

Missouri Crop and Livestock Budgets for 2019

Table of Contents	MU Extension Guide Number
Beef	
Beef Backgrounding Planning Budget	G681
Beef Heifer Planning Budget	G682
Northern Missouri Beef Cow-Calf Planning Budget	G680
Southern Missouri Beef Cow-Calf Planning Budget	G679
Yearling Beef Steer Feeding Planning Budget	---
Swine	
Feeder Pigs Planning Budget	---
Farrow to Finish Swine Planning Budget	---
Hog Finishing Planning Budget	---
Dairy	
Dairy (Confinement) Planning Budget	G676
Dairy (Grazing) Planning Budget	G677
Dairy Heifer Planning Budget	G678
Sheep and goat	
Goats, Spring Kidding Doe Herd Planning Budget	---
Goats, Doe Replacement Planning Budget	---
Sheep Flock Planning Budget	---
Corn	
Corn (Dryland) Planning Budget	G651
Corn (Irrigated) Planning Budget	G652
Corn Silage Planning Budget	G664
Soybean	
Soybeans (Dryland) Planning Budget	G654
Soybeans (Double Crop) Planning Budget	G655
Wheat and sorghum	
Winter Wheat Planning Budget	G656
Grain Sorghum Planning Budget	G653
Forages	
Alfalfa Establishment Planning Budget	G661
Alfalfa Baleage Planning Budget	G662
Alfalfa Small Bales Planning Budget	G663
Cool Season Pasture Establishment Planning Budget	G665
Fescue-Clover Hay Planning Budget	G666
Fescue Seed and Forage Planning Budget	G667



Beef Backgrounding Planning Budget for 2019

This budget presents information useful to beef farmers. Table 1 presents estimates for the 2019 year for backgrounded steer calves in Missouri. Assumptions were based on price forecasts as of October 2018. Detailed prices and practices are summarized in Tables 2, 3, 4 and 5. The production practices used to develop these cost estimates are common for beef farms in Missouri. Farmers are encouraged to customize this budget to fit their operation.

Table 1. Missouri beef steer backgrounding planning budget for 2019.

	Winter backgrounding Per steer ¹	Pasture backgrounding Per steer ¹	Your estimate
Income			
Market steer sales	1,153.63	1,135.76	
Less death loss (1 percent)	11.54	11.36	
Total income	1,142.10	1,124.40	
Operating costs			
Purchased steer	872.67	945.34	
Pasture (rental rate)	0.00	35.57	
Feed, mineral and stored forage	149.19	42.68	
Labor	33.58	20.15	
Veterinary, drugs and supplies	18.00	15.00	
Marketing and hauling	28.84	28.39	
Machinery and utilities	55.64	25.20	
Livestock facility repair	3.75	0.75	
Professional fees (legal, accounting, etc.)	1.00	1.00	
Miscellaneous	3.50	3.50	
Operating interest	17.38	17.58	
Total operating costs	1,183.54	1,135.17	
Ownership costs			
Depreciation on livestock facilities	3.87	0.62	
Interest on livestock facilities	3.27	0.52	
Insurance and taxes on capital items	3.69	2.79	
Total ownership costs	10.83	3.92	
Total costs	1,194.37	1,139.09	
Income over operating costs	-41.44	-10.76	
Income over total costs	-52.27	-14.68	
Pounds of gain per steer purchased	227	187	
Feed cost per pound gain	0.66	0.42	
Breakeven steer price per pound	1.48	1.48	

¹ Totals may not sum due to rounding.

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Table 2. Input assumptions used in beef steer winter backgrounding planning budget for 2019.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Steer purchase weight, pounds	580	Steer purchase price, per hundredweight	150.46
Market steer sale weight, pounds	815	Market steer sale price, per hundredweight	141.55
Labor, hours	2.5	Labor cost, per hour	13.43
Feeding period, days	105		
Average daily gain, pounds	2.24		

Table 3. Input assumptions used in beef steer pasture backgrounding planning budget for 2019.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Steer purchase weight, pounds	580	Steer purchase price, per hundredweight	162.99
Market steer sale weight, pounds	775	Market steer sale price, per hundredweight	146.55
Labor, hours	1.5	Labor cost, per hour	13.43
Feeding period, days	105		
Average daily gain, pounds	1.86		

Table 4. Feed and stored forage in beef steer backgrounding planning budgets for 2019, on a per steer basis.

Feed description	Cost per unit	Winter backgrounding ¹		Pasture backgrounding ²	
		Pounds	Dollars	Pounds	Dollars
Mixed hay, per ton	120.00	1,221	73.26		
Corn, per bushel	4.00	754	53.86		
Protein supplement, per ton	200.00	107	10.70	315	31.50
Salt and minerals, per ton	800.00	27	10.80	27	10.80
Limestone, per hundredweight	9.50	6	0.57	4	0.38
Total		2,115	149.19	346	42.68

¹ Winter backgrounding ration assumes 105 days on feed and 2.24 pound average daily gain for a steer.

² Pasture backgrounding ration assumes 105 days on feed and 1.86 pound average daily gain for a steer.

Table 5. Machinery assumptions used in beef steer backgrounding planning budgets for 2019.

Description	Cost per hour	Winter backgrounding ¹		Pasture backgrounding ²	
		Hours	Dollars	Hours	Dollars
Tractor; 105 MFWD	44.31	25	1,107.75		
Truck	25.00	20	500.00	10	250.00
Livestock trailer	28.00	8	224.00	8	224.00
4-wheeler	10.00	40	400.00	52.5	525.00
Total			2,231.75		999.00
Total per steer			53.14		22.70

¹ Machinery needs for winter backgrounding budget are based on 42 steers.

² Machinery needs for pasture backgrounding budget are based on 44 steers.

Abbreviations: MFWD = modified front-wheel drive tractor

Farmers can develop custom enterprise budget by using the Missouri Beef Enterprise Tool (<https://extensiondata.missouri.edu/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx>). This spreadsheet tool allows users to make an enterprise budget for a cow-calf (spring or fall calving), heifer or backgrounding (drylot or pasture) operation.



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Beef Heifer Planning Budget for 2019

This budget presents information useful to beef farmers. Table 1 presents estimates for the 2019 year for buying heifer calves and selling as bred replacement heifers in Missouri. Assumptions were based on price forecasts as of October 2018. Detailed assumptions are summarized in Tables 2-4. The production practices used to develop these cost estimates are common for beef farms in Missouri. Farmers are encouraged to customize this budget to fit their operation.

Table 1. Missouri beef heifer planning budget for 2019.

	Per heifer sold ¹	Your estimate
Income		
Bred heifer sales (0.875 head)	1,268.75	
Cull heifer sales (0.05 head)	67.85	
Yearling heifer sales (0.075 head)	72.45	
Less death loss (1 percent of heifer sales)	14.09	
Total income	1,394.96	
Operating costs		
Purchased heifer calf	779.41	
Pasture	122.80	
Feed, mineral and stored forage	174.43	
Labor	67.15	
Veterinary, drugs and supplies	30.00	
Marketing costs	42.27	
Breeding costs	37.50	
Machinery and utilities	116.15	
Livestock facility repairs	8.00	
Miscellaneous	6.00	
Operating and calf interest	66.66	
Total operating costs	1,450.37	
Ownership costs		
Depreciation on livestock facilities	8.45	
Interest on livestock facilities	7.44	
Insurance and taxes on capital items	13.33	
Total ownership costs	29.23	
Total costs	1,479.59	
Income over operating costs	-55.41	
Income over total costs	-84.63	
Total cost per head per day (excluding calf price)	1.84	
Total cost per pound of gain	1.73	
Bred heifer breakeven price per head	1,548.32	

¹ Totals may not sum due to rounding.

Table 2. Input assumptions used in replacement beef heifer planning budget for 2019.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Heifer purchase weight, pounds	560	Heifer purchase price, per hundredweight	139.18
Yearling cull heifer sale weight, pounds	750	Yearling cull heifer sale price, per hundredweight	128.80
Heavy cull heifer sale weight, pounds	1,000	Heavy cull heifer sale price, per hundredweight	135.70
Bred heifer sale weight, pounds	1,000	Bred heifer sale price, per head	1,450.00
Labor, hours	5	Labor cost, per hour	13.43
Pasture, animal unit month	8.19	Pasture, per animal unit month	15.00

Table 3. Feed and stored forage requirements in replacement beef heifer planning budget for 2019, on a per heifer basis.

Feed description	Cost per unit	November to	May to	October to	Total pounds	Dollars ⁴
		May ¹	October ²	December ³		
		Pounds	Pounds	Pounds		
Mixed hay, per ton	120.00	1,250			1,250	75.00
Processed corn, per bushel	4.21	240		90	330	24.83
Protein supplement, per ton	200.00	240		90	330	33.00
Salt and minerals, per ton	800.00	49	39	16	104	41.60
Total		1,779	39	196	2,014	174.43

¹ Beginning weight of 560 pounds and ending weight of 750 pounds after a 170 day feeding period.

² Beginning weight of 750 pounds and ending weight of 925 pounds after a 150 day feeding period.

³ Beginning weight of 925 pounds and ending weight of 1,000 pounds after a 60 day feeding period.

⁴ Totals may not sum due to rounding.

Table 4. Machinery assumptions used in replacement beef heifer planning budgets for 2019.

Description	Cost per hour	Hours	Total dollars ¹	Dollars attributed to total heifer operation ²	Dollars per replacement heifer ³
Tractor; 105 MFWD	44.31	50	2,215.50	288.02	38.40
Truck	25.00	15	375.00	48.75	6.50
Livestock trailer	28.00	24	672.00	87.36	11.65
4-wheeler	10.00	300.6	3,006.00	390.78	52.10
Total			6,268.50	814.91	108.65

¹ Total machinery costs are based on combined cow-calf and replacement heifer operation.

² 13 percent of the total machinery costs for the beef herd are attributed to the heifer operation.

³ An average of 7.5 replacement heifers are assumed to be raised yearly in a 50 cow herd.

Abbreviations: MFWD = modified front-wheel drive tractor

Farmers can develop custom enterprise budget by using the Missouri Beef Enterprise Tool (<https://extensiondata.missouri.edu/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx>). This spreadsheet tool allows users to make an enterprise budget for a cow-calf (spring or fall calving), heifer or backgrounding (drylot or pasture) operation.

