

Camelina (*Camelina sativa* (L.) Crantz.) as a sustainable feedstock crop for advanced biofuel production on a global scale

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Camelina as a renewable biofuel feedstock

- **Broad adaptability**
- **Resilient to marginal conditions**
- **High oil content**
- **Low CI crop**
- **Non-food crop**
- **Valuable meal co-product**



About Global Clean Energy



Plant/soil science



Agriculture



Transport



Storage



Extraction & refining

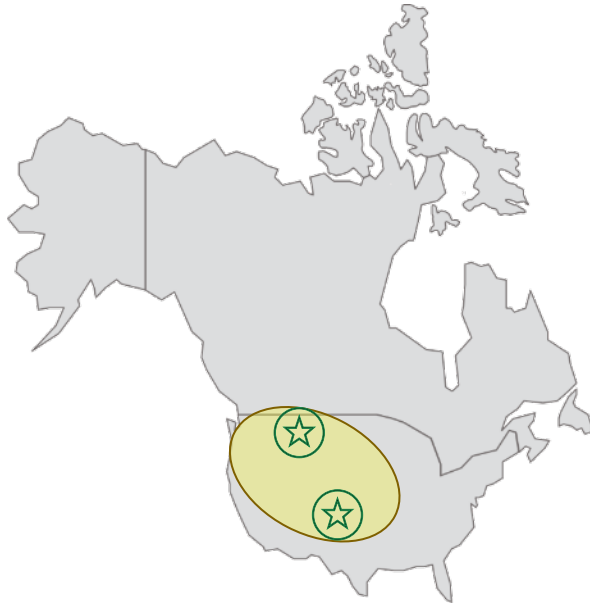


