

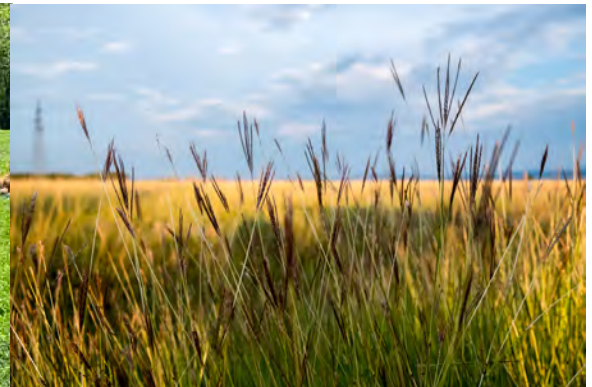
2023 Enterprise Budgets for Missouri Crops and Livestock



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November 2022

Agricultural Lenders School

June 5-8, 2023

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The Agricultural Lenders School is designed to train early to mid-career lenders specializing in financing agriculture. Participants typically work in banks, farm credit associations, agribusinesses, state agencies and finance companies.

Sessions use practical examples to demonstrate concepts focused on issues critical to successful agricultural lending. Speakers use a balance of presentations, exercises, and case studies to provide a quality adult learning experience.

Since 2000, the school has successfully trained more than 600 agricultural lenders from a variety of states and lending institutions. The fee for attending is \$1,300. Registration will open in January 2023!

*This program is sponsored by University of Missouri Extension,
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Missouri Crop and Livestock Budgets for 2023

	Guide Number	Page Number
Beef		
Beef Backgrounding Planning Budget	G681	2
Beef Heifer Planning Budget	G682	4
Northern Missouri Beef Cow-Calf Planning Budget	G680	6
Southern Missouri Beef Cow-Calf Planning Budget	G679	8
Yearling Beef Steer Feeding Planning Budget	G683	10
Swine		
Feeder Pigs Planning Budget	G687	12
Farrow to Finish Swine Planning Budget	G688	14
Hog Finishing Planning Budget	G689	16
Dairy		
Dairy (Confinement) Planning Budget	G676	18
Dairy (Grazing) Planning Budget	G677	20
Dairy Heifer Planning Budget	G678	22
Sheep and goat		
Goats - Early Kidding Planning Budget	G690	24
Goats - Late Kidding Planning Budget	G691	26
Sheep - Early Lambing Planning Budget	G685	28
Sheep - Late Lambing Planning Budget	G686	30
Corn		
Corn (Dryland) Planning Budget	G651	32
Corn (Irrigated) Planning Budget	G652	34
Corn Silage Planning Budget	G664	36
Soybean		
Soybean (Dryland) Planning Budget	G654	38
Soybean (Double Crop) Planning Budget	G655	40
Wheat and sorghum		
Winter Wheat Planning Budget	G656	42
Grain Sorghum Planning Budget	G653	44
Forages		
Alfalfa Establishment Planning Budget	G661	46
Alfalfa Baleage Planning Budget	G662	48
Alfalfa Small Bales Planning Budget	G663	50
Cool Season Pasture Establishment Planning Budget	G665	52
Fescue-Clover Hay Planning Budget	G666	54
Fescue Seed and Forage Planning Budget	G667	56
Native Warm Season Grass Planning Budget	G672	58
Industrial Hemp		
Industrial Hemp for Fiber Planning Budget	G669	60



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Beef Backgrounding Planning Budget

Using this planning budget, beef backgrounders may estimate their costs and returns for 2023. Table 1 presents estimates for steer calves purchased and backgrounded in Missouri. Assumptions were based on price forecasts as of September 2022. Detailed inputs, feed requirements and machinery investments are summarized in Tables 2, 3, 4 and 5. The production practices used to develop these cost estimates are common in Missouri beef farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri beef steer backgrounding planning budget for 2023.

	Winter backgrounding per steer ¹	Pasture backgrounding per steer ¹	Your estimate
Income			
Market steer sales	1,585.01	1,511.64	
Less death loss (1 percent)	15.85	15.12	
Total income	1,569.16	1,496.52	
Operating costs			
Purchased steer	1,084.54	1,265.26	
Pasture (rental rate)	0.00	38.22	
Feed, mineral and stored forage	230.79	94.00	
Labor	44.80	26.88	
Veterinary, drugs and supplies	20.00	17.00	
Marketing and hauling	39.63	37.79	
Machinery and utilities	73.27	31.86	
Livestock facility repair	4.00	1.00	
Professional fees (legal, accounting, etc.)	1.00	1.00	
Miscellaneous	4.00	4.00	
Operating interest	23.85	25.69	
Total operating costs	1,525.87	1,542.70	
Ownership costs			
Depreciation on livestock facilities	3.87	0.62	
Interest on livestock facilities	3.87	0.62	
Insurance and taxes on capital items	4.49	3.65	
Total ownership costs	12.23	4.89	
Total costs	1,538.10	1,547.59	
Income over operating costs	43.29	-46.18	
Income over total costs	31.06	-51.07	
Pounds of gain per steer purchased	216.85	177.25	
Feed cost per pound gain	1.06	0.75	
Breakeven steer price per pound	1.91	2.02	

¹ Totals may not sum due to rounding.

Table 2. Input assumptions used in beef steer winter backgrounding planning budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Steer purchase weight, pounds	590	Steer purchase price, per hundredweight	183.82
Market steer sale weight, pounds	815	Market steer sale price, per hundredweight	194.48
Labor, hours per head	2.5	Labor cost, per hour	17.92
Feeding period, days	105		
Average daily gain, pounds	2.14		

Table 3. Input assumptions used in beef steer pasture backgrounding planning budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Steer purchase weight, pounds	590	Steer purchase price, per hundredweight	214.45
Market steer sale weight, pounds	775	Market steer sale price, per hundredweight	195.05
Labor, hours per head	1.5	Labor cost, per hour	17.92
Feeding period, days	105		
Average daily gain, pounds	1.76		

Table 4. Feed and stored forage in beef steer backgrounding planning budgets for 2023, on a per steer basis.

Feed description	Cost per unit	Winter backgrounding ¹		Pasture backgrounding ²	
		Pounds	Dollars	Pounds	Dollars
Mixed hay, per ton	150.00	1,221	91.58		
Corn, per bushel	8.00	754	107.71		
Protein supplement, per ton	300.00	107	16.05	525	78.75
Salt and minerals, per ton	1,100.00	27	14.85	27	14.85
Limestone, per hundredweight	10.00	6	0.60	4	0.40
Total		2,115	230.79	556	94.00

¹ Winter backgrounding ration assumes 105 days on feed and 2.14 pound average daily gain for a steer.

² Pasture backgrounding ration assumes 105 days on feed and 1.76 pound average daily gain for a steer

Table 5. Machinery assumptions used in beef steer backgrounding planning budgets for 2023.

Description	Cost per hour	Winter backgrounding ¹		Pasture backgrounding ²	
		Hours	Dollars	Hours	Dollars
Tractor; 105 MFWD	57.25	25	1,431.25		
Truck	40.00	20	800.00	10.0	400.00
Livestock trailer	30.00	8	240.00	8.0	240.00
4-wheeler	12.00	40	480.00	52.5	630.00
Total			2,951.25		1,270.00
Total per steer			70.27		28.86

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 = mechanical front-wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Beef Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates in Missouri.



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Beef Heifer Planning Budget

Using this planning budget, farmers raising beef heifers may estimate their costs and returns for 2023. Table 1 presents estimates for calves purchased and sold later as bred replacement heifers in Missouri. Assumptions were based on price forecasts as of September 2022. Detailed inputs, feed requirements and machinery investments are summarized in Tables 2, 3 and 4. The production practices used to develop these cost estimates are common in Missouri beef farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri beef heifer planning budget for 2023.

	Per heifer sold ¹	Your estimate
Income		
Bred heifer sales (0.875 head)	1,618.75	
Cull heifer sales (0.05 head)	85.00	
Yearling heifer sales (0.075 head)	98.44	
Less death loss (1 percent of heifer sales)	18.02	
Total income	1,784.17	
Operating costs		
Purchased heifer calf	1,019.15	
Pasture	130.73	
Feed, mineral and stored forage	247.59	
Labor	89.60	
Veterinary, drugs and supplies	35.00	
Marketing costs	54.07	
Breeding costs	40.00	
Machinery and utilities	117.94	
Livestock facility repairs	8.50	
Miscellaneous	6.00	
Operating and calf interest	92.39	
Total operating costs	1,840.97	
Ownership costs		
Depreciation on livestock facilities	9.75	
Interest on livestock facilities	10.15	
Insurance and taxes on capital items	16.83	
Total ownership costs	36.73	
Total costs	1,877.69	
Income over operating costs	-56.80	
Income over total costs	-93.53	
Total cost per head per day (excluding calf price)	2.26	
Total cost per pound of gain	2.02	
Bred heifer breakeven price per head	1,958.68	

¹ Totals may not sum due to rounding.

Table 2. Input assumptions used in replacement beef heifer planning budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Heifer purchase weight, pounds	550	Heifer purchase price, per hundredweight	185.30
Yearling cull heifer sale weight, pounds	750	Yearling cull heifer sale price, per hundredweight	175.00
Heavy cull heifer sale weight, pounds	1,000	Heavy cull heifer sale price, per hundredweight	170.00
Bred heifer sale weight, pounds	1,000	Bred heifer sale price, per head	1,850.00
Labor, hours	5	Labor cost, per hour	17.92
Pasture, animal unit months	8.17	Pasture, per animal unit month	16.00

Table 3. Feed and stored forage requirements in replacement beef heifer planning budget for 2023, 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	150.00	1,250			1,250	93.75
Processed corn, per bushel	8.00	240		90	330	47.14
Protein supplement, per ton	300.00	240		90	330	49.50
Salt and minerals, per ton	1,100.00	49	39	16	104	57.20
Total		1,779	39	196	2,014	247.59

¹ Beginning weight of 550 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 budget for 2023.

Description	Cost per hour	Hours	Total dollars ¹	Dollars attributed to total heifer operation ²	Dollars per replacement heifer ³
Tractor; 105 MFWD	57.25	50	2,862.50	372.13	49.62
Truck	40.00	15	600.00	78.00	10.40
Livestock trailer	30.00	24	720.00	93.60	12.48
4-wheeler	12.00	180	2,160.00	280.80	37.44
Total			6,342.50	824.53	109.94

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 = mechanical front-wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Beef Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for a cow-calf (spring or fall calving), heifer or backgrounding (drylot or pasture) operation in Missouri.

Northern Missouri Beef Cow-Calf Planning Budget

Using this planning budget, beef cow-calf farmers may estimate their costs and returns for 2023. Table 1 presents estimates for a cow-calf operation (50-cow herd size and purchased replacements) in Northern Missouri with either a fall or spring calving season. Assumptions were based on price forecasts as of September 2022. Detailed assumptions and feed requirements are summarized in Tables 2, 3 and 4. The production practices used to develop these cost estimates are common in Missouri beef farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Northern Missouri beef cow-calf planning budget for 2023.

	Fall calving per cow ¹	Spring calving per cow ¹	Your estimate
Income			
Steer calf sales	526.48	519.55	
Heifer calf sales	438.13	433.14	
Cull cow sales	120.00	140.00	
Total income	1,084.61	1,092.69	
Operating costs			
Pasture (rental rate)	177.92	177.92	
Feed and stored forage	411.55	334.08	
Labor	143.36	143.36	
Veterinary, drugs and supplies	44.00	44.00	
Marketing	27.12	27.32	
Machinery and utility costs	128.32	118.36	
Livestock facility repairs	8.50	8.50	
Cow replacement	260.00	300.00	
Bull cost	50.00	50.00	
Professional fees (legal, accounting, etc.)	1.00	1.00	
Miscellaneous	6.00	6.00	
Operating interest	32.85	30.02	
Total operating costs	1,290.61	1,240.55	
Ownership costs			
Depreciation on facilities and equipment	9.10	9.10	
Interest on breeding stock, facilities and equipment	140.40	143.00	
Insurance/taxes on breeding stock and capital items	39.99	40.39	
Total ownership costs	189.49	192.49	
Total costs	1,480.09	1,433.03	
Income over operating costs	-205.99	-147.85	
Income over total costs	-395.48	-340.34	

¹ Totals may not sum due to rounding.

