PARKLAND COLLEGE

East Central Research Foundation

2013 Annual Research Report

Written by

Mike Hall

Contents

Introduction

The East Central Research Foundation (ECRF) is a non-profit, producer directed research organization which works closely with various levels of government, commodity groups, private industry and producers.

Founded in 1996, the mission of ECRF is to promote profitable and sustainable agricultural practices through applied research and technology transfer to the agricultural industry.

In 2013, ECRF signed a memorandum of understanding with Parkland College that will allow the partners to jointly conduct applied field crop research in the Yorkton area. The City of Yorkton has provided the college with a 5 year lease of land (108 acres) located just a half mile south of town on the York lake road and another 60 acre parcel located just west of town.

Michael Cameron (left), Director of Training & Business Development at Parkland College, signs the MOU with Glenn Blakley from the East Central Research Foundation.

Parkland College is now the first regional college in Saskatchewan to undertake an applied research program. Parkland

College is thrilled to be involved in applied research because it fits with one of their mandates to "serve regional economic development". The Partnership also provides the college with a location and equipment to use for training students. Both partners benefit from each other's expertise and connections. ECRF and Parkland College also have access to different funding sources which is another strength of the partnership.

ECRF Board of Directors

ECRF is led by a 7 member Board of Directors consisting of producers and industry stakeholders who volunteer their time and provide guidance to the organization. Residing all across East-Central Saskatchewan, ECRF Directors are dedicated to the betterment of the agricultural community as a whole. The 2013 ECRF Directors are:

- Glenn Blakely (Chairperson) – Tantallon, SK
- Fred Phillips (Vice Chairperson) – Yorkton, SK
- Blair Cherneski - Goodeve, SK
- Dale Peterson - Norquay, SK
- Wayne Barsby - Sturgis, SK
- Ken Waldherr - Churchbridge, SK
- Corwin Tonn - Preeceville, SK

Parkland College Staff

- Gwen Machnee - Co-ordinator for University and Applied Research

Gwen is the main driving force behind the partnership from the Parkland College side. She successfully secured funding from NSERC, hired staff and summer students and negotiates with many industry partners.

- Mike Hall - Researcher/Instructor

Mike is responsible for writing research proposals, experimental design, implementation and analysis.

- Hana Ruf - Summer technician

Hana was responsible for data collection, plot maintenance and organizing for tours.

ECRF Staff

- Corinn Lutz – Administrator

Corinn's main responsibility is keeping track of ECRF's finances.

- Vern Steranko – Technician

Vern's responsibilities included plot implementation and maintenance of equipment.

Extension Activities

- Main field tour was July 24. There were approximately 40 people attending. The tour was covered by various media outlets including local newspapers and radio. The tour made the CTV news in regina.
- Trials were also toured on several occasions by students in Parkland College's "Agricultural Crop Production Worker Course".
- Crop Production Show: Results of some trials were presented at the Agri-arm Research update in Regina Jan 17, 2014
- Annual report available via internet

Agri-ARM

The Saskatchewan Agri-ARM (Agriculture Applied Research Management) program connects eight regional, applied research and demonstration sites into a province-wide network. Each site is organized as a non-profit organization, and is led by volunteer Boards of Directors, generally comprised of producers in their respective areas.
Each site receives base-funding from the Saskatchewan Ministry of Agriculture to assist with operating and infrastructure costs, with project-based funding sought after through various government funding programs, producer / commodity groups and industry stakeholders. Agri-ARM provides the forum where government, producers, researchers and industry can partner on provincial and regional projects.
The eight Agri-ARM sites found throughout Saskatchewan include:

- Conservation Learning Centre (**CLC**), Prince Albert
- East Central Research Foundation (**ECRF**), Canora
- Indian Head Agricultural Research Foundation (**IHARF**), Indian Head
- Irrigation Crop Diversification Corporation (**ICDC**), Outlook
- Northeast Agriculture Research Foundation (**NARF**), Melfort
- South East Research Farm (**SERF**), Redvers
- Western Applied Research Corporation (**WARC**), Scott
- Wheatland Conservation Area (**WCA**), Swift Current

NorthStar Soybean Genetics Trial

Funded by NorthStar Genetics

Background

Soybeans are a highly profitable warm season crop. Soybeans are not a significant crop in central Saskatchewan because of a cooler climate. However, the development of shorter season varieties and improved management continue to push soybeans to more northern climes. Seeding soybeans into warm soil is key to crop establishment. Factors such as cultivation and even time of day can have an impact on crop establishment. The temperature the seed experiences during the first 8 hours of germination can have an impact on development and yield. NorthStar Genetics have developed 10 varieties they wish to have evaluated in the Yorkton, Saskatchewan area.

Objectives:

- to evaluate in the Yorkton area the maturity, yield and first internode length of ten soybean varieties developed by NorthStar Genetics.
- to evaluate impact of warming the soil with cultivation prior to seeding soybeans on maturity, yield and first internode length.

Methodology:

The trial has two replicates. The first replicate was seeded on soil which had been previously rotovated May 19, 2013. The second replicate was direct seeded. Both the replicates were seeded together on May 24, 2013. Plot size was 12 ft by 50 ft and was seeded with a seed hawk. The seeding rate for each variety varied based on 1000 kernel weights and vigor test results. Plant population target was 160000 plants per acre (3.67 plants/ft2). Seed was coated with Nodulator Pro liquid inoculant and Hi-Flo spherical granules inoculant was banded to the side. Two applications of Round transorb at 0.33 l/ac were sprayed. The first application was June 4 as the Soybeans were emerging and June 24 just has the first trifoliate was emerging. All varieties where harvested on October 9, 2013.

Varieties tested were:

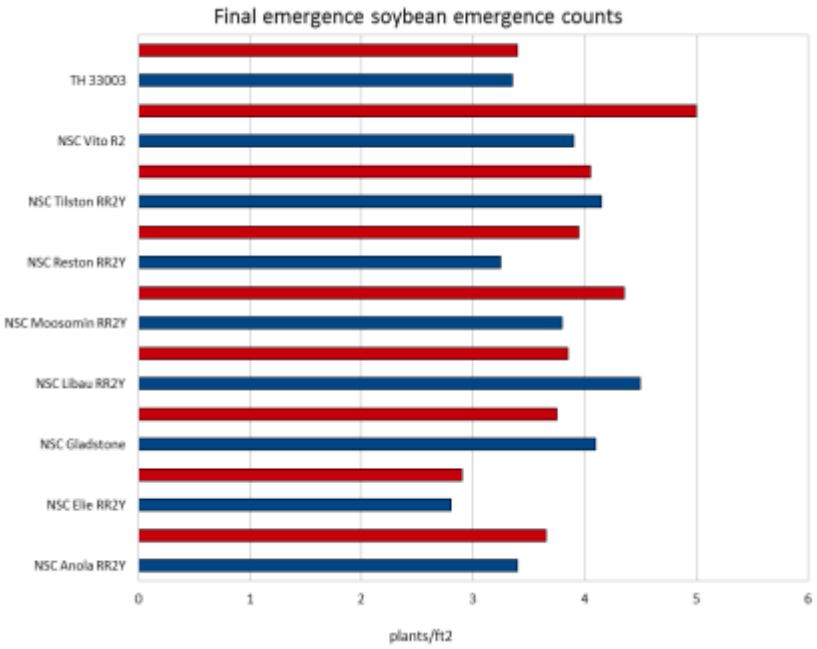
Variety	Maturity	Description
1. NSC Moosomin RR2Y	2300 CHU	Ultra early variety (<2300 CHU) is projected to be a game-changer in expanding the soybean market into areas with growing seasons currently considered to be too short. Compact, erect plant with short internodes and very dense podding. Data from plot and field scale trials to date have shown excellent yield potential.
2. NSC Reston RR2Y	2325 CHU	Very early maturing. Excellent variety for first-time growers in the North and West. Very good line for solid seeding.
3. Blank		Variety was not available at last minute.
4. NSC Anola RR2Y	2350 CHU	Early maturing. Limited branching. Ideally suited for solid seeding.
5. NSC Vito R2	2350 CHU	Very tall.
6. NSC Libau RR2Y	2375 CHU	Early stable line. Excellent standability. Top yielder for maturity class.
7. TH 33003	2375 CHU	
8. NSC Gladstone RR2Y (registration pending)	2375 CHU	
9. NSC Tilston RR2Y	2375 CHU	Early season variety, rated at 2375 CHU. Very tall with very good pod clearance and exceptional standability. Yielded 104% of check in 2012 Manitoba provincial trials. Performed very well in terms of yield and maturity vs other varieties in trials where conditions were particularly cool.
10. NSC Elie RR2Y	2425 CHU	Top midseason yielder (exceptional). Very stable strong looking line in the field. Suitable for solid seeded or row planted.

