Evaluation of corn varieties in the West Central Alberta area

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Partners
- Thunder Seeds Canada
- CanaMaize Seed Inc.
- Northstar Seed Ltd.
- Pickseed Canada
- Yellowhead County
- Bouius Custom Work

Introduction

Corn is a high energy feed with protein levels that will normally match the nutritional needs of a dry cow in mid and late pregnancy. It also has the potential to produce more dry matter than tame hay or forage cereals. By replacing other forms of feed with standing corn, labour time and machinery use, associated costs are reduced as no summer feed harvesting is required and winter supplemental feeding is limited. (Growing Opportunities, May 2006).

Summary

This Corn Variety demonstration trial was conducted in 2017 to evaluate the performance of several varieties and their potential in the West Central region of Alberta. Four varieties were tested at the Wildwood Site. By evaluating the agronomics of Thunder Seed /TH4126 RR, CanaMaize/CM440 conventional, Pickseed/PS2219 RR and Northstar with Legend Seed/LR9473 is expected that the producers will gain more knowledge and ultimately with the adoption of standing corn grazing in winter they are able reduce the overall feed cost.

Objectives
- To evaluate four different corn varieties for maturity, quality and yield grown
- To demonstrate the different varieties that can grow in the west central area
- To make recommendations to beef cattle producers in the area that intend to winter feed their cattle with standing corn.

Treatments

Company	*Variety*	*CHU*
Thunder Seed	TH 4126 RR	2250
CanaMaize	CM440 Conventional	2100
Pickseed	PS 2219 RR	2175
Northstart/Legend Seed	LR 9473	2150

Methodology

Demonstration plots were planted at the West Central Forage Association Forage Research Site (SE 27-53-9- W5th) near Wildwood Alberta, in the gray wooded soil zone. Plots were seeded in a prepared seedbed on May 31 with a John Deere corn planter (20 m long 12 rows at 30 inch spacing), at a rate of 30,000 seeds per acre and (20 m long 12 rows at 15 inch spacing), at a rate of 62,000 seeds per acre for CanaMaize variety.

Glyphosate treatments were administered prior to seeding and when the crop was three leaf stage. For CanaMaize conventional variety 2,4D Ester 700 + Dual ll Magnum treatments were administered and MCPA Amine 600 when the crop was three leaf stage.

Once established, rows where trimmed 20 m for uniformity. At harvest, plant and cob population counts were conducted along 17.5m length of 2 rows per treatment. Above ground plant matter was harvested, weighed and subsampled to determine moisture content, dry matter and feed quality.

Weather data was collected from the (Alberta Agriculture) weather station in Evansburg AB and used to determine Corn Heat Units (CHU) which are calculated using maximum and minimum growing season temperatures, and precipitation levels.

Results

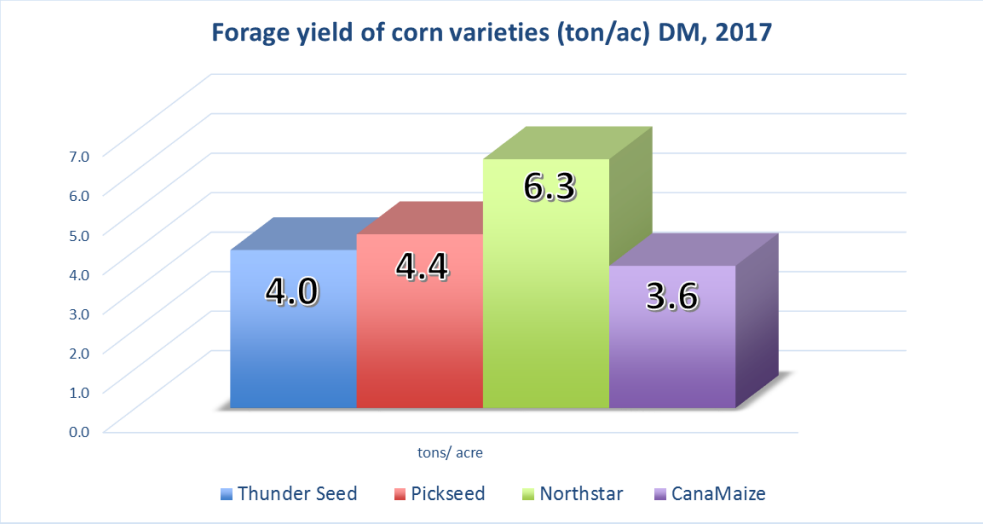
Plant count: Plant count and maturity summaries are shown in Table 1. Note: At the time when the samples were collected none of the cobs reached maturity.

