

Cereal forages for green feed and swath grazing

By
Mike Hall



**East Central
Research
Foundation**



**PARKLAND
COLLEGE**

Yorkton



Melfort



Comparison of Extended Grazing Crops for Land Utilization

		Barley	Oat	Grass	Corn	Triticale
Pasture days	day	102	105	82	129	117
Carry cap.	Cow-d ha ⁻¹	661	736	219	868	1152
Area	ha*	15.6	13.6	45.7	11.6	8.9

Area to graze 100 cows for 100 days
9 ha = 22 acres
45 ha = 111 acres

Slide courtesy:
Vern Baron



Affect of crop specie on green feed yield (lbs/ac) when seeded early around June 1. Work proposed by Forage Specialist Lorne Klein -Weyburn

	Barley (Cowboy)	Barley (Maverick)	Oats (Haymaker)	Oats (Baler)W	triticale (Bunker)	triticale (Tyndall)	Golden German millet
Outlook (2014)	6555a	6625a	7070a	7057a	7154a	6675a	6180a
Indian Head (2014)	5133b	5071b	7511a	7274a	5697b	5825b	3726c
Yorkton (2014)	8496b	8672b	8578b	7954bc	10500a	10841a	7033c
Melfort (2014)	12553a	12119ab	10528c	11280abc	10616c	10853bc	5591d
Indian Head (2013)	9944 a	na	na	9900 a	8920 ab	8107 b	4084 c
Swift Current (2013)	5898 a	na	na	6185 a	6061 a	5930 a	4093 b
Melfort (2013)	11269 b	na	na	12490 ab	13412 a	13414 a	9388 c
Outlook (2013)	11518 b	na	na	13554 ab	16725 a	15679 a	12128 b
Indian Head (2012)	9595a	na	na	10922ab	na	9980a	9105a
Melfort (2012)	9357a	na	na	7933ab	na	7181b	6940b

Statistical yield comparisons between forage varieties

Tyndall triticale versus Baler Oats

- Better 1/10 site years
- Same 7/10 site years
- Worse 2/10 site years

Tyndall triticale versus Cowboy Barley

- **Better 4/10 site years**
- **Same 4/10 site years**
- **Worse 2/10 site years**

Baler Oats versus Cowboy Barley

- Better 1/10 site years
- Same 9/10 site years

Golden German millet versus Baler, Tyndall and Cowboy

- **Never better**
- **Worse 5/10 site years**

Averaged across sites (no stats)

- **Tyndall triticale = 9448 lbs/ac**
- Baler Oats = 9454 lbs/ac
- **Cowboy Barley = 9031 lbs/ac**
- **Golden German Millet = 6826 lbs/ac**



*by Linda Hunt, AAg
Regional Forage Specialist, Prince Albert
Regional Services Branch*

Throughout Western Canada, producers are taking advantage of high commodity prices by shifting land from perennial forage into annual crops. At the same time, livestock numbers remain steady and the industry is optimistic for good returns. These market pressures have increased interest in growing forages with maximum carrying capacities.

At the Saskatchewan Beef Industry Conference in Saskatoon, Dr. Vern Baron presented findings from a swath grazing trial conducted in Lacombe, Alberta that compared the carrying capacities of triticale and barley for swath grazing. In this study, triticale achieved almost double the carrying capacity of barley. This finding is in contrast to the forage variety trials done here in Saskatchewan which show triticale yields to be equal to or slightly below that of forage barley. The contrast has many people scratching their heads, but the explanation becomes clear with a closer look.

The triticale advantage becomes apparent when it is seeded earlier than barley in a swath grazing situation. Typically, barley for swath grazing is seeded mid-to-end of June so it is at the soft dough stage as close to freeze up as possible, maximizing forage quality. Delayed seeding after May 10 has a negative impact on barley biomass yield. Barley is photosensitive; therefore, a late seeding date results in a shorter duration of vegetative growth. However, triticale is not photosensitive

they have comparable production. Similar triticale and barley were grown for silage (A). The triticale advantage over barley seems to be earlier to utilize spring moisture and has a summer variety trials at five Agri-ARM sites. Tyndall Triticale with CDC Cowboy Barley and German Millet for yield.

FOR MORE INFORMATION

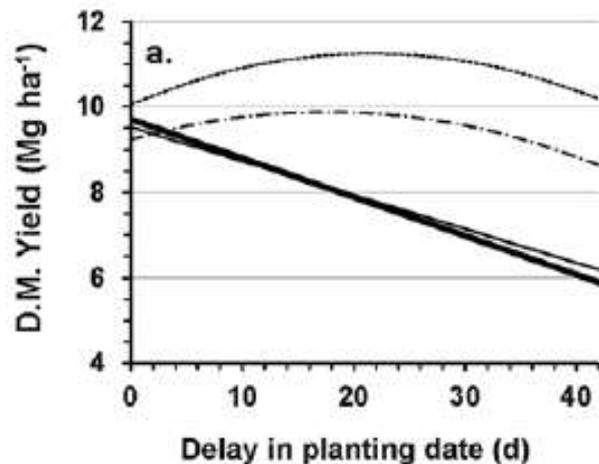
- A more detailed description of Dr. Baron's findings is in the April 2013 edition of the Canadian Forage Specialist titled "Tighten Up With Triticale" and can be found at www.saskbeef.com/presentations.html.
- For more information on the yield variability in Saskatchewan contact Linda Hunt, Regional Forage Specialist in Prince Albert at 306-953-2111 or linda.hunt@gov.sk.ca.



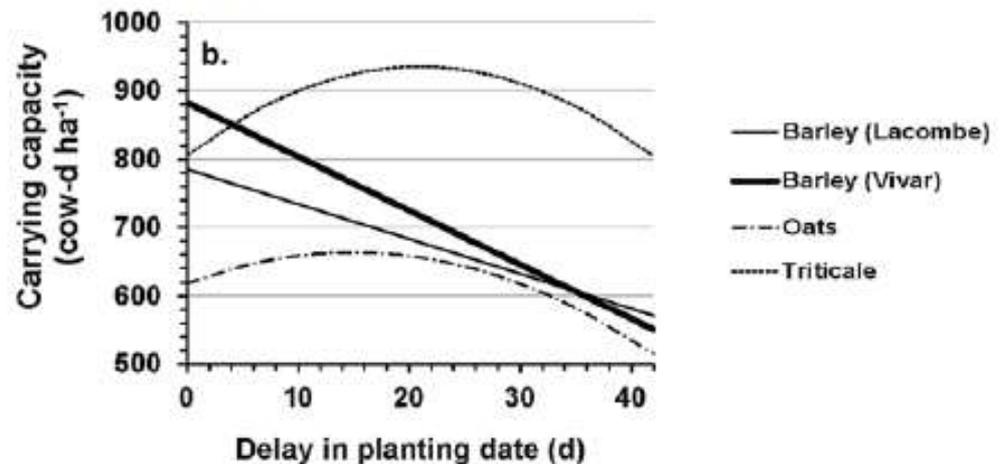
Effect of Planting Date on Yield and Carrying Capacity

Planting date must be delayed as late as June 30 to place swathing of barley in September