Results and Discussion:

Emergence

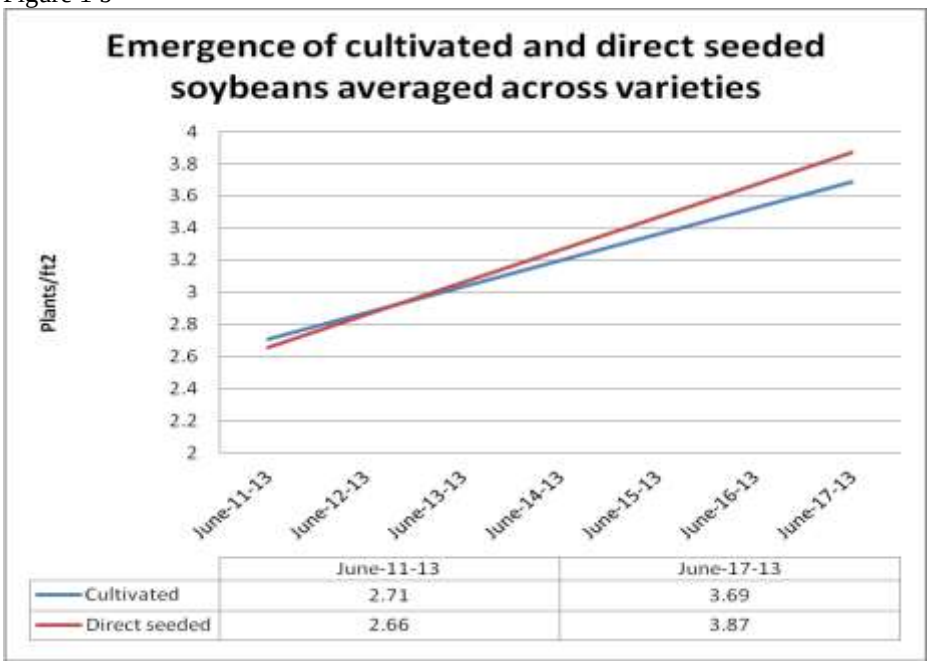
Plant target population of 3.67 plant/ft2 was met with the exception of NSC Elie which was just shy of 3 plant/ft2 (Figure 1a). The rate at which the plants emerged and final emergence was very similar between plots that were either rotovated or direct seeded (Figure 1b).

Figure 1 a.



blue is cultivated; red is direct seeded.

Figure 1 b



Crop Height and Height of First Internode

Soybean varieties which tended to be short or tall in rotovated plots also tended to be short or tall in direct seeded plots (Figures 2 and 4). On average, varieties that were direct seeded were taller (27.5 inches) then varieties that were seeded into rotovated soil (22.7 inches). Moreover, the height of the first internode was taller (2.5 inches) on direct seeded varieties in contrast to varieties seeded into rotovated soil (2.3 inches). The height of the first internode varied among varieties (figures 2 and 4). While taller varieties tended to have longer first internodes (Figures 3 and 5), the correlation was weak. This means a tall variety doesn't necessarily have a long first internode. NSC Tilston consistently had the longest first internode under direct seeded and rotovated conditions.

Figure 2.

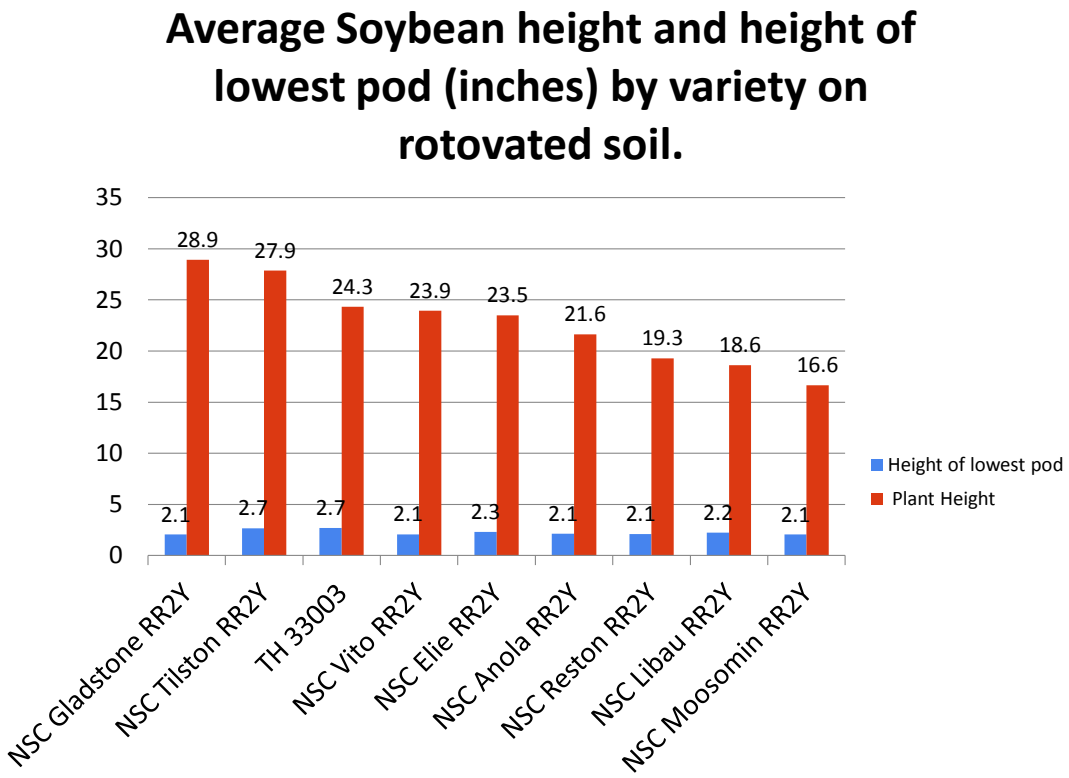


Figure 3.

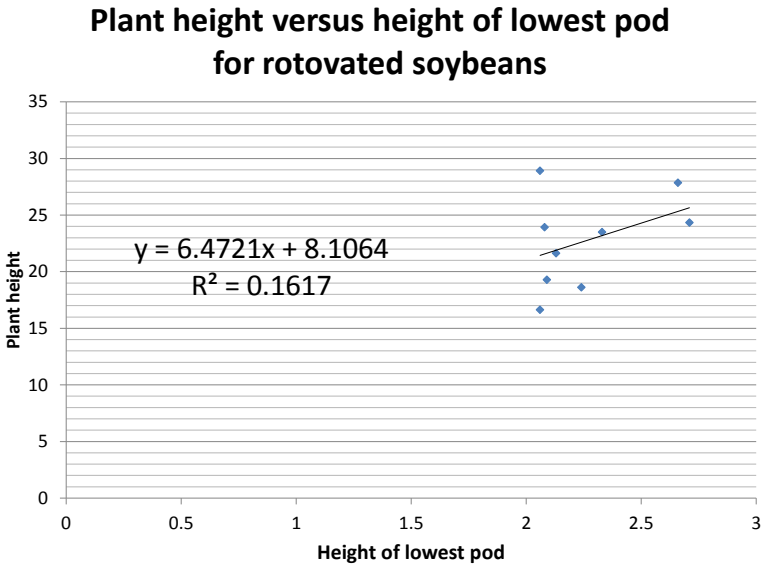


Figure 4.

