



# The Role of Cow-Calf Enterprise Budgets in **Evaluating the Economic Impact of Sage-Grouse Conservation** on Rangeland Ranching Operations Holly Dyer, UW Research Assistant, <u>hsdyer@gmail.com</u>

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## What we know:

Sage-grouse habitat conservation on private land expected to reach 8 million acres by 2018 (USDA-NRCS, 2015)

# What we do *not* know:

□ What are the economic impacts of sage-grouse conservation on ranching operations?

- Conservation efforts can be mutually beneficial to wildlife and ranchers
  - Reduce threats to the sage-grouse
  - Improve grazing and livestock water supplies

☐ How are those impacts measured?

Does the old adage, "What is good for the bird is good for the herd" stand true?



Photo Credit: USDA-NRCS

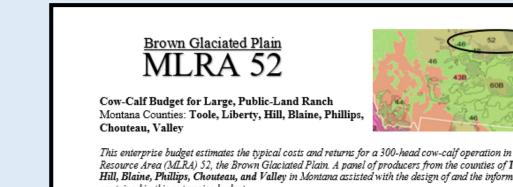
# **Tools we have:** Enterprise Budgets!

Enterprise budgets document all resources necessary for ranching production along with the rates of use and costs. Budgets help producers benchmark their operation's production and economic performance while providing estimates to business decision outcomes.



Photo by Rick McEwan, Sage-Grouse Initiative's Photo Gallery







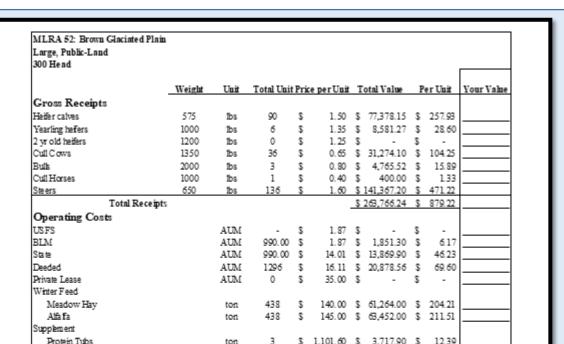
This enterprise budget estimates the typical costs and returns for a 300-head cow-calf operation in Major Land Resource Area (MLRA) 52, the Brown Glaciated Plain. A panel of producers from the counties of Toole, Liberty, Hill, Blaine, Phillips, Chouteau, and Vallev in Montana assisted with the design of and the information contained in this enterprise budge

State and BLM land are the sources of public land available for ranchers to use from May 15 However, most ranchers do not use both State and BLM land in this MLRA and choose one land type based on it availability and proximity to the operation. Ranchers in Blaine, Phillips, and Valley counties have more BLM land available than State land; whereas, Toole, Liberty, Hill, and Chouteau counties in the western region of the - available for them to lease during the same summer months beginning June 1. After the summer, about seven weeks of grazing crop aftermath occurs starting mid-September due to the abundant farming industry in the area Deeded land is grazed from November to December before winter feed begins, typically on Jan. 1. Ranchers typically put up their own hay and alfalfa to supply half of the required winter feed and purchase the remaining feed required to meet the herd's demand. Purchased feed is comprised of equal amounts meadow hay and alfalfa hay. After winter, the herd is kicked out to deeded land for about one month of grazing before summer grazing on leased land begins. A schedule of the grazing and other ranch activities within a calendar year is listed in Table 1

In the summer months, calves are marketed through Northern Livestock Video Auction and culled animals are marketed through local auction markets usually in Lewistown, Billings, or Great Falls, Montana, All sold animals are delivered in November and are transported to a sale barn about 150 miles away. Most ranchers have a semitruck and cattle pot to transport their cattle to the sale barn. Trucking expenses are included in the annual fuel and asset depreciation expenses on the budget

Employees include one full-time hand who is paid \$11.56 per hour, or about \$17,894 each year. The ranch owner also provides the full-time employee free on-site housing and pays their utilities. The operation's management includes one owner or manager and additional part-time help (usually the owner's kids).

