

OATSPO

AGRONOMIC SHOWCASE

15 September 2026



Department of
Primary Industries and
Regional Development



Field day co-hosts



PO Box 1081
BENTLEY DC WA 6983
admin@giwa.org.au
Phone: +61 8 6262 2128



PO Box 398
NARROGIN WA 6312
gk@consultag.com.au
Phone: 0427 442 887

Field day sponsors

Sundowner sponsor



Event sponsors



Trial supporters



Research contractor



Harvester provider



Disclaimer:

This Field Tour booklet has been prepared for OATSPO Field Day participants and attendees. It is not for general publication or distribution. All trial site data included is presented as submitted by those responsible for each trial site and is intended for information purposes only. Readers are responsible for assessing the relevance and accuracy of any included data. While all care has been taken, GIWA and its employees and agents shall have no liability (including liability by reason of negligence) to the attendees for any loss, damage, cost or expense incurred or arising by reason of any person attending the OATSPO Field Day or applying the information contained in this booklet.

Contents

Field day key contacts	4
Finding OATSP0.....	5
Field day program.....	6
Field day trial site	7
Trial summaries	8
Welcome to OATSP0	9
1. Evaluating new foliar fungicide options for septoria control in oats.....	11
2. Septoria Avenae management strategies in oats	12
3. Competition value of oats vs barley vs wheat against ryegrass	14
4. Herbicide safety: assessing the impact of sowing speed and depth.....	15
5. Canopy management: the impact of plant growth regulators and grazing on oat yield and quality	16
6. Optimising hay nutrition to achieve improved yield and quality	17
7. Saprophyte management in oaten hay windrows	18
8. Evaluating impact of sowing depth on hay yield and quality of a range of oat varieties.....	21
9. Comparative N response in oats vs high yielding feed barley	23
10. Defining the rules of thumb for April-sown oats	25
11. C-Wise compost: investigating alternative nutrition strategies for oats	29
12. Managing volunteer canola and broadleaf weeds with pre-emergent herbicides	31

Field day key contacts

GIWA

Peter Nash

Chief Executive Officer
Grain Industry Association of WA (GIWA)
Mb: 0413 032 654

Debbie Boxall

Program Manager—Strategic
Grain Industry Association of WA (GIWA)
Mb: 0419 944 286

Amanda Collett

Marketing and Communications Manager
Grain Industry Association of WA (GIWA)
Mb: 0402 838 059