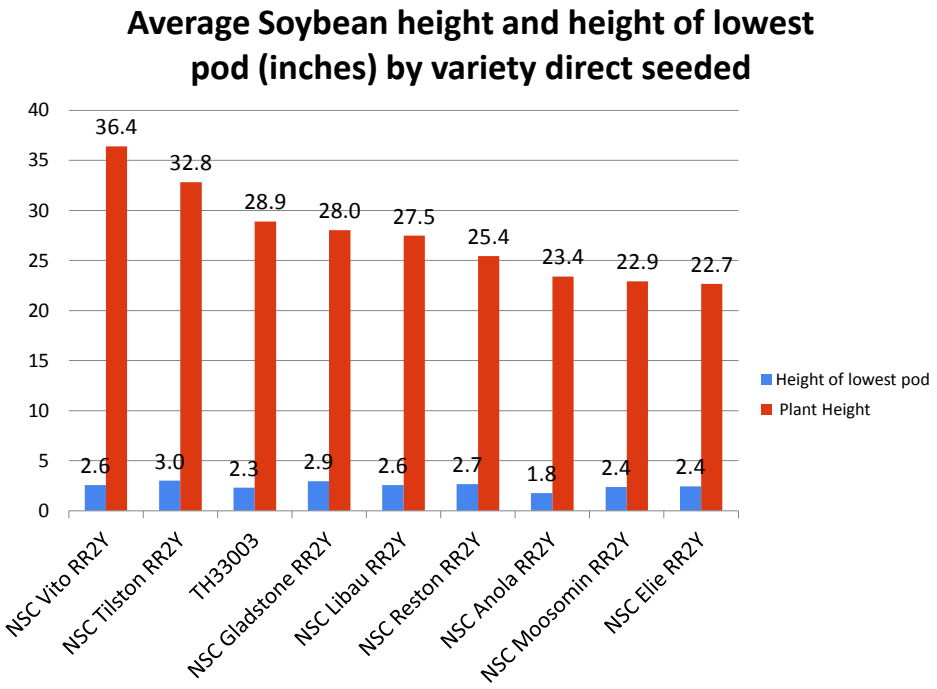
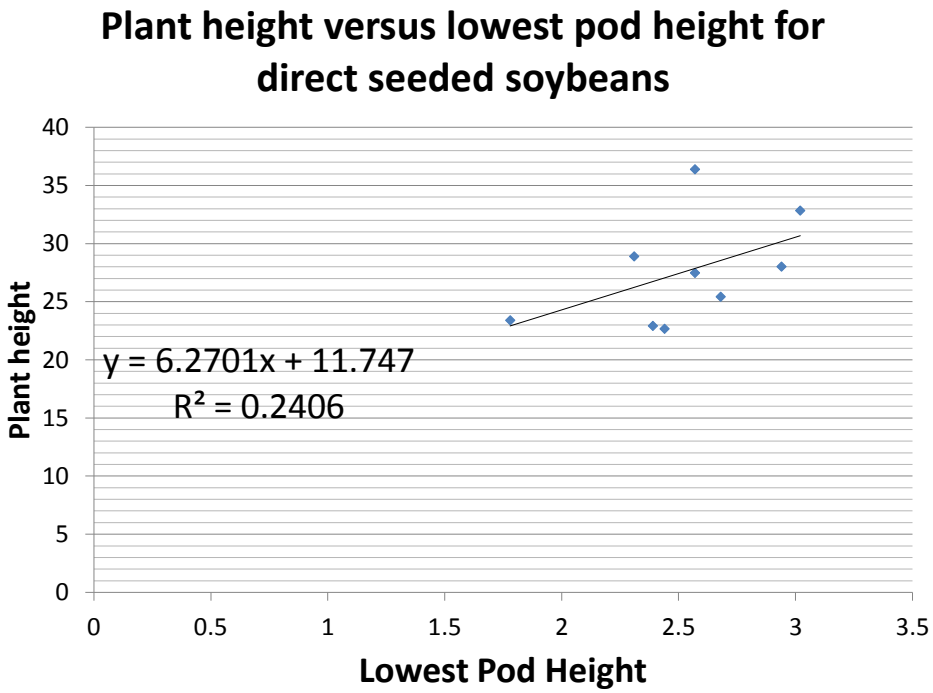


Figure 5.



Crop Maturity

Tables 1and 2 show the number of days it took for varieties to reach 10% and 95% pod color change. This gives us a relative indication of maturity under direct seeded and rotovated conditions. It is quite apparent that the varieties matured faster under rotovated conditions. Using NSC Vito as an example, figure 6 visually shows the difference in maturity between rotovated and direct seeded plots. NSC Moosomin and NSC Tilson were consistently very early maturing varieties whereas NSC Libau was a very late maturing variety.

Table 1and 2.

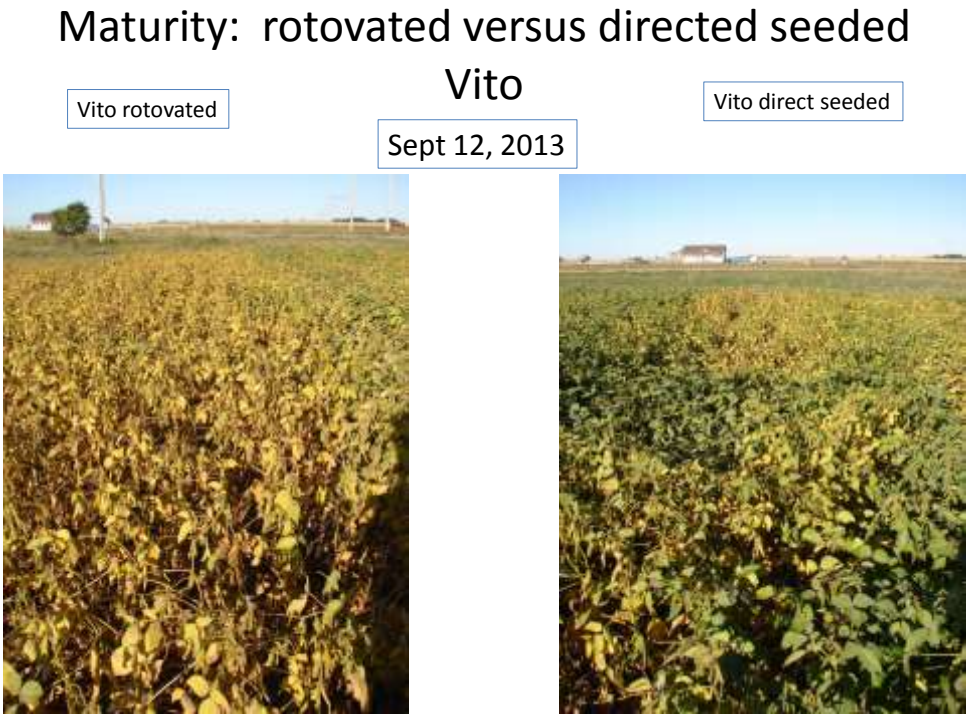
Days to 10% yellow pods

date	Days after seeding	Direct seeded	Rotovated
September 4, 2013	103	NA	NSC Moosomin RR2Y
September 6, 2013	105	NSC Moosomin RR2Y	TH 33003
		NSC Tilston RR2Y	NSC Reston RR2Y
			NSC Tilston RR2Y
September 9, 2013	108	TH 33003	NSC Vito R2
			NSC Anola RR2Y
			NSC Gladstone RR2Y
September 12, 2013	111	NSC Gladstone RR2Y	NSC Elie RR2Y
		NSC Vito R2	NSC Libau RR2Y
		NSC Anola RR2Y	
		NSC Reston RR2Y	
September 16, 2013	115	NSC Libau RR2Y	
		NSC Elie RR2Y	

