# SFP establishing seed rate recommendations for hybrid brown mustard

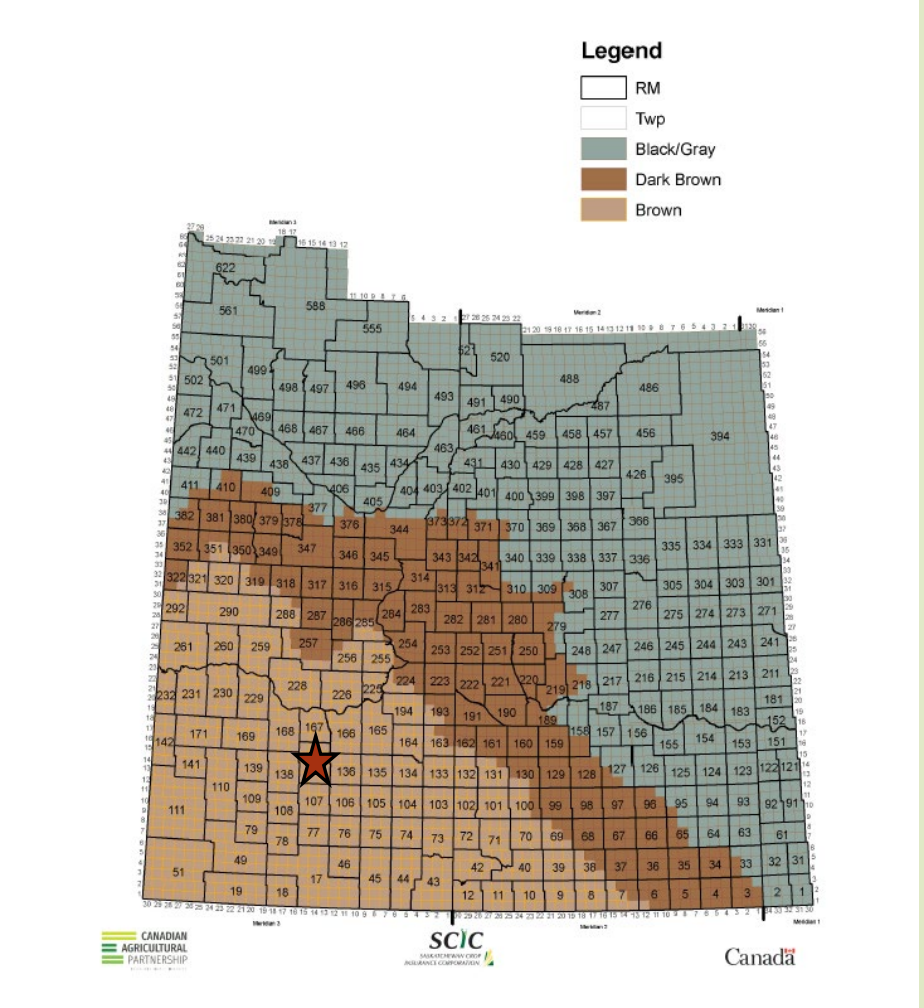
Amber Wall, Research Technician

# Overview

- Wheatland Conservation Area/Agri-ARM background and staff
- Year in Review
- SFP Establishing nitrogen and seeding rate recommendations for hybrid brown mustard

# Wheatland Brief History

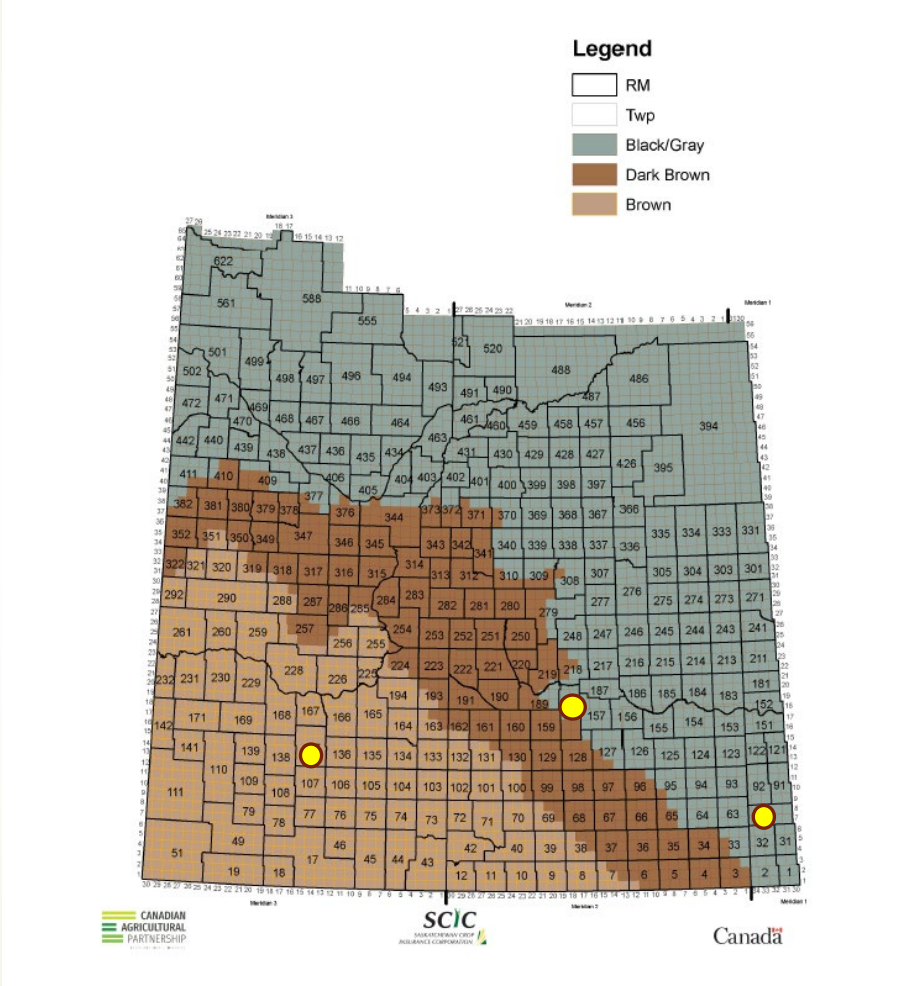
- Non-profit / producer run since 1983.
- We operate under the Agri-ARM umbrella of Applied Research sites (8 sites)
- Multiple soil zones in Saskatchewan
- Industry, Commodity groups, Universities, government funding



# WCA Annual Field Tours


## Site Locations

- Swift Current (WCA)
  - Dry Brown
- Redvers (SERF)
  - Black – long season
- Indian Head (IHARF)
  - Black



| Part 2: Seed Rate Trial<br>Variety | Total NPKS<br>Soil + Applied | seeds/ft2 |
|---|---|---|
| AAC Brown 18 | 90-40-0-25 | **10** |
| AAC Brown 18 | 90-40-0-25 | **14** |
| AAC Brown 18 | 90-40-0-25 | **18** |
| AAC Brown 18 | 90-40-0-25 | **22** |
| AAC Brown 18 | 90-40-0-25 | **26** |
| Centennial Brown | 90-40-0-25 | **10** |
| Centennial Brown | 90-40-0-25 | **14** |
| Centennial Brown | 90-40-0-25 | **18** |
| Centennial Brown | 90-40-0-25 | **22** |
| Centennial Brown | 90-40-0-25 | **26** |

## Date measured:

- Soil residual nutrients
- Plant counts
- Visual vigor (early and later)
- Height
- Lodging
- Yield