Livestock feed

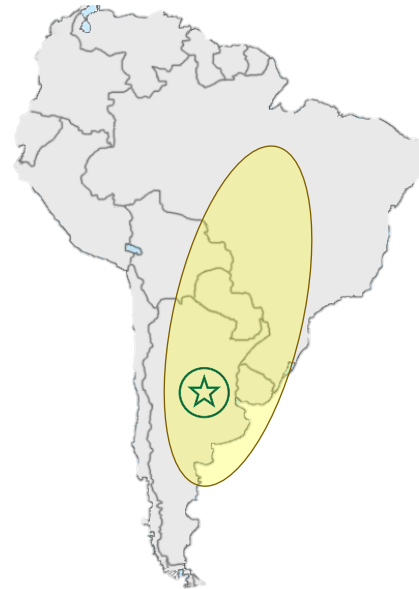


Renewable Fuels

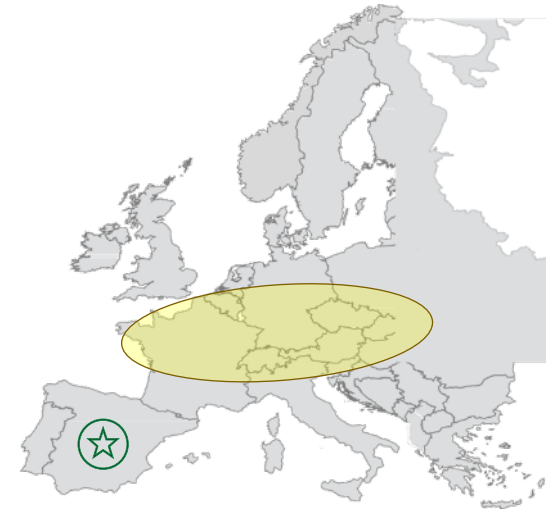
Global breeding activities



15 years breeding and cultivation
9 commercial varieties
US and Canada



Opening breeding station in 2023
3 countries
Commercial launch in 2023



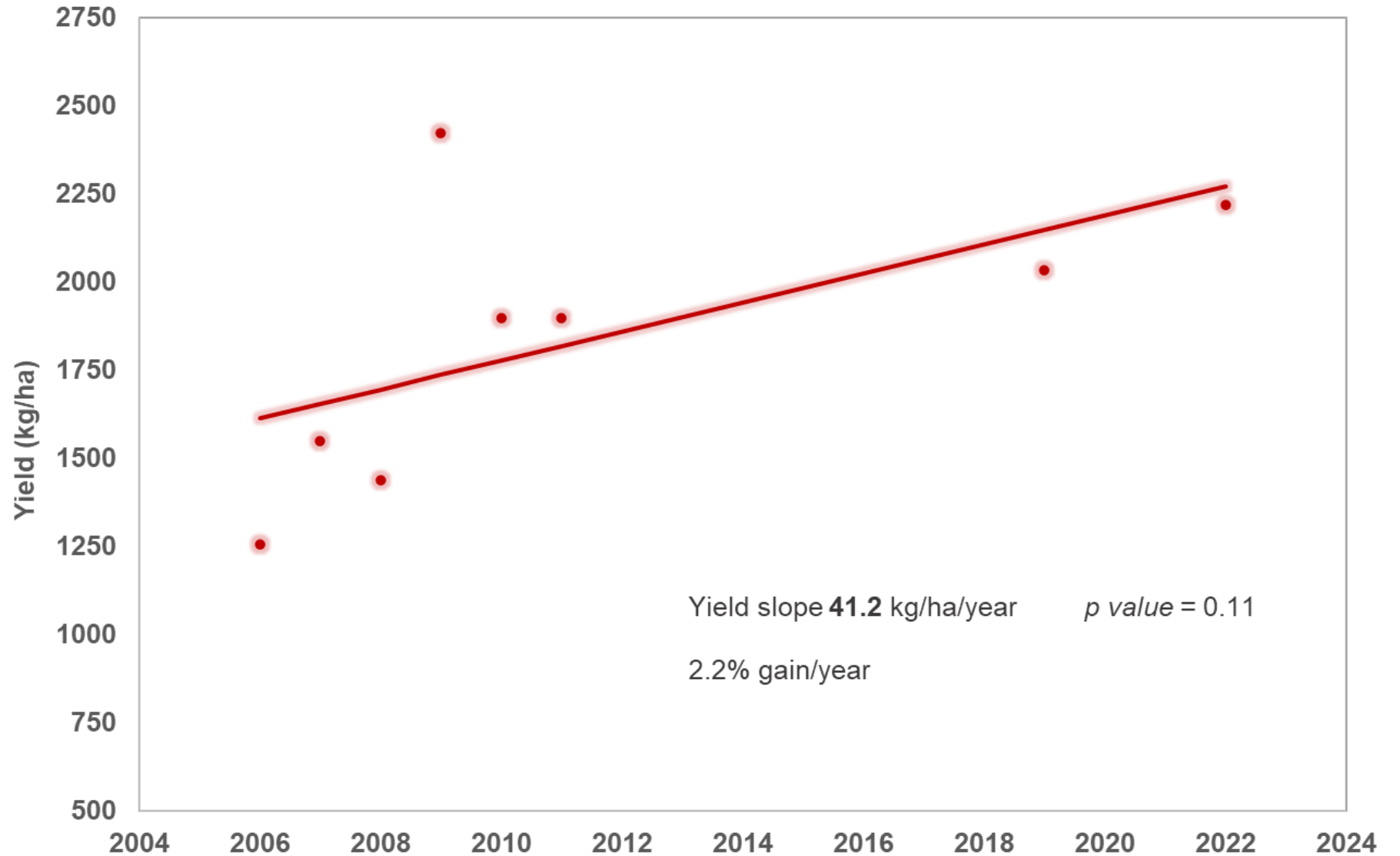
10 years of breeding and cultivation
11 commercial varieties
5 EU countries

Breeding efforts - Grain yield gains per year

2006 – 2008: Accessions

2009 – 2011, 2019, 2022:

