2023 Industrial
Hemp Variety Trial

Results from the Northern Territory Site

Shah Nawaz
Research Scientist

NORTHERN TERRITORY GOVERNMENT

AgriFutures® Australia

IHVT project background

- IHVT launched 2021, co-funded by AgriFutures Australia and participation agencies.
- To support potential growers to participate in the industry with general advice on varietal selection and to address challenges associated with the variety selection.
- Northern Territory –Katherine Research Station (KRS)

IHVT trial sites Information

Climatic Zone	IHVT Trial Sites	Latitude
Northern Australia	Katherine, NT Kununurra, WA	14.5° 15.6°
Central Australia	Stanthorpe, Qld Narrabri, NSW Manjimup, WA Loxton, SA	28.7° 30.3 34.3° 34.4°
Southern Australia	Reedy Creek, SA Hamilton, Vic Epping Forest, Tas	37.3° 37.8° 41.7°

NORTHERN TERRITORY GOVERNMENT

AgriFutures® Australia

Katherine site description

- Northern climatic zone - $14^{0}27'$S latitude, and $132^{0}18'$E longitude
- Soils – Clay loam Red Kandosol
- Seasons – Wet (November to April) & Dry (May to October)
- Temperatures – ranging between 21°C to 32°C
- Trial site – Bird exclusion cage

NORTHERN TERRITORY GOVERNMENT

AgriFutures® Australia

KRS trial background

Objectives:

- To evaluate varieties for industrial hemp grain production – suitable for Katherine region/NT.
- To evaluate best sowing time of the year
- Randomized complete block design, sowing time (main plots) and varieties (Sub plots)

Hemp varieties trialled

Sr. No.	Variety	Origin	Supplier	Sex Exp.	Purpose	2023
1	**CRS-1**	Canada	Midlands	Dioecious	Grain	x
2	**Ruby**	Australia	Hemp Farms Australia	Dioecious	Dual	x
3	**Yuma**	China	Colin Steddy Hemp Inside	Dioecious	Dual	x
4	**Han Cold**	China	Colin Steddy Hemp Inside	Dioecious	Dual	x
5	**Henola**	Poland	Hepburn Ag	Monoecious	Dual	x
6	**King Gee**	Australia	Hemp Farms Australia	Dioecious	Dual	x
7	**X-59**	Canada	Leawood Hemp	Dioecious	Dual	x
8	**Fedora 17**	France	HempGro	Monoecious	Dual	x
9	**Fibror 79**	France	HempGro	Monoecious	Dual	x
10	**Orion 33**	France	HempGro	Monoecious	Dual	x
11	**Bialobrzeskie**	Poland	Hepburn Ag	Monoecious	Dual	x

Time of Sowing (TOS)	2023
TOS 1	30 March
TOS 2	27 April
TOS 3	30 May

NORTHERN TERRITORY GOVERNMENT

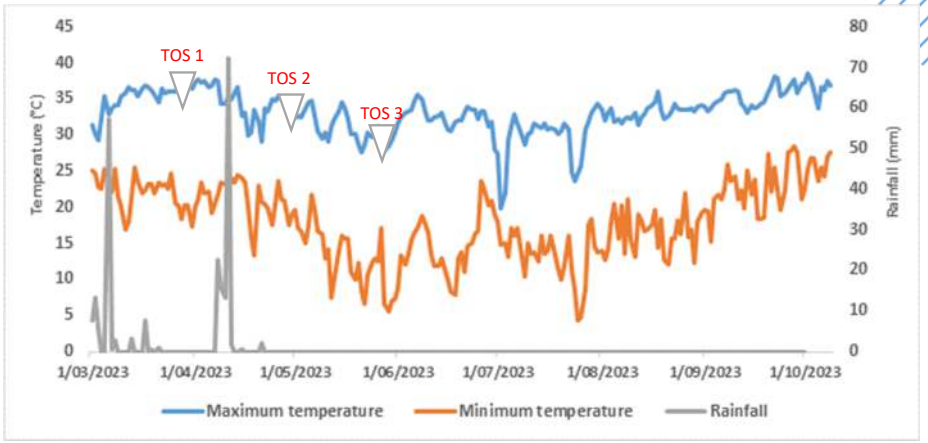
AgriFutures® Australia

2023 trial management

Fertilizer (NPK): Based on soil analysis
- TOS 1: 67:29:54 kg/ha
- TOS 2:106:61:150 kg/ha
- TOS 3: 106:61:150 kg/ha

- Top-dressing – 100 kg/ha Urea (two splits: 30 DAE and 45 DAE)

Irrigation (mm): sprinkler irrigation system
- TOS 1: range from 230 – 278 mm (+128 mm rainfall)
- TOS 2: range from 230 – 290 mm
- TOS 3: range from 230 – 253 mm