Northern Missouri Beef Cow-Calf Planning Budget for 2019

This budget presents information useful to beef farmers. Table 1 provides estimates for the 2019 year for a cow-calf operation (50-cow herd size and purchased replacements) in Northern Missouri for a fall and spring calving season. Assumptions were based on price forecasts as of October 2018. Detailed assumptions and feed requirements are summarized in Tables 2, 3 and 4. The production practices used to develop these cost estimates are common for beef farms in Missouri. Farmers are encouraged to modify this budget to fit their operation.

Table 1. Northern Missouri beef cow-calf planning budget for 2019.

	Fall calving Per cow ¹	Spring calving Per cow ¹	Your estimate
Income			
Steer calf sales	417.23	409.78	
Heifer calf sales	342.94	353.41	
Cull cow sales	86.40	100.80	
Total income	846.57	863.99	
Operating costs			
Pasture (rental rate)	138.30	138.30	
Feed and stored forage	345.75	291.81	
Labor	94.01	94.01	
Veterinary, drugs and supplies	38.00	38.00	
Marketing	21.16	21.60	
Machinery and utility costs	124.28	116.57	
Livestock facility repairs	8.00	8.00	
Cow replacement	188.50	217.50	
Bull cost	50.00	50.00	
Professional fees (legal, accounting, etc.)	1.00	1.00	
Miscellaneous expense	6.00	6.00	
Operating interest	25.16	23.31	
Total operating costs	1,040.16	1,006.11	
Ownership costs			
Depreciation on facilities and equipment	8.48	8.48	
Interest on breeding stock, facilities and equipment	106.09	107.83	
Insurance/taxes on breeding stock and capital items	33.18	33.47	
Total ownership costs	147.75	149.78	
Total costs	1,187.91	1,155.89	
Income over operating costs	-193.59	-142.12	
Income over total costs	-341.34	-291.90	

¹ Totals may not sum due to rounding.

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Table 2. Income assumptions used in Northern Missouri beef cow-calf planning budget for 2019.

Category	Percent	Weight (pounds)	Price per cwt	Calf crop (percent weaned)	Dollars per cow unit
Fall calving					
Steer	50	580	163.49	88	417.23
Heifers	50	560	139.18	88	342.94
Cull cows	12	1,200	60.00		86.40
Spring calving					
Steer	50	580	166.24	85	409.78
Heifers	50	560	148.49	85	353.41
Cull cows	14	1,200	60.00		100.80

Abbreviations: cwt = hundredweight

Table 3. Other assumptions used in Northern Missouri beef cow-calf planning budget for 2019.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Labor, hours	7	Labor cost, per hour	13.43
Fall calving heifers retained, percent	13	Heifer replacement value, per head	1,450.00
Spring calving heifers retained, percent	15	Bull value, per head	4,000.00

Table 4. Feed requirements in Northern Missouri beef cow-calf planning budget for 2019, on a per cow basis.

	Cost per unit	Cow (units)	Calf (units)	Bull ² (units)	Total units	Total cost per cow ³
Fall calving						
Pasture, per animal unit equivalent	15.00	8.7 ¹		0.5	9.2	138.30
Harvested forage, per pound	0.065	3,660.0	425.0	200.0	4,285.0	278.53
Protein supplement, per pound	0.100	300.0		7.2	307.2	30.72
Salt and mineral mix, per pound	0.400	91.3			91.3	36.50
					Total	484.05
Spring calving						
Pasture, per animal unit equivalent	15.00	8.7 ¹		0.5	9.2	138.30
Harvested forage, per pound	0.065	3,445.5		200.0	3,645.5	245.95
Protein supplement, per pound	0.100	90.0		3.6	93.6	9.36
Salt and mineral mix, per pound	0.400	91.3			91.3	36.50
					Total	430.11

¹ Cow and calf requirements are combined for pasture animal unit equivalents.

² Bull feed units are based on 4 percent of its total need being allocated to cow-calf enterprise.

³ Totals may not sum due to rounding.

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Southern Missouri Beef Cow-Calf Planning Budget for 2019

This budget presents information useful to beef farmers. Table 1 provides estimates for the 2019 year on a cow-calf operation (50-cow herd size and purchased replacements) in Southern Missouri for a fall and spring calving season. Assumptions were based on price forecasts as of October 2018. Detailed assumptions and feed requirements are summarized in Tables 2, 3 and 4. The production practices used to develop these cost estimates are common for beef farms in Missouri. Farmers are encouraged to modify this budget to fit their operation.

Table 1. Southern Missouri beef cow-calf planning budget for 2019.

	Fall calving Per cow ¹	Spring calving Per cow ¹	Your estimate
Income			
Steer calf sales	417.23	409.78	
Heifer calf sales	342.94	353.41	
Cull cow sales	86.40	100.80	
Total income	846.57	863.99	
Operating costs			
Pasture (rental rate)	138.30	138.30	
Feed, mineral and stored forage	290.90	246.36	
Labor	94.01	94.01	
Veterinary, drugs and supplies	35.50	35.50	
Marketing	21.16	21.60	
Machinery and utility costs	124.28	116.57	
Livestock facility repairs	8.00	8.00	
Cow replacement	188.50	217.50	
Bull cost	25.00	25.00	
Professional fees (legal, accounting, etc.)	1.00	1.00	
Miscellaneous expense	6.00	6.00	
Operating interest	22.66	21.10	
Total operating costs	955.31	930.95	
Ownership costs			
Depreciation on facilities and equipment	8.48	8.48	
Interest on breeding stock, facilities and equipment	103.69	105.43	
Insurance/taxes on breeding stock and capital items	32.39	32.68	
Total ownership costs	144.56	146.59	
Total costs	1,099.87	1,077.54	
Income over operating costs	-108.75	-66.96	
Income over total costs	-253.31	-213.55	

¹ Totals may not sum due to rounding.

Table 2. Income assumptions used in Southern Missouri beef cow-calf planning budget for 2019.

Category	Percent	Weight (pounds)	Price per cwt	Calf crop (percent weaned)	Dollars per cow unit
Fall calving					
Steer	50	580	163.49	88	417.23
Heifers	50	560	139.18	88	342.94
Cull cows	12	1,200	60.00		86.40
Spring calving					
Steer	50	580	166.24	85	409.78
Heifers	50	560	148.49	85	353.41
Cull cows	14	1,200	60.00		100.80

Abbreviations: cwt = hundredweight

Table 3. Other assumptions used in Southern Missouri beef cow-calf planning budget for 2019.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Labor, hours	7	Labor cost, per hour	13.43
Fall calving heifers retained, percent	13	Heifer replacement value, per head	1,450.00
Spring calving heifers retained, percent	15	Bull value, per head	3,000.00

Table 4. Feed requirements in Southern Missouri beef cow-calf planning budget for 2019, on a per cow basis.

	Cost per unit	Cow (units)	Calf (units)	Bull ² (units)	Total units	Total cost per cow ³
Fall calving						
Pasture, per animal unit equivalent	15.00	8.7 ¹		0.5	9.2	138.30
Harvested forage, per pound	0.055	3,660.0	425.0	200.0	4,285.0	235.68
Protein supplement, per pound	0.100	180.0		7.2	187.2	18.72
Salt and mineral mix, per pound	0.400	91.3			91.3	36.50
					Total	429.20
Spring calving						
Pasture, per animal unit equivalent	15.00	8.7 ¹		0.5	9.2	138.30
Harvested forage, per pound	0.055	3,445.5		200.0	3,645.5	200.50
Protein supplement, per pound	0.100	90.0		3.6	93.6	9.36
Salt and mineral mix, per pound	0.400	91.3			91.3	36.50
					Total	384.66

¹ Cow and calf requirements are combined for pasture animal unit equivalents.

² Bull feed units are based on 4 percent of its total need being allocated to cow-calf enterprise.

³ Totals may not sum due to rounding.

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Yearling Beef Steer Feeding

Projected Budget for 2018-19

Description of Production: Buy 750 lb. steers Nov. 2018 and feed 5 months in lot, sell April 2019
3.65 lbs. gain per day, 151 days

		Your Estimate
CATTLE SALES		
Gross receipts/head (1,300 lbs. @ \$120/cwt.)	\$ 1,560.00	\$ _____
Less death loss, 2%	-31.20	_____
ESTIMATED TOTAL INCOME/STEER	\$ 1,528.80	\$ _____
ESTIMATED OPERATING COSTS/STEER		
Purchased steer calf (750 lbs. @ \$155/cwt.)	\$ 1,162.50	\$ _____
Purchased feed:		_____
Corn (40 bu. @\$3.60/bu.)	\$ 144.00	_____
DDGS (1,500 lbs. @ \$125/Ton)	93.75	_____
Soybean meal (100 lbs. @ \$320/Ton)	16.00	_____
Salt and additives (30 lbs. @ \$400/Ton)	6.00	_____
Grass Hay (500 lbs. @ \$70/Ton)	17.50	_____
Total Feed Costs	\$ 277.25	_____
Machinery costs, feed preparation, etc.	8.00	_____
Veterinarian and medicine:		_____
Production veterinary products	8.50	_____
Disease treatment	3.75	_____
Commission, yardage, hauling	26.00	_____
Utilities and all machinery costs	5.00	_____
Labor (2 hours @ \$13.50/hour)	27.00	_____
Operating interest (1/3 of operating costs x 6%)	30.06	_____
Total Operating Costs	\$ 1,548.06	\$ _____
ESTIMATED OWNERSHIP (FIXED) COSTS/STEER		
Real estate interest, depreciation	\$ 5.00	\$ _____
Real estate and property taxes	4.00	_____
Total Ownership Costs	\$ 9.00	\$ _____
ESTIMATED TOTAL COSTS/STEER	\$ 1,557.06	\$ _____
INCOME OVER OPERATING COSTS/STEER	\$ - 19.26	\$ _____
INCOME OVER TOTAL COSTS/STEER	\$ - 28.26	\$ _____

Feeder Pigs Projected Budget for 2019

Per Sow Per Year

Description of Production: 22 pigs per sow per year, selling at 40 lbs.

