Management and Nutritional Considerations for Growing Cattle Under COVID – 19 Conditions

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The long reaching consequences of COVID – 19 on the livestock industry has created the necessity for self-evaluation and in many cases, making monumental changes to common management and nutritional approaches to growing and finishing beef cattle.

In March, sales of feeder cattle fell well below what was earlier anticipated. In April, the array of announced shutdowns at meat processing plants created disruptions, which have resulted in extended planned delivery dates. Combined, this "clogging" in the beef supply chain has created subsequent challenges in terms of potential shortages of available pen space to accept new arrivals of feeders. Consequently, many growers are re-assessing prospects of longer-term ownership of their feeder cattle.

Given adjustments in the ethanol industry, the dramatically reduced availability of distiller's grains has created dramatic ripple effects on the prices of feedstuffs such as alfalfa hay and those coproducts that could be substituted and used in its place. As a whole, the options for use with these alternative feed ingredients is significantly reduced with adjoining reductions in feed efficiency performance.

Where are you standing today?

If a producer presently has **backgrounding** cattle in his/her yard, the critical first step is to accurately assess their situation. This starts with knowing the present day, average weight of these cattle. This fact is important to know going forward to assess marketing scenarios and to examine how rations can be formulated with available feed ingredients.

The Department of Agricultural Economics (www.agmanager.info) has a broad range of tools available for cattle producers to use to provide guidance with the implementation of price protection and to obtain market-informed projections of the feeder cattle market at future periods when cattle may be sold. Two resources in particular include:

- https://www.agmanager.info/k-state-feeder-cattle-risk-management-tool
- https://www.beefbasis.com

The *KSU-Feeder Cattle Risk Management Tool* was updated on April 28th and is an Excel based decision-aide designed for users to compare expected net selling prices under alternative situations such as futures market hedging, buying put options, and buying USDA LRP coverage versus a cash or no price protection approach. The *BeefBasis.com* resource is a website providing the ability to project future feeder cattle cash prices, value of gain, and other items central to feeder cattle marketing decisions.

The Iowa Beef Center and the University of Wisconsin have assembled a short factsheet to address many of the management and nutritional considerations for slowing the growth of **feedlot cattle** due to the COVID-19 Pandemic. This factsheet may be found at http://www.iowabeefcenter.org/information/SlowFeedlotGrowth-COVID-ISU-UWExt0420.pdf

Considerations for growing cattle management and nutrition

It is important to know the tonnage of home raised forages (hay/silage) available especially if the planned marketing of feeder calves is delayed by one or even four months. While a producer may historically market his/her calves at 8 CWT the potential for keeping these calves on feed for a longer period of time waiting for more friendly marketing conditions is a real consideration under current conditions.

As mentioned before, the co-product market has been thrown out of its normal orbit of supply because of the disruption within the ethanol industry. Depending upon your location, there may be alternative sources of byproducts in a friendly marketing radius that can be used to substitute for the removal of distiller's grains from your diet(s). The University of Missouri maintains a user friendly web site of by-product feed price listings and availability. This website may be found at http://agebb.missouri.edu/dairy/byprod/bplist.asp. With this information in hand, producers can use a valuable tool developed by South Dakota State University to compare the feed cost differences between two feedstuffs with delivery costs considered. This tool maybe found at https://www.igrowlivestocktools.org/#!/calculators/feed-cost. A screenshot of the results from the use of this software is shown below.

Feed Cost Results

	Distillers Grain, Corn, Wet	Soybean Hulls	Max Price for Soybean Hulls
Feed Cost per Ton (As Fed)	$80.00	$160.00	
Shipping Cost per Load	$1,125.00	$200.00	
Shipping Cost per Ton	$45.00	$8.00	
Total Cost per Ton As Fed Delivered	$125.00	$168.00	
Delivered Cost per Ton DM	$347.22	$186.67	
Delivered Cost of Crude Protein ($/ton)	$1,197.32	$1,435.90	$132.09
Delivered Cost of TDN ($/ton)	$343.78	$242.42	$230.24
Delivered Cost of NE m ($/Mcal/ton)	$301.93	$227.64	$214.83
Delivered Cost of NE g ($/Mcal/ton)	$450.94	$358.97	$203.04
Delivered Cost of NE l ($/Mcal/ton)	$321.50	$236.29	$220.59

The highlighted cell is the better buy for that ingredient.

