Standardized Performance Analysis Integrating Production and Financial Performance

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A producer led effort through the NCA-Integrated Resource Management (IRM) Coordinating Committee has developed standardized cow-calf enterprise production and financial performance analysis to meet information needs of cow-calf producers. Areas addressed include (1) standardization of terminology and calculation procedure, (2) selection of a minimal set of measures that describe performance and (3) standardization of methodology in enterprise cost accounting. Field testing of the analysis system in 12 states involving 55 herds prior to January 1992 has been extremely successful. This re-emphasizes the desire of producers to have sound production and financial information that they can understand and utilize in decision making. The implementation of NCA-IRM-Standardized Performance Analysis (SPA™) is now underway. This paper briefly summarizes the measures selected, key results of the herds evaluated and future direction of SPA.

Measures Selected

SPA guidelines have been prepared that present standardized analysis terminology and calculation procedures for the cow-calf producer. Performance measures include both production and financial analysis measures in the following areas:

1. Reproduction Performance
2. Production Performance
3. Grazing and Raised Feed Land Use and Productivity
4. Marketing - Price and Method
5. Financial and Economic Performance

The following is a list of enterprise performance measures that have been chosen and field tested.

Reproduction

- Based on Exposed Females
  - Pregnancy Percentage*
  - Pregnancy Loss Percentage**
  - Calving Percentage*
  - Calf Death Loss*
  - Calf Crop or Weaning Percentage*
  - Female Replacement Rate**
- Calf Death Loss Based on Calves Born
- Calving Distribution**
  - Cumulative Distribution
    - Calves during first 21 days
    - Calves during first 42 days
    - Calves during first 63 days
    - Calves after first 63 days

*Primary performance measures that must be supplied by the participant.

**Secondary performance measures that the participant may not be able to provide.

Production

- Based on Exposed Females
  - Average Calf Weaned Age (months)*
  - Actual Weaning Weight (lbs./hd.)*
    - Steers / Bulls
    - Heifers
    - Average Weaning Weight
  - Pounds Weaned Per Exposed Female*

Grazing and Raised Feed Land Measures

- Acres Per Exposed Female*
  - Grazing Acres per Exposed Female
  - Raised Feed Acres per Exposed Female
  - Corp Aftermath Acres per Exposed Female
- Pounds Weaned Per Acres Utilized by the Cow-Calf Enterprise*
- Dominant Grazing Method - Exposed Females**
  - Continuous Grazing on Improved & Unimproved Native
- Pounds of Raised/Purchased Feed Fed per Breeding Cow**

Marketing, Financial and Economic Performance Measures

Marketing Information

- Marketing Information
  - Marketing method
  - Pricing method
  - Dominant breed
- Payweight Cattle Prices ($/cwt)

Calves	Culls
- Steers/Bulls	- Cows
- Heifers	- Bulls
- Weighted Average	

Financial Position***

- Investment Per Breeding Cow (Value of Assets)
  - Current assets
  - Livestock
  - Machinery and equipment
  - Other non-current assets
  - Real estate - land and improvements
  - Total investment
- Debt Per Breeding Cow (Enterprise Liabilities)
- Equity to Assets or Percent Ownership of the Breeding Cow

Financial and Economic Performance Per Breeding Cow and Per cwt. of Calf Weaned

- Total Raised/Purchased Feed Cost
- Total Grazing Cost
- Gross Cow-Calf Enterprise Accrual Revenue

*** Based on both cost and market valuation of assets.

- Total Cow-Calf Enterprise Operating Cost
- Total Financing Cost and Economic Return
- Total Pre-tax Cost Before Non-Calf Revenue Adjustment
- Net Pre-tax Income (After Withdrawals)
- Percent Return on Enterprise Assets (ROA)
- Unit Cost of Production (Economic Break-Even Price)
  - Total Non Calf Revenue
  - Total Calf Pre-tax Cost (Non-calf Revenue Adjusted)
- Rate of Economic Return on the Owned Real Estate Investment

Developing SPA/Data Needs

The development of SPA went through several phases. The first phase was to select the minimum number of production and financial performance measures that effectively measure performance. This was done by a multi-state producer and academic committee. Following the selection of the measures, the computation, interpretation and limitation of each measure was written. These first two steps were followed by prototype software development and the use of SPA in different states, production systems and sizes of herds.

The key component of SPA is development of the total farm or ranch financial statements that include a fiscal year beginning and ending balance sheet and accrual adjusted income statement. This meets the overall critical financial performance reporting needs for the producers, lenders and consultants. After total statements are prepared, the assets, liabilities, and revenues and expenses associated with the cow-calf enterprise are identified. Producers have this financial information, but quite frequently it is poorly organized and not understood sufficiently to be fully utilized in decision making.

The cow-calf reproduction and production measures require accurate cattle inventories, especially at the beginning and ending of the breeding season as well as at weaning time, and data on pregnancy testing results. Again, most producers have the data, it's just not organized in an usable manner.

A big pay off of SPA analysis is the more effective use of historical production and financial data that producers are already collecting. It's also an opportunity to give purpose to producers and their advisors to sharpen their analytical skills to find ways to reduce costs and improve performance. Having the comparative information developed using a standard procedure is extremely motivational.

