

## Standardized Performance Analysis (SPA) Summary for 1999-2000 Veterinary Medicine Students

### A.S. Leaflet R1751

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#### Summary

**Nine Iowa State University veterinary medical students completed SPA records on herds from Iowa, North Dakota and South Dakota. The Iowa herds were included in the SPA summary for Iowa, but the six North and South Dakota herds were summarized separately. These six herds had an average herd size of 371 cows and had a financial return to capital, labor and management of \$175 per cow. Total financial cost per cow averaged \$286 for these herds with a range of \$211 to \$388. Feed utilized averaged 4,442 pounds of dry matter per cow and the average pounds of calf produced per exposed female was 506 pounds.**

#### Introduction

The new veterinary graduates' understanding of beef production and agricultural economics concerns both practitioners and educators. A significant number of students interested in mixed or food animal practice do not come from an agricultural background, and this trend is likely to continue. Therefore innovative methods to introduce and teach veterinary students about the agricultural industry is critical to the future of the veterinary profession.

Standardized Performance Analysis (SPA) guidelines for beef cowherd records were developed in the early 1990's by Extension Service and the National Cattlemen's Beef Association. Many states have implemented these guidelines into their cow-calf record systems, developed benchmarking databases, and now assist producers with decision making processes off of these comparisons. Reports from various states suggest major herd economic improvements from this type of outreach activity.

#### Materials and Methods

The Department of Veterinary Diagnostic and Production Animal Medicine at Iowa State University has developed an in depth program for veterinary students interested in beef production. Students are encouraged to enroll in the program their first year in veterinary school. The program requires students to identify a cow calf producer and track the herd's production and financial performance annually while in vet school. They benchmark their producer's performance with similar herds, which

helps the student identify outlying parameters in their producer's operations. The herds are located in North Dakota, South Dakota and Iowa, and local veterinarians and state beef economists assist with the process.

Students have prepared presentations about analysis/interpretation of data and case reports. They have presented at The National Cattlemen's Beef Association's summer meeting in August of 2000, conducted a workshop of producers and veterinarians in Aberdeen, SD, and presented to a regional IRM-SPA working group. The first students to complete the program will graduate in the spring of 2001.

Nine students completed a financial analysis of their designated beef herds in 1999. Three were in Iowa, and six were in North and South Dakota. The Iowa herds were added to the annual Iowa SPA summary compiled through the beef center (publication IBC-12). The North and South Dakota herds were significantly different in terms of size, production, cost of forages, and capital investments. Therefore, the North and South Dakota herd results are summarized independently in this report.

Individual cow records are kept on Cowcalf (University of Nebraska) or Cow Herd Appraisal Performance Software (CHAPS) (North Dakota State University). SPA production and financial records are kept on the ISU-IRM-SPA Beef Cow Business Record System (Iowa State University). Students were required to visit their herd a minimum of three times per year beginning January 1, 1999. Students completed their analysis in the spring of 2000 and presented their herds to the class for discussion.

#### Results and Discussion

Final SPA summaries for the six North and South Dakota herds were averaged and presented in Tables 1-3. The average herd size was 371 cows and ranged from 188-951 cows for the North and South Dakota herds. Five of the six were commercial herds, and one was commercial and seedstock. All six herds were profitable in 1999 with an average return to capital, labor and management of \$175 per cow, ranging from \$98-\$341 on a financial basis. Net profit (after operator and family labor was paid) averaged \$48 per cow and ranged from \$28-\$207 per cow.

Total annual costs per cow averaged \$286, and ranged from \$211-\$388. Total cow costs was a major factor in profitability. The lower cost herds were more profitable than the higher cost herds.

The summer of 1999 was an excellent year for forage production. Overall, the North and South Dakota producers had extremely low forage production costs. The average financial cost of hay was \$14 per ton and ranged from \$7-

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\$29 per ton. Average dry matter consumption of harvested forages, silage and purchased feeds was 4,442 lbs. per cow and ranged from 3,581-6,825 lbs. per cow.

These six herds were highly productive averaging 506 lbs. weaned per cow exposed with a range of 484 lbs.-568 lbs. Market price for weaned calves averaged \$88.43 per cwt. with a range of \$82.73-\$95.00 per cwt.