Exp. lines & varieties



Yield values per year corrected by use of a common cultivar (Calena)

Performance of Camelina in target geographies - 2022

38 Varieties/Experimental lines

US: 6 locations

GCE

14 Sustainable Oils (SO)

16 Camelina Company España (CCE)

Spain: 4 locations

Other

5

Argentina: 8 locations

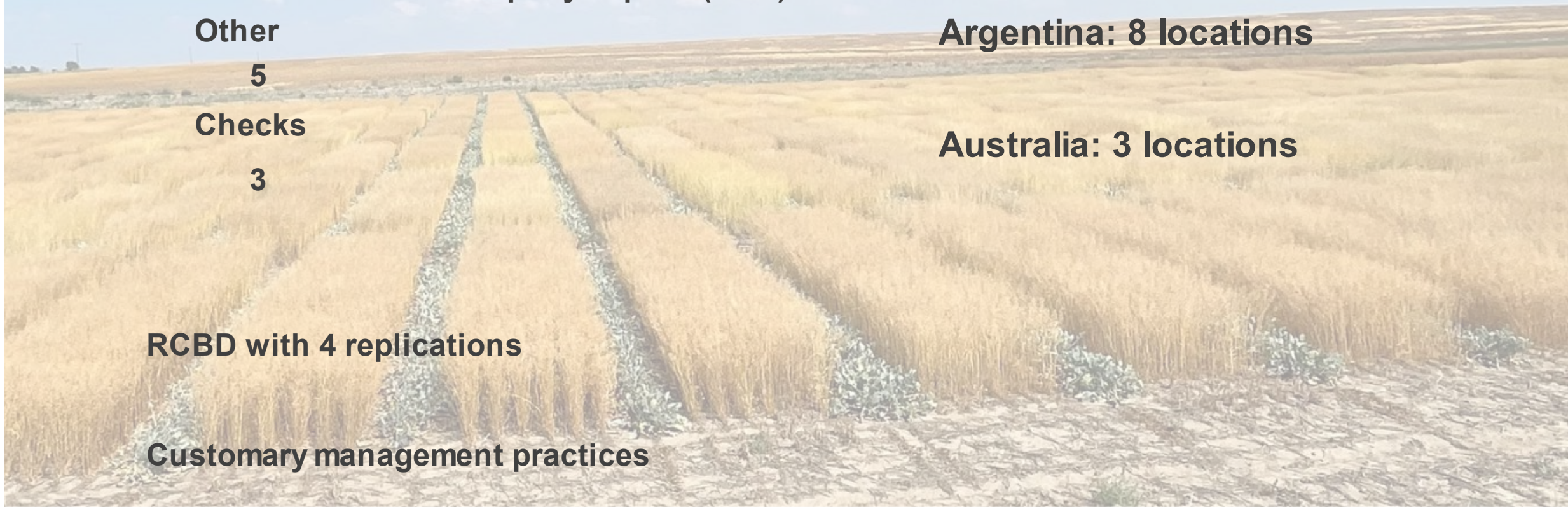
Checks

3

Australia: 3 locations

