Forage Production Costs and Yields for South-Central North Dakota

Steve Metzger
Carrington Area Farm Business Management Program

As livestock feeders who produce both beef and forages look for more viable cash flows, they will need to be aware of the true cost of producing forages and what that may mean to the bottom line of their feeding enterprises. These beef and forage producers will be challenged to find the most profitable combination of concentrates and forages that produces both the desired gain as well as the desired profit.

Forage production data for this study was gathered directly from producers enrolled in the North Dakota Farm Business Management Program in Region 3 at Bismarck, Casselton, Carrington, Enderlin, Jamestown, Napoleon, and Wahpeton. Each of these sites collected and summarized the data for its own area, after which the data was combined into an annual regional report. Farms or ranches located within the Red River Valley or west of Bismarck were deleted from the Region 3 report and were included in the regional reports that were more reflective of the corresponding areas.

The data for this study included corn silage, alfalfa hay, grass hay and mixed alfalfa-grass hay. These forage crops comprised a total of 30,141 acres. The annual field data came from an average of 54 farms or ranches with some duplication as some farms or ranches produced more than one of the forages in any given year. The FINPACK system was used to do the individual forage enterprise analysis for the 2006 to 2008 time frame. To secure as large a database as possible, a limited number of owned-forage enterprises were converted to a cash-rent equivalency by elimination of the real estate taxes and long-term interest and then assigning to those limited enterprises a cash-rent amount that was in line with the historic cash rents for those forages and the specific yearly rent for those forages.

The greatest amount of forage dry matter per acre was from corn, which at an average of 11.44 tons and a harvest time moisture of 65% still yielded 4.0 tons of dry matter. This was followed by alfalfa hay and grass hay, with alfalfa-grass hay finishing in fourth place at 1.31 tons per acre harvested at an estimated 15% moisture or approximately 1.11 tons of dry matter.

The greatest cost per ton of dry matter was also attributed to corn silage at $61.90 while the least cost was associated with grass hay at $33.85 per ton. Alfalfa hay and alfalfa-grass hay came in at $49.36 and $45.37, respectively. While cost per ton of dry matter is one method of comparing forages, it is vital to note that the quality and specific nutrient content of the various forages must always be addressed. While grass hay may have one of the lowest costs per ton of dry matter produced, it may also be much lower in energy and specific nutrients than some higher cost forages such as corn silage. It should also be noted that hay produced on CRP ground would most likely have been included as alfalfa-hay because of the mix of forages found within it.

The main value of knowing the real costs of forage production lies in being able to more correctly correlate the cost of the forage to the nutrient content of the forage. A forage such as corn silage may be more expensive, but it may be a better fit for a specific livestock enterprise as opposed to a much lower cost forage such as grass hay. In addition, this knowledge will also help producers to more adequately compare home-grown forages to purchased forages. Producers often express some surprise that home-grown forages are as costly as they are, when all costs, including overhead expenses are considered. All of these things can help beef producers to control their expenses while working towards the best bottom line possible.

Table 1 Forage Crop Production 2006-2008 in Region 3, South Central North Dakota.

Years 2006-2008 Region 3	Corn Silage At 65% Moist.	Alfalfa Hay 10-15% Moist.	Grass Hay 10-15% Moist.	Alfalfa-Grass 10-15% Moist.
Number of Fields	47	44	39	76
Number of Farms	42	39	31	51
Acres per field	55.0	112.7	178.8	205.6
Total Acres of Forage Crop	2,583	4,960	6,974	15,624
Yield in Tons per Acre	11.44	2.20	1.52	1.31
Operator Share	100.00	100.00	100.00	100.00
Value per Ton, includes LDP	$22.43	$55.07	$27.51	$41.10
Total product return/acre	$256.56	$121.33	$41.73	$53.70
Misc. Income per acre	$7.50	$2.08	$0.00	$2.16
Gross Value per Acre	$264.06	$123.41	$41.73	$55.86
Direct Expenses/Acre				
Seed	$39.96	$1.81	$0.00	$0.00
Fertilizer	$42.18	$4.06	$0.00	$0.09
Crop Chemicals	$14.16	$0.71	$0.00	$0.12
Crop Insurance	$12.96	$0.48	$0.00	$0.00
Fuel and Oil	$19.14	$12.21	$9.87	$8.55
Repairs	$17.22	$10.64	$9.74	$6.63
Custom Hire	$20.55	$1.02	$0.03	$1.58
Land Charge	$35.16	$33.49	$10.22	$11.11
Misc.	$4.14	$1.84	$1.50	$0.99
Operating Interest	$5.27	$3.86	$2.02	$4.46
Total Direct Costs/Acre	$210.74	$70.12	$33.38	$33.53
Return over Direct Exp.	$53.32	$53.29	$8.35	$22.33
Overhead Expenses/Acre				
Hired Labor	$7.62	$3.70	$2.08	$1.49
Machinery & Building Leases	$0.91	$0.25	$0.00	$0.14
Farm Insurance	$2.31	$2.08	$0.61	$2.04
Utilities	$2.08	$1.70	$0.48	$1.10
Interest	$3.30	$2.68	$0.96	$2.33
Mach. and Building Depreciation	$16.73	$11.19	$5.88	$8.99
Miscellaneous	$4.17	$3.29	$1.63	$2.39
Total Overhead Expense/Acre	$37.12	$24.89	$11.64	$18.48
Total Listed Expenses/Acre	$247.86	$95.01	$45.02	$52.01
Net Return per Acre without Direct or CC	$16.20	$28.40	($3.29)	$3.85
Direct Expense per Ton	$18.42	$31.87	$21.96	$25.60
Total Listed Expense per Ton	$21.67	$43.19	$29.62	$39.70
Net Return per Ton	$1.42	$12.91	($2.16)	$2.94
Breakeven Yield in Tons per Acre	$10.22	$1.52	$1.64	$1.17
Estimated Cost per Ton of Dry Matter	$61.90	$49.36	$33.85	$45.37
Farm Program Payments per Acre	$11.09	$9.24	$0.00	$1.64
Net Return/Acre Including Prog. Payments	$27.29	$37.64	($3.29)	$5.49

* Data Source, Region 3 Reports, 2006-2008, North Dakota Farm Business Management Program