	Per Sow (11 cwt)	Your Estimate
ESTIMATED INCOME/SOW		
Feeder pigs sold (8.8 cwt feeder pigs sold/sow x \$125 avg price/cwt)	\$ 1,100	\$ _____
Cull sows sold (2 cwt cull sow sold/sow x \$34 avg price/cwt)	\$ 68	\$ _____
Estimated Total Income (Gross Receipts/Sow)	\$ 1,168	\$ _____
ESTIMATED OPERATING COSTS		
Feed		
Commercial (1,458 lbs x 16.5 cents)	\$ 241	\$ _____
Grain & DDGS (2,708 lbs x 6.5 cents)	176	_____
Total Feed Cost	\$ 417	\$ _____
Veterinary and medicine	\$ 58	\$ _____
Breeding and replacement gilts	220	_____
Equipment operation, machine hire, and transportation	62	_____
Utilities, insurance and miscellaneous	72	_____
Personal property taxes	5	_____
Hog facility repair and maintenance	51	_____
Operating interest (1/2 operating costs x 6%)	27	_____
Total Operating Costs Except Labor	\$ 911	\$ _____
Estimated labor cost (12 hrs @ \$13.5)	\$ 162	\$ _____
Total Operating Costs Including Labor	\$ 1,073	\$ _____
ESTIMATED OWNERSHIP (FIXED) COSTS		
Real estate interest, depreciation, and taxes	\$ 107	\$ _____
Interest on breeding herd	16	_____
Machinery & equipment interest and depreciation	64	_____
Total Fixed Costs	\$ 187	\$ _____
ESTIMATED TOTAL COSTS/SOW	\$ 1,260	\$ _____
INCOME OVER OPERATING COSTS	\$ 95	\$ _____
INCOME OVER TOTAL COSTS	\$ (92)	\$ _____

Farrow-Finish Swine Projected Budget for 2019

Per Sow Per Year

Description of Production: 22 pigs per sow per year, selling at 280 lbs.

	Per Sow (63.6 cwt)	Your Estimate
ESTIMATED INCOME/SOW		
Market hogs sold (61.6 cwt mkt hogs sold/sow x \$42 avg price/cwt)	\$ 2,587	\$ _____
Cull sows sold (2 cwt cull sow sold/sow x \$34 avg price/cwt)	\$ 68	\$ _____
Estimated Total Income (Gross Receipts/Sow)	\$ 2,655	\$ _____
ESTIMATED OPERATING COSTS		
Feed		
Commercial (4,022 lbs x 16.5 cents)	\$ 664	\$ _____
Grain & DDGS (15,115 lbs x 6.5 cents)	982	_____
Total Feed Cost	\$ 1,646	\$ _____
Veterinary and medicine	\$ 118	\$ _____
Breeding and replacement gilts	221	_____
Equipment operation, machine hire, and transportation	133	_____
Utilities, insurance and miscellaneous	128	_____
Personal property taxes	6	_____
Hog facility repair and maintenance	104	_____
Operating interest (1/2 operating costs x 6%)	71	_____
Total Operating Costs Except Labor	\$ 2,427	\$ _____
Estimated labor cost (20 hrs @ \$13.5)	\$ 270	\$ _____
Total Operating Costs Including Labor	\$ 2,697	\$ _____
ESTIMATED OWNERSHIP (FIXED) COSTS		
Real estate interest, depreciation, and taxes	\$ 211	\$ _____
Interest on breeding herd	18	_____
Machinery & equipment interest and depreciation	118	_____
Total Fixed Costs	\$ 347	\$ _____
ESTIMATED TOTAL COSTS/SOW	\$ 3,044	\$ _____
INCOME OVER OPERATING COSTS	\$ (42)	\$ _____
INCOME OVER TOTAL COSTS	\$ (389)	\$ _____

Hog Finishing Projected Budget for 2019

Per Lot of 100 Hogs

Description of Production: Purchase 103 head of 50 lb pigs, sell 100 head of 280 lb market hogs.

	Per Lot (280 cwt)	Your Estimate
ESTIMATED INCOME/LOT		
Market hogs sold (280 cwt mkt hogs sold/lot x \$42 avg price/cwt)	\$ 11,760	\$ _____
ESTIMATED OPERATING COSTS		
Feed		
Commercial (10,159 lbs x 16.5 cents)	\$ 1,676	\$ _____
Grain & DDGS (52,500 lbs x 6.5 cents)	3,413	_____
Total Feed Cost	\$ 5,089	\$ _____
Purchase pigs (103 head x 40 lbs x \$1.25)	\$ 5,150	\$ _____
Veterinary and medicine	451	\$ _____
Livestock materials and services	25	_____
Equipment operation, machine hire, and transportation	527	\$ _____
Utilities, insurance and miscellaneous	326	\$ _____
Personal property taxes	25	_____
Hog facility repair and maintenance	193	_____
Operating interest (1/8 operating costs x 6%)	88	_____
Total Operating Costs Except Labor	\$ 11,874	_____
Estimated labor cost (39 hrs @ \$13.5)	\$ 527	_____
Total Operating Costs Including Labor	\$ 12,401	\$ _____
ESTIMATED OWNERSHIP (FIXED) COSTS		
Real estate interest, depreciation, and taxes	\$ 604	\$ _____
Machinery & equipment interest and depreciation	367	_____
Total Fixed Costs	\$ 971	\$ _____
ESTIMATED TOTAL COSTS/LOT	\$ 13,372	\$ _____
INCOME OVER OPERATING COSTS	\$ (641)	\$ _____
INCOME OVER TOTAL COSTS	\$ (1,612)	\$ _____

Dairy (Confinement) Planning Budget for 2019

This budget presents information useful to dairy farmers. Table 1 presents estimates for the 2019 year on a 150-cow rotational grazing dairy (replacements raised on farm) in Missouri. Assumptions were based on price forecasts as of October 2018. Detailed inputs, feed requirements and investments are summarized in Tables 2, 3 and 4. The production practices used to develop these cost estimates are common for confinement dairies in Missouri. Farmers are encouraged to customize this budget to fit their operation.

Table 1. Missouri dairy (confinement) planning budget for 2019.

	20,000 pounds milk sold		24,000 pounds milk sold		Your estimate
	Dollars per cow ¹	Dollars per cwt ¹	Dollars per cow ¹	Dollars per cwt ¹	
Income					
Milk sales	3,399.96	17.00	4,079.94	17.00	
Bull and surplus heifer sales	65.63	0.33	65.63	0.27	
Hedging and insurance	0.00	0.00	0.00	0.00	
Cull cow sales	234.90	1.17	234.90	0.98	
Total income	3,700.49	18.50	4,380.46	18.25	
Operating costs					
Feed	2,006.41	10.03	2,217.28	9.24	
Labor	443.35	2.22	443.35	1.85	
Veterinary, drugs and supplies	110.00	0.55	115.00	0.48	
Utilities and water	55.00	0.28	65.00	0.27	
Fuel, oil and vehicle	64.13	0.32	64.13	0.27	
Milk hauling and promotion	200.00	1.00	240.00	1.00	
Building and equip. repair	203.32	1.02	203.32	0.85	
Breeding/genetic charges	127.50	0.64	127.50	0.53	
Professional fees (legal, accounting, etc.)	10.00	0.05	10.00	0.04	
Miscellaneous and insurance	28.40	0.14	34.08	0.14	
Operating interest	89.55	0.45	96.50	0.40	
Total operating costs	3,337.66	16.69	3,616.16	15.07	
Ownership costs					
Depreciation on buildings and equip.	358.88	1.79	358.88	1.50	
Interest on land, buildings and equip.	193.28	0.97	193.28	0.81	
Insurance/tax on land, buildings and equip.	92.30	0.46	92.30	0.38	
Total ownership costs	644.46	3.22	644.46	2.69	
Total costs	3,982.12	19.91	4,260.62	17.75	
Income over operating costs	362.83	1.81	764.30	3.18	
Income over total costs	-281.63	-1.41	119.85	0.50	

¹ Totals may not sum due to rounding.

Abbreviations: cwt = hundredweight; equip. = equipment

Written by
Joe Horner and Ryan Milhollin, Extension Specialists, Agricultural Business and Policy

Table 2. Input assumptions used in dairy (confinement) planning budget for 2019.

Selected input quantities	Quantity	Selected input prices	Dollars per unit
Cull cow sale weight, pounds	1,450	Cull cow sale price, per hundredweight	60.00
Labor, cows per worker	70	Annual labor salary and benefits, per worker	36,000.00
Calf crop, percent	95	Bull calf sale price, per head	100.00
Heifer replacement, percent	33	Surplus heifer calf sale price, per head	125.00
Operating interest, percent	6	Milk price, per hundredweight	17.00

Table 3. Feed requirements used in dairy (confinement) planning budget for 2019, on a per cow basis.

Feed description	Cost per unit	20,000 pounds milk sold		24,000 pounds milk sold	
		Pounds	Dollars ²	Pounds	Dollars ²
Corn silage, per ton	40.00	12,223	244.47	13,357	267.15
Alfalfa silage, per ton	100.00	3,741	187.05	5,296	264.79
Corn, ground, per bushel	4.00	3,470	247.86	3,658	261.25
Alfalfa hay, per ton	200.00	1,708	170.78	1,934	193.41
Whole cotton seed, per ton	190.00	1,675	159.15	1,897	180.24
Soybean hulls, per ton	165.00	1,125	92.78	752	62.03
Soybean meal, per ton	350.00	1,095	191.59	1,354	237.03
Distillers grain, dry, per ton	165.00	1,005	82.93	949	78.26
Grass hay, per ton	100.00	914	45.68	914	45.68
Minerals/vitamins, per ton	1,100.00	577	317.38	656	360.72
Total lactating and dry cow feed cost			1,739.68		1,950.55
Replacement heifer feed and forage cost ¹			266.73		266.73
Total feed cost per cow			2,006.41		2,217.28

¹ Total replacement heifer (0 to 24 months) feed cost is \$808.27 and was adjusted to a 33% heifer replacement rate.

² Totals may not sum due to rounding.

Table 4. Investment assumptions in dairy (confinement) planning budget for 2019.

Description	Quantity	Dollars per unit	Total dollars	Dollars per cow ²
Land, acres	4	3,000	12,000	80
Milking parlor, stalls	12	25,000	300,000	1,989
Breeding herd, cows	150	1,050	158,340	1,050
Free stall barn, stalls	130	2,538	330,000	2,188
Feed storage			55,426	368
Manure storage system			97,500	647
Equipment			81,100	538
Total¹			1,034,366	6,859

¹ Totals may not sum due to rounding.

