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Built on the Farm Machinery Economic Cost Estimation Spreadsheet (MACHDATA.XLSM) from:



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Custom Rate Parameters:

Skilled labor rate \$/hr = \$33.38 Unskilled labor rate \$/hr = \$22.49 Interest Rate = 4.04% Fuel price = \$3.03 Lubrication cost = 15.0% of fuel

Sources:

USDA Farm Labor Report: https://usda.library.cornell.edu/concern/publications/x920fw89s?locale=en
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Federal Reserve Economic Data: https://fred.stlouisfed.org/series/DGS10

AAA website for Michigan: https://gasprices.aaa.com/?state=MI
Added in to "power cost"

Total Cambina	Net Cost	Annual	Fuel & Oil	Maintenanc	Depreciatio	Overl	nead ³	Total Cost	Total Cost	Diesel
Tractor, Combine, or Forage Harvester HP ¹	of a New Power Unit ²	Hours of Use	Cost Per Hour	e & Repair Cost/Hr	n Cost Per Hour	Cost Per Year	Cost Per Hour	Per Year of Use	Per Hour of Use	Use Gal / Hr
Tractors, Combines, and Self-Prope	lled Forage	Harvesters	(Without H	eads)						
40 HP	\$33,000	400	\$6.13	\$1.11	\$2.89	\$1,392	\$3.48	\$5,444	\$13.61	1.76
60 HP	37,000	400	9.20	1.24	3.24	1,562	3.90	7,033	17.58	2.64
75 HP	65,000	400	11.50	2.30	5.27	2,723	6.81	10,351	25.88	3.30
105 HP MFWD	173,000	450	16.10	5.19	15.03	6,763	15.03	23,109	51.35	4.62
130 HP MFWD	239,000	450	19.93	7.17	20.77	9,299	20.67	30,842	68.54	5.72
160 HP MFWD	299,000	500	24.53	9.97	23.68	11,630	23.26	40,721	81.44	7.04
200 HP MFWD	387,000	500	30.66	12.90	30.65	15,006	30.01	52,114	104.23	8.80
225 HP MFWD	402,000	400	34.50	10.72	38.77	15,729	39.32	49,324	123.31	9.90
260 HP MFWD	480,000	400	39.86	7.68	46.29	18,734	46.83	56,269	140.67	11.44
310 HP 4WD	491,000	400	47.53	7.86	47.36	19,158	47.89	60,254	150.63	13.64
360 HP 4WD	451,000	400	55.19	7.22	43.50	17,617	44.04	59,980	149.95	15.84
425 HP 4WD	536,000	400	65.16	8.58	51.70	20,891	52.23	71,064	177.66	18.70
275 HP Combine	447,000	400	42.16	105.71	80.62	13,573	33.93	104,967	262.42	12.10
375 HP Combine	525,000	400	57.49	124.15	94.68	15,971	39.93	126,502	316.26	16.50
440 HP Combine	557,000	400	58.73	131.72	100.45	16,915	42.29	133,276	333.19	16.85
400 HP SP Forage Harvester Base Unit	524,000	350	33.45	73.19	18.13	24,401	69.72	68,073	194.50	9.60
625 HP SP Forage Harvester Base Unit	630,000	350	52.27	88.00	21.80	29,239	83.54	85,963	245.61	15.00

¹HP shown for the smaller tractors is PTO horsepower. Engine HP is shown for the larger tractors. PTO HP for the larger tractors runs about 87% of engine HP, and is shown in parentheses. Fuel use is estimated at 0.044 gallons of diesel fuel per hour per PTO HP.

²Net cost of a new unit assumes no trade-in. Farm machinery is exempt from sales tax in Michigan so no sales tax is included.

³Overhead costs include interest, insurance, and housing but not depreciation, which is shown separately because it varies to some extent with use. Overhead per hour will vary with annual use.