Forage Yield Decreases



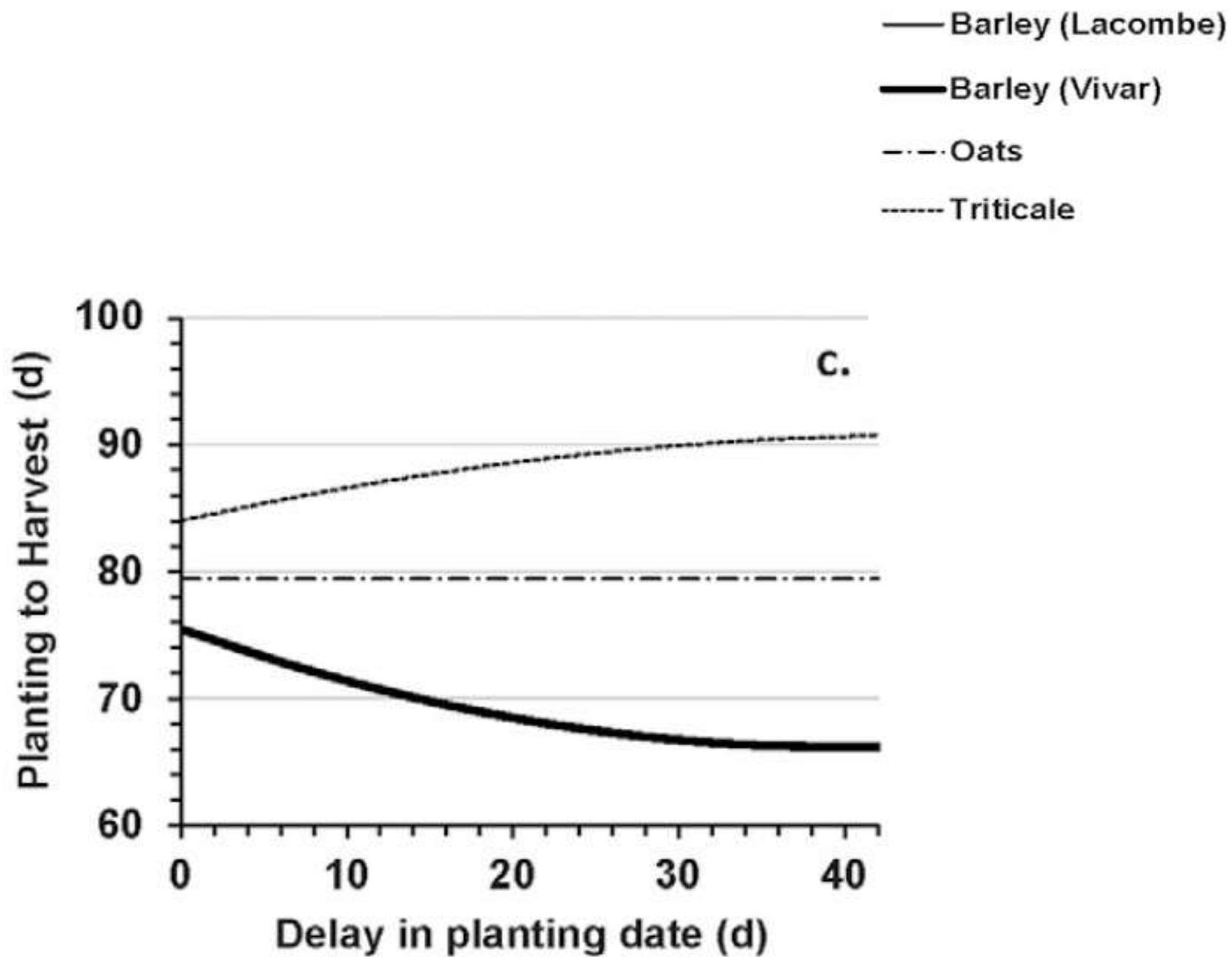
Carrying Capacity Decreases



May 10 ----- June 23

May 10 ----- June 23

Baron et al. 2012: Agron J. 104: 393 - 404.



Impact of seeding date on Cereal Forage Yield

Trial sites

- Yorkton East Central Research Foundation (ECRF)
- Melfort (Northeast Agriculture Research Foundation (Narf))

Two seeding dates

- Early
 - May 22 (Ecrf)
 - June 6 (Narf)
- Late
 - June 25 (Ecrf)
 - July 3 (Narf)

Seven Crop Species

- Barley
 - Cowboy
 - Maverick
- Oats
 - Baler
 - Haymaker
- Triticale
 - Tyndall
 - Bunker
- Golden German Millet

Adopt proposal by Sask Ag. Forage Specialists:

Allan Foster - Tisdale

Charlotte Ward - Yorkton

Fertility and Weed Control

- Yorkton

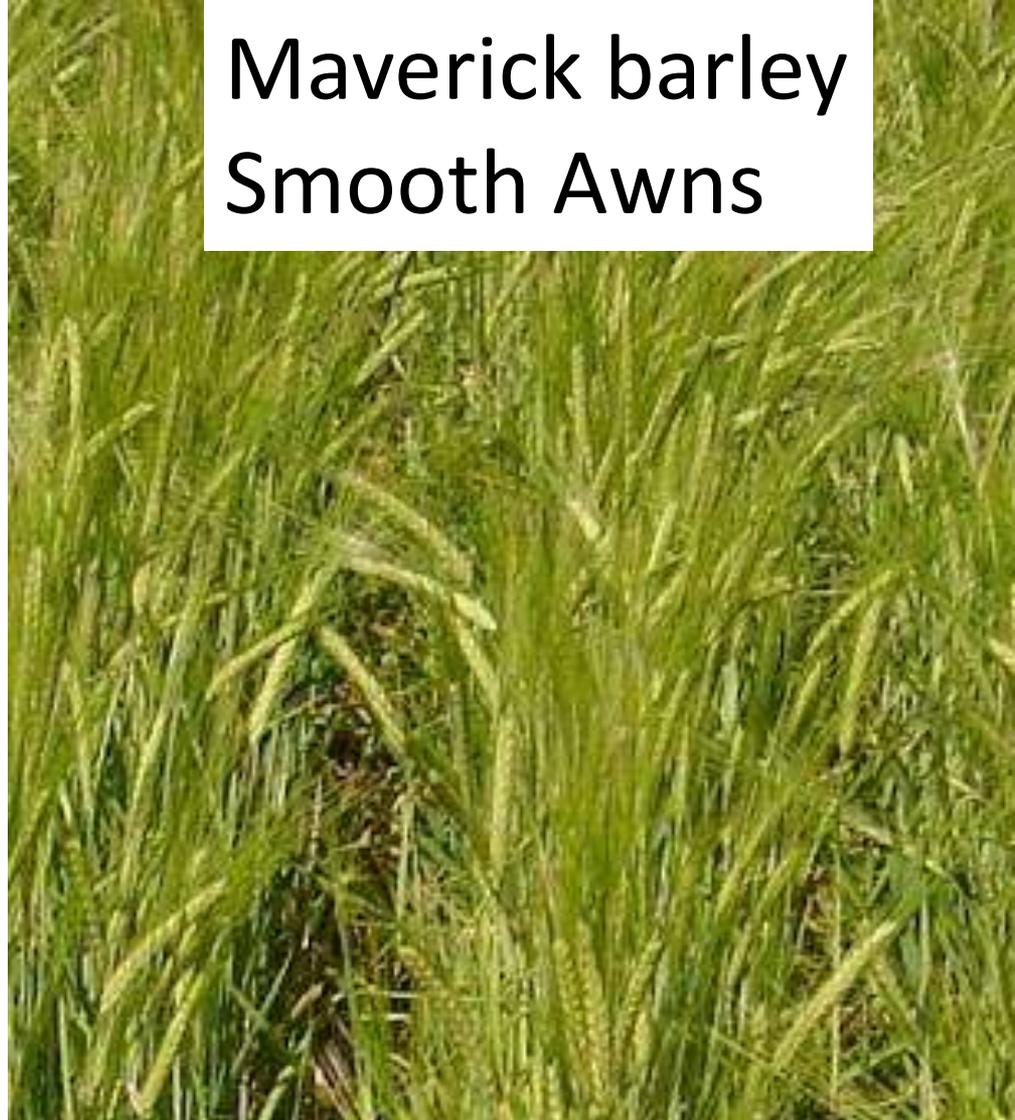
- Preseed burnoff with glyphosate and cleanstart (volunteer canola)
- In crop with Prestige
- 50N 20P

- Melfort

- Preseed burnoff with glyphosate
- No in crop herbicide
- No fertilizer (high N levels seeded on summerfallow)



Cowboy barley
Rough Awns



Maverick barley
Smooth Awns

Maverick was bred from Cowboy and has many of its attributes such as high forage yields and feed quality under low inputs. However, unlike Cowboy it has smooth awns to reduce the occurrence of mouth sores in cattle which is more of a problem in a swath grazing scenario where the cow is using snow as a water source. That Maverick is one smooth Cowboy!

Oats

- Haymaker oats is expected to replace Baler as it is reported to have better forage quality and yield.
- Forage oat not designed for milling
- Grain ripens while the plant stays green allowing producers to wait for the grain to mature before cutting. Cows like their oats green.



Expression Triticale



Source of reduced awn is the spring wheat RL413

Tyndall and Bunker are awnletted (reduced awns) varieties which are more acceptable to cattle.