Variety	# Plants	immature cobs	mature cobs	Total cobs	Moisture %
Thunder Seed					
Sample 1	27	30	0	30	77
Sample 2	30	30	0	30	79
Pickseed					
Sample 1	27	26	0	26	80
Sample 2	28	29	0	29	76
Northstar					
Sample 1	32	34	0	34	75
Sample 2	33	43	0	43	79
CanaMaize					
Sample 1	57	55	0	55	87
Sample 2	54	49	0	49	73

Table 1. – Samples were collected form 17.5 feet on two different spots at Wildwood Site

Yield:

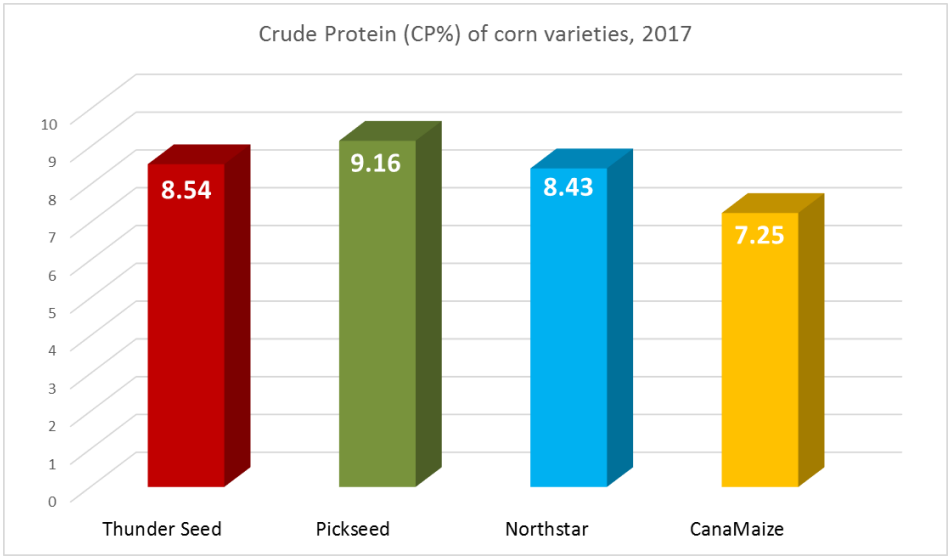
Two samples were taken from each treatment to determine yield. The highest yielding variety was Northstar with 6.3 tons per acre, followed by Pickseed with 4.4 tons, followed by Thunder Seeds with 4.0 tons and CanaMaize had the lowest yield at 3.6 tons per acre. Yield results are illustrated in Graphic 1 below.



Graphic 1. –Dry Matter (Tons/ac) for corn varieties grown in Wildwood Alberta, Corn Variety Trial 2017

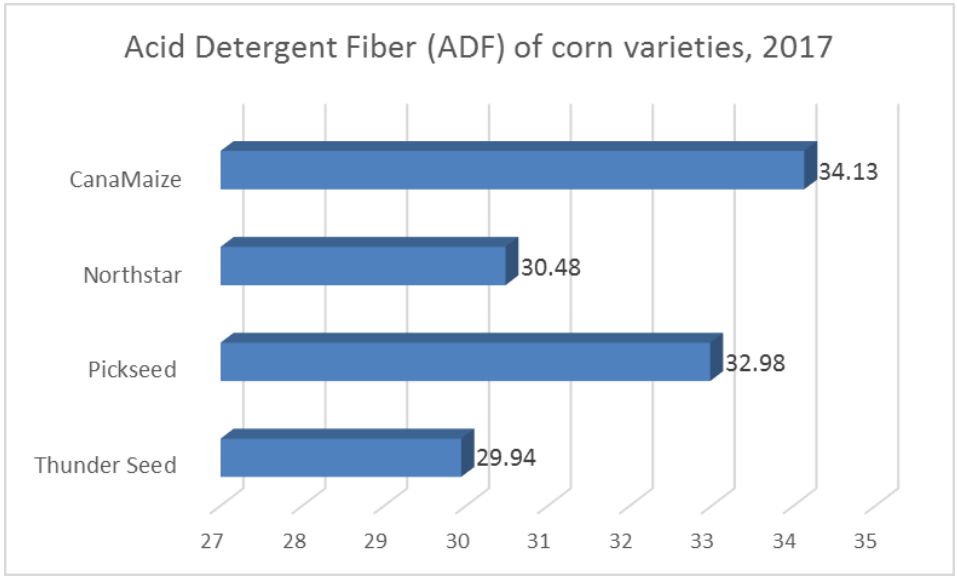
Feed quality:

