

Energy Requirements of Grazing Activity

The amount of energy Net Energy for Lactation (NE_L) required for grazing activity is listed below in Table 1. Grazing activity is a function of body weight (BW), distance walked between pasture and parlor, and topography of the pasture. The equations used to calculate these values assume that dry matter intake (DMI) is 'normal' for the given body weight and that pasture is 60% of the total DMI.

Table 1. Estimated NE_L requirements (Mcal/day) associated with grazing flat or hilly ground for an average Jersey cow (1000 lbs) and an average Holstein cow (1400 lbs). Adapted from NRC (2001).

Total distance, parlor to paddock, miles/day	BW = 1000		BW = 1400	
	'Flat'	'Hilly'	'Flat'	'Hilly'
0.25	0.63	3.33	0.88	4.66
0.50	0.71	3.41	0.99	4.77
0.75	0.79	3.49	1.11	4.89
1.00	0.88	3.58	1.23	5.01
1.25	0.96	3.66	1.34	5.12
1.50	1.04	3.74	1.46	5.24
1.75	1.12	3.82	1.57	5.35
2.00	1.21	3.91	1.69	5.47

****High-quality pastures (cool-season grasses or legumes) typically contain 0.69 – 0.72 Mcal/lb of DM.**

Approximately 0.31 Mcal NE_L is required for each pound of 3.5% milk produced (or 0.33 Mcal for 4.0% milk). Therefore, if we assume that DMI and nutrient intake remains the same (which it may or may not), a 1000 lb. cow that has to walk on flat ground 2 miles/day may drop in milk by 2-4 lb. in milk (1.21/0.31).

A 1400 lb. cow walking on hilly ground 2 miles per day may drop in milk production by more than 10 lb./day (5.47/ 0.31 = 17.6 lb of milk lost) if additional energy (or DMI) does not make up the difference for this increased activity.