

MOISTURE CONTENT VERSUS INTAKE AND
ENERGY VALUE OF HIGH MOISTURE CORN

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Due to the marked influence of moisture content on high moisture corn (HMC) characteristics cited earlier by Thornton (this conference), animal performance results from 36 experiments at many different stations summarized by Corah (included in this publication) were plotted against moisture level of HMC. Dry matter intake and metabolizable energy (calculated back from intake, animal weight and rate of gain using the California net energy equations) of cattle fed HMC were compared to that for cattle fed dry corn (DC) in the same experiment. Percentage difference from DC was plotted against moisture level of the HMC. This comparison is presented in figures 1 and 2, and values from linear regressions within each storage system are given in table 1.

Regardless of storage type, metabolizable energy content of HMC increased with moisture content of HMC. On the average, energy value of HMC equaled DC at 23% moisture and increased by 0.3% for every 1% higher moisture. It is doubtful that errors in dry matter determination could explain all of this increase. Losses of energy after fermentation due to heating and handling would be expected to be greater with higher moisture content, so this could not explain the trend. Perhaps site or extent of digestion by the animal could be advantageous for higher moisture HMC.

Dry matter intake of HMC and DC were equal, on the average, when HMC contained 24% moisture (or possible 23% moisture if 1% volatiles are lost during drying). For every 1% added moisture, intake decreased by about 1%. Intake decreased with moisture level across all methods of preservation, which should represent HMC containing different levels of soluble nitrogen and acid. Consequently, no explanation for depressed intake is apparent. Drier HMC should have an advantage in reduced fermentation energy loss and longer bunk life. This is at the expense of lower yields due to field loss, more feeding loss due to wind, and more oxidation and browning due to more difficult packing.

In summary, higher moisture levels will apparently maximize ME content of HMC but will also depress intake. The ideal moisture content depends on relative costs of feed and overhead or yardage. It is hoped that dry matter content will be reported in all published literature in the future.

TABLE 1. RELATIONSHIPS OF METABOLIZABLE ENERGY
AND FEED INTAKE OT MOISTURE CONTENT OF HMC.

	Metabolizable energy			Dry matter intake		
	H ₂ O when	Change	Reg.	H ₂ O when	Change	Reg.
	HMC=DC	/1% H ₂ O		HMC=DC	/1% H ₂ O	
%	% change	r	%	% change	r	
Oxygen-limiting structures	22.7	+ .76	.64*	24.5	-1.8	-.87**
Organic Acid preserved grains	24.4	+ .91	.72**	24.7	- .96	-.55**
Conventional or bunker silos	27.6	+ .26	.26	19.5	- .63	-.34
Overall summary	23	+ .32	.30*	24	-1.01	-.56**