Crude Protein. **-** Pickseed variety showed the highest crude protein percentage at 9.16%, Thunder Seed and Northstar varieties showed 8.54% and 8.43% respectively and CanaMaize with the lowest at 7.25%. This can be seen in Graphic 2.



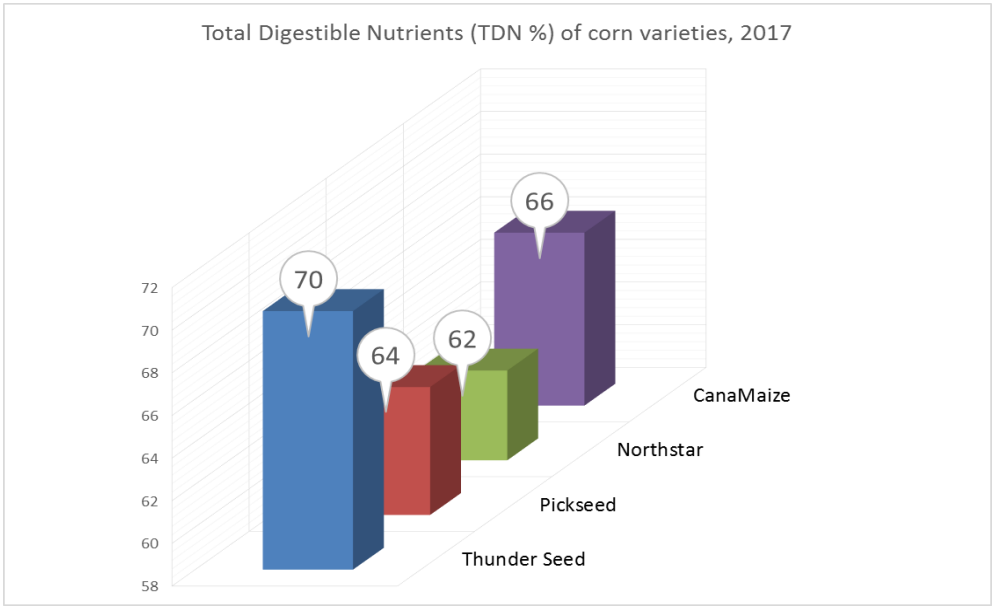
Graphic 2. - Crude protein percentage in corn varieties grown at Wildwood Alberta. Values reported on Dry Matter basis.

Acid Detergent Fibre (ADF). –Thunder Seeds was the variety with the lowest ADF with 30% ADF value followed by Northstar with 30% and Pickseed and CanaMaize showed the highest ADF values with 33% and 34% respectively.



Graphic 3. - Corn varieties graph showing (ADF) comparison Corn Variety Trial 2017, Wildwood AB. Values reported on Dry Matter basis.