² Represents total cows in herd.

Farmers can also develop their own custom budget by using the Missouri Dairy Enterprise Tool (<http://dairy.missouri.edu/business/budgets/modairybudget.xls>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for dairy production and heifer raising in Missouri.

Dairy (Grazing) Planning Budget for 2019

This budget presents information useful to dairy farmers. Table 1 presents estimates for the 2019 year on a 150-cow rotational grazing dairy (replacements raised on farm) in Missouri. Assumptions were based on price forecasts as of October 2018. Detailed inputs, feed requirements and investments are summarized in Tables 2, 3 and 4. The production practices used to develop these cost estimates are common for grazing dairies in Missouri. Farmers are encouraged to customize this budget to fit their operation.

Table 1. Missouri dairy (grazing) planning budget for 2019.

	11,000 pounds milk sold		14,000 pounds milk sold		Your estimate
	Dollars per cow ¹	Dollars per cwt ¹	Dollars per cow ¹	Dollars per cwt ¹	
Income					
Milk sales	1,870.04	17.00	2,380.05	17.00	
Bull and surplus heifer sales	81.88	0.74	81.88	0.58	
Hedging and insurance	0.00	0.00	0.00	0.00	
Cull cow sales	118.80	1.08	118.80	0.85	
Total income	2,070.72	18.82	2,580.73	18.43	
Operating costs					
Feed	925.18	8.41	996.52	7.12	
Labor	300.00	2.73	300.00	2.14	
Veterinary, drugs and supplies	85.00	0.77	95.00	0.68	
Utilities and water	50.00	0.45	50.00	0.36	
Fuel, oil and vehicle	59.06	0.54	59.06	0.42	
Milk hauling and promotion	110.00	1.00	140.00	1.00	
Building and equipment repair	142.52	1.30	142.52	1.02	
Breeding/genetic charges	127.50	1.16	127.50	0.91	
Professional fees (legal, accounting, etc.)	10.00	0.09	10.00	0.07	
Miscellaneous and insurance	15.62	0.14	19.88	0.14	
Operating interest	49.56	0.45	52.12	0.37	
Total operating costs	1,874.44	17.04	1,992.61	14.23	
Ownership costs					
Depreciation on buildings and equip.	105.71	0.96	105.71	0.76	
Interest on land, buildings and equip.	246.77	2.24	246.77	1.76	
Insurance/taxes on land, buildings and equip.	38.89	0.35	38.89	0.28	
Total ownership costs	391.37	3.56	391.37	2.80	
Total costs	2,265.81	20.60	2,383.98	17.03	
Income over operating costs	196.28	1.78	588.12	4.20	
Income over total costs	-195.09	-1.77	196.75	1.41	

¹ Totals may not sum due to rounding.

Abbreviations: cwt = hundredweight; equip. = equipment

Written by
Joe Horner and Ryan Milhollin, Extension Specialists, Agricultural Business and Policy

Table 2. Input assumptions used in dairy (grazing) planning budget for 2019.

Selected input quantities	Quantity	Selected input prices	Dollars per unit
Cull cow sale weight, pounds	1,100	Cull cow sale price, per hundredweight	60.00
Labor, cows per worker	100	Annual labor salary and benefits, per worker	36,000.00
Calf crop, percent	95	Bull calf sale price, per head	100.00
Heifer replacement, percent	20	Surplus heifer calf sale price, per head	125.00
Operating interest, percent	6	Milk price, per hundredweight	17.00

Table 3. Feed requirements in dairy (grazing) planning budget for 2019, on a per cow basis.

Feed description	Cost per unit	11,000 pounds milk sold		14,000 pounds milk sold	
		Pounds	Dollars ²	Pounds	Dollars ²
Pasture (intensive dairy), dry matter per ton	80.00	7,335	293.41	7,658	306.31
Alfalfa hay, per ton	200.00	1,289	128.94	1,289	128.94
Corn, cracked, per bushel	4.00	910	65.00	1,384	98.88
Soybean hulls, per ton	165.00	910	75.08	1,068	88.12
Distillers grain, dry, per ton	165.00	791	65.22	949	78.26
Grass hay, per ton	100.00	670	33.50	639	31.97
Minerals/vitamins, per ton	1,100.00	186	102.38	186	102.38
Total lactating and dry cow feed cost			763.52	834.86	
Replacement heifer feed and forage cost ¹			161.65	161.65	
Total feed cost per cow			925.18	996.52	

¹ Total replacement heifer (0 to 24 months) feed cost is \$808.27 and was adjusted to a 20% heifer replacement rate.

² Totals may not sum due to rounding.

Table 4. Investment assumptions in dairy (grazing) planning budget for 2019.

Description	Quantity	Dollars per unit	Total dollars	Dollars per cow ²
Land, acres	200	3,000	600,000	3,333
Milking parlor, stalls	24	7,000	168,000	933
Breeding herd, cows	180	1,050	189,000	1,050
Working facility			14,800	82
Feed storage			10,080	56
Manure storage system			31,250	174
Equipment			31,000	172
Total¹			1,044,130	5,801

¹ Totals may not sum due to rounding.

² Represents total cows in herd.

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Dairy Heifer Planning Budget for 2019

This budget presents information useful to farmers raising dairy heifers. Table 1 presents estimates for the 2019 year for dairy calves purchased at birth, bred and sold at 24 months in Missouri. Assumptions were based on price forecasts as of October 2018. Detailed inputs and feed requirements are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to customize this budget to fit their operation.

Table 1. Missouri dairy heifer planning budget for 2019.

	Per heifer sold ¹	Your estimate
Income		
Springer heifer sales (0.95 head)	997.50	
Cull heifer sales (0.025 head)	32.50	
Yearling heifer sales (0.025 head)	18.13	
Less death loss (4 percent) of purchased calves	-5.00	
Total income	1,043.13	
Operating costs		
Purchased heifer calf and interest	140.60	
Feed (birth to 24 months of age)	808.27	
Labor	134.30	
Veterinary, drugs and supplies	25.00	
Breeding costs for artificial insemination services	45.00	
Transportation and marketing	15.00	
Utilities, fuel and oil	18.75	
Building and equipment repairs	9.68	
Miscellaneous	15.00	
Operating interest	32.13	
Total operating costs	1,243.72	
Ownership costs		
Depreciation on buildings and equipment	52.09	
Interest on buildings and equipment	31.93	
Insurance and taxes on buildings and equipment	14.08	
Total ownership costs	98.10	
Total costs	1,341.82	
Income over operating costs	-200.59	
Income over total costs	-298.70	
Total cost per day per heifer sold	1.67	
Total cost per pound of gain per heifer sold	1.01	
Springer heifer breakeven price per head	1,364.42	

¹ Totals may not sum due to rounding.

Written by
Joe Horner and Ryan Milhollin, Extension Specialists, Agricultural Business and Policy

Table 2. Input assumptions used in dairy heifer planning budget for 2019.

Selected input quantities	Quantity	Selected input prices	Dollars per unit
Cull heifer sale weight, pounds	1,300	Cull and yearling heifer sale price, per pound	1.00
Yearling heifer sale weight, pounds	725	Springer heifer sale price, per head	1,050.00
Labor, hours	10	Labor cost, per hour	13.43
		Heifer purchase price	125.00

Table 3. Feed requirements for dairy heifer planning budget for 2019.

Birth to 6 months (90 to 400 pounds)		Pre-weaning ration (90 to 180 pounds)		Transition ration (180 to 235 pounds)		Early growing ration (235 to 400 pounds)	
Feed description	Cost per unit	Units	Dollars ¹	Units	Dollars ¹	Units	Dollars ¹
Milk replacer, per pound	1.290	50	64.50				
Calf starter, per pound	0.215	100	21.50	100	21.50		
Alfalfa hay, per pound	0.100	20	1.00	90	4.50	225	11.25
Calf grower, per pound	0.180			50	9.00	450	81.00
Grass hay, per pound	0.05					225	11.25
Pasture, per animal unit month	15.00					0.4	6.13
Feed cost per period			87.00		35.00		109.53
Total feed costs²			233.35				
6 to 12 months (400 to 725 pounds)		Winter ration		Spring/Fall ration		Summer ration	
Feed description	Cost per unit	Units	Dollars ¹	Units	Dollars ¹	Units	Dollars ¹
Corn gluten feed, per pound	0.0825	525	43.31			270	22.28
Corn, cracked, per pound	0.0714	387	27.64	252	18.00	234	16.71
Soybean hulls, per pound	0.0825	263	21.66	360	29.70	270	22.28
Grass hay, per pound	0.05	1,350	67.50				
Mineral, per pound	0.55	36	19.80	36	19.80	36	19.80
Pasture, per animal unit month	15.00			1.1	16.88	1.7	25.31
Feed cost per period			179.91		84.38		106.38
Average total feed costs			227.52				
12 to 24 months (725 to 1,380 pounds)		Winter ration		Spring/Fall ration		Summer ration	
Feed description	Cost per unit	Units	Dollars ¹	Units	Dollars ¹	Units	Dollars ¹
Corn gluten feed, per pound	0.0825	225	18.56			207	17.08
Corn, cracked, per pound	0.0714	135	9.64	90	6.43	117	8.36
Soybean hulls, per pound	0.0825	90	7.43	180	14.85	207	17.08
Grass hay, per pound	0.05	1,710	85.50				
Mineral, per pound	0.55	18	9.90	18	9.90	18	9.90
Pasture, per animal unit month	15.00			2.1	31.58	3.2	47.36
Feed cost per period			131.03		62.75		99.77
Average total feed costs³			347.40				

¹ Totals may not sum due to rounding.² Feed cost adjusted to account for death loss (4 percent).³ Feed cost adjusted to account for sale of yearling heifers (2.5 percent).

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Goats, Spring Kidding Doe Herd
Projected Annual Budget for 2019 Per Doe Per Year

Description of Production: Herd of 50 Does and 2 Bucks with 150% kid crop raised.
 7 doe kids are kept as replacements.