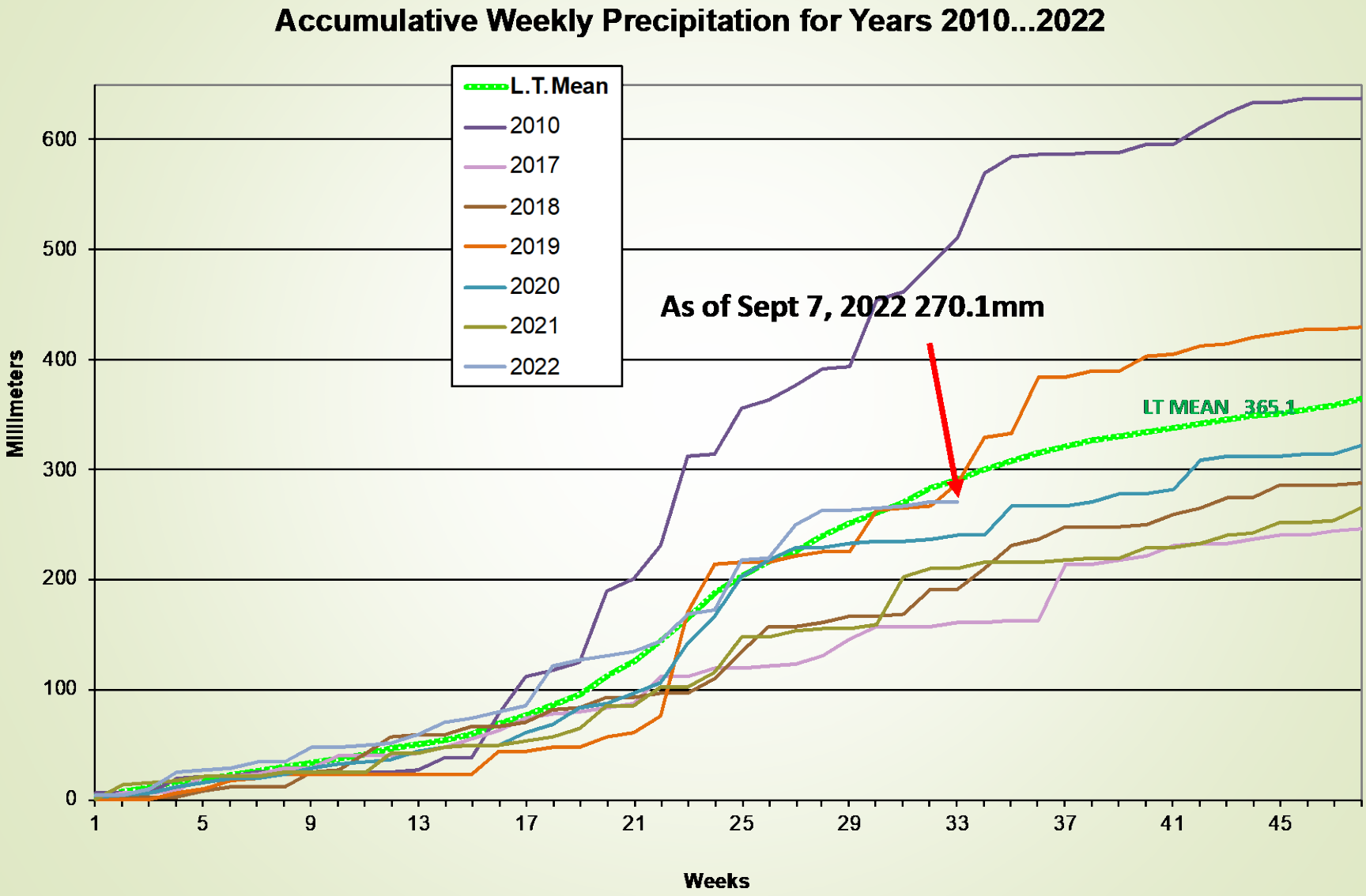
OP 14 seeds/ft$^2$

OP 18 seeds/ft$^2$

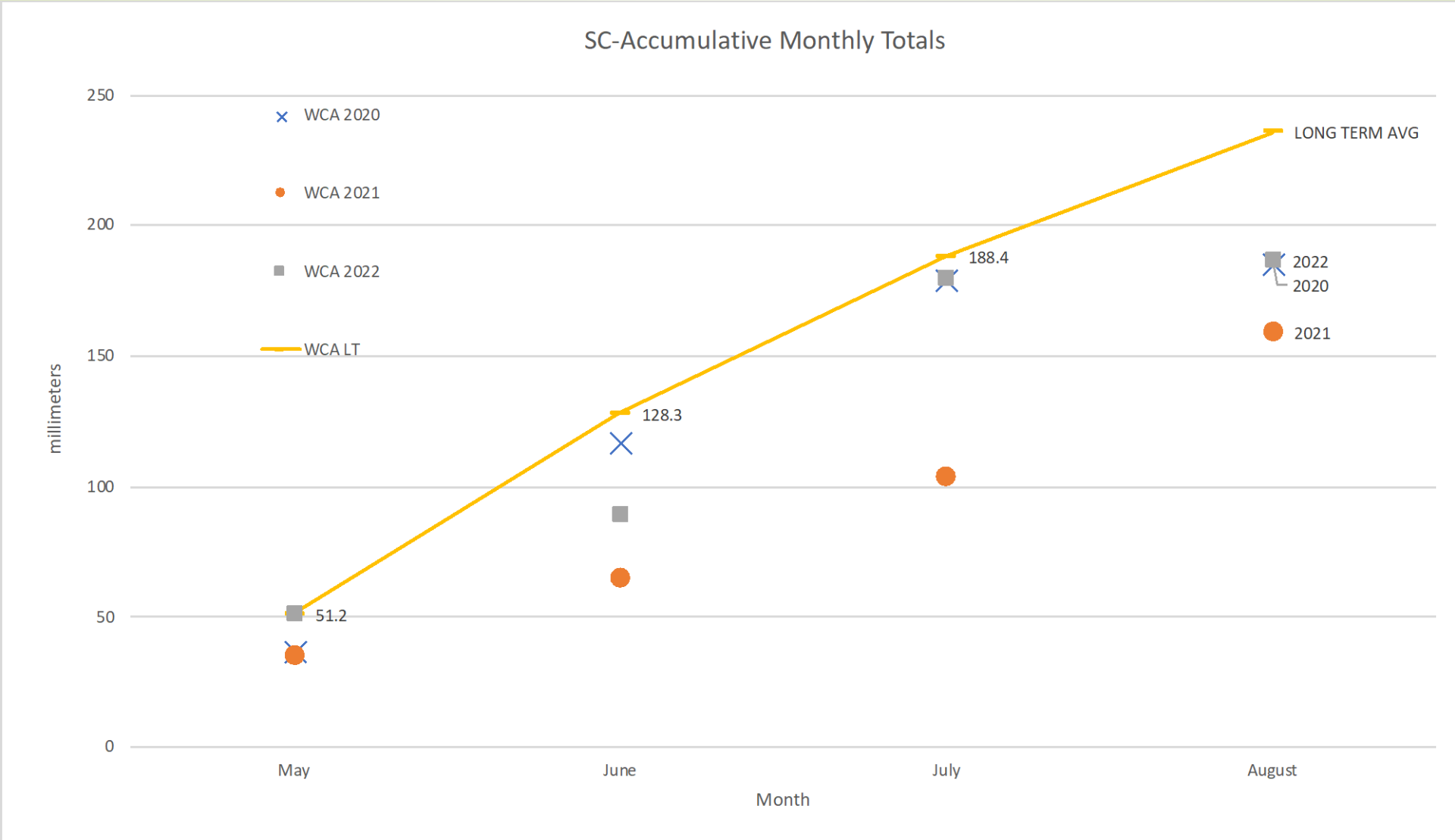
OP 22 seeds/ft$^2$

OP 26 seeds/ft$^2$

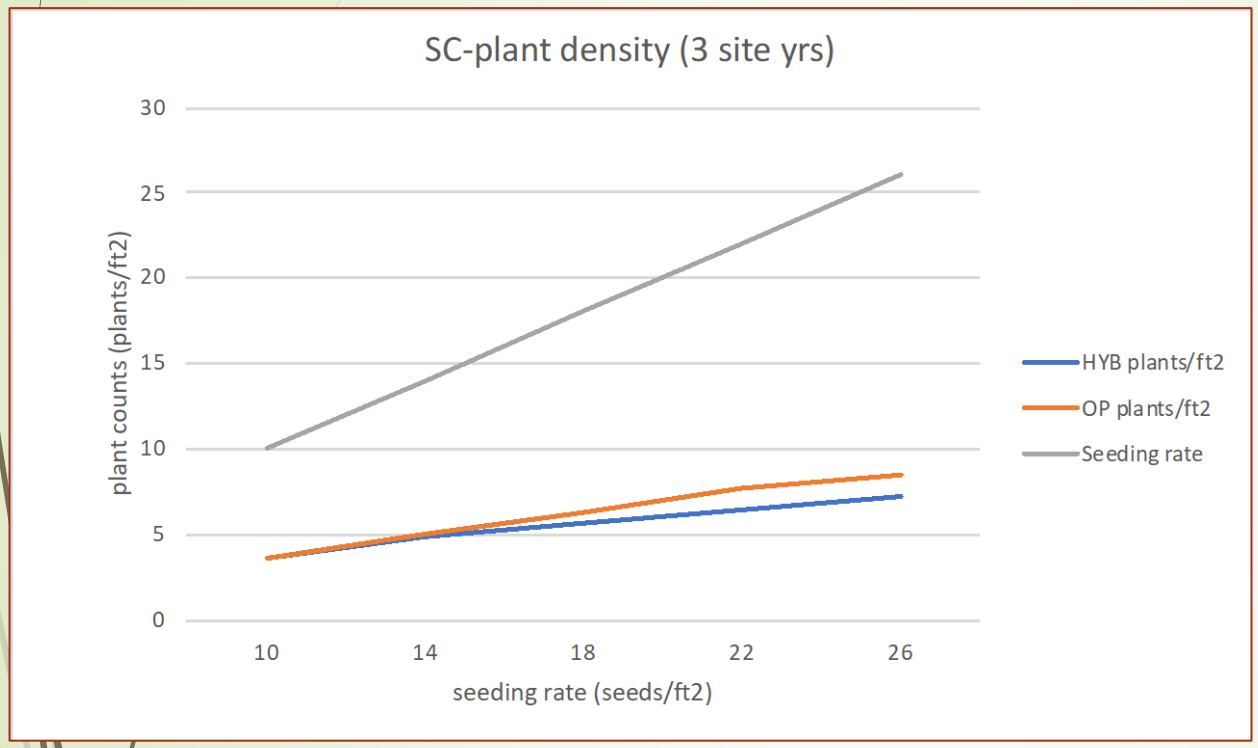
# SC Weather


Accumulative Weekly Precipitation for Years 2010...2022
L.T. Mean
2010
2017
2018
2019
2020
2021
2022
As of Sept 7, 2022 270.1mm
LT MEAN 365.1
Millimeters
0
100
200
300
400
500
600
1
5
9
13
17
21
25
29
33
37
41
45
Weeks

# SC Weather


SC-Accumulative Monthly Totals
250
200
150
100
50
0
millimeters
WCA 2020
WCA 2021
WCA 2022
WCA LT
LONG TERM AVG
188.4
128.3
51.2
2022
2020
2021
May
June
July
August
Month

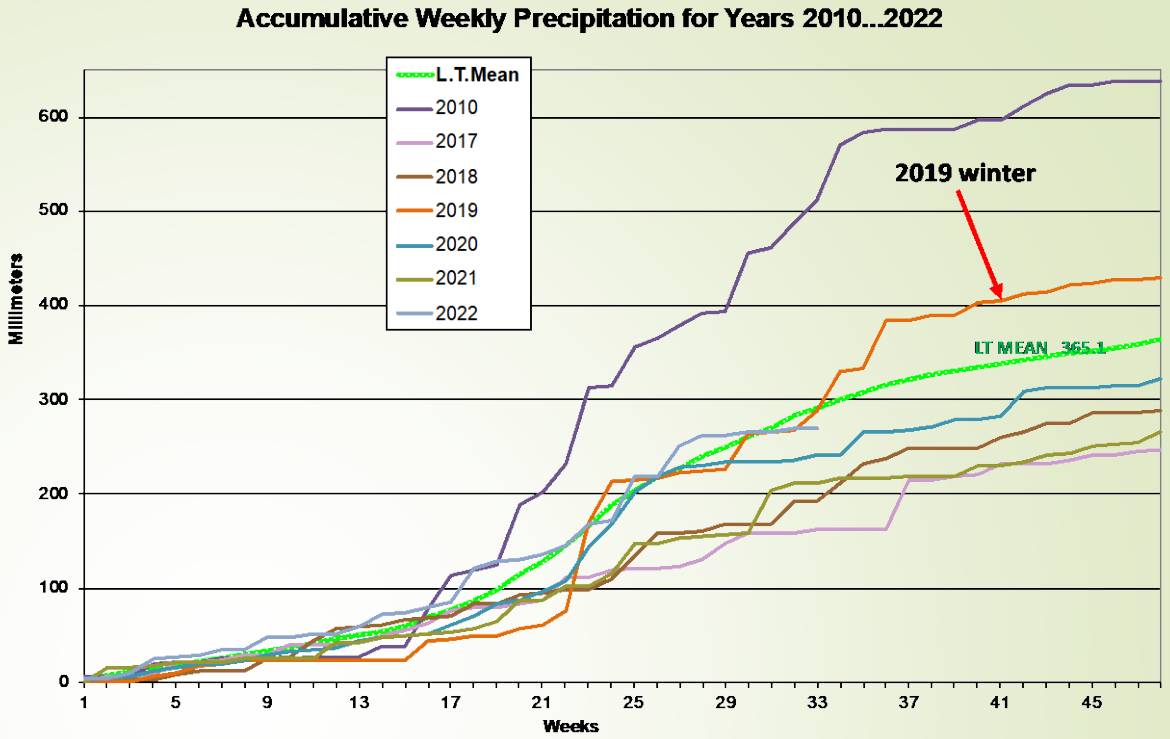
# Swift Current Plant Establishment

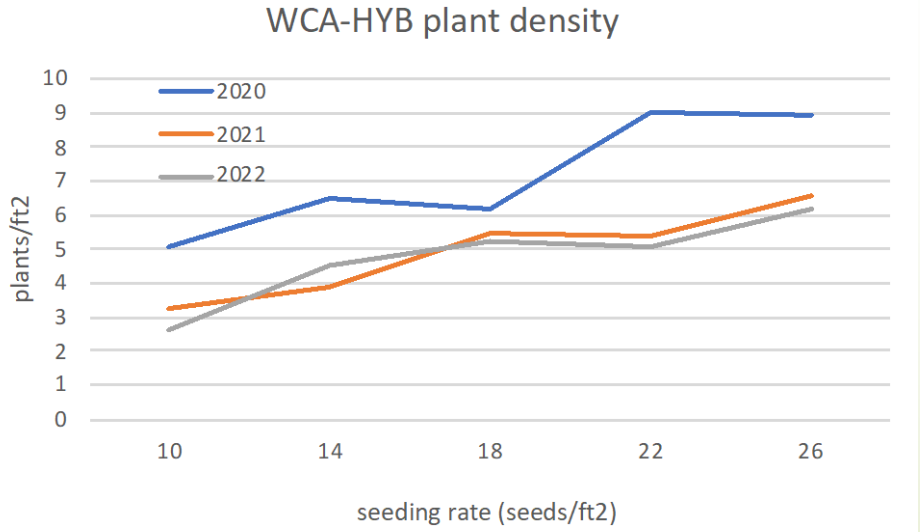


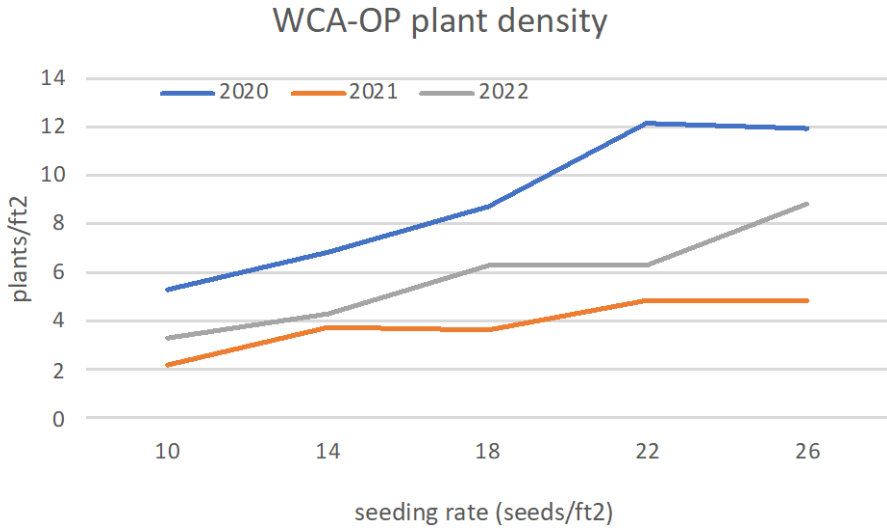

| WCA AAC Brown 18 | | |
|---|---|---|
| seeds/ft2 | plants/ft2 | % emergence |
| 10 | 3.6 | 36% |
| 14 | 4.9 | 35% |
| 18 | 5.6 | 31% |
| 22 | 6.5 | 29% |
| 26 | 7.2 | 28% |
| WCA Centennial Brown | | |
| seeds/ft2 | OP plants/ft2 | % emergence |
| 10 | 3.6 | 36% |
| 14 | 5.0 | 36% |
| 18 | 6.2 | 35% |
| 22 | 7.8 | 35% |
| 26 | 8.5 | 33% |