Days to 95% pod color change

date	Days after seeding	Direct seeded	Rotovated
September 12, 2013	111	NSC Tilston RR2Y	NSC Tilston RR2Y
		NSC Moosomin RR2Y	NSC Reston RR2Y
			NSC Vito R2
			TH 33003
			NSC Moosomin RR2Y
September 16, 2013	115	TH 33003	NSC Gladstone RR2Y
		NSC Reston RR2Y	
September 23, 2013	121	NSC Elie RR2Y	NSC Elie RR2Y
		NSC Gladstone RR2Y	NSC Anola RR2Y
		NSC Vito R2	
		NSC Anola RR2Y	
September 29, 2013	127	NSC Libau RR2Y	NSC Libau RR2Y

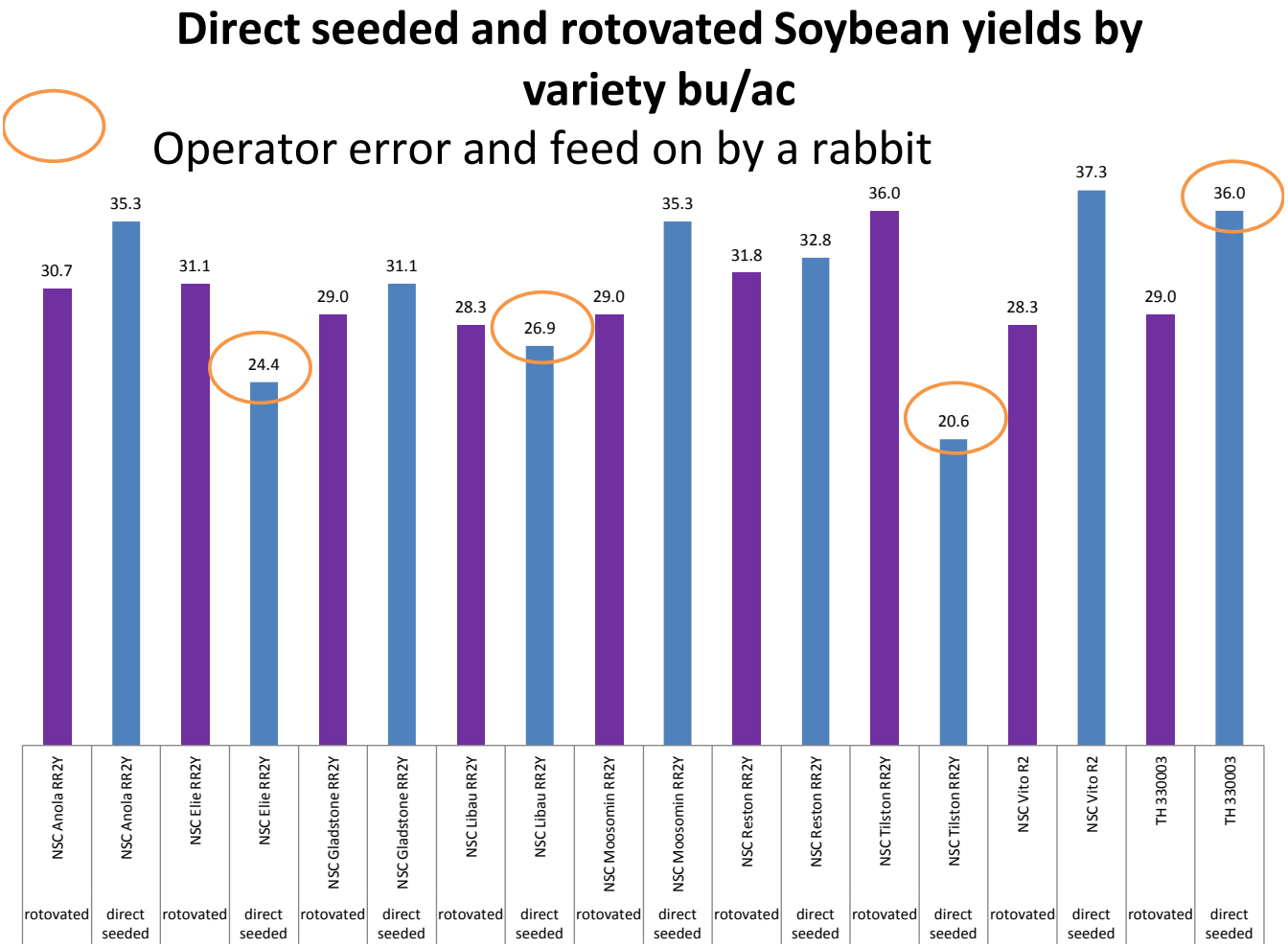
Figure 6.



Yield

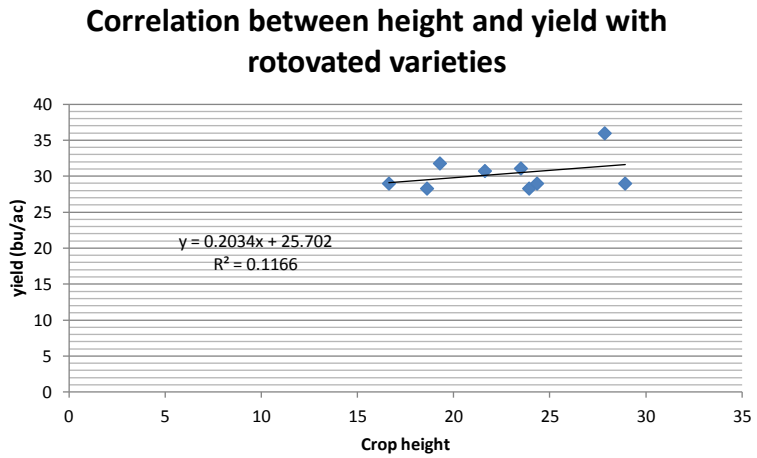
Figure 7 shows the relative yield of each variety under rotovated and direct seeded conditions. Values which have been circled should be disregarded due to operator error and a rabbit which was feeding on the last two plots of the trial.

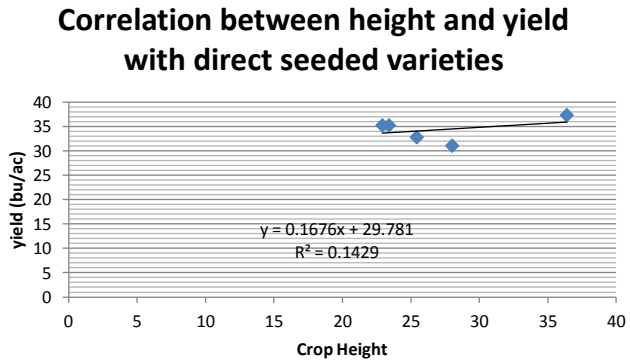
Figure 7.



Figures 8 and 9 shows that taller varieties tended to have slightly more yield. However, the correlation was very weak. In other words, taller varieties were not necessarily providing substantially greater yields.

Figures 8 and 9.





Average across varieties which had good values for both rotovated and direct seeded plots, the yield from rotovated plots and direct seeded plots were 29.7 and 34.4 bu/ac, respectively.