	Per Doe	Your Estimate
<u>ESTIMATED INCOME/DOE</u>		
Wether kid sales, (55 lbs @ \$260.00/cwt)	\$107.25	_____
Doe kid sales, (55 lbs @ \$260.00/cwt)	87.23	_____
Cull doe sales, (125 lbs @ \$150.00/cwt x 14%)	26.25	_____
Cull buck sales, (175 lbs @ \$160.00/cwt x 1)	5.60	_____
<u>ESTIMATED TOTAL INCOME/DOE</u>	<u>\$226.33</u>	<u>_____</u>
<u>ESTIMATED OPERATING COSTS/DOE</u>		
Pasture (rental rate @ \$27.50 /acre)	\$10.16	_____
Mixed hay (\$120/ton)	39.79	_____
Commodity mix 16% (\$220/ton)	5.55	_____
Mineral (\$20.00/ 50lbs)	6.57	_____
Labor (2.25 hrs @ \$13.50/hr)	30.38	_____
Veterinary, drugs, and supplies	8.17	_____
Marketing (7.0% of sales)	15.84	_____
Utilities and all machinery costs	4.48	_____
Livestock facility repairs	1.33	_____
Breeding charges		
Doe replacemnet (14% of herd)	31.68	_____
Buck cost or A.I. charge	10.00	_____
Interest on breeding stock (6.0%)	18.10	_____
Insurance on breeding stock	3.02	_____
Professional fees (legal, accounting, etc.)	0.25	_____
Miscellaneous	1.00	_____
Interest on 1/2 operating costs @ 6.0%	3.75	_____
TOTAL OPERATING COSTS	<u>\$190.07</u>	<u>_____</u>
<u>ESTIMATED OWNERSHIP COST/DOE</u>		
Depreciation on livestock facilities	6.40	_____
Interest on livestock facilities	4.40	_____
Insurance and taxes on capital items	4.14	_____
TOTAL OWNERSHIP COSTS	<u>\$14.94</u>	<u>_____</u>
<u>ESTIMATED TOTAL COSTS/DOE</u>	<u>\$205.01</u>	<u>_____</u>
<u>INCOME OVER OPERATING COSTS/DOE</u>	<u>\$36.26</u>	<u>_____</u>
<u>INCOME OVER TOTAL COSTS/DOE</u>	<u>\$21.32</u>	<u>_____</u>

Goats – Doe Replacement Projected Budget for 2019

Description of Production: Buy 55 lb. doe kids, sell unbred yearling does.

<u>ESTIMATED INCOME/DOE</u>	Per Doe	Your Estimate
Doe kid sales:		
Doe, springer (0.86 head @ \$200/hd)	\$172.00	_____
Cull doe (0.14 head, 103 lbs @ \$132.00/cwt)	18.98	_____
Less death loss (1% of doe kid sales)	1.91	_____
Other income	0.00	_____
<u>ESTIMATED TOTAL INCOME/DOE</u>	<u>\$189.07</u>	<u>_____</u>
<u>ESTIMATED OPERATING COSTS/DOE</u>		
Purchased doe kid (55 lbs @ \$260/cwt)	\$143.00	_____
Summer pasture (180 days @ 0.28 ac/hd @ \$27.50/ac)	3.79	_____
Mixed hay (117 lbs @ \$120/ton)	7.01	_____
Commodity Mix 16% (17 lbs @ \$220/ton)	1.86	_____
Mineral and salt (10 lbs @ \$800/ton)	4.05	_____
Labor (1.0 hrs @ \$13.50/hr)	13.50	_____
Veterinary, drugs, and supplies	1.44	_____
Marketing (7.0% of sales)	13.37	_____
Breeding cost	0.00	_____
Utilities and all machinery costs	3.99	_____
Livestock facility repairs	1.33	_____
Professional fees (legal, accounting, etc.)	0.25	_____
Miscellaneous	1.00	_____
Interest on kid purchase and 1/2 operating costs @ 6%	6.05	_____
TOTAL OPERATING COSTS	<u>200.64</u>	<u>_____</u>
<u>ESTIMATED OWNERSHIP COSTS/DOE</u>		
Depreciation on livestock facilities	5.42	_____
Interest on livestock facilities	2.30	_____
Insurance and taxes on capital items	2.98	_____
TOTAL OWNERSHIP COSTS	<u>10.70</u>	<u>_____</u>
<u>ESTIMATED TOTAL COSTS/DOE</u>	<u>\$211.34</u>	<u>_____</u>
<u>INCOME OVER OPERATING COSTS/DOE</u>	<u>-\$11.57</u>	<u>_____</u>
<u>INCOME OVER TOTAL COSTS/DOE</u>	<u>-\$22.27</u>	<u>_____</u>
Total cost per head per day	0.30	_____
Total cost per pound of gain	1.23	_____
Doe breakeven price, \$/head	\$226.31	_____

Sheep Flock

Projected Budget for Spring Lambing Ewe Flock in 2019 Per Ewe Per Year

	Per Ewe	Your Estimate
(100 ewes, Spring lambing, finish lambs on pasture) (140% lamb crop at sell weight)		
ESTIMATED INCOME/EWE		
Wether lambs, 115 lbs @ \$140/cwt.	\$ 112.70	\$ _____
Ewe lambs, 105 lbs @ \$145/cwt.	106.58	_____
Culled ewes, 150 lbs @ \$70/cwt. x 16%	16.80	_____
Total returns per ewe	\$ 236.08	\$ _____
ESTIMATED OPERATING COSTS/EWE		
Pasture @ \$35 per acre	\$ 20.19	\$ _____
Grass hay @ \$145 per ton	20.93	_____
Supplement @ \$0.14 per lb	8.38	_____
Mineral @ \$0.40 per lb	3.65	_____
Vet-med, animal health, stock supplies	19.48	_____
Marketing	12.98	_____
Machinery fuel, repair and utilities	26.94	_____
Fence, water, facility maintenance	3.50	_____
Annual ram cost (net)	7.00	_____
Ewe replacement (17% of flock)	30.60	_____
Operating interest, 1/2 operating costs @ 6%	4.22	_____
Total Operating Costs, except labor	\$ 157.89	\$ _____
Operator and hired labor @ \$13.50 per hour	47.25	_____
Total Operating Costs, including labor	\$ 205.14	\$ _____
ESTIMATED OWNERSHIP COSTS/EWE		
Business overhead (legal, accounting, misc.)	\$ 3.00	\$ _____
Insurance and property taxes on capital	6.32	_____
Opporunity interest on capital invested @ 6%	19.95	_____
Depreciation of facilities and equipment	28.40	_____
Total Ownership Costs	\$ 57.67	\$ _____
ESTIMATED TOTAL COSTS/EWE	\$ 262.80	\$ _____
INCOME OVER OPERATING COSTS	\$ 30.94	\$ _____
INCOME OVER TOTAL COSTS	\$ - 26.73	\$ _____

Corn (Dryland) Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of corn for grain. Table 1 presents estimates for the 2019 crop year for dryland corn production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri corn (dryland) planning budget for 2019.

	Dollars per acre	Your estimate
Income per acre		
Grain sales	576.00	
Other income	0.00	
Total income per acre	576.00	
Operating costs per acre		
Seed	95.63	
Fertilizer and soil amendments	105.64	
Crop protection chemicals	41.00	
Crop supplies, storage, and marketing	1.00	
Crop consulting and insurance	20.00	
Custom hire and rental	6.50	
Machinery fuel, drying, and irrigation energy	37.67	
Machinery repairs and maintenance	17.55	
Operator and hired labor	14.56	
Operating interest	10.19	
Total operating costs per acre	349.73	
Ownership costs per acre		
Farm business overhead	3.60	
Machinery overhead	26.80	
Machinery depreciation	31.95	
Real estate charge	147.00	
Total ownership costs per acre	209.35	
Total costs per acre	559.08	
Income over operating costs per acre		
	226.27	
Income over total costs per acre		
	16.92	
Operating costs per bushel	2.19	
Ownership costs per bushel	1.31	
Total costs per bushel	3.49	

Written by
Raymond Massey, Extension Professor, Agricultural Economics

Table 2 shows input assumptions used to estimate the dryland corn budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in corn (dryland) planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	160	Corn market price, per bushel	3.60
Seeding rate, count	30,000	Seed, per 80,000 seed bag	255.00
Nitrogen rate, pounds	160	Nitrogen, per pound N	0.31
Phosphorus rate, pounds P ₂ O ₅	72	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	46	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.60	Lime, per ton	20.00
Sum of allocated labor, hours	0.97	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in corn (dryland) planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
V-ripper 30-inch (17 feet); 360 4WD	0.03	0.45	2.12	5.72	7.84	0.3
Row crop planter (16 row); 225 MFWD	0.05	0.53	5.39	10.85	16.24	1.0
Boom sprayer (90 feet); 160 MFWD	0.04	0.31	2.91	4.59	7.50	2.0
Anhydrous applicator (21 feet); 225 MFWD	0.09	0.88	5.37	7.23	12.60	1.0
Combine, corn head (8 row); 275 HP	0.15	1.78	15.86	19.15	35.01	1.0
Grain cart (500 bushel); 225 MFWD	0.07	0.73	4.10	5.51	9.61	
Grain auger (5,000 bushels per hour); 130 MFWD	0.03	0.18	1.19	1.13	2.32	
Semi, tractor and trailer		0.58	3.32	2.44	5.76	
Pickup truck		0.33	1.46	2.13	3.59	
Total ³	0.47	5.78	41.73	58.75	100.49	5.3

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 4WD = 4-wheel drive tractor; MFWD = modified front-wheel drive tractor; HP = horsepower

Farmers can also develop their own custom budget by using the Missouri Crop Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/CBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing corn and other grain crops in Missouri.

Corn (Irrigated) Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of irrigated corn. Table 1 presents estimates for the 2019 crop year for irrigated corn production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri corn (irrigated) planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Grain sales	720.00	
Other income	0.00	
Total income per acre	720.00	
Operating costs per acre		
Seed	102.00	
Fertilizer and soil amendments	129.20	
Crop protection chemicals	41.00	
Crop supplies, storage, and marketing	2.00	
Crop consulting and insurance	22.50	
Custom hire and rental	6.50	
Machinery fuel, drying, and irrigation energy	83.00	
Machinery repairs and maintenance	51.73	
Operator and hired labor	21.96	
Operating interest	13.80	
Total operating costs per acre	473.68	
Ownership costs per acre		
Farm business overhead	3.00	
Machinery overhead	50.13	
Machinery depreciation	58.52	
Real estate charge	175.00	
Total ownership costs per acre	286.65	
Total costs per acre	760.33	
Income over operating costs per acre	246.32	
Income over total costs per acre	-40.33	
Operating costs per bushel	2.37	
Ownership costs per bushel	1.43	
Total costs per bushel	3.80	

¹ Totals may not sum due to rounding.