Nadia Chiang

Administration Manager
Grain Industry Association of WA (GIWA)
Mb: 0424 096 872

ConsultAg

Garren Knell

Field Day Manager
ConsultAg
Mb: 0427 442 887

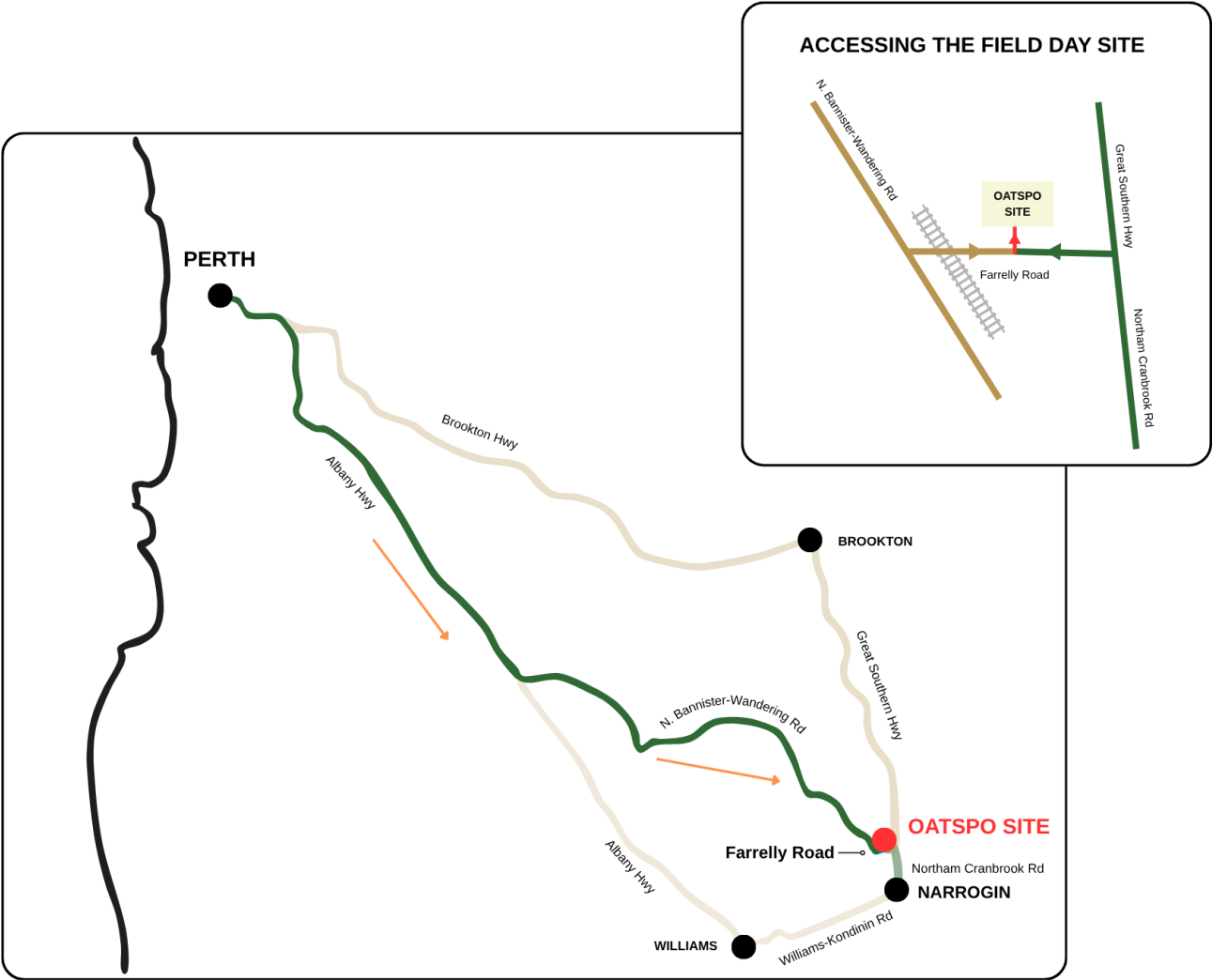
Gray Yates

ConsultAg
Mb: 0475 406 202

Trent Butcher

ConsultAg
Mb: 0417 137 211

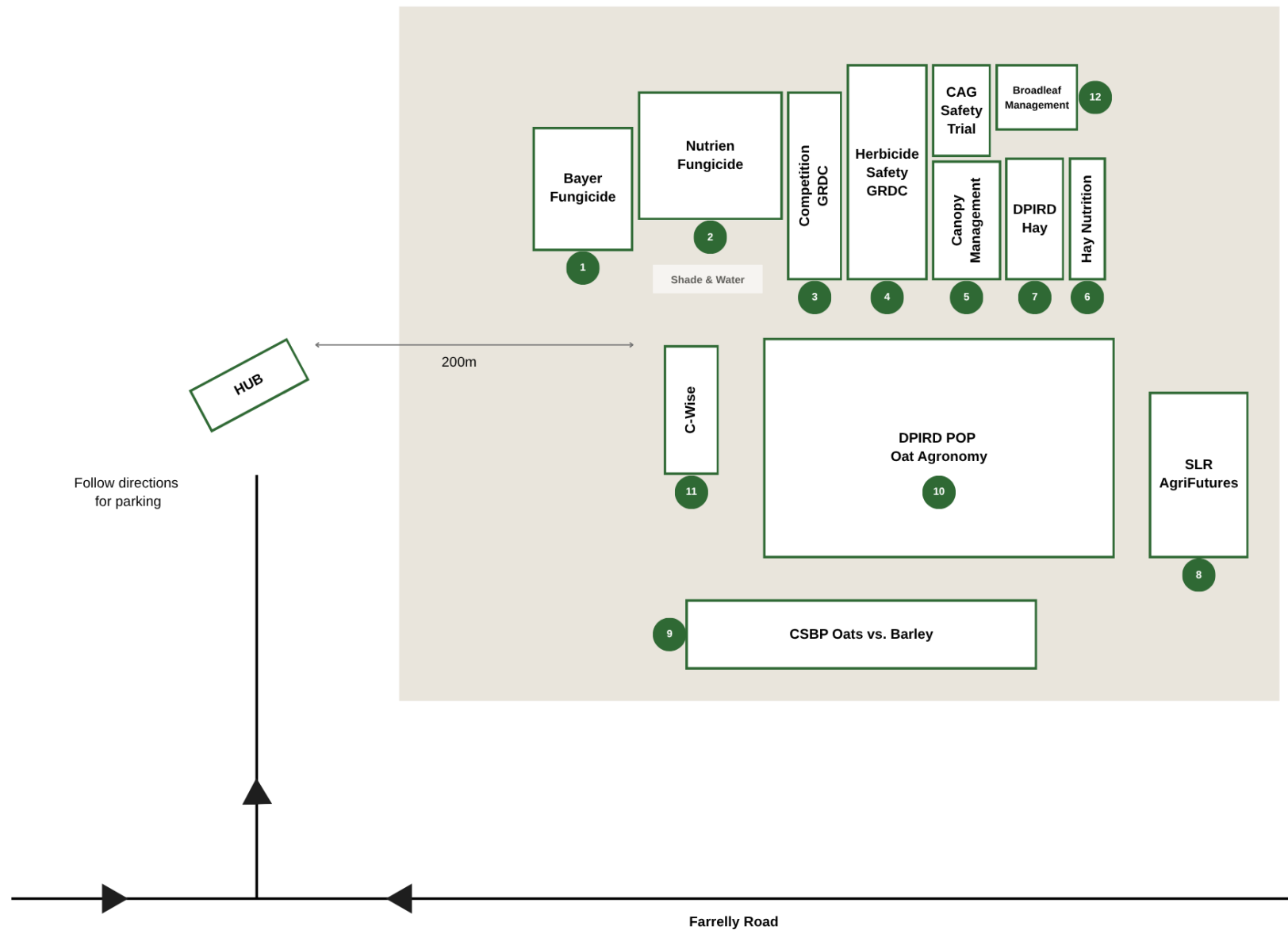
Finding OATSPO



Field day program

	12.30pm	Arrival, registration and coffee
	1.00pm	Field day commences Farrelly Road, Hillside
	Trial Tours	1. Fungicide trials, with James Lyden and Annabell Maher 2. Weed control, with Trent Butcher 3. Minimising oat lodging, with Gray Yates 4. Managing hay trial, with Kylie Chambers 5. Deep Sowing Oats, with Rob Enright 6. Oats vs Barley, with Peter Rees 7. POP Oat Agronomy, with Blakely Paynter and Allan Rattey 8. C-Wise alternative fertiliser source, with Zac Rick and Gavin
	2.50pm	Afternoon tea
	3.15pm	Oat market update
	3.45pm	Trial Tours recommence
	5.20pm	Sundowner, proudly sponsored by CBH Group
	5.20pm	Harvester discussion, supported by AFGRI
	7.00pm	Event concludes

Field day trial site



Trial summaries

1 Evaluating new foliar fungicide options for septoria control in oats, Bayer

This trial aims to evaluate Bayer's new SDHI fungicide for septoria control compared to industry standard products. It will compare the efficacy of a range of fungicides applied at Flag leaf (Z39).

2 Septoria Avenae Management Strategies in Oats, Nutrien

This trial investigates if seeding fungicide (Systiva/Flutriafol) has an economic benefit for Septoria Avenae, if the foliar management of septoria in a dry year economical and what the most economical seasonal strategy for septoria is.

3 Competition value of oats vs barley vs wheat against ryegrass, GRDC

This trial aims to evaluate the performance of oats against wheat and barley for their competitive ability against annual ryegrass; and determine the impact of seeding rate of oats under different annual ryegrass burdens on ryegrass suppression.

4 Herbicide Safety: Assessing the impact of sowing speed and depth, GRDC

This trial aims to show growers the importance of making a good seed bed to establish oats when using a range of herbicide options.

5 Canopy management: The Impact of Plant Growth Regulators and Grazing on Oat Yield and Quality, the POP and ConsultAg

This trial aims to evaluate if lower doses (micro dosing) of Moddus can improve the straw strength while minimising the potential negative impacts on grain yield and quality.

6 Optimising Hay Nutrition to achieve improved yield and quality, ConsultAg

This trial aims to quantify whether the addition of sulphur and/or potassium on top of nitrogen improves oat hay yield and quality enough to justify the extra cost.

7 Saprophyte Management in Oaten Hay Windrows, DPIRD and AgriFutures

This trial looks at the off-target effect of fungicides applied to oaten hay for disease control on weather induced fungal staining.

