

## GRAZING CEREAL AND CEREAL-PULSE INTERCROPS IN SOUTHWESTERN NORTH DAKOTA

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### Research Summary

Report summarizes the first year of a two-year grazing study. Preliminary analysis suggests that pastures of annual forage produced .92 animal grazing unit months per acre, while allowing bred heifers to gain 2.0 lb/d from mid June through mid August. Additionally, oat and pea combinations appear to produce more grazing days compared to barley and lentil combinations, while the converse is true when weight gains are compared. Experiment will be repeated in 1999. Data from both years will be subsequently combined and a final report generated.

### Introduction

Interest in annual forage production for livestock feed is increasing in the Northern Great Plains. Producers are contemplating annual forages as both a harvested and unharvested feed resource. Preliminary studies suggest that grazing annual forages may be a viable alternative for livestock producers in southwestern North Dakota (Manske and Nelson, 1995; Poland et al., 1997). A study was initiated to determine the production potential of oat, barley, pea and lentil, as well as, combinations of oat/pea and barley/lentil for beef cattle grazing in southwestern North Dakota. Portions of these data have been included in a 5-yr summary of annual forage grazing at the Dickinson Research Extension Center (Poland et al., 1998).

## Materials and Methods

In 1998, 12 paddocks (2.5 ac/paddock) were blocked into two, 6-paddock groups (2 paddocks/forage type). One group was seeded to pea, oat or oat-pea intercrop, while the other group was seeded to lentil, barley or barley-lentil intercrop. Paddocks were grazed by bred beef heifers (.75 AU/heifer) at a constant stocking rate of .9 AU/ac. Paddocks seeded ([Table 1](#)) to oat, pea and oat/pea combinations were grazed first (mid June to mid July), followed by paddocks seeded to the barley, lentil and barley/lentil combinations (mid July to mid August). Grazing potential of each forage type was evaluated as in earlier experiments. This seeding/grazing sequence will be repeated in a second set of paddocks in 1999.

## Results and Discussion

Pastures of annual forage produced an average of .92 animal grazing unit months per acre in 1998 ([Table 1](#)). Bred heifer performance (1 year; 1998) is presented in [Table 2](#). Heifers averaged 2.0 lb/d from mid June to mid August. Typical summer grazing performance for bred heifers at DREC is 1.0 lb/d (Ringwall et al., 1998). Heifer live weight gain per acre (67.2 lb/ac) was comparable to average suckling calf performance (66.0 lb/ac) reported in previous years (Poland et al., 1998).

Based upon data from one year, there appeared to be little difference in animal performance among oat and pea pastures. The barley and barley/lentil intercrop pastures supported greater animal performance than the lentil pasture. This difference was primarily due to a poor plant stand, and subsequently lower herbage production (data not shown), in the lentil pastures. Preliminary comparisons between oat/pea and barley/lentil combinations would suggest that oat/pea produce more grazing days, while barley/lentil produced higher animal performance. This observation is consistent with other grazing data collected in 1995 and 1996 with beef cows and calves grazing oat/pea intercrop in June and barley in July (Poland et al., 1997).

## Literature Cited

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**Table 1. Seeding and grazing dates and stocking rates for beef cattle grazing annual forages at Dickinson Research Extension Center.**

Year/Forage Type	Seeding date	Grazing dates	Days	AUM <sup>a</sup> /acre
<b>1998</b>		<b>15June - 15August</b>	<b>61</b>	<b>.92</b>
Oat and Pea	27April	15June - 20July	35	1.05
Barley and Lentil	04June	22July - 17August	26	.78

<sup>a</sup> Animal unit month or the equivalent of one cow-calf pair grazing for one month. Bred heifer were considered to be .75 animal unit.

<sup>b</sup> Stocking rates were .9 animal units per acre in 1998.

<sup>c</sup> Grazing in pastures of sole lentil was not initiated until 05 August giving only 12 days of grazing and .36 AUM/acre.

**Table 2. Cattle performance<sup>a</sup> while grazing annual forages at Dickinson Research Extension Center.**

Year/Forage Type	Average daily gain lb/d	Gain per acre lb/ac
<b>Bred heifer performance</b>		
<b>1998</b>	<b>2.02<sup>b</sup></b>	<b>67.2<sup>c</sup></b>
Oat	1.21	51.3
Pea	1.68	71.4
OP <sup>c</sup> intercrop	1.45	61.4
Barley	3.02	95.3
Lentil	1.69	24.6
BL <sup>c</sup> intercrop	3.14	99.0
SE <sup>d</sup>	.32	10.0
<p><sup>a</sup> Stocking rates were .9 animal units per acre.</p> <p><sup>b</sup> Standard error not reported.</p> <p><sup>c</sup> OP and BL refer to oat-pea and barley-lentil intercrops, respectively.</p> <p><sup>d</sup> Standard error of the mean is average for all forage types within year.</p>		

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