Conclusions

Soybeans seeded into the warmer rotovated soil were expected to mature faster, yield better and have a longer first internode. In this study the soybeans seeded into rotovated soil did mature faster but they were also shorter with shorter 1st internodes and poorer yielding. The reason is unclear but it is worth discussing the possibilities. The soybeans may have been seeded a bit deeper into the softer rotovated soil but no data was taken to confirm or refute that. If the soybeans were seeded deeper it had no impact on the initial rates of emergence and development or final plant counts. Perhaps there was something else about rotovating the soil that impacted the soybeans. Perhaps the rotovation interferred with mycorrhizal root associations and nodulation. Mycorrhizal associations with the roots are important for the uptake of phosphorous. Reduced phosphorous uptake can definitely reduce yield and plant height but would it hasten maturity? Phosphorous deficiency in other crops such as cereals actually lengthens maturity. If nodulation was interfered with this would easily account for smaller plants, reduced yield and earlier maturity. While all the soybeans received more than ample inoculation, all that can be said is that both sides seemed well nodulated from the observations of a few random samples. Unfortunately, detailed scores of nodulation were not taken. So what exactly happened out there is uncertain to this author. There was obviously a stress placed on the soybeans that was related to rotovating the soil.

Some of our maturity results didn't line up with the published CHU ratings. For example, NSC NSC Tilston, TH 33003 and NSC Libau are all rated at 2375 CHU. However, in our trial NSC Tilson and TH 33003 matured significantly earlier than NSC Libau. Northstar Genetics suspects varieties may differ in tolerance to cold conditions either experienced at germination or during flowering. Varieties with poor cold tolerance are growing shorter, yielding poorer and maturing later than expected. Northstar Genetics suspects NSC Moosomin, TH 33003 and NSC Tilston have good cold tolerance, NSC

Reston and NSC Anola have some cold tolerance and NSC Libau has poor cold tolerance. Whether the cold tolerance is to conditions experienced at seeding or to cooler temperatures we experienced during July is yet to be determined. Some varieties may have their progress put on hold while varieties such as NSC Tilston continued with their normal progression despite those cool temps at flowering. To try and answer the cold tolerance question, Northstar has initiated growth chamber experiments with Agriculture Canada this winter and we hope to correlate their results with field experiments this spring.

All varieties were harvested on Oct 9. While all varieties were physiologically mature at the time of combining some of the latter maturing varieties like NSC Elie and NSC Libau were probably harvested at higher moisture contents then a farmer would want to handle. I don't want to make any conclusions about yield between these varieties as this was more of a demonstration. No replication and thus no statistics possible. However, all the varieties were yielding "in the ball park". For the Yorkton region I would consider growing the shorter season varieties. NSC Moosomin was good yielding and probably the shortest season variety but it had the shortest first internode making it the hardest to cut. TH 33003 is also a variety to consider as it was tall and early maturing. NSC Tilston particularly stands out because of its high yield, relatively long first internode and its short season. Figure 10 shows the relative advancement of maturity for the varieties NSC Moosomin, NSC Tilston and NSC Libau on the rotovated land. Figure 11 also shows the relative height of the varieties.

Figure 10.

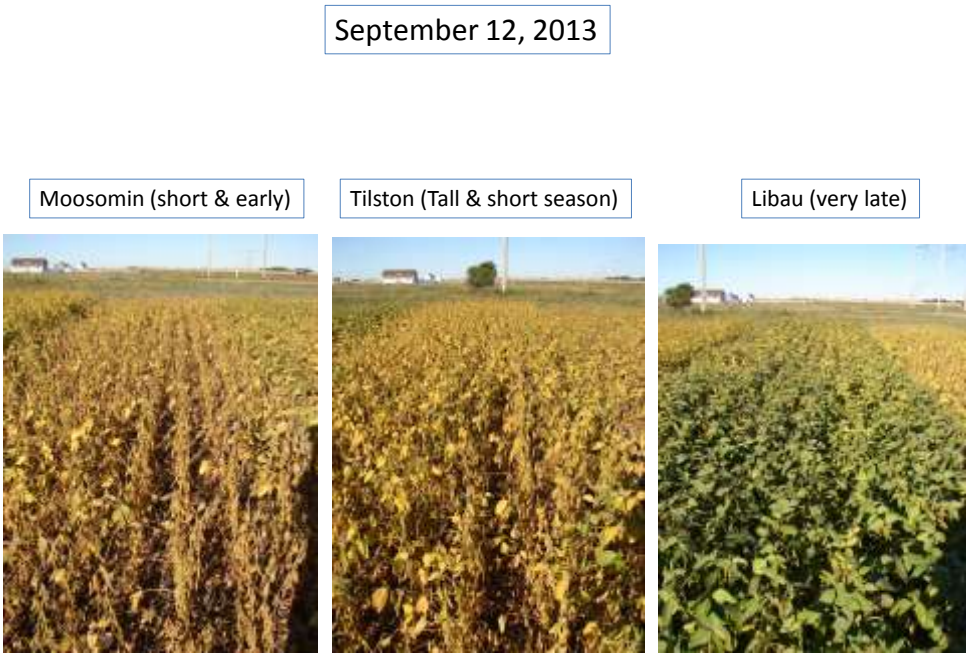


Figure 11.

Demonstration of Perennial Forage Crops

Funded by ADOPT – Agricultural Demonstration of Practices and Technologies

Background

Perennial forage crops are a vital component of the livestock industry of Saskatchewan, providing year round feed for livestock producers either through grazing or hay production. Livestock and forage producers need forage species and varieties that will establish easily, provide abundant yield and persist under varying management systems. In recent years there has also been interest from the cereal grains, pulse and oilseed sectors as to how perennial forages may fit into their rotation to reduce annual inputs (fuel, seed, fertilizer etc) and disrupt disease, insect and weed cycles. In order for perennial forages to be integrated into annual cropping systems, they must establish easily and provide yield potential that can be sold or harvested as a useable commodity.

Each year forage specialists across the province respond to many producer inquiries on what species and varieties of perennial forages are best suited to their region. Producers are presented with forage seed catalogues that list numerous forage species and varieties and are expected to choose varieties that will work on their operation. Many of the new forage varieties are developed outside of the Western Canadian prairies and are not suited to all regions of the province. As establishment success, yield and persistence will vary with moisture conditions and soil types, it is beneficial to have side-by-side comparisons of perennial forages at the local level.

Objectives

- To provide a side-by-side demonstration of new and unique forage varieties in comparison to those more commonly used.
- To demonstrate any differences in establishment, growth habit, maturity and yield of thirty-six (36) different perennial forages, including both grass and legume species

Material and Methods

A preseed burn off was applied June 1, 2013 and the plots were seeded the following day (June 2) with a four row cone seeder (Figure 1) with 12 inch row spacing. The grass species received 50 and 20 lb/ac of actual nitrogen and phosphorous,

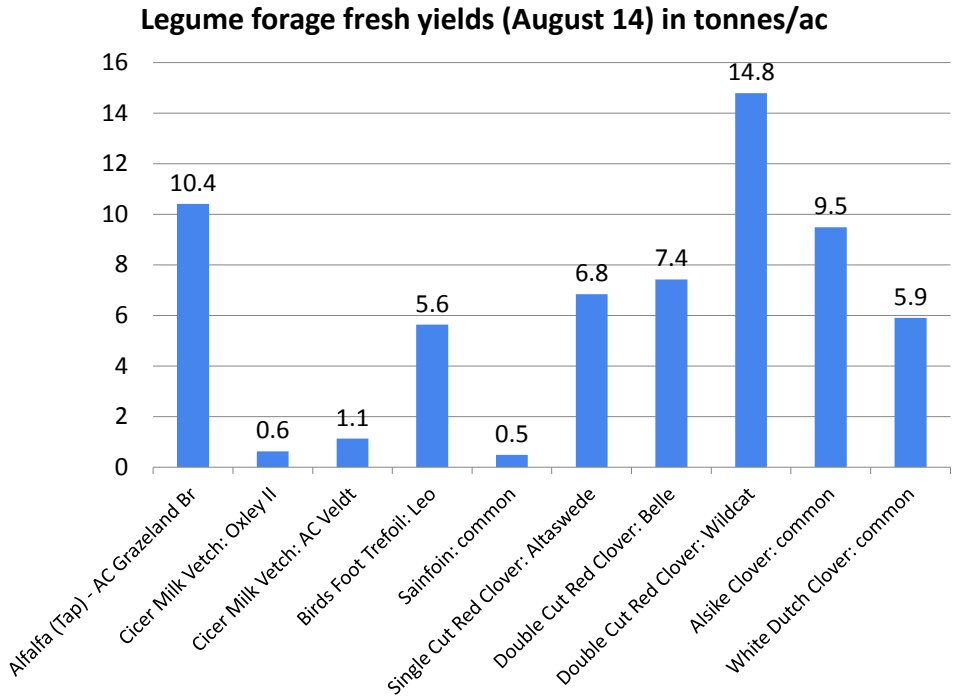
respectively. The legumes received 50 lbs/ac of actual phosphorous. Another half litre glyphosate was sprayed June 4 Preemergent. Fresh weights were harvested August 13.