8 Evaluating impact of sowing depth on hay yield and quality of a range of oat varieties, AgriFutures and SLR Agriculture

This trial aims to assess whether deep seeding oats improves the success and reliability of early-season germination and has the potential to increase hay yield and quality.

9 Comparative N response in Oats vs High yielding feed barley, CSBP

To investigate the Nitrogen (N) response in Oats versus high yielding feed Barley.

10 Defining the rules of thumb for April-sown oats, DPIRD and the POP

The trial aims to understand the best varieties and agronomic strategy for managing early sown oats.

11 C-Wise Compost: Investigating alternative nutrition strategies for oats, C-Wise

This trial investigates two of C-Wise compost products (FCHR50 and FCHR25) incorporated into a nutrition program for oats and the comparison of these programs with grower-standard granular fertiliser.

12 Managing volunteer canola and broadleaf weeds with pre-emergent herbicides, the POP

This trial aims to compare a range of pre-emergent broadleaf weed herbicides for volunteer canola control in oats.

Welcome to OATSPO

Introduction

OATSPO is an agronomic showcase designed to introduce both new and experienced oat and hay growers to the latest oat research being undertaken with the support of the State Government funded and industry led Processed Oat Partnership (POP), the Grains Research Development Corporation (GRDC) and others in the oat supply chain.

OATSPO and the ongoing research and industry development it showcases, will make a lasting and significant contribution to the future development and sustainability of the Western Australian oat industry.

OATSPO follows the journey of growing an oat crop throughout the season. It showcases variety selection, nutrition strategies, seeding practices (rates/depths), pre and post emergent weed and disease control options, canopy management strategies, and finishes with tips on how to harvest oats to maximise grain quality.

OATSPO has two major objectives:

1. Present the latest oat research funded by the POP and collaborators including the GRDC, DPIRD and agribusiness.
2. Showcase current and evolving agronomic practices for growing oats to give growers the confidence to include oats in their cropping system.

Site information:

The Trial sites were dry sown between 16 – 24 April 2026 and received a germinating rain event of 9.5mm on 28 April.

Small plot trials

Dry Sown on 24 April, with 90kg of Goldie Oats.

Fertiliser was seeding 70kg/ha MAP + 30kg/ha MOP + 80L/ha UAN banded (41kg/ha N, 16kg/ha P, 15kg/ha K).

Nitrogen was topped up post emergent to take total nitrogen to 85kg/ha N.

Base herbicide

Boxergold 2.5L/ha + Voraxor 200mL/ha was applied prior to seeding unless otherwise specified.

Paddock history

Year	Crop/Pasture	Amelioration Treatments
2025	Canola	2t Lime

Rainfall

Month (mm)	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	GSR (Apr-Oct)
Hillside			6	7	36	23	10	68	22	39			162*

**GSR rainfall only to 31st August*

Notes

[illegible]



1. Evaluating new foliar fungicide options for septoria control in oats

Research aim

To evaluate Bayer's new SDHI fungicide for septoria control compared to industry standard products. The trial will compare the efficacy of a range of fungicides applied at Flag leaf (Z39).

Method

The trial was sown on the 24th of April to Goldie oats at 90kg/ha. Oat straw was spread at the 3-leaf crop stage to imitate an oat-on-oat rotation and encourage septoria development through the canopy. The fungicide treatments were sprayed on the 31st of July at 50% flag leaf emergence.

Nutrition (80N, 16P, 14.9K, 0.8S)

- 100kg of MAP:MOP 70:30 (banded with the seed)
- 80L/ha Flexi N (deep banded below the seed)
- 92L/ha Flexi N (5-6 leaf)

No.	Product(s)	RATE (mL/ha)
1	UTC	
2	VIMOY iblon 50 EC + Prosaro	300 + 150
3	VIMOY iblon 50 EC + Prosaro	500 + 150
4	VIMOY iblon 50 EC + Proviso Opti	300 + 160
5	VIMOY iblon 50 EC + Proviso Opti	500 + 160
6	Experimental	
7	Experimental	
8	Prosaro + BS1000	150 + 0.25% v/v
9	Proviso Opti + BS1000	160 + 0.25% v/v
10	Opera	500
11	Radial Opti	125
12	Revystar	750
13	VIMOY iblon 50 EC + Soprano	500 + 65

**VIMOY iblon fungicide is not currently registered and is awaiting approval from the APVMA for wheat and barley. At this time an application for oats has not yet been made and is subject to sufficient data being available and future submission approval by the APVMA. Always follow the published label before use.*

2. Septoria Avenae management strategies in oats

Research aim

- Do seeding fungicide (Systiva/Flutriafol) have an economic benefit for Septoria Avenae?
- Is the foliar management of septoria in a dry year economical?
- What is the most economical seasonal strategy for septoria?

Septoria Avenae management strategies

As the hectares of oats increase, Septoria Avenae is becoming an increasingly common disease through oat growing areas. As a stubble borne disease, tighter rotations increase the prevalence of inoculum, and there are currently no varieties with significant genetic resistance. This trial was designed to look at the most profitable management strategy, and whether fungicides at seeding, either on the seed or fertiliser, offer a benefit in reducing early infection, with supporting foliar fungicides to create a proactive approach to yearlong disease management.

	Seeding		Z31		Z39		GROUPS USED
	Treatment	Rate	Treatment	Rate	Treatment	Rate	
1	UTC		UTC				
2	UTC		Prosaro	300mL/ha			3
3	UTC				Maxentis Opti	400mL/ha	3, 11
4	UTC		Prosaro	300mL/ha	Maxentis Opti	400mL/ha	3 / 3, 11
5	Flutriafol 500	200mL/ha	UTC				3
6	Flutriafol 500	200mL/ha	Prosaro	300mL/ha			3 / 3
7	Flutriafol 500	200mL/ha			Maxentis Opti	400mL/ha	3 / 3, 11
8	Flutriafol 500	200mL/ha	Prosaro	300mL/ha	Maxentis Opti	400mL/ha	3 / 3 / 3, 11
9	Systiva	150mL/100kg seed	UTC				7
10	Systiva	150mL/100kg seed	Prosaro	300mL/ha			7 / 3
11	Systiva	150mL/100kg seed			Maxentis Opti	400mL/ha	7 / 3, 11
12	Systiva	150mL/100kg seed	Prosaro	300mL/ha	Maxentis Opti	400mL/ha	7 / 3 / 3, 11

Table 1 Treatment list for Fungicide System trial

Timing of SDHI fungicide in oats

In best practice with fungicides, SDHI (Group 7) fungicides are not applied consecutively, as this group is the most vulnerable to developing resistance. In the past this group has only been available as a foliar fungicide, however, BASF have now registered Systiva for use on oats. In this trial, the timing and application of an SDHI is being moved to see where it offers the most profit, either initially at seeding, or applied to flag leaf. This will help us understand which strategy will give best disease control and ultimately best yield and profit.

