



NORTHEAST AGRICULTURE RESEARCH FOUNDATION

2013 Demonstration of Annual Forages for Greenfeed or Swath Grazing

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ABSTRACT:

Interest from forage and livestock producers in the use of annual warm season crops for livestock feed has created the need to develop a project to address producer questions. The purpose of this project was to demonstrate the differences in growth habit, maturity and yield of cool and warm season annual forages grown for greenfeed or swath grazing, including forage oats, forage barley turnips and warm season millets. A randomized small plot trial with eleven treatments was seeded with four replicates with at Agri-ARM sites at Melfort and two replications at Prince Albert. Plot harvest timing was based on crop maturity. It is very important to note that this is a demonstration trial, statistical analysis was not carried out and differences may or may not be significant.

In this project Baler oat/ pea mixture and Golden German millet were the highest yielding treatment at the Prince Albert site. At Melfort barley, oat, barley/pea, oat/pea, Siberian, AC Prairie Gold and Crown millets were the highest yielding annual forage crops. However at both sites the warm season millet crops yielded similar or better than oats and barley. Triticale did not yield any better than oats or barley at the Melfort site and not better than oats at the P.A. site. The turnips yielded well considering only the top-growth was harvested in this project. Grazing of whole turnips has resulted in cattle chocking on the roots so caution is advised when using turnips for grazing. Results from this trial demonstrate that there is potential to grow cool season cereals, turnips and warm season millets for greenfeed or grazing in the parklands. The project was discussed during a forage field day held at the CLC on July 17, 2012 with 30 attendees. No field day was held at the Melfort site in 2012 however the results were presented in as Sask. Ag. Report on the Melfort radio stations CJVR and CK750 on December 12, 2012.

Project Objective:

The objective of this project is to demonstrate the differences in growth habit, maturity and yield of eleven (11) different annual forages and to document the agronomic management applied to each treatment.

Project Rationale:

Forage Specialists across the province were getting many producer inquiries on what varieties of annual forages are suited to the region and the agronomics of establishing them. At the 2009 Saskatchewan Advisory Council on Forage Crop meetings, it was identified that annual forages are an area of forage production where producers still have many questions and would benefit from seeing these new varieties produced and demonstrated at the local level.

Methodology

Small plot trials of eleven annual forage treatments were to be seeded at Melfort and Prince Albert in the spring of 2011 but due to poor establishment in each location both demonstrations were terminated. One replication was kept and used as a demonstration of the crops on a forage field day held at Melfort Research Farm on August 4 which had 4 participants.

Both sites were reseeded in 2012. The project details and results are provided below.

The annual forage treatments, harvest stage and seeding rates are summarized in Table 1. Plot dimensions were 1.5 m by 6.0 m with row spacing of 20 cm or 30 cm depending on location. The Melfort site consisted of four replications and the P.A. site two replications. Entire plots were harvested at Melfort using a plot harvester. At P.A. one, 0.25 m² sample of each treatment was harvested from each of the two replications.

Nitrogen fertilizer was applied at 30 lbs/ac of 60 – 70- 0- 13 at time of seeding at Prince Albert, CLC. At Melfort 50 lb of N/ac and 20 lb P/ac was applied at seeding.

Weed control consisted of pre-seed tillage. No in-crop herbicides were applied. Plot harvest timing was based on crop maturity.

Table 1. Annual forage treatments, harvest stage and seeding rates.

Treatment	Seeding rate Bu/ac	Harvest Stage
Cowboy Barley	2.0	Milk-soft dough
Baler Oat	2.5	Milk-soft dough
Tyndal Triticale	2.0	Soft dough
Cowboy Barley/40:10 Pea 70/30	1.4/0.6	Barley soft dough
Baler Oat/40:10 Pea 70/30	1.8/0.8	Oat late milk
Golden German Foxtail Millet	0.4	Early heading
Siberian Foxtail millet	0.4	Headed
AC Prairie Gold Foxtail Millet	0.4	Headed
Crown Proso Millet	0.4	Headed
Red Proso millet	0.4	Headed
Turnip	10 lb/ac	Mature

Results

It is very important to note that this is a demonstration trial, statistical analysis was not carried out and differences may or may not be significant.

The average DM forage yield for the Melfort site is provided in Table 2 and for the Prince Albert site in Table 3. Yield results from each site are different. At Melfort the highest yielding crops were Barley, Oat, Barley/Pea, Oat/Pea, Siberian millet, AC Prairie Gold millet and Crown millet.

At P.A. the highest yielding crops were the oat/pea mixture and Golden German millet. Oat and the remaining millets also yielded well at P.A. in 2012.

Turnip yields are low because only the top-growth was harvested in this project. Under grazed conditions cattle would pull and graze the roots. This would increase yields substantially. Grazing of whole turnips has resulted in cattle chocking on the roots so caution is advised when using turnips for grazing.

Table 2. Average dry matter yield of annual forage crops at Melfort in 2012.

Crop	Dry Matter (lb/ac)**	Days from Seeding to Swathing
Cowboy Barley	5255	80
Baler Oat	4455	80
Tyndal Triticale	4035	87
Cowboy Barley/4010 Pea	4670	80
Baler Oat/4010 Pea	4390	80
Golden German Foxtail Millet	3900	107
Siberian Foxtail Millet	5250	87
AC Prairie Gold Foxtail Millet	4750	80
Crown Proso Millet	5195	87
Red Proso Millet	3835	80
*Purple Top Turnip	1770	80
*Appin Turnip	2195	80

*Top-growth only.

** Yields followed by the same letter are not statistically different

Conclusions and Recommendations

In this project Oat/pea mixture and Golden German millet were the highest yielding treatment at the Prince Albert site. At Melfort Barley, Oat, Barley/Pea, Oat/Pea, Siberian, AC Prairie Gold and Crown millets were the highest yielding annual forage crops. However at both sites the warm season millet crops yielded similar or better than oats and barley.

Triticale did not yield any better than oats or barley at the Melfort site and not better than oats at the P.A. site. Turnips yielded well considering only the top-growth was harvested in this project. Under grazed situations roots would be pulled and grazed and production from roots would be expected be similar to top-growth production. Grazing of whole turnips has resulted in cattle chocking on the roots so caution is advised when using turnips for grazing.

Results from this trial demonstrate that there is potential to grow cool season cereals, turnips and warm season millets for greenfeed and/or grazing in the parklands.

Table 2. Average dry matter yield of annual forage crops at Prince Albert in 2012.

Crop	Dry Matter (lb/ac)**	Days from Seeding to Swathing
Cowboy Barley	4,630	72
Baler Oat	8,275	92
Tyndal Triticale	5,700	92
Cowboy Barley/4010 Pea	4,090	72
Baler Oat/4010 Pea	11,615	92
Golden German Foxtail Millet	10,145	104
Siberian Foxtail Millet	8,275	92
AC Prairie Gold Foxtail Millet	8,720	92
Crown Proso Millet	8,410	92
Red Proso Millet	8,010	77
*Turnip	4,360	104

* Average of Purple Top and Appin Forage turnip varieties. Top-growth only.

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