Table 2. Income assumptions used in Northern Missouri beef cow-calf planning budget for 2023.

Category	Percent	Weight (pounds)	Price per cwt	Calf crop (percent weaned)	Dollars per cow
Fall calving					
Steer	50	580	206.30	88	526.48
Heifers	50	540	184.40	88	438.13
Cull cows	12	1,250	80.00		120.00
Spring calving					
Steer	50	590	207.20	85	519.55
Heifers	50	550	185.30	85	433.14
Cull cows	14	1,250	80.00		140.00

Abbreviations: cwt = hundredweight

Table 3. Other assumptions used in Northern Missouri beef cow-calf planning budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Labor, hours	8	Labor cost, per hour	17.92
Fall calving cows replaced, percent	13	Heifer replacement value, per head	2,000.00
Spring calving cows replaced, percent	15	Bull value, per head	4,000.00

Table 4. Feed requirements in Northern Missouri beef cow-calf planning budget for 2023, 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	16.0	10.6 ¹		0.5	11.1	177.92
Harvested forage, per pound	0.0625	4,392.0	510.0	240.0	5,142.0	321.38
Protein supplement, per pound	0.145	300.0		7.2	307.2	44.54
Salt and mineral mix, per pound	0.5	91.3			91.3	45.63
					Total	589.47
Spring calving						
Pasture, per animal unit equivalent	16.0	10.6 ¹		0.5	11.1	177.92
Harvested forage, per pound	0.0625	4,158.0		240.0	4,398.0	274.88
Protein supplement, per pound	0.145	90.0		3.6	93.6	13.57
Salt and mineral mix, per pound	0.5	91.3			91.3	45.63
					Total	512.00

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.

Farmers can also customize this budget to fit their own operations by using the [Missouri Beef Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for a cow-calf (spring or fall calving), heifer or backgrounding (drylot or pasture) operation in Missouri.



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Southern Missouri Beef Cow-Calf Planning Budget

Using this planning budget, beef cow-calf farmers may estimate their costs and returns for 2023. Table 1 presents estimates for a cow-calf operation (50-cow herd size and purchased replacements) in Southern Missouri with either a fall or spring calving season. Assumptions were based on price forecasts as of September 2022. Detailed assumptions and feed requirements are summarized in Tables 2, 3 and 4. The production practices used to develop these cost estimates are common in Missouri beef farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Southern Missouri beef cow-calf planning budget for 2023.

	Fall calving per cow ¹	Spring calving per cow ¹	Your estimate
Income			
Steer calf sales	535.55	519.55	
Heifer calf sales	446.25	433.14	
Cull cow sales	120.00	140.00	
Total income	1,101.80	1,092.69	
Operating costs			
Pasture (rental rate)	168.32	168.32	
Feed, mineral and stored forage	372.86	314.86	
Labor	143.36	143.36	
Veterinary, drugs and supplies	37.50	37.50	
Marketing	27.55	27.32	
Machinery and utility costs	128.32	118.36	
Livestock facility repairs	8.50	8.50	
Cow replacement	240.50	277.50	
Bull cost	35.00	35.00	
Professional fees (legal, accounting, etc.)	1.00	1.00	
Miscellaneous expense	6.00	6.00	
Operating interest	30.53	28.33	
Total operating costs	1,199.44	1,166.04	
Ownership costs			
Depreciation on facilities and equipment	9.10	9.10	
Interest on breeding stock, facilities and equipment	134.58	136.99	
Insurance/taxes on breeding stock and capital items	38.41	38.78	
Total ownership costs	182.10	184.87	
Total costs	1,381.53	1,350.91	
Income over operating costs	-97.63	-73.35	
Income over total costs	-279.73	-258.22	

¹ Totals may not sum due to rounding.

Written by
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Table 2. Income assumptions used in Southern Missouri beef cow-calf planning budget for 2023.

Category	Percent	Weight (pounds)	Price per cwt	Calf crop (percent weaned)	Dollars per cow
Fall calving					
Steer	50	590	206.30	88	535.55
Heifers	50	550	184.40	88	446.25
Cull cows	12	1,250	80.00		120.00
Spring calving					
Steer	50	590	207.20	85	519.55
Heifers	50	550	185.30	85	433.14
Cull cows	14	1,250	80.00		140.00

Abbreviations: cwt = hundredweight

Table 3. Other assumptions used in Southern Missouri beef cow-calf planning budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Labor, hours per cow	8	Labor cost, per hour	17.92
Fall calving cows replaced, percent	13	Heifer replacement value, per head	1,850.00
Spring calving cows replaced, percent	15	Bull value, per head	3,500.00

Table 4. Feed requirements in Southern Missouri beef cow-calf planning budget for 2023, 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	16.00	10.0 ¹		0.5	10.5	168.32
Harvested forage, per pound	0.06875	3,660.0	425.0	200.0	4,285.0	294.59
Protein supplement, per pound	0.15	180.0		7.2	187.2	28.08
Salt and mineral mix, per pound	0.55	91.3			91.3	50.19
					Total	541.18
Spring calving						
Pasture, per animal unit equivalent	16.00	10.0 ¹		0.5	10.5	168.32
Harvested forage, per pound	0.06875	3,445.5		200.0	3,645.5	250.63
Protein supplement, per pound	0.15	90.0		3.6	93.6	14.04
Salt and mineral mix, per pound	0.55	91.3			91.3	50.19
					Total	483.18

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.

Farmers can also customize this budget to fit their own operations by using the [Missouri Beef Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/Beef/Docs/MissouriBeefEnterprise.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for a cow-calf (spring or fall calving), heifer or backgrounding (drylot or pasture) operation in Missouri.

Yearling Beef Steer Feeding Planning Budget

Using this planning budget, beef cattle producers may estimate their costs and returns for 2023. Table 1 presents estimates for yearling steers purchased in November 2022 and sold in April 2023 in Missouri. Assumptions were based on price forecasts as of September 2022. Detailed assumptions and feed requirements are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common in Missouri beef farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri yearling beef steer feeding planning budget.

	Per steer sold ¹	Your estimate
Income		
Market steer sales	2,002.00	
Less death loss (2 percent)	-40.04	
Total income	1,961.96	
Operating costs		
Purchased steer calf	1,320.00	
Purchased feed	516.50	
Labor	35.84	
Veterinary and medicine	11.75	
Commission, yardage, and hauling	25.00	
Machinery and feed preparation	8.00	
Utilities	5.00	
Operating interest	41.23	
Total operating costs	1,963.32	
Ownership costs		
Depreciation and interest on real estate	5.00	
Real estate and property taxes	4.00	
Total ownership costs	9.00	
Total costs	1,972.32	
Income over operating costs	-1.36	
Income over total costs	-10.36	

¹ Totals may not sum due to rounding.

Table 2. Assumptions in Missouri yearling beef steer feeding planning budget.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Steer purchase weight, pounds	750	Steer purchase price, per hundredweight	176.00
Market steer sale weight, pounds	1,300	Market steer sale price, per hundredweight	154.00
Labor, hours	2	Labor cost, per hour	17.92
Operating interest, percent	6.5		

Table 3. Feed requirements per steer in Missouri yearling beef steer feeding planning budget.

Feed description	Cost per unit	Total pounds¹	Dollars
Corn, per bushel	6.50	2,240	260.00
Distiller grains, dry, per ton	275.00	1,500	206.25
Soybean meal, per ton	430.00	100	21.50
Salt and additives, per ton	500.00	30	7.50
Grass hay, per ton	85.00	500	21.25
Total		4,370	516.50

¹Ration assumes 151 days on feed and 3.65 pound average daily gain for a steer.

Farmers can also customize this budget to fit their own operations by using the [Missouri Yearling Steer Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/YearlingSteerBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/YearlingSteerBudget.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for a beef cattle operation in Missouri.

Feeder Pigs Planning Budget

Using this budget, farmers can estimate the costs and returns associated with feeder pig production. Table 1 presents estimates for a confinement feeder pig operation in Missouri with a production system of 23 pigs per sow per year and pigs sold at 40 pounds each. Assumptions were based on price forecasts as of October 2022. Detailed assumptions and feed requirements are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri swine farms. Use the "Your estimate" column to estimate your operation's costs and returns for 2023.

Table 1. Missouri feeder pigs planning budget for 2023.

	Per sow ¹	Your estimate
Income		
Feeder pigs sold (22 head)	1,329.24	
Cull sows sold (0.5 head)	132.00	
Total income	1,461.24	
Operating costs		
Purchased feed	541.10	
Feed processing	26.41	
Labor	214.50	
Veterinary and medicine	84.65	
Replacement gilts	120.42	
Semen and genetics	28.60	
Utilities and fuel	33.50	
Facility repair and maintenance	22.42	
Marketing and miscellaneous	16.31	
Operating interest	35.36	
Total operating costs	1,123.26	
Ownership costs		
Taxes and insurance	16.19	
Machinery and equipment	198.38	
Total ownership costs	214.57	
Total costs	1,337.83	
Income over operating costs	337.98	
Income over total costs	123.41	

¹ Totals may not sum due to rounding.

Table 2. Assumptions used in Missouri feeder pigs budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Feeder pig sale weight, pounds	40	Feeder pig sale price, hundredweight	150.00
Cull sow sale weight, pounds	400	Cull sow price, hundredweight	60.00
Replacement gilt weight, pounds	200	Replacement gilt price, per gilt	208.00
Labor, hours/sow	11.0	Labor rate, per hour	19.50
Weaned pigs/sow/year	23.3	Feed processing, per ton	15.50
Operating interest, percent	6.5		
Feeder pig death loss, percent	5.0		
Sow/gilt death loss, percent	5.0		

Table 3. Annual feed requirements for the Missouri feeder pigs budget for 2023.

Feed description	Pounds per sow	Dollars per pound	Total per sow
Corn	2,586	0.12	300.16
Soybean meal	605	0.22	130.08
Dried distillers grain with solubles	91	0.14	12.51
Vitamin and mineral supplement	54	0.50	27.00
Nursery pellets	49	0.40	19.60
Other feed additives	23	2.25	51.75
Total	3,408		541.10

Farmers can also customize this budget to fit their own operations by using the [Missouri Swine Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/SwineBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/SwineBudgets.xlsx). Download the spreadsheet tool to create a copy of your cost and return estimates for raising feeder pigs in Missouri.

Farrow to Finish Swine Planning Budget

Using this budget, farmers raising hogs from farrow to finish can plan their costs and returns in 2023. Table 1 presents estimates for a confinement farrow to finish operation in Missouri with production of 23 pigs per sow per year and selling market hogs at 280 pounds. Assumptions were based on price forecasts as of October 2022. Detailed assumptions and feed requirements are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri swine farms. Use the "Your estimate" column to plan your operation's costs and returns for 2023.

Table 1. Missouri farrow to finish swine planning budget for 2023.

	Per sow ¹	Your estimate
Income		
Market hogs sold (22 head)	4,081.65	
Cull sows sold (0.5 head)	132.00	
Total income	4,213.65	
Operating costs		
Purchased feed	1,882.46	
Feed processing	111.75	
Labor	257.40	
Veterinary and medicine	222.80	
Replacement gilts	120.42	
Semen and genetics	28.60	
Utilities and fuel	232.01	
Facility repair and maintenance	155.29	
Marketing and miscellaneous	112.94	
Operating interest	101.52	
Total operating costs	3,225.19	
Ownership costs		
Taxes and insurance	41.89	
Machinery and equipment	934.48	
Total ownership costs	976.37	
Total costs	4,201.56	
Income over operating costs	988.46	
Income over total costs	12.09	

¹ Totals may not sum due to rounding.

Table 2. Assumptions used in Missouri farrow to finish budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Market hog sale weight, pounds	280	Market hog sale price, hundredweight	66.50
Cull sow sale weight, pounds	400	Cull sow price, hundredweight	60.00
Replacement gilt weight, pounds	200	Replacement gilt price, per gilt	208.00
Labor, hours/sow	13.2	Labor rate, per hour	19.50
Weaned pigs/sow/year	23.3	Feed processing, per ton	15.50
Operating interest, percent	6.5		
Market hog death loss, percent	6.0		
Sow/gilt death loss, percent	5.0		

Table 3. Annual feed requirements for the Missouri farrow to finish budget for 2023.