		Net Cost	Estin	nated	Power (Cost/Acre ² -			ement Cost/	Acre	Total
Implement	Tractor Size (HP)	of a New Implement ¹		erformed	ı		Labor Cost Per Acre	Repairs	Deprec-	Overhead ³	Cost Per Acre ⁴
			Acres/hr	Acres/yr	Fuel	Other					
Tillage											
Chisel Plow 23 Ft	200 HP MFWD	\$59,500	11.85	711	\$2.28	\$6.52	\$1.94	\$1.37	\$4.48	\$3.23	\$ 19.81
Chisel Plow 37 Ft	310 HP 4WD	\$87,000	19.06	1,144	\$2.37	\$5.53	\$1.20	\$1.25	\$4.07	\$2.94	\$ 17.36
Chisel Plow 57 Ft	425 HP 4WD	\$146,000	29.36	1,762	\$2.65	\$3.40	\$0.78	\$1.36	\$4.44	\$3.06	\$ 15.69
Chisel Plow, Front Dsk 16.3 Ft	200 HP MFWD	\$38,000	8.37	670	\$4.34	\$8.11	\$2.74	\$0.88	\$2.66	\$2.38	\$ 21.12
Chisel Plow, Front Dsk 21.3 Ft Fold	310 HP 4WD	\$59,500	10.95	876	\$3.66	\$10.10	\$2.10	\$1.06	\$3.19	\$2.71	\$ 22.81
Moldboard Plow 6 Bottom-18, 9 Ft	130 HP MFWD	\$33,500	4.17	501	\$4.41	\$12.02	\$5.50	\$3.46	\$3.58	\$2.56	\$ 31.53
Moldboard Plow 8 Bottom-18, 12 Ft	160 HP MFWD	\$44,500	5.56	668	\$4.78	\$9.86	\$4.12	\$3.45	\$3.57	\$2.52	\$ 28.30
Field Cultivator 23 Ft	105 HP MFWD	\$54,000	16.59	1,659	\$1.19	\$1.90	\$1.38	\$1.05	\$1.74	\$1.24	\$ 8.51
Field Cultivator 47 Ft	260 HP MFWD	\$111,000	33.90	3,390	\$0.99	\$3.16	\$0.68	\$1.06	\$1.75	\$1.24	\$ 8.88
Field Cultivator 60 Ft	310 HP 4WD	\$139,000	43.27	4,327	\$1.06	\$2.42	\$0.53	\$1.04	\$1.72	\$1.20	\$ 7.97
Tandem Disk 21 Ft Fold	160 HP MFWD	\$89,000	12.22	1,222	\$3.16	\$3.50	\$1.88	\$2.44	\$3.90	\$2.72	\$ 17.60
Tandem Disk 30 Ft Fold	360 HP 4WD	\$129,000	17.45	1,745	\$2.01	\$6.58	\$1.31	\$2.47	\$3.96	\$2.71	\$ 19.04
V-Ripper 25 "O.C., 10 Ft	160 HP MFWD	\$22,550	6.18	618	\$3.79	\$9.38	\$3.71	\$1.18	\$1.95	\$1.49	\$ 21.51
V-Ripper 30 "O.C., 17 Ft	260 HP MFWD	\$29,150	10.51	1,051	\$3.97	\$9.42	\$2.18	\$0.90	\$1.49	\$1.18	\$ 19.13
Planting											
Row Crop Planter 6 Row-30, 15 Ft	60 HP	\$47,500	7.00	490	\$1.50	\$1.01	\$5.53	\$1.99	\$3.33	\$4.24	\$ 17.60
Row Crop Planter 8 Row-30, 20 Ft	75 HP	\$59,000	9.33	653	\$1.58	\$1.19	\$4.15	\$1.86	\$3.10	\$3.88	\$ 15.75
Row Crop Planter 12 Row-30, 30 Ft	105 HP MFWD	\$136,000	14.00	980	\$1.66	\$2.00	\$2.77	\$2.85	\$4.76	\$5.80	\$ 19.85
Row Crop Planter 16 Row-30, 40 Ft	200 HP MFWD	\$200,000	18.67	1,307	\$1.17	\$4.41	\$2.07	\$3.14	\$5.25	\$6.29	\$ 22.35
Row Crop Planter 24 Row-30, 60 Ft	310 HP 4WD	\$324,000	28.00	1,960	-\$1.70	\$7.08	\$1.38	\$3.40	\$5.67	\$6.71	\$ 22.54
Presswheel Drill 16 Ft	105 HP MFWD	\$29,500	6.79	509	\$1.89	\$5.67	\$5.46	\$1.38	\$3.69	\$2.13	\$ 20.21
Presswheel Drill 20 Ft	130 HP MFWD	\$35,000	8.48	636	\$1.91	\$6.16	\$4.37	\$1.31	\$3.50	\$2.03	\$ 19.28
Presswheel Drill 25 Ft	130 HP MFWD	\$63,000	10.61	795	\$2.38	\$4.08	\$3.49	\$1.88	\$5.04	\$2.80	\$ 19.67

