

# ECONOMIC & POLICY UPDATE

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## Cow-Calf Profitability Estimates for 2020 and 2021 (Spring Calving Herd)

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The purpose of this article is to examine cow-calf profitability for a spring calving herd that sold weaned calves in the fall of 2020 and provide an estimate of profitability for the upcoming year. Table 1 summarizes estimated costs for a well-managed spring-calving cowherd for 2020. Every operation is different, so producers should evaluate and modify these estimates to fit their situation. Note that in this table we are not including depreciation or interest on equipment/fencing/facilities, as well as labor and land costs.

Calves are assumed to be weaned and sold at an average weight of 550 lbs. In the fourth quarter of 2020, steers in this weight range were selling for prices in the upper \$130's and heifers in the low \$120's, on a state average basis. Therefore, a steer / heifer average price of \$1.30 per lb is used for the analysis, which is actually the same price that was used last year. Weaning rate was estimated at 85%, meaning that it is expected that a calf will be weaned and sold from 85% of the cows that were exposed to the bull. Based on these assumptions and adjusted for the weaning rate, average calf revenue is \$608 per cow.

Pasture maintenance costs are assumed to be relatively low at \$20 per acre, and would include only basic cash costs of pasture clipping (fuel, maintenance, repairs), and a limited amount of reseeding, fertilizer, and fencing repairs. Producers who consistently apply larger amounts of fertilizer to pasture ground would see much higher pasture maintenance costs. The pasture stocking rate is assumed to be 2.0 acres per cow, but producers should carefully consider the stocking rate for their operation as this will vary greatly. Stocking rate impacts the number of grazing days and winter feeding days for the operation (i.e. high stocking rates will mean more hay feeding days), which has large implications for costs on a per cow basis.

These spring calving cows will use 2.5 tons of hay per cow, and the estimated cash cost of making this hay (fuel, maintenance, repairs, supplies, fertilizer, etc.) is \$35 per ton. Mineral cost is \$35 per

cow, veterinary / medicine costs \$25, trucking costs \$15, machinery cash costs for winter feeding and other miscellaneous jobs is \$15, and other costs (insurance, property taxes, water, etc.) are \$40. Breeding costs are \$40 per cow and should include annual depreciation of the bull and bull maintenance costs, spread across the number of cows he services. Marketing costs are currently around \$25 per cow, but larger operations may market cattle in larger groups and pay lower commission rates.

Breeding stock depreciation and interest are major costs that are often overlooked. They are generally not cash costs that need to be paid on a yearly basis, unless you have a loan on them, but they are real costs that need to be paid at some point. As an example, assume a bred heifer is valued at \$1300, has eight productive years, and has a cull cow value of \$600. The average yearly depreciation is calculated as follows:

\$1300 bred heifer value  
 –\$600 cull-cow value  
 \$700 total depreciation

\$700 depreciation / 8 productive years = \$88 cow depreciation per year. The actual depreciation will vary across farms. When buying bred replacement heifers, the initial heifer value is clear. With farm-raised replacements, this cost should be the revenue foregone had the heifer been sold with the other calves, plus all expenses incurred (feed, breeding, pasture rent, etc.) to reach the same reproductive stage as a purchased bred heifer. At an average value of \$950 (halfway between bred heifer and cull value) over her lifespan on your farm, and assuming a 3% interest rate results in a \$29/cow/year interest cost, or a total of \$117/cow/year in combined depreciation and interest.

**Table 1: Estimated Gross Return to Spring Calving Cow-calf Operation**

**Revenues:**

Steer / Heifer Calf Average	550	lbs	\$1.30	\$715
Discount for Open Cows	15%	open		\$107
<b>Total Revenues per Cow</b>				<b>\$608</b>

**Specified Expenses:**

Pasture Maintenance (cash costs)	2.0	acres	\$20	\$40
Hay (cash costs)	2.5	tons	\$35	\$88
Mineral				\$35
Vet				\$25
Breeding				\$40
Marketing				\$25
Winter Feeding and Other Machinery (cash costs)				\$15
Trucking (calves, supplies, etc.)				\$15
Cow Depreciation and Interest				\$117
Other (insurance, prop taxes, water, etc.)				\$40
<b>Total Specified Expenses per Cow</b>				<b>\$440</b>
<b>Gross Return (Doesn't include Depreciation or Interest on Equipment/Fencing/Facilities, Land, or Labor)</b>				<b>\$168</b>

Note that based on the assumptions in our example, total specified expenses per cow are \$440 and revenues per cow are \$608. Thus, the estimated gross return is \$168 per cow. At first glance, this positive return looks impressive, but is also misleading. A number of costs were intentionally excluded because they vary greatly across operations. Notice that no depreciation or interest on equipment/fencing/facilities was included. Notice also that labor and land costs were also not included. Thus, the gross return needs to be adjusted by these costs to come up with a true return to the farm.

Since these costs vary so much from one operation to the next, it may be helpful to pick a specific sized farm and provide estimates for these costs: a 40-cow operation that is producing its own hay and has all farming operations on its own land (80 acres of pasture and 30 acres of hay).

Assume this farm has on average \$50K in equipment which depreciates roughly \$1000 every year, or \$25/cow/year in depreciation. At 4% interest, an additional cost of \$2000 in interest per year, or \$50/cow/year, would be realized. Assume also this farm has fencing, barns, working facilities, etc., with an initial value of \$50K and a lifespan of 25 years. That would amount to \$50/cow/year in depreciation and \$25/cow/year in interest.