Slide courtesy:
Vern Baron

Golden German Millet

- Warm season cereal forage alternative with good forage quality.
- Drought tolerant but will not produce well in cool wet years.
- Establishes very slowly and can be uncompetitive against weeds.
- Makes a good swath grazing option
 - Late maturity
 - Waxy coating on leaves and stems helps to retain quality in swath
- Can be difficult to bale as greenfeed because it does not dry down quickly in the swath.
- Not suitable for grazing as it is shallow rooted
- Seeding rate 20 lbs/ac



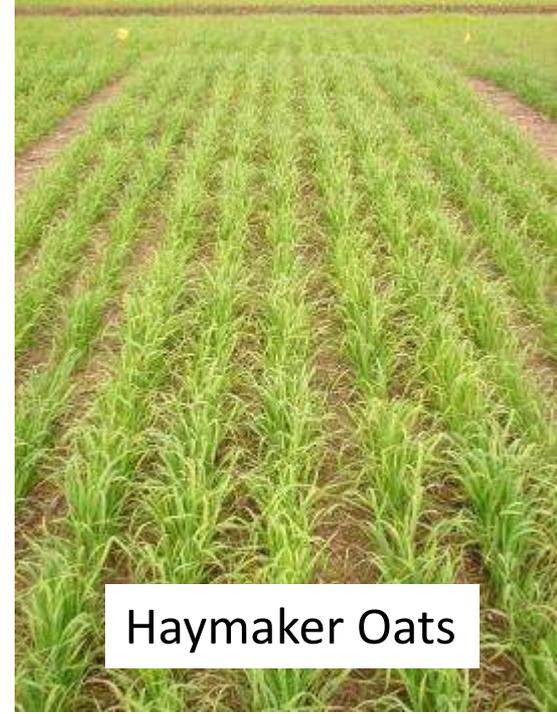
Targeted stages for cutting

- Oats - milk dough
- Barley - soft dough
- Golden German Millet - 2 to 3 weeks after heading
- Triticale - soft to firm dough (swathed at milk/soft dough due to leaf disease)

Cereal forages on June 26 - Yorkton (Seeded May 22)



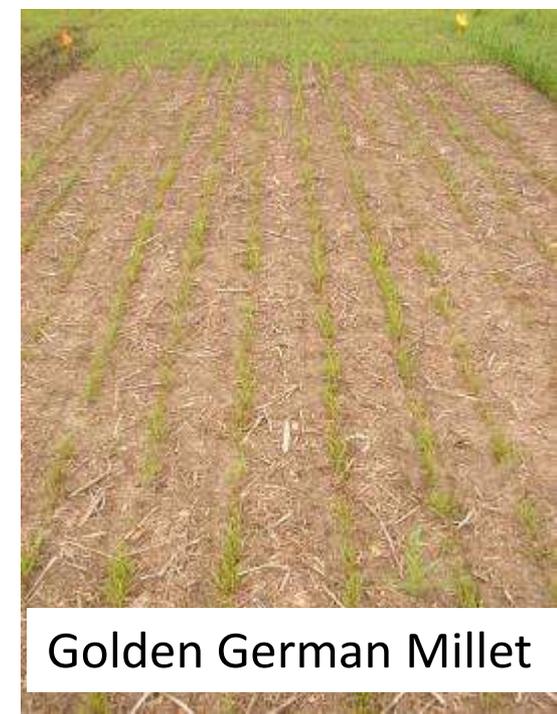
Maverick barley



Haymaker Oats



Tyndall Triticale



Golden German Millet



Maverick barley



Haymaker Oats

Cereal forages on July 7 - Yorkton (Seeded May 22)

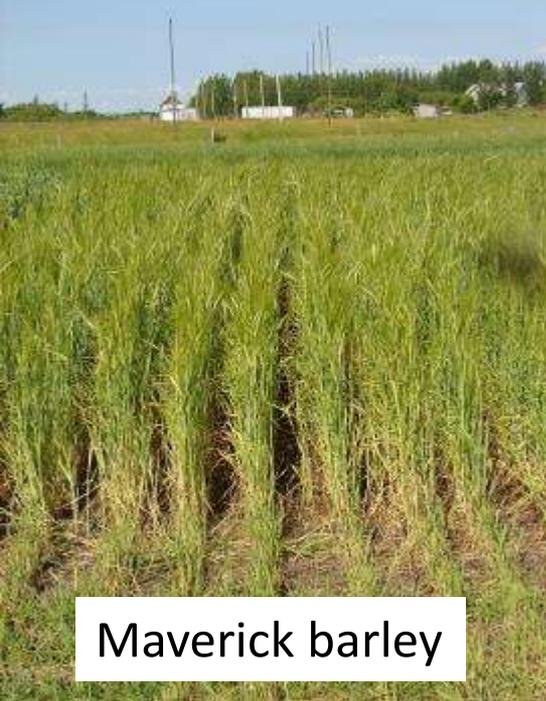


Tyndall Triticale



Golden German Millet

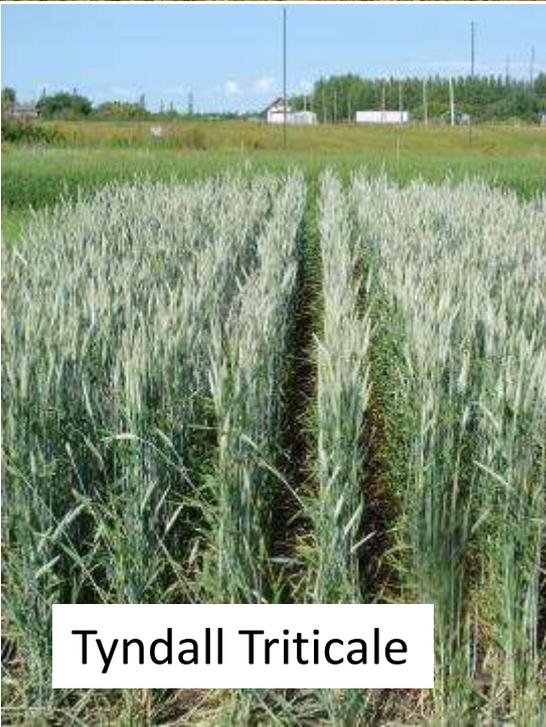
Cereal forages on July 28 - Yorkton (Seeded May 22)



Maverick barley



Haymaker Oats



Tyndall Triticale



Golden German Millet

Cereal forages on August 18 – Yorkton (Seeded May 22)

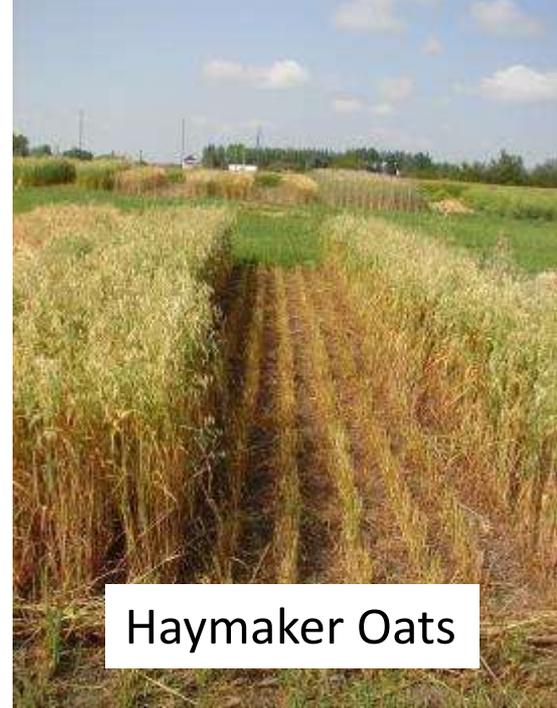


Maverick barley

Harvested August 5th



Harvested August 11th



Haymaker Oats



Tyndall Triticale

To be harvested August 19th



To be harvested Sept 2



Golden German Millet



Maverick barley
Harvested Aug 5



Haymaker Oats
Harvest Aug 11

Cereal forages on Sept 2 - Yorkton (Seeded May 22)