Feed description	Pounds per sow	Dollars per pound	Total per sow
Corn	12,900	0.12	1,497.32
Soybean meal	1,020	0.22	219.30
Dried distillers grain with solubles	300	0.14	41.25
Vitamin and mineral supplement	150	0.50	75.00
Nursery pellets	49	0.40	19.59
Other feed additives	1	30.00	30.00
Total	14,420		1,882.46

Farmers can also customize this budget to fit their own operations by using the [Missouri Swine Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/SwineBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/SwineBudgets.xlsx). Download the spreadsheet tool to create a copy of your cost and return estimates for raising hogs from farrow to finish in Missouri.

Hog Finishing Planning Budget

Using this budget, farmers can estimate the costs and returns of finishing hogs in Missouri. Table 1 presents estimates for a confinement hog finishing operation in Missouri that purchases 103 head of 40 pound pigs and sells 100 head of 280 pound market hogs. Assumptions were based on price forecasts as of October 2022. Detailed assumptions and feed requirements are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri swine farms. Use the "Your estimate" column to plan your operation's costs and returns for 2023.

Table 1. Missouri hog finishing budget for 2023.

	Per lot of 100 hogs ¹	Your estimate
Income		
Market hogs sold (100 head)	18,620.00	
Total income	18,620.00	
Operating costs		
Purchased pigs	6,180.00	
Purchased feed	8,551.07	
Feed processing	488.25	
Labor	331.50	
Veterinary and medicine	619.20	
Utilities and fuel	844.80	
Facility/equipment repair and maintenance	261.60	
Marketing and miscellaneous	460.80	
Operating interest	240.19	
Total operating costs	17,977.41	
Ownership costs		
Taxes and insurance	208.80	
Machinery and equipment	2,035.20	
Total ownership costs	2,244.00	
Total costs	20,221.41	
Income over operating costs	642.59	
Income over total costs	-1,601.41	
Breakeven selling price for operating costs per hundredweight	64.21	
Breakeven selling price for total costs per hundredweight	72.22	

¹ Totals may not sum due to rounding.

Table 2. Assumptions used in Missouri hog finishing budget for 2023.

Selected input quantities	Per unit	Selected input prices	Dollars per unit
Feeder pig purchase weight, pounds	40	Feeder pig purchase price, hundredweight	150.00
Market hog sale weight, pounds	280	Market hog sale price, hundredweight	66.50
Labor, hours/pig	0.17	Labor rate, per hour	19.50
Operating interest, percent	6.5	Feed processing, per ton	15.50
Death loss, percent	3.0		

Table 3. Feed requirements used in Missouri hog finishing budget for 2023.

Feed description	Pounds per pig	Dollars per pound	Dollars per lot of 100 hogs
Corn	500	0.12	5,803.57
Soybean meal	90	0.22	1,935.00
Dried distillers grain with solubles	30	0.14	412.50
Vitamin and mineral supplement	10	0.40	400.00
Total	630		8,551.07

Farmers can also customize this budget to fit their own operations by using the [Missouri Swine Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/SwineBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/SwineBudgets.xlsx). Download the spreadsheet tool to create a copy of your cost and return estimates for finishing hogs in Missouri.

Dairy (Confinement) Planning Budget

Using this planning budget, dairy farmers may estimate their costs and returns for 2023. Table 1 presents estimates for a 150-cow confinement dairy (replacements raised on farm) in Missouri. Assumptions were based on price forecasts as of September 2022. 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 Missouri confinement dairies. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri dairy (confinement) planning budget for 2023.

	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	4,399.95	22.00	5,279.92	22.00	
Government payments	150.00	0.75	180.00	0.75	
Bull and surplus heifer sales	58.38	0.29	58.38	0.24	
Cull cow sales	313.20	1.57	313.20	1.31	
Total income	4,921.52	24.61	5,831.49	24.30	
Operating costs					
Feed	3,161.27	15.81	3,453.44	14.39	
Labor	615.76	3.08	615.76	2.57	
Veterinary, drugs and supplies	120.00	0.60	125.00	0.52	
Utilities and water	65.00	0.33	80.00	0.33	
Fuel, oil and vehicle	90.00	0.45	90.00	0.38	
Milk hauling and promotion	230.00	1.15	276.00	1.15	
Building and equipment repair	265.94	1.33	265.94	1.11	
Breeding/genetic charges	57.00	0.29	57.00	0.24	
Professional fees (legal, accounting, etc.)	12.00	0.06	12.00	0.05	
Miscellaneous and DMC premiums	28.40	0.14	34.08	0.14	
Operating interest	143.50	0.72	153.83	0.64	
Total operating costs	4,788.87	23.94	5,163.05	21.51	
Ownership costs					
Depreciation on buildings and equipment	468.72	2.34	468.72	1.95	
Interest on land, buildings and equipment	273.81	1.37	273.81	1.14	
Interest on breeding stock	91.00	0.46	91.00	0.38	
Insurance/tax on capital items	134.12	0.67	134.12	0.56	
Total ownership costs	967.64	4.84	967.64	4.03	
Total costs	5,756.51	28.78	6,130.69	25.54	
Income over operating costs	132.65	0.66	668.44	2.79	
Income over total costs	-834.99	-4.17	-299.20	-1.25	

¹ Totals may not sum due to rounding.
Abbreviations: cwt = hundredweight

Written by
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Table 2. Input assumptions used in dairy (confinement) planning budget for 2023.

Selected input quantities	Quantity	Selected input prices	Dollars per unit
Cull cow sale weight, pounds	1,450	Cull cow sale price, per hundredweight	80
Labor, cows per worker	70	Annual labor salary and benefits, per worker	50,000
Calf crop, percent	95	Bull calf sale price, per head	100
Heifer replacement, percent	33	Surplus heifer calf sale price, per head	75
Operating interest, percent	6.5	Milk price, per hundredweight	22

Table 3. Feed requirements used in dairy (confinement) planning budget for 2023, 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	79.50	12,223	485.88	13,357	530.95
Alfalfa baleage, per ton	109.88	3,741	205.53	5,296	290.95
Corn, ground, per bushel	7.00	3,470	433.76	3,658	457.19
Alfalfa hay, per ton	275.00	1,708	234.83	1,934	265.94
Whole cotton seed, per ton	460.00	1,675	385.32	1,897	436.37
Soybean hulls, per ton	275.00	1,125	154.64	752	103.39
Soybean meal, per ton	515.00	1,095	281.91	1,354	348.77
Distillers grain, dry, per ton	310.00	1,005	155.80	949	147.04
Grass hay, per ton	150.00	914	68.51	914	68.51
Minerals/vitamins, per ton	1,250.00	577	360.66	656	409.91
Total lactating and dry cow feed cost			2,766.85	3,059.02	
Replacement heifer feed and forage cost ¹			394.42	394.42	
Total feed cost per cow			3,161.27	3,453.44	

¹ Total replacement heifer (0 to 24 months) feed cost is \$1,195.21 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 2023.

Description	Quantity	Dollars per unit	Total dollars	Dollars per cow ²
Land, acres	4	4,320	17,280	115
Milking parlor, stalls	12	35,000	420,000	2,785
Breeding herd, cows	150	1,400	211,120	1,400
Free stall barn, stalls	130	3,000	390,000	2,586
Land improvements			5,000	33
Feed storage			74,548	494
Manure storage system			130,000	862
Equipment			109,000	723
Total¹			1,356,948	8,998

¹ Totals may not sum due to rounding.

² Represents total cows in herd.

Farmers can also customize this budget to fit their own operations by using the [Missouri Dairy Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/MODairyBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/MODairyBudget.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for dairy production and heifer raising in Missouri.



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Dairy (Grazing) Planning Budget

Using this planning budget, dairy farmers may estimate their costs and returns for 2023. Table 1 presents estimates for a 150-cow rotational grazing dairy (replacements raised on farm) in Missouri. Assumptions were based on price forecasts as of September 2022. 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 Missouri grazing dairies. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri dairy (grazing) planning budget for 2023.

	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	2,420.05	22.00	3,080.07	22.00	
Government payments	82.50	0.75	105.00	0.75	
Bull and surplus heifer sales	66.63	0.61	66.63	0.48	
Cull cow sales	158.40	1.44	158.40	1.13	
Total income	2,727.58	24.80	3,410.09	24.36	
Operating costs					
Feed	1,335.00	12.14	1,454.37	10.39	
Labor	416.67	3.79	416.67	2.98	
Veterinary, drugs and supplies	90.00	0.82	100.00	0.71	
Utilities and water	60.00	0.55	60.00	0.43	
Fuel, oil and vehicle	70.00	0.64	70.00	0.50	
Milk hauling and promotion	126.50	1.15	161.00	1.15	
Building and equipment repair	195.82	1.78	195.82	1.40	
Breeding/genetic charges	57.00	0.52	57.00	0.41	
Professional fees (legal, accounting, etc.)	12.00	0.11	12.00	0.09	
Miscellaneous and DMC premiums	15.62	0.14	19.88	0.14	
Operating interest	73.19	0.67	77.54	0.55	
Total operating costs	2,451.80	22.29	2,624.27	18.74	
Ownership costs					
Depreciation on buildings and equipment	136.97	1.25	136.97	0.98	
Interest on land, buildings and equipment	373.75	3.40	373.75	2.67	
Interest on breeding stock	91.00	0.83	91.00	0.65	
Insurance/taxes on capital items	64.06	0.58	64.06	0.46	
Total ownership costs	665.78	6.05	665.78	4.76	
Total costs	3,117.58	28.34	3,290.05	23.50	
Income over operating costs	275.78	2.51	785.82	5.61	
Income over total costs	-390.00	-3.55	120.04	0.86	

¹ Totals may not sum due to rounding.
 Abbreviations: cwt = hundredweight

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

Table 2. Input assumptions used in dairy (grazing) planning budget for 2023.

Selected input quantities	Quantity	Selected input prices	Dollars per unit
Cull cow sale weight, pounds	1,100	Cull cow sale price, per hundredweight	80
Labor, cows per worker	100	Annual labor salary and benefits, per worker	50,000
Calf crop, percent	95	Bull calf sale price, per head	100
Heifer replacement, percent	22	Surplus heifer calf sale price, per head	75
Operating interest, percent	6.5	Milk price, per hundredweight	22

Table 3. Feed requirements in dairy (grazing) planning budget for 2023, 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	100.00	7,335	366.77	7,658	382.88
Alfalfa hay, per ton	275.00	1,289	177.29	1,289	177.29
Corn, cracked, per bushel	7.00	910	113.75	1,384	173.04
Soybean hulls, per ton	275.00	910	125.13	1,068	146.87
Distillers grain, dry, per ton	310.00	791	122.53	949	147.04
Grass hay, per ton	150.00	670	50.24	639	47.96
Minerals/vitamins, per ton	1,250.00	186	116.34	186	116.34
Total lactating and dry cow feed cost			1072.05	1,191.42	
Replacement heifer feed and forage cost ¹			262.95	262.95	
Total feed cost per cow			1,335.00	1,454.37	

¹ Total replacement heifer (0 to 24 months) feed cost is \$1,195.21 and was adjusted to a 22% heifer replacement rate.

² Totals may not sum due to rounding.

Table 4. Investment assumptions in dairy (grazing) planning budget for 2023.

Description	Quantity	Dollars per unit	Total dollars	Dollars per cow ²
Land, acres	200	4,320	864,000	4,800
Milking parlor, stalls	24	8,000	192,000	1,067
Breeding herd, cows	180	1,400	252,000	1,400
Working facility			17,060	95
Feed storage			14,350	80
Manure storage system			37,500	208
Equipment			50,000	278
Total¹			1,426,910	7,927

¹ Totals may not sum due to rounding.

² Represents total cows in herd.

Farmers can also customize this budget to fit their own operations by using the [Missouri Dairy Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/MODairyBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/MODairyBudget.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for dairy production and heifer raising in Missouri.

Dairy Heifer Planning Budget

Using this planning budget, farmers raising dairy heifers may estimate their costs and returns for 2023. Table 1 presents estimates for dairy calves purchased at birth, bred and sold at 24 months in Missouri. Assumptions were based on price forecasts as of September 2022. 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 in Missouri. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri dairy heifer planning budget for 2023.