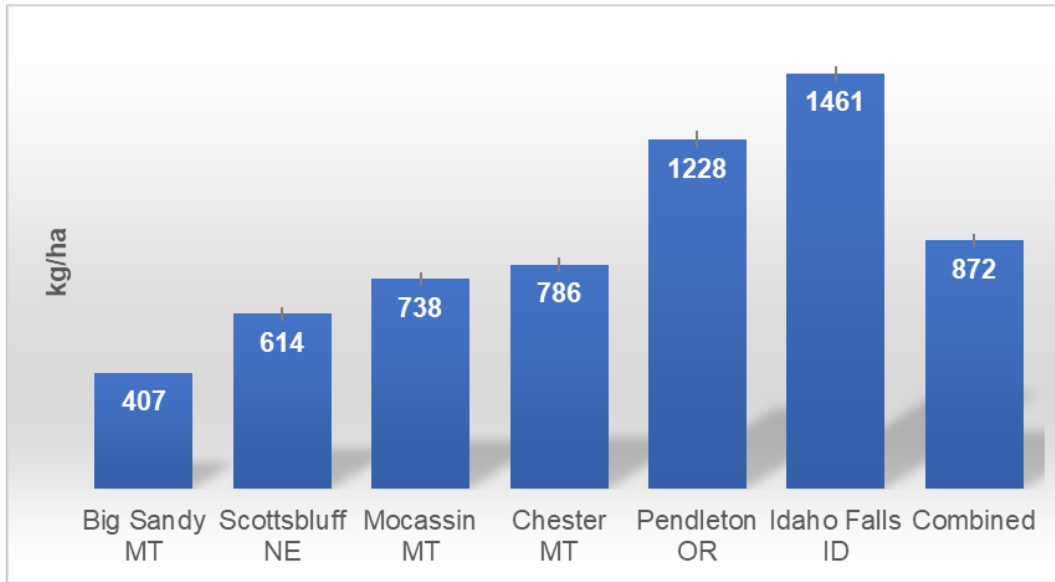
RCBD with 4 replications

Customary management practices

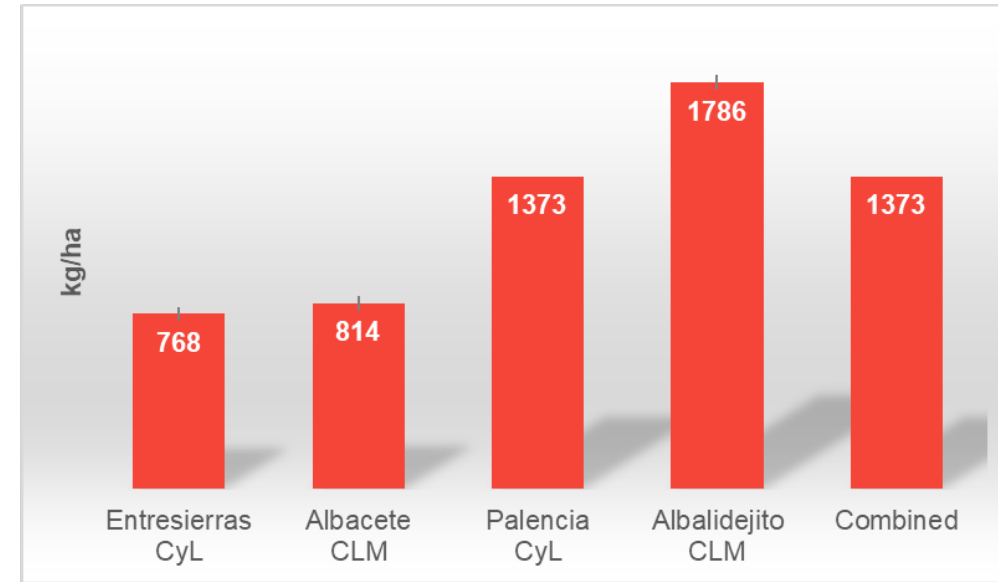


Average environmental yields

US



Spain



Seasonal water (mm)

| | | | | | | | |
|-----|----|-----|-----|-----|-----|-----|-----|
| 104 | 89 | 176 | 122 | 157 | 238 | 251 | 162 |
|-----|----|-----|-----|-----|-----|-----|-----|