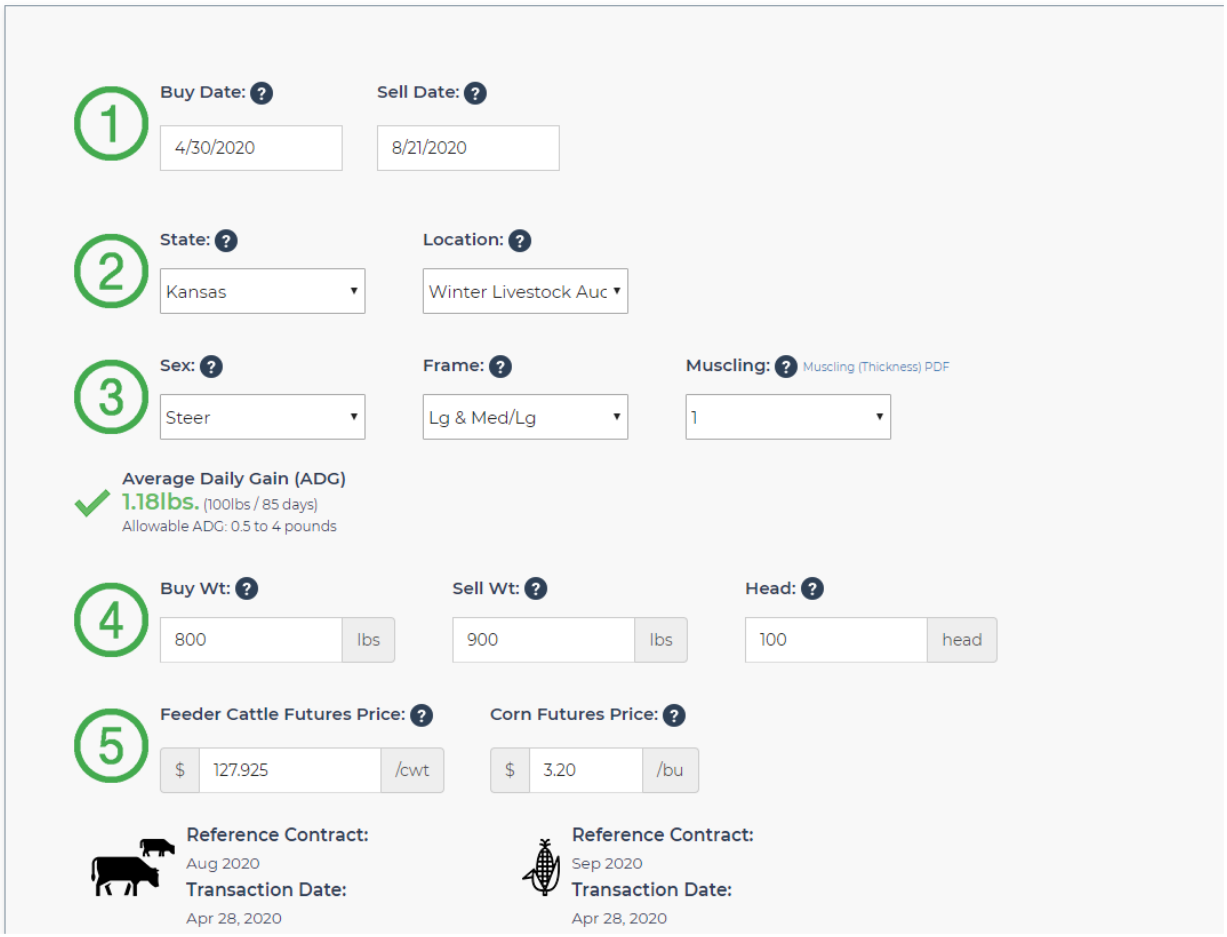
OK

Many backgrounders have calves weighing in the vicinity of 800 lbs and ready for feedlot entry today. The big decision is what to do with these calves? In this current depressed feeder market, should the producer take their losses now or should they retain ownership and "slow grow" their cattle into the future in hopes that the market will rebound?

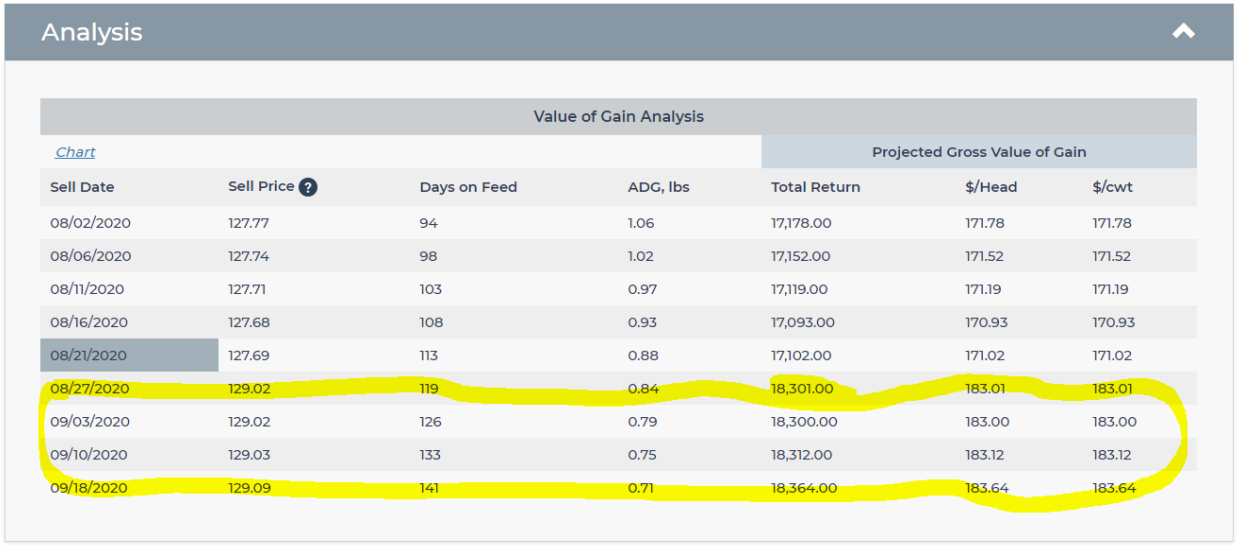
Using beefbasis.com, the following scenario using the value of gain function located in the analytics section is a good tool to evaluate the potential for holding equity together when taking into consideration the feeder cattle and corn futures price.

The use of this tool is fairly easy to use. There are drop downs for many of the inputs necessary to generate a look at the future in terms of the gross value of gain.

Value of Gain



The values generated from this simulation are shown below. Under the assumption that a producer has in their possession 800 pound steers today (April 28, 2020), what happens to the projected gross value of the steer if it is marketed at different marketing dates into the future?