	Per heifer sold ¹	Your estimate
Income		
Springer heifer sales (0.95 head)	1,330.00	
Cull heifer sales (0.025 head)	32.50	
Yearling heifer sales (0.025 head)	19.03	
Less death loss (4 percent) of purchased calves	-3.00	
Total income	1,378.53	
Operating costs		
Purchased heifer calf and interest	85.14	
Feed (birth to 24 months of age)	1,195.21	
Labor	179.20	
Veterinary, drugs and supplies	25.00	
Breeding costs for artificial insemination services	47.50	
Transportation and marketing	20.00	
Utilities, fuel and oil	20.00	
Building and equipment repairs	10.50	
Miscellaneous	18.00	
Operating interest	49.25	
Total operating costs	1,649.80	
Ownership costs		
Depreciation on buildings and equipment	55.80	
Interest on buildings and equipment	37.54	
Insurance and taxes on buildings and equipment	15.53	
Total ownership costs	108.86	
Total costs	1,758.66	
Income over operating costs	-271.27	
Income over total costs	-380.13	
Total cost per day per heifer sold	2.32	
Total cost per pound of gain per heifer sold	1.40	
Springer heifer breakeven price per head	1,800.14	

¹ Totals may not sum due to rounding.

Table 2. Input assumptions used in dairy heifer planning budget for 2023.

Selected input quantities	Quantity	Selected input prices	Dollars per unit
Cull heifer sale weight, pounds	1,300	Cull heifer sale price, per hundredweight	100.00
Yearling heifer sale weight, pounds	725	Yearling heifer sale price, per hundredweight	105.00
Labor, hours	10	Springer heifer sale price, per head	1,400.00
		Labor cost, per hour	17.92
		Heifer purchase price	75.00

Table 3. Feed requirements for dairy heifer planning budget for 2023.

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	1.5000	50	75.00				
Calf starter, per pound	0.3310	100	33.10	100	33.10		
Alfalfa hay, per pound	0.1375	20	2.75	90	12.38	225	30.94
Calf grower, per pound	0.3100			50	15.50	450	139.50
Grass hay, per pound	0.0750					225	16.88
Pasture, per animal unit month	16.0000					0.4	6.53
Feed cost per period		110.85		60.98		193.85	
Total feed costs²		365.67					
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	0.1500	525	78.75			270	40.50
Corn, cracked, per pound	0.1250	387	48.38	252	31.50	234	29.25
Soybean hulls, per pound	0.1375	263	36.09	360	49.50	270	37.13
Grass hay, per pound	0.0750	1,350	101.25				
Mineral, per pound	0.6000	36	21.60	36	21.60	36	21.60
Pasture, per animal unit month	16.0000			1.1	18.00	1.7	27.00
Feed cost per period		286.07		120.60		155.48	
Average total feed costs		341.37					
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	0.1500	225	33.75			207	31.05
Corn, cracked, per pound	0.1250	135	16.88	90	11.25	117	14.63
Soybean hulls, per pound	0.1375	90	12.38	180	24.75	207	28.46
Grass hay, per pound	0.0750	1,710	128.25				
Mineral, per pound	0.6000	18	10.80	18	10.80	18	10.80
Pasture, per animal unit month	16.0000			2.1	33.68	3.2	50.52
Feed cost per period		202.05		80.48		135.46	
Average total feed costs³		498.47					

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).

Farmers can also customize this budget by using the [Missouri Dairy Enterprise Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/MODairyBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/MODairyBudget.xlsx). Download the spreadsheet to keep an electronic copy of your cost and return estimates for dairy production and heifer raising.



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Goats - Early Kidding Planning Budget

Table 1. Missouri meat goat planning budget for 2023: Early kidding, sell at weaning (50 does, 155% kidding rate).

	Head per doe	Quantity	Unit	Dollars per unit	Dollars per doe	Dollars per enterprise	
Returns							
Heavy kids	0.44	60	pound	3.40	89.76	4,488.00	
Light kids	1.04	50	pound	3.50	182.00	9,100.00	
Culled does	0.16	125	pound	2.15	37.63	1,881.25	
Culled bucks	0.02	175	pound	2.10	7.35	367.50	
Total returns					316.74	15,836.75	
Operating costs							
Doe replacement	0.16		head	210.00	33.60	1,680.00	
Buck cost, breeding supplies	0.04		head	410.00	9.20	460.00	
Pasture		0.36	acre	27.53	7.14	357.00	
Hay		396	pounds	0.050	19.82	990.78	
Supplement		30	pounds	0.153	4.60	230.01	
Mineral		4.4	pounds	0.800	7.08	353.93	
Animal health					6.44	322.24	
Guard dog replacement and food					10.65	532.38	
Bedding and stock supplies					3.25	162.50	
Marketing					23.76	1,187.76	
Machinery fuel, lube, repair					14.55	727.37	
Facility maintenance					3.90	195.00	
Operating interest		6.5	percent		3.98	198.99	
Operator and hired labor		4.37	hour	17.92	78.27	3,913.73	
Total operating costs					226.23	11,311.67	
Ownership costs							
Business overhead (professional fees, utilities, miscellaneous)					4.50	225.00	
Property taxes and insurance					3.51	175.60	
Economic depreciation, facility and equipment					21.12	1,056.17	
Opportunity interest on capital investment		5.0	percent		26.07	1,303.63	
Total ownership costs					55.21	2,760.39	
Total costs					281.44	14,072.06	
Return over operating costs					90.50	4,525.08	
Return over total costs					35.29	1,746.69	
					Return to labor and management	113.57	5,678.41
					Shut-down kid price, all else equal, \$ per pound	2.31	
					Break-even kid price, all else equal, \$ per pound	3.02	

Written by
Jennifer Lutes, Field Specialist, Agriculture Business Extension

Table 2. Production rates for 2023: Early kidding, sell at weaning.

Rates	Quantity
Kiddings, per doe per year	1
Doe numbers, start of breeding season	50
Bucks for breeding	2
Kid crop (live birth per exposed), percent	155
Kid crop (raised to sale weight), percent	148
Adult death loss, percent	2
Kid death loss, pre-weaning, percent	3
Kid death loss, post-weaning, percent	3

Table 3. Feed and labor estimates for 2023: Early kidding, sell at weaning.

	Unit	Units per head, adults	Units per head, kids	Total units per doe	Weighted price (dollars per unit)	Total dollars per doe
Pasture	acre	0.2	0.1	0.36	27.53	9.83
Hay	pound	381.1	0.0	396.0	0.050	19.82
Supplement	pound	27.5	1.0	30.1	0.153	4.60
Mineral	pound	8.0	0.3	8.8	0.80	7.08
Labor	hour	3.0	0.8	4.37	17.92	78.27

Table 4. Land and capital investment estimates for 2023: Early kidding, sell at weaning.

	Unit	Quantity	Dollars per unit	Enterprise total dollars	Dollars per doe
Breeding stock unit	doe	50	261	13,045	261
Buildings and facilities				11,500	230
Machinery, equipment and pickup				9,800	196
				Total	34,345
					687

Note: Building and machinery investment is allocated across multiple enterprises.

The meat goat budget is designed to reflect the economic costs and returns of a 50 doe, winter kidding flock (December and January) with kids marketed between 50 to 60 pounds in April. This management system takes advantage of seasonally high market prices for weaned kids. However, this management system has relatively high production risk due to summer breeding challenges and winter kidding.

Farmers can also customize this budget to fit their own operations by using the [Missouri Meat Goat Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/EarlyKiddingGoatBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/EarlyKiddingGoatBudget.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for meat goats in Missouri.

Goats - Late Kidding Planning Budget

Table 1. Missouri meat goat planning budget for 2023: Late kidding, sell at weaning (50 does, 167% kidding rate).

	Head per doe	Quantity	Unit	Dollars per unit	Dollars per doe	Dollars per enterprise	
Returns							
Heavy kids	0.38	60	pound	3.20	72.96	3,648.00	
Light kids	1.20	50	pound	3.00	180.00	9,000.00	
Culled does	0.16	125	pound	1.80	31.50	1,575.00	
Culled bucks	0.02	175	pound	2.15	7.53	376.25	
Total returns					291.99	14,599.25	
Operating costs							
Doe replacement	0.16		head	210.00	33.60	1,680.00	
Buck cost, breeding supplies	0.04		head	410.00	9.20	460.00	
Pasture		0.37	acre	27.49	7.38	369.00	
Hay		395.0	pound	0.050	19.76	987.98	
Supplement		30.0	pound	0.153	4.63	231.65	
Mineral		4.4	pound	0.80	7.11	355.40	
Animal health					6.49	324.34	
Guard dog replacement and food					10.65	532.38	
Bedding and stock supplies					3.25	162.50	
Marketing		7.5	percent		21.90	1,094.94	
Machinery fuel, lube, repair					14.55	727.37	
Facility maintenance					3.90	195.00	
Operating interest		6.5	percent		3.99	199.69	
Operator and hired labor		4.46	hour	17.92	79.99	3,999.74	
Total operating costs					226.40	11,320.00	
Ownership costs							
Business overhead (professional fees, utilities, miscellaneous)					4.50	225.00	
Property taxes and insurance					3.51	175.60	
Economic depreciation, facility and equipment					21.12	1,056.17	
Opportunity interest on capital investment		4.9	percent		26.07	1,303.63	
Total ownership costs					55.21	2,760.39	
Total costs					281.61	14,080.39	
Return over operating costs					65.59	3,279.25	
Return over total costs					10.38	518.86	
					Return to labor and management	90.37	4,518.61
					Shut-down kid price, all else equal, \$ per pound	2.26	
					Break-even kid price, all else equal, \$ per pound	2.93	

Written by
Jennifer Lutes, Field Specialist, Agriculture Business Extension

Table 2. Production rates for 2023: Late kidding, sell at weaning.

Rates	Quantity
Kiddings, per doe per year	1
Doe numbers, start of breeding season	50
Bucks for breeding	2
Kid crop (live birth per exposed), percent	167
Kid crop (raised to sale weight), percent	158
Adult death loss, percent	2
Kid death loss, pre-weaning, percent	3
Kid death loss, post-weaning, percent	3

Table 3. Feed and labor estimates for 2023: Late kidding, sell at weaning.

	Unit	Units per head, adults	Units per head, kids	Total units per doe	Weighted price (dollars per unit)	Total dollars per doe
Pasture	acre	0.2	0.1	0.37	27.49	10.14
Hay	pound	380.0		395.0	0.05	19.76
Supplement	pound	27.5	1.0	30.2	0.153	4.63
Mineral	pound	8.0	0.3	8.9	0.80	7.11
Labor	hour	3.0	0.8	4.46	17.92	79.99

Table 4. Land and capital investment estimates for 2023: Late kidding, sell at weaning.

	Unit	Quantity	Dollars per unit	Enterprise total dollars	Dollars per doe
Breeding stock unit	doe	50	261	13,045	261
Buildings and facilities				11,500	230
Machinery, equipment and pickup				9,800	196
				Total	687

Note: Building and machinery investment is allocated across multiple enterprises.

The meat goat budget is designed to reflect the economic costs and returns of a 50 doe, spring kidding flock (March and April) with kids marketed between 50 to 60 pounds in July/August. This management system takes advantage of spring forage production and the natural breeding season. However, this management system has high price risk during summer marketing.

Farmers can also customize this budget to fit their own operations by using the [Missouri Meat Goat Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/LateKiddingGoatBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/LateKiddingGoatBudget.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for meat goats in Missouri.

Sheep - Early Lambing Planning Budget

Table 1. Missouri hair sheep planning budget for 2023: Early lambing, sell at weaning (50 ewes, 175% lambing rate).

	Head per ewe	Quantity	Unit	Dollars per unit	Dollars per ewe	Dollars per enterprise
Returns						
Heavy lambs	0.30	70	pound	2.30	48.30	2,415.00
Light lambs	1.36	60	pound	2.50	204.00	10,200.00
Culled ewes	0.14	120	pound	1.65	23.76	1,188.00
Culled rams	0.02	170	pound	1.50	5.10	255.00
Total returns					281.16	14,058.00
Operating costs						
Ewe replacement	0.14		head	200.00	28.00	1,400.00
Ram cost, breeding supplies	0.04		head	350.00	8.00	400.00
Pasture		0.34	acre	30.00	6.83	341.60
Hay		462.0	pound	0.051	23.33	1,166.65
Supplement		30.0	pound	0.154	4.66	232.90
Mineral		4.5	pound	0.80	7.13	356.58
Animal health					5.82	291.16
Guard dog replacement and food					10.65	532.38
Bedding and stock supplies					3.25	162.50
Marketing		7.5	percent		21.09	1,054.35
Machinery fuel, lube, repair					14.55	727.37
Facility maintenance					3.90	195.00
Operating interest		6.5	percent		4.11	205.57
Operator and hired labor		4.53	hour	17.92	81.14	4,057.09
Total operating costs					222.46	11,123.13
Ownership costs						
Business overhead (professional fees, utilities, miscellaneous)					4.50	225.00
Property taxes and insurance					3.51	175.60
Economic depreciation, facility and equipment					21.12	1,056.17
Opportunity interest on capital investment		5.0	percent		24.49	1,224.38
Total ownership costs					53.62	2,681.14
Total costs					276.09	13,804.27
Return over operating costs					58.70	2,934.87
Return over total costs					5.07	253.73
					Return to labor and management	86.22 4,310.81
					Shut-down lamb price, all else equal, \$ per pound	1.89
					Break-even lamb price, all else equal, \$ per pound	2.41

Written by
Jennifer Lutes, Field Specialist, Agriculture Business Extension

Table 2. Production rates for 2023: Early lambing, sell at weaning.