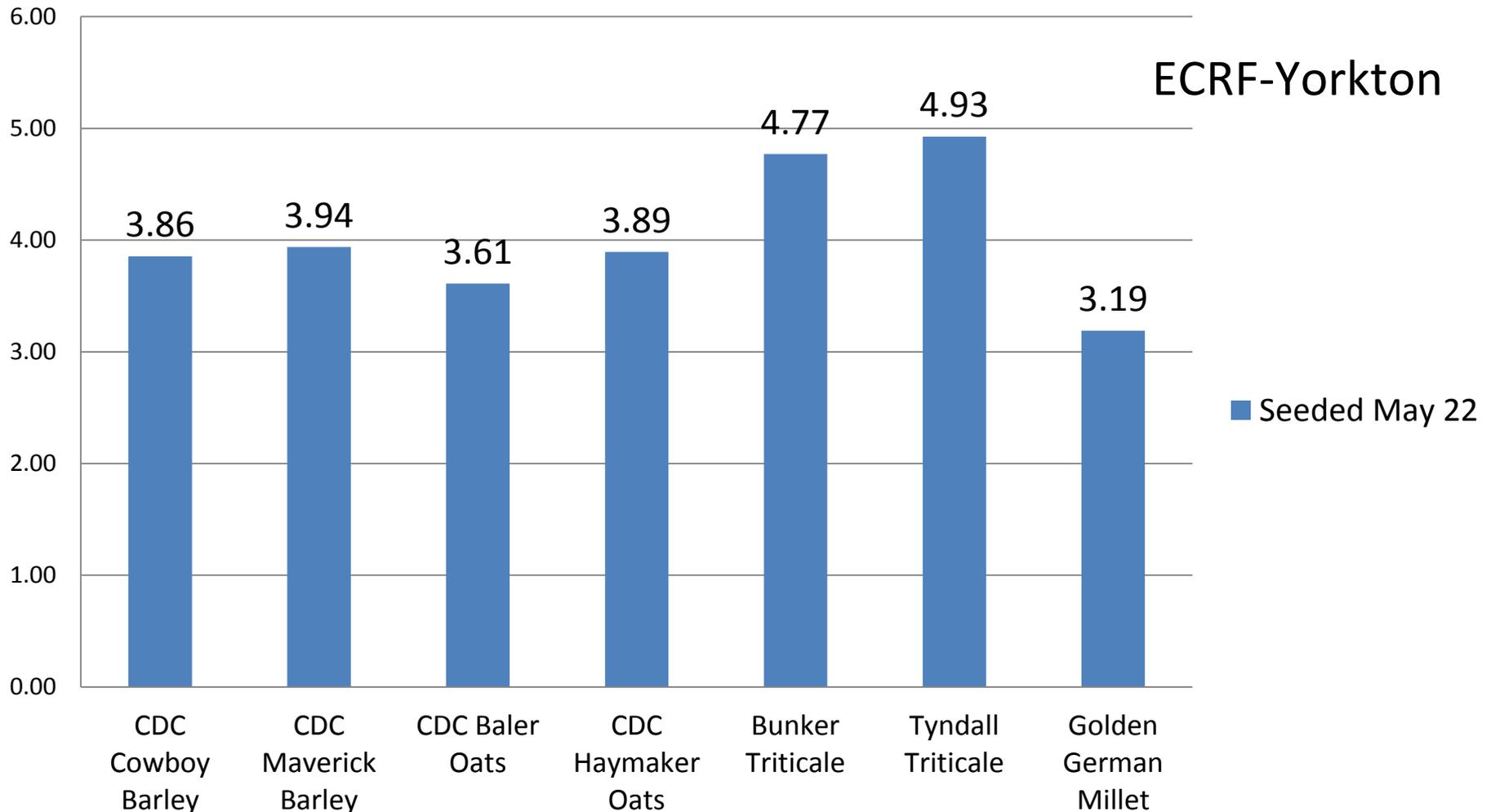


Tyndall Triticale
Harvested Aug 19



Golden German Millet
About to be harvested

Figure 1. Effect of Seeding Date on Cereal forage dry matter yield (Tonnes/ac). Lsd= 0.64 for species within a seeding date; Lsd = 1.1 for species between different seeding dates





Maverick barley
Harvested Aug 5



Haymaker Oats
Harvest Aug 11

Cereal forages on Sept 2 - Yorkton (Seeded May 22)



Tyndall Triticale
Harvested Aug 19



Golden German Millet
About to be harvested



Maverick barley
Harvested Sept 2



Haymaker Oats
Harvested Sept 15

Cereal forages on Sept 2 - Yorkton (Seeded late June 25)



Tyndall Triticale
Harvested Sept 26



Golden German Millet
Harvested Sept 26

Figure 2. Effect of Seeding Date on Cereal emergence (plants/ft²). Lsd= 7.6 for species between seeding dates; Lsd=5.6 for species within seeding date

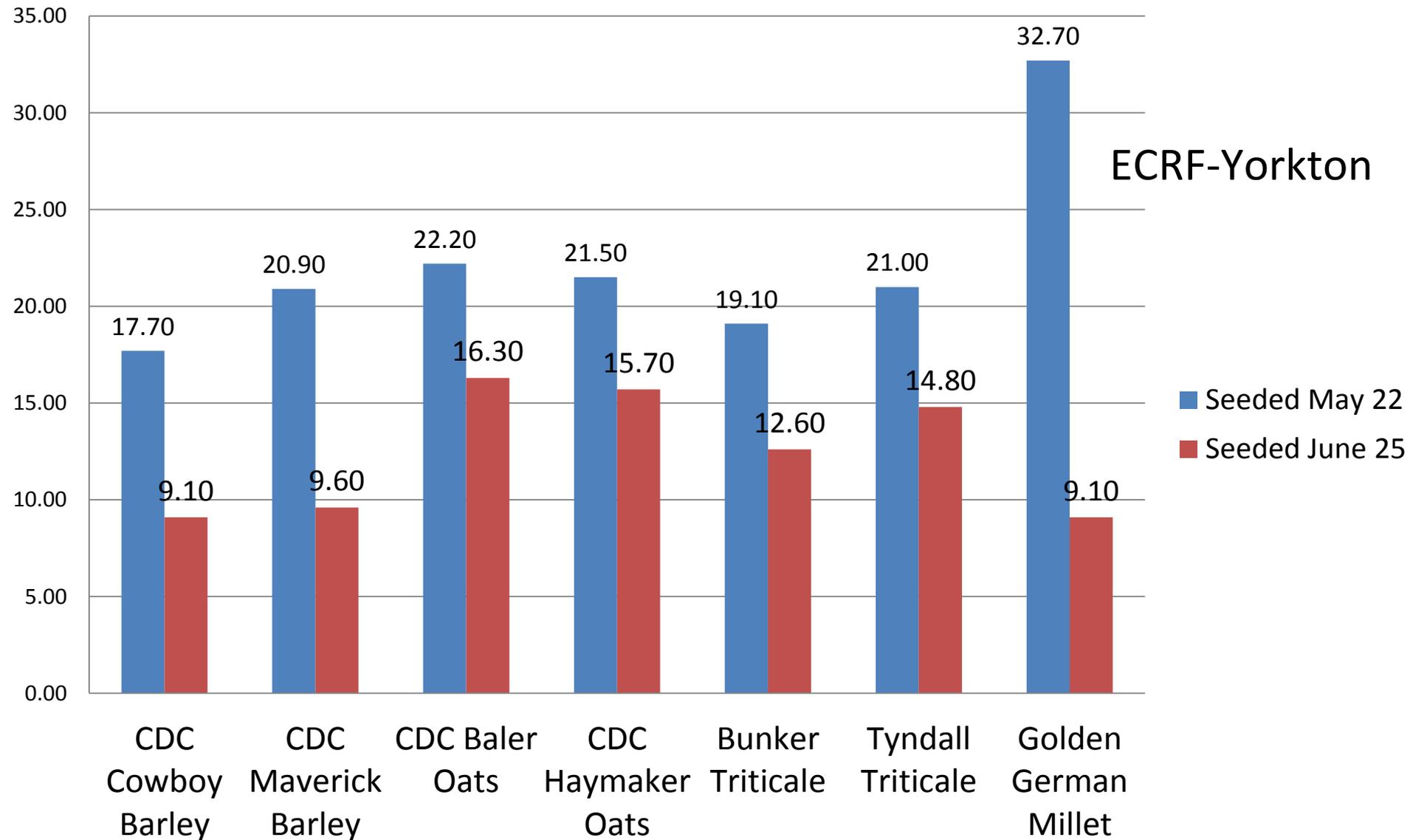


Figure 1. Effect of Seeding Date on Cereal forage dry matter yield (Tonnes/ac). Lsd= 0.64 for species within a seeding date; Lsd = 1.1 for species between different seeding dates