- Hybrid had a lower plant stand than OP
- Plant stand increased linearly up to 26 seeds/ft2
- Overall poor emergence
- % emergence decreased as seeding rate increased

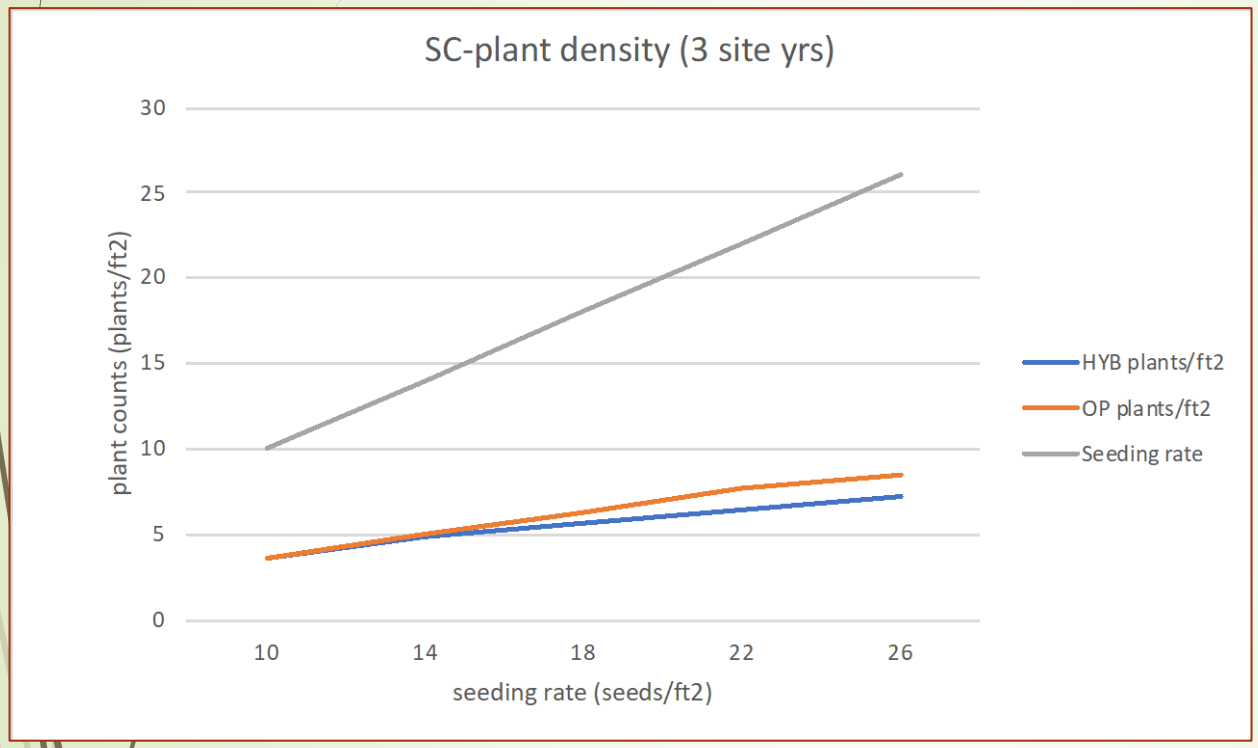
- Overall poor emergence at SC due to dry conditions



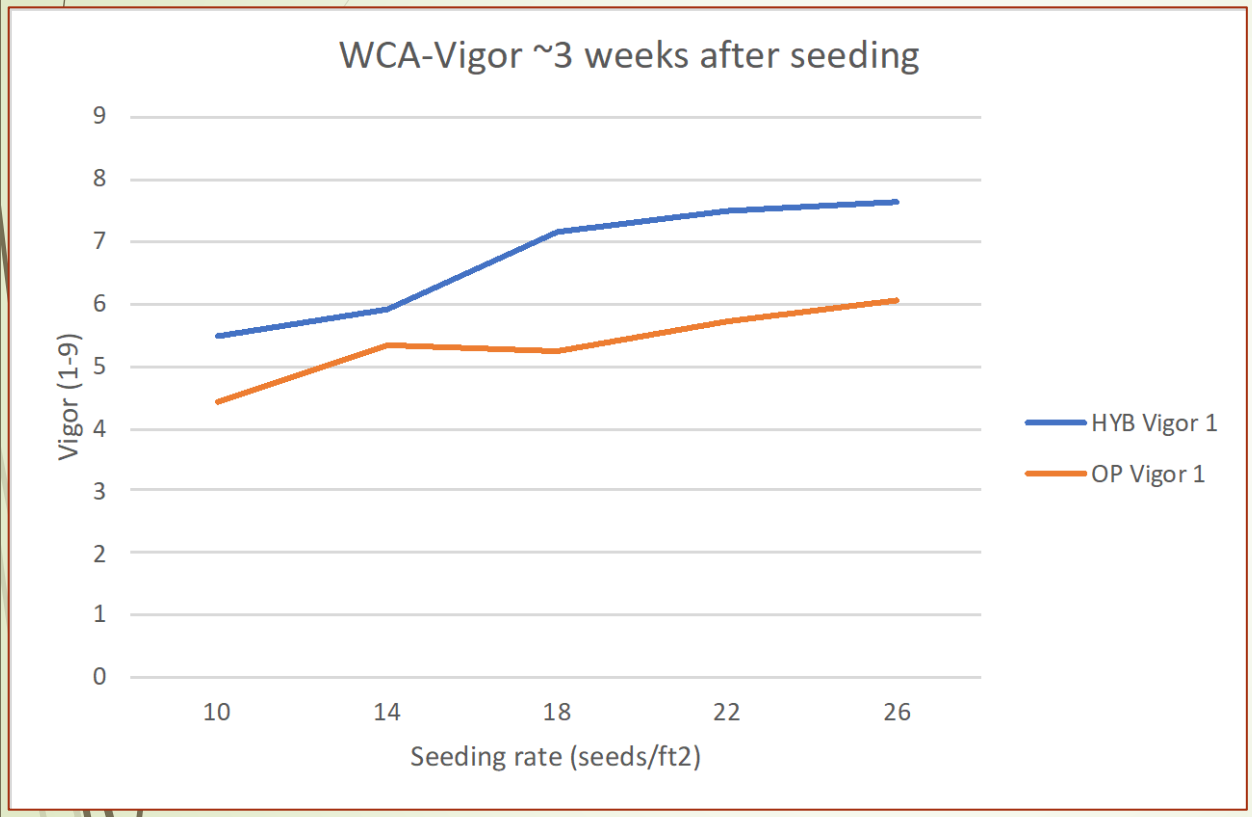
# Swift Current Plant Establishment




| WCA AAC Brown 18 | | |
|---|---|---|
| seeds/ft2 | plants/ft2 | % emergence |
| 10 | 3.6 | 36% |
| 14 | 4.9 | 35% |
| 18 | 5.6 | 31% |
| 22 | 6.5 | 29% |
| 26 | 7.2 | 28% |
| WCA Centennial Brown | | |
| seeds/ft2 | OP plants/ft2 | % emergence |
| 10 | 3.6 | 36% |
| 14 | 5.0 | 36% |
| 18 | 6.2 | 35% |
| 22 | 7.8 | 35% |
| 26 | 8.5 | 33% |

- Hybrid had a lower plant stand than OP
- Plant stand increased linearly up to 26 seeds/ft2
- Overall poor emergence
- % emergence decreased as seeding rate increased

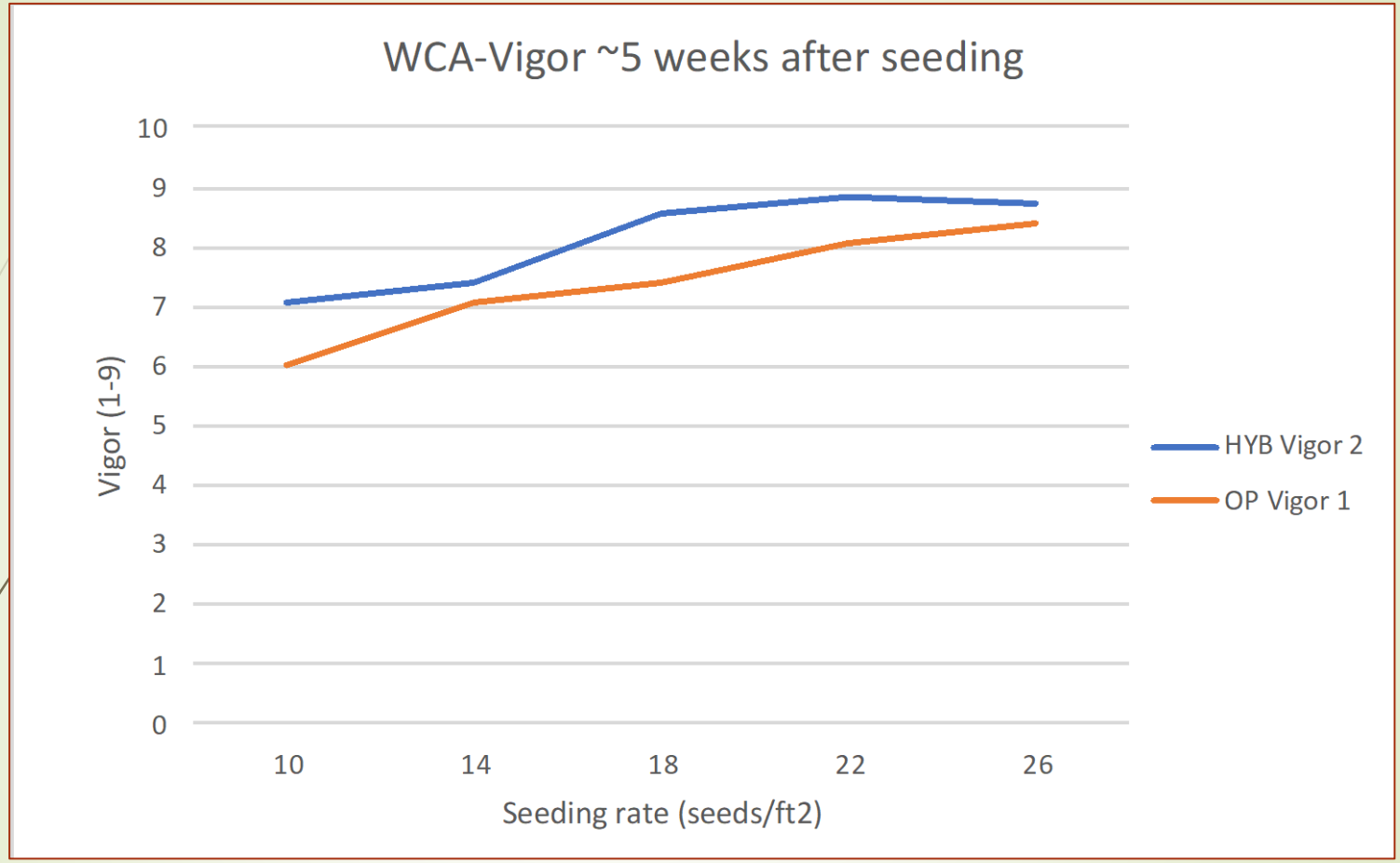
# Vigor Ratings (1-9=best)