Rates	Quantity
Lambings, per ewe per year	1
Ewe numbers, start of breeding season	50
Rams for breeding	2
Lamb crop (live birth per exposed), percent	175
Lamb crop (raised to sale weight), percent	166
Adult death loss, percent	2
Lamb death loss, pre-weaning, percent	3
Lamb death loss, post-weaning, percent	2

Table 3. Feed and labor estimates for 2023: Early lambing, sell at weaning.

	Unit	Units per head, adults	Units per head, lambs	Total units per ewe	Weighted price (dollars per unit)	Total dollars per ewe
Pasture	acre	0.165	0.1	0.34	30.00	10.25
Hay	pound	443.8	0.0	462.0	0.051	23.33
Supplement	pound	27.5	1.0	30.3	0.154	4.66
Mineral	pound	8.0	0.3	8.9	0.80	7.13
Labor	hour	3.0	0.8	4.53	17.92	81.14

Table 4. Land and capital investment estimates for 2023: Early lambing, sell at weaning.

	Unit	Quantity	Dollars per unit	Enterprise total dollars	Dollars per ewe
Breeding stock unit	ewe	50	229	11,460	229
Buildings and facilities				11,500	230
Machinery, equipment, and pickup				9,800	196
			Total	32,760	655

Note: Building and machinery investment is allocated across multiple enterprises.

The sheep budget is designed to reflect the economic costs and returns of a 50 ewe, winter lambing flock (December/January) with lambs marketed between 60 to 70 pounds in April/May. This management system takes advantage of expected seasonally high market prices for light lambs. However, this management system also has relatively high production risk due to summer breeding challenges and winter lambing.

Farmers can also customize this budget to fit their own operations by using the [Missouri Sheep Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/EweEarlyLambingBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/EweEarlyLambingBudget.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for sheep in Missouri.

Sheep - Late Lambing Planning Budget

Table 1. Missouri hair sheep planning budget for 2023: Late lambing, sell at weaning (50 ewes, 185% lambing rate).

	Head per ewe	Quantity	Unit	Dollars per unit	Dollars per ewe	Dollars per enterprise	
Returns							
Heavy lambs	0.20	70	pound	2.20	30.80	1,540.00	
Light lambs	1.56	60	pound	2.40	224.64	11,232.00	
Culled ewes	0.14	120	pound	1.60	23.04	1,152.00	
Culled rams	0.02	170	pound	1.45	4.93	246.50	
Total returns					283.41	14,170.50	
Operating costs							
Ewe replacement	0.14		head	200.00	28.00	1,400.00	
Ram cost and breeding supplies	0.04		head	350.00	8.00	400.00	
Pasture		0.35	acre	30.00	7.03	351.60	
Hay		466.0	pound	0.051	23.56	1,177.85	
Supplement		30.0	pound	0.154	4.69	234.46	
Mineral		4.5	pound	0.80	7.16	358.05	
Animal health					5.86	292.91	
Guard dog replacement and food					10.65	532.38	
Bedding and stock supplies					3.25	162.50	
Marketing		7.5	percent		21.26	1,062.79	
Machinery fuel, lube, repair					14.55	727.37	
Facility maintenance					3.90	195.00	
Operating interest		6.5	percent		4.14	206.83	
Operator and hired labor		4.61	hour	17.92	82.58	4,128.77	
Total operating costs					224.61	11,230.49	
Ownership costs							
Business overhead (professional fees, utilities, miscellaneous)					4.50	225.00	
Property taxes and insurance					3.51	175.60	
Economic depreciation, facility and equipment					21.12	1,056.17	
Opportunity interest on capital investment		5.0	percent		24.49	1,224.38	
Total ownership costs					53.62	2,681.14	
Total costs					278.23	13,911.64	
Return over operating costs					58.80	2,940.01	
Return over total costs					5.18	258.86	
					Return to labor and management	87.75	4,387.63
					Shut-down lamb price, all else equal, \$ per pound	1.83	
					Break-even lamb price, all else equal, \$ per pound	2.33	

Written by
Jennifer Lutes, Field Specialist, Agriculture Business Extension

Table 2. Production rates for 2023: Late lambing, sell at weaning.

Rates	Quantity
Lambings, per ewe per year	1
Ewe numbers, start of breeding season	50
Rams for breeding	2
Lamb crop (live birth per exposed), percent	185
Lamb crop (raised to sale weight), percent	176
Adult death loss, percent	2
Lamb death loss, pre-weaning, percent	3
Lamb death loss, post-weaning, percent	2

Table 3. Feed and labor estimates for 2023: Late lambing, sell at weaning.

	Unit	Units per head, adults	Units per head, lambs	Total units per ewe	Weighted price (dollars per unit)	Total dollars per ewe
Pasture	acre	0.165	0.1	0.35	30.00	10.55
Hay	pound	448.1	0.0	466.0	0.051	23.56
Supplement	pound	27.5	1.0	30.4	0.154	4.69
Mineral	pound	8.0	0.3	9.0	0.80	7.16
Labor	hour	3.0	0.8	4.61	17.92	82.58

Table 4. Land and capital investment estimates for 2023: Late lambing, sell at weaning.

	Unit	Quantity	Dollars per unit	Enterprise total dollars	Dollars per ewe
Breeding stock unit	ewe	50	229	11,460	229
Buildings and facilities				11,500	230
Machinery, equipment, and pickup				9,800	196
				Total	32,760
					655

Note: Building and machinery investment is allocated across multiple enterprises.

The sheep budget is designed to reflect the economic costs and returns of a 50 ewe, spring lambing flock (March/April) with lambs marketed between 50 to 60 pounds in July/August. This management system takes advantage of spring forage production and the natural breeding season. However, this management system has high price risk during summer marketing.

Farmers can also customize this budget to fit their own operations by using the [Missouri Sheep Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/EweLateLambingBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/EweLateLambingBudget.xlsx). Download the spreadsheet tool to keep an electronic copy of your cost and return estimates for sheep in Missouri.

Corn (Dryland) Planning Budget

Using this planning budget, corn farmers may estimate their costs and returns for 2023. Table 1 presents estimates for dryland corn grain production in northern, central and southwest Missouri. Assumptions were based on price forecasts as of late September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri corn (dryland) planning budget for 2023.

	Dollars per acre	Your estimate
Income		
Grain sales	1,003.00	
Other income	0.00	
Total income	1,003.00	
Operating costs		
Seed	116.25	
Fertilizer and soil amendments	243.95	
Crop protection chemicals	56.00	
Crop supplies, storage, and marketing	3.00	
Crop consulting and insurance	33.00	
Custom hire and rental	6.50	
Machinery fuel, drying, and irrigation energy	72.63	
Machinery repairs and maintenance	30.51	
Operator and hired labor	21.52	
Operating interest	18.96	
Total operating costs	602.32	
Ownership costs		
Farm business overhead	4.40	
Machinery overhead	30.80	
Machinery depreciation	44.70	
Real estate charge	182.00	
Total ownership costs	261.90	
Total costs	864.21	
Income over operating costs	400.68	
Income over total costs	138.79	
	Operating costs per bushel	3.54
	Ownership costs per bushel	1.54
	Total costs per bushel	5.08

Written by
Raymond Massey, Professor, Agricultural Business and Policy Extension
Ben Brown, Senior Research Associate, Agricultural Business and Policy Extension

Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	170	Corn market price, per bushel	5.90
Seeding rate, count	30,000	Seed, per 80,000 seed bag	310.00
Nitrogen rate, pounds	170	Nitrogen, per pound N	0.80
Phosphorus rate, pounds P ₂ O ₅	77	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	49	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.60	Lime, per ton	30.00
Sum of allocated labor, hours	0.97	Skilled labor, per hour	25.00
Land value, per acre	5,600	Farm diesel, per gallon	4.05

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in corn (dryland) planning budget for 2023, 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	0.4	0.63	4.91	6.12	11.03	1.0
V-ripper 30-inch (17 feet); 360 4WD	0.03	0.45	3.04	5.75	8.80	0.3
Row crop planter (16 row); 225 MFWD	0.05	0.53	6.63	13.30	19.93	1.0
Boom sprayer (90 feet); 130 MFWD	0.04	0.25	3.41	4.67	8.08	2.0
Anhydrous applicator (21 feet); 225 MFWD	0.09	0.88	7.44	8.59	16.03	1.0
Combine, corn head (8 row); 275 HP	0.15	1.78	25.29	17.74	43.03	1.0
Grain cart (500 bushel); 225 MFWD	0.07	0.73	6.47	9.31	15.78	
Grain auger (5,000 bushels per hour); 130 MFWD	0.03	0.19	1.81	1.36	3.17	
10-wheeler		1.50	7.46	1.90	9.36	
Semi, tractor and trailer		1.07	8.06	4.51	12.57	
Pickup truck		0.33	2.24	2.25	4.49	
Total³	0.51	8.35	76.77	75.50	152.27	6.3

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 = mechanical front-wheel drive tractor; HP = horsepower

Farmers can also customize this budget to fit their own operations by using the [Missouri Crop Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for corn and other crops in Missouri.



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Corn (Irrigated) Planning Budget

Using this planning budget, corn farmers may estimate their costs and returns for 2023. Table 1 presents estimates for irrigated corn grain production in northern, central and southwest Missouri. Assumptions were based on price forecasts as of late September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri corn (irrigated) planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Grain sales	1,268.50	
Other income	0.00	
Total income	1,268.50	
Operating costs		
Seed	124.00	
Fertilizer and soil amendments	303.51	
Crop protection chemicals	56.00	
Crop supplies, storage, and marketing	6.00	
Crop consulting and insurance	33.00	
Custom hire and rental	6.50	
Machinery fuel, drying, and irrigation energy	134.98	
Machinery repairs and maintenance	78.38	
Operator and hired labor	31.44	
Operating interest	25.15	
Total operating costs	798.96	
Ownership costs		
Farm business overhead	3.44	
Machinery overhead	52.33	
Machinery depreciation	99.88	
Real estate charge	260.00	
Total ownership costs	415.64	
Total costs	1,214.61	
Income over operating costs		
	469.54	
Income over total costs		
	53.98	
	Operating costs per bushel	3.72
	Ownership costs per bushel	1.93
	Total costs per bushel	5.65

¹ Totals may not sum due to rounding.

Written by
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Ben Brown, Senior Research Associate, Agricultural Business and Policy Extension

Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	215	Corn market price, per bushel	5.90
Seeding rate, count	32,000	Seed, per 80,000 seed bag	310.00
Nitrogen rate, pounds N	215	Nitrogen, per pound N	0.80
Phosphorus rate, pounds P ₂ O ₅	97	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	62	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.6	Lime, per ton	30.00
Sum of allocated labor, hours	1.52	Skilled labor, per hour	25.00
Irrigation, inches	6	Farm diesel, per gallon	4.05
		Land value, per acre	8,000

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in corn (irrigated) planning budget for 2023, 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	4.91	6.12	11.03	1
V-ripper 30" (17 feet); 360 4WD	0.03	0.45	3.04	5.75	8.80	0.3
Row crop planter (16 row); 360 4WD	0.05	0.53	6.63	13.30	19.93	1
Boom sprayer (90 feet); 130 MFWD	0.04	0.25	3.41	4.67	8.08	2
Anhydrous applicator (21 feet); 225 MFWD	0.09	0.88	7.44	8.59	16.03	1
Combine, corn head (8 row); 275 HP	0.15	1.78	25.29	17.74	43.03	1
Grain cart (500 bushel); 225 MFWD	0.07	0.73	6.47	9.31	15.78	
Grain auger (5,000 bushels per hour); 130 MFWD	0.04	0.25	2.29	1.72	4.01	
Irrigation	0.50		84.51	77.29	161.80	1
10 Wheeler		1.41	6.99	1.76	8.76	
Semi, tractor and trailer		1.00	7.55	4.20	11.75	
Pickup truck		0.26	1.75	1.75	3.50	
Total³	1.02	8.17	160.30	152.21	312.51	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 = four wheel drive tractor; MFWD = mechanical front-wheel drive tractor; HP = horsepower

Farmers can also customize this budget to fit their own operations by using the [Missouri Crop Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for corn and other crops in Missouri.