	Seeding			Z39		GROUPS USED
	Treatment	Rate		Treatment	Rate	
1	UTC					
2	Flutriafol	200mL/ha		Revystar	500ml/ha	3 / 3, 7
3	Flutriafol	200mL/ha		Maxentis Opti	400mL/ha	3 / 3, 11
4	Flutriafol	200mL/ha		Prosaro	300mL/ha	3 / 3
5	Systiva	150mL/100kg seed		Maxentis Opti	400mL/ha	7 / 3, 11

Table 2 Treatment list for SDHI fungicide trial

Notes

[illegible]

3. Competition value of oats vs barley vs wheat against ryegrass

Research aims

1. Evaluate the performance of oats against wheat and barley for their competitive ability against annual ryegrass.
2. Determine the impact of seeding rate of oats under different annual ryegrass burdens on ryegrass suppression.

Methods

The trial was sown on 24 April. Two rates of safeguard ryegrass were spread pre-sowing to create two different densities and thus increase the likelihood of finding a significant difference between crops and between sowing rates. The ryegrass densities targeted were:

- 150 plants/m² (3.75 kg/ha)
- 400 plants/m² (10kg/ha)

Nutrition (80N, 16P, 14.9K, 0.8S)

- 100kg of MAP:MOP 70:30 (banded with the seed)
- 80L/ha Flexi N (deep banded below the seed)
- 92L/ha Flexi N (5-6 leaf)

Treatment list

Treatment	Crop type	Variety	Target plant density (plants/m ²)
1	Barley	Neo	160
2	Wheat	IGW8247	160
3	Oats	Goldie	160
4	Oats	Goldie	240
5	Oats	Minnie	160
6	Oats	Minnie	240

4. Herbicide safety: assessing the impact of sowing speed and depth

Research aim

To show growers the importance of making a good seed bed to establish oats when using a range of herbicide options. Results should indicate whether any additional risk from deep sowing results from commonly used herbicide mixes. Oat establishment with 6 herbicide options, 2 sowing depths and 2 seeding speeds will be evaluated.

Methods

The pre-emergent herbicide treatments were sprayed and then incorporated by seeding on 24 April. The trial was sown to Goldie oats at 90kg/ha. Each treatment was sown using 3 different seeding methods:

Approach	Seed depth	Sowing Speed
1	Shallow (30mm)	Fast (10kmph)
2	Shallow (30mm)	Slow (6kmph)
3	Deep (80mm)	Slow (6kmph)

A plot seeder with knife point and press wheels on 10" row spacing was used.

Nutrition (80N, 16P, 14.9K, 0.8S)

- 100kg of MAP:MOP 70:30 (banded with the seed)
- 80L/ha Flexi N (deep banded below the seed)
- 92L/ha Flexi N (5-6 leaf)

Treatment list

Treatment	Products	Rate (ml/ha)	Timing
1	UTC	-	-
2	Trifluralin	2000	IBS
3	Trifluralin Voraxor	2000 200	IBS IBS
4	Trifluralin Callisto	2000 200	IBS IBS
5	Trifluralin Boxer Gold	2000 2500	IBS EPE
6	Trifluralin Terbyne Xtreme	200 860	IBS IBS
7	Trifluralin Callisto Boxer Gold	2000 200 2500	IBS IBS EPE

5. Canopy management: the impact of plant growth regulators and grazing on oat yield and quality

Research aim

The new variety Goldie has weak straw and suffers from pre harvest brackling resulting in significant grain loss and harvest challenges especially under high Nitrogen supply. Previous research has shown that higher rates of Moddus (registered plant growth regulator) can have a negative influence on oat yield and quality.

This trial aims to evaluate if lower doses (micro dosing) can improve the straw strength while minimising the potential negative impacts on grain yield and quality.

Methods

The trial was sown on the 24th of April to Goldie oats at 90kg/ha. The 'grazing' treatments were mown with a whipper snipper to simulate sheep grazing.

Nutrition (150N, 16P, 14.9K, 0.8S)

- 100kg of MAP:MOP 70:30 (banded with the seed)
- 80L/ha Flexi N (deep banded below the seed)
- 152kg/ha Urea (3 leaf)
- 92L/ha Flexi N (5-6 leaf)

Treatment list

	Treatment	Rate (ml/ha)	Timing
1	Moddus	300	Z31
2	Moddus	100 + 100	Z31 + Z32
3	Moddus	200	Z31
4	Moddus	100	Z31
5	Grazed	-	4-5 leaf
6	Grazed	-	Z30
7	Moddus	100	Z31
	Experimental	-	Z31
8	Experimental	-	Z31
9	UTC	-	

6. Optimising hay nutrition to achieve improved yield and quality

Research aim

Quantify whether the addition of sulphur and/or potassium on top of nitrogen improves oat hay yield and quality enough to justify the extra cost.

Methods

70kg MAP and Nitrogen was applied to all treatments so that total unit of nitrogen and phosphorus were matched. Muriate of Potash was spread prior to seeding in treatments inclusive of potassium. Gypsum was applied post-emergent to plots that were targeting additional sulphur. Plots will be measured for growth, hay yield and hay quality.

Treatment list

Treatment	N		P		K		S	
	Units	Product	Units	Product	Units	Product	Units	Product
1 At seeding	41	80 UAN	16	70kg MAP				
Z13	46	100kg Urea						
Total	87		16		0		0	
2 At seeding	41	80 UAN	16	70kg MAP			22.2	150kg Gypsum
Z13	46	100kg Urea						
Total	87		16				22.2	
3 At seeding	41	80 UAN	16	70kg MAP	30	60kg MOP		
Z13	46	100kg Urea						
Total	87		16		30		0	
4 At seeding	41	80 UAN	16	70kg MAP	30	60kg MOP	22.2	150kg Gypsum
Z13	46	100kg Urea						
Total	87		16		30		22.2	

Notes

7. Saprophyte management in oaten hay windrows

Research aim

This demonstration site looks at the off-target effect of fungicides applied for disease control on weather induced fungal staining also known as saprophyte damage.