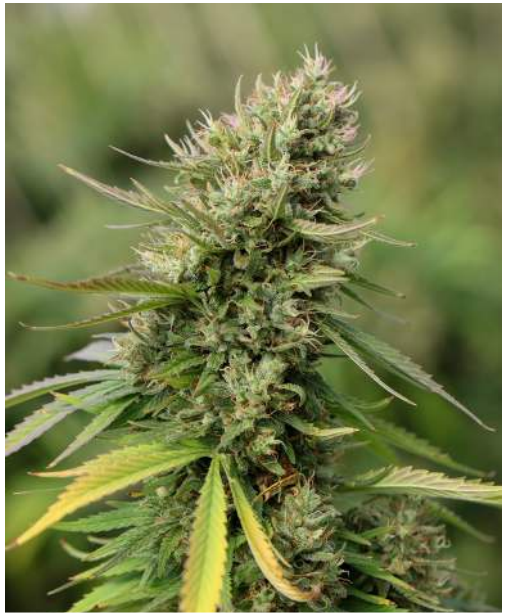
NORTHERN TERRITORY GOVERNMENT

AgriFutures® Australia

Trial results

- Tetrahydrocannabinol (THC) level

Variety	Avg. THC level
Bialobrzeskie	0.024
CRS-1	0.015
Fedora-17	0.014
Fibror-79	0.019
Han Cold	0.093
Henola	0.019
Orion-33	0.028
Ruby	0.024
X-59	0.012
Yuma	0.085
King Gee	0.136



Sampling done at peak flowering stage

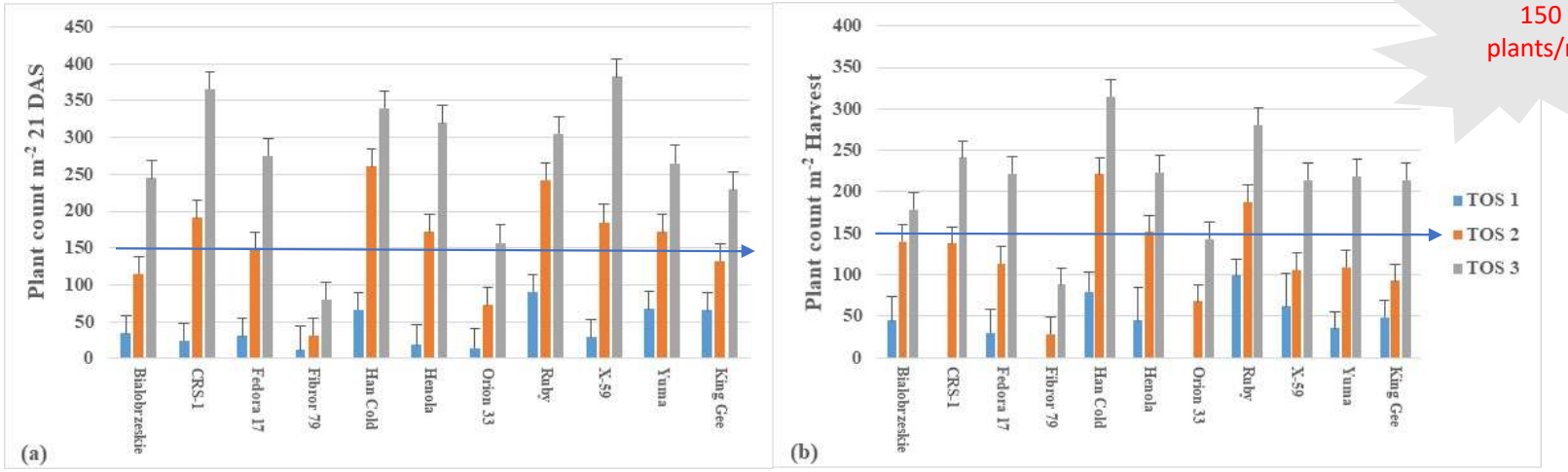
NORTHERN TERRITORY GOVERNMENT

AgriFutures® Australia

Plant density (plants/m^2)