### Implications

**Benchmarking a cow-calf operation can be an important management tool, which, when done properly, can assist a producer in determining production and financial strengths and weaknesses. It is critical for veterinary students to understand normal production and financial parameters. The ISU-IRM-SPA Beef Cow Business Record can give veterinarians a record system which when implemented with clients and compared against a regional database can assist them in making clients more competitive. Allowing veterinary students at Iowa State University to develop this skill has the potential to impact the profitability of their future clients and gives them an in-depth view of cow-calf production and economics.**

### Acknowledgements

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**Table 1. Return and cost summary for six North and South Dakota beef herds.**

	Financial	Economic	Economic w/ raised hay @ market value
<b>1. Return to Capital, Labor &amp; Mgmt.</b>	<b>\$64,991</b>	<b>\$53,141</b>	<b>\$50,331</b>
<b>2. Return to Labor &amp; Mgmt.</b>	<b>\$53,143</b>	<b>\$31,955</b>	<b>\$29,145</b>
<b>3. Net Profit</b>	<b>XXXXX</b>	<b>\$17,947</b>	<b>\$15,137</b>
4. Return per \$100 of Feed Fed	\$378	\$263	\$253
5. Annual % Return on Capital Investment	27%	14%	13%
6. Return per Hour of Operator Labor	\$35.16	\$16.56	\$14.77
<b>Costs for Cow-Calf Enterprises</b>			
7. January 1 Number of Cows in Herd	371	371	371
8. a. Pasture Cost per Cow	\$82	\$109	\$109
b. Crop Residues per Cow	\$0	\$0	\$0
c. Harvested Forages per Cow	\$30	\$44	\$54
d. Non-Purchased Raised Feed Fed per Cow	\$8	\$8	\$8
e. Purchased Feed per Cow	\$17	\$17	\$17
<b>f. Total Feed Cost per Cow</b>	<b>\$137</b>	<b>\$178</b>	<b>\$188</b>
9. Operating Cost per Cow	\$76	\$76	\$76
10. Depreciation Cost per Cow	\$40	\$40	\$40
11. Capital Charge per Cow	\$24	\$58	\$58
12. Hired Labor Cost per Cow	\$9	\$9	\$9
13. Family & Operator Labor Charge per Cow	XXXXX	\$45	\$45
<b>14. Total Cost per Cow in Herd, January 1</b>	<b>\$286</b>	<b>\$407</b>	<b>\$416</b>
<b>15. a. Return to Management per Cow</b>	<b>\$167</b>	<b>\$90</b>	<b>\$80</b>
b. Margin per Cwt Beef Produced, Inventory Included	\$26.72	\$14.12	\$13.03
<b>Costs/Cwt for Cow-Calf Enterprises</b>			
16. Feed Cost per Cwt of Beef Produced	\$24.78	\$31.50	\$32.60
17. a. Operating Cost per Cwt of Beef Produced	\$11.27	\$11.27	\$11.27
b. Vet Med Cost per Cwt of Beef Produced	\$3.69	\$3.69	\$3.69
18. Depreciation Cost per Cwt of Beef Produced	\$6.80	\$6.80	\$6.80
19. Capital Cost per Cwt of Beef Produced	\$4.51	\$9.99	\$9.99
20. Family & Operator Labor Cost per Cwt of Beef Produced	XXXXX	\$7.17	\$7.17
<b>21. Total Cost per Cwt of Beef Produced</b>	<b>\$51.05</b>	<b>\$70.43</b>	<b>\$71.52</b>
<b>Production &amp; Sales for Cow-Calf Enterprises</b>			
22. Total Number of Feeder Calves Sold		335	
23. Average Age at Weaning		205	
24. Average Weight of Feeder Calves Sold		598	
25. Pounds of Calf Weight Sold per Cow		534	
26. Price per Cwt of Feeder Calves Sold		\$88.43	
27. Total Number of Breeding Stock Sold		67	
28. Average Weight of Breeding Stock Sold		1,243	
29. Pounds of Breeding Stock Sold per Cow		226	
30. Price per Cwt of Breeding Stock Sold		\$43.77	
31. Total Pounds of Beef Produced per Cow		589	
32. Total Pounds of Beef Sold per Cow		760	
33. Total Value of Production Sold per Cow		\$570.22	

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**Table 2. Forage, pasture and feed utilization summary for six North and South Dakota beef herds.**