Background

Saprophytic fungi, such as *Alternaria* spp. and *Cladosporium* spp., can colonise senescing or dead plant tissue, resulting in dark discolouration known as saprophytic damage or weather damage. Hay curing in the windrow provides an ideal environment for saprophyte colonisation, especially when coinciding with or following rainfall events. Hay discolouration due to weather-induced saprophytic fungal growth is a significant issue for export oaten hay producers as it reduces visual quality, suitability for export markets, and economic returns.

There are no fungicides registered for the control of saprophyte damage in oaten hay. However, work conducted as part of AgriFutures funded projects PRJ-016604 understanding and reducing weather induced fungal staining of oaten hay windrows” and PRJ-011029 “National Hay Agronomy” projects have shown that fungicides registered for the in-season control of oat diseases (e.g. septoria, rusts and red leather leaf) may provide an indirect benefit by reducing (but not eliminating) saprophyte damage when applied for disease management.

While strobilurins have either a 21- or 28-day withholding period and must be applied prior to Zadoks growth stage Z59, they have been shown to provide a similar level of protection when applied 28–35 days prior to cutting (PTC). Earlier fungicide application can provide growers more flexible cutting windows, reduce the chemical residue risk, and help control septoria leaf blotch in season but still provide incidental protection from saprophyte damage in the windrow.

Management

This trial uses the single variety Carrolup (sown 24 April), with application of strobilurin based fungicides 21-, 28-, and 35-days PTC in a replicated and randomised trial design with untreated plots for comparison.

Treatments

Treatments:

1. Nil
2. Mefentrifluconazole (75 g ai/ha) + pyraclostrobin (75 g ai/ha) applied 35 days PTC
3. Mefentrifluconazole (75 g ai/ha) + pyraclostrobin (75 g ai/ha) applied 28 days PTC
4. Mefentrifluconazole (50 g ai/ha) + pyraclostrobin (50 g ai/ha) applied 28 days PTC
5. Azoxystrobin (79.8 g ai/ha) + prothioconazole (60 g ai/ha) applied 28 days PTC
6. Azoxystrobin (160 g ai/ha) + cyproconazole (64 g ai/ha) applied 28 days PTC

Trial note

When using fungicides, always check the latest registration details via the APVMA database, follow the latest directions and observe withholding periods (WHPs) for grazing and cutting to minimise the risk of chemical residues in hay. Growers should be aware that compliance with Australian label requirements does not guarantee compliance with maximum residue limits (MRLs) for export markets, which may have stricter standards.

Notes

[illegible]

Modernising detection, risk prediction & management of *annual ryegrass toxicity* in WA

DPIRD
Dept. of Primary
Industries
& Regional Development



Annual Ryegrass Toxicity (ARGT) is a **fatal livestock poisoning** arising from this three-way interaction between nematode, bacteria and plant host. ARGT is widespread in some areas of WA's grainbelt and more scattered in SA. Incidence declined by the early 2000's thanks to development of resistant varieties (e.g. Safeguard), sensitive molecular tests and a range of management options — but diagnostic results and grower reports suggest **ARGT is re-emerging**, particularly in high-rainfall areas, and remains a risk to WA's grain, livestock, dairy, equine, fodder and export hay industries.

01 Establish the current status of ARGT in WA

The first contemporary assessment of ARGT in over a decade, combining literature review, historical data and targeted new testing.

- Review of Australian ARGT research, ecology, detection & management
- Analysis of WA ELISA testing data, 2010–2025, with export hay companies
- Spatial & temporal assessment of trends and hotspots
- Regional surveys across livestock, grain, fodder, dairy & export hay sectors
- 500 subsidised ELISA tests linked to industry questionnaires

02 Preliminary risk & distribution modelling

Historical and current data integrated to lay the groundwork for future forecasting tools.

- Updated ARGT distribution maps across WA
- Investigation of clustering and range expansion since prior studies
- Seasonal conditions vs. ARGT occurrence relationships
- Climate variables associated with ARGT risk

03 Industry communication & extension

PestFacts WA

Livestock & broadacre newsletters

DPIRD web & fact sheets

Survey reports

Sector-tailored reviews

Project aims

- 1 Quantify current ARGT prevalence and impacts across grain, livestock and export hay
- 2 Improve understanding of spatial distribution and change since previous studies
- 3 Identify seasonal and climate drivers of ARGT occurrence
- 4 Deliver a comprehensive WA-relevant research and management review
- 5 Lift industry awareness of testing services and management options
- 6 Build the scientific basis for future climate-informed forecasting tools



Take part in the industry survey

DPIRD is inviting producers & stakeholders to a short online or in-person survey mapping current ARGT distribution — respondents receive a free ELISA test kit.



Scan to
take survey

**Free ELISA
test kit**

8. Evaluating impact of sowing depth on hay yield and quality of a range of oat varieties

Research aim

To assess whether deep seeding oats improves the success and reliability of early-season germination and has the potential to increase hay yield and quality. Six oat varieties were trialled to identify if there are any varietal differences in response to being seeded at depth or early in the season.

Method

This trial seeded at Oatspo in Narrogin was seeded on the 16th of April, using a DBS style precision tyne seeder. The target plant density was 320plants/m².

The deep seeded plots were seeded at 100mm below the bottom of the furrow, 140mm below the surface of the virgin soil level. This resulted in there being 50mm of moisture above the seed.

The shallow plots were seeded at 25mm of depth below the bottom of the furrow into dry soil, some soil containing moisture was dragged up from depth during the seeding process. The resulting effect creating a typical wet/dry environment for the seed, where some seed was placed in completely dry soil and some in soil with low moisture.

Nutrition (125N, 14P, 50K, 9S)

