Total Ranch Analysis Colorado (T.R.A.C.): A Ranch Benchmarking Program





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Abstract

Benchmarking is a valuable tool for tracking and comparing the performance of ranch operations over time and relative to peers. However, no benchmark averages have historically been available to cow-calf operators dependent on extensive grazing lands in Colorado. Total Ranch Analysis Colorado (T.R.A.C.) was developed as a collaborative partnership involving Colorado State University faculty and Extension personnel, cattlemen associations, and beef producers. Personnel make onsite visits to collect production and financial records, and participants receive an in-depth analysis that includes a suite of production, financial, and integrated metrics. This article reports benchmark averages from the first cohort of 30 ranch visits.

INTRODUCTION

Total Ranch Analysis Colorado (T.R.A.C.) was developed as a statewide collaborative partnership in Colorado State University (CSU) Extension programming involving campus faculty, Extension personnel, cattlemen associations, and beef producers. Participant ranches are provided an in-depth financial, production, and management analysis of the ranch using a standardized approach. University personnel make onsite ranch visits to meet with producers, listen to their unique successes and challenges, and collect an array of production and financial data. The data collected are then analyzed to determine critical production, financial, and integrated metrics. A customized report with benchmarks is given to the ranch, providing a unique opportunity to identify areas to reduce the cost of production and improve production and marketing efficiency. This article reports benchmark averages from the first cohort of ranch visits.

The T.R.A.C. program aims to provide ranchers with the most accurate cow-calf enterprise analysis possible by using accrual adjustments, accounting for non-cash expenses (depreciation), and allocating overheads based on Animal Unit Month (AUM) equivalents. When applicable, enterprise analyses of stockers, hay production, and raised replacement heifers are conducted. Participants also complete a survey to help clarify current management strategies. Livestock production and financial performance data from participant ranches are assessed and used to establish key performance indicators (KPIs) and benchmarks. Livestock production and financial performance are only two components of ranch sustainability. Therefore, we are actively developing new KPIs related to ranch sustainability's human and ecological dimensions to create a systems approach to ranch analysis.

The overall T.R.A.C. program's goals are to 1) create a comprehensive ranch scorecard to be used by individual operations to set targets and track performance over time, 2) build a robust database of regional benchmarks to help producers (both participating and non-participating) make informed ranch management decisions, and 3) improve ranch family livelihoods through a long-term partnership centered on continual analysis and integration of financial, animal, human, and natural resource data. The T.R.A.C. program was developed in response to a 2018 Colorado beef producer needs assessment suggesting that ranch business management was a priority for further education and training (Rhoades and Mooney, 2018).

BENCHMARKING FOR THE COW-CALF BUSINESS

Benchmark data can help evaluate past performance, measure progress toward current goals, and plan for the future (Kahan, 2010). Benchmarking is the process of conducting a comparative analysis of the same cow-calf enterprise over time (internal benchmarking) or relative to reference herds on similar ranches (external benchmarking) (Langemeier, 2018). Although most ranchers in Colorado collect and record appropriate data, few know how to interpret and analyze this information, for instance, to calculate an accurate breakeven cost for the operation (Rhoades and Mooney, 2022). Extension can play a vital role in assisting ranchers with addressing this and similar gaps.

While cow-calf benchmarking programs exist in other states, there are no existing cow-calf benchmark data for Colorado. Because ranching in Colorado operates under a distinct set of social, financial, and environmental conditions, it requires its own set of benchmark numbers. The benchmarking process can help transform collected information into wisdom to make management decisions (Ramsay, Hanna, and Ringwall, 2016), with KPIs to measure a business's production and financial health (Bevers, 2016). The KPIs within T.R.A.C. are used as a report card to evaluate components of the ranch that are critical to success.

There are several important considerations to keep in mind when interpreting benchmarking averages. The ranch manager should always be the final decision-maker on interpreting what is a strength and weakness. Unique circumstances can make one ranch's performance logically differ from the benchmark ranches—if so, the benchmark averages should not be interpreted as "target" values to be attained. Additionally, ranches should use a systems approach to utilizing benchmark information to make changes. Focusing on improving a single metric alone will often not improve overall ranch performance.

T.R.A.C. BENCHMARKS AND KEY PERFORMANCE INDICATORS

T.R.A.C. benchmarks more than 20 production, financial, and integrated metrics (Table 1). From that extensive list, we identify and describe six KPIs that are particularly critical for cow-calf operations in Colorado dependent on extensive grazing systems (Bevers, 2016). It is important to note that most participating ranches are involved in multiple enterprises (e.g., hay production, raised replacement heifers, and backgrounding). However, the KPIs below only apply to a ranch's cow-calf enterprise. Analyses of the additional enterprises are provided when applicable.

Production KPIs

KPI #1: Pounds Weaned per Exposed Female: A product of weaning weight and weaning percentage. It reflects the number of saleable pounds a ranch has produced and can be influenced by environment, management, and genetics.

