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Performance and Economics of Two Calf Wintering Systems

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Summary

Two wintering systems, cornstalk grazing plus 5 lb/head/day of wet corn gluten feed and cornstalk grazing followed by dry lot where steers were fed hay and supplemented 5lb/head/day of wet corn gluten feed were evaluated. There were no differences in daily gain, or final body weight for either system. While there were no statistical differences in cost of gain, breakeven, or profitability, economics numerically favored steers grazing cornstalks alone.

Introduction

With the increase in corn price, there is potential for more corn acres leading to more cornstalk residue available for grazing cattle. Traditional wintering programs have included some cornstalk grazing and a period of dry lotting with hay and other feed resources. However, harvested forage prices have increased, increasing the cost of dry-lotting programs for feeder cattle. These increases in corn price and hay prices have caused producers to look for alternative ways to winter feeder cattle.

Therefore, the objective of this study was to determine the differences in steer performance and economics of season long cornstalk grazing and partial season cornstalk grazing with a dry lotting period.

Procedure

Experiments

The wintering system comparison used data from the University of Nebraska from 2000 to 2007. The data used for this comparison are from the long-yearling system projects that were conducted each year. Calves were received in the fall of each year and

placed on cornstalks after processing and a 30 to 45 day receiving period in which cattle were allowed to graze brome grass pasture.

Partial season cornstalk grazing

Four years of data from 2000 to 2003 from 515 steers (541 ± 51 lb) were used to determine animal performance and economics of a wintering growing system using cornstalks and dry lotting with grass hay. Steers grazed cornstalk residue from the first of December until the end of February (average = 80 days). In February, steers were placed in a dry lot and fed grass hay ad-libitum until the middle of April (average = 61 days). During each phase of the wintering period, steers were supplemented 5 lb/head/day of wet corn gluten feed (WCGF).

Full Season cornstalk grazing

Four years of data from 2004 to 2007 from 845 steers (535 ± 59 lb) were used to determine animal performance and economics of a wintering growing system using cornstalk grazing from the first of December until the middle of April (average = 152 days). Steers were supplemented 5 lb/head/day WCGF during cornstalk grazing.

Effect of Grazing on Yield in a Corn-Soybean Rotation

There is a concern in production agriculture with the effect cattle grazing cornstalks can have on subsequent year crop production. A 9-year study was conducted to determine the impact of grazing cornstalks on subsequent year crop yield in a corn-soybean rotation. Steers were allowed to graze cornstalk residue in the fall and spring of each year with the grazing treatment in the spring being a 2.5 times greater than the recommended stocking rate of 0.8 acres/head for 60 days. Grazed and ungrazed areas were maintained on the respective treatments for the 9-year. Crop yields were collected using a grain cart with load cells.

Economics

Initial animal cost was determined using the USDA December 2006 feeder steer price of \$117.35/cwt for a 550 lb steer. Health and processing were charged at \$8.33/head for the winter period. The interest rate used was determined using the 7-year average prime interest rate. The interest rate used is equal to prime plus 1% for the months that cattle were owned (7.6%). Simple interest was charged on initial animal cost and health for the entire period of ownership.

The cost of corn residue was charged at a rate of \$0.32/head/day. This cost includes \$0.12/head for the rent of cornstalk residue and \$0.20/head/day charged as yardage while steers grazed cornstalk residue. This yardage cost includes the cost of fencing stalk fields and cost of labor to deliver WCGF and water to the cattle. Steers were supplemented with 5 lb/head/day of WCGF for the winter period at a cost of \$123.09/ton (DM basis) which is 95% the average price of corn from December 2006 to April 2007. Interest was charged on the WCGF for half of the winter period and the remainder of ownership.

For steers in dry lot, hay price was calculated using the monthly average price of grass hay for 2007 during the months that cattle were dry lotted. Additionally, steers were assessed \$0.30/head/day yardage for the dry lot period. Hay cost per steer was determined using the animal unit equivalent of the steers used in this study. Animal unit equivalents were determined by averaging the initial weight and weight of cattle when they were removed from dry lot and dividing by 1,000 lb.