- 100kg of AgStar Extra
- 140 Kg/ha Urea
- 100 Kg/ha MOP
- 100 Kg/ha Urea

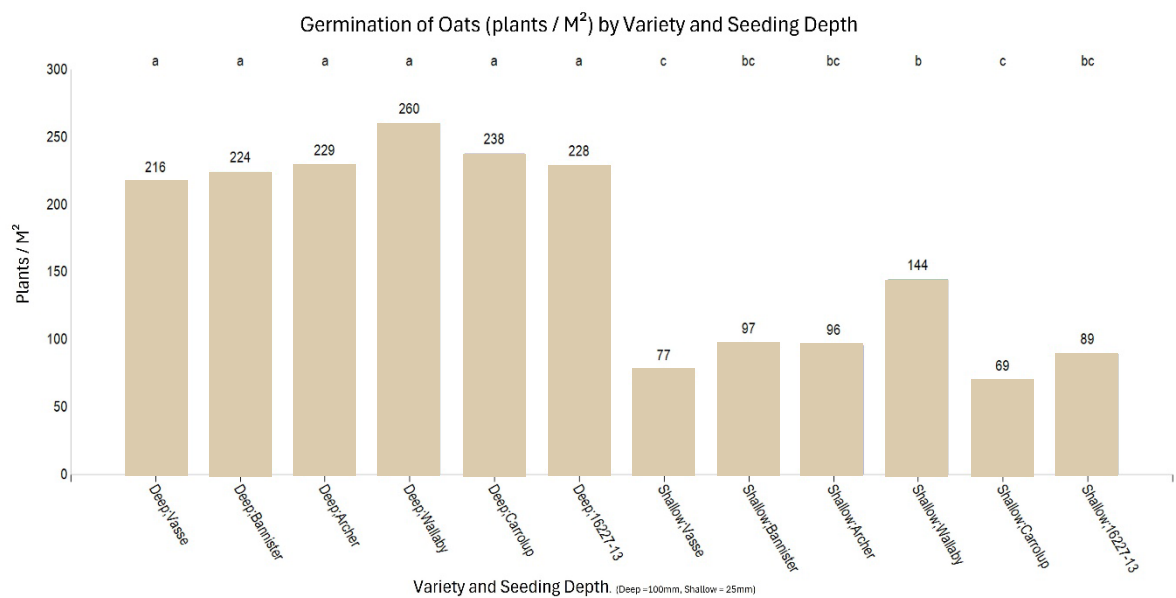
Variety	Season length
Vasse	Very Late
Wallaby	Late
Archer	Medium-Late
Bannister	Medium
Carrolup	Early-Medium
16227-13	Early

Findings

The initial germination was 7 days after seeding, with the deep and shallow plots germinating on the same day. No extension in time required between seeding and germination was observed in any of the varieties when sown at a greater depth.

An even and consistence establishment was achieved in the deep sown plots, with all plots germinating on the moisture available at seeding. In comparison the shallow plots achieved a staggered germination, with the seed placed in dry soil having to wait for follow-up rains.

Wallaby and 16227-13 have shown the greatest vigour when growing from both at depth and from the shallow, conventional depth.



Notes

9. Comparative N response in oats vs high yielding feed barley

Research aim

To investigate the Nitrogen (N) response in Oats versus high yielding feed Barley.

Background

After the success and interest in a trial last season comparing the N response in wheat and oats, this trial compares nitrogen response curves of oats and barley to compare returns for both crops and help growers make decisions on crop selection and input allocation. Results will also feed into NUlogic to help improve fertiliser recommendations for the different crops.

Paddock history

Year	Crop/Pasture
2025	Canola
2024	Oats

Soil Analysis: March 2026

Soil Type: Light brown sandy loam

Depth (cm)	Gravel (%)	pH (CaCl ₂)	EC (dS/m)	OC (%)	Nit N (mg/kg)	Amm N (mg/kg)	Col P (mg/kg)	PBI	Col K (mg/kg)	S (mg/kg)	Ex Al%	ECEC (cmol/kg)
0-10	0-5	5.8	0.1	1.3	2.3	4.0	43	37	37	7	0.02	5.37
10-20	5	4.9	0.0	0.7	2.0	3.0	43	37	22	3		
20-30	5	4.4	0.0	0.0	<1	<1	24	30	19	2		

Management

Pre-seeding:

Seeding:	29-Apr	Barley (Combat) 80 kg/ha & Oats (Goldie) 90 kg/ha with 5L/ha of SE14
Fertiliser:	29-Apr 5-June	100kg/ha MOP top-dressed IBS 110kg/ha BigPhos banded 4cm below seed Flexi-N, Urea and Urea Sustain applied (Z20-23 treatments)
Spray applications:	29-Apr	1L/ha paraquat, 2.5L/ha Boxer Gold, 150ml/ha Callisto and 80ml/ha Trojan

Treatments 2026 Note: all treatments had 15 kg P/ha, 50 kg K/ha, and 8 kg S/ha.

Trt	Description	IBS Topdress (kg/ha)	Seeding Banded (kg/ha)	Seeding Deep Banded (kg/ha)	Z20-23 Streamed (L/ha)	Z20-23 Topdress (L/ha)	Z30-32 Streamed (L/ha)	N
1	Barley Nil N	100 Muriate of Potash	110 Big Phos					4
2	Barley 35 N	100 Muriate of Potash	110 Big Phos	20 Flexi-N	54 Flexi-N			35
3	Barley 70 N	100 Muriate of Potash	110 Big Phos	40 Flexi-N	62 Flexi-N		55 Flexi-N	70
4	Barley 105 N	100 Muriate of Potash	110 Big Phos	60 Flexi-N	85 Flexi-N		95 Flexi-N	105
5	Barley 140 N	100 Muriate of Potash	110 Big Phos	90 Flexi-N	130 Flexi-N		100 Flexi-N	139
6	Barley urea 70 N	100 Muriate of Potash	110 Big Phos			144 Urea		70
7	Barley Urea Sustain 70 N	100 Muriate of Potash	110 Big Phos			144 Urea Sustain		70
8	Oats Nil N	100 Muriate of Potash	110 Big Phos					4
9	Oats 35 N	100 Muriate of Potash	110 Big Phos	20 Flexi-N	54 Flexi-N			35
10	Oats 70 N	100 Muriate of Potash	110 Big Phos	40 Flexi-N	62 Flexi-N		55 Flexi-N	70
11	Oats 105 N	100 Muriate of Potash	110 Big Phos	60 Flexi-N	85 Flexi-N		95 Flexi-N	105
12	Oats 140 N	100 Muriate of Potash	110 Big Phos	90 Flexi-N	130 Flexi-N		100 Flexi-N	139
13	Oats urea 70 N	100 Muriate of Potash	110 Big Phos			144 Urea		70
14	Oats Urea Sustain 70 N	100 Muriate of Potash	110 Big Phos			144 Urea Sustain		70

Preliminary results

Plant tests taken prior to the Z30 applications showed both oats and barley were deficient in N in the Nil treatments. Application of nitrogen significantly increased plant size and N concentrations, leading to higher N uptake (mg N per plant) as seen in figure 1. Nitrogen status in the 140kg N/ha treatments (which had received approximately 100kg N when sampled) showed high nitrogen status and were unlikely to respond to additional N.

