
Integrated approach to FHB management

**Experiences at Lethbridge and Bow
Island 2014-2017**

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- **Lethbridge Agronomy Team**
 - **Allan Middleton, Pat Pfiffner, Colin Enns, and Helena Jowkar**
 - **Chris Hietamaa and Marie Schussler**

Methodology

- **Irrigation:** dryland and irrigated
- **Genetics:**
 - CWRS “MS” rating for FHB
 - CWRS “MR” rating for FHB
 - Durum
- **Inoculum:** with and without infected residue
- **Fungicide:** with and without Prosaro

Surface residue post seeding



Genetics

	2014	2015	2016	2017
MS	Lillian	Muchmore	Muchmore	Muchmore
MR	Carberry	Carberry	Carberry	Carberry
Durum	Strongfield	Enterprise	Enterprise	CDC Vivid

2014: Lethbridge only

2015-2017: Lethbridge and Bow Island

Total of 7 site-years

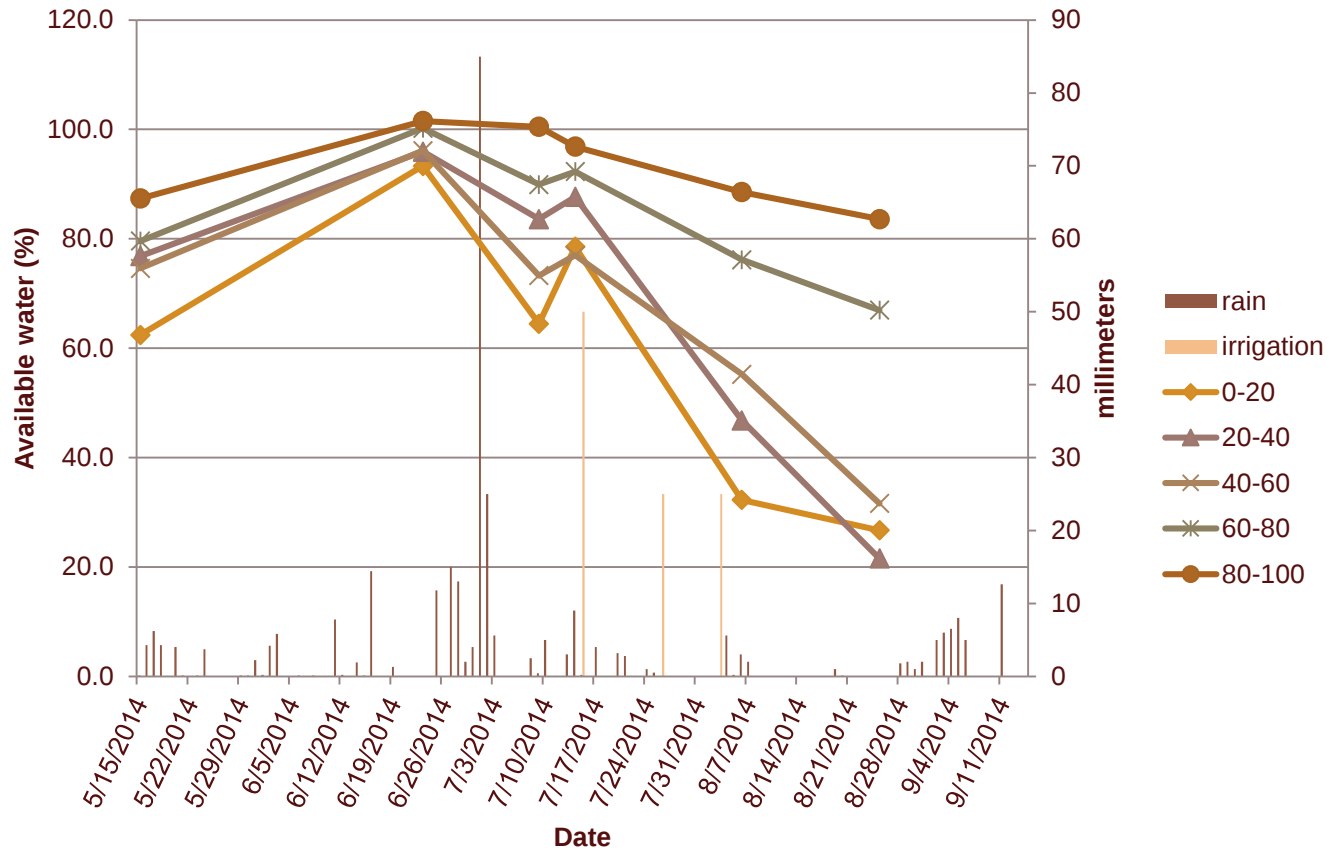
Worst case scenario plots

- Lethbridge only 2014-2017
- Adjacent to main experiment but separate
- Durum, on inoculated plots, no Prosaro, irrigated the same as main experiment
- Light irrigation daily or twice daily through flowering

Effect of irrigation on durum FDK and DON levels in 2014

Treatment	FDK (%)	DON (ppm)
