



Combinations Of Corn Gluten Feed And Distillers Grains*

With the expansion of ethanol plants in the Midwest, feedlots may utilize both wet distillers grains with solubles (WDGS) and wet corn gluten feed (WCGF) in combination. In addition to their commercial availability, another reason for feeding a combination of WDGS and WCGF is their complimentary nutritional profiles. Synergistic effects in feeding a combination of these byproducts may be observed because of differences in fat, effective fiber, and protein components.

Loza et al. (2004; Table 1) fed yearling steers a 50:50 blend of WDGS and WCGF (DM basis) at inclusion levels ranging from 0 to 75% of diet DM. This experiment also evaluated different forage levels. A level of 7.5% alfalfa hay was used across all treatments, and a lower alfalfa level was included in each of the byproduct diets, decreasing the forage inclusion as the rate of inclusion of byproducts increased (i.e. 25% of diet DM had 5% alfalfa in the lower forage treatment, 75% inclusion had 0% alfalfa in the lower forage treatment). Results indicated that there were no

differences in cattle performance between forage levels for each byproduct blend level. The lack of differences in performance with decreasing forage would indicate that the byproduct inclusion was enough to prevent the negative consequences of subacute acidosis.

The analysis of the pooled data from each byproduct level indicated that the performance of the steers fed the maximum byproduct level (75%), regardless of the forage level, was not different than a typical corn-based diet (0% byproduct blend). However, the diets including 25 and 50% of the WDGS and WCGF blend resulted in significantly better animal performance than the control. In conclusion, it is feasible to decrease the forage levels with high inclusion of byproducts. Producers may also feed the blended products at levels as high as 75% of diet DM without negatively affecting performance. However, optimum inclusion rates of a byproduct would be between 25 and 50% of diet DM.

TABLE 1. Effect of different inclusion levels of a 50:50 blend of WDGS and WCGF and forage levels fed to yearling steers.

Blend:	0% DM		25% DM		50% DM		75% DM	
	7.5	5	7.5	2.5	7.5	0	7.5	
DMI, lb/day	24.3 ^a	26.3 ^{bc}	26.5 ^b	25.4 ^c	26.1 ^{bc}	23.0 ^d	23.6 ^{ad}	
ADG, lb/day	3.99 ^a	4.70 ^b	4.57 ^b	4.55 ^b	4.56 ^b	3.86 ^a	3.93 ^a	
F:G	6.10 ^a	5.60 ^c	5.80 ^{bc}	5.59 ^c	5.73 ^{bc}	5.97 ^{ab}	6.01 ^{ab}	

^{a,b,c,d}Means with different superscripts differ (P<0.05).

Loza, P.L., K.J. Vander Pol, G.E. Erickson, R.A. Stock, and T.J. Klopfenstein. 2004. Corn Milling Byproducts and Alfalfa Levels in Cattle Finishing Diets. *J. Anim. Sci.* 82(Suppl. 1):158.

*Adapted from: Ethanol Coproducts in Northern High Plains Feedlot Cattle. G.E. Erickson and T.J. Klopfenstein. University of Nebraska, Lincoln. Presented at: 2006 Plains Nutrition Council Spring Conference. San Antonio, TX.

(continued)

Feeding a combination of WDGS and WCGF also offers producers greater flexibility. A major challenge facing some ethanol plants is not having feed for cattle feeders on a consistent basis. Cattle do not respond well if either WDGS or WCGF, as sole byproducts in the diet, are removed and replaced with corn abruptly. Therefore, one approach would be to feed a combination to ensure that at least one byproduct is consistently in the ration.

Buckner et al. (2006; Table 2) recently evaluated feeding a blend of WDGS and WCGF to determine if there was a synergism between blends compared to feeding either byproduct alone. Feeding 30% WCGF increased DMI and ADG with no change in F:G. Feeding 30% WDGS increased DMI and ADG and decreased F:G. Feeding 15% of each was intermediate to feeding either byproduct alone for F:G and ADG. However, by using a blend, up to 60% of diet DM could be used as total byproduct

with significant improvement in ADG and F:G compared to cattle fed corn alone.

In an experiment to mimic a producer that may want to keep WCGF in the diet but can purchase varying amounts of WDGS, Loza et al. (2006; Table 3) evaluated level of WDGS at 0, 10, 15, 20, 25, and 30% of diet DM with all levels containing 30% WCGF. A corn-based control diet was also fed for a total of 7 treatments and 9 replications per treatment. Feeding WCGF in this study markedly increased ADG and DMI and improved F:G by 4.9% over cattle fed corn alone. No differences were observed for F:G when WDGS was added to WCGF. Because ADG and DMI were maximized with 15% to 20% WDGS added to the 30% WCGF diets and no change in F:G, one may conclude that 45 to 50% byproduct is optimum when feeding a combination of WCGF and WDGS.

TABLE 2. Effect of a blend of WDGS or WCGF or each byproduct fed alone on finishing steer performance.

Treatment ^a :	CON	30WCGF	30Blend	30WDGS	60Blend	SE
DMI, lb/day	23.8 ^b	26.2 ^d	25.3 ^{cd}	25.1 ^c	23.8 ^b	0.3
ADG, lb/day	4.07 ^b	4.47 ^d	4.56 ^{de}	4.66 ^e	4.27 ^c	0.05
F:G	5.82 ^d	5.86 ^d	5.58 ^c	5.34 ^b	5.60 ^c	0.07

^aBlend = 1:1 WDGS:WCGF (DM basis) at 30 and 60% dietary inclusion.

^{b,c,d,e}Means with different superscripts differ (P<0.05).

Buckner, C.D., G.E. Erickson, T.J. Klopfenstein, R.A. Stock, K.J. Vander Pol. 2006. Effect of Feeding a Byproduct Combination at Two Levels or Byproduct Alone in Feedlot Diets. J. Anim. Sci. Abstract presentation at Midwest ASAS meetings.

TABLE 3. Effect of WDGS level with diets containing WCGF.

WDGS:	0	0	10	15	20	25	30
WCGF:	0	30	30	30	30	30	30
DMI, lb/day	25.3	26.4	26.4	26.6	26.4	26.2	25.7
ADG, lb/day	3.59	3.89	3.87	3.96	3.96	3.87	3.78
F:G	6.99	6.67	6.76	6.67	6.63	6.71	6.80

Loza, P.L., G.E. Erickson, K.J. Vander Pol, M.A. Greenquist, R.A. Stock, and T.J. Klopfenstein. 2006. Addition of Wet Distillers Grains Plus Solubles in Cattle Finishing Diets Containing Wet Corn Gluten Feed. J. Anim. Sci. Abstract presentation at Midwest ASAS meetings.