

An Evaluation of Wheat and Corn-Based Dry Distiller Grains with Solubles in Barley-Based Finishing Diets of Feedlot Steers in Western Canada

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Introduction

With the increase in fuel ethanol production from wheat and corn in Canada and the United States and the resulting abundance of distiller grains, this study evaluated the use of wheat-based dry distiller grains with solubles (WDDGS) or corn-based dry distiller grains with solubles (CDDGS) at 22.5% diet dry matter in barley-based diets compared to a standard barley-based finishing diet (CTRL) in feedlot steers in western Canada. Outcome variables describing feedlot performance, carcass characteristics, and animal health were used to assess the relative economic impact of the three feeding strategies within commercial production settings.

Materials and Methods

The candidate animals utilized in the study were fall-placed, mixed source, ranch direct or auction market-derived male calves. Animals were allocated to the study from September 25, 2009 through November 25, 2009 at a feedlot near Strathmore, Alberta. The average individual animal initial weight of pens allocated to the study was between 618 lb to 689 lb. Cattle were processed and randomly allocated on an individual animal basis upon arrival at the feedlot to one of three experimental groups. The WDDGS group received finishing diets which included 22.5% WDDGS diet dry matter (DM) (n=2,272), the CDDGS group received finishing diets which included 22.5% CDDGS diet DM (n=2,273), and the CTRL group received finishing diets which did not contain distiller grains (n=2,270). The experimental units in the study were pens containing animals from only one experimental group. Each replicate (one pen from each experimental group) was filled consecutively until there were 10 replicates (30 pens). Monthly feed

bunk samples were collected throughout the study period. The last slaughter shipment was completed at the end of August, 2010.

Results

WDDGS vs CTRL

On a carcass-adjusted basis, cattle fed WDDGS had 3.0% decreased ($P=0.030$) average daily gain (ADG), and 4.9% poorer ($P<0.001$) dry matter to gain ratio (DM:G) relative to cattle fed the control diet. In addition, the WDDGS cattle had a lower proportion of Canada AAA grade carcasses compared to CTRL cattle ($P=0.022$). There were no differences in other quality grade parameters, Canada yield grades (YG), morbidity or mortality between the two groups ($P=0.050$).

CDDGS vs CTRL

On a carcass-adjusted basis, cattle fed CDDGS had 2.3% improved ADG ($P=0.024$) relative to cattle fed the control diet. The CDDGS group had a lower proportion of Canada YG 1 and higher proportions of Canada YG 2 and 3 carcasses compared to the CTRL group ($P=0.003$). There were no differences in DM:G, quality grade, morbidity, or mortality parameters between the two groups ($P=0.050$).

Significance

The economic analysis compared the cost-effectiveness of the three feeding programs in a large pen commercial feedlot production setting. The cost-effectiveness of using dried distiller grains with solubles depends on commodity pricing relative to that of barley, with risks of feedlot performance and carcass grading disadvantages.