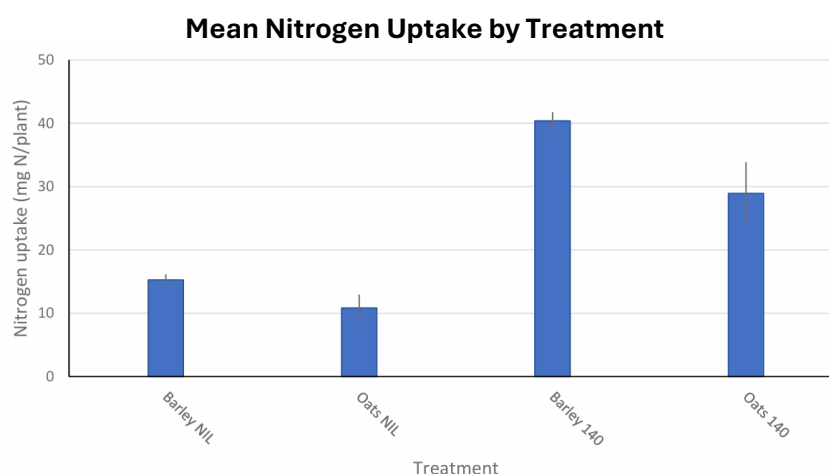


Figure 1. Mean N uptake by treatment for plant tests taken 33 days after Z21 N applications. Vertical bars represent standard errors

10. Defining the rules of thumb for April-sown oats

Take home message

April sowing has transformed milling oat production in WA, but agronomy recommendations have not kept pace with new varieties and changing farming systems. This project is developing practical guidelines on variety choice, nitrogen management and plant density to help growers maximise profit, reduce production risk and consistently achieve OAT1 milling quality.

Farmer rationale for this research project

Ten years ago, milling oats were largely sown after mid-May. Today many growers are sowing in April to make better use of stored moisture, avoid spring heat and water stress, and fit oats into modern farming systems after canola. Research has shown that earlier sowing of Bannister and Williams can increase grain yield and improve quality. Still, most agronomic recommendations were developed for older varieties grown later in the season.

New varieties such as Goldie, Koala, and Minnie differ from Bannister and Williams in their yield pathways, yield potential, lodging risk, and grain quality characteristics. However, information on how they respond to nitrogen and plant population under April sowing remains limited.

As a result, growers often guess, creating uncertainty around input decisions. Applying too little nitrogen can limit yield, while excessive nitrogen or plant density may increase lodging, reduce grain quality and lower profitability. Missing OAT1 specifications can also result in significant price penalties.

The objective of this project is to identify profitable agronomy packages (the "sweet-spot") that optimise grain yield, grain quality and economic returns for April-sown milling oats across the major oat-growing regions of Western Australia.

Project aim

In plain terms, the project aims to answer the questions growers are already asking:

- Which milling oat variety is best suited to early and late April sowing?
- How much nitrogen maximises profit rather than simply maximising yield?
- What plant density gives the best return on seed investment?
- How can I increase yield without sacrificing grain quality?
- How do I make my oats more profitable than they are now?

The outcome will be practical, regionally relevant agronomy packages that reduce risk, improve gross margins, and help growers consistently produce higher-yielding, higher-quality oats for premium export markets.

Where is the research being done?

The project spans six sites across differing oat-growing regions of WA in 2026:

- Merredin (low rainfall) – early and late April sowing dates
- Dale (medium-high rainfall) – early and late April sowing dates
- Tarin Rock (medium rainfall) – late April sowing
- Cuballing (medium-high rainfall) – late April sowing
- Katanning (medium rainfall) – late April sowing
- Northam (medium-high rainfall) – early and late April sowing dates

Testing across multiple environments (Merredin to Katanning) allows us to determine whether the advice remains consistent across regions or needs tailoring. The Northam site then helps explain how the varieties react in more detail to early and late April planting, so recommendations are based on solid science rather than short-term observations.

What is on show today?

The trial at Cuballing has three trials (or series) nested in one trial block (Table 1):

- Evaluates interactions between four milling oat varieties (Bannister, Goldie, Koala and Minnie), three nitrogen rates (20, 60 and 100 kg N/ha) and four target plant densities (80, 160, 240 and 320 plants/m²).
- Examines crop response of commercial varieties to a wider range of nitrogen rates (20, 60, 100 and 140 kg N/ha) at a standard milling oat plant density.
- Compares current commercial varieties with advanced breeding lines under a common management package to identify future opportunities for the oat industry.

Table 1. Trial series and treatments sown at Cuballing.

Series	Varieties	N rates (kg N /ha)	Target density (plants/m ²)
A	Bannister Goldie Koala Minnie	20 60 100	80 160 240 320
B	Bannister Goldie Koala Minnie	20 60 100 140	240
C	Bannister Goldie Koala Minnie 16083-06 16116-11 16227-13 17V119-18 18V063-08 18V064-09 18V064-15 18V263-01	100	240

What data is being collected?

Researchers are measuring a range of traits, including crop establishment, biomass production (via NDVI assessment), lodging, grain yield, and grain quality traits such as hectolitre weight, screenings, and achievement of OAT1 milling standards. These measurements will be used to determine which combinations of variety, nitrogen rate and plant density maximise grower profitability across environments.

Economic analyses will also be undertaken to identify management packages that provide the highest gross margins rather than simply the highest yield.

The goal is not to maximise yield alone. The goal is to identify the combination of variety, nitrogen and plant density that consistently delivers the greatest profit while meeting OAT1 quality standards in April-sown milling oats.

Acknowledgements

This research is funded by the Processed Oat Partnership (POP) in partnership with DPIRD. Kate Beilken provided technical support. DPIRD (Merredin and Northam), Bill Cleland (Dale), Roger Newman (Cuballing), Mark Pearce (Tarin Rock), and Frank Boetel (Katanning) are providing access to land for this research project. DPIRD Field Research has seeded, sprayed and managed the trial.

Important Disclaimer

The Chief Executive Officer of the Department of Primary Industries and Regional Development and the State of Western Australia accept no liability whatsoever by reason of negligence or otherwise arising from the use or release of this information or any part of it.

Copyright © State of Western Australia (Department of Primary Industries and Regional Development) [2026].