N application (kg/ha)

| | | | | | | | |
|-----|-----|----|-----|-----|----|-----|-----|
| 115 | 112 | 78 | 131 | 114 | 29 | 123 | 101 |
|-----|-----|----|-----|-----|----|-----|-----|

| |
|-----|
| 221 |
|-----|

| |
|-----|
| 333 |
|-----|

| |
|-----|
| 235 |
|-----|

| |
|-----|
| 216 |
|-----|

| |
|-----|
| 251 |
|-----|

| |
|----|
| 68 |
|----|

| |
|----|
| 72 |
|----|

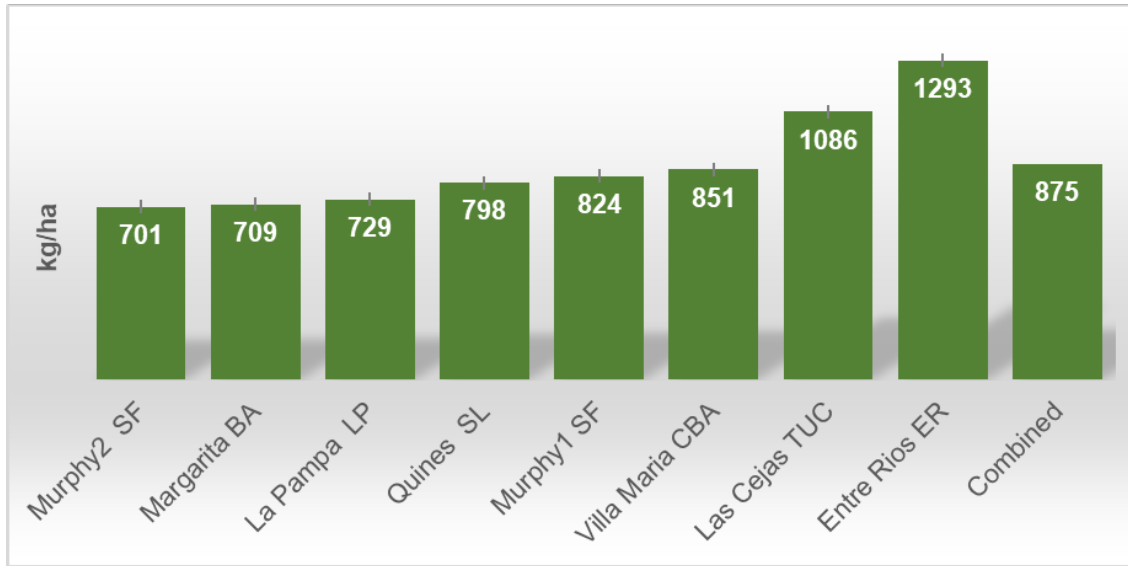
| |
|----|
| 52 |
|----|

| |
|----|
| 89 |
|----|

| |
|----|
| 70 |
|----|

Average environmental yields

Argentina



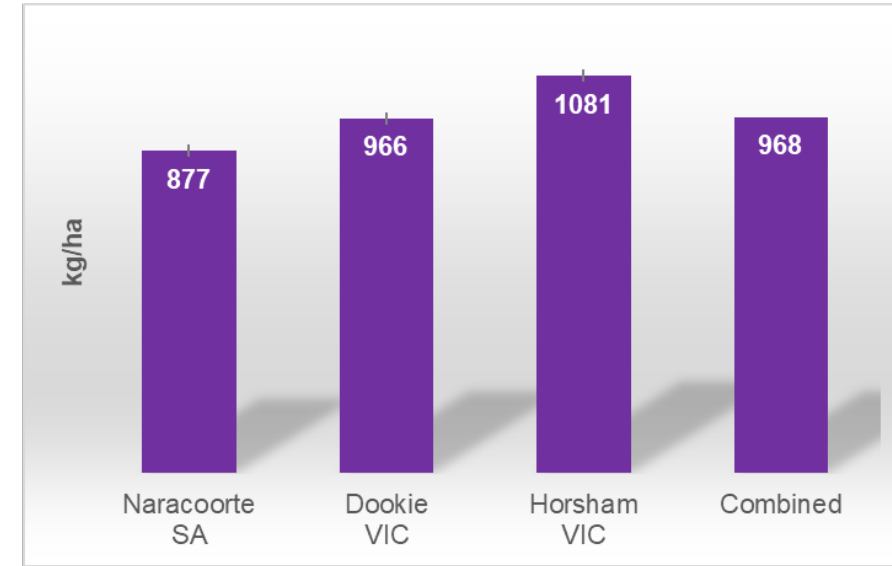
Seasonal water (mm)