Analysis

Value of Gain Analysis

Chart

Sell Date	Sell Price	Days on Feed	ADG, lbs	Projected Gross Value of Gain: Total Return	$/Head	$/cwt
08/02/2020	127.77	94	1.06	17,178.00	171.78	171.78
08/06/2020	127.74	98	1.02	17,152.00	171.52	171.52
08/11/2020	127.71	103	0.97	17,119.00	171.19	171.19
08/16/2020	127.68	108	0.93	17,093.00	170.93	170.93
08/21/2020	127.69	113	0.88	17,102.00	171.02	171.02
08/27/2020	129.02	119	0.84	18,301.00	183.01	183.01
09/03/2020	129.02	126	0.79	18,300.00	183.00	183.00
09/10/2020	129.03	133	0.75	18,312.00	183.12	183.12
09/18/2020	129.09	141	0.71	18,364.00	183.64	183.64

Based upon the results of this specific analysis, the calves in this example will weigh 900 lbs and sell for $129.02/cwt with a daily gain of 0.84 lbs/day on 08/27/20. The projected gross value of gain per head is $183.01 dollars. This dollar amount represents the gross dollars available to add an additional 100 lbs to an 800 pound steer. This value is important because it helps the producer determine if their costs of production can be achieved below this value. So, formulating a ration to achieve the level of gain within the confines of ingredient prices is the primary challenge.

Using the KSU BRaNDS nutrition software, a diet was formulated to achieve only .84 lb/day to correspond with the price analysis from Beefbasis.com above. Mid-bloom alfalfa hay (17% crude protein) was priced at $165/ton, prairie hay at $90/ton, soybean meal at $310/ton and corn priced at $3.50/bushel.

Admittedly, there are faults that can be found in this ration; the ration dry matter is too high and consequent blending of ingredients won't be ideal. With diets that are mostly hay based, simply running the garden hose into the mixer wagon to facilitate blending would be a potential solution. In this example, adding 10 lbs of water would reduce the ration dry matter content from 87.9 to 59.2%. Another aspect of this diet is the borderline content of crude protein (11.9%) that is available.

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Feedyard Summary Sheet

Covid 19 Examples		*Ration:*	**800 lb steers**		*dblasi@ksu.edu*
Feeding Period	4/27/20	6/27/20	**Wind Exposure**	some protection	**Modifiers**
Average Weight	800 lbs	*range:* 100	**Hair Condition**	clean/dry	no implant
Wt. @ 50% Choice	1152		**Hair Coat**	summer coat	no MGA
Breed Type	Beef		**Avg. Air Temp. -F**	54.5	no Beta agonist
Current Condition Score	5		**Hide Thickness**	thick	
Gender	steer		**Maintenance Adj.**	0 %	

Ration Formulation — 1 head

Feed	% of DMI	% AsFed	Pounds	%waste
prairiehaylateb	*45.00%*	*44.4%*	9.0	
mod_ distillers				
soybean meal 44	*4.9%*	*4.9%*	1.0	
corn rolled	*19.1%*	*19.8%*	4.0	
feedlot mineral	*1.3%*	*1.2%*	0.3	
alfalfa-mid bl	*29.7%*	*29.6%*	6.0	

Storage Shrink	*1.0%*	Delivered	*20.3*	*lbs*
Bunk Loss		Consumed	*20.3*	*lbs*

Ration Summary — *61 days*

		750 lb	800 lb	850 lb
	DMI *lbs*	*17.0*	*17.8*	*18.6*
	Est. DMI	*19.4*	*20.4*	*21.3*
lbs	NE -Gain	*0.8*	*0.8*	*0.8*
lbs	MP -Gain	*1.3*	*1.4*	*1.5*
	peNDF %	RDP Ratio	Rumen pH	Ration DM
	35.6%	124.5%	6.39	87.9%
	DMI Ratio	87.4%	87.4%	87.4%
	DMI:BWt	2.26%	2.23%	2.19%
	MP Reqmt	129%	132%	136%
Mcal	NE/MP adj	0.20	0.19	0.19
	Feed:Gain	20.19	21.08	21.95
lbs	Daily Gain	0.84	0.84	0.85
lbs	Final Wt.	801	851	902
$0.40	$/Hd/Day	$1.73	$1.79	$1.86
+yardage	$/lb Gain	$2.06	$2.12	$2.19
		$/ton DM		$/ton AF
		$156.61	*$155.06*	*$137.66*	*$136.30*

