 21.6 | 5.5 | 19.0 | 8.9 | 17.5 | 5.4 | 24.5 |
| 12 | 13.9 | 38.7 | 15.6 | 31.4 | 16.7 | 30.2 | 10.7 | 22.3 | 10.1 | 11.4 | 13.3 | 17.9 | 0.7 | 16.8 | 2.0 | 16.0 | 8.6 | 23.4 | 2.5 | 17.6 | 5.6 | 18.3 | 6.3 | 24.8 |
| 13 | 13.6 | 33.7 | 14.7 | 30.0 | 16.3 | 26.8 | 11.4 | 20.2 | 8.0 | 15.1 | 9.2 | 15.3 | 1.2 | 18.4 | 7.5 | 15.4 | 11.0 | 14.9 | 5.8 | 19.0 | 7.7 | 19.9 | 10.8 | 25.6 |
| 14 | 11.3 | 31.4 | 14.5 | 33.2 | 17.8 | 29.6 | 6.1 | 23.8 | 8.1 | 18.5 | 6.3 | 15.6 | 7.9 | 15.0 | 3.6 | 16.1 | 5.9 | 15.4 | 4.0 | 20.3 | 7.5 | 21.7 | 10.8 | 26.7 |
| 15 | 9.4 | 31.3 | 16.3 | 35.4 | 15.2 | 28.5 | 8.6 | 24.3 | 8.3 | 17.3 | 9.9 | 16.4 | 10.1 | 17.2 | 4.3 | 20.2 | 8.2 | 17.1 | 7.0 | 22.2 | 7.1 | 25.8 | 12.6 | 27.9 |
| 16 | 11.0 | 30.7 | 14.1 | 35.3 | 14.4 | 28.4 | 9.1 | 25.2 | 4.6 | 18.7 | 8.3 | 19.5 | 4.5 | 17.0 | 10.4 | 14.9 | 6.7 | 18.2 | 6.3 | 21.3 | 7.2 | 31.6 | 9.1 | 26.1 |
| 17 | 10.8 | 31.7 | 12.0 | 33.6 | 15.0 | 30.2 | 8.9 | 20.2 | 5.6 | 23.4 | 10.9 | 18.4 | 5.0 | 14.1 | 7.8 | 13.4 | 4.7 | 18.3 | 5.8 | 22.1 | 11.4 | 21.7 | 11.1 | 28.9 |
| 18 | 14.3 | 38.3 | 10.8 | 35.0 | 14.0 | 36.3 | 5.6 | 21.9 | 11.9 | 21.9 | 7.8 | 13.2 | 7.5 | 16.2 | 3.1 | 15.2 | 7.2 | 18.7 | 4.3 | 25.4 | 7.4 | 15.2 | 12.7 | 30.1 |
| 19 | 16.4 | 39.5 | 12.5 | 39.4 | 14.9 | 22.0 | 10.7 | 23.7 | 11.8 | 20.1 | 8.4 | 14.5 | 7.9 | 14.5 | 7.0 | 16.3 | 8.5 | 17.0 | 4.6 | 29.8 | 5.5 | 21.2 | 12.2 | 33.1 |
| 20 | 14.0 | 40.8 | 13.1 | 29.4 | 14.5 | 27.5 | 9.8 | 22.7 | 7.2 | 20.8 | 8.3 | 17.5 | 7.2 | 17.7 | 4.0 | 16.9 | 5.2 | 19.1 | 10.9 | 22.4 | 6.8 | 20.9 | 8.5 | 34.4 |
| 21 | 14.6 | 39.3 | 12.3 | 31.6 | 15.1 | 23.5 | 9.4 | 19.8 | 8.4 | 22.6 | 10.6 | 16.5 | 9.6 | 15.1 | 5.0 | 16.6 | 9.1 | 20.7 | 11.7 | 20.2 | 5.0 | 25.6 | 13.9 | 30.2 |
| 22 | 13.6 | 40.3 | 12.1 | 36.2 | 13.8 | 24.1 | 7.0 | 22.6 | 10.6 | 20.9 | 12.2 | 18.9 | 7.2 | 16.7 | 2.6 | 15.2 | 2.4 | 16.5 | 9.6 | 22.4 | 8.3 | 31.4 | 12.2 | 33.3 |
| 23 | 14.9 | 40.0 | 16.0 | 28.2 | 8.4 | 23.9 | 5.7 | 23.1 | 12.1 | 14.5 | 11.0 | 14.8 | 10.9 | 13.6 | 1.4 | 15.0 | 1.9 | 19.0 | 8.9 | 23.9 | 16.7 | 31.2 | 9.8 | 35.5 |
