



AgriFutures Australia

Industrial Hemp Newsletter

September 2024

Welcome to the third AgriFutures Australia Industrial Hemp newsletter for 2024. In this edition, we're pleased to provide an update on several projects.

Current Investments

- Industrial Hemp Variety Trials (IHVT)
 - Katherine, NT and Kununurra, WA Field Days
 - Northern Sites
 - Southern and Central Sites
- Australian Industrial Hemp Program of Research (AIHPR)

Recently Completed Investments

- Development of Fence Posts made from Hempcrete
- Opening the gates to Hemp Grazed Livestock in Australia - Phase 2

Current investments

There was plenty to smile about in the sunshine of the northern Australia winter when the final Industrial Hemp Variety Trial field days were held in June – even the hire car company was in on the fun with vehicle plates pointing the way to the IHVT trials (see images below).

The field days for the northern sites encompassed both the IHVT and sesame trials this year, which are part of the Sesame Program of Research investment by AgriFutures Australia.

The three-year hemp variety trials showcased the best available varieties for the hotter growing conditions, with close to 30 stakeholders attending the Northern Territory Department of Industry Tourism and Trade's Katherine Research Station, and a further 25 attending the West Australian Department of Primary Industries Resources and Development's Frank Wise Research Station in Kununurra.



For the 2024 harvest, Yuma was the highest yielding variety for both grain and biomass at the [Katherine](#) site, and King Gee was a top performer in [Kununurra](#) also for grain and biomass. The field days not only attracted potential new growers interested in integrating hemp within broadacre crop rotations; they also attracted interest from international buyers keen to source Australian hemp seed and fibre.

It was the end product that really got tongues wagging and the taste buds jumping. Both field day lunches incorporated hemp seeds into the menu. It was a eye opener for several people as they discovered hemp's culinary versatility for the first time, while others learned new ways to incorporate hemp into their cooking.

The lunch showcased the potential of hemp seeds as a healthy and tasty addition

to any diet, high in protein and healthy fatty acids omega 3, 6 and 9.

Katherine, NT

At the Katherine site the IHVT trial comprised of eight hemp varieties across three times of sowing (ToS), 4 April, 30 April and 30 May 2024.

Key findings from this site to date include:

- Bama, Han Cold, Han NE and Yuma outperformed all other varieties.
- ToS 1 produced taller plants and higher grain yields for Bama, Han Cold, Han NE and Yuma when compared to the last two years’ results for the same varieties.
- April is the best month for sowing industrial hemp in the Katherine region.

A conference paper titled "2023 Industrial Hemp Variety Trials: Results from the Northern Territory" written by Shah Nawaz (Katherine IHVT site manager) will be presented at the Agronomy Conference on October 21–24, 2024 in Albany, WA.

Kununurra, WA

The Kununurra trial site consists of cracking clay soil (Kununurra clay) and is irrigated using gravity fed furrow irrigation. The ToS were 18 April, 16 May and 13 June 2024.

The long season varieties produced higher grain yields but pose a risk as they are generally thick stemmed and will be hard to harvest with a conventional header.

	Ruby	HanNe	Yuma	Han Cold	Bama
ToS 1	Good establishment, vigour and canopy cover	Good establishment, vigour and canopy cover	Good establishment, vigour and canopy cover	Good establishment, vigour and canopy cover	Good establishment, vigour and canopy cover
ToS 2	Good establishment, vigour and canopy cover		Good establishment, vigour and canopy cover	Good establishment, vigour and canopy cover	Good establishment, vigour and canopy cover
ToS 3	Good establishment, vigour and canopy cover	Vigour and good canopy cover, however the establishment wasn't ideal.		Good establishment, vigour and canopy cover	

At this stage there are no indicators for grain quality, however the long season varieties are expected to have the highest seed yield as they have more biomass and grain heads compared to other mid-season varieties. They have also been the highest yielding in previous seasons.

The pest pressure was lower this year compared to previous years. The green vegetable bug, *Nezara viridula*, and red banded shield bug, *Piezodorus oceanicus* were the major pests this season.

ToS1 long season varieties took one month longer to mature compared to previous years. It is possible this is linked to the cooler dry season the NT has experienced with temperatures also fluctuating more than usual.

HanNe was larger seeded with a higher 1000 grain weight than previous years. In previous seasons HanNe was considered a short season variety in the previous two years but is closer in maturity to the long season varieties this season.



Central and Southern Sites

Sampling and harvest of the final year three trials (2023_2024) is complete at the Central and Southern sites. The planting dates for the season are shown below.

Southern/Central	State	Town	ToS 1	ToS 2
Central	WA	Manjimup	24/11/2023	19/12/2023
Central	SA	Loxton	16/11/2023	7/12/2023
Central	NSW	Narrabri	17/11/2023	12/12/2023
Central	QLD	Stanthorpe	22/11/2023	8/12/2023
Southern	SA	Maaoupe	21/11/2023	18/12/2023
Southern	VIC	Hamilton	22/11/2023	13/12/2023
Southern	TAS	Epping Forest	30/11/2023	12/212/2023

Each of the trial sites will publish an annual report summarising the final season's (2023_2024) results. This will be followed by a final report for each site, presenting results from all three years. It will contain recommendations for sowing times and suitable varieties for each location based on results from across the three years of trials.

