

# Grain Sorghum Planning Budget

Using this planning budget, sorghum farmers may estimate their costs and returns for 2024. Table 1 presents estimates for grain sorghum production in northern, central and southwest Missouri. Assumptions were based on price forecasts as of October 2023. 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 2024.

**Table 1. Missouri grain sorghum planning budget for 2024.**

	Dollars per acre <sup>1</sup>	Your estimate
<b>Income</b>		
Grain sales	477.75	
Other income	0.00	
Total income	477.75	
<b>Operating costs</b>		
Seed	10.80	
Fertilizer and soil amendments	90.70	
Crop protection chemicals	34.00	
Crop supplies, storage, and marketing	2.50	
Crop consulting and insurance	16.37	
Custom hire and rental	7.50	
Machinery fuel, drying, and irrigation energy	38.17	
Machinery repairs and maintenance	22.18	
Management	14.33	
Operating interest	10.64	
Total operating costs	247.19	
<b>Ownership costs</b>		
Farm business overhead	6.25	
Machinery ownership	61.73	
Real estate charge	145.00	
Total ownership costs	212.98	
Total costs	460.17	
<b>Income over operating costs</b>		
	<b>230.56</b>	
<b>Income over total costs</b>		
	<b>17.58</b>	
<b>Return to land and management</b>		
	<b>176.92</b>	
	Operating costs per bushel	2.35
	Ownership costs per bushel	2.03
	Total costs per bushel	4.38

<sup>1</sup> Totals may not sum due to rounding.

Written by  
**Ben Brown**, Senior Research Associate, Agricultural Business and Policy  
**Juo-Han Tsay**, Assistant Extension Professor, Agricultural Business and Policy

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 2024.**

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Yield, bushels	105	Grain sorghum market price, per bushel	4.55
Seeding rate, count	90,000	Seed, per 750,000 seed bag	90.00
Nitrogen rate, pounds N	90	Nitrogen, per pound N	0.60
Phosphorus rate, pounds P <sub>2</sub> O <sub>5</sub>	36	Phosphorus, per pound P <sub>2</sub> O <sub>5</sub>	0.62
Potassium rate, pounds K <sub>2</sub> O	25	Potassium, per pound K <sub>2</sub> O	0.41
Lime rate, tons	0.2	Lime, per ton	27.50
Sum of allocated labor, hours	0.81	Skilled labor, per hour	25.00
		Farm diesel, per gallon	4.00

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 2024, on a per acre basis.**

Machine activity (not custom fieldwork)	Labor (hours)	Fuel (gallons)	Operating costs <sup>1</sup> (dollars)	Ownership costs <sup>2</sup> (dollars)	Total costs (dollars)	Trips across field
Tandem disk (21 feet); 360 4WD	0.08	1.43	9.15	15.20	24.35	0.3
Row crop planter (16 row); 225 MFWD	0.08	0.78	7.82	17.10	24.92	1
Boom sprayer (90 feet); 130 MFWD	0.03	0.14	1.48	5.19	6.67	2
Combine, flexible grain head (25 feet); 275 HP	0.15	1.79	27.01	19.41	46.42	1
Grain auger (5,000 bushels per hour); 130 HP MFWD	0.03	0.19	1.81	1.36	3.17	
10-wheeler		1.5	7.56	1.98	9.54	
Semi, tractor and trailer		1.07	8.09	4.52	12.61	
Pickup truck		0.33	2.35	2.42	4.77	
<b>Total<sup>3</sup></b>	<b>0.37</b>	<b>7.23</b>	<b>60.35</b>	<b>61.73</b>	<b>122.08</b>	<b>4.3</b>

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

<sup>2</sup> Machinery ownership cost is the sum of machinery overhead and depreciation.

<sup>3</sup> 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.