

# Title

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## Introduction

Marbling in the cuts of our meat has been a topic of discussion for a long time. How much marbling is good without there being to little meat? What is a good ratio between the two without sacrificing flavor. These are some of the questions people ask, so is there a way to get both good marbling and good ratio of meat by varying the type of feed and way that the cattle are raised? The diets fed in feedlots are different than diets fed on pasture, and different pastures may be able to be able to get the nutrients that will provide the cattle the same results as a feedlot if enough of the different types of grass is provided.

## Materials and methods

My method for gathering this data is by gathering the nutrients required to create the marbling that people look for and the nutrients required to have the cattle grow bigger and have more meat as well and see if there is a middle meeting point to provide a good combination of both. This will be done by feeding a group of cattle corn and analyze the results of their growth, and a second group being fed alfalfa and clover and any of the seasonal grass growth. The cows will then when its time to harvest be checked for marbling and meat quantity to see if grass fed can get the size and marbling that we are trying to achieve.

## Literature cited

Fychan 4 minute read, R. (n.d.). *Consider Red Clover Silage*. Consider Red Clover Silage | The Cattle Site. Retrieved April 2, 2023, from <https://www.thecattlesite.com/articles/2522/consider-red-clover-silage>

V., H., G., T., S., G.-R., & F., L. (n.d.). *Red Clover (trifolium pratense)*. Feedipedia. Retrieved April 2, 2023, from <https://www.feedipedia.org/node/246#:~:text=Red%20clover%20is%20a%20nutritious,from%2040%25%20to%2051%25>.

## Results

Nutrient	Alfalfa Hay
Dry matter, g/kg	906
Crude protein, g/kg	183
Acid detergent fiber, g/kg	351
Neutral detergent fiber, g/kg	406
Nonfiber carbohydrates, g/kg <sup>1</sup>	323
Fat, g/kg	10
Ash, g/kg	78
Calcium, g/kg	15.3
Phosphorus, g/kg	2.7
Magnesium, g/kg	4.5
Potassium, g/kg	14.9
Sodium, g/kg	1.5
Copper, mg/kg	12
Iron, mg/kg	357
Manganese, mg/kg	43
Zinc, mg/kg	22

	100% Red Clover
Dry Matter	298
pH	4.0
Ammonia-N	48
Crude Protein	204
WSC	25
Lactate	63
Acetic	11
NDF	376

Table 1. Nutrient content of various feed grains.

	Barley	Corn	Wheat	Oats	Sorghum	Field Peas
Dry-matter basis						
Energy						
TDN, %	84.1	87.6	86.8	83.0	86.0	80.0
NEm (Mcal/kg)	2.06	2.17	2.15	2.03	2.12	1.94
NEg (Mcal/kg)	1.40	1.49	1.47	1.37	1.45	1.30
Protein						
Crude protein (%)	12.8	8.8	13.8	12.6	11.6	23.9
Undegradable protein (% of CP)	50.8	65.3	35.6	56.5	71.1	15.5
Fiber						
Neutral detergent fiber (%)	18.3	9.7	12.4	26.7	7.2	13.7
Acid detergent fiber (%)	7.1	3.6	4.2	13.3	4.6	9.2

Source: National Academy of Sciences, Engineering, and Medicine, 2016  
TDN = Total digestible nutrients  
NEm = Net energy for maintenance  
NEg = Net energy for gain

Table 2. Mineral content of major cereal grains.

	Barley	Corn	Wheat	Oats	Sorghum	Peas
Calcium, %	0.08	0.03	0.08	0.10	0.06	0.13
Phosphorus,%	0.38	0.29	0.36	0.38	0.34	0.42
Potassium, %	0.53	0.37	0.43	0.50	0.39	1.07
Magnesium,%	0.13	0.11	0.13	0.14	0.15	0.18
Sodium, %	0.02	0.03	0.02	0.02	0.12	0.03
Sulfur, %	0.14	0.11	0.15	0.17	0.11	0.57
Copper, ppm	6.12	2.63	5.44	6.18	4.95	8.8
Iron, ppm	99.4	50.0	60.28	105.03	42.94	112.70
Manganese, ppm	21.9	7.58	42.96	50.29	20.11	21.47
Selenium, ppm	1.0	0.61	—	0.28	—	—
Zinc, ppm	30.64	20.49	29.25	31.07	19.9	36.26
Cobalt, ppm	—	0.51	—	—	0.65	—
Molybdenum, ppm	1.37	0.17	0.65	1.70	0.76	0.81

Source: National Academy of Sciences, Engineering, and Medicine 2016

Table 3. Nutrient content of corn using different harvest, storage or processing methods.

Corn Type	Dry Matter	TDN, %	NE <sub>m</sub> , Mcal/lb	NE <sub>g</sub> , Mcal/lb	CP, %	Escape Protein, % of CP
Dry rolled corn	87	88	0.99	0.68	8.8	65
High-moisture corn	70	90	1.02	0.71	8.8	55
Steam-flaked corn	81	95	1.08	0.76	8.5	70
Ear corn	83	85	0.95	0.64	8.3	64
Earlage	63	84	0.95	0.64	8.1	49
Snaplage	59	82	0.91	0.61	8.1	45

Source: National Academy of Sciences, Engineering, and Medicine 2016