Annual tax costs for MLRA 52 are estimated following Montana's Department of Revenue 2016 Biennial Report In this report, agricultural land is property considered as "Class 3" which follows a productivity valuation standard. The 2016 tax rate for Class 3 agricultural property within Montana is 2.16 percent. According to Montana Code Annotated 2017 (MCA 15-7-201), the per-acre productivity value of agricultural land is equal to the per-acre net income of agricultural land divided by the 6.4% capitalization rate. Net income of agricultural land is based on commodity price and cost of production data obtained from the Montana Agricultural Statistics 2017 publication. For the purpose of this budget, the representative ranch's value of agricultural property is calculated by dividing the Income Above Ownership Costs by Montana's capitalization rate of 6.4%; equal to \$753,342. By applying the 2.16% 2016 tax rate, the annual tax expense is estimated at \$16,272; or about \$54 per cow. Please note, these numbers are not intended for accounting purposes but rather, to provide an example of annual tax expenses' role in a ranching operation. For IRS accounting scenarios and accurate tax filing, ranchers will need to follow the Generally Accepted Accounting Principles (GAAP rules).



"...but what is



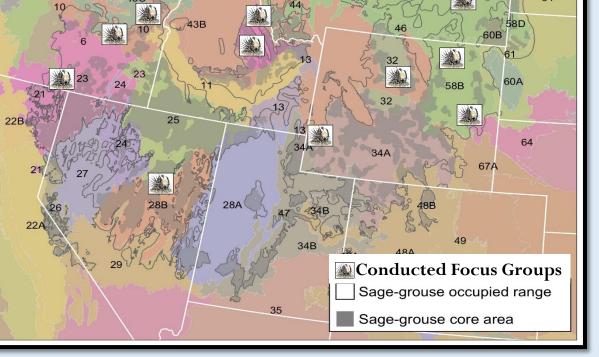


Table 1: Annual activities for calendar year for cow-calf operation.

ctivities	Cale ndar Date
egin winter feed and provide 15%-protein cake	Jan 1 - May 1
alving	March 15 - May 1
Iarket open-animals; work replacement heifers	May 1
tart Breeding on Deeded Land	May 15 - June
randing	June 1 - Jun 3
raze State or BLM Land	May 15 - Sept 1
raze Tribal Lands or other privately-leased land	June 1 - Sept 1
rail to deeded aftermath	Sept 16 - Nov
rail to base or home operation; vaccine and preg-check cows; market and sell calves and cullanimals	Nov
raze Deeded	Nov 6 - Dec 3

### Herd Characteristics

On Jan. 1, livestock inventory consists of 300 cows, 15 bulls (including bulls for the replacement-heifer herd), and 10 horses. Three replacement bulls are bought annually and all bulls have a useful life of five years. Each year 1% of brood cows die and 12% of brood cows are culled. Bulls are turned into the herd for breeding season from mid-May to June 1. The calving rate for all cows exposed to bulls is 92%. In the fall, all steer calves are sold and 64% of heifer calves are sold. The remaining 34% of heifer calves are selected at wearing as replacement heifers and after death loss, consists of 46 head. Six heifers are culled in the spring; therefore, 40 replacement-heifer yearlings are brought into the herd during fall breeding evaluation. Due to unsuccessful breeding and old age, 36 cows are culled from the herd. Steer calves, non-replacement heifer calves, cull bulls, and cull cows are marketed for delivery in November. Also in November, all cattle are vaccinated while cows and replacement heifers are pregnancy-checked. All steers and heifers calves are earmarked, branded, dehorned, and vaccinated by June 30th Also in June, 50% of ranchers in this MLRA artificially inseminate their replacement heifers and all ranchers castrate and implant their steers.

### Inventory and Capital Investments

There are five buildings and structures for a large cow-calf operation including one shop, two homes, and two calving barns. Vehicles used for the ranch enterprise include three tractors (130, 75, and 40 horsepower), a gooseneck 32-foot stock trailer, one semi-truck (50% of its use is for the ranch enterprise), a cattle pot, and two pickups. The pickups include one 3/4 ton 4x4 truck and one 1-ton pickup. The ranch also uses two ATVs. Other machinery and equipment include one set of corrals, a portable loading chute, and two squeeze chutes. Although ranchers also own and use hay equipment such as balers, a swather, and hay rake, depreciation costs of having equipment are not included in this budget as hay production is treated as a separate enterprise. This budget's depreciation costs are calculated using straight-line depreciation and applying a 5% interest rate, useful life by asset as determined by the Modified Accelerated cost Recovery System (MACRS) standards, and machinery salvage value calculations from Iowa State University of Science and Technology's Cooperative Extension Service (File A3-29, Edwards, 2015).