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Corn Silage Planning Budget

Using this planning budget, farmers growing corn silage can estimate their costs and returns for 2023. Table 1 presents estimates for corn silage production in Missouri. Assumptions were based on price forecasts as of September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common on Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri corn silage planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Silage sales	990.00	
Other income	0.00	
Total income	990.00	
Operating costs		
Seed	81.25	
Fertilizer and soil amendments	304.17	
Crop protection chemicals	56.00	
Crop supplies, storage, and marketing	6.50	
Custom hire: fertilizer application	6.50	
Custom hire: silage transport	83.50	
Machinery fuel and irrigation energy	24.74	
Machinery repairs and maintenance	26.02	
Operator and hired labor	28.43	
Operating interest	20.06	
Total operating costs	637.17	
Ownership costs		
Farm business overhead	11.00	
Machinery overhead	29.53	
Machinery depreciation	37.14	
Real estate charge	182.00	
Total ownership costs	259.67	
Total costs	896.84	
Income over operating costs		
	352.83	
Income over total costs		
	93.16	
Operating costs per ton, as-fed basis	35.40	
Ownership costs per ton, as-fed basis	14.43	
Total costs per ton, as-fed basis	49.82	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Forage yield, tons, as-fed basis	18	Corn silage market price, per ton	55.00
Seeding rate, corn	26,000	Seed, per 80,000 seed bag	250.00
Nitrogen rate, pounds	184	Nitrogen, per pound N	0.80
Phosphorus rate, pounds P ₂ O ₅	59	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	139	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.5	Lime, per ton	30.00
Sum of allocated labor, hours	1.26	Skilled labor, per hour	25.00
		Farm diesel, per gallon	4.05

Table 3 details the field activities for this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in corn silage planning budget for 2023, 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	5.15	4.70	9.85	1
Row crop planter (12 row); 130 MFWD	0.07	0.41	6.34	11.80	18.14	1
Boom sprayer (90 ft); 105 2WD	0.04	0.25	3.40	4.70	8.10	2
Anhydrous applicator (21 feet); 160 MFWD	0.09	0.63	6.05	5.17	11.22	1
Silage chopper, 3 row (7.5 feet); 160 MFWD	0.48	3.40	42.91	34.71	77.62	1
Pickup truck		0.83	5.59	5.60	11.20	
Total³	0.76	6.06	69.44	66.67	136.12	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 = mechanical front-wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Forage Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for corn silage and other forages in Missouri. For corn grown for grain, customized budgets can be created using the [Missouri Crop Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgetGenerator.xlsm) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgetGenerator.xlsm).

Soybean (Dryland) Planning Budget

Using this planning budget, soybean farmers may estimate their costs and returns for 2023. Table 1 presents estimates for dryland soybean production in northern, central and southwest Missouri. Assumptions were based on price forecasts as of late September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri soybean (dryland) planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Grain sales	698.50	
Other income	0.00	
Total income	698.50	
Operating costs		
Seed	73.67	
Fertilizer and soil amendments	105.26	
Crop protection chemicals	63.00	
Crop supplies, storage, and marketing	4.00	
Crop consulting and insurance	20.00	
Custom hire and rental	6.50	
Machinery fuel, drying, and irrigation energy	20.95	
Machinery repairs and maintenance	23.18	
Operator and hired labor	18.19	
Operating interest	10.88	
Total operating costs	345.62	
Ownership costs		
Farm business overhead	4.40	
Machinery overhead	20.09	
Machinery depreciation	33.41	
Real estate charge	182.00	
Total ownership costs	239.91	
Total costs	585.53	
Income over operating costs		
	352.88	
Income over total costs		
	112.97	
	Operating costs per bushel	6.28
	Ownership costs per bushel	4.36
	Total costs per bushel	10.65

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	55	Soybean market price, per bushel	12.70
Seeding rate, count	170,000	Seed, per 150,000 seed bag	67.00
Phosphorus rate, pounds P ₂ O ₅	46	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	80	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.5	Lime, per ton	30.00
Sum of allocated labor, hours	0.87	Skilled labor, per hour	25.00
Land value, per acre	5,600	Farm diesel, per gallon	4.05

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in soybean (dryland) planning budget for 2023, 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	6.53	7.89	14.41	1
Row crop planter (16 row); 225 MFWD	0.05	0.53	6.63	13.30	19.93	1
Boom sprayer (90 feet); 130 MFWD	0.04	0.25	3.41	4.67	8.08	2
Combine, flexible grain head (25 feet); 275 HP	0.13	1.63	22.70	14.48	37.18	1
Grain cart (500 bushel); 225 MFWD	0.07	0.67	5.92	8.52	14.44	
Grain auger (5,000 bushels per hour); 130 MFWD	0.01	0.06	0.59	0.44	1.02	
10 Wheeler		0.38	1.87	0.47	2.34	
Semi, tractor and trailer		0.36	2.69	1.50	4.18	
Pickup truck		0.33	2.24	2.25	4.49	
Total³	0.37	5.11	52.57	53.51	106.07	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 = mechanical front-wheel drive tractor; HP = horsepower

Farmers can also customize this budget to fit their own operations by using the [Missouri Crop Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for soybeans and other crops in Missouri.

Soybean (Double Crop) Planning Budget

Using this planning budget, soybean farmers may estimate their costs and returns for 2023. Table 1 presents estimates for double crop soybeans (after wheat) production in northern, central and southwest Missouri. Assumptions were based on price forecasts as of late September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri soybean (double crop) planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Grain sales	444.50	
Other income	0.00	
Total income	444.50	
Operating costs		
Seed	86.67	
Fertilizer and soil amendments	57.31	
Crop protection chemicals	12.00	
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	12.22	
Machinery repairs and maintenance	16.44	
Operator and hired labor	14.57	
Operating interest	6.47	
Total operating costs	205.68	
Ownership costs		
Farm business overhead	5.50	
Machinery overhead	13.18	
Machinery depreciation	20.20	
Real estate charge	0.00 ²	
Total ownership costs	38.87	
Total costs	244.55	
Income over operating costs	238.82	
Income over total costs	199.95	
	Operating costs per bushel	5.88
	Ownership costs per bushel	1.11
	Total costs per bushel	6.99

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.

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Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	35	Soybean market price, per bushel	12.70
Seeding rate, count	200,000	Seed, per 150,000 seed bag	65.00
Phosphorus rate, pounds P ₂ O ₅	29	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	51	Potassium, per pound K ₂ O	0.72
Sum of allocated labor, hours	0.69	Skilled labor, per hour	25.00
Land value, per acre	4,700	Farm diesel, per gallon	4.05

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in soybean (double crop) planning budget for 2023, 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	6.63	13.30	19.93	1
Boom sprayer (90 feet); 130 MFWD	0.02	0.12	1.70	2.96	4.67	1
Combine, flexible grain head (30 feet); 275 HP	0.11	1.36	19.05	12.63	31.68	1
Grain auger (5,000 bushels per hour); 130 MFWD	0.01	0.11	0.71	0.63	1.33	
10 Wheeler		0.25	1.24	0.31	1.56	
Semi, tractor and trailer		0.18	1.34	0.75	2.09	
Pickup truck		0.42	2.80	2.80	5.60	
Total³	0.19	2.97	33.48	33.37	66.85	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 = mechanical front-wheel drive tractor; HP = horsepower

Farmers can also customize this budget to fit their own operations by using the [Missouri Crop Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for soybeans and other crops in Missouri.

Winter Wheat Planning Budget

Using this planning budget, wheat farmers may estimate their costs and returns for 2023. Table 1 presents estimates for winter wheat (for grain) production in northern, central and southwest Missouri. Assumptions were based on price forecasts as of late September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri winter wheat planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income per acre		
Grain sales	542.00	
Other income	0.00	
Total income	542.00	
Operating costs		
Seed	40.00	
Fertilizer and soil amendments	145.44	
Crop protection chemicals	23.00	
Crop supplies, storage, and marketing	4.00	
Crop consulting and insurance	17.00	
Custom hire and rental	13.00	
Machinery fuel, drying, and irrigation energy	24.26	
Machinery repairs and maintenance	20.92	
Operator and hired labor	17.41	
Operating interest	9.91	
Total operating costs	314.94	
Ownership costs		
Farm business overhead	5.50	
Machinery overhead	18.25	
Machinery depreciation	27.06	
Real estate charge	152.75	
Total ownership costs	203.56	
Total costs	518.50	
Income over operating costs	227.56	
Income over total costs	24.00	
	Operating costs per bushel	4.50
	Ownership costs per bushel	2.91
	Total costs per bushel	7.41

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	70	Wheat market price, per bushel	7.75
Seeding rate, 50 pound bag	100	Seed, per bag	20.00
Nitrogen rate, pounds N	95	Nitrogen, per pound N	0.90
Phosphorus rate, pounds P ₂ O ₅	42	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	21	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.5	Lime, per ton	30.00
Sum of allocated labor, hours	0.82	Skilled labor, per hour	25.00
Land value, per acre	4,700	Farm diesel, per gallon	4.05

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in winter wheat planning budget for 2023, 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 (15 feet); 225 MFWD	0.12	1.17	10.68	13.97	24.65	1
Boom sprayer (90 feet); 130 MFWD	0.02	0.12	1.70	2.96	4.67	1
Combine, fixed grain head (30 feet); 275 HP	0.11	1.36	19.05	12.63	31.68	1
Grain cart (500 bushel); 225 MFWD	0.06	0.56	4.93	7.09	12.02	
Grain auger (5,000 bushels per hour); 130 MFWD	0.01	0.08	0.75	0.56	1.30	
10-wheeler		1.25	6.22	1.57	7.78	
Semi, tractor and trailer		0.89	6.71	3.73	10.45	
Pickup truck		0.42	2.80	2.80	5.60	
Total³	0.32	5.84	52.84	45.31	98.15	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 = mechanical front-wheel drive tractor; HP = horsepower

Farmers can also customize this budget to fit their own operations by using the [Missouri Crop Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for winter wheat and other crops in Missouri.

Grain Sorghum Planning Budget

Using this planning budget, sorghum farmers may estimate their costs and returns for 2023. Table 1 presents estimates for grain sorghum production in northern, central and southwest Missouri. Assumptions were based on price forecasts as of late September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common for Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri grain sorghum planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Grain sales	567.00	
Other income	0.00	
Total income	567.00	
Operating costs		
Seed	24.00	
Fertilizer and soil amendments	157.83	
Crop protection chemicals	38.00	
Crop supplies, storage, and marketing	2.50	
Crop consulting and insurance	21.00	
Custom hire and rental	13.00	
Machinery fuel, drying, and irrigation energy	24.18	
Machinery repairs and maintenance	22.45	
Operator and hired labor	17.04	
Operating interest	10.40	
Total operating costs	330.40	
Ownership costs		
Farm business overhead	5.50	
Machinery overhead	22.08	
Machinery depreciation	30.30	
Real estate charge	152.75	
Total ownership costs	210.63	
Total costs	541.03	
Income over operating costs	236.60	
Income over total costs	25.97	
	Operating costs per bushel	3.15
	Ownership costs per bushel	2.01
	Total costs per bushel	5.15

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	105	Grain sorghum market price, per bushel	5.40
Seeding rate, count	90,000	Seed, per 750,000 seed bag	200.00
Nitrogen rate, pounds N	100	Nitrogen, per pound N	0.90
Phosphorus rate, pounds P ₂ O ₅	45	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	29	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.5	Lime, per ton	30.00
Sum of allocated labor, hours	0.81	Skilled labor, per hour	25.00
Land value, per acre	4,700	Farm diesel, per gallon	4.05

Table 3 details the field activities assumed in this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in grain sorghum planning budget for 2023, 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	3.04	5.75	8.80	0.3
Row crop planter (16 row); 225 MFWD	0.05	0.53	6.63	13.30	19.93	1
Boom sprayer (90 feet); 130 MFWD	0.04	0.25	3.41	4.67	8.08	2
Combine, fixed grain head (30 feet); 275 HP	0.11	1.36	19.05	12.63	31.68	1
Grain cart (500 bushel); 225 MFWD	0.06	0.56	4.93	7.09	12.02	
Grain auger (5,000 bushels per hour); 130 MFWD	0.02	0.12	1.12	0.84	1.96	
10-wheeler		1.25	6.22	1.57	7.78	
Semi, tractor and trailer		0.89	6.71	3.73	10.45	
Pickup truck		0.42	2.80	2.80	5.60	
Total³	0.31	5.82	53.92	52.38	106.30	4.3

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 = mechanical front-wheel drive tractor; HP = horsepower

Farmers can also customize this budget to fit their own operations by using the [Missouri Crop Budget Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/CropBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for grain sorghum and other crops in Missouri.