	<b>Financial</b>	<b>Economic</b>	
<b>Forage Production Costs</b>			
1. Number of Acres in Forage Production	659	659	
2. Land Charge per Acre	\$4.38	\$11.40	
3. Operating Cost per Acre	\$24.33	\$24.33	
4. Depreciation Cost per Acre	\$1.86	\$1.86	
5. Non-Real-Estate Loan, Interest per Acre	\$0.85	XXXXXX	
6. Family & Operator Labor per Acre	xxxxxx	\$12.28	
<b>7. Total Cost per Acre of Land in Forage Production</b>	<b>\$31.42</b>	<b>\$49.87</b>	
8. Yield per Acre of Forage Production, Tons	2.5	2.5	
9. Land Charge per Ton	\$2.05	\$5.01	
10. Operating Cost per Ton	\$11.01	\$11.01	
11. Depreciation Cost per Ton	\$0.60	\$0.60	
12. Non-Real-Estate Loan, Interest per Ton	\$0.44	XXXXXX	
13. Family & Operator Labor per Ton	xxxxxx	\$4.29	
<b>14. Total Cost per Ton of Forage Produced</b>	<b>\$14.10</b>	<b>\$20.91</b>	
<b>Pasture Summary</b>			
15. Number of Acres Pastured	4500	4500	
16. Land Charge per Acre	\$9.83	\$11.08	
17. Operating Cost per Acre	\$1.94	\$1.94	
18. Depreciation Cost per Acre	\$0.04	\$0.04	
19. Non-Real Estate Loan, Interest per Acre	\$0.25	XXXXXX	
20. Family & Operator Labor per Acre	xxxxxx	\$0.77	
<b>21. Total Cost per Acre of Land in Pasture Production</b>	<b>\$12.06</b>	<b>\$13.83</b>	
22. Acres per Cow-Calf Pair	11.99	11.99	
23. Animal Unit Months (AUM) from Pasture	5148	5148	
24. Pasture Cost per Cow-Calf Pair	\$82.37	\$108.74	
25. AUM per Acre	1.5	1.5	
26. Cost per AUM	\$7.30	\$9.80	
27. Cost per Day for 1,000 lbs of Body Weight	\$0.24	\$0.33	
<b>Aftermath Grazing Summary</b>			
28. Acres per Producing Cow	1.40	1.40	
29. Cost per Acre	\$0.00	\$0.00	
30. Cost per Cow	\$0.00	\$0.00	
31. AUM per Acre	1.0	1.0	
32. Cost per AUM	\$0.00	\$0.00	
33. Cost per Day for 1,000 lbs of Body Weight	\$0.00	\$0.00	
	<b>Dry Matter</b>	<b>Financial</b>	<b>Economic</b>
	<b>(lbs)</b>	<b>Value</b>	<b>Value</b>
<b>Feed Utilization Summary</b>			
34. Raised Hay Fed per Cow	3,889	\$29.55	\$44.18
35. Other Home-Raised Feed Fed per Cow	299	\$7.57	\$7.57
36. Purchased Hay Fed per Cow	0	\$0.00	\$0.00
37. Purchased Supplements Fed per Cow	57	\$10.89	\$10.89
38. Purchased Silages & Concentrates Fed per Cow	198	\$6.56	\$6.56
<b>39. Total Feed Fed per Cow</b>	<b>4442</b>	<b>\$54.58</b>	<b>\$69.20</b>
40. Feed Fed per Cwt. Marketed	583	xxxxxxx	xxxxxx

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**Table 3. Reproduction, production and investment summary for six North and South Dakota beef herds.**

### Reproduction & Production Measures

1.	Pregnancy Percentage	92.8%
2.	Pregnancy Loss Percentage	3.0%
3.	Calving Percentage	90.8%
4.	Calf Death Loss	3.7%
5.	Calf Crop or Weaning Percentage	87.2%
6.	Female Replacement Rate	15.0%
7.	Calf Death Loss Based on No. of Calves Born	0.7%

### Calving Distribution:

8.	Beginning Calving Date:	03/01/99
9.	Calves Born during 1st 21 Days	59.5%
10.	Calves Born during 1st 42 Days	87.3%
11.	Calves Born during 1st 63 Days	96.0%
12.	Calves Born after 1st 63 Days	4.0%

### Production Performance Measures:

13.	Average Age at Weaning (Days)	205
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### Actual Weaning Weights

14.	Steers/Bulls	612
15.	Heifers	573
16.	Average Weaning Weight	593
17.	Pounds Weaned per Exposed Female	506

	<u>Cost</u>	<u>Market</u>
<b>Summary of Investment per Breeding Cow</b>		
18. Breeding Livestock	\$563	\$725
19. Machinery, Equipment & Structures	\$51	\$243
20. Current Assets	\$52	\$52
<b>21. Total Breeding Stock &amp; Equipment Investment/Cow</b>	<b>\$665</b>	<b>\$1,019</b>
<b>Summary of Investment per Forage Production Acre</b>		
22. Structures & Equipment	\$7	\$92
23. Real Estate	\$57	\$105
24. Current Assets	\$31	\$41
<b>25. Total R.E. &amp; Equipment Investment/Forage Production Acre</b>	<b>\$95</b>	<b>\$238</b>
<b>26. Total R.E. &amp; Equipment Investment in Forage Production/Cow</b>	<b>\$110</b>	<b>\$241</b>
<b>Summary of Investment per Pasture Acre</b>		
27. Structures & Equipment	\$0	\$1
28. Real Estate	\$32	\$68
29. Current Assets	\$3	\$3
<b>30. Total R.E. &amp; Equipment Investment/Pasture Production Acre</b>	<b>\$35</b>	<b>\$72</b>
<b>31. Total R.E. &amp; Equipment Investment in Pasture Production/Cow</b>	<b>\$359</b>	<b>\$643</b>
<b>32. Total Capital Investment/Cow</b>	<b>\$1,134</b>	<b>\$1,904</b>