Figure 1. Cone seeder and forage demo.

Results and Discussion

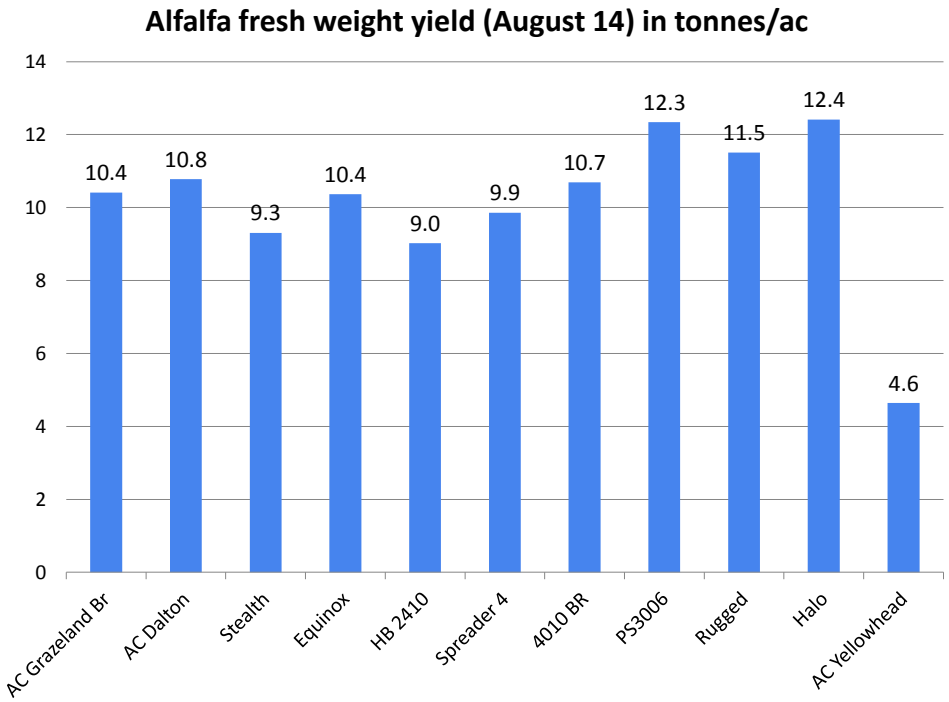
Legume forages which are commonly grown such as alfalfa and the clovers provided the most yield in the establishment year (Figure 1.) but they all present a bloat risk. Cicer milk vetch, sainfoin and birds foot trefoil are all non bloating legume species. The yields from Cicer milk vetch and sainfoin were very low. These species may take a little more time to become established. We will see what happens next year. Birds Foot Trefoil is not commonly grown either but. It produced much better than the cicer milk vetch or sainfoin. However, past experience suggests the stand may not last long. Birds Foot Trefoil is not competitive against weeds and grass species or winter hardy. It should be seeded alone.

Figure 1.



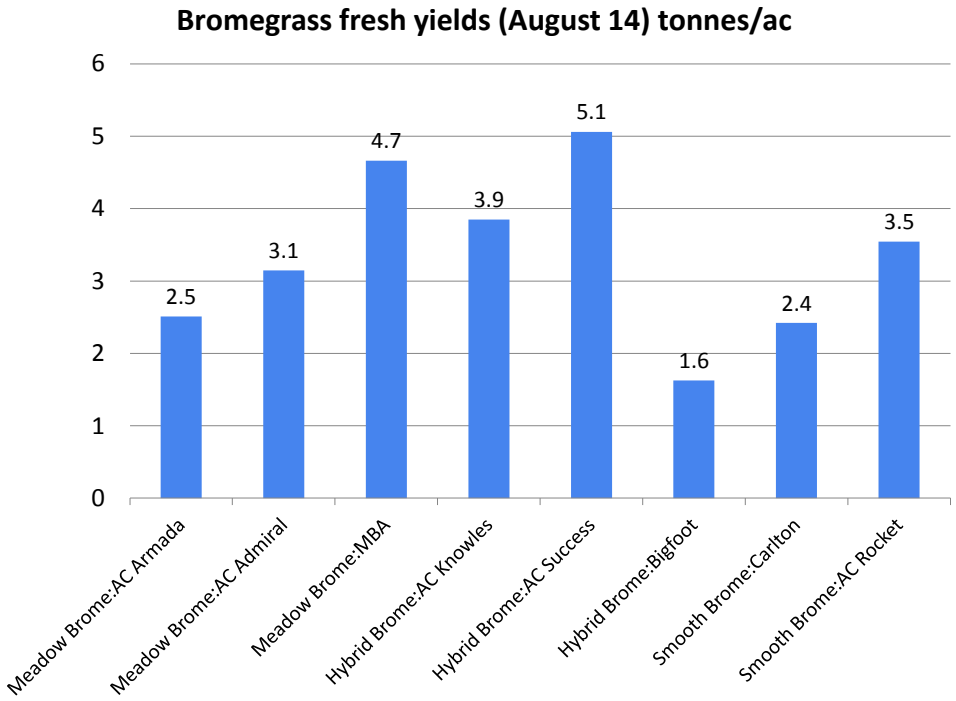
Alfalfa is a productive legume adapted to a variety of soil types. Tap-rooted types are well suited to hay production, while creeping-rooted types are hardier and more persistent under grazing or harsh growing conditions. Branched root alfalfas are recommended for high water tables and can better tolerate wet soils. Tap root alfalfas included in this demonstration include **AC Grazeland BR,** which was bred for reduced incidence of bloat; **AC Dalton**, **Equinox** and **Stealth**, all suited for hay production and high yields. This demo also includes the hybrid alfalfa **HB 2410;** a creeping alfalfa (**Spredor 4**); a multifoliate alfalfa (**PS3006**); and the branched root variety **4010 BR**. Salt tolerant alfalfas have been developed to assist in establishing high yielding forages in saline soils. **Rugged** and **Halo** alfalfa are saline tolerant varieties. **AC Yellowhead**, a yellow-flowered, long-lived alfalfa was included in the demo. Yields of alfalfa varieties didn't vary greatly from the first cut with the exception of AC Yellowhead which is known to be lower yielding but more winter hardy variety (Figure 2).

Figure 2.