Following the publication of these reports, a Final Summary Report for the entire IHVT program, will be published by November 2025. This will summarise the major findings and recommendations from the three year variety trials, across all nine sites.

All reports will be available on the [AgriFutures Knowledge Hub](#) when published.

Hamilton, Victoria

Project leads at the IHVT in Hamilton Victoria are in the process of analysing the data and producing the final report.

Preliminary findings include:

- The fibre varieties trialled were later maturing and produced less seed.
- Grain yields ranged between 0.07 t/ha to 2.3 t/ha.
- In general TOS 1 yielded better than TOS 2.
- ECO-Excalibur sown in November produced the greatest grain yields.
- Total biomass ranged between 4.8 t/ha and 13.5 t/ha.
- Thousand seed weights ranged between 10.1 g and 29.2 g with seeds from the Chinese varieties (Han Cold, Han NE, Bama and Yuma) being around twice the size of the other varieties.

Stanthorpe, Queensland

When comparing grain yield of the four varieties grown at the Stanthorpe trial site in 2023-24, Excalibur had the highest yield this season of up to 1.2 t/ha. If a grower is considering a crop for biomass production, Ruby had the highest biomass yield in 2023-24 of up to 7.5 t/ha. Grain quality parameters including protein, oil and bulk density did not differ significantly between varieties at the Stanthorpe site.

The Stanthorpe trial site is fully organic and the results of this year's trial also identified key considerations for growers with respect to soil nutrition, pest and weed control.

Narrabri, New South Wales

Of the twelve varieties grown at the Narrabri trial site in 2023-24 Ruby and Excalibur were two of the best-performing varieties with grain yields of up to 1.00 t/ha. Han NE and Futura-75 also yielded well for grain.

Growers considering a crop for biomass production, might consider Bama, Han NE and Han Cold which achieved biomass yields of up to 10.4 t/ha. Ruby also had a high biomass yield making Han NE and Ruby both good potential dual-purpose varieties for this region. Grain weight, grain oil and protein content was highest amongst the long-season varieties, Han NE, Han Cold and Bama.

What can the industry do with this information?

The IHVT results will assist in guiding future research including the Australian Industrial Hemp Program of Research (AIHPR) and will assist growers making informed decisions, including variety and sowing time, when considering planting an industrial hemp crop in their region.



Recently completed investments

Hemp-Grazed Livestock

Hemp as a summer crop offers exciting new opportunities as a feed source for

livestock in hemp-growing regions. However, to realise this potential, research has been undertaken capturing detailed data to inform the permissible limits for cannabinoids in meat products consumed by humans.

The final report for the project, [*Opening the Gates to Hemp Grazed Livestock in Australia – Phase 2*](#), has now been published and is available on the [AgriFutures Knowledge Hub](#), and key findings include (all conducted on sheep):

- Hemp hay (harvested at the flowering stage) was found to be a nutritionally suitable feed for ruminants and when incorporated at 42% into a pelleted diet had no adverse effects on feed intake, apparent nutrient digestibility, rumen function or the gastrointestinal microbiome.
- Feeding hemp hay for <1 month resulted in the deposition of Tetrahydrocannabinol (THC) in subcutaneous fat which was still detectable up to 140 days later.
- High cannabinoid concentrations were detrimental to animal production as a consequence of reduced feed intake; even relatively low concentrations could be detrimental to animal production due to potential adverse effects on rumen microbial activity.
- Oral administration of cannabidiol (CBD) had no apparent effect on either feed intake or animal health.
- Somewhere between 0.01% and 0.25% THC in a forage hemp crop is the upper safe limit for sheep to graze without compromising productivity or welfare.
- While use of hemp forage in finishing diets is unlikely to be practical, there is scope for its use in other animal groups, such as breeding ewes, growing animals, or animals whose products are not destined for the food market e.g., wool production.
- Hemp provides an off-season green forage option for livestock but only if careful management strategies are implemented and maximum residue limits for cannabinoids in edible tissues are established.
- The report recommends that a maximum residue limit is set for THC and CBD in meat to further reduce risk to producers wishing to utilise this crop for grazing, or for those wishing to market their produce as ‘hemp-fed’ for its value-add potential.



Australian Industrial Hemp Program of Research

The Australian Industrial Hemp Program of Research (AIHPR) is a flagship initiative within the AgriFutures Australia Emerging Industries portfolio.

Through collaborative research across four themes, AIHPR aims to enhance hemp production, develop innovative products, and promote sustainable practices.

It is managed by Southern Cross University and led by Prof Tobias Kretschmar, with Dr Omid Ansari as the Program Manager, who said the past six months have been marked by significant progress across all thematic areas.

