

Industrial Hemp for Fiber Planning Budget

This guide presents information useful to farmers considering industrial hemp production for fiber in the 2021 crop year. Table 1 presents income and cost estimates for industrial hemp fiber production in Missouri based on prices in October 2020. Production and necessary inputs are poorly documented for Missouri. Information from Missouri and other states have been used to develop this budget. Farmers should understand production assumptions used in this budget may not describe their production activities. Assumptions are summarized in Tables 2 and 3. Assumed production is 40 acres. To account for the increased uncertainty in hemp production and marketing, a sensitivity analysis showing the impact on profit of various yields and market prices is included in Table 4.

Table 1. Missouri industrial hemp for fiber planning budget for 2021.

	Dollars per acre ¹	Your estimate
Income		
Hemp fiber bales	650.00	
Total income	650.00	
Operating costs		
Seed	175.00	
Fertilizer	58.30	
Machinery operating cost	16.69	
Custom hire and rental	154.90	
Registration and background check	20.00	
Sampling costs	5.63	
Operating interest	9.69	
Total operating costs	440.20	
Ownership costs		
Machinery ownership	47.21	
Real estate charge	150.00	
Total ownership costs	197.21	
Total costs	637.42	
Income over operating costs	209.80	
Income over total costs	12.58	

¹ Totals may not sum due to rounding.

Industrial hemp is more regulated than most other Missouri agricultural commodities. These budgets contain cost estimates for state registration, grower background checks and product sampling and testing costs. It is suggested that producers contact the Missouri Department of Agriculture Industrial Hemp Program to learn the latest regulations surrounding industrial hemp production.

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Table 2. Input assumptions used in Missouri industrial hemp for fiber planning budget for 2021.

Selected input quantities	Per acre	Selected input prices	Dollars per unit
Fiber yield, tons	5	Fiber price, per ton	130.00
Seeding rate, pounds	50	Seed, per pound	3.50
Nitrogen rate, pounds N	50	Nitrogen, per pound N	0.31
Phosphorus rate, pounds P ₂ O ₅	50	Phosphorus, per pound P ₂ O ₅	0.38
Potassium rate, pounds K ₂ O	40	Potassium, per pound K ₂ O	0.28
Lime rate, tons	0.6	Lime, per ton	21.00
Fuel for machinery and drying, gallons	3.22	Fuel, per gallon	2.38
Labor, hours	0.58	Labor, per hour	15.50

Table 3. Machinery used in Missouri industrial hemp for fiber planning budget for 2021, 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	2.72	7.30	10.02	1
Tandem disk, fold (21 feet), 160 MFWD	0.16	1.48	6.06	19.92	25.98	2
Presswheel drill (16 feet), 105 MFWD	0.15	0.61	3.74	10.05	13.79	1
Sickle mower, 75 HP tractor	0.12	0.35	2.66	6.90	9.56	1
Hay rake (30 feet), 40 HP tractor	0.08	0.13	1.50	3.05	4.55	2
Dry fertilizer application, custom charge					12.40	2
Large rectangular bales, custom charge					85.00	1
Moving large rectangular bales, custom charge					57.50	1
Total²	0.58	3.22	16.69	47.21	218.80	10

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.

Table 4. Sensitivity analysis: income over total costs per acre.

Market price (dollars per ton)	Fiber yield (tons per acre)				
	3	4	5	6	7
90	-\$367.42	-277.42	-187.42	-97.42	-7.42
110	-307.42	-197.42	-87.42	22.58	132.58
130	-247.42	-117.42	12.58	142.58	272.58
150	-187.42	-37.42	112.58	262.58	412.58
170	-127.42	42.58	212.58	482.58	552.58

Farmers can also develop their own cost and return estimates by using the Missouri Industrial Hemp Budget Generator (<https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/IndustrialHempBudget.xlsx>).



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