Smooth Bromegrass is the most commonly grown grass in legume/grass mixtures. It is quite tolerant to stressful conditions but it also tends to out compete alfalfa stands. Meadow bromegrass is ideally suited for grazing. It starts growth early in the spring and regrows quickly after grazing. It doesn't tolerate flooding or stressful conditions as well as smooth brome. Meadow Bromegrass is less aggressive than Smooth Bromegrass so maintains its grass to legume ratio longer in mixed stands. Hybrid bromegrass is the result of a cross between smooth bromegrass and meadow bromegrass. Hybrid bromegrass has growth characteristics and adaptation intermediate to its parental lines. Hybrid bromegrass regrows more rapidly than smooth bromegrass and has greater hay yields than meadow bromegrass. Hybrid brome variety **AC Success** is better suited to the drier brown soil zones, while **AC Knowles** does best in the dark brown soil zone and **Bigfoot** is reported to do best on loamy or sandy loam soils in a variety of zones. There was quite a variation in bromegrass yields between species however, this may not be a typical response (Figure 3.). Overall the brome grasses yielded quite well.

Figure 3.



Commonly grown grass species like smooth bromegrass and orchardgrass performed well (Figure 4). Orchardgrass is a highly palatable and yields well for both hay and pasture but only under conditions of high moisture or irrigation. It is best used mid-season and displays excellent regrowth. **AC Kootenay** and **AC Killarney** are both included in this demonstration. Both varieties were bred for improved winter hardiness as well as increased productivity. AC Killarney is reported to be more persistent than other varieties of Orchardgrass.

The Kentucky bluegrass did not establish well. This is surprising since no one else is having difficulty establishing it in their lawns. It is very grazing tolerant and tends to increase in overgrazed pastures.

Green needlegrass was not very productive in the establishment year. It is a native grass that is also used for reclamation.

Reed canarygrass performed well due to moist conditions. Reed Canarygrass is very flood and saturated soil tolerant, but does not tolerate salinity. This species can be invasive in waterways but can produce good yields and many varieties show good palatability.

The two foxtail species also performed poorly in the year of establishment despite moist conditions. Meadow Foxtail and Creeping Foxtail both tolerate flooding well but only creeping foxtail will tolerate saline soils. Both these species are suitable for pasture or grazing and both thrive under moist conditions.

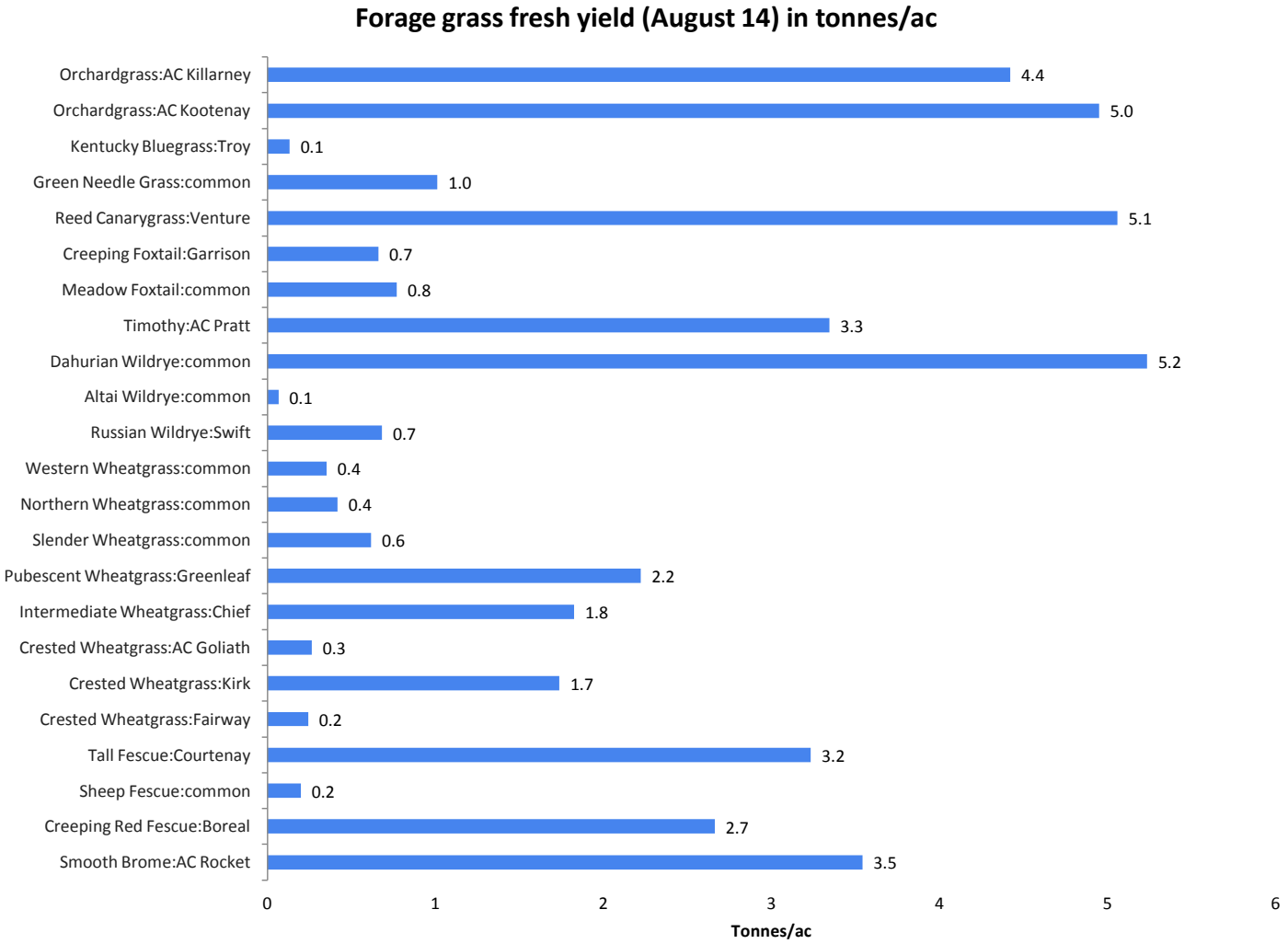
Timothy performed pretty well and is relatively common grass in western Canada. It prefers a moist environment and is tolerant to spring flooding. It is also tolerant of acid soils.

Neither Russian Wildrye or Altai Wildrye performed well in the establishment year. The wildrye species are generally used for grazing. Russian Wildrye and Altai Wildrye are tolerant of drought and salinity and are long-lived once established. They do not tolerate saturated or flooded soils. Dahurian Wildrye is well adapted to many soils zones and is shorter-lived but quicker to establish and more competitive than Russian or Altai wildrye. In our demonstration, Dahurian Wildrye is the only wildrye to produce well in the establishment year.

Many of the wheatgrasses which perform relatively better under dry conditions produced poor yields under the moist conditions experienced at our site. Crested Wheatgrass is suitable for both pasture and hay and is a drought tolerant forage. It can be invasive in natural areas, so it is best to avoid planting this species adjacent to native pastures. Graze early in the season for improved palatability. The wheatgrass species in this demonstration may all be used for either hay or pasture. Intermediate Wheatgrass is an introduced species. If used intensively, it can be a short-lived. Pubescent Wheatgrass is another introduced wheatgrass similar to intermediate wheatgrass but is more strongly creeping. Slender Wheatgrass is a native grass which establishes quickly and is also used for reclamation purposes. It is moderately tolerant of salinity and saturated soils but is not preferred by livestock. Northern Wheatgrass is the most common wheatgrass on the prairies and is drought tolerant and well-adapted to a variety of soils. It is well suited to fall or winter grazing and maintains high energy levels. Western Wheatgrass is another native wheatgrass commonly used for reclamation. It is adapted to many soil zones and has good salinity, flooding and drought tolerance. Western wheatgrass is a sod-forming grass which provided good forage in summer and fall.

Tall fescue and creeping red fescue yielded well but the Sheep fescue did not. Sheep fescue is used for pasture and reclamation and is well adapted to cold climates but does not perform well under heavy grazing. Tall fescue is best suited to grazing but can also be used for hay. This forage thrives on wet/poorly drained soils and is also moderately saline tolerant. Care must be taken not to use tall fescues breed for the turf industry. These tall fescues have an entophyte which is toxic to cattle. Creeping red fescue is a sod-forming grass best suited for pasture. It is most competitive in the black and grey soil zones under adequate moisture.