Financial KPIs

KPI #2: Return on Assets: Calculated by dividing ranch net income (including interest expenses) by total ranch assets. Because cow-calf producers are first and foremost asset managers, this metric demonstrates how efficiently assets on the ranch are returning the owner a profit.

KPI #3: Fixed to Variable Expense Ratio: Fixed expenses do not change (to a point) based on the number of animal units on the ranch. Variable expenses increase with each additional unit on the ranch. By knowing the fixed cost structure, managers can project how stocking density and expansion opportunities will affect operation efficiency.

Integrated KPIs

KPI #4: Cost/Female: Cumulative cow-calf enterprise expenses are divided by the number of breeding females at the beginning of the fiscal year. Data include depreciation of vehicles, machinery, equipment, buildings, and improvements; raised and purchased livestock; and a conservative management salary (if not already assumed). Opportunity costs are not currently included. No interest is charged if assets (land, cattle, etc.) are owned.

KPI #5: Cost/ CWT of Weaned Calf: Calculated by dividing the total cow-calf enterprise expenses by the total amount of weaned pounds produced by the ranch. This metric can be directly compared to the price received ($/CWT) for calves to determine whether the cow-calf enterprise was profitable each year.

KPI #6: Grazed vs. Fed Days: Calculated as a percentage of days cattle graze pastures annually. The percentage of grazed days is determined by recording the AUMs of each livestock class spent grazing pastures with no fed feed. Maximizing the percentage of grazed days can help reduce feed costs, one of the most significant and variable costs.

Data Requirements

Data are collected, and benchmarks calculated, following Standard Performance Analysis (SPA) guidelines (McGrann, 2010) developed by the National Cattlemen's Beef Association Integrated Resource Management (NCBA IRM) program. Thus, T.R.A.C. is an analysis tool, not a record-keeping system, but that said, many T.R.A.C. participants report improved record-keeping habits and skills as an additional benefit of program participation. Data are collected on ranches where the cow-calf enterprise is the primary source of revenue. Essential records for data calculation of T.R.A.C. benchmark KPIs are listed below (Table 2).

First Cohort Benchmarks

In 2022, the first T.R.A.C. program benchmarks were presented to producer groups at ranch gatherings, Extension meetings, trainings, and industry events (Rhoades and Mooney, 2022). This article makes these benchmark averages available to a broader audience (Table 3). The first cohort of ranches participating in T.R.A.C. were recruited statewide to represent all Colorado geographical regions: 27% from the Northwest, 14% from the Southwest, 13% from the Front Range, 23% from the Northeast, and 23% from the Southeast. They represented small (30% of herds, < 250 head), medium (40%, 250-500 head), and large (30%, >500 head) cow-calf operations. They brought a range of ranch management experience, with 12% considered to be beginning ranchers (>10 years), 19% considered to be intermediate (11-20 years), and 69% considered experienced (>20 years). Just under half of the participating ranches (48%) indicated they work full time on the ranch, with the remainder working most of the time (42%) or part time (10%). More than half (56%) owned less than 25% of the land used for cattle production (56%), whereas fewer (6%) owned 25-50% of the land or (38%) owned more than 50%. One-quarter (25%) of ranchers managed a fourth-generation family ranch, while the remaining (75%) managed a third-generation one.

IMPACT AND FUTURE ANALYSIS

Ranch management is complex, and ranchers need access to systems-level data and metrics to make effective decisions. T.R.A.C. aims to provide producers with the information needed to make more informed management decisions. Ranchers are busy people with limited time for strategic planning and data analysis. Moreover, some ranchers may not consider financial management to be "real" ranch work and leave this activity to evenings, weekends, or other less-than-ideal times of the day (Chase and Dietmann, 2012). Monitoring benchmark data through programs like T.R.A.C. can help focus limited management time on critical areas of the cow-calf business, quickly identify potential areas for improvement, and continuously measure progress toward meeting business goals.

Planning, gathering, and determining the benchmark averages for the first cohort of ranches produced several critical takeaways for Colorado cow-calf enterprises in these areas:

- First, production benchmarks (pregnancy, weaning, pounds weaned/exposed female, etc.) remain challenging for some producers but not most. Management decisions can impact productivity, but rainfall has the most significant influence. Therefore, this resource limitation likely prevents producers operating at or above the median production benchmarks from further cost-

effectively increasing their productivity. As costs rise, managers must also evaluate the marginal returns of increasing productivity.