21 DAS

Harvest



150 plants/m^2

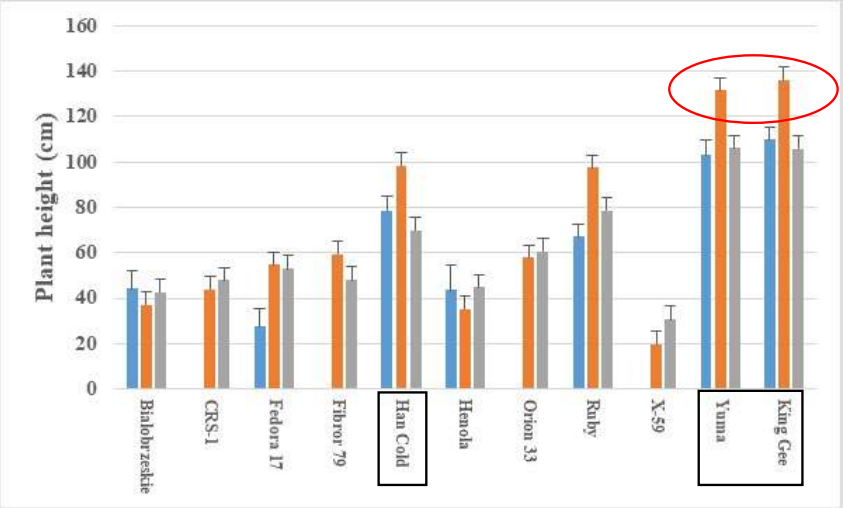
- Poor seed germination
- High soil temperature –TOS 1