----- Percent of Requirement Met -----

TDN	*64.3%*	Calcium	*336.2%*	Selenium	*40.5%*	Ca:P	*3.6*
NE m Mcal/lb	*0.57*	Phosph.	*149.4%*	Zinc	*30.2%*	N:S	*14.1*
NE g Mcal/lb	*0.31*	Magnes.	*189.8%*	Copper	*21.5%*	Fe:Cu	*53.2*
Non Fiber Carb.	*30.2%*	Potassium	*213.4%*	Mangan.	*19.2%*	DCAB	*25.9*
Cr. Protein	*11.9%*	Sulfur	*96.6%*	Cobalt	*54.3%*	Ionophore	*69*
Degradable CP	*71.6%*	Sodium	*54.1%*	Iodine	*39.5%*		
Soluble CP	*23.2%*	Chlorine	*55.7%*	Iron	*228.6%*		
Fat	*2.8%*	Vit. A	*386.2%*	Vit. E	*8.3%*		

Manure-lbs/100 hd days — MGA

N excr.	P excr.	K excr.	S excr.
18.0	*2.5*	*22.8*	*1.1*

Final Analysis

With a 40 cents per day yardage affixed to the diet above, the cost per head per day is $1.79. Over 100 days, the feed cost (and yardage) costs would be estimated to be $179.00. The projected gross value ($/head) from beefbasis.com is $183.00 per head. So, this feeding strategy corresponds effectively with a projected break-even situation. The benefits would include delayed cattle sales and being positioned for possible recovery in market prices; the downside risks of lower market prices must also be appreciated.

Another important question that is being asked is how many days is necessary on feed to achieve acceptable carcass merit with heavy stocker cattle. This question was addressed by Houser et al., (2011, https://doi.org/10.4148/2378-5977.2924). This study utilized crossbred steers averaging 955 lbs that were fed for 75, 100 or 125 days. The results are as follows:

Table 1. Feedlot performance of heavy stocker cattle fed for 75, 100, or 125 days

	Days on feed			
Trait	75	100	125	SEM
Average daily gain, lb	3.42	3.52	3.37	0.110
Average daily dry matter intake, lb	27.67	27.30	27.82	0.471
Gain:feed ratio	0.125	0.128	0.120	0.005
Total gain, lb	257.7[a]	354.4[b]	419.1[c]	11.23

[abc] Means within a row with different superscripts differ (P<0.05).

Table 2. Carcass characteristics and composition of heavy stocker cattle fed for 75, 100, or 125 days

	Days on feed			
Trait	75	100	125	SEM
Hot carcass weight, lb	704.7[a]	758.6[b]	820.9[c]	8.85
Dressing percentage	60.5	61.7	62.0	0.004
Yield grade	2.1	2.1	2.4	0.100
Fat thickness, in.	0.27[a]	0.27[a]	0.35[b]	0.022
Ribeye area, in.^{2}	13.05[a]	13.71[ab]	14.13[b]	0.217
Marbling score[1]	363.6[a]	407.1[b]	409.5[b]	11.12
Kidney, pelvic, and heart fat, %	2.08	2.07	2.36	0.100
Carcass composition				
Protein, %	17.0[b]	16.5[ab]	16.0[a]	0.261
Fat, %	24.2[a]	25.0[a]	28.9[b]	0.554
Moisture, %	57.8[b]	56.9[b]	54.0[a]	0.393

[1] Marbling score: small = 400 to 499; slight = 300 to 399.
[abc] Means within a row with different superscripts differ (P<0.05).

The results of this particular study concluded that producers can place heavy yearling cattle on high-concentrate diets for a minimum of 75 days with minimal changes to performance, efficiency and sensory traits, but heavy yearling stocker cattle should be fed for a minimum of 100 days to optimize marbling score and white external fat color.