

Feeding Carrots or Sugar Beets to Cattle

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Root crops such as carrots and sugar beets can be fed to beef cattle. The nutrient contents are shown in Table 1. Root crops can have ash contents greater than listed in the table due to soil contamination. Long term storage may be a challenge with root crops.

Table 1. Comparison of nutrient composition of carrots and sugar beets to corn silage, hay and corn grain

Feed	DM, %	TDN, %	ME, Mcal/lb	CP, %	Fat, %	Ash, %	Ca, %	P, %	K, %	S, %
Carrots	12	84.0	1.35	9.9	1.4	8.2	.40	.35	2.80	.17
S. beets	20	75.1	1.23	6.8	.6	5.5	.24	.24	1.52	.06
Hay ^a	88	57.0	.94	15.5	2.4	9.7	.83	.25	1.78	.28
C. silage	35	72.0	1.18	8.7	3.1	3.6	.25	.22	1.14	.12
Corn	85	90.0	1.48	9.8	4.1	1.5	.09	.29	.44	.11

^a All nutrients except dry matter (DM) expressed on a DM basis

^b Alfalfa brome mixture (50:50)

Sugar beets



It is recommended to process sugar beets prior to feeding to eliminate the possibility of lodging in the esophagus or trachea and causing bloat or choke. This is likely more of a problem with small rather than large sugar beets. Mashing the sugar beets by driving over them with a tractor may be sufficient processing. Sugar beets have a nutrient profile similar to corn silage. They may be most suited for use in cow and backgrounding/growing diets. The high sugar content may limit the use in

backgrounding/growing diets to 20% of the dry matter (DM). Up to 50% of ration DM could be used in cow diets.

Carrots

Carrots are quite palatable and readily consumed by cattle. Carrots have 91% the metabolizable energy value of corn, on a DM basis. There is a popular press report that indicates 40% of a feedlot diet DM as carrots did not cause any deleterious affects. Feeding high levels of fresh carrots may cause some scouring which can be minimized by storage for a few weeks. Carrots can also serve as an energy source in cow diets. A report indicated cows will eat up to 35 lb of carrots per day.

Pricing the root crops

Both root crops contain a lot of water so make sure the price reflects that. It is recommended to value these root crops on a DM (water free) basis and similar weight units. For example, suppose you were offered carrots at \$20/ton and you wanted to compare it to \$5.70/bu. corn. The value of carrots is a function of the energy content and moisture level. The first step is to convert corn price to \$/ton. There are 35.7 bu./ton (2000/56) of U.S. #2 corn (56 lb/bu.). Therefore, a ton of corn costs \$203.49/ton (as is) or \$239.40 (\$203.49/.85) on a DM basis. The cost

of carrots on a DM basis is \$166.67/ton (\$20.00/.12). The carrots have an energy content of 1.35 Mcal of ME/lb of DM and a moisture level of 88%. Corn has 1.48 Mcal of ME/lb of DM and a 15% moisture level. The cost per Mcal of ME from corn and carrots would be \$.81 (\$239.40/(1.48 x 2,000)) and \$.62 (\$166.67/(1.35 x 2,000)), respectively. In this price comparison, carrots were a better buy. The conclusion may change when the price relationship between corn and carrots is different. Tables 2 and 3 present the values of carrots and sugar beets at different corn and hay values. In the tables, no price adjustments were made for protein differences in the diets.

Table 2. Value of carrots and sugar beets as a replacement for corn in cattle diets with various corn prices

	Value of corn			Value of carrots		Value of sugar beets	
	\$/bu. (as-is)	\$/ton (as-is)	\$/ton DM	\$/Mcal ME/cwt	Equiv. price \$/ton DM	\$/ton (as-is)	Equiv. price \$/ton DM
3	107.10	126	.04	114.93	13.79	104.72	20.94
4	142.80	168	.06	153.24	18.39	139.62	27.92
5	178.50	210	.07	191.55	22.99	174.53	34.91
6	214.20	252	.09	229.86	27.58	209.43	41.89
7	249.90	294	.10	268.18	32.18	244.34	48.87

*Corn DM = 85%; carrot DM = 12%; sugar beet DM = 20%

Table 3. Value of carrots and sugar beets as a replacement for hay in cattle diets with various hay prices

	Value of hay			Value of carrots		Value of sugar beets	
	\$/ton (as-is)	\$/ton DM	\$/Mcal ME/cwt	Equiv. price \$/ton DM	\$/ton (as-is)	Equiv. price \$/ton DM	\$/ton (as-is)
60.00	68.18	.04	97.92	11.75	89.22	17.84	
80.00	90.91	.05	130.56	15.67	118.96	23.79	
100.00	133.64	.06	163.20	19.58	148.69	29.74	
120.00	136.36	.07	195.84	23.50	178.43	35.69	
140.00	159.09	.08	228.48	27.42	208.17	41.63	

*Hay DM = 88%; carrot DM = 12%; sugar beet DM = 20%

Michigan Feed Exchange

The Michigan Farm Bureau has created a website for those wishing to buy or sell food commodities (including sugar beets, carrots, and apples)

www.michfb.com/feed