

# Incorporating Condensed Corn Distillers Solubles into an Integrated Pasture and Drylot Finishing System for Feedlot Steers

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## Introduction

The need to improve production efficiency continues to mount as livestock producers search for methods to maintain profitable livestock enterprises. Feed costs are a major component of production costs. Therefore, seeking feeds that are less costly and still meet nutritional requirements is paramount. The fermentation of corn grain produces distillers grains and a liquid fraction called thin stillage. These byproducts derived from the manufacturing process have been shown to be affordable and to have feeding potential for growing-finishing cattle. The liquid fraction is often condensed to a syrup, which can range from 30–50% dry matter (DM), 10–20% fat, and 20–30% protein. The syrup is commonly referred to as condensed corn distillers solubles (CCDS). Because of its nutrient content and supposed palatability, there is interest in mixing it with low-quality roughages to serve as a feed for growing-finishing cattle. Therefore, the object of this study is to evaluate the use of CCDS mixed with ground corn stalks in a pasture and drylot growing-finishing program.

## Experimental Procedure

One hundred and twelve Angus and Angus crossbred steer calves (initial weight 592 lb) were placed either in drylot or on bromegrass pasture in May. The calves were assigned to treatments by weight and color pattern. Four treatments (2 drylots, 2 pastures) were developed with four replications, seven head in one replication per treatment. Two drylot treatments consisted of feeding an 82%

concentrated diet consisting of corn grain and chopped corn stover mixed with CCDS or chopped alfalfa hay. Two pasture treatments involved placing calves on rotational bromegrass pastures from May to September, with one treatment being supplemented with chopped cornstalks and CCDS. Following pasture, the cattle were placed in drylot. The supplemented-pasture cattle continued on the corn stover and CCDS diet and the unsupplemented-pasture cattle received the alfalfa hay diet or the same diets that were being fed to the cattle initially placed in drylot. The steers in the drylot treatments were fed 223 and 253 days, and steers in pasture treatments were fed 281 days. Daily feed intake in drylot was recorded and cattle were weighed at 28-day intervals to obtain average daily gains, feed consumption, and feed conversion among the treatments. When cattle within a treatment averaged about 1,290 lb, they were sold to a commercial beef packing plant. Weights of hot carcasses were taken after slaughter and yield and quality grades of the carcasses were obtained after postmortem chill.

## Results and Discussion

Feedlot performance of the steers is summarized in Table 1. Cattle on pasture showed higher DM intakes because they were heavier when they entered the drylot feeding period. Average daily gains for the duration of the test favored cattle spending more time in drylot and receiving more grain throughout the feeding period. Accordingly, feed conversion during the drylot feeding period favored the cattle spending less time on pasture and more time in drylot. When pastured cattle were removed from pasture on September 2, cattle on pasture-supplied CCDS had gained over .5 lb/day more than nonsupplemented cattle. Though this advantage

did not carry over into drylot feeding, it may be a function of daily energy intake while on pasture.

Average carcass weights were similar across treatments. Carcass measurements for loin eye area, backfat thickness, and kidney, pelvic, and heart fat were also consistent among treatments except for the drylot and alfalfa hay treatment (Table 2). The drylot and alfalfa hay treatment

had higher kidney, pelvic, and heart fat percentages. However there were similar treatment responses for yield and quality grades.

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**Table 1. Feeding performance of cattle.**

	Pasture	Pasture + corn stalks and CCDS	Drylot + alfalfa hay	Drylot + corn stalks with CCDS
Initial wt, lb	591.25	592.68	593.04	592.32
Final wt, lb	1294.46	1286.96	1295.00	1301.61
Days on test	281	281	223	253
Avg. daily gain, lb	2.50	2.47	3.15	2.80
Daily DM intake in drylot, lb	27.26	26.01	23.44	21.70
Feed conversion in drylot, lb feed/lb gain	8.45	9.02	7.45	7.74

**Table 2. Carcass composition and cattle grades.**

	Pasture	Pasture + corn stalks and CCDS	Drylot + alfalfa hay	Drylot + corn stalks with CCDS
Number of carcasses	27	28	28	28
Hot carcass wt, lb	800.18	775.31	790.97	786.39
Loineye area, in. <sup>2</sup>	13.10	12.48	14.24	13.33
Backfat, in.	.50	.43	.57	.41
Kidney, pelvic, and heart fat, %	2.16	2.24	3.14	1.98
Yield grade	2.54	2.48	2.43	2.47
Quality grade <sup>a</sup>	7.79	7.36	8.36	7.75

<sup>a</sup> Choice = 7; Choice = 8