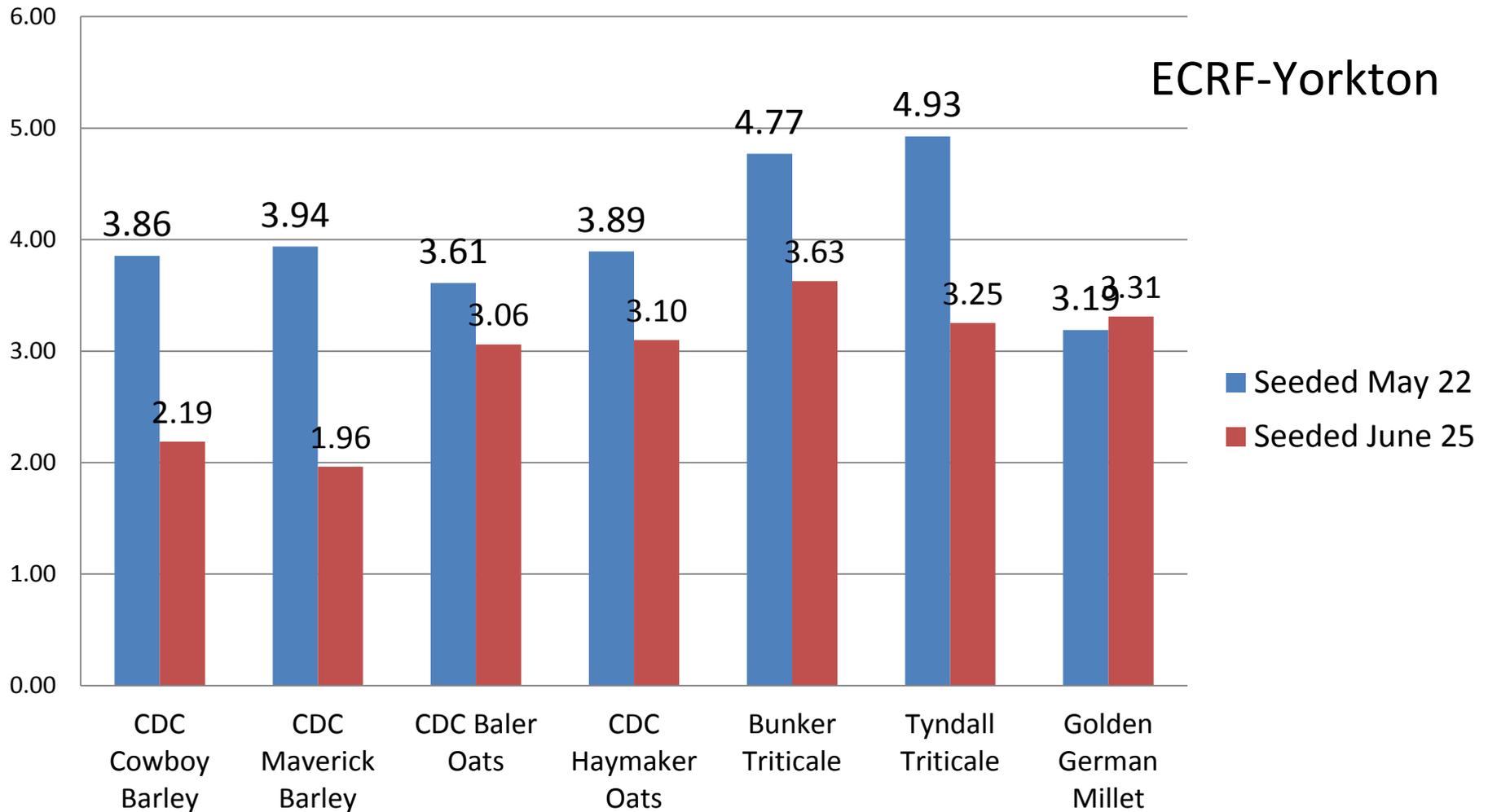


Figure 3. Cereal Forage yields (Tonnes/ac) seeded early
June 6 (NARF) Lsd=0.49

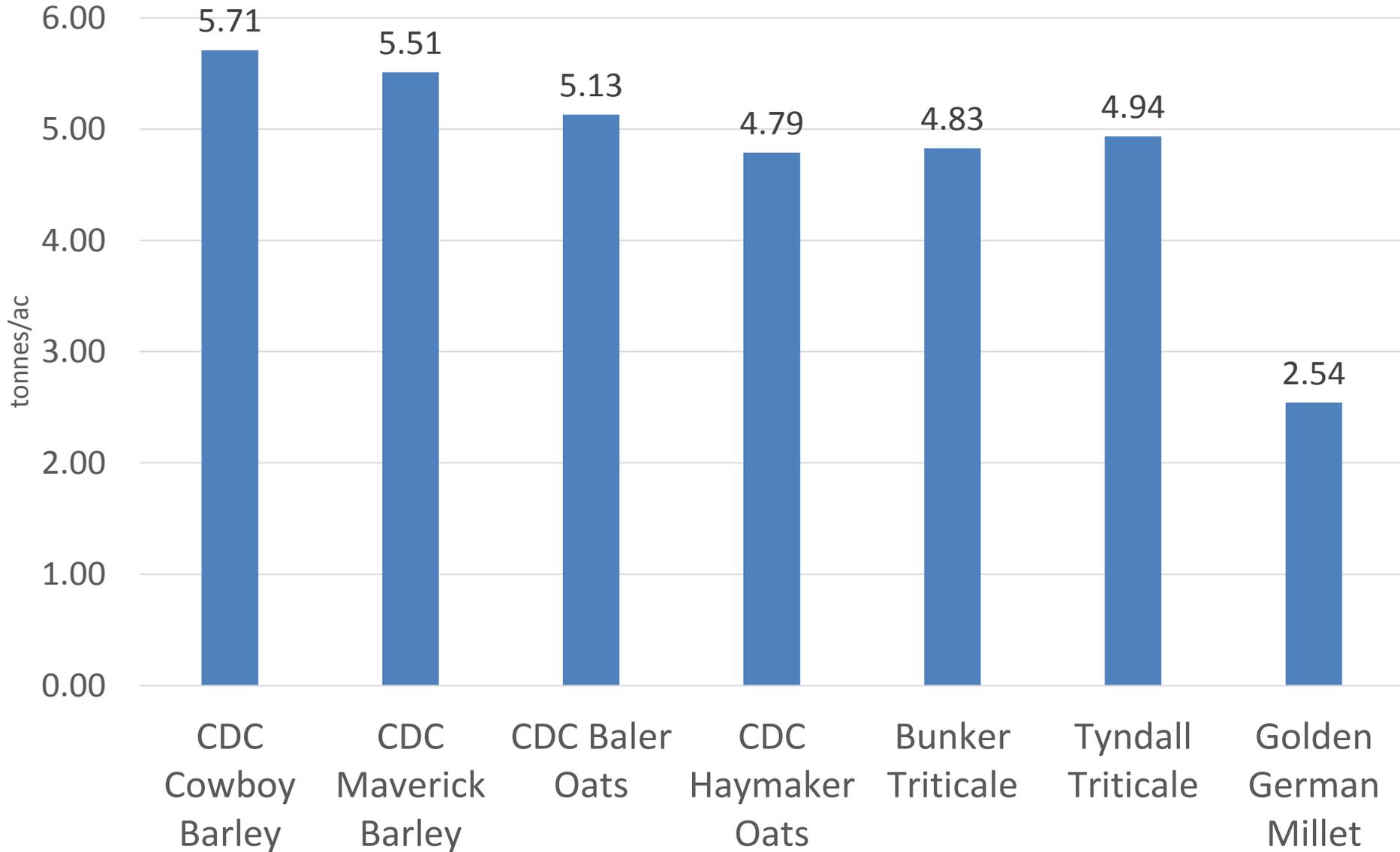
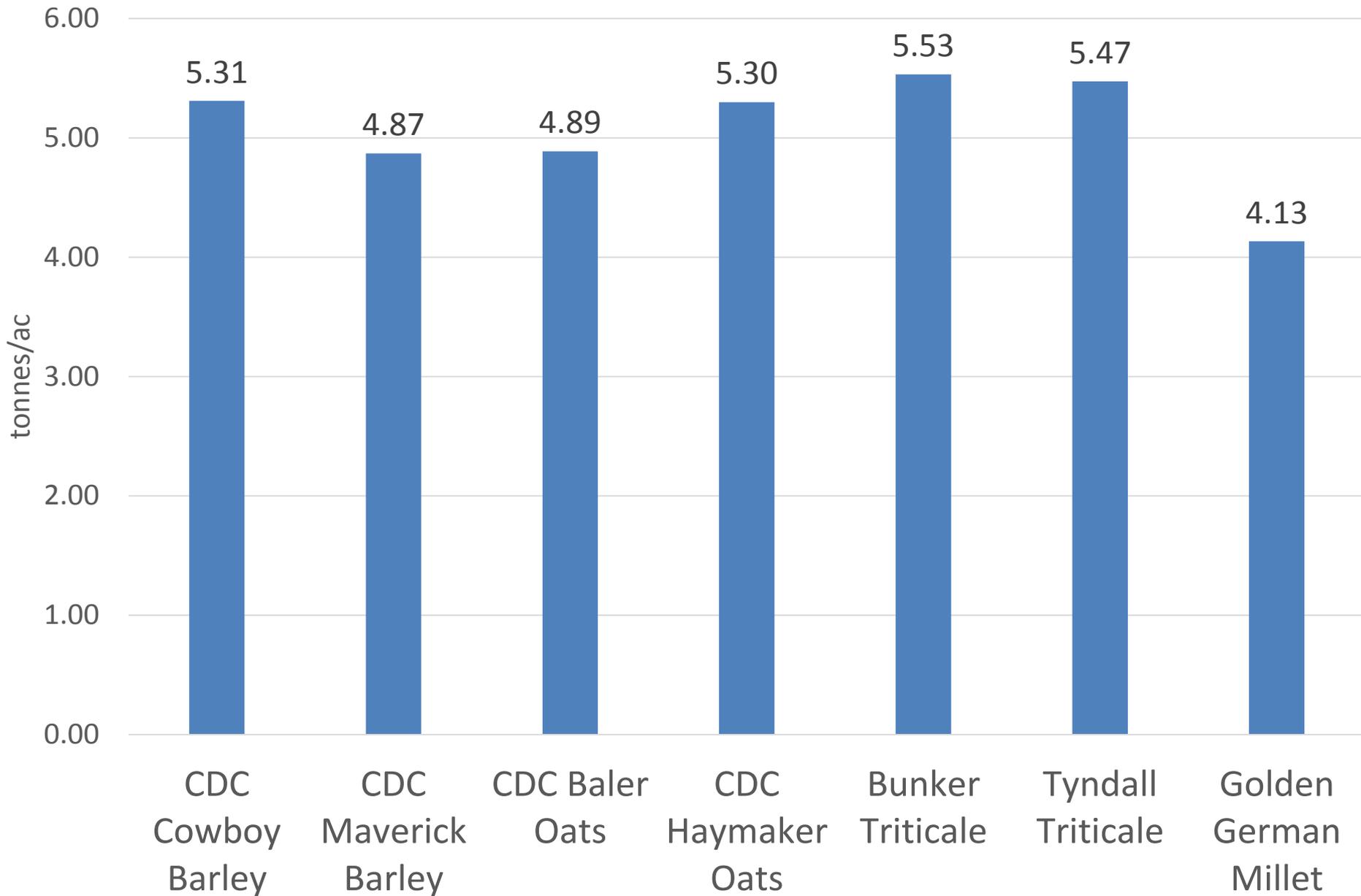