Notes

Layout (Banks 1 and 2) – planted 22 April (effective 27 April)

Plot	Variety	N rate	Density		Plot	Variety	N rate	Density
Buffer	Buffer	.	.		Buffer	Buffer	.	.
1001	Goldie	60 N	160		2001	Minnie	60 N	160
1002	Goldie	60 N	320		2002	Minnie	60 N	240
1003	Goldie	60 N	80		2003	Minnie	60 N	80
1004	Goldie	60 N	240		2004	Minnie	60 N	320
1005	Bannister	100 N	80		2005	Goldie	20 N	160
1006	Bannister	100 N	320		2006	Goldie	20 N	320
1007	Bannister	100 N	240		2007	Goldie	20 N	80
1008	Bannister	100 N	160		2008	Goldie	20 N	240
1009	Bannister	140 N	240		2009	Minnie	140 N	240
1010	18V064-09	100 N	240		2010	18V263-01	100 N	240
1011	Koala	20 N	320		2011	Bannister	60 N	80
1012	Koala	20 N	160		2012	Bannister	60 N	240
1013	Koala	20 N	80		2013	Bannister	60 N	160
1014	Koala	20 N	240		2014	Bannister	60 N	320
1015	Koala	100 N	320		2015	Koala	60 N	320
1016	Koala	100 N	80		2016	Koala	60 N	240
1017	Koala	100 N	160		2017	Koala	60 N	80
1018	Koala	100 N	240		2018	Koala	60 N	160
1019	16116-11	100 N	240		2019	Goldie	140 N	240
1020	18V064-15	100 N	240		2020	17V119-18	100 N	240
1021	Goldie	100 N	80		2021	Minnie	100 N	240
1022	Goldie	100 N	320		2022	Minnie	100 N	160
1023	Goldie	100 N	160		2023	Minnie	100 N	320
1024	Goldie	100 N	240		2024	Minnie	100 N	80
1025	Minnie	20 N	160		2025	Bannister	20 N	320
1026	Minnie	20 N	240		2026	Bannister	20 N	160
1027	Minnie	20 N	80		2027	Bannister	20 N	80
1028	Minnie	20 N	320		2028	Bannister	20 N	240
1029	Koala	140 N	240		2029	16083-06	100 N	240
1030	18V063-08	100 N	240		2030	16227-13	100 N	240
Buffer	Buffer	.	.		Buffer	Buffer	.	.



11. C-Wise compost: investigating alternative nutrition strategies for oats

Research aim

C-Wise uses organic by-products to make compost with a known amount of N, P, K and S. This trial will investigate two of their compost products (FCHR50 and FCHR25) incorporated into a nutrition program for oats and compare these programs with grower-standard granular fertiliser.

Methods

The compost treatments were spread the day prior to sowing and then incorporated by the seeder bar. All treatments had MAP/MOP banded with the seed and have been topped up to equal units of N,P,K and S.

Treatment list

Treatment 1	Rate (kg/ha)	Timing	N	P	K	S
CBH Pro Extra MAPSZC	60	Seeding	7.7	10.3	0.0	3.5
MAP	28	Seeding	3.1	6.4	0.0	0.0
MOP	30	Seeding	0.0	0.0	14.9	0.0
Urea	62.6	Seeding	28.8	0.0	0.0	0.0
Gypsum	55	Seeding	0.0	0.0	0.0	9.3
Urea	88	6WAS	40.5	0.0	0.0	0.0
MOP	30	6WAS	0.0	0.0	14.9	0.0
			80.1	16.6	29.8	12.8

Treatment 2	Rate (kg/ha)	Timing	N	P	K	S
FCHR50 (wet)	1500	Pre-Seeding	37.16	5.87	11.81	8.12
MAP	47	Seeding	5.17	10.72	0.00	0.00
MOP	36	Seeding	0.00	0.00	17.82	0.00
Gypsum	25	Seeding	0.00	0.00	0.00	4.23
Urea	41.7	Seeding	19.18	0.00	0.00	0.00
Urea	40	6WAS	18.40	0.00	0.00	0.00
			79.91	16.59	29.63	12.34

Treatment 3	Rate (kg/ha)	Timing	N	P	K	S
FCHR50 (wet)	2500	Pre-Seeding	61.93	9.79	19.69	13.53
MAP	30	Seeding	3.30	6.84	0.00	0.00
MOP	20	Seeding	0.00	0.00	9.90	0.00
Urea	32	6WAS	14.72	0.00	0.00	0.00
			79.95	16.63	29.59	13.53

Treatment 4	Rate (kg/ha)	Timing	N	P	K	S
FCHR25 (wet)	1500	Pre-Seeding	18.35	6.53	12.54	8.51
MAP	44	Seeding	4.84	10.03	0.00	0.00
MOP	35	Seeding	0.00	0.00	17.33	0.00
Gypsum	25	Seeding	0.00	0.00	0.00	4.23
Urea	55.6	Seeding	25.58	0.00	0.00	0.00
Urea	68	6WAS	31.28	0.00	0.00	0.00
			80.05	16.57	29.87	12.74

Treatment 3	Rate (kg/ha)	Timing	N	P	K	S
FCHR25 (wet)	2500	Pre-Seeding	30.58	10.89	20.90	14.19
MAP	25	Seeding	2.75	5.70	0.00	0.00
MOP	18	Seeding	0.00	0.00	8.91	0.00
Urea	51.5	Seeding	23.69	0.00	0.00	0.00
Urea	50	6WAS	23.00	0.00	0.00	0.00
			80.02	16.59	29.81	14.19

Notes

12. Managing volunteer canola and broadleaf weeds with pre-emergent herbicides

Research aim

Compare a range of pre-emergent broadleaf weed herbicides for volunteer canola control in oats.

Methods

The trial was sprayed and sown on the 24th of April to Goldie oats at 90kg/ha. 10kg of Hunter canola was spread and then incorporated just below the soil surface prior to spraying the pre-emergent herbicides. The herbicide treatments were incorporated by sowing within 3 hours.

Nutrition (80N, 16P, 14.9K, 0.8S)

- 100kg of MAP:MOP 70:30 (banded with the seed)
- 80L/ha Flexi N (deep banded below the seed)
- 92L/ha Flexi N (5-6 leaf)

Treatment list:

Treatment	Products	Rate (ml,g/ha)	Timing
1- Control	Boxer Gold	2500	IBS
	Trifluralin	2000	IBS
2	Logran	5	IBS
	Boxer Gold	2500	IBS
	Trifluralin	2000	IBS
3	Voraxor	200	IBS
	Boxer Gold	2500	IBS
	Trifluralin	2000	IBS
4	Callisto	100	IBS
	Boxer Gold	2500	IBS
	Trifluralin	2000	IBS
5	Callisto	150	IBS
	Boxer Gold	2500	IBS
	Trifluralin	2000	IBS
6	Callisto	200	IBS
	Boxer Gold	2500	IBS
	Trifluralin	2000	IBS
7	Callisto	130	IBS
	Boxer Gold	1750	IBS
	Trifluralin fb	2000	IBS
	Callisto	70	PSPE
	Boxer Gold	750	PSPE