OP 18 seeds/ft2

- Variety effect and seed rate effect at early rating

# Nitrogen Trial June 18, 2021



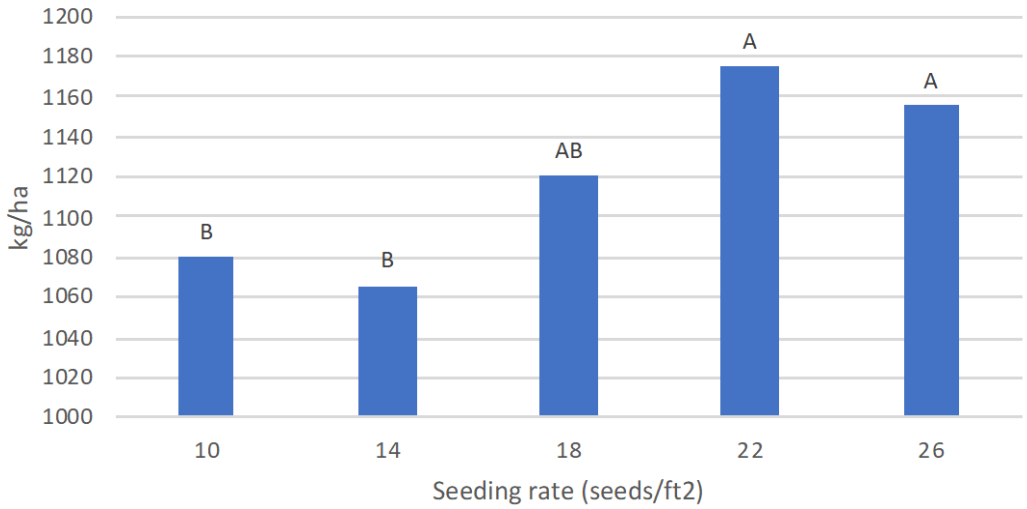

- Variety effect and seed rate effect at early rating
- Still a variety effect, but not as strong seed rate response at later rating

