

344.5, 331.2 and 324.2 Btu/hr-ft² for September 14, 19, and 21, respectively. The average air temperature for each test period was 91.9, 90.9 and 91.2°F., respectively. Cloud cover was negligible, although at times a slight haze existed near the horizon.

The initial reduction in radiation heat load due to a simple shade (no walls) was slightly less than half (about 150 Btu/hr-ft²) the outside radiation level. Further reductions caused by adding walls to the shelter were of a much lower order of magnitude, though appreciable. One wall (west side) reduced the radiation heat load under the shelter an additional 15 Btu/hr-ft². Two walls (east and west sides) resulted in a 20 Btu/hr-ft² lower radiation heat load than under the simple shade, and for three walls (south, east and west sides), the radiation heat load was 26 Btu/hr-ft² lower.

Another factor clearly indicated by the graph is the decreasing variation in radiation heat load within the shelter as more walls are added. Much of the reduction in variation is probably due to the increased mass of the structure leveling out external environmental variations.

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Ethyl Alcohol Supplement

NOT Beneficial to Cattle in Feedlot Tests

THIS TRIAL was conducted to evaluate observations by a supplier of industrial alcohol indicating the possibility of a beneficial production response when feedlot cattle were given small amounts of ethanol in their water. The experiment was conducted for a 105-day period from July through October in 1962. Four pens of three Hereford steers received an identical ration with two pens (six steers) receiving alcohol in the water at a concentration providing 8 oz. of denatured ethanol per head daily. Dispensing apparatus was a 100-gallon tank supplied with a float valve and a small, 8 x 8 x 2-inch drinking pan to minimize evaporation. Water and the ethanol were added to the tank daily. Similar drinkers used in control pens were equipped with water meters to record water consumption.

Results of this trial (shown in the table) are on the basis of empty body weight—thus eliminating much variation due to digestive tract contents.

There were no differences in the response of the steers as measured by average daily gain, energy gain per day, carcass yield, carcass fat percentage or corrected carcass weight (identical caloric content). The control steers each consumed over a pound more feed daily than those receiving the alcohol. This difference was statistically significant. However, if an amount of feed is added to the intake of the steers given the alcohol, which is equivalent in digestible energy to that received in the form of ethanol (shown in parentheses in the table) then the difference in feed intake is no longer at a significant level. Feed efficiency, either in terms of weight gain or energy gain per 100 pounds of feed, was essentially the same for each group of steers. These data support the conclusion that a small level of ethanol added to the drinking water of beef steers has no production value other than what might be expected on the basis of its energy content.

Water consumption of the steers given the alcohol was slightly above the intake

EFFECT OF DENATURED ETHANOL ON THE FEEDLOT PERFORMANCE OF HEREFORD STEERS

	Control	Denatured ethanol	
Number of animals	6	6	
Initial weight, lb.	596	598	
Final weight, lb.	850	842	
Daily weight gain, lb.	2.42	2.32	
Daily energy gain, megal.	6.15	6.05	
Daily feed intake ^a , lb.	19.7**	18.3	(19.3) ^b
Weight gain/100 lb. feed, lb.	12.3	12.7	(12.0)
Energy gain/100 lb. feed, megal.	31.2	33.0	(31.3)
Carcass data:			
Dressing percent	58.3	58.9	
Carcass fat, percent	24.0	24.2	
Corrected carcass, lb.	600	597	
Grades	2 Choice	4 Choice	
	4 Good	2 Good	
Water consumption:			
Gallons/day	13.1	13.7	
Gallons/100 lb. dry matter intake	0.66	0.75	
Denatured ethanol, oz./day	..	7.8	

** Significantly higher (P < .01) than denatured ethanol group.

^a Oven dry basis. Ration: alfalfa, 25%; sudan, 10%; barley, 47%; molasses beet pulp, 15%; molasses, 3%.

^b Figures in parentheses were obtained by adding an equivalent amount of ration for the energy in the denatured ethanol. Ethanol 7.1 kcal./gm. assumed 100% digestible. Ration has 3.2 kcal. digestible energy/gm. Therefore, 7.8 oz. of ethanol is equivalent to approximately 1 lb. of ration.

of the control animals. The data indicate that most of this increase occurred during the first six weeks of the trial when the alcohol steers were consuming 1.9 gallons per head per day more than control steers. The reason for this initial difference in water intake is not known. It was apparent, however, that alcohol did not decrease water intake even though the odor of the denaturing materials (mercaptans) was easily detected at the water surface and generally offensive to the human sense of smell.

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