243 197 408 284 218 154 315 165 255

N application (kg/ha)

60 23 56 64 37 23 66 66 49

Australia



437

557

509

501

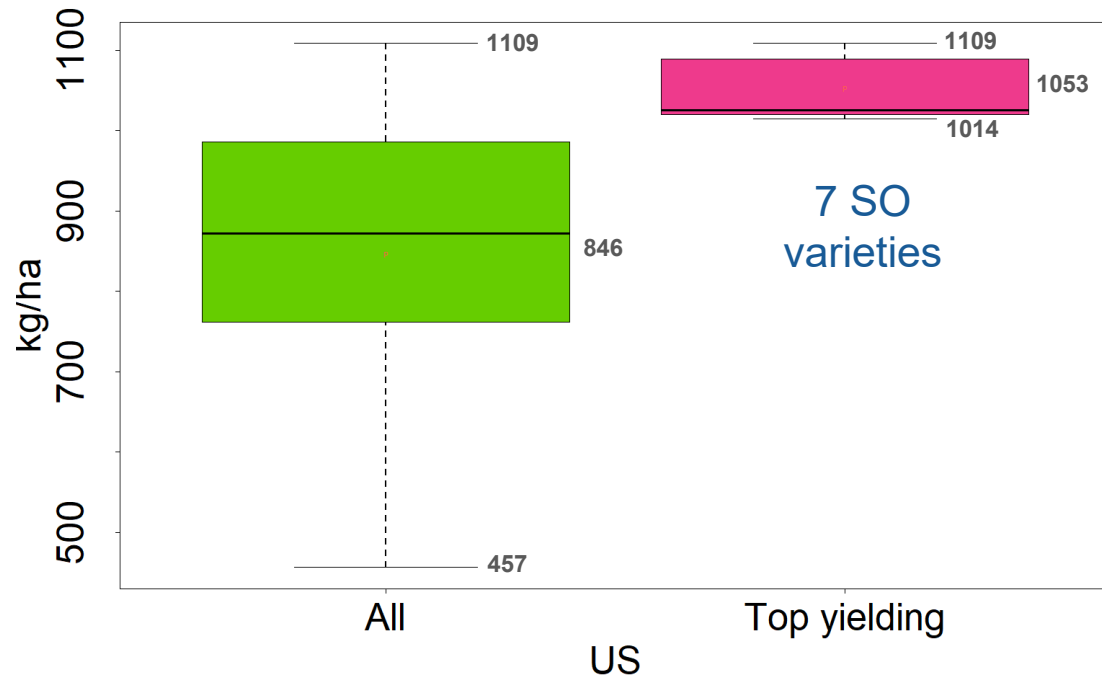
216

171

