



# Western Beef Development Centre

## Using Corn to Extend the Grazing Season by Western Beef Development Centre

As cow/calf producers, we are constantly searching for opportunities to reduce feed costs. Some producers have experimented in recent years with grazing corn as a means of extending the grazing season. Results from these producers and past research work suggested that grazing corn varieties might have potential in regions where this crop has not traditionally been grown. Increased interest in this forage crop led the Western Beef Development Centre Inc. to establish grazing corn for the 1999 fall grazing season.

In the spring of 1999 a long established stand of smooth bromegrass/alfalfa at Termuende Research Farm, near Lanigan, Saskatchewan, was seeded to grazing corn. In late May, prior to seeding, the pasture was sprayed with Roundup Transorb® at 1.5 litres per acre. On June 3, 12.5 acres of 'Amaizing Graze 100' hybrid corn were seeded directly into sod using a John Deere 20 ft no-till press drill. The corn was seeded at 45,000 seeds per acre with 60 pounds of nitrogen added to the seed. An additional 90 pounds of nitrogen was side-banded giving a total of 150 pounds of actual nitrogen per acre. Recommended seeding rates for Amaizing Graze is between 30,000 and 35,000 seeds per acre and fertilizer applications at 200 to 250 lbs actual nitrogen per acre for maximum forage production. No weed control was used on the crop. Forage samples were collected to evaluate forage production (Table 1) and feed quality (Table 2).

For comparison purposes, the results of a swath grazing project have been included. Sixty acres was seeded to Excel barley, a smooth-awned variety, at 2 bushel per acre on June 24/99. No fertilizer was applied at seeding, however the field was spread with livestock manure in late May. Roundup Transorb® (0.5 litres per acre) was applied in mid-June.

**Table 1. Dry matter yield of fall grazed crops.**

Crop	kg/ha	lb/ac	T/ac
Amaizing Graze 100 Corn	7796	6947	3.5
Excel Barley*	8534	7604	3.8

\*Barley samples contained approximately 40% weeds therefore actual forage production estimates are more accurate at 5120 kg/ha or 2.3 T/acre.



**Table 2. Feed quality (100% dry matter) of crops grown for fall grazing.**

Crop	Date	Protein (%)	TDN* (%)	ADF** (%)	Nitrate (%)
Amaizing Graze 100	Sept 1/99	9.9	65.7	30.8	0.07
	Oct 2/99	10.8	56.1	39.8	---
	Nov 20/99	9.1	52.5	43.1	0.41
Barley	Sept 10/99	11.2	74.1	22.9	0.13
	Nov 27/99	9.4	66.3	30.3	0.10

\*TDN = Total digestible nutrients \*\*ADF = Acid detergent fibre

The barley field was swathed September 8, 1999 while in the soft dough stage. One hundred 2 year old Angus cross cows, averaging 1180 lbs., began grazing barley swaths starting November 28, 1999. Electric fencing, supplied by Gallagher™ Power Fence™ systems was used to restrict cows access to swaths and monitor utilization of the available feed. Grazing of swaths continued until January 17, 2000, providing 83 grazing days/acre for the grazing period. The cornfield was divided into 3 acre paddocks using electric fence. 143 crossbred cows (1520 lb average) grazed the field starting November 29, 1999 and ending on December 10, 1999, resulting in 126 grazing days/acre.

Forage quality analysis (Table 2) indicated that barley swaths and grazing corn adequately supplied energy (TDN) and crude protein for dry, pregnant mature cows. Body condition score of cows was maintained or slightly improved when grazing both forage types. Nitrate levels in corn samples were slightly higher than in barley samples, however no problems were experienced with cattle grazing either feed source.

Table 3 provides cost estimates for barley swath and corn grazing at Termuende Research Farm in 1999. It is important to note that these costs will vary and calculations must be based upon values for each individual cow/calf operation.

It is important to note that these results are based upon only one year of production data. 1999 was a cool, wet summer for much of Saskatchewan and not terribly representative of normal growing conditions. Since corn production is very dependent upon available heat units, forage production values were no doubt negatively affected.

Findings from this and other studies indicate corn should be seeded as early as possible. This is of course dependent upon soil moisture and soil temperature. Early seeding will provide the greatest possible days for plant development and maturity. It is important to remember that in this case the corn was seeded directly into sod, which very likely had an impact upon our results. Seeding rates for Amaizing Graze corn are recommended at 30,000 seeds per acre (compared to the seeding rate of 45,000 seeds per acre). Lower seeding rates may increase forage production due to decreased seedling competition. Seed costs (\$52.50) and total input costs (\$125.97) per acre must be adjusted (Table 3) for the correct seeding rate.



**Table 3. Costs\* for barley swath and corn grazing (\$/ac)**

	Tillage	Spraying	Seed	Seeding	Fertilizer	Swathing	Fence	TOTAL*
Barley	19.83	7.90	7.00	11.25	30.00	8.00	3.73	<b>87.71</b>
Corn (adjusted)	---	17.20	75.38 (52.50)	14.00	38.54	---	3.73	<b>148.85</b> <b>(125.97)</b>

\*Costs are calculated according to custom equipment and labour rates

Weed control and fertility are two management aspects that must be considered as well. Weed control is especially critical in the early stages of corn plant development. Small plant populations and slow initial growth allows weeds to take over quickly and compete with the young plants. Producers have used pre-emergent herbicides with positive results. However, it is important to note that the herbicides used are not currently registered for use in Amaizing Graze. It is also important that we pay close attention to fertility management to monitor available soil nutrient levels and meet plant requirements, just as with all other forages.

In the 2000 season we will once again be seeding grazing corn to extend the grazing season at Termuende Research Farm. Several varieties will be seeded including Canamaize, Pioneer and Hyland Seeds varieties, as well as a second year for Amaizing Graze. Stay tuned for upcoming results.

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Strategic Support and Funding has been  
provided by  
Agri-Food Innovation Fund



Canada Saskatchewan