If we have 2.0 acres of pasture and .75 acres of hayground per cow, and value that at a land rent of \$36/acre, that would be \$100/cow/year in land rent. Assume also that we have determined we have \$100/cow/year in labor, which would amount to \$4000 total per year for the entire herd.

Summary of Additional Non-Cash Costs (Example Farm):

Equipment Depreciation	\$25/cow/year
Equipment Interest	\$50/cow/year
Fencing-Facilities Depreciation	\$50/cow/year
Fencing-Facilities Interest	\$25/cow/year
Land Rent	\$100/cow/year
Labor	\$100/cow/year
<b>Total Additional Non-Cash Costs</b>	<b>\$350/cow/year</b>

These non-cash costs add up to \$350/cow/year on our example farm: \$150 per cow in depreciation/interest on equipment/fencing/facilities and \$200 per cow in land rent and labor. We encourage you to estimate these for your own operation, but the unfortunate reality is that they quickly add up on most farms. The \$168/cow/year gross return over cash costs and cow depreciation does not look quite as good now. After adjusting for these other costs, the net return (all costs included) is -\$182 per cow per year, or -\$7280 for the 40-cow farm.

Another way to look at this is to just include the depreciation and interest for equipment/fencing/facilities (\$150/cow/year), and not include land and labor (\$200/cow/year). In this case, the return would increase to \$18/cow/year, and would represent the farms return to land and labor. Did this farm actually lose money on a cash basis? No, not if they are using their own labor and their land is paid for. But the farm also did not make a real profit. This farm essentially paid the equipment/fencing/facilities depreciation and interest in full, but the cattle farmer and land effectively worked for free.

These numbers will vary across operations, but estimating your own cost structure is extremely important. Our guess is that compared to our example farm, there are far more cow-calf operations of similar size with a higher cost structure than there are operations with a lower cost structure in Kentucky. Put simply, well-managed spring calving herds were likely covering all cash costs,

breeding stock depreciation/interest, and depreciation and interest on equipment/fencing/facilities, but were not generating a return on their labor or land this last year.

Readers can use Table 2 to modify the analysis based on their cost structure and expected calf prices, for 2020 and future years. It uses all costs except for land and labor, so the table shows a return to land and labor.

**Table 2: Estimated Return to Land and Labor (per cow) to Spring Calving Cow-Calf Operation given Changes in Cost Structure and Calf Prices**

Change in Cost Structure (per cow per year)	Avg. Steer/Heifer Price, 550 lbs				
	\$1.25	\$1.30	\$1.35	\$1.40	\$1.45
-\$100	\$95	\$118	\$142	\$165	\$188
-\$50	\$45	\$68	\$92	\$115	\$138
\$0	-\$5	\$18	\$42	\$65	\$88
\$50	-\$55	-\$32	-\$8	\$15	\$38
\$100	-\$105	-\$82	-\$58	-\$35	-\$12

*Note: Returns are based on costs shown in Table 1, plus \$150 per cow in depreciation/interest on equipment/fencing/facilities.*

As an example, we used \$1.30/lb in our base scenario as the expected steer/heifer price for 2020. Given the cost structure, we used (\$0 change on the left-hand side of the table), the expected return to land and labor is \$18/cow/year, just as was previously described. If a cattle farmer sold their calves for an average price of \$1.35/lb, and had a \$50/cow/year cheaper cost structure (-\$50 change on the left-hand side of the table), their expected return to land and management would be \$92/cow/year. If another cattle farmer thought the \$1.30/lb calf price was accurate, but had \$50/cow/year more expensive cost structure (+\$50 on the left-hand side), their expected return to land and management would be -\$32/cow/year. In this last example, they had no return to their land and labor and were \$32/cow/year short in covering all their depreciation and interest expenses.

Predicting cattle prices is nearly impossible given the numerous factors that affect the market. While the impact of higher feed prices on feeder cattle and calf values is cause for concern, several other factors paint a more optimistic picture for the current year. The size of the US cowherd continues to shrink, which means the 2021 calf crop will be smaller. Domestic demand is likely to improve throughout the year as restaurant business picks up. Finally, beef exports showed a lot of improvement in the fourth quarter of 2020, and this trend is likely to continue into 2021.

Given that, our best guess for fall 2020 prices for that same 550 lb steer/heifer are in the \$1.35-1.45/lb range. At a \$1.40/lb price, and using the same cost structure, the return to land and labor would now be estimated at \$65/cow/year. This would still not fully compensate a cow-calf operator for the value of their labor, and would not provide any return to land, but it would be an improvement from 2020. Put simply, profit continues to be a challenge for cow-calf operations which means that efficiency and cost control will be of great importance once again.

Reducing and managing costs was one of the main focuses of the Cow-Calf Profitability Conferences that were held during the winter of 2019-2020. Unfortunately, COVID-19 forced us to cancel over half of the conferences we planned to deliver last year. The good news is that we will be offering these in a virtual format this winter on the evenings of March 23-25. Registration, agendas, and other

information can be found at the [Virtual Cow-calf Profitability Conference webpage](#). We hope that you will join us on those evenings as we think every cow-calf operator in Kentucky can benefit from the material being covered.

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