Centennial brown

Hybrid Brown

# SC Yield

- HYB>OP



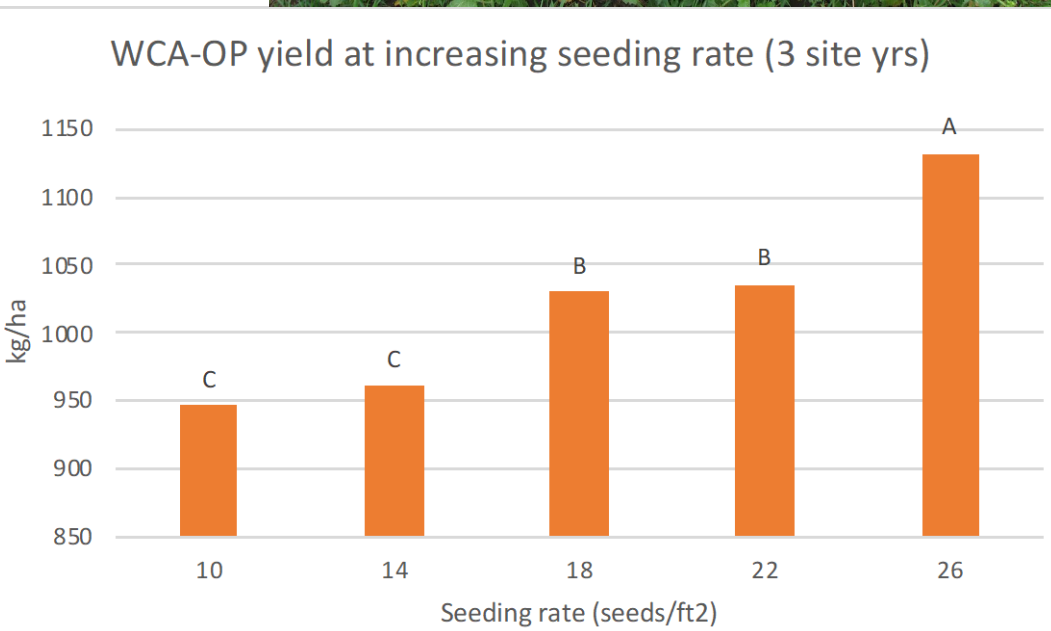

Hybrid @ 22 seeds/ft$^2$

- HYB yield increased up to 18 to 22 seeds/ft$^2$

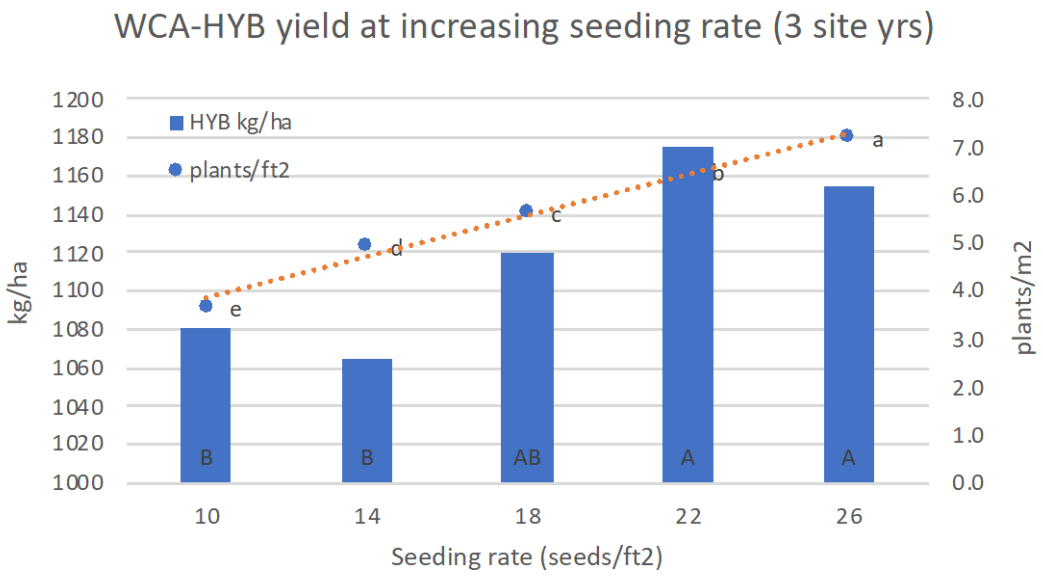
  **(1175 kg/ha or 21 bu/ac)**

- OP yield increased up to 26 seeds/ft$^2$

  **(1132 kg/ha or 20 bu/ac)**

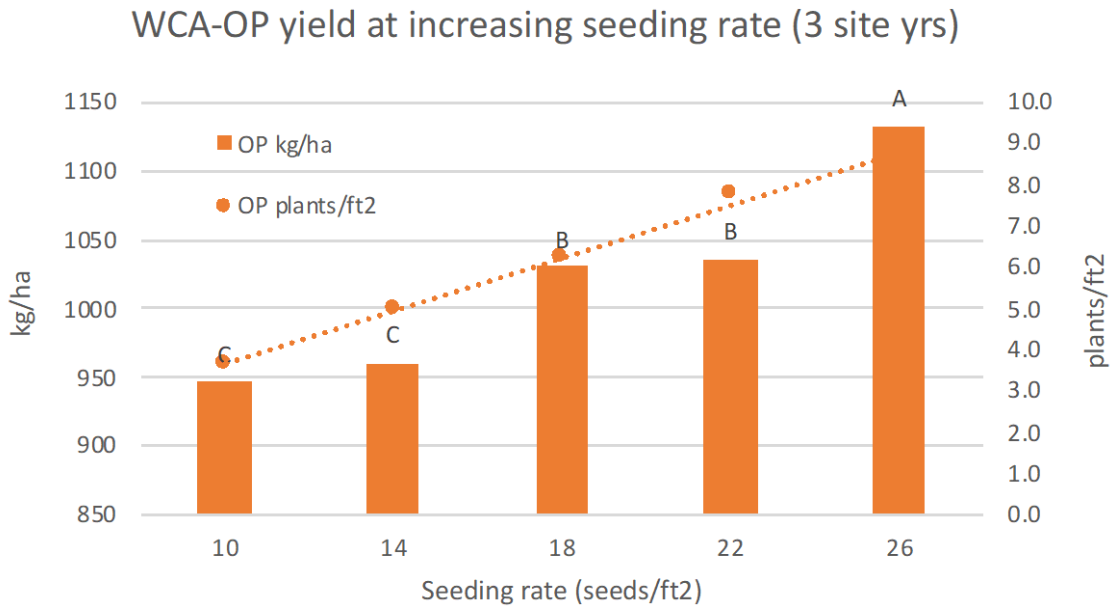


# SC Yield

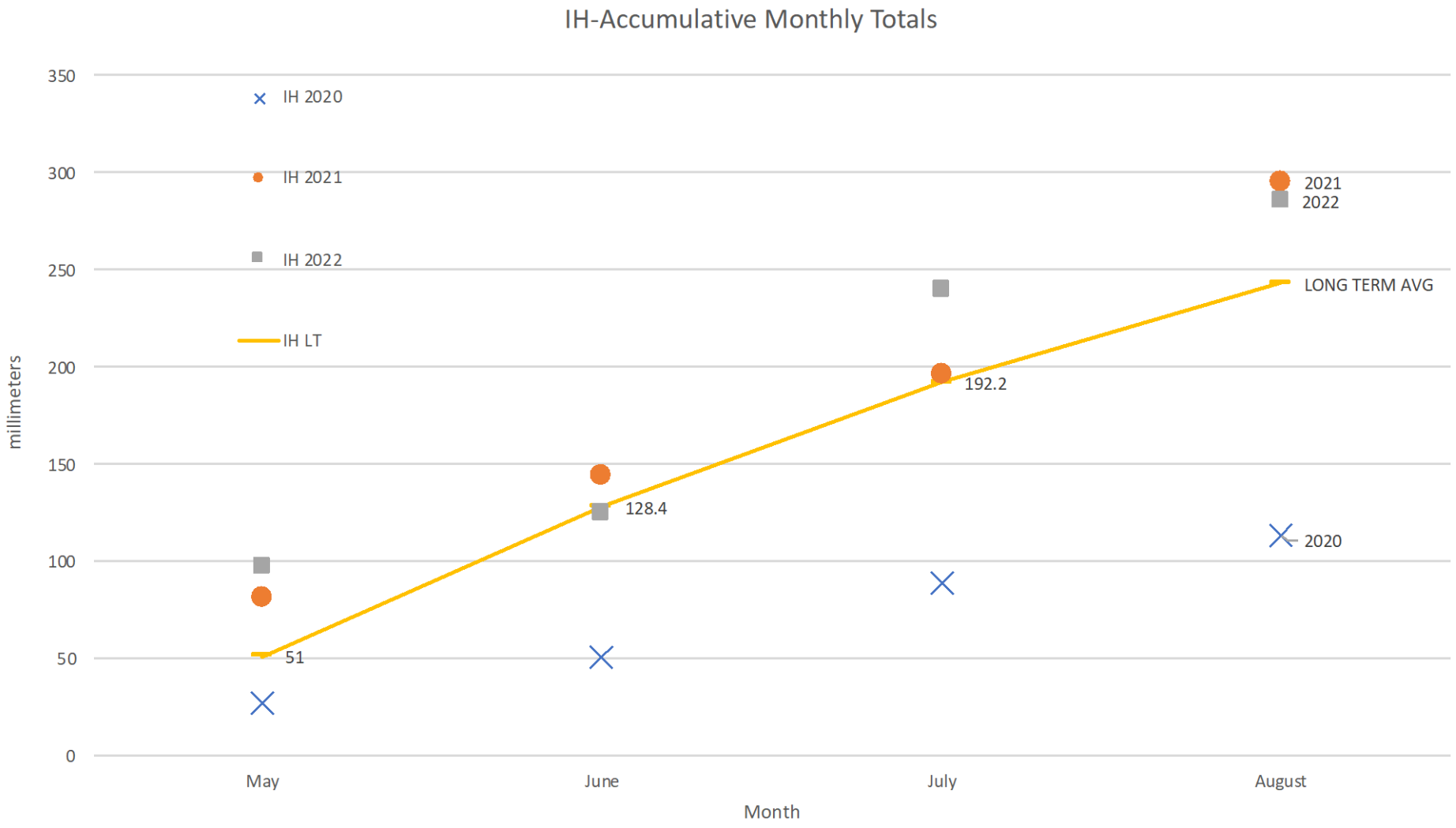



Hybrid @ 18 seeds/ft$^2$

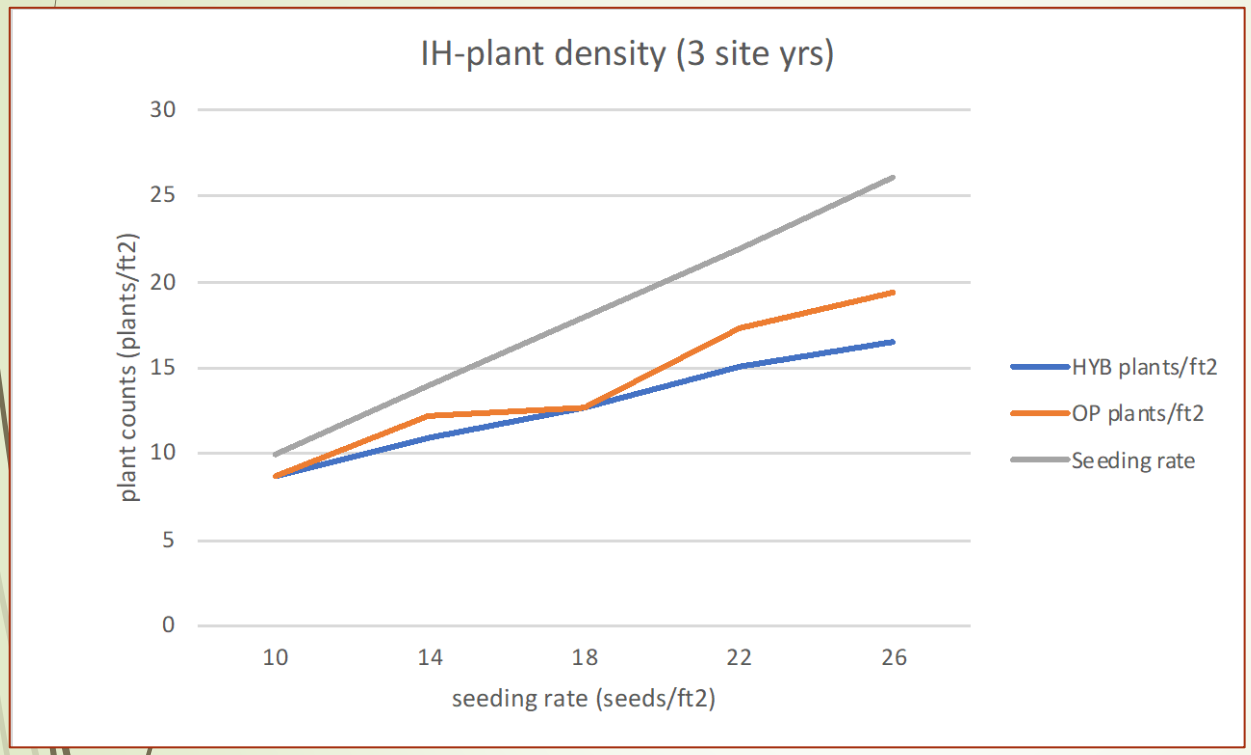
- Optimum hybrid plant stand 18 seeds/ft$^2$
- OP yield increased up to 26 seeds/ft$^2$



# IH Weather


IH-Accumulative Monthly Totals
350
300
250
200
150
100
50
0
millimeters
IH 2020
IH 2021
IH 2022
IH LT
51
128.4
192.2
2021
2022
LONG TERM AVG
2020
May
June
July
August
Month

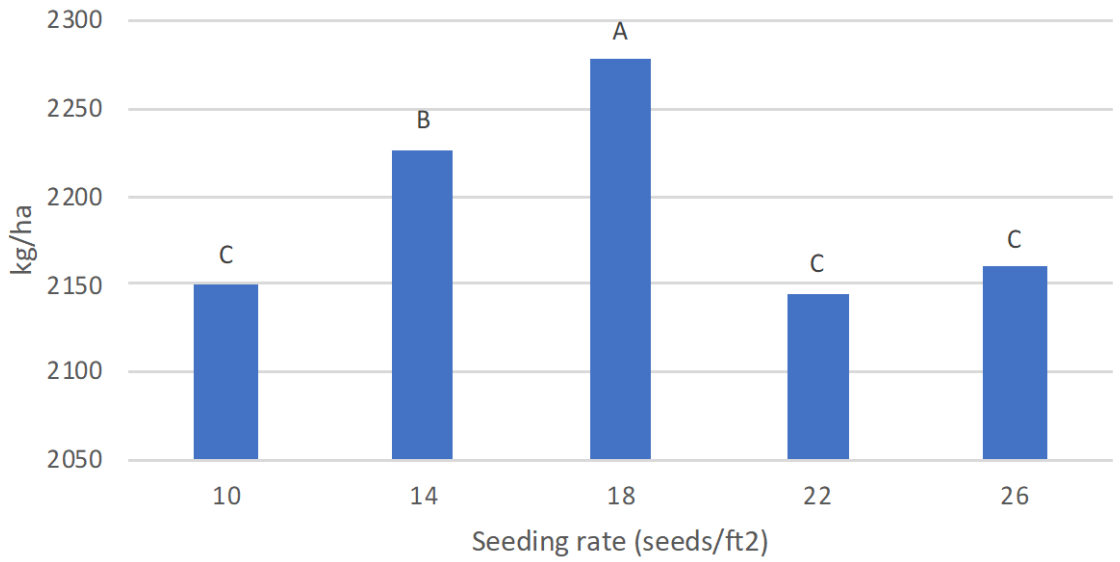
# Indian Head Plant Establishment




| IH AAC Brown 18 | | |
|---|---|---|
| seeds/ft2 | plants/ft2 | % emergence |
| 10 | 8.6 | 86% |
| 14 | 10.9 | 78% |
| 18 | 12.7 | 71% |
| 22 | 15.0 | 68% |
| 26 | 16.5 | 63% |
| IH Centennial Brown | | |
| seeds/ft2 | plants/ft2 | % emergence |
| 10 | 8.8 | 88% |
| 14 | 12.2 | 87% |
| 18 | 12.7 | 71% |
| 22 | 17.3 | 79% |
| 26 | 19.4 | 75% |

- Hybrid had a lower plant stand than OP
- Plant stand increased with seeding rate up to 26 seeds/ft2
- Good emergence, above the target plant stand
- % emergence decreased as seeding rate increased