Figure 4. Cereal Forage yields (Tonnes/ac) seeded late July 3 (Narf) Lsd=0.74



Days to soft dough stage at Melfort and Yorkton

Seeding time	Barley	Triticale
Early (Melfort) ¹	76	82
Late (Melfort) ²	71	85
Early (Yorkton) ¹	75	89
Late (Yorkton) ²	69	93

Days to heading of Golden German Millet (Yorkton)

Crop Specie	Seeding date	Days to heading
Golden German Millet	May 22 (Early)	81
Gold German Millet	June 25 (Late)	69

Figure 7. Total digestible nutrients (%). Yorkton (Ecrf)

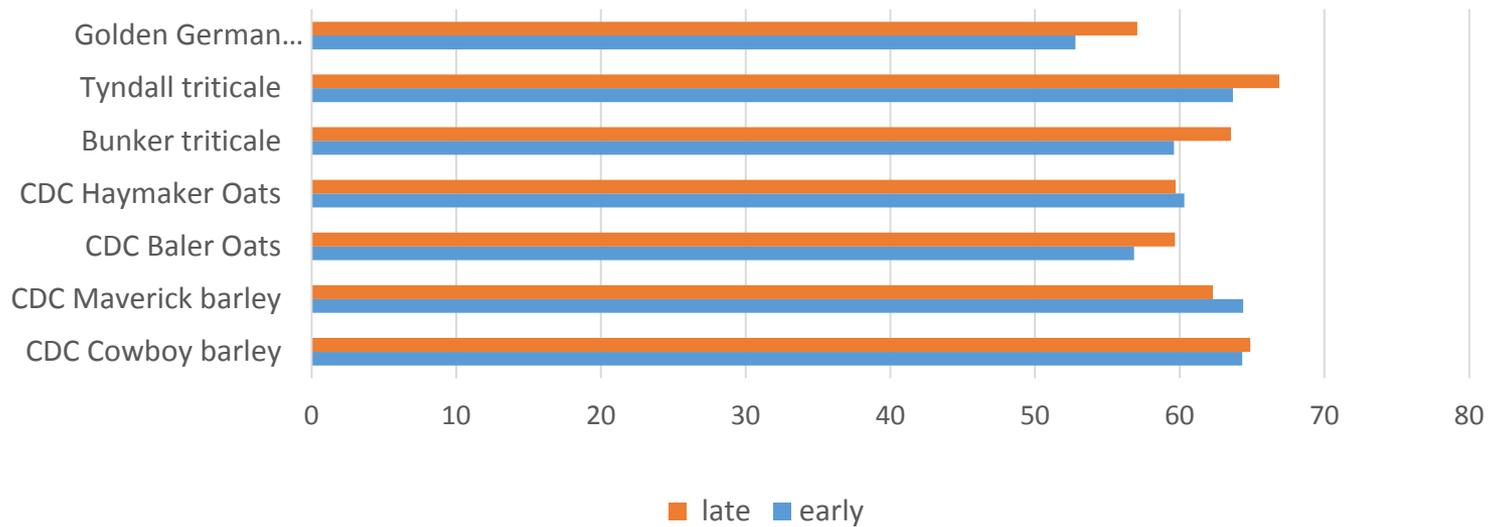
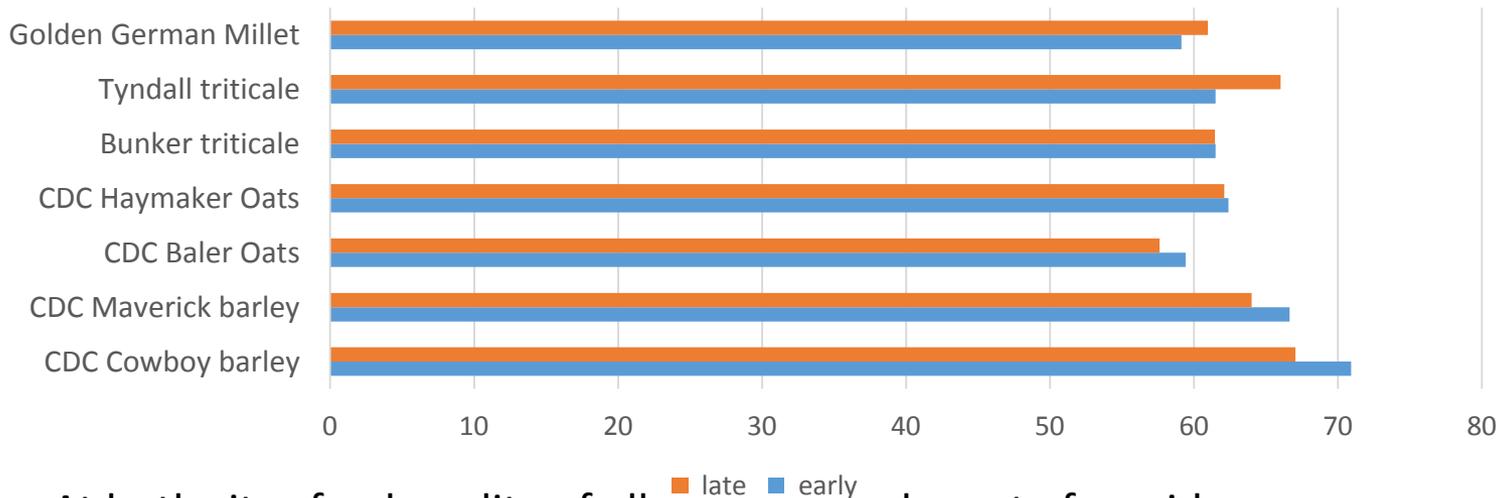


Figure 8. Total digestible nutrients (%). Melfort (Narf)



At both sites feed quality of all crops was adequate for mid-pregnancy cows. The average cow requires 55 per cent TDN during mid-pregnancy, 60 per cent during late pregnancy and 65 per cent after calving.