Figure 4.



Monsanto FACTS Variety Trial

Funded by Monsanto

Introduction

Monsanto continues to develop and bring new varieties on to the market. Field Analysis Comparison Trials (Facts) are designed to compare promising varieties against Monsanto check varieties on a larger field scale. Varieties which compare well in these trials are then brought to market.

Objectives

- to evaluate maturity and yield of 12 Monsanto varieties in the Yorkton area.
- to evaluate some experimental seed treatments.

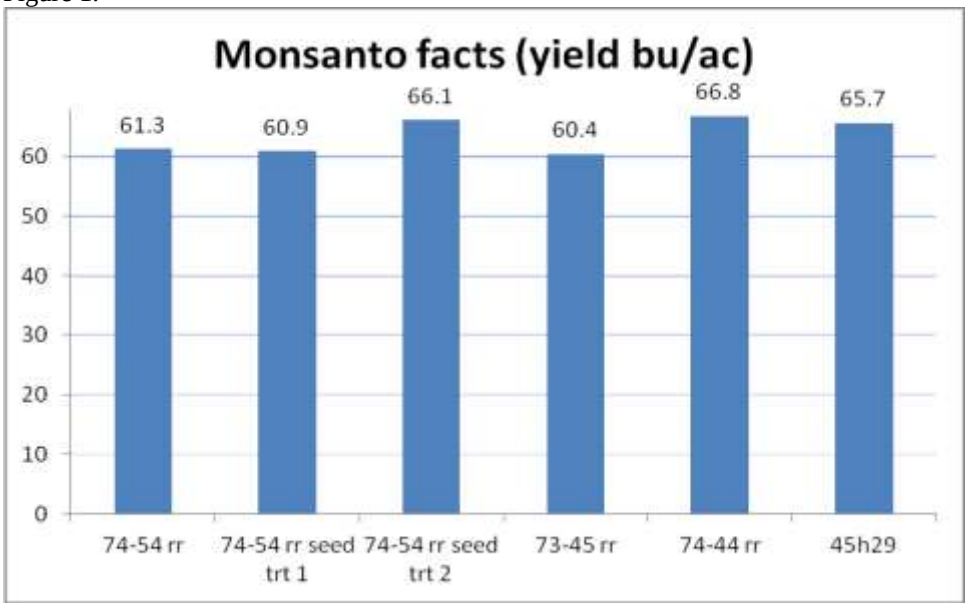
Materials and Methods

The trial was seeded on May 25, 2013 with 10 foot seedhawk drill on cereal stubble. A 105 N 25P 15S was applied at the time of seeding. Phosphorous was placed with the seed and the Nitrogen/Sulphur blend was banded to the side. Plot size was 20 ft wide by 900 ft long. A 0.33 l/ac rate of Roundup transorb was sprayed twice; once on June 4 when the canola was at the cotyledon to 1 leaf stage and then again on June 24 when the canola was at the 5 leaf stage. Varieties were swathed at different times depending on maturity but all varieties where combined on September 24, 2013.

Results and Discussion

Only data for registered varieties can be provided as the data for unregistered varieties and seed treatments is proprietary information. All varieties yielded exceedingly well as environmental conditions during the growing season were ideal (Figure 1). No stats can be applied to the results as these values represent only one replication. The results from this trial should not be view alone. They should be taken into consideration with the results from multiple locations.

Figure 1.



Monsanto Canola Market Development Trials

Funded by Monsanto

Introduction

DEKALB brand canola hybrids continue to be tested through DEKALB Market Development trials. These are large field scale trials that are typically grown and managed by farmers using their own equipment and crop inputs. The performance of each DEKALB hybrid and competitor comparison is tested in strip trials across Western Canada. All agronomic decisions and farm practices are made by the grower. Yields are determined with a weigh wagon and are available online at www.DEKALBPerformance.ca.

Objective

to compare varieties currently registered and available to producers.

Materials and Methods

The trial was seeded on the late side, June 7, 2013 (Figure 1). Plot width was 60 ft by 1000 ft long and was seeded with a 60 ft Morris drill. Applied fertilizer was only 35N 25P 15S. We were able to go with a greatly reduced rate because the field had been summer fallowed for 3 years straight. The crop was seeded deeper than intended due to operator error. The seeding depth was 1.5 inches. A preseed burnoff of 0.33 l/ac Roundup transorb was applied June 4. Another 0.33 l/ac rate of Roundup transorb was applied June 24 at the 2 leaf stage. Varieties were swathed at different times depending on maturity but the whole trial was harvested September 29, 2013

Figure 1.

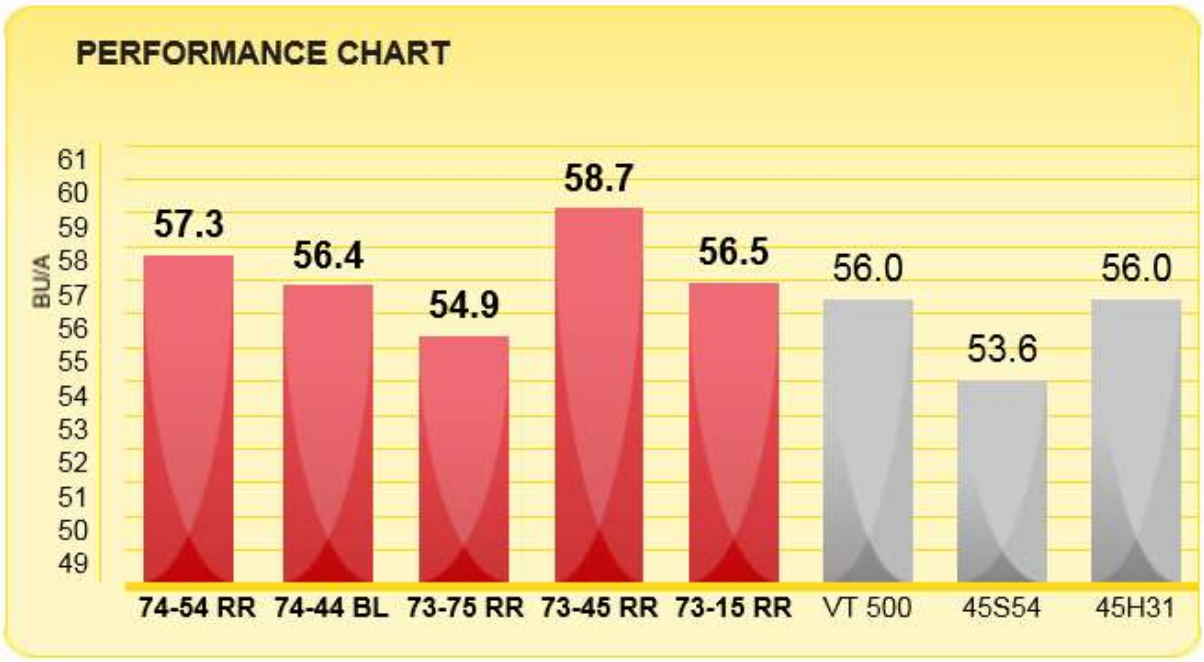
Results and Discussion

The results from our trial are located at www.DEKALBPerformance.ca (Figure 2.). Yields were exceptional especially when one considers the late planting date and excessive seeding depth. The results from this trial should not be looked at in isolation. There is only one replicate. Instead results from multiple sites should considered before deciding on a variety. Results from multiple locations can be compared at www.DEKALBPerformance.ca.

Figure 2.

CANOLA MARKET DEVELOPMENT

Co-operator:	Parkland College
Location:	Yorkton, Saskatchewan
Planted:	06-Jun-2013
Harvested:	29-Sep-2013



Yield values are adjusted to 9% moisture