# IH Yield



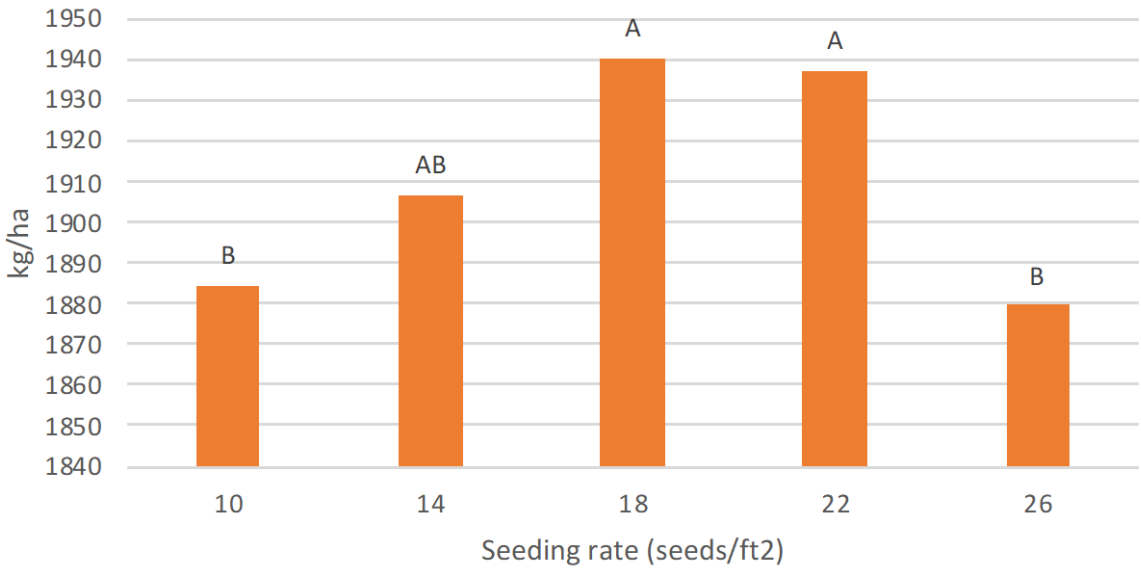

- HYB yield increased up to 18 seeds/ft2

  **(2,278 kg/ha or 46 bu/ac)**

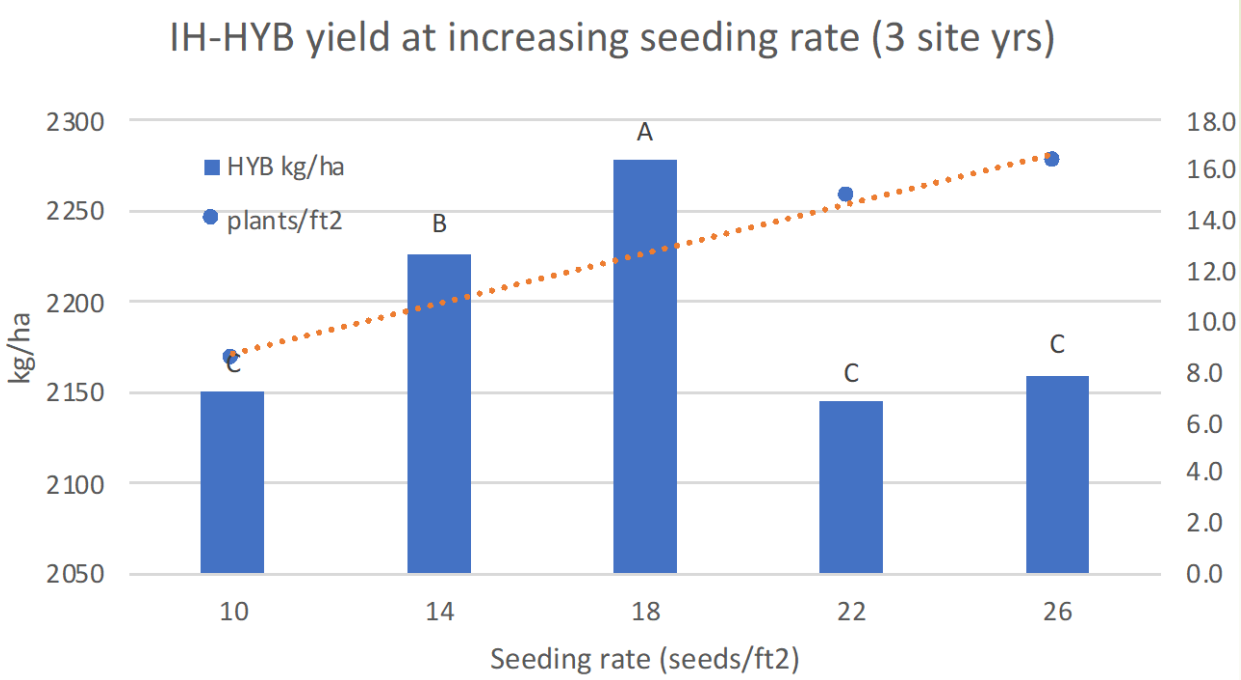
- OP yield increased up to 18 seeds/ft2

  **(1,941 kg/ha or 39 bu/ac)**

- HYB>OP



# IH Yield



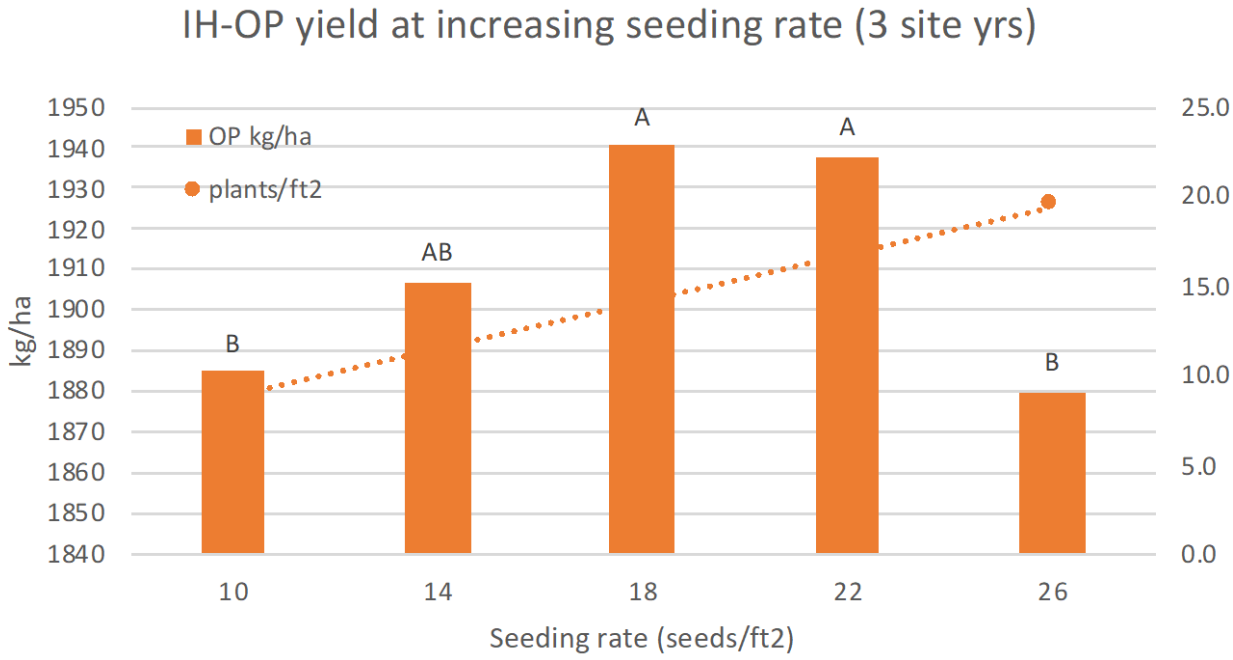

- HYB yield increased up to 18 seeds/ft2

  **(2,278 kg/ha or 46 bu/ac)**

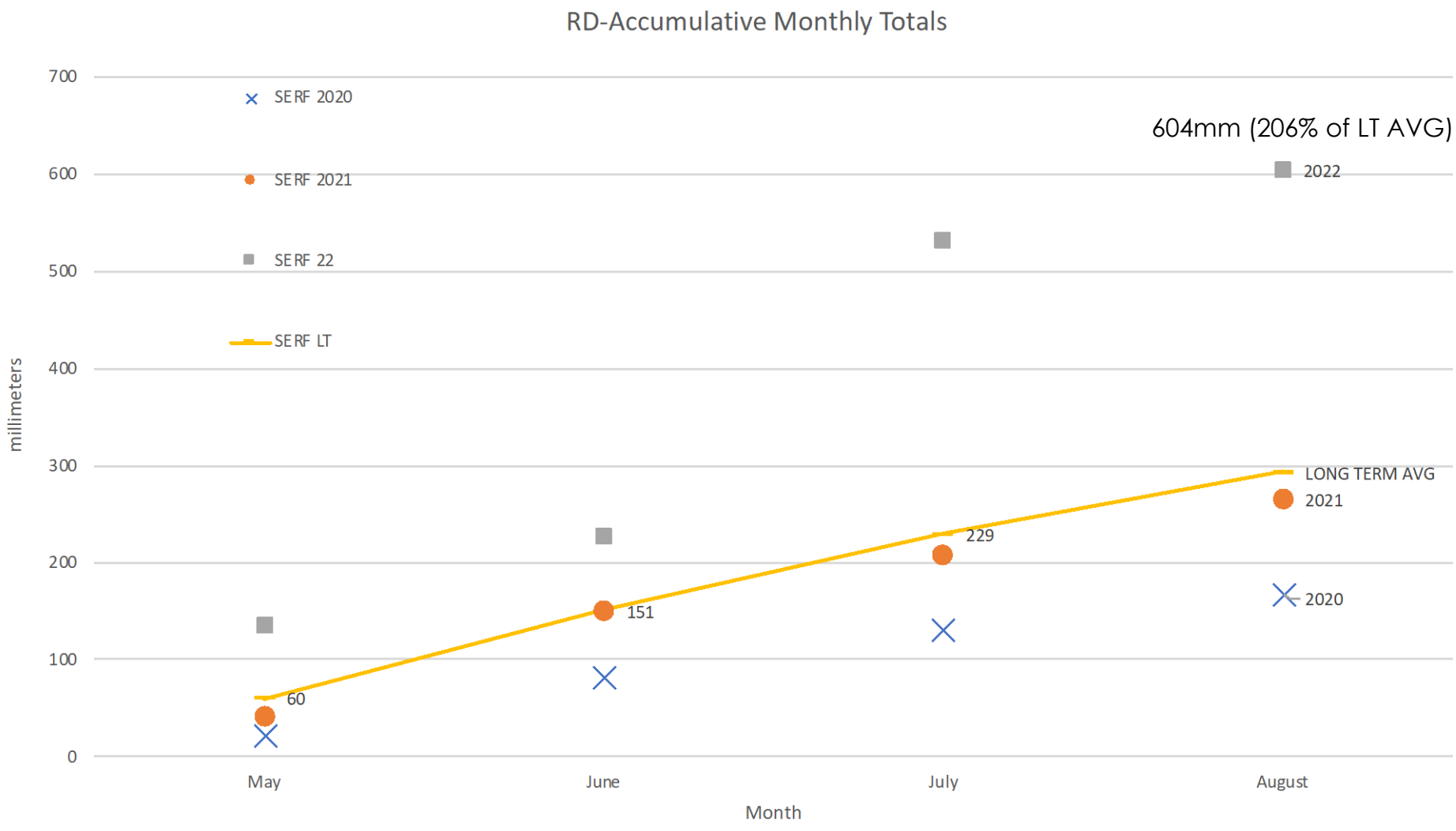
- OP yield increased up to 18 seeds/ft2

  **(1,941 kg/ha or 39 bu/ac)**

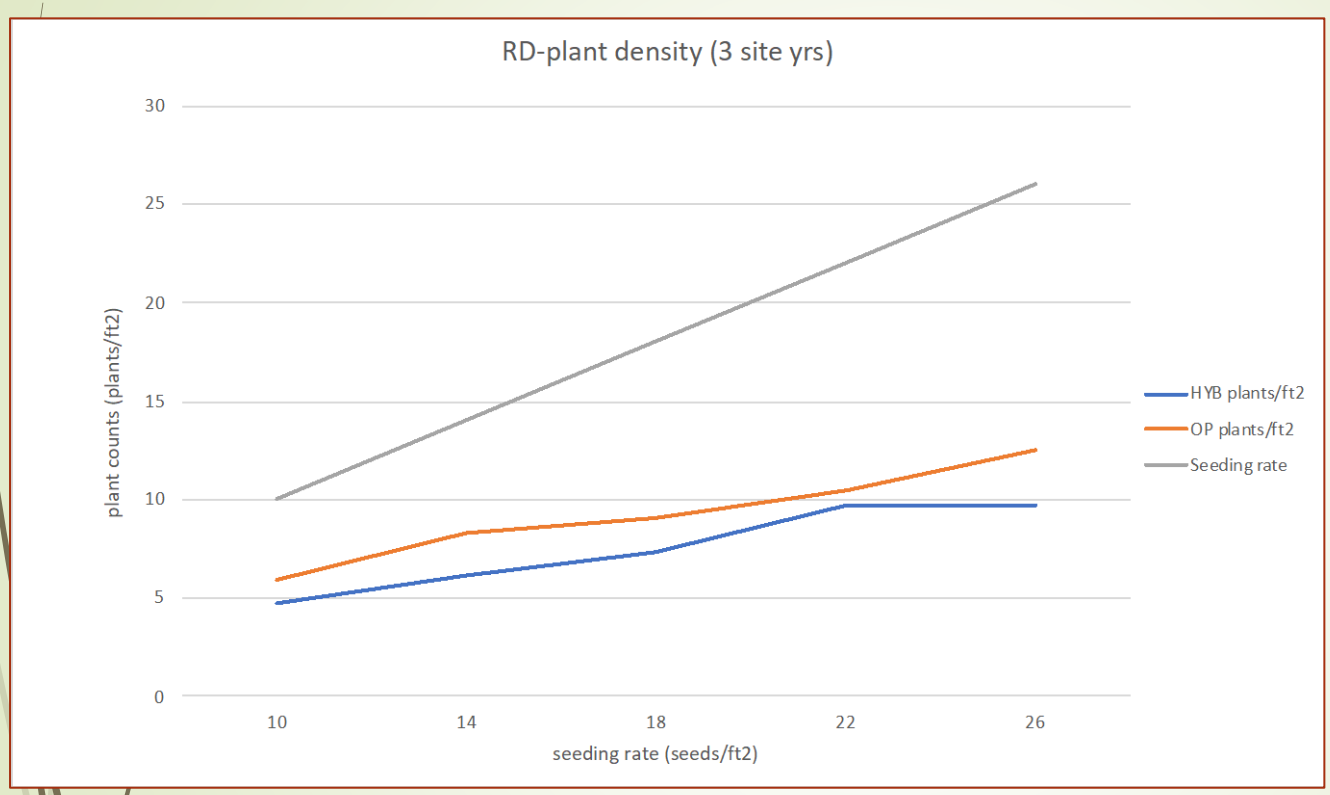
- Target plant stand was met for both varieties seeded at 14 seeds/ft2



# RD Weather


RD-Accumulative Monthly Totals
700
600
500
400
300
200
100
0
millimeters
SERF 2020
SERF 2021
SERF 22
SERF LT
604mm (206% of LT AVG)
2022
LONG TERM AVG
2021
2020
60
151
229
May
June
July
August
Month