| 24 | 14.1 | 26.5 | 15.7 | 32.8 | 8.1 | 26.3 | 8.7 | 24.5 | 12.1 | 18.8 | 3.8 | 15.6 | 3.6 | 13.4 | 1.4 | 15.3 | 7.9 | 17.7 | 12.2 | 17.4 | 14.4 | 26.6 | 13.1 | 33.8 |
| 25 | 13.8 | 26.8 | 17.0 | 36.9 | 10.0 | 31.5 | 11.2 | 25.9 | 7.8 | 19.2 | 4.2 | 16.4 | 6.1 | 15.5 | 3.3 | 19.6 | 3.6 | 18.4 | 10.0 | 20.6 | 10.2 | 24.6 | 14.9 | 34.9 |
| 26 | 14.5 | 27.1 | 16.8 | 28.7 | 16.6 | 28.6 | 12.4 | 20.2 | 5.3 | 19.0 | 2.8 | 18.0 | 8.9 | 14.8 | 1.4 | 21.4 | 3.2 | 20.8 | 5.1 | 19.8 | 11.2 | 24.3 | 15.3 | 38.3 |
| 27 | 13.9 | 29.3 | 16.4 | 28.4 | 15.4 | 21.0 | 7.8 | 22.1 | 3.9 | 21.3 | 8.7 | 18.7 | 4.6 | 16.7 | 7.0 | 14.7 | 3.8 | 22.9 | 3.8 | 18.0 | 6.6 | 24.9 | 14.3 | 38.1 |
| 28 | 7.9 | 33.1 | 17.1 | 35.4 | 11.2 | 16.4 | 8.8 | 19.7 | 4.0 | 20.1 | 3.5 | 14.7 | 5.2 | 18.1 | 3.8 | 13.6 | 4.6 | 26.9 | 5.5 | 21.0 | 7.2 | 27.5 | 12.8 | 39.4 |
| 29 | 13.5 | 39.0 | | | 14.0 | 20.7 | 6.0 | 20.0 | 5.5 | 13.7 | 4.5 | 13.0 | 9.5 | 16.4 | -0.5 | 13.0 | 9.5 | 26.6 | 9.6 | 13.1 | 9.0 | 33.1 | 13.3 | 41.2 |
| 30 | 16.3 | 35.6 | | | 15.7 | 18.3 | 5.1 | 22.2 | 8.0 | 17.7 | 6.3 | 14.4 | 5.4 | 11.3 | -0.4 | 17.0 | 7.2 | 25.2 | 6.1 | 13.9 | 14.9 | 32.8 | 14.4 | 34.4 |
| 31 | 16.5 | 26.3 | | | 14.7 | 22.8 | | | 8.6 | 15.0 | | | 3.1 | 13.3 | 1.1 | 18.3 | | | 4.9 | 17.2 | | | 13.8 | 27.0 |

2022 vs Long Term Average Monthly Temperature (°C)

| | Jan | | Feb | | Mar | | Apr | | May | | Jun | | Jul | | Aug | | Sep | | Oct | | Nov | | Dec | |
|------|------|------|------|------|------|------|------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|------|------|------|------|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| 2022 | 13.2 | 33.2 | 14.3 | 33.4 | 13.6 | 27.4 | 9.8 | 23.1 | 7.2 | 19.6 | 7.5 | 16.1 | 5.0 | 15.6 | 4.5 | 15.5 | 6.0 | 18.7 | 6.3 | 19.9 | 9.2 | 23.9 | 11.7 | 30.0 |
| Ave | 13.6 | 30.1 | 14.1 | 29.7 | 13.1 | 27.0 | 11.1 | 23.3 | 8.6 | 19.2 | 6.9 | 16.2 | 6.0 | 14.8 | 5.9 | 15.4 | 6.2 | 17.6 | 7.7 | 21.9 | 10.1 | 26.2 | 11.8 | 28.8 |