Final animal value was determined using the 2007 USDA April feeder steer price of \$99.64/cwt. Profitability of each system was determined by adding initial animal cost and all cost of the wintering period and subtracting from the final value of each animal.

Table 1. Effect of cornstalk grazing on subsequent year crop yield in a corn-soybean rotation.

Item	Grazed	Ungrazed	SEM
Soybean Yield, bu/ac ^a	60.6	59.2	0.9
Corn Yield, bu/ac ^b	210.7	211.1	2.3

^aSoybean yield during subsequent growing season.^bCorn yield during second growing season following grazing.**Table 2. Effect of wintering system on animal performance.**

Item	Cornstalks + dry lot	Cornstalks	SEM
Initial BW, lb	535	541	13
Final BW, lb	757	748	16
ADG, lb/day	1.55	1.41	0.19
Days	140 ^b	152 ^a	5

^{a,b}Means within a row with different superscripts differ ($P < 0.05$).**Table 3. Economic analysis of wintering system.**

Item	Cornstalks + dry lot	Cornstalks	SEM
Initial Steer Cost, \$/head	634.32	627.52	15.19
Final Steer Value, \$/head	754.27	745.08	15.78
Yardage ^c , \$/head	43.71 ^b	30.40 ^a	0.69
Feed Cost ^c , \$/head	95.05 ^b	65.01 ^a	3.83
Breakeven, \$/cwt	102.91	98.64	0.04
Cost of Gain, \$/cwt	68.40	52.71	0.10
P/L ^d , \$/head	-23.76	7.90	30.36

^{a,b}Means within a row with different superscripts differ ($P < 0.01$).^c For cornstalk, grazing yardage was charged at a rate of \$0.20/head/day and rent (feed cost) was \$0.12/head/day; dry lot yardage was charged at a rate of \$0.30/head/day.^d p/l is profit or loss.

Statistical Analysis

Effect of Grazing on Yield in a Corn-Soybean Rotation

Data were analyzed using the Mixed procedure of SAS with grazing treatment as a fixed effect. Year was used as a random effect. The experimental unit was plot within year with a total of 385 replications per crop treatment.

Wintering Program

Data were analyzed using the Mixed procedure of SAS with wintering program as a fixed effect. Year and year*treatment interaction were used as random effects. The experimental unit was replication within year (two replications/year). There were a total of eight replications per treatment.

Results

Effect of Grazing on Yield in a Corn-Soybean Rotation

Corn ($P = 0.72$) yields were not different for grazed and ungrazed treatments (Table 1). However, soybean ($P = 0.12$) yields were numerically higher for grazed plots compared with ungrazed plots. Therefore, grazing cornstalks with cattle has no effect on subsequent year crop yields in a corn-soybean rotation.

Animal Performance

Initial BW ($P = 0.69$) and BW at the end of the wintering period ($P = 0.61$) were not different (Table 2.) However, steers that grazed cornstalks for the entire season were in their wintering program 12 days longer

compared to cattle that grazed cornstalks for a partial season (140 vs. 152 days). Daily gain for steers was not different across treatment ($P = 0.19$) but was numerically lower for steers grazing the entire season.

Economics

Initial steer cost ($P = 0.67$) and final steer value ($P = 0.58$) were not different across treatments (Table 3). Breakevens for steers in the wintering program including cornstalk grazing and dry lotting were \$4.27/cwt numerically higher compared to steers that grazed cornstalks for the entire wintering period. Additionally, cost of gain tended to be lower for steers that grazed cornstalks only ($P = 0.15$), because of the added cost of the grass hay used in dry lot and extra yardage cost. Profitability was not statistically different across treatment ($P = 0.33$) even though cattle grazing season long cornstalks had \$31.66/head higher returns than cattle that grazed partial season cornstalks.

The lack of statistical difference in profitability is due to rather large year to year variation caused by weather and residue quality and availability. The year to year variation is perhaps most evident in the range of ADG on corn stalks with a minimum and maximum ADG of 1.10 and 1.82 lbs/head, respectively. Calves performed similarly in the two systems. Additionally, feed and yardage costs were less for grazing cattle. Therefore, we concluded that savings can be made by season-long grazing of corn residue compared to partial season. We have also demonstrated that season long grazing was not detrimental to subsequent crop production.

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