



SWATH GRAZING BARLEY & BARLEY/PEA MIXTURES

Introduction

Much interest has been expressed in the different crops that can be swath grazed to extend the grazing season in Saskatchewan. Forty-five acres each of barley and a barley/pea mixture were seeded June 23/98 at the WBDC Termuende Research Farm, 5 miles east of Lanigan, SK. The field had been continuously cropped with annuals for the past twelve years.

Barley & Barley/Pea Mixture

Excel, a smooth awned variety of barley was seeded alone and as a mixture with Performance 40-10 silage peas, which were provided by Philips Seeds Ltd. Barley was seeded alone at 2 bushel/acre and the mixture was 1

bushel each of barley and peas/acre. No fertilizer was applied at seeding; however livestock manure had been spread annually on these two fields. Soil test results indicated adequate levels of nitrogen and phosphorous.

Swath Grazing

Crops were swathed September 10/98 when the barley was in soft dough stage. Eighty crossbred cows (Hereford/Angus/Charolais) averaging 1350 lb. were allocated to each field starting November 23/98. Both fields were swathed so windrows lay in a north/south direction. Electric fencing, supplied by Gallagher[®] Power Fence[®] systems was used to restrict access to swaths, and monitor utilization of the available feed.

Table 1. Yield of Swath Graze Crops

| Crop | kg/ha ¹ | lbs/ac |
|-------------|--------------------|--------|
| Barley | 4411 | 3934 |
| Barley/Peas | 4368 | 3696 |

¹dry matter basis

Table 2. Feed Quality of Swath Graze Crops (1998)

| Crop | Sample Date | Protein (%) | TDN ₁ (%) | ADF ₂ (%) | Nitrate (%) |
|--------------------|-------------|-------------|----------------------|----------------------|-------------|
| Barley | Sept 10 | 10.6 | 74.7 | 22.4 | 0.16 |
| | Oct 5 | 11.2 | 73.6 | 23.5 | 0.14 |
| | Nov 6 | 12.3 | 76.8 | 20.4 | 0.16 |
| | Dec 18 | 9.0 | 50.1 | 27.9 | 0.07 |
| Barley/Peas | Sept 10 | 11.1 | 62.5 | 33.8 | 0.14 |
| | Oct 5 | 14.2 | 73.8 | 23.3 | NIL |
| | Nov 6 | 15.3 | 58.0 | 38.0 | 0.08 |
| | Dec 18 | 13.8 | 61.5 | 34.8 | NIL |

₁TDN=Total digestible nutrients ₂ADF=Acid detergent fibre

Yield & Quality

Both crops produced equivalent dry matter yield (**Table 1**). The barley yielded 1.97 tons/acre and barley/pea mix 1.95 tons/acre. Feed quality was tested each month during the trial. In both fields protein quality increased from September to November in the samples then declined in December. The barley/pea mix protein was slightly higher than the barley protein. Barley TDN averaged 75% declining to 50% in December, whereas the barley/pea TDN was highest at 74% in October with a low of 58% in November. Nitrate levels were low in both crops ranging from 0.07 to 0.16%.

Table 3. Performance of Cows Grazing Barley and Barley/Pea Mixture

| | Grazing Days | AU ₁ /Acre | ADG ₂ (lbs) | Body Condition Score ₃ |
|--------------------|--------------|-----------------------|------------------------|-----------------------------------|
| Barley | 38 | 3.0 | 0.25 | 3.0 |
| Barley/Peas | 30 | 2.3 | 0.77 | 3.0 |

₁AU=Animal Unit; ₂ADG=average daily gain; ₃1=very thin; 5=very fat

Table 4. Costs for Barley and Barley/Peas Swath Grazing (\$/acre)

| | Disc/Harrow | Seed | Seeding | Swathing | Fence | TOTAL ₁ |
|--------------------|-------------|-------|---------|----------|-------|--------------------|
| Barley | 14.76 | 7.00 | 10.50 | 8.00 | 2.50 | 42.76 |
| Barley/Peas | 14.76 | 10.50 | 10.50 | 8.00 | 2.50 | 46.26 |

₁Costs are calculated according to custom equipment and labor rates

Animal Performance

Average daily gain was determined and all animals were body condition scored before and at the end of this study. On average cows entering the trial and at the end of the study maintained a body condition score of 3.0. The group grazing the barley/pea mixture gained slightly more than the group grazing the barley swaths (**Table 3**). The barley swaths provided eight more grazing days.

Project Costs

Total costs for the swath grazing study are presented in Table 4. The 80 cows that were on the barley/pea field were moved onto the barley field after 30 days as the barley/pea swaths were

completely utilized. As a result the costs per cow per day are significantly higher for the barley/pea paddock. As a comparison, the costs of baling the swath are also included. These baling costs are estimated assuming a cow consumes 2.5% of its body weight per day, baling results in a 10% waste of product, and the costs of baling are \$10.17 per bale.

If we assume that we can obtain 90% of the dry matter of the barley/pea swath by baling it, the costs per cow per day of baling would be comparable to swath grazing. The key to economic viability of swath grazing is to maximize utilization of what is produced. Table 6 gives some examples of how the cow utilization of swath grazing barley can affect its economics.

Table 5. Swath Grazing Costs of Production

| | BARLEY | BARLEY/PEA MIX |
|-------------------------------|---------------------|-----------------------|
| | Swath Grazed | Swath Grazed |
| Total Cost | \$1,924.20 | \$2,081.70 |
| Total Cows¹ | 80 | 80 |
| Total Cow Days | 3680 | 2400 |
| Cost/Cow | \$24.05 | \$26.02 |
| Cost/Cow/Day | \$0.523 | \$0.867 |
| | If Baled | If Baled |
| Total Cost | \$3,406.01 | \$3,549.19 |
| Total Cows | 80 | 80 |
| Days Fed | 55.46 | 54.43 |
| Cost/Cow | \$42.58 | \$44.36 |
| Cost/Cow/Day | \$0.765 | \$0.815 |

¹80 cows were on pasture for 30 days, 160 cows were on pasture for 160 days.

Table 6. Costs of Baling vs Swath Grazing at Various Levels of Utilization

| BALING | COST |
|-----------------------------|----------------|
| 90% Utilization | |
| Cost per cow per day | \$0.765 |
| | |
| SWATH GRAZING | |
| 90% Utilization | |
| Cost per cow per day | \$0.432 |
| | |
| 75% Utilization | |
| Cost per cow per day | \$0.518 |
| | |
| 65% Utilization | |
| Cost per cow per day | \$0.598 |
| | |
| 50% Utilization | |
| Cost per cow per day | \$0.778 |

Conclusion

In this study swath grazing barley/peas and barley extended the grazing season 30 and 38 days, respectively. Forage quality remained adequate and cows gained slightly throughout the study not decreasing in body condition score. Although not evaluated in this study, animal utilization of the crop is critical to justifying the costs associated with swath grazing. If the land base could be put to a more cost-effective method of producing winter feedstuffs other alternatives should be considered. In summary swath grazing has the potential to provide a low-cost means of extending the grazing season. However the key is to maximize utilization of the crop being produced.