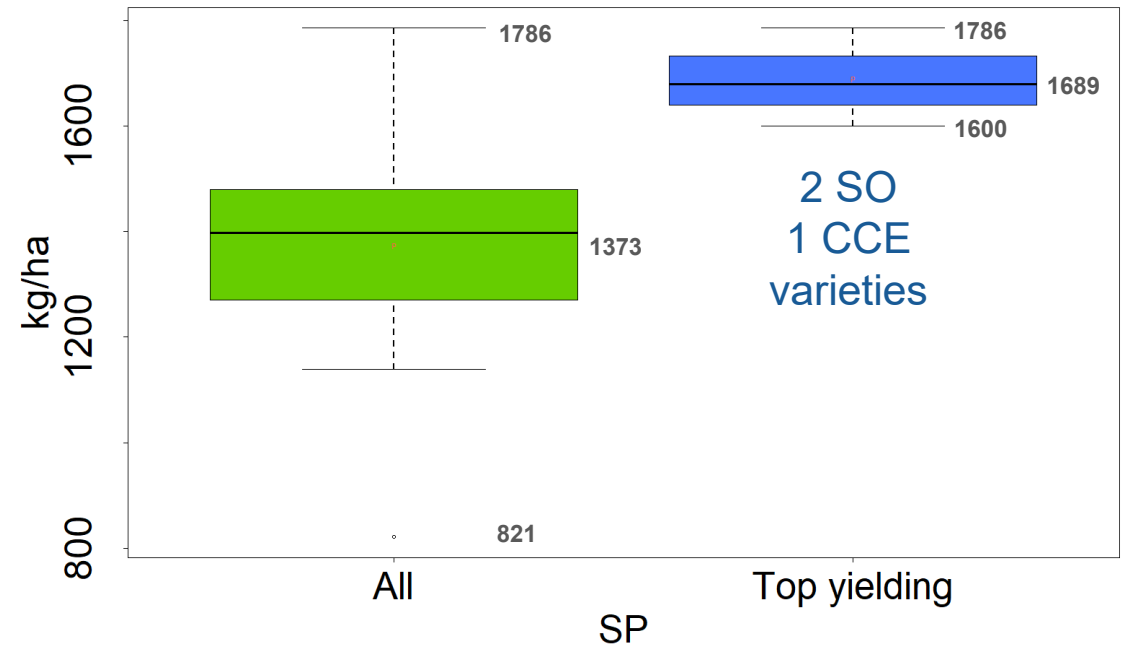
180

189

Genotypic grain yield performance

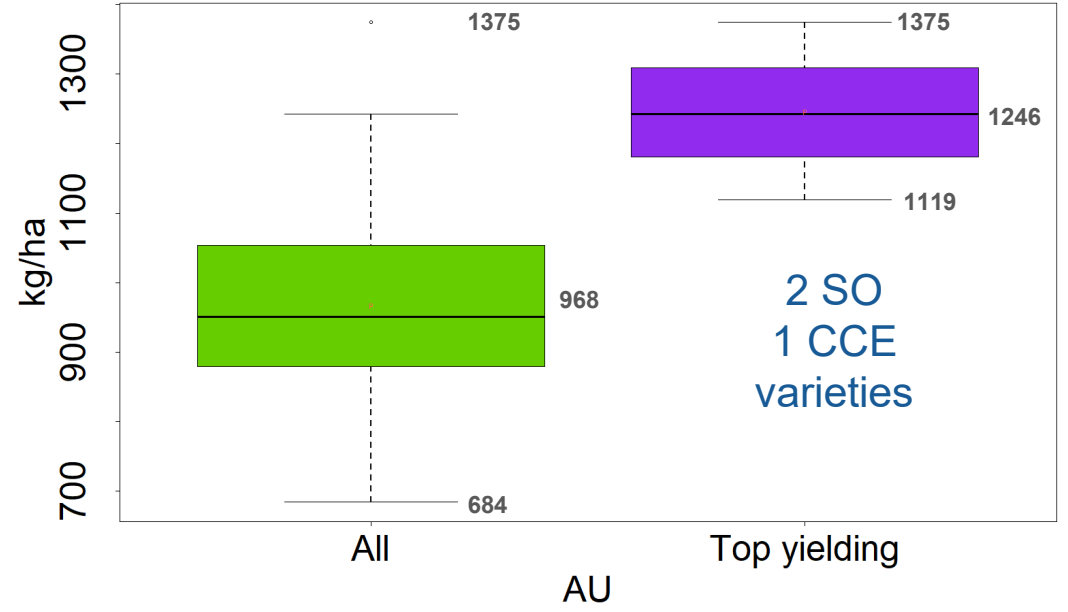
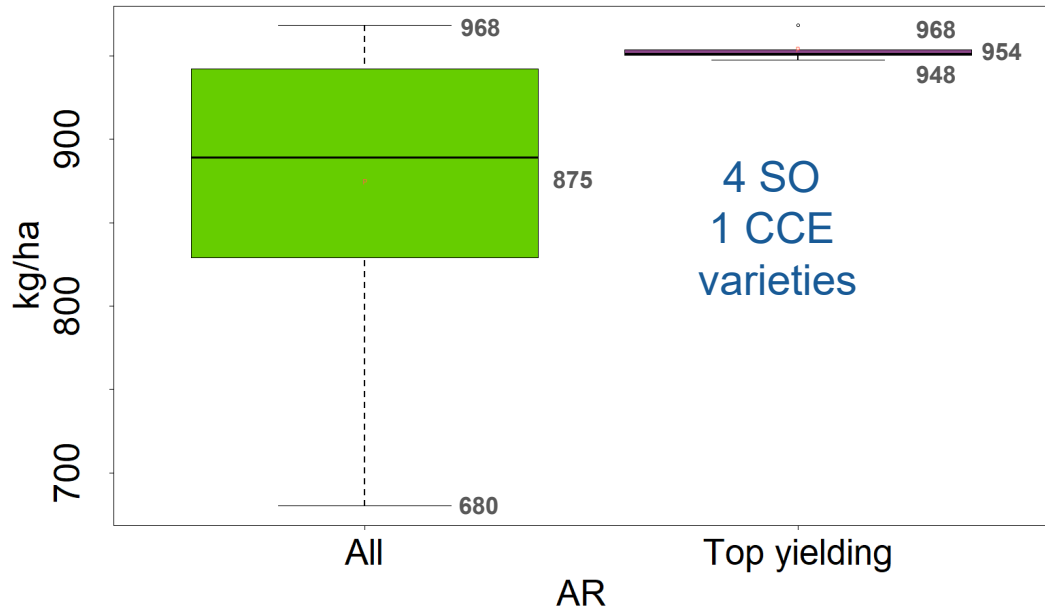