Figure 9. Protein (%). Yorkton (Ecrf)

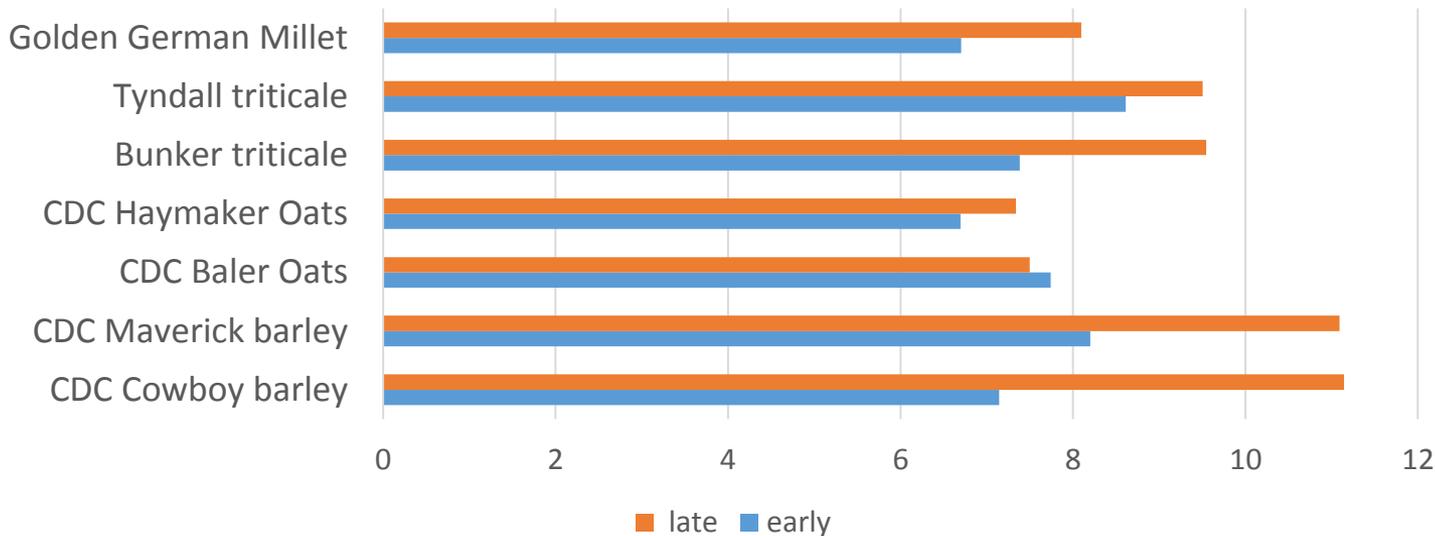
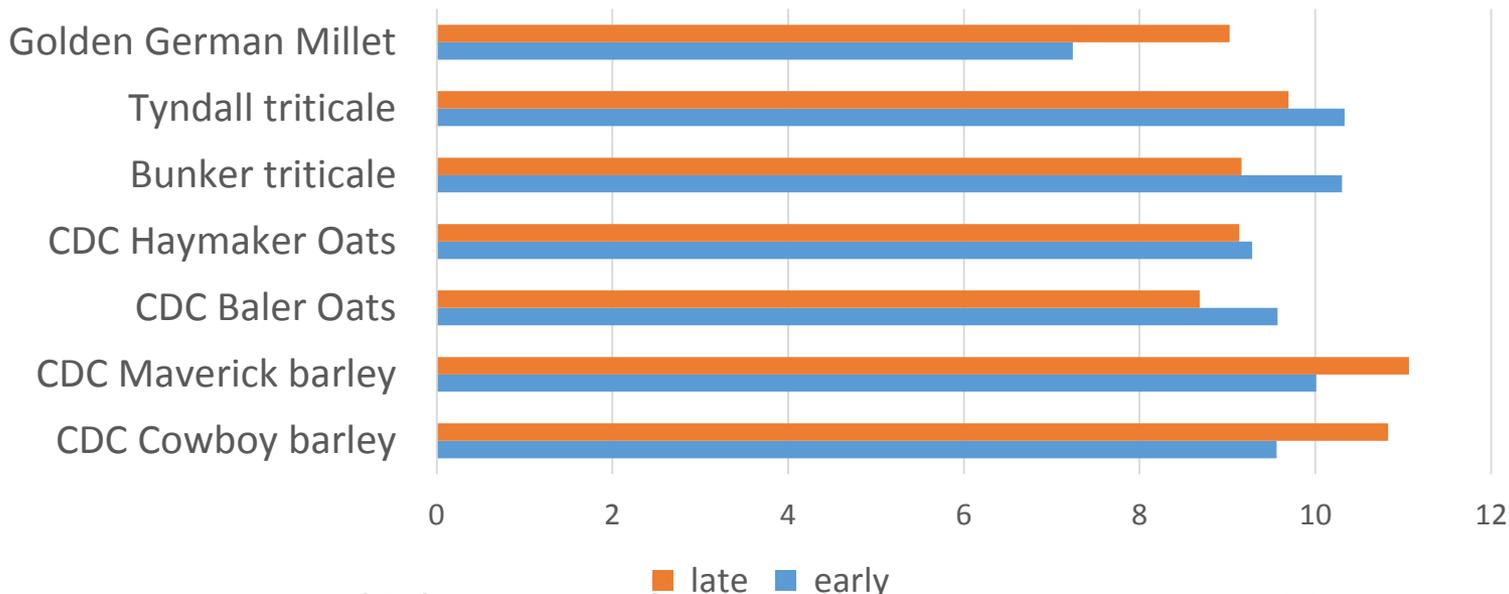


Figure 10. Protein (%). Melfort (Narf)



All crude protein (CP) adequate for a cow in mid-pregnancy requiring about seven per cent. Cows in late pregnancy require nine and after calving requirements are 11 per cent.

Conclusions

- How did forage quality compare between varieties and species
 - No glaring differences with the exception of protein with late seeded barley in Yorkton but this was due to yield suppression
 - Melfort had higher N levels and overall protein
 - All these forages could provide good feed by themselves for mid-pregnancy cows.

Conclusions

Which is the best cereal forage when seeding early?

- First place varies but Oat and triticale might have a slight edge on barley for yield.

Did Barley show photosensitivity?

- Yes. Vegetative period was shortened by 5 days with late seeding. In contrast, the vegetative period lengthened a few days for triticale.

Did late seeding reduce barley yield relative to Oats and Triticale?

- Melfort – Maybe a little?
- Yorkton- Yes. But can't be all contributed the photosensitivity of barley. Excessive moisture was a confounding factor
- More work needed in this area. There could be varietal differences in barley photosensitivity and yield.

Conclusions

Is Golden German Millet a good alternative?

- Often yields less than barley, triticale and oats
- Not competitive against weeds, particularly when seeded early into cool conditions
- Comparable forage quality
- Developed more quickly and did well when seeded late.

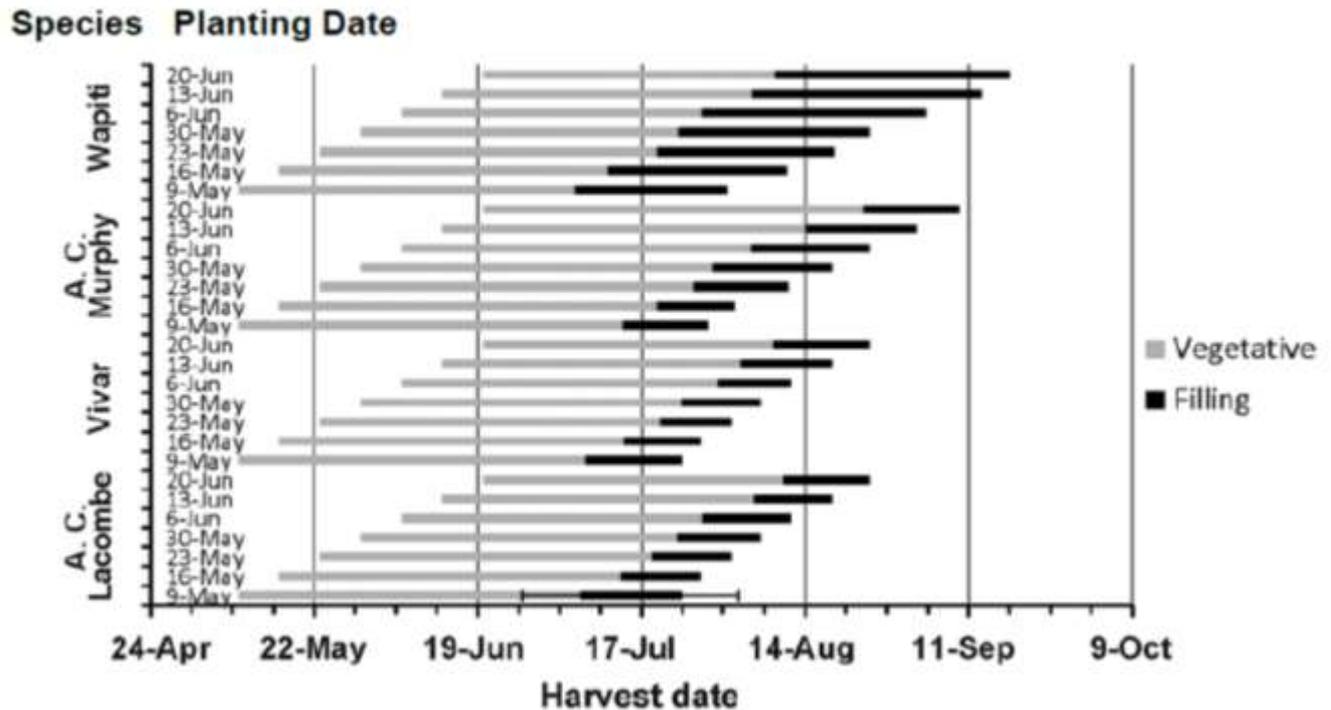
Questions?





