Grain Processing Option for a Beef Cow Herd

Successful financial management must consider the farm as a business and make decisions on farm activities in this context. What is the best use of land according to its capabilities? Consider soil type, rainfall, degree of drainage provided and frost free days. These answers will determine if cropping is a better financial decision or whether cattle can be used as a stream of revenue. Look at the cost of production for each option both cropping and livestock and place them in order of potential to generate a profit over expenses. Consumer trends can impact decisions as well as weather and politics.

Beef cattle are suited to areas where low rainfall is common or excessive rainfall coupled with short frost free days, or no access for equipment due to rocks, gullies, or things that make cropping risky. Access to crown and public grazing land has been a great assist for cattle farmers and remains a future need. Feed ingredients have changed during the drought years to include more crop residues mixed with hay and a minimum of grain. This means more attention to vitamin and mineral intake to take into account the lower content of vitamins in crop residues compared to hay. Additionally there are more by-products going into rations and there is a higher awareness that these can be acquired at a cost which allows their use even though there may be some extra work to do it. There is a good understanding of how by-products affect the rumen balance and how to incorporate these successfully into rations to keep costs as low as possible. Societally there is a focus on using productive crop land to produce more cereals to feed the world and by utilizing marginal land for cattle this makes a good partnership. Livestock producers who focus on efficiency are examining all options.

With the drought induced doubling in cost of grain an assessment of preprocessing grain before feeding is helpful to evaluate this option. Consider the cost of processing against what amount of grain is passed in the manure. Processing improves energy availability by opening up the kernel to rumen microbes from grain that might otherwise pass through the digestive processes. When feeding a high forage diet to beef cows along with grain, best utilization is achieved when forages are chopped and grain is added in such as way as to prevent selective eating by the animals. Highline has added both a grain tank and a chopper to the Bale Pro® which inserts the grain into the forage flow then passes it through the chopper. Corn grain is processed by the chopper about 85% and small cereals about 50% in this process. When normal grain prices are in play the advantage to preprocessing is small but with high prices it deserves another examination.

New roller mill processing 250 bu. /hr $15000/10	$1500.00
10 hp. electric motor 1500/10	$ 150.00
Cost/hour to run .15/kwh*7.46kw	$ 1.12
5625/250 bu. per hour = 22.5 hours	
at $1.12/Kwh	$ 25.20
Re-grooving $1000/10	$ 100.00
Total annual cost	$1775.20

One way to improve digestibility from grain during high prices is use a roller mill to preprocess barley or wheat. I contacted two Canadian manufacturers of roller mills and had advice from a Highline engineer for the information that follows. As an example, a 16" roller mill made in Canada capable of processing 250 bu/hr of barley costs about $15,000 and can be run with a 10 hp electric motor which costs about $1500. The power consumption at 100% load for an hour is 7.46Kwh. If power costs 15 cents per Kwh then one hour operating on a light crack setting for barley costs $1.12. Annual cost for electricity to process 5,625 bu of barley is $25. Re-grooving the rollers is done after 75,000 bu. or around 12 years for this example herd and costs $1000. Manufacturing companies advise amortization can be calculated over 15 years but I will use 10 years. An amortized cost for mill, re-grooved rollers and motor over 10 years is $1750/year.

Barley/bushel $7.90 yields 7.90/48 = .165/lb.
Unavailable Energy in 1 lb barley .165-(.165*.85) = $0.025
Cost/lb to process barley using amortized equipment values:
$1775/270,000 lb barley = $0.00657/lb
Added value of energy by processing .025-.00657 = $0.01843/lb
Annual value of captured energy through processing:
$$0.0184*270000lb = $4968.00

Operating cost adds an additional $25. A 300 cow herd fed 6 lb/hd/day of barley over 150 days uses 135 tons or 5,625 bushels of barley fed. This covers the last 90 days of pregnancy and 2 months of lactation. Programs vary from farm to farm. Barley contains 1.36 Mcal of metabolizable energy/ lb. and 1 lb. of barley is valued at $0.165 currently. Available energy in unprocessed grain is available at 85% or lower rates so each farm should estimate unprocessed grain showing up in manure and do your own calculation. For this example I am using 15% of grain consumed as unavailable to the animal and passing through the chewing and digestive processes to the manure.

The unavailable energy in 1 lb of consumed barley is valued at $0.025. Processing grain to make it 100% available will cost $0.00657/lb annually which nets $0.0184/lb added value of barley feed energy. For the year, increased value over cost to process is $4,968.00 at today's value for barley. For an easier reference, the cost to process a bushel of barley is $0.31 and the value of 15% more available energy in a bushel of barley is $1.19 netting $0.88/bu. in this example. Values will differ from farm to farm.

For a dry forage system an efficient way to capture this value is to feed the processed grain through the grain tank on a Highline Bale Pro for mixing with the chopped forages.

CORPORATE RUMINANT NUTRITIONIST

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