Written by
Raymond Massey, Extension Professor, Agricultural Economics

Table 2 shows input assumptions used to estimate the irrigated corn budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in corn (irrigated) planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	200	Corn market price, per bushel	3.60
Seeding rate, count	32,000	Seed, per 80,000 seed bag	255.00
Nitrogen rate, pounds N	200	Nitrogen, per pound N	0.31
Phosphorus rate, pounds P ₂ O ₅	90	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	58	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.6	Lime, per ton	20.00
Sum of allocated labor, hours	1.52	Skilled labor, per hour	18.00
Irrigation, inches	6	Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in corn (irrigated) planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Field cultivator (35 ft); 360 4WD	0.04	0.63	3.36	4.64	8.00	1
V-ripper 30" (17 feet); 360 4WD	0.03	0.45	2.12	5.72	7.85	0.3
Split row no-till planter; 225 MFWD	0.05	0.53	4.83	12.02	16.85	1
Boom sprayer (90 feet); 130 MFWD	0.04	0.25	2.67	4.49	7.16	2
Anhydrous applicator (21 feet); 225 MFWD	0.09	0.88	5.37	7.23	12.60	1
Combine, corn head (8 row); 275 HP	0.15	1.78	15.86	19.15	35.02	1
Grain cart (500 bushel); 225 MFWD	0.07	0.73	4.10	5.51	9.61	
Grain auger (5,000 bushels per hour); 130 MFWD	0.04	0.23	1.49	1.41	2.90	
Irrigation	0.50		59.13	44.00	103.13	1
Semi, tractor and trailer		0.90	4.39	2.70	7.09	
Pickup truck		0.28	1.22	1.77	2.99	
Total³	1.02	6.66	104.54	108.65	213.19	7.3

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 4WD = 4-wheel drive tractor; MFWD = modified front-wheel drive tractor; HP = horsepower

Farmers can also develop their own custom budget by using the Missouri Crop Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/CBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing corn and other grain crops in Missouri.

Corn Silage Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of corn silage. Table 1 presents estimates for the 2019 crop year for corn silage production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri corn silage planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Silage sales	720.00	
Other income	0.00	
Total income per acre	720.00	
Operating costs per acre		
Seed	66.63	
Fertilizer and soil amendments	147.70	
Crop protection chemicals	41.00	
Crop supplies, storage, and marketing	5.00	
Custom hire and rental	78.50	
Machinery fuel and irrigation energy	21.95	
Machinery repairs and maintenance	18.87	
Operator and hired labor	24.52	
Operating interest	12.12	
Total operating costs per acre	416.29	
Ownership costs per acre		
Farm business overhead	8.00	
Machinery overhead	21.20	
Machinery depreciation	34.04	
Real estate charge	147.00	
Total ownership costs per acre	210.24	
Total costs per acre	626.54	
Income over operating costs per acre		
	303.71	
Income over total costs per acre		
	93.46	
Operating costs per ton, as-is basis	23.13	
Ownership costs per ton, as-is basis	11.70	
Total costs per ton, as-is basis	34.83	

¹ Totals may not sum due to rounding.

Written by
Raymond Massey, Extension Professor, Agricultural Economics

Table 2 shows input assumptions used to estimate the corn silage budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in corn silage planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Forage yield, tons, as-is basis	18	Corn silage market price, per ton	40.00
Seeding rate, corn	26,000	Seed, per 80,000 seed bag	205.00
Nitrogen rate, pounds	140	Nitrogen, per pound N	0.42
Phosphorus rate, pounds P ₂ O ₅	70	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	165	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.5	Lime, per ton	20.00
Sum of allocated labor, hours	1.51	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in corn silage planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Field cultivator (18 ft); 160 MFWD	0.08	0.54	3.78	3.86	7.64	1
Row crop planter (12 row); 130 MFWD	0.07	0.41	4.12	7.14	11.25	1
Boom sprayer (90 ft); 105 2WD	0.04	0.21	2.35	3.35	5.70	2
Anhydrous applicator (21 feet); 160 MFWD	0.09	0.63	4.37	4.20	8.56	1
Silage chopper, 2 row (5 feet); 160 MFWD	0.73	5.11	40.33	31.41	71.74	1
Pickup truck		0.83	3.65	5.29	8.95	
Total³	1.01	7.73	58.59	55.24	113.84	6

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 2WD = 2-wheel drive tractor; MFWD = modified front-wheel drive tractor

Farmers can also develop their own custom budget by using the Missouri Forage Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/FBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing corn silage and other forage crops in Missouri.

Soybean (Dryland) Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of soybeans for grain. Table 1 presents estimates for the 2019 crop year for dryland soybean production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri soybean (dryland) planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Grain sales	408.00	
Other income	0.00	
Total income per acre	408.00	
Operating costs per acre		
Seed	56.67	
Fertilizer and soil amendments	47.80	
Crop protection chemicals	47.00	
Crop supplies, storage, and marketing	1.00	
Crop consulting and insurance	12.00	
Custom hire and rental	6.50	
Machinery fuel, drying, and irrigation energy	10.57	
Machinery repairs and maintenance	11.54	
Operator and hired labor	11.38	
Operating interest	6.13	
Total operating costs per acre	210.59	
Ownership costs per acre		
Farm business overhead	3.60	
Machinery overhead	17.85	
Machinery depreciation	21.30	
Real estate charge	147.00	
Total ownership costs per acre	189.75	
Total costs per acre	400.34	
Income over operating costs per acre		
	197.41	
Income over total costs per acre		
	7.66	
	Operating costs per bushel	4.39
	Ownership costs per bushel	3.95
	Total costs per bushel	8.34

¹ Totals may not sum due to rounding.

Written by
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Table 2 shows input assumptions used to estimate the dryland soybean budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in soybean (dryland) planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	48	Soybean market price, per bushel	8.50
Seeding rate, count	170,000	Seed, per 150,000 seed bag	50.00
Phosphorus rate, pounds P ₂ O ₅	40	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	70	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.5	Lime, per ton	20.00
Sum of allocated labor, hours	0.79	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in soybean (dryland) planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Tandem disk (30 feet); 360 4WD	0.06	0.91	4.83	7.56	12.39	1
Row crop planter (16 row); 225 MFWD	0.05	0.53	5.39	10.85	16.24	1
Boom sprayer (90 feet); 130 MFWD	0.04	0.25	2.67	4.49	7.16	2
Combine, flexible grain head (30 feet); 275 HP	0.07	0.91	7.76	9.07	16.83	1
Grain cart (500 bushel); 225 MFWD	0.05	0.46	2.60	3.50	6.10	
Grain auger (5,000 bushels per hour); 130 MFWD	0.01	0.05	0.36	0.34	0.70	
Semi, tractor and trailer		0.29	1.66	1.21	2.87	
Pickup truck		0.33	1.46	2.13	3.59	
Total³	0.29	3.73	26.74	39.15	65.89	5

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 4WD = 4-wheel drive tractor; MFWD = modified front-wheel drive tractor; HP = horsepower

Farmers can also develop their own custom budget by using the Missouri Crop Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/CBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing soybeans and other grain crops in Missouri.

Soybean (Double Crop) Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of double crop soybeans for grain, after wheat. Table 1 presents estimates for the 2019 crop year for double crop soybean production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri soybean (double crop) planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Grain sales	229.50	
Other income	0.00	
Total income per acre	229.50	
Operating costs per acre		
Seed	66.67	
Fertilizer and soil amendments	21.36	
Crop protection chemicals	8.00	
Crop supplies, storage, and marketing	0.00 ²	
Crop consulting and insurance	0.00	
Custom hire and rental	0.00 ²	
Machinery fuel, drying, and irrigation energy	7.12	
Machinery repairs and maintenance	9.57	
Operator and hired labor	9.52	
Operating interest	3.67	
Total operating costs per acre	125.91	
Ownership costs per acre		
Farm business overhead	4.50	
Machinery overhead	13.93	
Machinery depreciation	13.96	
Real estate charge	0.00 ²	
Total ownership costs per acre	32.39	
Total costs per acre	158.31	
Income over operating costs per acre	103.59	
Income over total costs per acre	71.19	
	Operating costs per bushel	4.66
	Ownership costs per bushel	1.20
	Total costs per bushel	5.86

¹ Totals may not sum due to rounding.

² These expenses were charged to wheat production since soybeans were planted in the same year wheat was harvested.

Written by
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Table 2 shows input assumptions used to estimate the double crop soybean budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge was not included but could be allocated between the soybean and wheat crops.

Table 2. Input assumptions used in soybean (double crop) planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	27	Soybean market price, per bushel	8.50
Seeding rate, count	200,000	Seed, per 150,000 seed bag	50.00
Phosphorus rate, pounds P ₂ O ₅	23	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	39	Potassium, per pound K ₂ O	0.30
Sum of allocated labor, hours	0.66	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in soybean (double crop) planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Row crop planter (16 row); 225 MFWD	0.05	0.53	5.39	10.85	16.24	1
Boom sprayer (90 feet); 130 MFWD	0.02	0.12	1.34	2.86	4.20	1
Combine, flexible grain head (30 feet); 275 HP	0.07	0.91	7.76	9.07	16.83	1
Grain auger (5,000 bushels per hour); 130 MFWD	0.01	0.09	0.39	0.45	0.84	
Semi, tractor and trailer		0.49	2.77	2.01	4.78	
Pickup truck		0.42	1.83	2.65	4.47	
Total³	0.16	2.55	19.47	27.89	47.36	3

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 4WD = 4-wheel drive tractor; MFWD = modified front-wheel drive tractor; HP = horsepower

Farmers can also develop their own custom budget by using the Missouri Crop Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/CBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing soybeans and other grain crops in Missouri.