### Interest on Operating Capital and Retained Livestock

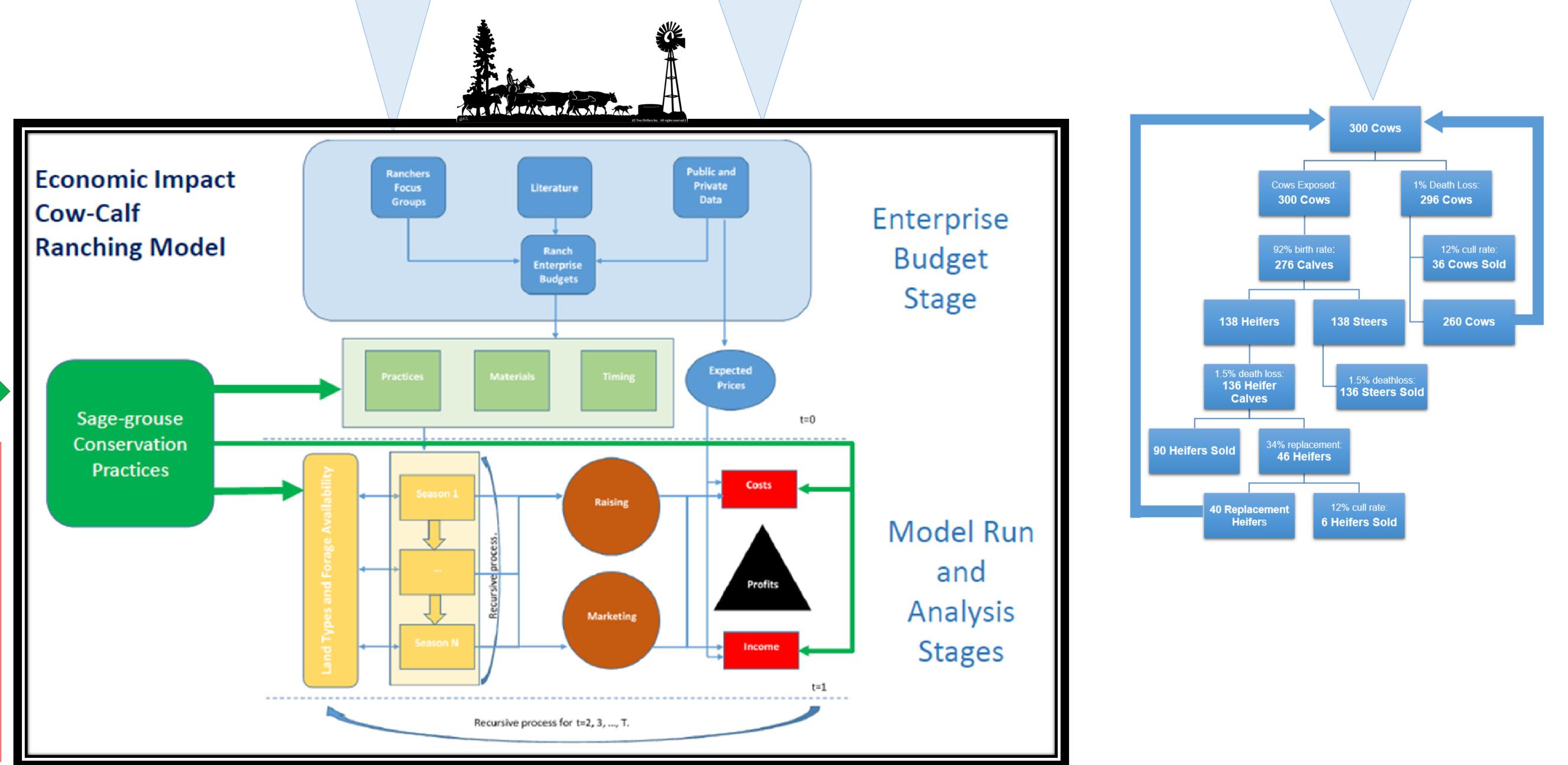
Interest on operating capital expenses are calculated using cow-calf production costs and returns per cow for the Northern Great Plains in 2016. The reports were compiled by the ERS using Agricultural Resource Management Survey data and other sources. In 2016, the interest on operating capital cost was \$1.56 per cow.