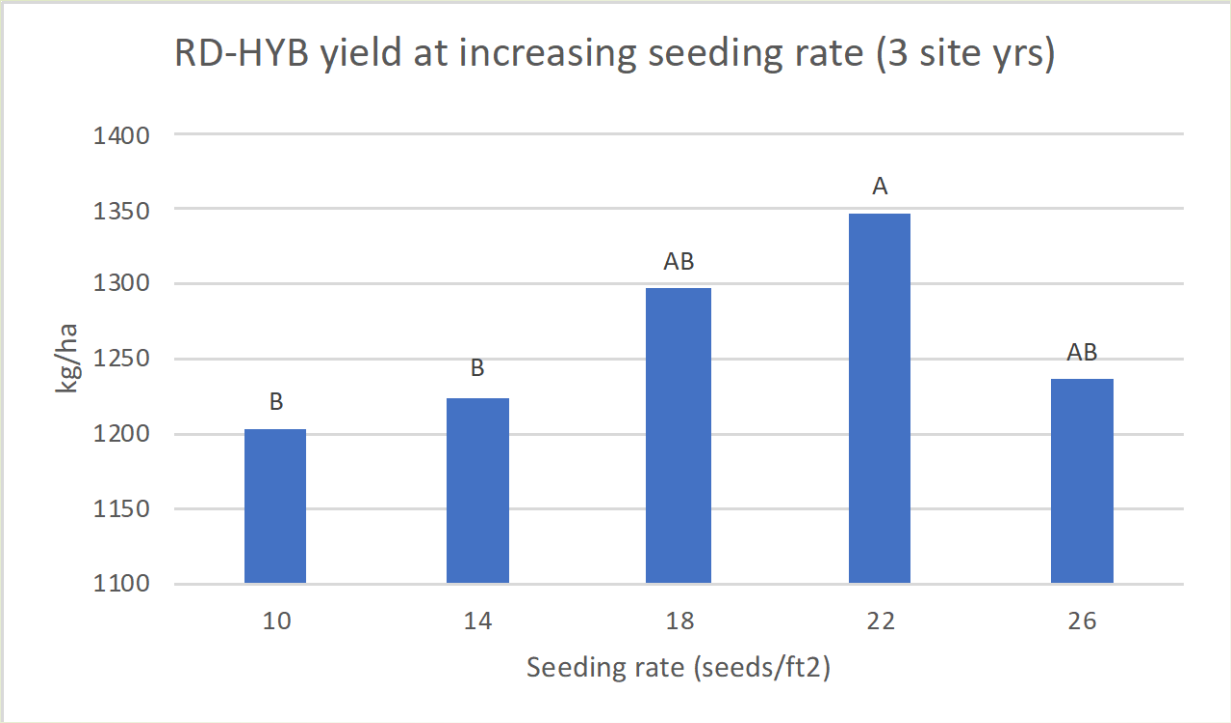
# Redvers Plant Establishment




| RD AAC Brown 18 | | |
|---|---|---|
| seeds/ft2 | plants/ft2 | % emergence |
| 10 | 4.7 | 47% |
| 14 | 6.2 | 44% |
| 18 | 7.3 | 41% |
| 22 | 9.7 | 44% |
| 26 | 9.8 | 38% |
| RD Centennial Brown | | |
| seeds/ft2 | plants/ft2 | % emergence |
| 10 | 5.9 | 59% |
| 14 | 8.3 | 59% |
| 18 | 9.0 | 50% |
| 22 | 10.5 | 48% |
| 26 | 12.6 | 48% |

- Hybrid had a lower plant stand than OP
- Plant stand increased with seeding rate
- Emergence above and below the target plant stand
- % emergence decreased as seeding rate increased