- Second, financial management represents the number one barrier to success. Ranch net income and return on assets vary considerably between the upper and lower producer groupings. Most operations that struggle financially have higher fixed costs. Cow-calf businesses are asset-based, and fixed costs (equipment, labor, and cows) on benchmark operations accounted for 50-70% of every dollar spent. Fixed costs on ranches are difficult to change once assets have been acquired. An effective way to lower them is to spread it out over more units by increasing cow numbers, but maintaining or even increasing stocking rates (rainfall dependent) can be challenging.
- Third, the total costs of owning a cow will continue to rise due to inflation. Substantial variation in cow costs exists between the upper and lower 30% of producers in the first T.R.A.C. benchmark cohort. A breakdown of cow costs can identify which specific expenses might need improvement. The top four expenses are typically depreciation, labor, feed, and pasture. Costs per CWT of weaned calf (i.e., breakeven relative to price received) could be the most important number to focus on and compare. Although every ranch has different resources available, this metric incorporates expenses and productivity.
- Last, most cow-calf operations aim to wean the most profitable calf possible. To do so takes excellent management, which requires a clear view of the financial position of the ranch and drivers of net income and return on assets; making a multitude of small decisions to collectively keep costs low relative to the value of weaned calves; and finding leverage in the production system that can have long-lasting systematic benefit to the operation. Good records and accounting systems are critical to accurate financial information. Benchmarking and completing an in-depth enterprise analysis to evaluate potential changes (partial budgeting, capital budgeting, etc.) can assist with decision-making and continuous improvement.

For Extension, developing programs like T.R.A.C. can support strong stakeholder relationships, facilitate valuable comparative analysis for clientele, and create unique long-term datasets for research, Extension, and educational programming. Analysis and comparison of early T.R.A.C. records highlighted depreciation, labor, feed, and pasture expenses as the top four contributors to overall cow costs (McQuagge et al., 2021). Subsequent publications and Extension materials will be developed by T.R.A.C. team members, Extension personnel, and graduate students to demonstrate the value of using benchmarking information for improved decision-making to producers and beef industry stakeholders. As mentioned, livestock production and financial performance are only two components of ranch sustainability. T.RA.C. benchmarks should, therefore, be used in conjunction with other indicators (e.g., animal health, rangeland health) and long-term strategic planning when deciding to make significant changes to ranching operations to maintain a holistic approach to ranch management and analysis.

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Table 1. T.R.A.C. Benchmarks and KPIs[1] for Ranch Analysis		
Production Benchmarks	**Financial Benchmarks**	**Integrated Benchmarks**
Breeding Females	Return on Assets[1]	Cost/Female[1]
Acres/Female	Investment/Female	Weaned Calf Price
Feed Fed/Exposed Female	Equity to Assets Ratio	Labor & Management Expense Ratio
Normal Rainfall	Asset Turnover Ratio	Nutrition Expense Ratio
Pregnancy Rate	Net Worth Change	Cost/CWT Weaned Calf[1]
Calving Distribution	Operating Ratio	Cost/Weaned Calf
Weaning Rate	Depreciation	Grazed vs Fed Days[1]
Replacement Rate	Interest Rate	
Weaning Weight	Net Income from Operation	
Pounds Weaned/Exposed Female[1]	Fixed to Variable Expense Ratio[1]	
Pounds Weaned/Acre		

[1]KPI = Key Performance Indicator.

Table 2. T.R.A.C. Data and Records Utilized for Ranch Analysis		
Production Benchmarks	**Financial Benchmarks**	**Grazing Benchmarks**
Cattle Inventory • Cows Exposed • Cows on January 1 • Weaned Calves	Profit & Loss Statement	Acreage Utilization
Feed Inventory • Raised • Purchased	Balance Sheet	AUMs
Pregnancy Check Records	Depreciation Schedules	
Calving Distribution Records	Loan Schedules	
Weaning Weights		

Table 3. T.R.A.C. Benchmark Averages from First Cohort (N = 30)			
	Lower 30% (N=9)	Median (N=30)	Upper 30% (N=9)
Production Benchmarks			
Pregnancy (%)	89.5	93.0	96.0
Calving (%)	85.0	89.1	93.0
Weaning (%)	81.0	85.0	90.0
Weaning weight (lbs)	480	558	608
Lbs weaned/exposed female[1] (lbs/head)	417	487	528
Grazing acres/female (acres/head)	81.0	43.5	18.4
Lbs. weaned/acre (lbs/acre)	6.0	11.6	29.0
Calving distribution (% of cow herd)			
1-21 days	---	46.5	---
22-42 days	---	38.8	---
43-63 days	---	11.1	---
63+ days	---	3.6	---
Financial Benchmarks			
Return on assets (%)[1]	-6.1	-0.6	5.0
Ranch net income ($1,000s)	-70.0	3.6	121.8
Fixed vs variable expenses[1]			
Variable expenses (%)	31%	36%	49%
Fixed expenses (%)	69%	64%	51%
Integrated Benchmarks			
Cow cost ($/cow)[1]	1,326	1,013	799
Grazed vs fed days[1]	53.0%	70.0%	92.5%
Cost per calf vs price received			
Cost / CWT weaned calf ($/cwt)[1]	280	211	159
Price received ($/cwt)	146	157	169

[1]KPI = Key Performance Indicator.