Interest on retained livestock is the value of the herd multiplied by the 5% interest rate. This cost is the opportunity cost of keeping the herd and can be thought of as the amount a rancher could have made if the value of the herd had otherwise been invested at a 5% interest rate. The \$430,376 value of the herd is calculated using the Jan 1 herd size (post annual death loss), the budget's sale weights, and prices received for various livestock classes. The annual interest on retained livestock expense for this herd is about \$21,518.

ton	3	\$	1,101.60	\$	3,717.90	\$	12.39	
ton	7	\$	1,398.86	\$	10,071.77	\$	33.57	
ton	14	\$	280.00	\$	3,780.00	\$	12.60	
				\$	5,800.00	\$	19.33	
				\$	3,300.00	\$	11.00	
				\$	2,874.00	\$	9.58	
hd	250	\$	15.00	\$	3,750.00	\$	12.50	
hd	30	\$	36.00	\$	1,080.00	\$	3.60	
hr	1,548	\$	11.56	\$	17,894.88	\$	59.65	
hd	300	\$	5.00	\$	1,500.00	\$	5.00	
hd	300.00	\$	1.56	\$	468.00	\$	1.56	
				\$	215,552.31	\$	718.51	
				\$	48,213.93	\$	160.71	
bul	3	\$	1,300.00	\$	3,900.00	\$	13.00	
\$	5%	\$4	30,367.04	\$	21,518.35	\$	71.73	
\$				\$	5,000.00	\$	16.67	
\$				\$	2,000.00	\$	6.67	
S				\$	33,750.34	\$	112.50	
s	2.16%	\$7	53,342.68	ŝ	16,272.20	ŝ	54.24	
			-			,		
s				\$	13,000.00	\$	43.33	
ŝ				ŝ	6,000.00	ŝ	20.00	
				\$	101,440.90	\$	338.14	
				\$	316,993.21	\$	1,056.64	
					(53,226.97)	-		
	ton ton hd hd hd hd s s s s s s s s s s s s s s	ton 7 ton 14 hd 250 hd 30 hr 1,548 hd 300.00 hd 300.00 hd 300.00 but 3 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	ton 7 \$ ton 14 \$ hd 250 \$ hd 30 \$ hr 1,548 \$ hd 300 \$ hd 300.00 \$ hd 300.00 \$ hd 300.00 \$ \$ \$ 5% \$4 \$ \$ 2,16% \$7 \$	ton 7 \$ 1,398.86 ton 14 \$ 280.00 hd 250 \$ 15.00 hd 30 \$ 36.00 hr 1,548 \$ 11.56 hd 300 \$ 5.00 hd 300 \$ 5.00 hd 300.00 \$ 1.56 bul 3 \$ 1,300.00 \$ 5% \$430,367.04 \$ \$ \$ 2 16% \$753,342.68 \$	ton 7 \$ 1,398.86 \$ ton 14 \$ 280.00 \$ s hd 250 \$ 15.00 \$ hd 30 \$ 36.00 \$ hr 1,548 \$ 11.56 \$ hd 300 \$ 5.00 \$ hd 300 \$ 5.00 \$ hd 300 \$ 1.56 \$ \$ but 3 \$ 1,300.00 \$ \$ 5% \$430,367.04 \$ \$ \$ 216% \$753,342.68 \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	ton 7 \$ 1,398.86 \$ 10,071.77 ton 14 \$ 280.00 \$ 3,780.00 \$ 5,800.00 \$ 3,300.00 \$ 2,874.00 hd 250 \$ 15.00 \$ 3,750.00 hd 30 \$ 36.00 \$ 1,080.00 hr 1,548 \$ 11.56 \$ 17,894.88 hd 300 \$ 5.00 \$ 1,500.00 hd 300.00 \$ 1.56 \$ 468.00 <u>\$ 215,552.31</u> \$ 48,213.93 bul 3 \$ 1,300.00 \$ 3,900.00 \$ 5% \$ 430,367.04 \$ 21,518.35 \$ \$ 5,000.00 \$ 5% \$ 430,367.04 \$ 21,518.35 \$ \$ 5,000.00 \$ 2,000.00 \$ 5% \$ 1,300.00 \$ 3,900.00 \$ 5% \$ 430,367.04 \$ 21,518.35 \$ \$ 5,000.00 \$ \$ 33,750.34 \$ 2,16% \$ 753,342.68 \$ 16,272.20 \$ \$ 13,000.00 \$ \$ 5,000.00 \$ \$ 5,000.00 \$ \$ 5,000.00 \$ \$ 101,440.90	ton 7 \$ 1,398.86 \$ 10,071.77 \$ ton 14 \$ 280.00 \$ 3,780.00 \$ \$ 5,800.00 \$ \$ 3,300.00 \$ \$ 3,300.00 \$ \$ 2,874.00 \$ hd 250 \$ 15.00 \$ 3,750.00 \$ hd 30 \$ 36.00 \$ 1,080.00 \$ hd 300 \$ 5.00 \$ 1,080.00 \$ hd 300 \$ 5.00 \$ 1,080.00 \$ hd 300 \$ 5.00 \$ 1,56 \$ 468.00 \$ $\frac{$ 215,552.31 $}{$ 48,213.93 $}$ bul 3 \$ 1,300.00 \$ 3,900.00 \$ \$ 5% \$ 430,367.04 \$ 21,518.35 \$ \$ 48,213.93 \$ bul 3 \$ 1,300.00 \$ 3,900.00 \$ \$ 5% \$ 430,367.04 \$ 21,518.35 \$ \$ 2,000.00 \$ \$ 2,000.00 \$ \$ 2,000.00 \$ \$ 2,000.00 \$ \$ 3,750.34 \$ \$ 2,16% \$ 753,342.68 \$ 16,272.20 \$ \$ 3,000.00 \$ \$ 5,000.00 \$ \$ 5,000.00 \$ \$ 5,000.00 \$ \$ 3,000.00	ton 7 \$ 1,398.86 \$ 10,071.77 \$ 33.57 ton 14 \$ 280.00 \$ 3,780.00 \$ 12.60 \$ 5,800.00 \$ 19.33 \$ 3,300.00 \$ 11.00 \$ 2,874.00 \$ 9.58 hd 250 \$ 15.00 \$ 3,750.00 \$ 12.50 hd 30 \$ 36.00 \$ 1,080.00 \$ 3.60 hr 1,548 \$ 11.56 \$ 17,894.88 \$ 59.65 hd 300 \$ 5.00 \$ 1,500.00 \$ 5.00 hd 300.00 \$ 1.56 \$ 468.00 \$ 1.56 \$ 215,552.31 \$ 718.51 \$ 48,213.93 \$ 160.71 bul 3 \$ 1,300.00 \$ 3,900.00 \$ 13.00 \$ 5% \$430,367.04 \$ 21,518.35 \$ 71.73 \$ 5,000.00 \$ 16.67 \$ 2,000.00 \$ 16.67 \$ 2,000.00 \$ 16.67 \$ 2,000.00 \$ 16.67 \$ 2,000.00 \$ 16.67 \$ 3,3750.34 \$ 112.50 \$ 2,16% \$753,342.68 \$ 16,272.20 \$ 54.24 \$ 3,000.00 \$ 43.33