NORTHERN TERRITORY GOVERNMENT

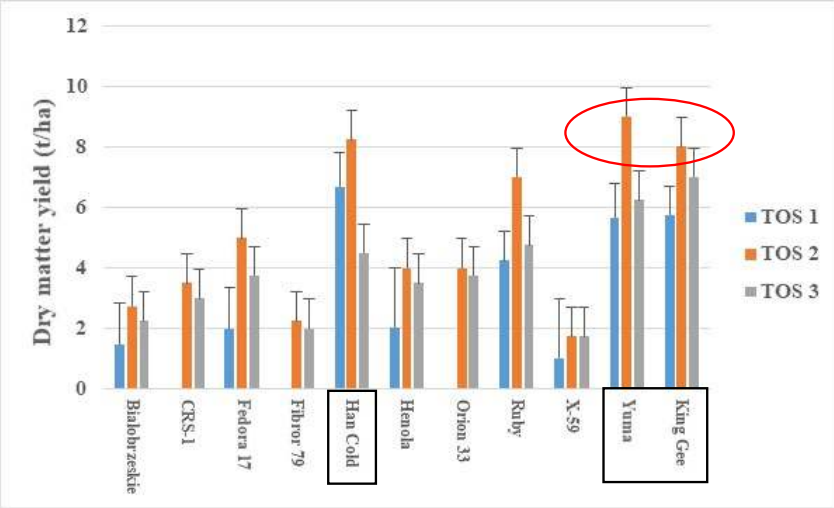
AgriFutures® Australia

Crop growth parameters

Plant height

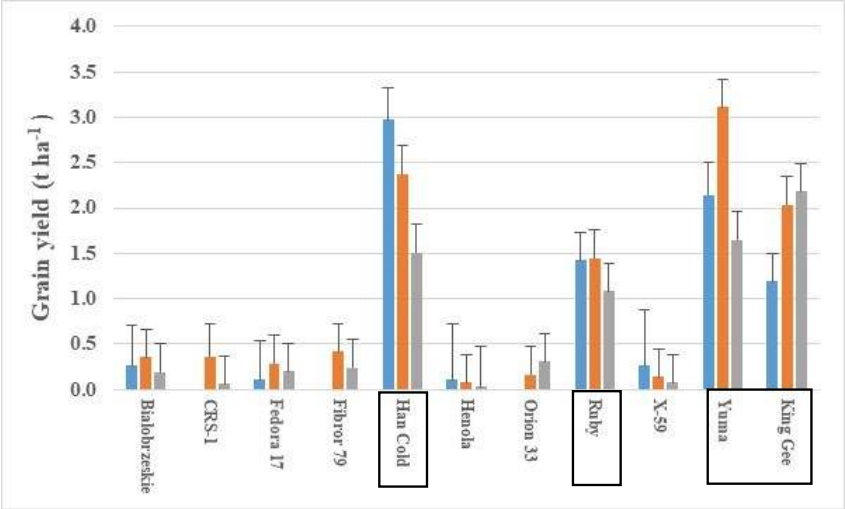


Dry matter yield

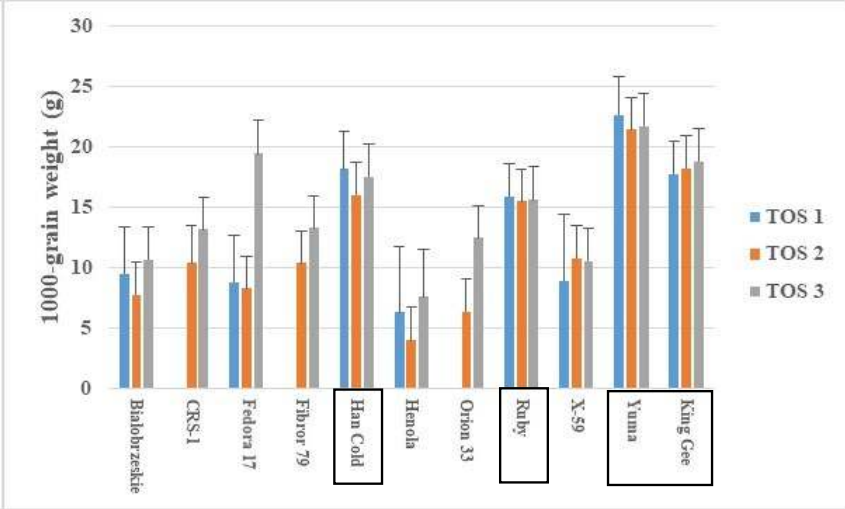


Grain yield parameters

Grain yield

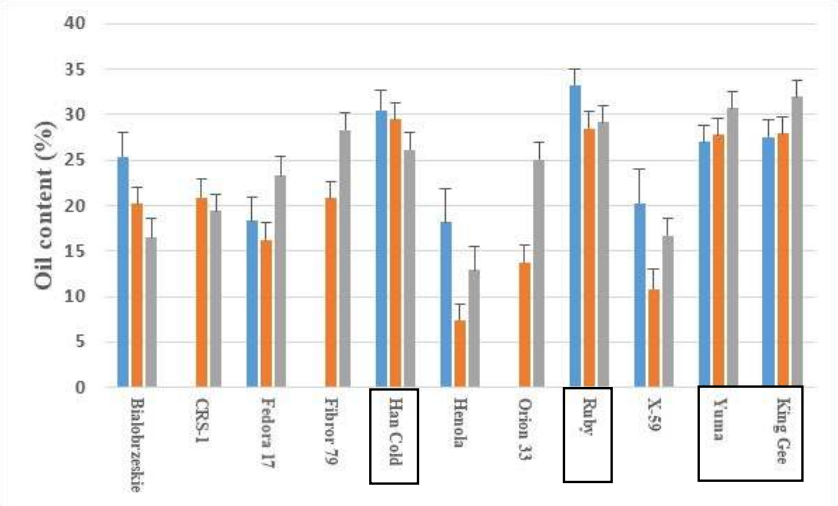


1000-grain weight

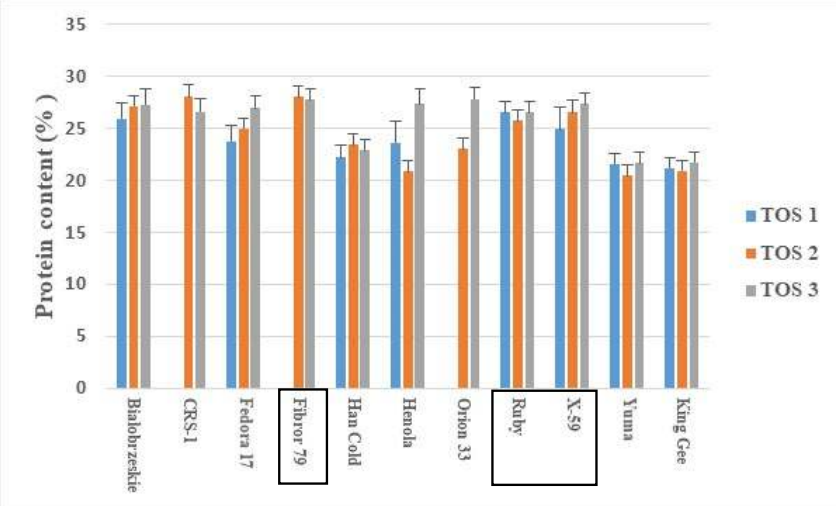


Grain quality parameters

Oil content



Protein content



Conclusion

- King Gee, Han Cold and Yuma – best performing varieties for most of the parameters except protein content.
- TOS 2 – best time of the year for most of the varieties to produce high yields

NORTHERN TERRITORY GOVERNMENT

AgriFutures® Australia

Acknowledgements

Funding:

The Katherine Research Station IHVT site is co-funded by AgriFutures Australia and the Northern Territory Government (NTG).

Seed Supplies: The following companies supplied seed for the trials free of charge:-

- Midlands Seed
- Hemp Farms Australia
- Hepburn Ag
- The Hemp Corporation
- Leawood Hemp
- HempGro

Cropping Team – Dr Edward Mwando, Staci Stanley, and Nick Hartley

Data analysis – Dr Mark Hearnden

Program coordinator – Mark Skewes

Agronomist – John Muir

Thankyou.

- Any questions?

NORTHERN TERRITORY GOVERNMENT

AgriFutures® Australia