Alfalfa Establishment Planning Budget

Using this planning budget, farmers establishing alfalfa can estimate their costs and returns for 2023. Table 1 presents estimates for the fall establishment of alfalfa in Missouri. Assumptions were based on price conditions as of September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common on Missouri farms. 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. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri alfalfa establishment planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Hay sales (60 pound bales)	770.00	
Other income	0.00	
Total income	770.00	
Operating costs		
Seed	49.50	
Fertilizer and soil amendments	204.50	
Crop protection chemicals	47.36	
Crop supplies, storage, and marketing	8.25	
Custom hire: fertilizer and chemical application	14.50	
Custom hire: bale transport	70.00	
Machinery fuel and irrigation energy	38.13	
Machinery repairs and maintenance	32.41	
Operator and hired labor	53.54	
Operating interest	16.84	
Total operating costs	535.03	
Ownership costs		
Farm business overhead	13.75	
Machinery overhead	29.75	
Machinery depreciation	54.27	
Real estate charge	126.75	
Total ownership costs	224.52	
Total costs	759.55	
Income over operating costs	234.97	
Income over total costs	10.45	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions for alfalfa establishment and small bale production. Price estimates reflect summer prices out-of-the-field. 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Forage yield, 60 pound bales	70	Alfalfa market price, per bale	11.00
Seeding rate, pounds	15	Alfalfa seed, per pound	3.30
Phosphorus rate, pounds P ₂ O ₅	70	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	90	Potassium, per pound K ₂ O	0.72
Lime rate, tons	3	Lime, per ton	30.00
Sum of allocated labor, hours	2.47	Skilled labor, per hour	25.00
Operating interest, %	6.5	Farm diesel, per gallon	4.05

Table 3 details the field activities for this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in alfalfa establishment planning budget for 2023, 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	0.13	0.91	8.46	9.65	18.11	1
Tandem disk (21 feet); 130 MFWD	0.16	1.15	13.78	14.18	27.95	2
Roller harrow (12 feet); 105 2WD	0.13	0.65	6.55	5.49	12.04	1
No-till drill (15 feet); 130 MFWD	0.16	0.90	11.87	15.08	26.95	1
Disk mower-conditioner (9 feet); 105 2WD	0.35	1.71	19.11	10.82	29.93	2
Wheel rake (2-16'); 60 2WD	0.08	0.37	3.84	3.23	7.08	2
Small square baler; 75 2WD	0.46	2.62	33.98	18.55	52.53	2
Pickup truck		1.04	6.99	7.00	14.00	
Total³	1.47	9.36	104.58	84.02	188.60	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 = mechanical front-wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Forage Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for alfalfa and other forages in Missouri.

Alfalfa Baleage Planning Budget

Using this planning budget, farmers growing alfalfa for baleage can estimate their costs and returns for 2023. Establishment costs for alfalfa can be found in MU Extension publication, G661, [Alfalfa Establishment Planning Budget](https://extension.missouri.edu/g661) (extension.missouri.edu/g661). Table 1 presents estimates for established alfalfa baleage production in Missouri. Assumptions were based on price forecasts as of September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop this budget are common in Missouri. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri alfalfa baleage planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Baleage sales	855.00	
Other income	0.00	
Total income	855.00	
Operating costs		
Seed	0.00	
Fertilizer and soil amendments	193.70	
Crop protection chemicals	20.36	
Crop supplies, storage, and marketing	120.00	
Custom hire: fertilizer application	13.00	
Custom hire: haylage transport	45.00	
Machinery fuel and irrigation energy	68.02	
Machinery repairs and maintenance	58.10	
Operator and hired labor	80.27	
Operating interest	19.45	
Total operating costs	617.90	
Ownership costs		
Farm business overhead	13.75	
Machinery overhead	43.19	
Machinery depreciation	75.23	
Real estate charge	126.75	
Total ownership costs	258.92	
Total costs	876.82	
Income over operating costs	237.10	
Income over total costs	-21.82	
	Operating costs per ton, as fed	68.66
	Ownership costs per ton, as fed	28.77
	Total costs per ton, as fed	97.42

¹ Totals may not sum due to rounding.

Written by
Raymond Massey, Professor, Agricultural Business and Policy Extension

Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, tons, as fed	9.00	Market price, per ton	95.00
Phosphorus rate, pounds P ₂ O ₅	70.00	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	200.00	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.00	Lime, per ton	0.00
Sum of allocated labor, hours	3.71	Skilled labor, per hour	25.00
		Farm diesel, per gallon	4.05

Table 3 details the field activities for this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in alfalfa baleage planning budget for 2023, 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); 130 MFWD	0.04	0.25	3.40	4.70	8.10	2
Disk mower-conditioner (9 feet); 130 MFWD	0.71	4.03	42.16	24.69	66.85	4
Wheel rake (2-16'); 105 2WD	0.15	0.74	7.69	5.51	13.19	4
Round baler, silage kit (1500 pound); 105 2WD	0.71	3.41	43.38	28.04	71.42	4
Round bale wrapper haylage; 105 2WD	1.50	7.26	91.08	48.48	139.56	1
Pickup truck		1.04	6.99	7.00	14.00	
Total³	3.11	16.74	194.69	118.42	313.11	15

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 = Mechanical front wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Forage Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for alfalfa and other forages in Missouri.

Alfalfa Small Bales Planning Budget

Using this planning budget, farmers growing alfalfa can estimate their costs and returns associated with producing small square bales in 2023. Establishment costs for alfalfa can be found in MU Extension publication G661, [Alfalfa Establishment Planning Budget](https://extension.missouri.edu/g661) (extension.missouri.edu/g661). Table 1 presents estimates for established alfalfa with small bale production. Assumptions were based on price forecasts as of September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common on Missouri farms. 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. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri alfalfa small bales planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Hay sales (60 pound bales)	1,833.37	
Other income	0.00	
Total income	1,833.37	
Operating costs		
Seed	0.00	
Fertilizer and soil amendments	193.70	
Crop protection chemicals	20.36	
Crop supplies, storage, and marketing	15.00	
Custom hire: fertilizer and herbicide application	21.00	
Custom hire: bale transport	166.67	
Machinery fuel and irrigation energy	54.71	
Machinery repairs and maintenance	42.74	
Operator and hired labor	63.73	
Operating interest	18.78	
Total operating costs	596.70	
Ownership costs		
Farm business overhead	13.75	
Machinery overhead	18.44	
Machinery depreciation	77.51	
Real estate charge	126.75	
Total ownership costs	236.45	
Total costs	833.15	
Income over operating costs	1,236.67	
Income over total costs	1,000.22	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions for the alfalfa small bales budget. Price estimates reflect harvest time prices out-of-the-field. 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Forage yield, 60 pound bales	166.67	Alfalfa market price, per bale	11.00
Phosphorus rate, pounds P ₂ O ₅	70	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	200	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.00	Lime, per ton	0.00
Sum of allocated labor, hours	2.74	Skilled labor, per hour	25.00
		Farm diesel, per gallon	4.05

Table 3 details the field activities for this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in alfalfa small bales planning budget for 2023, 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); 130 MFWD	0.04	0.25	3.40	4.70	8.10	2
Swather (haybine) mower-conditioner	0.92	5.25	56.04	39.35	95.39	4
Hay tedder (8.5 feet); 105 MFWD	0.21	0.96	9.44	6.04	15.48	2
Wheel rake (2-16'); 105 MFWD	0.15	0.71	7.61	6.19	13.80	4
Small square baler; 130 MFWD	0.92	5.25	67.96	32.66	100.62	4
Pickup truck		1.04	6.99	7.00	14.00	
Total³	2.24	13.45	151.44	95.95	247.39	16

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 = Mechanical front wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Forage Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for alfalfa and other forages in Missouri.

Cool Season Pasture Establishment Planning Budget

Using this budget, farmers establishing cool season pasture can estimate their costs and returns for 2023. Table 1 presents estimates for cool season pasture establishment in Missouri. Assumptions were based on price forecasts as of September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common on Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri cool season pasture establishment planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Grazing	32.00	
Other income	0.00	
Total income	32.00	
Operating costs		
Seed, orchardgrass and red clover	39.40	
Fertilizer and soil amendments	114.25	
Crop protection chemicals	13.46	
Crop supplies, storage, and marketing	5.00	
Custom hire: fertilizer and herbicide application	14.50	
No-till drill rental	12.00	
Machinery fuel and irrigation energy	8.52	
Machinery repairs and maintenance	4.32	
Operator and hired labor	15.91	
Operating interest	7.39	
Total operating costs	234.76	
Ownership costs		
Farm business overhead	6.88	
Machinery overhead	7.93	
Machinery depreciation	9.68	
Real estate charge	57.00	
Total ownership costs	81.48	
Total costs	316.23	
Income over operating costs	-202.76	
Income over total costs	-284.23	

¹ Totals may not sum due to rounding.

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Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Pasture yield, animal unit month	2	Pasture price, per animal unit month	16.00
Seeding rate, pounds orchardgrass	6	Orchardgrass seed, per pound	2.70
Seeding rate, pounds clover	8	Clover seed, per pound	2.90
Nitrogen rate, pounds N	30	Nitrogen, per pound N	0.90
Phosphorus rate, pounds P ₂ O ₅	35	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	45	Potassium, per pound K ₂ O	0.72
Lime rate, tons	1	Lime, per ton	30.00
Sum of allocated labor, hours	0.77	Skilled labor, per hour	25.00
		Farm diesel, per gallon	4.05

Table 3 details the field activities for this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in cool season pasture establishment planning budget for 2023, 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
Rented no-till drill (15 feet); 130 MFWD	0.16	0.90	20.91	5.29	26.20	1
Rotary mower (12 feet); 130 MFWD	0.11	0.66	6.60	8.81	15.41	1
Pickup truck		0.52	3.50	3.50	7.00	
Total³	0.27	2.07	31.01	17.60	48.61	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 = mechanical front-wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Forage Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for forages in Missouri.

Fescue - Clover Hay Planning Budget

Using this planning budget, farmers growing hay can estimate their costs and returns for 2023. Table 1 presents estimates for established fescue-clover hay production in Missouri. Assumptions were based on price forecasts as of September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common on Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri fescue-clover hay planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Hay	360.00	
Grazing	16.00	
Other income	0.00	
Total income	376.00	
Operating costs		
Seed	0.00	
Fertilizer and soil amendments	126.86	
Crop protection chemicals	0.00	
Crop supplies, storage, and marketing	15.00	
Custom hire: fertilizer application	6.00	
Custom hire: bale transport	23.00	
Machinery fuel and irrigation energy	9.51	
Machinery repairs and maintenance	12.66	
Operator and hired labor	12.67	
Operating interest	6.69	
Total operating costs	212.40	
Ownership costs		
Farm business overhead	6.88	
Machinery overhead	9.62	
Machinery depreciation	11.63	
Real estate charge	57.00	
Total ownership costs	85.13	
Total costs	297.52	
Income over operating costs	163.60	
Income over total costs	78.48	

¹ Totals may not sum due to rounding.

Written by
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Table 2 shows input assumptions for 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 2023.