Other variable costs include Montana's Per Capita, Brand Inspection, Predator Control, and Beef Check-off fees Lump-sum annual repair cost estimates provided by focus group Depreciation costs of having equipment are not included in this budget as hav production is treated as a separate enterprise. <sup>9</sup> Paying for a family of six (two parents and four children or extended family members) was decided as the representative health

urance cost by the local focus group held in Chester, Montana



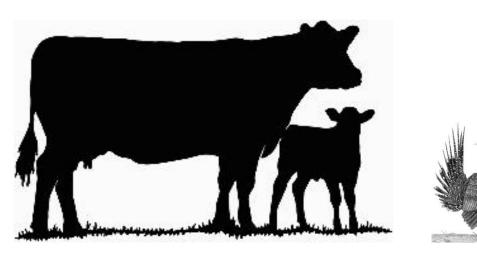


**Cover majority of sage-grouse habitats** • **11 MLRAs** in sage-grouse core area: 8, 10, 12, 23, 25, 28B, 32, 34A, 52, 58A, 58B

• Covering parts of CO, ID, MT, NV, OR, and WY.

## **Types of representative ranches:**

- Small-herd, private-land only
- Small-herd, public & private land
- Large-herd, private-land only
- Large-herd, public & private land



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For more information on Sustainable Rangelands Roundtable visit http://www.sustainablerangelands.org/