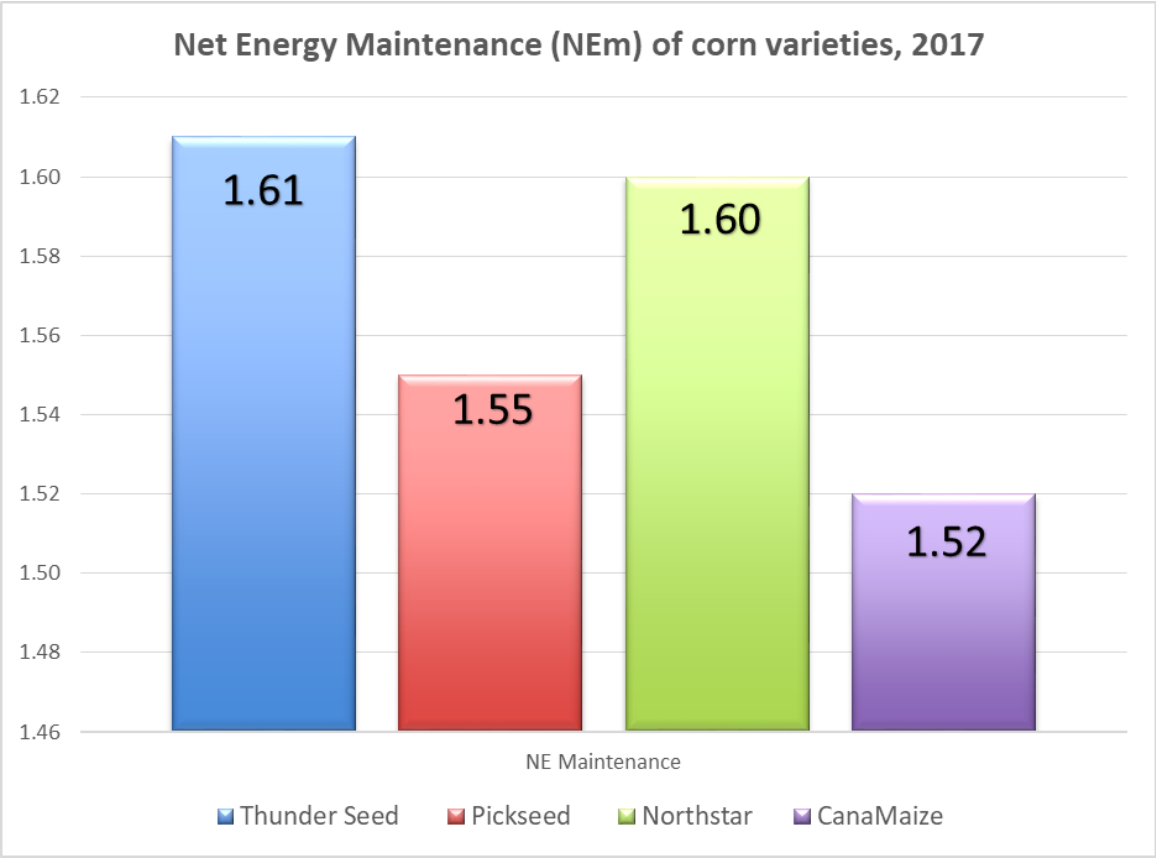
Total Digestible Nutrients (TDN). -Thunder Seeds was the variety that shows the higher TDN with 70% TDN value followed by CanaMaize with 66% and the lowest TDN value were Pickseed and Northstar with 64% and 62% respectively.



Graphic 4. - Corn varieties graph showing (TDN) comparison Corn Variety Trial 2017, Wildwood AB

*Note: TDN value calculated using the Weiss Formula by A&L Labs. Values reported on Dry Matter basis.