Dryland/Inoculated/No Prosaro	1.3	0.9
Irrigated/Inoculated/No Prosaro	1.8	1.8
Irrigated/Inoculated/No Prosaro Worst Case	3.5	3.7

2014 Rainfall, irrigation and available soil moisture



Effect of Irrigation and Prosaro on FDK levels in wheat 2014

Treatment	FDK (%)	Treatment	FDK (%)
Irrigated	0.59 A	Prosaro	0.41 B
Dryland	0.43 B	No Prosaro	0.61 A
Carberry Irrigated	0.38 C	Carberry Prosaro	0.27
Lillian Irrigated	0.37 C	Lillian Prosaro	0.28
Strongfield Irrigated	1.04 A	Strongfield Prosaro	0.69
Carberry Dryland	0.26 C	Carberry No Prosaro	0.37
Lillian Dryland	0.32 C	Lillian No Prosaro	0.41
Strongfield Dryland	0.70 B	Strongfield No Prosaro	1.05

FDK and DON levels in wheat at Lethbridge and Bow Island 2015

		FDK (%)	DON (ppm)
Lethbridge	Carberry	0.03	0.02
	Muchmore	0.05	0.03
	Enterprise	0.05	0.08
	Worst Case	0.29	0.48
Bow Island	Carberry	0.04	0.00
	Muchmore	0.04	0.02
	Enterprise	0.11	0.04

FDK and DON levels in wheat at Lethbridge and Bow Island 2017

		FDK (%)	DON (ppm)
Lethbridge	Carberry	0	0.02
	Muchmore	0	0.01
	Enterprise	0.04	0.03
	Worst Case	0	0.1
Bow Island	Carberry	0.01	0.04
	Muchmore	0.01	0.05
	Enterprise	0.03	0.07

