



Western Beef  
Development Centre

# BACKGROUNDING STEERS ON FALL RYE PASTURE

## Introduction

Spring seeded fall rye provides excellent pasture in the year of seeding. Fall rye remains vegetative throughout the summer and into the fall in the year of seeding. The following spring, this same crop may be left to grow and develop for a grain crop or may be used for early pasture. If the crop is to be used solely for pasture in the second year, it needs to be managed to prevent plants from reaching the flag leaf stage or seed set. A disadvantage with growing annuals is the cost associated with having to reseed the crop every year.

## Seeding Fall Rye

Prima fall rye was seeded on 170 acres, May 13, 1998 at Termuende Research Farm, located 5 miles east of Lanigan, SK. The field was previously fertilized using livestock manure at the rate of 60 tonnes/acre prior to seeding. This rate provided 432

lbs N/ac, 156 lbs P/ac, 492 lbs K/ac and 168 lbs S/ac. Rainfall prior to grazing was 11.2 inches with an additional 2.2 inches received during the grazing period.

## Grazing Management

The field was cross fenced into four equally sized paddocks of approximately 42.5 acres each using electric fencing to facilitate rotational grazing. Thin stillage from a local ethanol plant was provided as a water source for the animals.

Grazing commenced July 9<sup>th</sup> with 393 steers averaging 780 lb. On July 20, this group of steers returned to the feedlot for finishing and another group of 342 steers averaging 715 lb. were then placed on the fall rye pastures. Steers were removed from the pasture on August 28<sup>th</sup>.

## Forage Production

Forage dry matter yield was determined after each paddock rotation from 5 randomly sampled 0.25 m<sup>2</sup> quadrats (**Table 1**). Samples were dried, weighed

and submitted for quality analysis. Forage crude protein, digestible energy, acid detergent fibre and total digestible nutrients are reported in **Table 2**.

**Table 1. PRODUCTION OF FALL RYE PASTURE**

<b>DRY MATTER YIELD</b>		
	<b>KG/HA<sup>1</sup></b>	<b>LB/AC<sup>2</sup></b>
Paddock 1	5633	5025
Paddock 2	7460	6654
Paddock 3	6712	5987
Paddock 4	5851	5219
Average Yield	6414	5722

<sup>1</sup>kilogram/hectare, <sup>2</sup>pounds/acre

**Table 2. QUALITY OF FALL RYE PASTURE**

<b>Date</b>	<b>Crude Protein (%)</b>	<b>DE<sub>1</sub> (Mcal/kg)</b>	<b>ADF<sub>2</sub> (%)</b>	<b>TDN<sub>3</sub> (%)</b>
July 10	30.7	3.13	25.1	71.9
July 15	33.1	2.95	29.2	67.5
July 22	22.3	3.00	28.3	68.4
July 28	24.0	2.91	29.7	66.9
Aug 6	32.7	3.31	21.9	75.3
Aug 12	32.8	3.31	21.4	75.8
Aug 18	31.4	3.35	21.2	76.0
Nov 9	27.9	3.44	19.3	78.0

<sup>1</sup>DE=Digestible Energy; <sup>2</sup>ADF=Acid Detergent Fiber; <sup>3</sup>TDN=Total digestible nutrients

## Yield and Quality

Forage production of the fall rye averaged 5722 lbs/ac or 2.9 tons/ac of dry matter yield.

These yields could be attributed to manure application before seeding. The crop also provided 66 animal grazing days per acre.

Crude protein (CP) and energy levels of the fall rye were extremely high (**Table 2**), possibly due to the high rate of livestock manure applied. Previous studies with fall rye at Termuende Research Farm reported CP levels of 27% in early July and 12% in mid-September.

## Animal Performance

Rotational grazing allowed paddocks 1, 2 and 3 to be grazed twice while paddock 4 was only grazed once during the summer. During the grazing period from July 20 to August 28, the 342 steers (averaging 715 lbs) gained an average of 1.9 lbs per day. Other Saskatchewan studies grazing fall rye have indicated gains of over 2.0 pounds a day. The low ADF levels associated with the lush pasture may have resulted in a high rumen turnover of nutrients resulting in reduced animal utilization of the high forage protein levels.

After 50 days rest and regrowth the fall rye was again grazed by 105 weaned calves, providing an additional 25 days of annual pasturing into early November. The potential for spring grazing in 1999 was dependent on regrowth of the pasture. By mid May 1999 spring growth allowed for another 15 days of grazing.

## Economics

How does this production translate into returns for producers? The costs of

production for growing fall rye on the 170 acres are shown in **Table 3**.

Non cash costs for this land includes the value of the land, estimated at \$20.72 per acre, and the cost of fencing (\$3.73/acre) the 170 acres into four paddocks. The cost of a dugout (\$2.30/acre) is used as an estimated value of the thin stillage that was the water source for the animals.

The cash costs from this project include the cost of seeding, disking, harrowing, and seed costs (\$38.36/acre). It also includes the estimated value of the manure applied in the first year.

These inputs generated an estimated 38,596 pounds of beef during the summer and fall grazing period. As a result, the cash costs of this pasture equaled \$0.24 per pound of gain and the total costs equaled \$0.38 per pound of gain.

The revenues from the land come from two sources – the custom grazing that was done for the 735 yearling steers, and the additional weight gain from the 105 weaned calves that were on the pasture in the fall. This revenue totaled approximately \$95.83 per acre. Subtracting expenses from revenues gives the profits per acre for this land. In this project cash costs paid for totaled \$41.06 per acre. When all costs are included, the net profit is \$10.25 per acre.

Table 3. CASH AND NONCASH COSTS OF FALL RYE PASTURE

Expenses	(\$/Acre)
Land	\$20.72
NonCash Costs	\$10.10
Cash Costs	\$50.57
Taxes	\$4.19
Total Cash Costs	\$54.77
Total Costs	\$85.58

## Conclusion

Spring seeded fall rye can provide excellent mid to late season pasture, in the year of establishment and the following year as well. The role for annuals can be a flexible fall or spring pasture to balance off with the existing perennial pasture.

Rotational grazing can be used to obtain maximum productivity of the pasture by keeping the plants vegetative. Forage quality is enhanced as a benefit of

rotational grazing due to the vegetative regrowth, which occurs while the animals are removed from the paddock. With multiple inputs of seed, fencing and livestock manure it is important to maximize the full potential of grazing fall rye pasture.

Intensive grazing of fall rye pastures can also provide adequate returns for producers. The key to successfully maximize profits is to manage costs effectively.