“We are excited about the strides made in sustainability and production efficiency. The insights gained will significantly benefit the industry and contribute to a more sustainable future,” Dr Kretschmar said.

In April 2024 key findings of the program were discussed with industry stakeholders and the Industry Advisory Committee (IAC) at the annual AIHPR workshop, held in conjunction with the fourth Australian Industrial Hemp Conference (AIHC).

Theme 1: Hemp Seeds & Varieties

- A survey of growers has been conducted to scope key traits necessary for primary hemp products. Preliminary analysis indicates varying trait priorities among growers, highlighting the need for tailored breeding strategies across different regions.
- Product profiles (PPs) have been drafted for grain and fibre traits suitable for different Australian regions, benchmarked against the IHVT, for optimised grain and fibre production.

- Potential trial sites have been identified across Northern, Central, and Southern Australia for evaluating new hemp germplasms.

Theme 2: Production

- Data collection from the 2023/24 field trials is complete, with analysis and adjustments planned before the next sowing season.
- There have been delays in the entomology stream due to staff changes and administrative policies, but mitigation strategies are now in place.
- A disease survey has been conducted identifying *Macrophomina* and *Alternaria* as key pathogens, with further monitoring planned at various trial sites. This insight will inform future disease management strategies.
- Producers will be encouraged to participate in ongoing research trials particularly in areas of disease management to improve overall hemp production systems.

Theme 3: Products

- Progress has been achieved in fermenting hempseed cake, enhancing its nutritional value and functionality, with increased protein solubility, antioxidant activity, and other beneficial properties. This potentially increases its market value and applications in the human food and feed industries.

Theme 4: Environmental and Sustainability Impacts

- The Greenhouse Gas (GHG) Life Cycle Assessment (LCA) of hemp cropping and value-added products is underway, with training in SimaPro software and data collection from industry surveys. A sustainability benchmarking criteria has also been developed, with a focus on environmental and economic metrics.
- Early data from GHG LCA efforts and sustainability criteria development suggests that this will inform more sustainable hemp production practices, aiding in resource use optimisation and environmental impact reduction.
- Novel studies on soil remediation have commenced, focusing on contaminants like Al toxicity and sodicity, with experimental setups planned for October 2024. Initial soil remediation studies show promise in addressing

key contaminants, potentially enhancing hemp's role in environmental cleanup efforts.



Current opportunities

Agribusiness workshops for Emerging Industries

2 x 4 hour workshops will introduce participants to using the Business Model Canvas (BMC) process for planning and developing a business model.

Workshop: Online via Teams

- Dates:
 - Friday, 11 October 2024
 - Friday, 18 October 2024
- Time: 9am – 1pm
- [Click here to register](#)

evoke^{AG}

It's time to plan your trip to the Sunshine State, because tickets to agrifood tech and innovation event AgriFutures evoke^{AG}. 2025 are officially on sale.

The next edition of evoke^{AG}, will be held on 18-19 February 2025 in Brisbane, Queensland. The event is an invitation to the agrifood tech and innovation community to come together on common ground. From founders to funders, and not forgetting the most critical link in the agrifood innovation chain: the adopters. The producers, processors, and supply chain partners who translate innovation into action to deliver impact.

Date: 18 - 19 February 2025

Location: Brisbane Convention and Exhibition Centre

[Register here](#)

So, mark it in your diary, and secure your tickets now.

2024 AgriFutures Rural Women's Award and Acceleration Grant

AgriFutures Australia is proud to champion diversity through our grants for women. In addition to our AgriFutures Rural Women's Award, we have created the Rural Women's Acceleration Grant, developed to foster the professional growth of rural women who are not quite ready to apply for the Award. By providing seven Australian women with a learning and development bursary, we can drive innovation in rural industries, businesses and communities.

Seven Australian women per annum will be granted with a learning and development bursary (not cash) of up to \$7,000 for professional development to enable them to bring their idea, cause or vision to life. Applications close Wednesday, 9 October 2024 at 12pm AEDT. [Apply now](#).

Further information

[AgriFutures Emerging Industries industrial hemp](#)

For information on industrial hemp from the two national industrial hemp bodies, visit:

- [Australian Hemp Council](#)
- [Australian Industrial Hemp Alliance](#)



AgriFutures Australia acknowledges the First Nations people of Australia as the traditional custodians of the lands and waters on which we live, learn and work. We pay our respects to past, present and future Elders of these nations. In particular, we acknowledge the Wiradjuri people of Australia, the traditional custodians of the lands and waters where AgriFutures' head office is located.



AgriFutures Australia is the trading name for Rural Industries Research & Development Corporation (RIRDC), a statutory authority of the Federal Government established by the Primary Industries Research and Development Act 1989.

www.agrifutures.com.au | [Collection Statement](#) | [Privacy Statement](#)

No longer wish to receive these emails?

[Update Communication Preferences](#) | [Update Contact Details](#) | [Unsubscribe](#)