Winter Wheat Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of winter wheat for grain. Table 1 presents estimates for the 2019 crop year for winter wheat production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri winter wheat planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Grain sales	306.00	
Other income	0.00	
Total income per acre	306.00	
Operating costs per acre		
Seed	32.00	
Fertilizer and soil amendments	64.54	
Crop protection chemicals	17.00	
Crop supplies, storage, and marketing	1.00	
Crop consulting and insurance	12.00	
Custom hire and rental	13.00	
Machinery fuel, drying, and irrigation energy	10.22	
Machinery repairs and maintenance	10.36	
Operator and hired labor	11.40	
Operating interest	5.15	
Total operating costs per acre	176.67	
Ownership costs per acre		
Farm business overhead	4.50	
Machinery overhead	14.54	
Machinery depreciation	20.66	
Real estate charge	126.00	
Total ownership costs per acre	165.70	
Total costs per acre	342.37	
Income over operating costs per acre	129.33	
Income over total costs per acre	-36.37	
Operating costs per bushel	2.94	
Ownership costs per bushel	2.76	
Total costs per bushel	5.71	

¹ Totals may not sum due to rounding.

Written by
Raymond Massey, Extension Professor, Agricultural Economics

Table 2 shows input assumptions used to estimate the winter wheat budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in winter wheat planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	60	Wheat market price, per bushel	5.10
Seeding rate, 50 pound bag	2	Seed, per bag	16.00
Nitrogen rate, pounds N	81	Nitrogen, per pound N	0.42
Phosphorus rate, pounds P ₂ O ₅	36	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	18	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.5	Lime, per ton	20.00
Sum of allocated labor, hours	0.77	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in winter wheat planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
No-till drill (20 feet); 225 MFWD	0.12	1.17	8.49	14.89	23.39	1
Boom sprayer (90 feet); 130 MFWD	0.02	0.12	1.34	2.86	4.20	1
Combine, fixed grain head (30 feet); 275 HP	0.07	0.91	7.76	8.86	16.62	1
Grain cart (500 bushel); 225 MFWD	0.05	0.46	2.60	3.50	6.10	
Grain auger (5,000 bushels per hour); 130 MFWD	0.01	0.07	0.45	0.42	0.87	
Semi, tractor and trailer		0.49	2.77	2.01	4.78	
Pickup truck		0.42	1.83	2.65	4.47	
Total³	0.27	3.63	25.23	35.20	60.43	3

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: MFWD = modified front-wheel drive tractor; HP = horsepower

Farmers can also develop their own custom budget by using the Missouri Crop Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/CBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing winter wheat and other grain crops in Missouri.

Grain Sorghum Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of grain sorghum. Table 1 presents estimates for the 2019 crop year for grain sorghum production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri grain sorghum planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Grain sales	320.10	
Other income	0.00	
Total income per acre	320.10	
Operating costs per acre		
Seed	12.60	
Fertilizer and soil amendments	66.95	
Crop protection chemicals	30.00	
Crop supplies, storage, and marketing	1.00	
Crop consulting and insurance	13.00	
Custom hire and rental	6.50	
Machinery fuel, drying, and irrigation energy	11.63	
Machinery repairs and maintenance	11.70	
Operator and hired labor	12.60	
Operating interest	4.98	
Total operating costs per acre	170.96	
Ownership costs per acre		
Farm business overhead	3.00	
Machinery overhead	21.01	
Machinery depreciation	22.74	
Real estate charge	126.00	
Total ownership costs per acre	172.75	
Total costs per acre	343.71	
Income over operating costs per acre		
	149.14	
Income over total costs per acre		
	-23.61	
	Operating costs per bushel	1.76
	Ownership costs per bushel	1.78
	Total costs per bushel	3.54

¹ Totals may not sum due to rounding.

Written by
Raymond Massey, Extension Professor, Agricultural Economics

Table 2 shows input assumptions used to estimate the grain sorghum budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in grain sorghum planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	97	Grain sorghum market price, per bushel	3.30
Seeding rate, count	90,000	Seed, per 750,000 seed bag	105.00
Nitrogen rate, pounds N	97	Nitrogen, per pound N	0.31
Phosphorus rate, pounds P ₂ O ₅	44	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	28	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.5	Lime, per ton	20.00
Sum of allocated labor, hours	0.85	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in grain sorghum planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
V-ripper 30-inch (17 feet); 360 4WD	0.03	0.45	2.12	5.72	7.85	0.3
Row crop planter (16 row); 225 MFWD	0.05	0.53	5.39	10.85	16.24	1
Boom sprayer (90 feet); 130 MFWD	0.04	0.25	2.67	4.49	7.16	2
Anhydrous applicator (21 feet); 225 MFWD	0.09	0.88	5.37	7.23	12.60	1
Combine, fixed grain head (30 feet); 275 HP	0.07	0.91	7.76	8.86	16.62	1
Grain cart (500 bushel); 225 MFWD	0.04	0.37	2.08	2.80	4.88	
Grain auger (5,000 bushels per hour); 130 MFWD	0.02	0.11	0.72	0.68	1.41	
Semi, tractor and trailer		0.32	1.84	1.34	3.19	
Pickup truck		0.28	1.22	1.76	2.98	
Total³	0.35	4.10	29.18	43.75	72.93	5.3

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 4WD = 4-wheel drive tractor; MFWD = modified front-wheel drive tractor; HP = horsepower

Farmers can also develop their own custom budget by using the Missouri Crop Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/CBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing grain sorghum and other grain crops in Missouri.

Alfalfa Establishment Planning Budget for 2019

This budget presents information useful to farmers planning the financing, establishment and marketing of alfalfa. Table 1 presents estimates for the 2019 crop year for alfalfa establishment in the fall for northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances. For example, spring established alfalfa would have a higher crop protection cost to account for necessary herbicides.

Table 1. Missouri alfalfa establishment planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Hay sales (60 pound bales)	420.00	
Other income	0.00	
Total income per acre	420.00	
Operating costs per acre		
Seed	69.00	
Fertilizer and soil amendments	116.40	
Crop protection chemicals	20.50	
Crop supplies, storage, and marketing	7.50	
Custom hire and rental	73.50	
Machinery fuel and irrigation energy	20.22	
Machinery repairs and maintenance	21.96	
Operator and hired labor	37.58	
Operating interest	11.00	
Total operating costs per acre	377.66	
Ownership costs per acre		
Farm business overhead	4.38	
Machinery overhead	20.10	
Machinery depreciation	38.80	
Real estate charge	91.00	
Total ownership costs per acre	154.28	
Total costs per acre	531.94	
Income over operating costs per acre	42.34	
Income over total costs per acre	-111.94	

¹ Totals may not sum due to rounding.

Table 2 shows input assumptions used to estimate the alfalfa establishment budget for small bale production. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in alfalfa establishment planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Forage yield, 60 pound bales	70	Alfalfa market price, per bale	6.00
Seeding rate, pounds	15	Alfalfa seed, per pound	4.60
Phosphorus rate, pounds P ₂ O ₅	70	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	90	Potassium, per pound K ₂ O	0.30
Lime rate, tons	3	Lime, per ton	20.00
Sum of allocated labor, hours	2.46	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in alfalfa establishment planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Chisel plow (15 feet); 130 MFWD	0.12	0.67	4.97	5.88	10.85	1
Tandem disk (21 feet); 130 MFWD	0.16	0.94	7.88	7.89	15.77	2
Roller harrow (12 feet); 105 2WD	0.13	0.65	4.85	5.49	10.34	1
No-till drill (15 feet); 130 MFWD	0.16	0.90	9.31	13.72	23.03	1
Disk mower-conditioner (9 feet); 105 2WD	0.35	1.71	14.31	10.82	25.13	2
Wheel rake (2-16'); 60 2WD	0.08	0.20	2.42	3.75	6.17	2
Small square baler; 75 2WD	0.46	1.51	20.24	8.04	28.29	2
Pickup truck		0.52	2.28	3.31	5.59	
Total³	1.46	7.10	66.26	58.90	125.16	11

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 2WD = 2-wheel drive tractor; MFWD = modified front-wheel drive tractor

Farmers can also develop their own custom budget by using the Missouri Forage Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/FBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing alfalfa and other forage crops in Missouri.

Alfalfa Baleage Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of alfalfa baleage. Establishment costs for alfalfa can be found in MU Guide 661. Table 1 presents estimates for the 2019 crop year for established alfalfa baleage production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri alfalfa baleage planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Baleage sales	900.00	
Other income	0.00	
Total income per acre	900.00	
Operating costs per acre		
Seed	0.00	
Fertilizer and soil amendments	89.40	
Crop protection chemicals	7.50	
Crop supplies, storage, and marketing	100.00	
Custom hire and rental	49.00	
Machinery fuel and irrigation energy	38.21	
Machinery repairs and maintenance	48.41	
Operator and hired labor	56.19	
Operating interest	11.66	
Total operating costs per acre	400.37	
Ownership costs per acre		
Farm business overhead	8.75	
Machinery overhead	28.76	
Machinery depreciation	59.24	
Real estate charge	91.00	
Total ownership costs per acre	187.75	
Total costs per acre	588.12	
Income over operating costs per acre		
	499.63	
Income over total costs per acre		
	311.88	
	Operating costs per ton, as fed	44.89
	Ownership costs per ton, as fed	20.86
	Total costs per ton, as fed	65.75

¹ Totals may not sum due to rounding.

Written by
Raymond Massey, Extension Professor, Agricultural Economics

Table 2 shows input assumptions used to estimate the alfalfa baleage budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in alfalfa baleage planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, tons, as fed	9	Market price, per ton	100.00
Phosphorus rate, pounds P ₂ O ₅	70	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	200	Potassium, per pound K ₂ O	0.30
Sum of allocated labor, hours	3.68	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in alfalfa baleage planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Boom sprayer (90 feet); 105 2WD	0.02	0.11	1.17	2.20	3.37	1
Disk mower-conditioner (9 feet); 105 2WD	0.71	3.41	28.61	18.18	46.79	4
Wheel rake (2-16'); 75 2WD	0.15	0.50	5.26	6.90	12.15	4
Round baler, silage kit (1500 pound); 105 2WD	0.71	3.41	33.77	28.04	61.81	4
Round bale wrapper haylage; 75 2WD	1.50	4.95	61.33	26.07	87.40	1
Pickup truck		1.04	4.57	6.62	11.19	
Total³	3.08	13.43	134.71	88.00	222.71	14

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 2WD = 2-wheel drive tractor

Farmers can also develop their own custom budget by using the Missouri Forage Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/FBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing alfalfa baleage and other forage crops in Missouri.