Effect of Planting Date Harvest Date

- Wapiti-triticale
- A.C. Murphy- Oat
- Vivar – Barley
- A.C. Lacombe - Barley



Baron et al. 2012: Agron J. 104: 393 - 404.

Comments from linda hunt

Cereal forages on Sept 16 - Yorkton (Seeded late June 25)



Figure 3. Cereal Forage yields (Tonnes/ac) seeded early
June 6 (NARF) Lsd=0.49

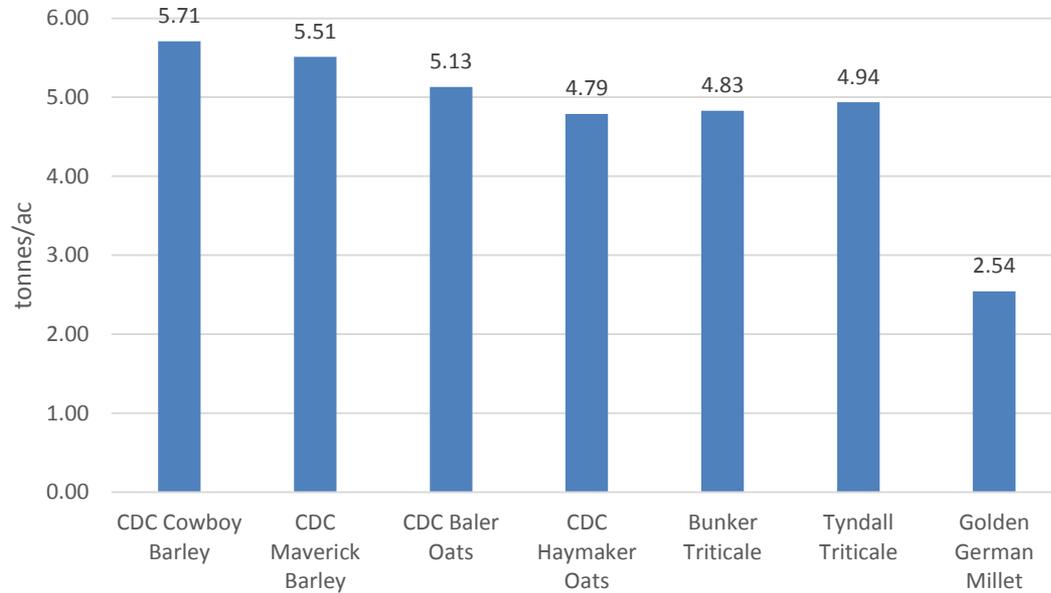
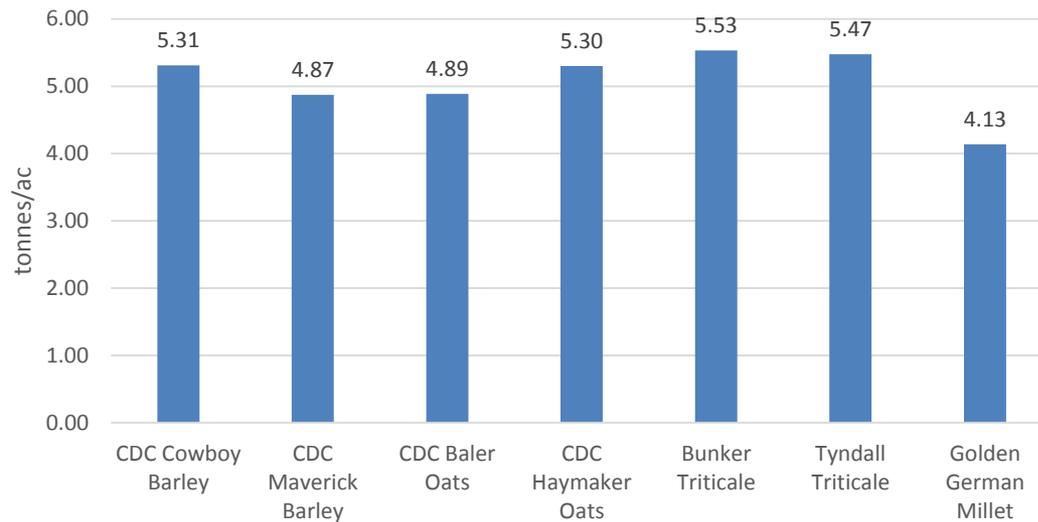


Figure 4. Cereal Forage yields (Tonnes/ac) seeded late
July 3 (Narf) Lsd=0.74

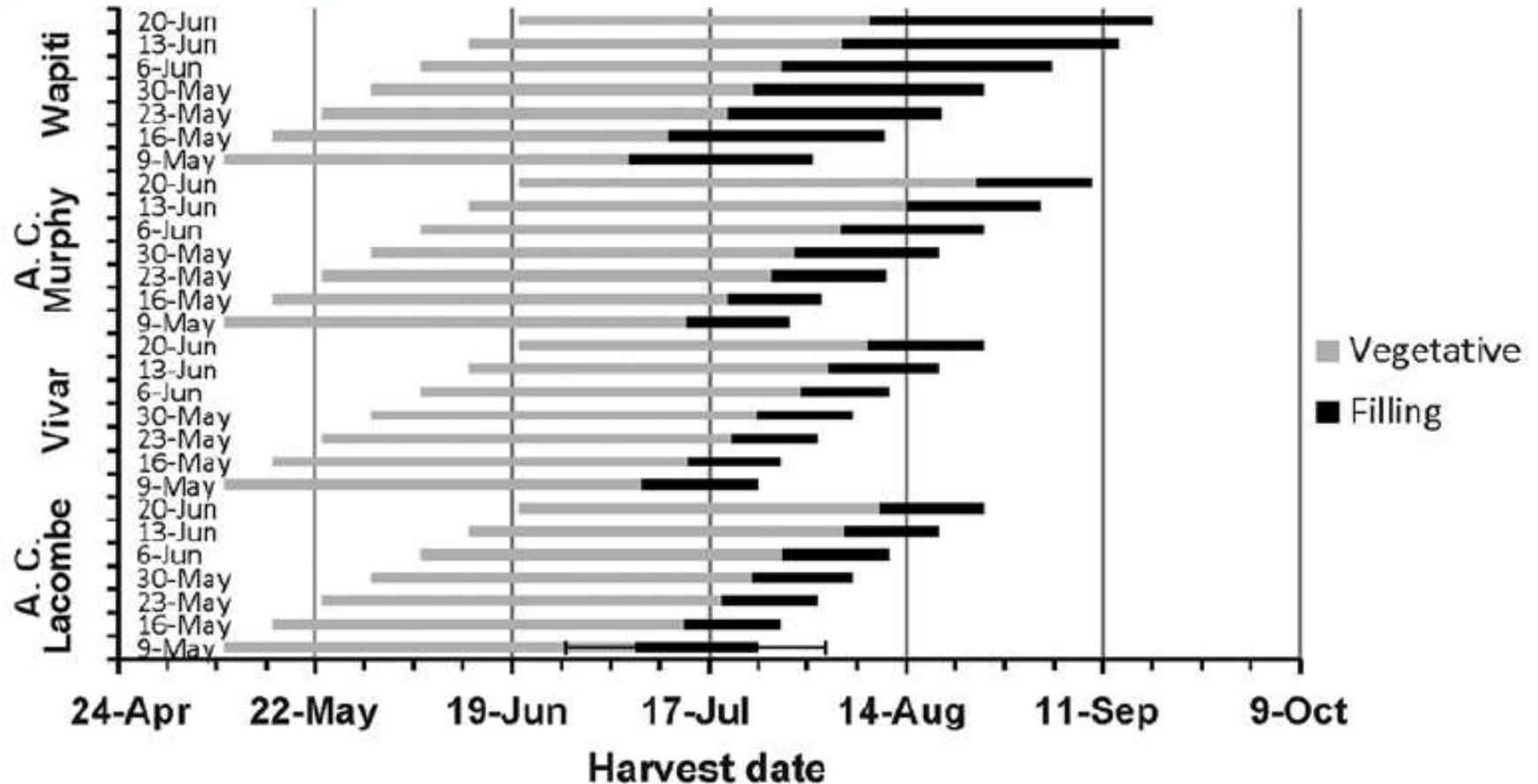


The affect of seeding date on cereal maturity

Crop Specie	Seeding date	Days to soft dough
Barley	May 22 (Early)	75
Barley	June 25 (Late)	69
Oats	May 22 (Early)	81
Oats	June 25 (Late)	82
Triticale	May 22 (Early)	89
Triticale	June 25 (Late)	93

Effect of Planting Date Harvest Date

Species Planting Date



Baron et al. 2012: Agron J. 104: 393 - 404.