Summary of Results

The initial 55 test herds from twelve states are summarized in table 1. These are a few selected measures generated by SPA. **This limited set of data from twelve states only serves as an example of information that can be reported.**

The return on assets (ROA) is the most commonly used measure of financial performance for any business and is very useful in evaluating the financial performance of the cow-calf enterprise. These are some of the relationships that SPA analysis of the data behind table 1 show:

1. Higher pregnancy percentage herds have a higher ROA
2. Higher calving percentage herds have a higher ROA
3. Higher calf crop herds have a higher ROA

Reproduction factors are positively correlated with ROA. Factors that are more influenced in the market place have different relationships. Initial data shows higher weaning weights are associated with lower ROA. It may cost too much to get the high weaning weights.

The importance of nutrition and management is illustrated by the positive relationship between

Table 1. NCA-IRM-SPA SUMMARY 1990 CO,FL,MO,MT,NB,NM,ND,OK,SC,SD,TX,WY Summary of 55 Herds

Select SPA Performance Measures----------

	Simple Average	Min.	Max.	Weighted Average
Production Based on Exposed Females				
Pregnancy Percentage	88.93	68.63	98.34	86.98
Calving Percentage	84.82	59.13	98.28	81.85
Calf Death Loss	4.12	0.00	9.86	4.27
Calf Crop or Weaning Percentage	81.60	57.39	96.77	79.58
Actual Weaning Weight Steers/Bulls	536	410	793	523
Actual Weaning Weight Heifers	502	325	713	495
Actual Average Weaning Weight Per Calf	519	369	749	509
Pounds Weaned Per Exposed Female	429	245	669	406
Total Acres Per Exposed Female	22.27	1.91	140.31	18.03
Pounds Weaned Per Acre Utilized Per Exposed Female	57.50	2.37	258.92	54.33
Marketing				
Pay Weight Price - Bulls and Steers - $/Cwt.	94.94	83.49	113.94	94.10
Pay Weight Price - Heifers - $/Cwt.	89.71	63.53	110.00	88.08
Pay Weight Price - Average - $/Cwt.	91.78	73.43	111.34	90.53
Financial and Economic				
Total Investment Per Breeding Cow-Cost Basis	1703	296	6951	1366
Percent Return on Enterprise Assets (ROA) at Cost	10.45	-9.21	39.40	6.59
Total Investment Per Breeding Cow - Market Value	3658	775	11016	4159
Percent Return on Enterprise Assets (ROA) at Market Value	5.04	-9.96	29.55	3.07
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Total Financial Raised/Purchased Feed Cost Per Breeding Cow	102.29	20.32	292.63	67.31
Total Financial Grazing Cost Per Breeding Cow	81.79	0.00	389.36	65.49
Total Financial Pre-tax Cost Before Non-calf Revenue Adjustment	390.79	186.70	682.30	316.29
Net Financial Pre-tax Income (After Withdrawals) Per Breeding Cow	86.81	-286.60	303.25	118.76
Total Economic Raised/Purchased Feed Cost Per Breeding Cow	100.54	9.32	383.13	71.29
Total Economic Grazing Cost Per Breeding Cow	124.88	15.48	518.44	118.04
Total Economic Pre-tax Cost Before Non-calf Revenue Adjustment	500.47	273.74	866.84	427.51
Net Economic Pre-tax Income (After Withdrawals) Per Breeding Cow	-22.73	-522.21	192.15	7.58
Weaned Calf Economic Pre-tax Cost (Non-calf Revenue Adjusted) $/Cwt.*	99.82	49.49	194.61	89.10

*Adjusted for gain or loss on cull sales, base value increase for replacements and inventory change.

percent calf crop based on exposed females and average weaning weights.

As can be observed in table 1, the cow-calf enterprise generates a low rate of return even in the higher price years of 1990 and 1991. When considering health practices, producers rightfully should be concerned about the benefits and costs associated with each alternative. Practitioners need to inform producers of the benefits and costs of their recommendations.

Space does not permit highlight of reproduction and production results. However, it should be noted that these rates are substantially below the "coffee shop values" when one truly bases these values on exposed females. Variation indicates a great potential for improvement.

Future NCA-IRM-SPA

A resolution was passed by NCA in January to adopt the SPA for cow-calf and also initiate efforts to develop SPA for purebred as well as stocker-feeder cattle enterprises. NCA has initiated an effort to develop a SPA data base for comparative analysis of SPA results that will be valuable to producers, educators and practitioners. Although producers led these standardization efforts, professionals from all disciplines including veterinarians were also involved. Training and implementation efforts are under way nationally to support SPA adoption.

It should also be noted that work by the author's colleagues in South America (Venezuela, Uruguay and Argentina) as well as New Zealand and Australia point to a potential for international standardization possibilities for SPA.

NCA-IRM-SPA Importance to Bovine Practitioners

SPA will bring two important opportunities to the practitioner. First, it is a business opportunity for those who wish to broaden their area of expertise and service efforts providing SPA use support to clientele. Second, producers using SPA can better inform the bovine practitioner as to the production and financial implications of the practitioner's work. In many cases the economic benefits relative to the costs can be more clearly demonstrated.

SPA information will also allow for better accessibility of the contribution of the veterinary profession to the profitability of the business. Future work with SPA health and environment will provide information to monitor the impacts of management and health practices on the environment that have never been available. Contact you state IRM coordinator for further information on the NCA-IRM-SPA effort.

References

1. National Cattlemen's Association, Guidelines for Production and Financial Performance Analysis for the Cow-calf Producers. Denver, Colorado, 1992.