Alfalfa Small Bales Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing and marketing of alfalfa small bales. Establishment costs for alfalfa can be found in MU Guide 661. Table 1 presents estimates for the 2019 crop year for established alfalfa small bale production in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances. For example, an alfalfa large round bale planning budget could be developed by modifying machinery activities and hay sales.

Table 1. Missouri alfalfa small bales planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Hay sales (60 pound bales)	1,000.02	
Other income	0.00	
Total income per acre	1,000.02	
Operating costs per acre		
Seed	0.00	
Fertilizer and soil amendments	89.40	
Crop protection chemicals	7.50	
Crop supplies, storage, and marketing	10.00	
Custom hire and rental	162.17	
Machinery fuel and irrigation energy	27.69	
Machinery repairs and maintenance	27.94	
Operator and hired labor	44.64	
Operating interest	11.08	
Total operating costs per acre	380.42	
Ownership costs per acre		
Farm business overhead	13.13	
Machinery overhead	12.04	
Machinery depreciation	48.36	
Real estate charge	91.00	
Total ownership costs per acre	164.52	
Total costs per acre	544.94	
Income over operating costs per acre	619.60	
Income over total costs per acre	455.08	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions used to estimate the alfalfa small bales budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in alfalfa small bales planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Forage yield, 60 pound bales	167	Alfalfa market price, per bale	6.00
Phosphorus rate, pounds P ₂ O ₅	70	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	200	Potassium, per pound K ₂ O	0.30
Sum of allocated labor, hours	2.70	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in alfalfa small bales planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Swather mower-conditioner (9 feet); 105 MFWD	0.92	4.24	36.48	27.36	63.83	4
Hay tedder (8.5 feet); 60 2WD	0.21	0.55	4.87	2.45	7.32	2
Wheel rake (2-16'); 60 2WD	0.15	0.40	4.84	6.59	11.43	4
Small square baler; 75 2WD	0.92	3.03	40.48	14.07	54.55	4
Pickup truck		1.56	6.85	9.94	16.79	
Total³	2.20	9.78	93.52	60.40	153.92	14

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 2WD = 2-wheel drive tractor; MFWD = modified front-wheel drive tractor

Farmers can also develop their own custom budget by using the Missouri Forage Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/FBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing alfalfa and other forage crops in Missouri.

Cool Season Pasture Establishment Planning Budget for 2019

This budget presents information useful to farmers planning the financing, establishment and grazing of cool season pasture. Table 1 presents estimates for the 2019 crop year for cool season pasture establishment in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri cool season pasture establishment planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Grazing	30.00	
Other income	0.00	
Total income per acre	30.00	
Operating costs per acre		
Seed, orchardgrass and red clover	31.70	
Fertilizer and soil amendments	100.80	
Crop protection chemicals	10.50	
Crop supplies, storage, and marketing	3.50	
Custom hire and rental	26.00	
Machinery fuel and irrigation energy	5.84	
Machinery repairs and maintenance	3.15	
Operator and hired labor	11.12	
Operating interest	5.78	
Total operating costs per acre	198.40	
Ownership costs per acre		
Farm business overhead	5.00	
Machinery overhead	5.58	
Machinery depreciation	8.71	
Real estate charge	39.90	
Total ownership costs per acre	59.19	
Total costs per acre	257.59	
Income over operating costs per acre	-168.40	
Income over total costs per acre	-227.59	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions used to estimate the cool season pasture establishment budget. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in cool season pasture establishment planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Pasture yield, animal unit month	2	Pasture price, per animal unit month	15.00
Seeding rate, pounds orchardgrass	6	Orchardgrass seed, per pound	1.95
Seeding rate, pounds clover	8	Clover seed, per pound	2.50
Nitrogen rate, pounds N	30	Nitrogen, per pound N	0.42
Phosphorus rate, pounds P ₂ O ₅	35	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	45	Potassium, per pound K ₂ O	0.30
Lime rate, tons	3	Lime, per ton	20.00
Sum of allocated labor, hours	0.77	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in cool season pasture establishment planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Rent, no-till drill (15 feet); 130 MFWD	0.16	0.90	18.35	3.93	22.28	1
Rotary mower (12 feet); 130 MFWD	0.11	0.66	4.73	7.05	11.79	1
Pickup truck		0.52	2.28	3.31	5.59	
Total³	0.27	2.07	25.37	14.29	39.66	2

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: MFWD = modified front-wheel drive tractor

Farmers can also develop their own custom budget by using the Missouri Forage Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/FBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing cool season pasture and other forage crops in Missouri.

Fescue - Clover Hay Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing, grazing and marketing of fescue-clover hay. Table 1 presents estimates for the 2019 crop year for established fescue-clover hay in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri fescue-clover hay planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Hay	360.00	
Grazing	15.00	
Other income	0.00	
Total income per acre	375.00	
Operating costs per acre		
Seed	0.00	
Fertilizer and soil amendments	64.12	
Crop protection chemicals	0.00	
Crop supplies, storage, and marketing	10.00	
Custom hire and rental	24.50	
Machinery fuel and irrigation energy	6.37	
Machinery repairs and maintenance	7.25	
Operator and hired labor	8.97	
Operating interest	3.64	
Total operating costs per acre	124.85	
Ownership costs per acre		
Farm business overhead	5.00	
Machinery overhead	6.96	
Machinery depreciation	10.26	
Real estate charge	39.90	
Total ownership costs per acre	62.12	
Total costs per acre	186.96	
Income over operating costs per acre	250.15	
Income over total costs per acre	188.04	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions used to estimate the fescue-clover hay budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in fescue-clover hay planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Hay yield, tons, 10% moisture	3	Hay price, per ton	120.00
Pasture yield, animal unit month	1	Pasture price, per animal unit month	15.00
Nitrogen rate, pounds N	40	Nitrogen, per pound N	0.42
Phosphorus rate, pounds P ₂ O ₅	46	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	60	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.5	Lime, per ton	20.00
Sum of allocated labor, hours	0..57	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in fescue-clover hay planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Disk mower-conditioner (9 feet); 130 MFWD	0.18	1.01	7.67	7.37	15.04	1
Wheel rake (2-16'); 75 2WD	0.04	0.13	1.31	2.44	3.75	1
Round baler, net wrap (1500 pound); 130 MFWD	0.11	0.61	7.95	4.11	12.05	1
Pickup truck		0.52	2.28	3.31	5.59	
Total³	0.32	2.26	19.22	17.22	36.43	3

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 2WD = 2-wheel drive tractor; MFWD = modified front-wheel drive tractor

Farmers can also develop their own custom budget by using the Missouri Forage Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/FBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for growing fescue-clover hay and other forage crops in Missouri.

Fescue Seed and Forage Planning Budget for 2019

This budget presents information useful to farmers planning the production, financing, grazing and marketing of fescue. Table 1 presents estimates for the 2019 crop year for established fescue used for seed, hay and grazing purposes in northern, central and southwest Missouri. Assumptions were based on price conditions as of October 2018. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri. Farmers are encouraged to modify this budget based on their circumstances.

Table 1. Missouri fescue seed and forage planning budget for 2019.

	Dollars per acre ¹	Your estimate
Income per acre		
Fescue hay	336.00	
Fescue seed	69.00	
Grazing	15.00	
Other income	0.00	
Total income per acre	420.00	
Operating costs per acre		
Seed	0.00	
Fertilizer and soil amendments	76.00	
Crop protection chemicals	0.00	
Crop supplies, storage, and marketing	6.00	
Custom hire and rental	38.00	
Machinery fuel and irrigation energy	7.34	
Machinery repairs and maintenance	8.81	
Operator and hired labor	13.29	
Operating interest	4.48	
Total operating costs per acre	153.93	
Ownership costs per acre		
Farm business overhead	3.00	
Machinery overhead	7.45	
Machinery depreciation	11.99	
Real estate charge	39.90	
Total ownership costs per acre	62.33	
Total costs per acre	216.26	
Income over operating costs per acre	266.07	
Income over total costs per acre	203.74	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions used to estimate the fescue seed and forage budget. Price estimates reflect harvest time prices. Costs or returns from storage or other marketing methods are not included. No income from government programs are added. Farm business overhead includes liability insurance, utilities, accounting, etc. Real estate charge is an estimated rental rate for above average land.

Table 2. Input assumptions used in fescue seed and forage planning budget for 2019.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Hay yield, tons	2.80	Hay price, per ton	120.00
Seed yield, pounds	300	Seed price, per pound	0.23
Pasture yield, animal unit month	1	Pasture price, per animal unit month	15.00
Nitrogen rate, pounds N	70	Nitrogen, per pound N	0.42
Phosphorus rate, pounds P ₂ O ₅	30	Phosphorus, per pound P ₂ O ₅	0.42
Potassium rate, pounds K ₂ O	80	Potassium, per pound K ₂ O	0.30
Lime rate, tons	0.5	Lime, per ton	20.00
Sum of allocated labor, hours	0.82	Skilled labor, per hour	18.00
		Farm diesel, per gallon	2.86

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using an economic engineering approach.

Table 3. Machinery assumptions used in fescue seed and forage planning budget for 2019, on a per acre basis.

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ² (dollars)	Total costs (dollars)	Trips across field
Swather mower-conditioner (9 feet); 105 MFWD	0.23	1.06	9.12	6.51	18.63	1
Wheel rake (2-16'); 60 2WD	0.04	0.10	1.21	2.32	3.53	1
Round baler, net wrap (1500 pound); 105 MFWD	0.11	0.49	7.41	3.06	10.47	1
Combine, fixed grain head (15 feet); 100 horsepower	0.15	0.66	6.44	2.78	9.21	1
Pickup truck		0.28	1.22	1.76	2.98	
Total³	0.52	2.59	25.39	19.43	44.82	4

¹ Machinery operating cost is the sum of fuel, repairs, maintenance, and the value of labor.

² Machinery ownership cost is the sum of machinery overhead and depreciation.

³ Totals may not sum due to rounding.

Abbreviations: 2WD = 2-wheel drive tractor; MFWD = modified front-wheel drive tractor

Farmers can also develop their own custom budget by using the Missouri Forage Budget Generator Tool (<http://crops.missouri.edu/economics/budgets/FBG.xlsm>). This spreadsheet tool allows users to develop a custom estimate for their costs and returns for fescue and other forage crops in Missouri.