# RD Yield



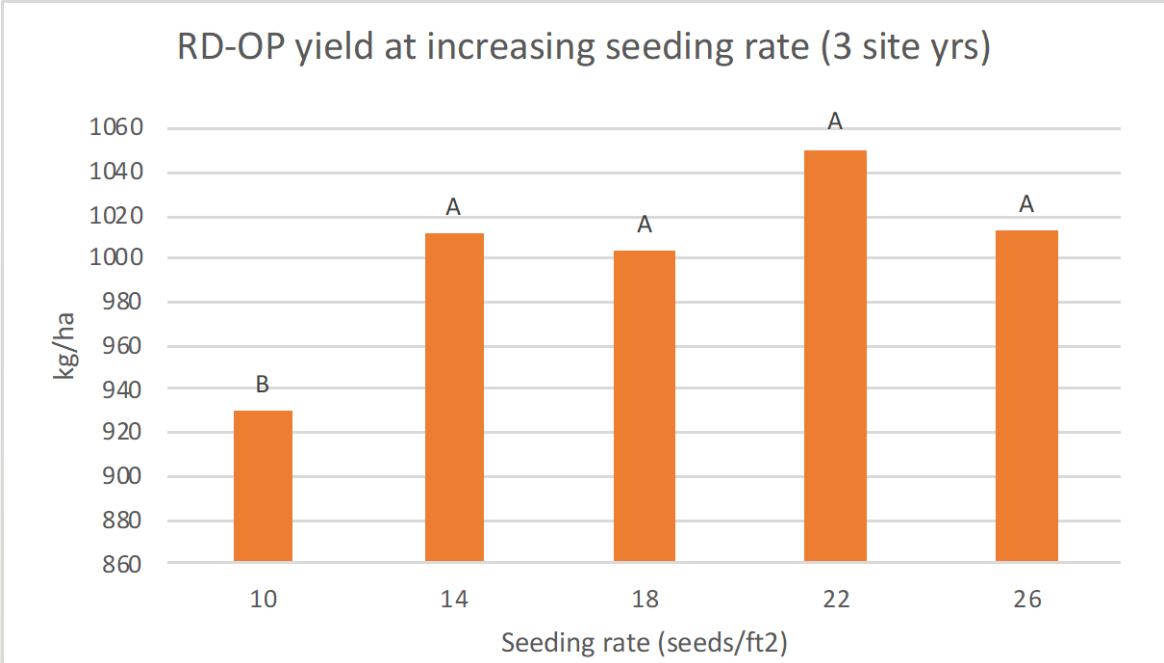

- HYB>OP

- HYB yield increased up to 18-22 seeds/ft$^2$

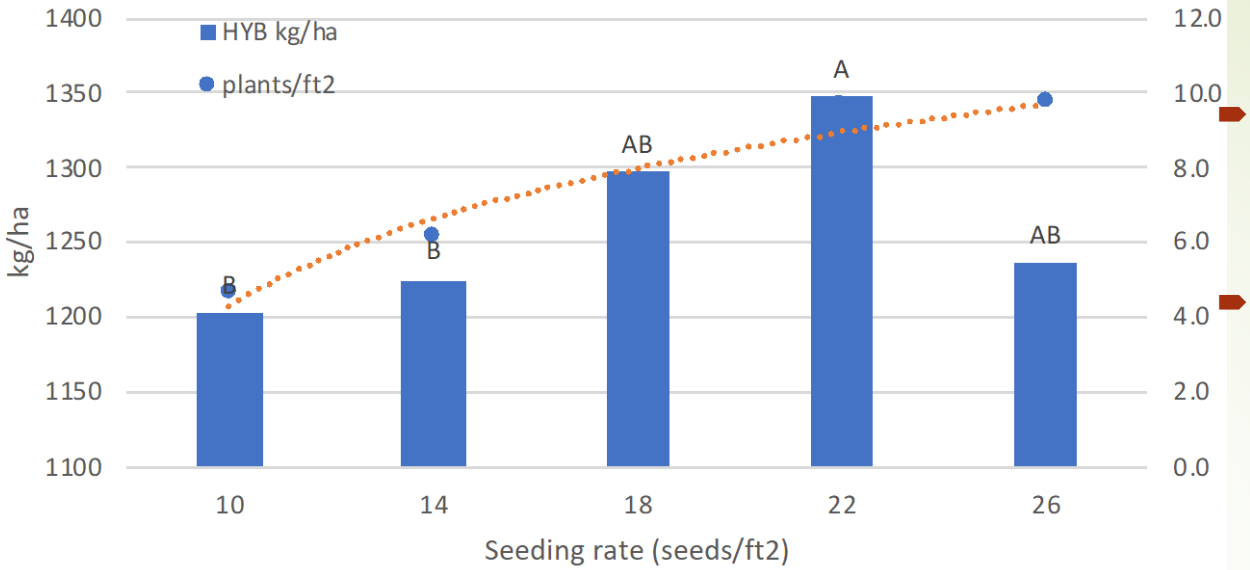
  **(1,347 kg/ha or 27 bu/ac)**

- OP yield increased up to 22 seeds/ft$^2$

  **(1,050 kg/ha or 21 bu/ac)**

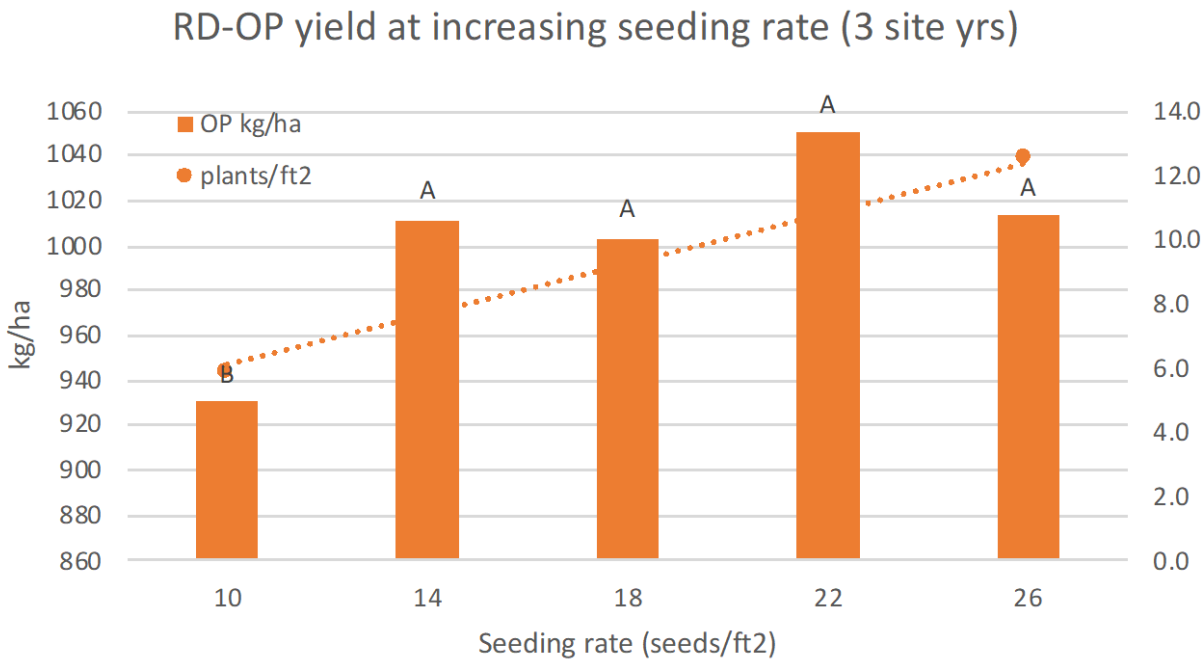


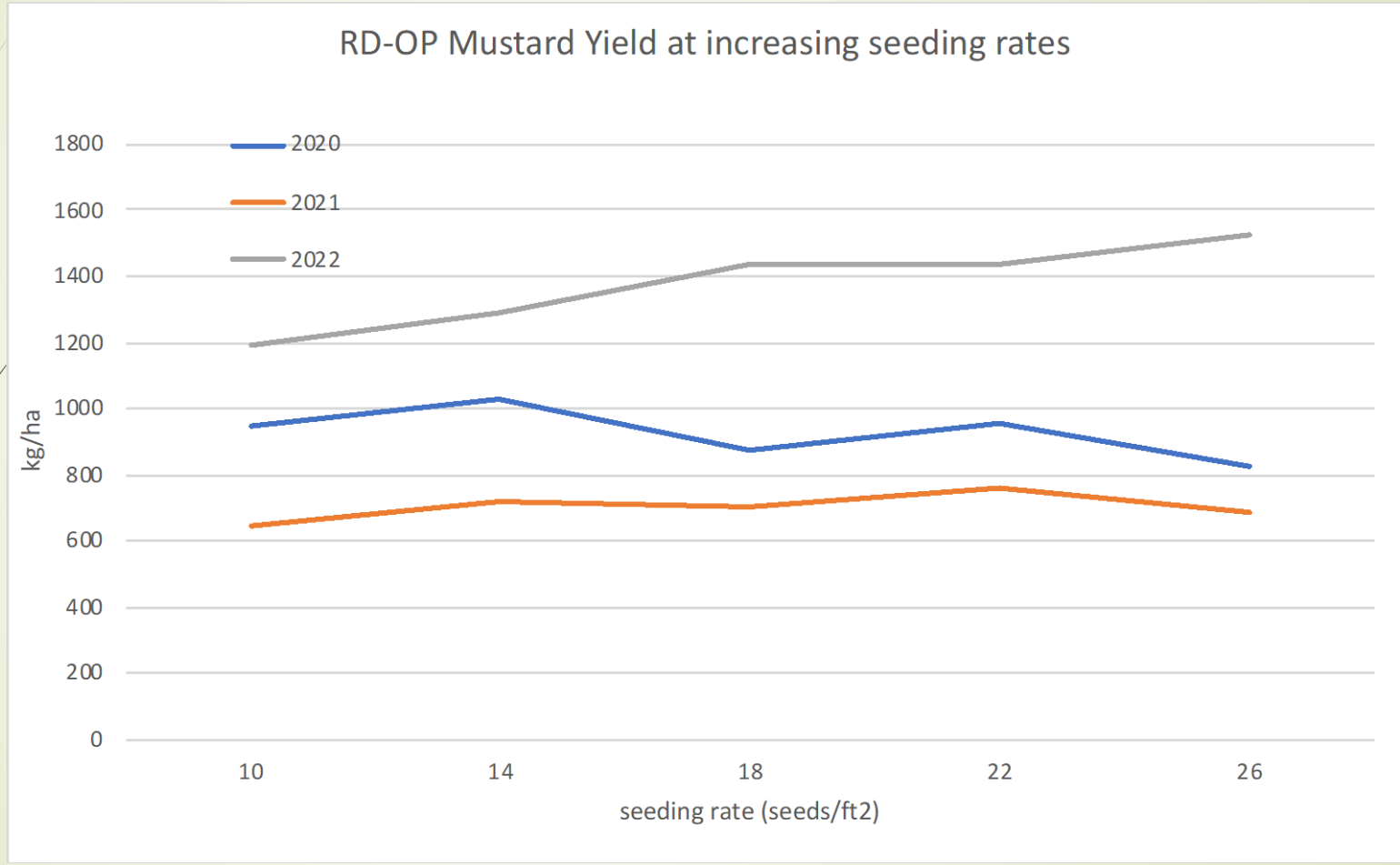
# RD Yield



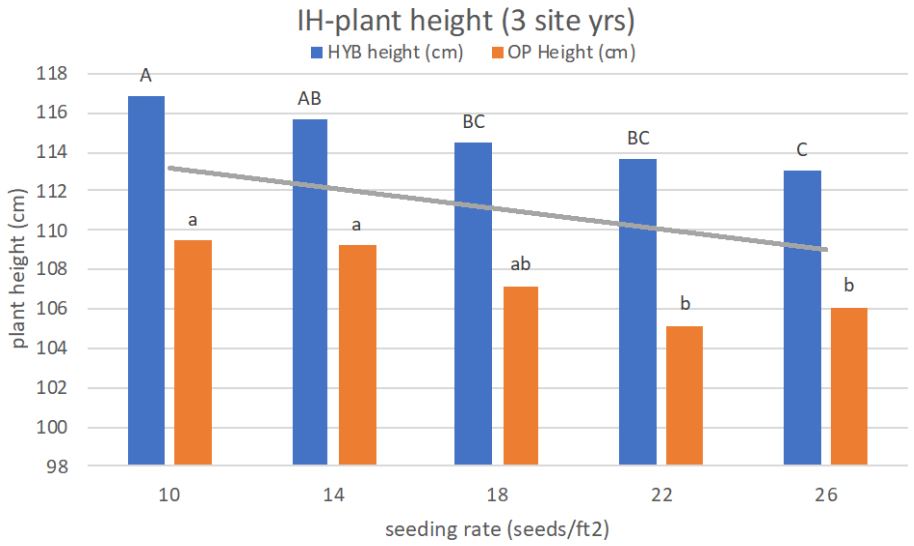

- HYB yield increased up to 18-22 seeds/ft$^2$ **=27 bu/ac)**
- OP yield increased up to 22 seeds/ft$^2$ **=21 bu/ac)**

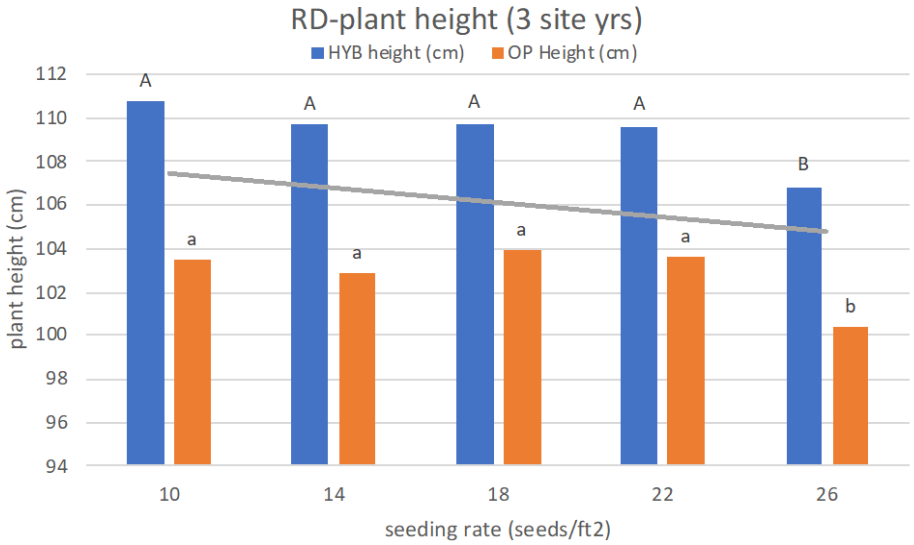
- HYB: 18-22 seeds/ft$^2$
- OP: 18 seeds/ft$^2$




RD-OP Mustard Yield at increasing seeding rates
2020
2021
2022
1800
1600
1400
1200
1000
800
600
400
200
0
kg/ha
10
14
18
22
26
seeding rate (seeds/ft2)

# Plant Height (cm)



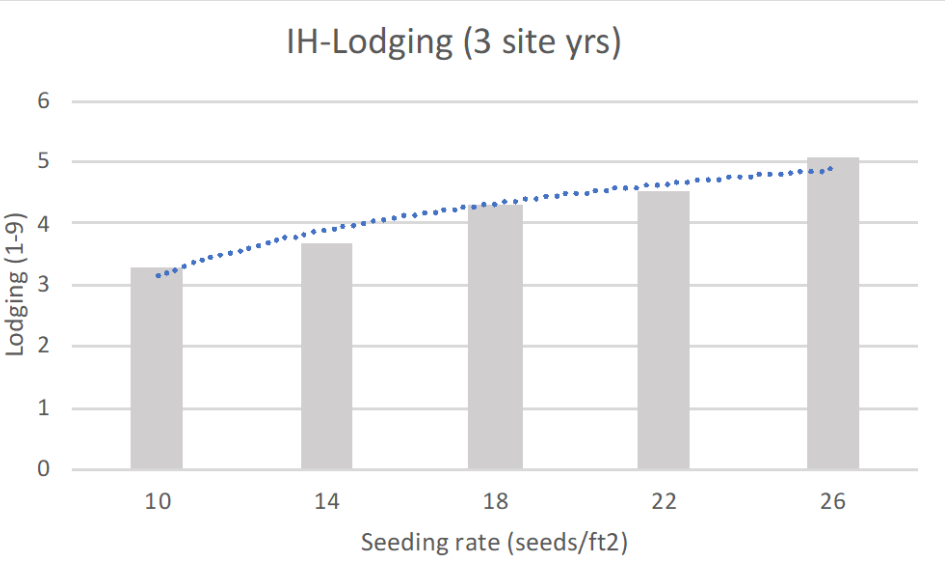



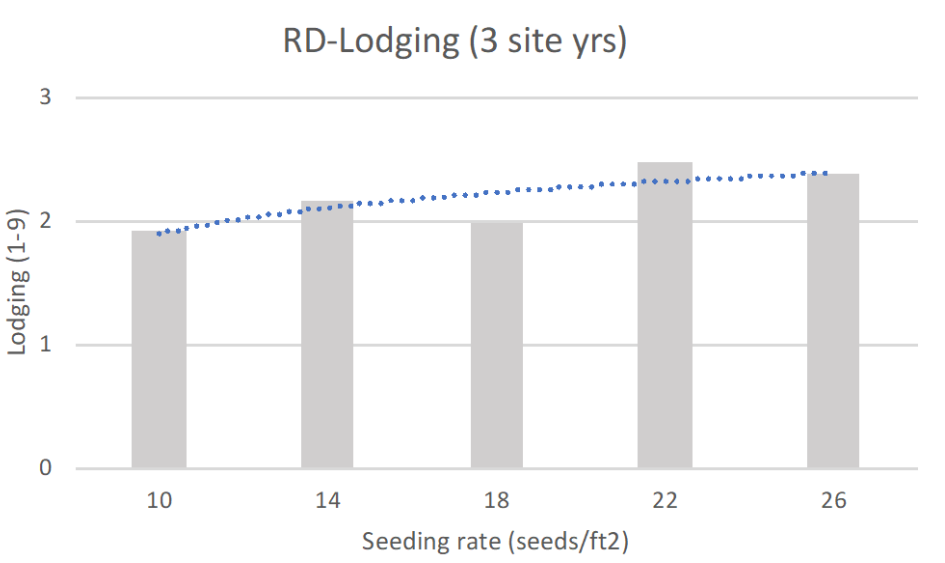

- WCA (No VAR or SR effect)

- Hybrid > OP
- Negative relationship with increasing seed rate

- Hybrid > OP
- 26 seeds/ft$^2$ was significantly lower for both HYB and OP

# Lodging (1-9)




- WCA (No VAR or SR effect)

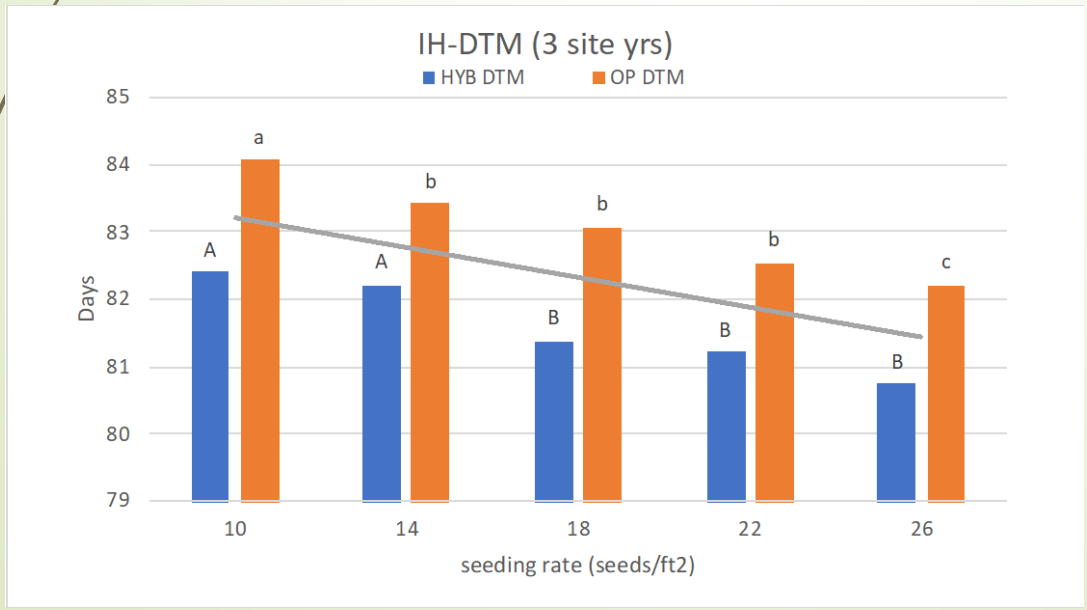
- HYB and OP not significantly different
- Slight increase in lodging with increasing seeding rate

- WCA (No VAR or SR effect)
- RD (No VAR effect)

# Days to Maturity

14 seeds/ft2

16 seeds/ft2




- Hybrid < OP
- Slightly negative relationship with increasing seed rate


June 21, 2022


June 21, 2022


July 22, 2022


July 12, 2022


July 22, 2022

# Full results available in February

- Yield varied by location and environmental conditions
- Seed size
- Future SFP and ADOPT projects

# Thank you!

**Cropportunities March 14, 2023**
**Annual field tour July 20, 2023**

www.wheatlandconservation.ca
Twitter: @wheatlandsask
Facebook: Wheatland Conservation Area

wcawall@sasktel.net


18 seeds/ft2
22 seeds/ft2
26 seeds/ft2
Hybrid Brown Mustard June 19, 2020

Hybrid @ 26 seeds/ft2

# OP 140N June 21, 2022