

Performance and Carcass Traits of Yearling Steers Fed Barley-based Finishing Diets with Increasing Levels of Dried Distillers Grains

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One hundred-thirty heavy yearling steers (980 lbs. \pm 14.5 lbs.) were used to determine the effects of increasing levels of dry distillers grains in barley-based finishing diets on feedlot performance, carcass traits and carcass value. Steers were blocked by weight into four groups, and randomized within block to treatment diets. Diets were based on dry rolled barley with 0, 12, 24, and 36% dry distillers grains. Dry matter intake increased linearly ($P < 0.01$) with level of distillers grains during the first two months on feed and overall tended to show a linear response ($P = 0.09$). Gains improved with distillers grains in the diet ($P < 0.01$) and a linear increase was observed with increasing level of distillers grains ($P < 0.01$). At the end of the 90 day study, steers in the 24% treatment were heavier ($P < 0.01$) than the 0 and 12% with 36% intermediate. No differences in feed efficiency were observed. Carcass traits reflected the increased rate of gain with higher dressing percent ($P < 0.01$), fat content ($P < 0.01$), marbling scores ($P < 0.01$), internal fat (KPH, $P < 0.01$), and a higher percentage of Choice carcasses. The use of distillers grains with barley increased carcass value above the control by \$30.83 for 12% distillers grains, \$83.34 for 24% distillers grains, and \$70.98 for 36% distillers grains due primarily to higher percentage USDA Choice carcasses but also to greater carcass weight. From this data, it appears that barely fed with dry distillers grains at 24% of the diet provides for excellent growth of yearling cattle, improved carcass quality traits and greater net return. The relative cost of DDGS or WDGS needs to be considered in formulating diets. Logistics considerations for distance from ethanol plant(s), cost of trucking, rate of use, and storage area are also important. Wet distillers grains should provide as good or possibly greater performance. Animal performance and improved carcass value observed in this study suggest that distillers grains and feed barley can be the foundation of a profitable feedlot industry in the Northern Plains.

Table 1. Barley based finishing rations with increasing dried distillers grains

| Ingredient | Ration Treatment | | | |
|-------------------------------|---------------------|----------|----------|----------|
| | 0% DDGS | 12% DDGS | 24% DDGS | 36% DDGS |
| | Dry matter basis, % | | | |
| Barley, dry-rolled | 76.96 | 68.40 | 52.28 | 44.40 |
| Dry dist grains w/solubles | 0.00 | 12.07 | 24.04 | 36.06 |
| Corn Silage | 16.43 | 16.71 | 16.86 | 16.77 |
| Canola meal | 3.98 | 0.00 | 0.00 | 0.00 |
| Ground limestone | 0.78 | 0.94 | 0.95 | 0.94 |
| Rumensin, Vit, Min supplement | 1.95 | 1.88 | 1.90 | 1.89 |
| Nutrients | | | | |
| Crude protein, % | 13.50 | 13.90 | 15.40 | 16.90 |
| Metabolizable protein ratio | 92 | 106 | 123 | 140 |
| Degradable protein ratio | 144 | 135 | 133 | 131 |
| NEg, Mcal/lb | 61 | 61 | 62 | 62 |

Table 2. Effects of barley-based finishing diets with increasing levels of distillers grain on finishing steer weight gain, feed intake, and feed efficiency.

| | 0% DDGS | 12% DDGS | 24% DDGS | 36% DDGS | Std Err | P Value | Contrast | |
|--------------------------------|---------------------|---------------------|---------------------|----------------------|---------|---------|------------------------------------|--------|
| | | | | | | | Distillers vs. No distillers | Linear |
| No. Head | 32 | 33 | 32 | 33 | | | | |
| No Pens | 4 | 4 | 4 | 4 | | | | |
| Avg. weight, lbs. | 1297.4 ^a | 1293.0 ^a | 1358.4 ^b | 1311.1 ^{ab} | 15.50 | 0.02 | 0.20 | 0.13 |
| Dry Matter Intake, lbs./hd/day | 24.75 | 24.96 | 27.92 | 26.24 | 0.88 | 0.09 | 0.14 | 0.09 |
| Avg Daily Gain, lbs. | 3.683 ^a | 3.722 ^a | 4.34 ^b | 4.04 ^{ab} | 0.12 | 0.01 | 0.01 | 0.01 |
| Gain per feed | 0.154 | 0.154 | 0.161 | 0.159 | 0.006 | 0.81 | 0.57 | 0.44 |

a,b, Values with different superscripts are significantly different P<.05.