| | |
|---------------------------|--------|
| Entries | 30 |
| Locations | 6 |
| <i>Prob F</i> (Loc) | <0.001 |
| <i>Prob F</i> (Entry) | <0.001 |
| <i>Prob F</i> (Loc x Ent) | <0.001 |
| CV (%) | 30 |



| | |
|---------------------------|--------|
| Entries | 20 |
| Locations | 4 |
| <i>Prob F</i> (Loc) | <0.001 |
| <i>Prob F</i> (Entry) | <0.001 |
| <i>Prob F</i> (Loc x Ent) | <0.001 |
| CV (%) | 20 |

Genotypic grain yield performance



| | |
|---------------------------|--------|
| Entries | 25 |
| Locations | 8 |
| <i>Prob F</i> (Loc) | <0.001 |
| <i>Prob F</i> (Entry) | <0.001 |
| <i>Prob F</i> (Loc x Ent) | <0.001 |
| CV (%) | 26 |

| | |
|---------------------------|--------|
| Entries | 30 |
| Locations | 3 |
| <i>Prob F</i> (Loc) | <0.001 |
| <i>Prob F</i> (Entry) | <0.001 |
| <i>Prob F</i> (Loc x Ent) | <0.001 |
| CV (%) | 18 |

Concluding remarks

- Camelina is a crop that shows high resiliency to marginal growing conditions
- Camelina GCE proprietary varieties show high productivity and wide adaptability to prevalent growing conditions across target geographies
- The opportunity for a speedy variety release on a global scale is evident

A wide-angle photograph of a vast agricultural field. The foreground and middle ground are filled with rows of lush green crops, likely corn or soybeans, stretching towards a flat horizon. The sky is a clear, bright blue, dotted with several fluffy white cumulus clouds. The overall scene is bright and open, suggesting a clear, sunny day.

Thank you!