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	16.00
Nitrogen rate, pounds N	40	Nitrogen, per pound N	0.90
Phosphorus rate, pounds P ₂ O ₅	46	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	60	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.50	Lime, per ton	30.00
Sum of allocated labor, hours	0.57	Skilled labor, per hour	25.00
		Farm diesel, per gallon	4.05

Table 3 details the field activities for this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in fescue-clover hay planning budget for 2023, 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	10.54	8.90	19.44	1
Wheel rake (2-16'); 105 2WD	0.04	0.18	1.92	2.10	4.02	1
Round baler, net wrap (1500 pound); 130 MFWD	0.11	0.61	14.02	6.76	20.77	1
Pickup truck		0.52	3.50	3.50	7.00	
Total³	0.32	2.32	29.97	21.25	51.23	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 = mechanical front-wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Forage Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx) (<https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx>). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for forages in Missouri.

Fescue Seed and Forage Planning Budget

Using this planning budget, farmers growing fescue for seed and forage can estimate their costs and returns for 2023. Table 1 presents estimates for established fescue used for seed, hay and grazing purposes. Assumptions were based on price forecasts as of September 2022. Detailed prices and practices are summarized in Tables 2 and 3. The production practices used to develop these cost estimates are common on Missouri farms. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri fescue seed and forage planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Fescue hay	304.00	
Fescue seed	450.00	
Grazing	16.00	
Other income	0.00	
Total income	770.00	
Operating costs		
Seed	0.00	
Fertilizer and soil amendments	156.90	
Crop protection chemicals	0.00	
Crop supplies, storage, and marketing	10.00	
Custom hire: fertilizer application	6.50	
Custom hire: combining seed	28.00	
Custom hire: product transport	38.50	
Machinery fuel and irrigation energy	9.20	
Machinery repairs and maintenance	12.83	
Operator and hired labor	14.97	
Operating interest	9.00	
Total operating costs	285.90	
Ownership costs		
Farm business overhead	3.67	
Machinery overhead	9.75	
Machinery depreciation	14.18	
Real estate charge	57.00	
Total ownership costs	84.60	
Total costs	370.49	
Income over operating costs	484.10	
Income over total costs	399.51	

¹ Totals may not sum due to rounding.

Written by
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Table 2 shows input assumptions for 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 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Hay yield, bales	4	Hay price, per bale	76.00
Seed yield, pounds	300	Seed price, per pound	1.50
Pasture yield, animal unit month	1	Pasture price, per animal unit month	16.00
Nitrogen rate, pounds N	70	Nitrogen, per pound N	0.90
Phosphorus rate, pounds P ₂ O ₅	30	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	80	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.50	Lime, per ton	30.00
Sum of allocated labor, hours	0.67	Skilled labor, per hour	25.00
		Farm diesel, per gallon	4.05

Table 3 details the field activities for this budget and their machinery costs. Machinery costs were estimated using typical life (years), use (hours) and performance (fuel and labor) factors for each power unit and implement used.

Table 3. Machinery assumptions used in fescue seed and forage planning budget for 2023, 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); 130 MFWD	0.23	1.31	14.01	13.78	27.79	1
Wheel rake (2-16'); 105 MFWD	0.04	0.18	1.90	2.23	4.13	1
Round baler, net wrap (1500 pound); 105 MFWD	0.11	0.49	13.37	6.06	19.43	1
Pickup truck		0.28	1.86	1.87	3.73	
Total³	0.37	2.26	31.15	23.93	55.08	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 = mechanical front-wheel drive tractor

Farmers can also customize this budget to fit their own operations by using the [Missouri Forage Budget Generator](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/ForageBudgets.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for forages in Missouri.

Native Warm-Season Grass Planning Budget

Using this budget, farmers can estimate the costs and returns of establishing native warm-season grass (NWSG) forage species. Table 1 presents estimates for replacing existing forage stands with NWSG in Missouri. Assumptions were based on price forecasts as of September 2022. The NWSG forage species mix used in this budget includes big bluestem, indiangrass, little bluestem and forbs. The mix was assumed to be planted in a dormant season. Multiple calendar years are needed for the NWSG stand to reach full forage yield potential. Seeding mixes are designed to enhance wildlife habitat and meet eligibility for cost share practices. Use the “Your estimate” column to plan your operation’s costs and returns, including any cost share awarded.

Table 1. Missouri big bluestem, indiangrass, little bluestem and forbs budget for 2023.

	Year 1 Preparation	Year 2 Establishment	Year 3 Half production	Year 4 Full production	Your estimate
Income	<i>Dollars per acre</i>				
Haying	0.00	0.00	218.75	437.50	
Grazing	0.00	0.00	18.00	36.00	
Total income	0.00	0.00	236.75	473.50	
Operating costs					
Warm-season grass seed	0.00	165.20	0.00	0.00	
Forb/minor species seed mix	0.00	62.50	0.00	0.00	
Fertility ¹	93.20	0.00	49.67	99.35	
Herbicide	28.80	6.00	0.00	0.00	
Custom hire and rental					
Chemical application	7.00	7.00	0.00	0.00	
Fertilizer application	6.00	0.00	6.00	6.00	
No-till drill rental	0.00	22.00	0.00	0.00	
Hay preparation and baling	0.00	0.00	70.00	140.00	
Mowing (rotary cutter)	0.00	20.00	0.00	0.00	
Operator and hired labor	0.00	8.96	0.00	0.00	
Operating interest	4.39	9.48	4.08	7.97	
Total operating costs	139.39	301.14	129.76	253.32	
Ownership costs					
Business overhead & depreciation	0.00	0.00	0.00	0.00	
Real estate charge	8.50	34.00	34.00	34.00	
Total ownership costs	8.50	34.00	34.00	34.00	
Total costs	147.89	335.14	163.76	287.32	
Income over operating costs	-139.39	-301.14	106.99	220.18	
Income over total costs	-147.89	-335.14	72.99	186.18	

Note: Totals may not sum due to rounding.

1. University of Missouri Soil Test Lab recommends 2 pounds of P₂O₅ and 14.6 pounds of K₂O per ton of hay yield.

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Year 1: Fall burndown and seedbed preparation

Year 1 reflects the fall prior to seeding. Seedbed preparation begins in early fall by chemically eradicating the existing stand. Soil tests are taken and fertilizer and lime are applied accordingly. Fertilizer and chemical application are performed by a custom operator. If the existing pastureland is grazed, allocate 75 percent of ownership costs to the previous pasture stand and 25 percent to the new NWSG stand because of lost fall grazing days. If additional pasture must be rented to carry livestock, the cost of renting should be applied to the NWSG.

Year 2: Seeding and competition management

Year 2 no-till drills the seed and forb mix during the winter dormant season. There will be no forage harvested. Weed control includes an application of Imazapic for broadleaf and cool-season grass control if the label recommends for the seeding mix used. Mowing with a rotary cutter is included for weed and residual grass control. Ownership costs are limited to a land charge.

Year 3: Fertilization, hay and graze, half mature yield

Forage production begins in Year 3, which is at least one full year after seeding. Yield will be approximately 50 percent of full production. Costs include a nitrogen application to boost yield and plant vigor along with potassium and phosphorous applied according to soil test recommendations and yield goals. If weed pressure is an issue, an application of an approved herbicide can be used or the area can be mowed for broadleaf control.

Yield is measured both in tonnage harvested as hay (1.75 tons) and animal unit months (AUM) of grazing (1 AUM). The first cutting of hay is typically in the beginning of July, then again in late August or grazed until 45 days before frost.

Table 2. Input prices in NWSG budget.

Description	Dollars per unit
Hay market price, per ton	125.00
Pasture, per animal unit month	18.00
Big bluestem seed, per PLS pound	15.25
Indiangrass seed, per PLS pound	12.45
Little bluestem seed, per PLS pound	13.35
Forb seed, per PLS pound	62.50
Nitrogen, per pound N	0.90
Phosphorus, per pound P ₂ O ₅	0.72
Potassium, per pound K ₂ O	0.72
Lime, per ton applied	30.00
Soil testing, per test	20.00
Glyphosate, per ounce	0.45
Imazapic, per ounce	1.50
Operator labor, per hour	17.92
Operating interest, percent	6.50

Year 4: Fertilization, hay and graze, full production

Full production is achieved in Year 4, or at least two full years after seeding. Costs include fertilizer applied according to soil test recommendations. Forage yield of 3.5 tons hay and 2 AUM per acre are expected to remain stable in the future if the stand is properly managed.

Develop your own budget

Farmers can also customize this budget to fit their own operations by using the [Native Warm-Season Grass Planning Tool](https://extension.missouri.edu/media/wysiwyg/Extensiondata/ProAgBusinessPolicyExtension/Docs/NWSGBudgets.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/ProAgBusinessPolicyExtension/Docs/NWSGBudgets.xlsx). Download the spreadsheet tool to create a copy of your cost and return estimates. Budget worksheets are available for the following NWSG scenarios:

1. Big bluestem and indiagrass with no forbs, dormant season planting
2. Big bluestem and indiagrass with no forbs, spring planted following winter cover crop
3. Big bluestem, indiagrass, little bluestem and forbs, dormant season planting
4. Big bluestem, indiagrass, little bluestem and forbs, spring planted following winter cover crop
5. Eastern gamagrass, dormant season planting

Industrial Hemp for Fiber Planning Budget

Using this budget, growers of industrial hemp fiber can estimate their production costs for 2023. Table 1 presents cost estimates for industrial hemp fiber production based on price conditions in October 2022. Available information from Missouri and other states have been used to develop this budget. Assumptions are summarized in Tables 2 and 3. Use the “Your estimate” column to plan your operation’s costs and returns for 2023.

Table 1. Missouri industrial hemp for fiber planning budget for 2023.

	Dollars per acre ¹	Your estimate
Income		
Hemp fiber	1,064.00	
Other income	0.00	
Total income	1,064.00	
Operating costs		
Seed	192.50	
Fertilizer	234.00	
Crop protection	12.00	
Machinery operating cost	30.75	
Custom hire and rental	198.00	
Registration and background check	19.13	
Sampling costs	13.88	
Operating interest	22.76	
Total operating costs	723.01	
Ownership costs		
Machinery ownership	61.94	
Real estate charge	152.00	
Total ownership costs	213.94	
Total costs	936.95	
Income over operating costs	340.99	
Income over total costs	127.05	

¹ Totals may not sum due to rounding.

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Table 2. Input assumptions used in industrial hemp for fiber planning budget for 2023.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Hemp fiber yield, pounds	7,600	Hemp fiber price, per pound	0.14
Seeding rate, pounds	55	Seed, per pound	3.50
Nitrogen rate, pounds N	100	Nitrogen, per pound N	0.80
Phosphorus rate, pounds P ₂ O ₅	80	Phosphorus, per pound P ₂ O ₅	0.71
Potassium rate, pounds K ₂ O	110	Potassium, per pound K ₂ O	0.72
Lime rate, tons	0.6	Lime, per ton	30.00
Fuel for machinery and drying, gallons	3.84	Fuel, per gallon	4.05
Labor, hours	0.78	Labor, per hour	19.50

Table 3. Machinery used in industrial hemp for fiber planning budget for 2023, on a per acre basis.

Machinery activity (including custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs ¹ (dollars)	Ownership costs ¹ (dollars)	Total costs (dollars)	Trips across field
Anhydrous application, 200 MFWD	0.08	0.64	4.52	7.30	11.82	1
Tandem disk, fold (21 feet), 160 MFWD	0.16	1.48	10.12	19.91	30.03	2
Presswheel drill (16 feet), 105 MFWD	0.15	0.61	5.89	10.05	15.93	1
Boom sprayer, pull-type (90 feet), 130 MFWD	0.02	0.12	1.02	4.95	5.97	1
Mower, 75 HP tractor	0.11	0.38	4.14	8.17	12.31	1
Hay rake (30 feet), 40 HP tractor	0.18	0.60	6.62	11.56	18.18	2
Dry fertilizer application, custom charge					13.00	2
Large square bales, custom charge					115.00	1
Moving large square bales, custom charge					70.00	1
Total²	0.70	3.83	32.31	61.94	292.24	12

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

² Totals may not sum due to rounding.

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

Industrial hemp is more regulated than most other Missouri agricultural commodities. This budget contain cost estimates for registration, grower background checks and product sampling and testing costs.

Farmers can also customize this budget to fit their own operations by using the [Missouri Industrial Hemp Budget](https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/IndustrialHempBudget.xlsx) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/IndustrialHempBudget.xlsx). Download the spreadsheet tool to create an electronic copy of your cost and return estimates for industrial hemp production in Missouri.