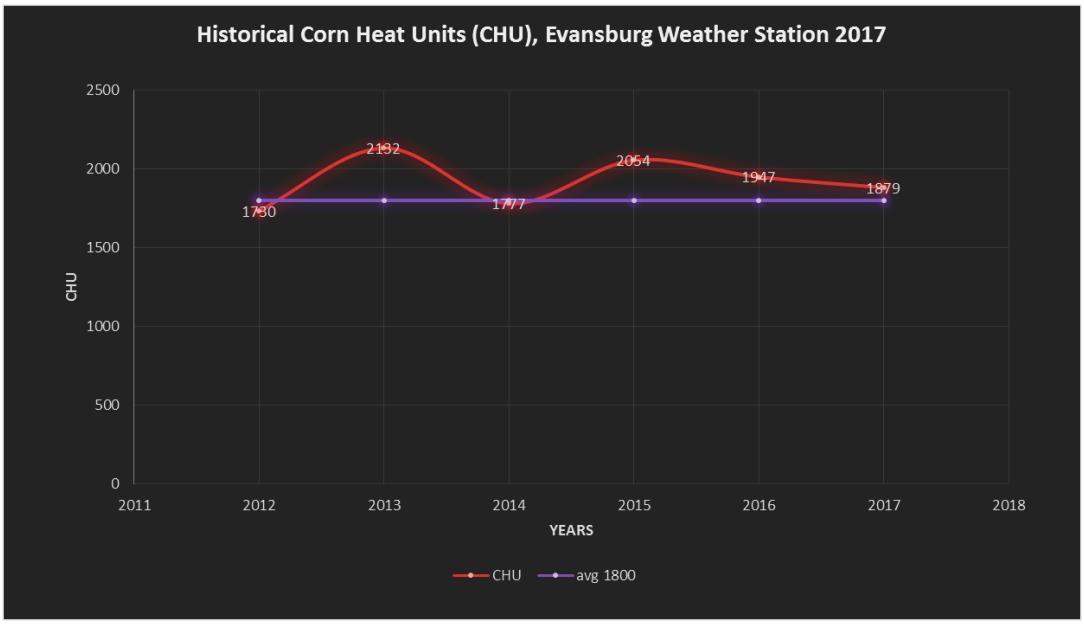
Net Energy Maintenance (NEm). - Thunder Seed variety showed the highest (NEm) with 1.61 NEm Mcal/kg followed by Northstar with 1.60 NE Mcal/kg and Pickseed with 1.55 NEm Mcal/kg for both varieties and the lowest was CanaMaize with 1.52 NEm Mcal/kg value. The NEm values are seen in Graphic 5.



Graphic 5. – Energy (NE Mcal/kg) for all treatments at Wildwood AB. Values reported on Dry Matter basis.

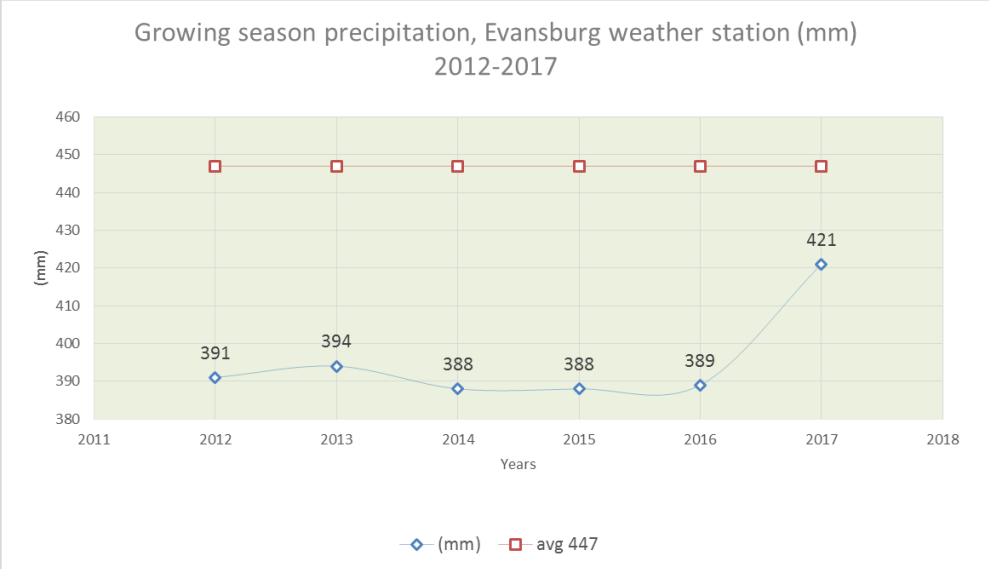
Environmental Records

Corn Heat Units (CHU): CHU is an energy term calculated for each day and accumulated from planting to the harvest date. CHU was calculated from May 1st to October 31st using data from the Evansburg weather station.



Graphic 6. - Historical CHU at the Evansburg weather station from 2012 to 2017

Precipitation: Growing Season precipitation of the gray wooded soil zone from 1971 to 2000 was 447mm (Agroclimatic Atlas of Alberta, 2003)



Graphic 7. – Growing Season precipitation in the Evansburg weather station from 2012 to 2017