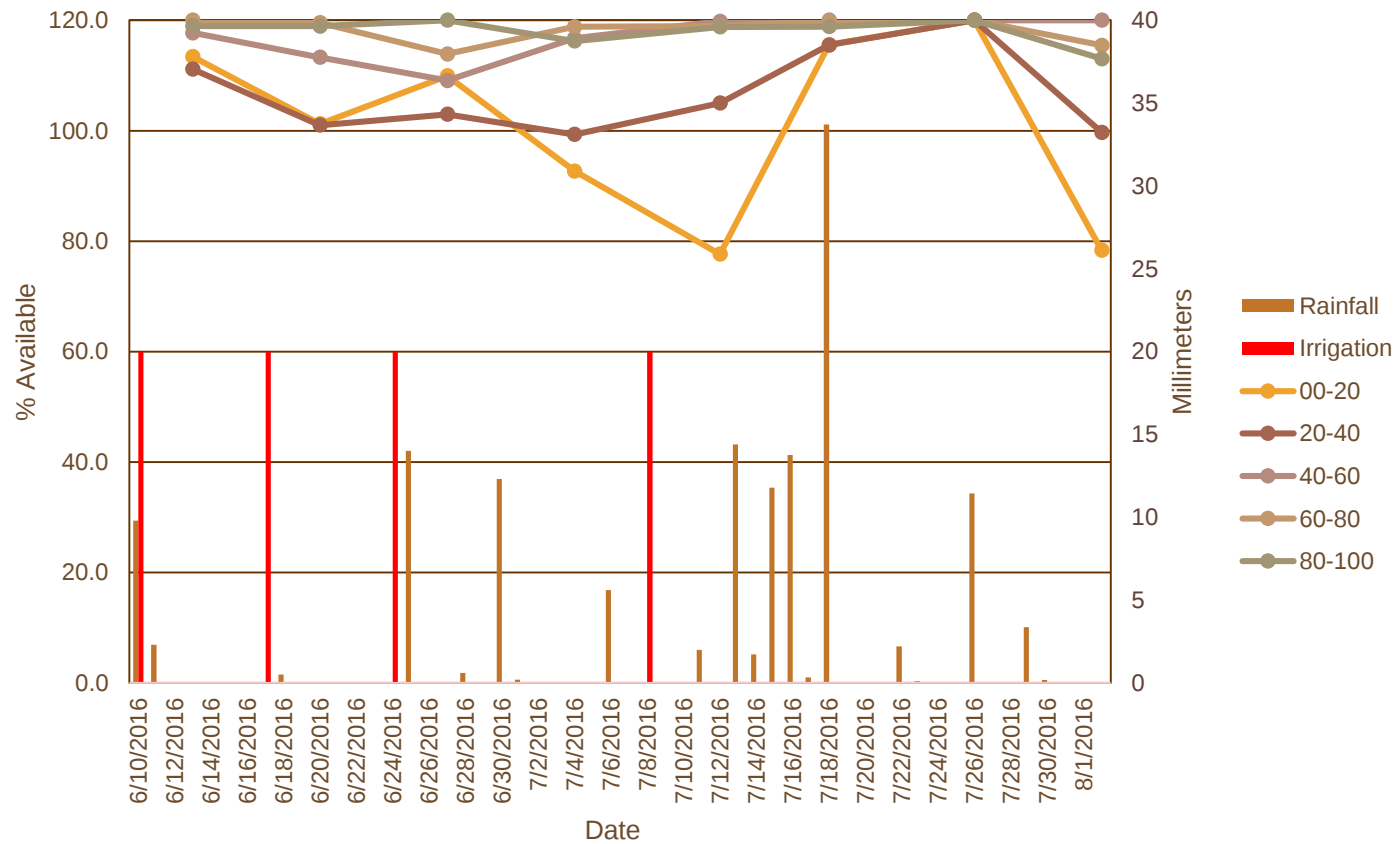
Yield, lodging, protein, FDK & DON in Carberry, Muchmore & Enterprise wheat at Lethbridge & Bow Island 2016

Site	Cultivar	Yield (kg/ha)	Lodging	Protein (%)	FDK (%)	DON (ppm)
Lethbridge	Carberry	3736 C	1.0	12.1 A	1.0	0.10
	Muchmore	4322 B	1.0	11.6 B	1.1	0.16
	Enterprise	4745 A	1.0	11.2 C	1.3	0.12
Bow Island	Carberry	5410 B	1.8 B	12.9 B	1.1 B	0.10 C
	Muchmore	6089 A	1.5 B	12.8 B	1.1 B	0.13 B
	Enterprise	6119 A	6.5A	13.1 A	1.5 A	0.67 A

Irrigation x cultivar x fungicide treatment interaction effect on DON at Bow Island 2016

			DON (ppm)
Dryland	Carberry	Prosaro	0.01 B
	Carberry	No Prosaro	0.03 B
	Muchmore	Prosaro	0.06 B
	Muchmore	No Prosaro	0.09 B
	Enterprise	Prosaro	0.40 A
	Enterprise	No Prosaro	0.34 A
Irrigated	Carberry	Prosaro	0.05D
	Carberry	No Prosaro	0.15 CD
	Muchmore	Prosaro	0.13 CD
	Muchmore	No Prosaro	0.26 C
	Enterprise	Prosaro	0.69 B
	Enterprise	No Prosaro	1.27 A

Rainfall, irrigation and available soil moisture at Bow Island 2016



Summary

- 4 of 7 site years minimal FDK and/or DON
- 3 of 7 site-years with treatment effects or FDK levels that lower grade
- Durum>>>MS = MR
- Moisture conditions before and after heading affect FHB. Frequency more important than quantity.

Summary

- **Elevated FDK more frequent than elevated DON**
- **Prosaro reduces FDK and DON, but achieving <0.25% FDK on CWRS may not be possible**