		Net Cost		nated	Power (Cost/Acre ² -			ement Cost/	Acre		Total
Implement	Tractor Size (HP)	of a New	Work Po	erformed	-Power (Jost/Acre -	Labor Cost Per Acre	Repairs	Deprec-	Overhead ³		Cost
		Implement ¹	Acres/hr	Acres/yr	Fuel	Other		Repairs	iation	Overnead	Pe	r Acre⁴
Presswheel Drill 30 Ft	160 HP MFWD	\$79,500	12.73	1,018	\$2.34	\$4.06	\$2.91	\$2.12	\$4.97	\$2.71	\$	19.11
Air Seeder Drill w/Cart 52 Ft	260 HP MFWD	\$342,000	22.06	1,765	\$1.81	\$4.57	\$1.68	\$5.27	\$12.33	\$6.31	\$	31.96
No-Till Drill 15 Ft	130 HP MFWD	\$79,000	6.36	509	\$3.13	\$7.64	\$5.82	\$4.22	\$9.87	\$5.24	\$	35.92
Weed Control												
Row Cultivator 12 Row-30, 30 Ft	160 HP MFWD	\$48,000	15.45	1,545	\$1.59	\$3.68	\$1.51	\$0.73	\$1.66	\$1.16	\$	10.34
Boom Sprayer, Self-Propelled 120 Ft	None	\$673,000	66.18	6,618	\$0.24	\$0.00	\$0.63	\$1.19	\$3.49	\$4.06	\$	9.62
Boom Sprayer, Pull-Type 90 Ft	130 HP MFWD	\$54,500	46.09	1,152	\$0.43	\$1.05	\$0.91	\$0.38	\$1.62	\$2.21	\$	6.60
Harvest												
Rotary Mower/Conditioner 12 Ft	75 HP	\$47,500	8.73	698	\$1.32	\$1.65	\$2.71	\$0.93	\$2.91	\$2.68	\$	12.20
Hay Rake 30 Ft	40 HP	\$31,000	26.18	2,095	\$0.23	\$0.29	\$0.88	\$0.22	\$0.80	\$0.62	\$	3.04
Hay Merger 14 Ft	75 HP	\$74,000	10.86	2,172	\$0.93	\$1.45	\$2.11	\$1.83	\$1.84	\$1.32	\$	9.49
Hay Merger 34 Ft	160 HP MFWD	\$295,000	26.38	5,275	\$1.06	\$2.03	\$0.87	\$1.79	\$2.39	\$2.15	\$	10.30
Hay Baler PTO Twine 12 Ft	40 HP	\$37,000	4.36	873	\$1.41	\$1.71	\$8.49	\$4.28	\$2.29	\$1.66	\$	19.84
Round Baler w/Bale Wrap 5x6 , 20 Ft	75 HP	\$114,000	9.45	1,891	\$1.22	\$1.52	\$2.43	\$10.36	\$3.26	\$2.10	\$	20.88
Large Rectangular Baler 3x3 , 20 Ft	130 HP MFWD	\$155,000	11.64	2,909	\$1.71	\$4.18	\$3.18	\$3.56	\$2.88	\$1.91	\$	17.43
Large Rectangular Baler 4x3 , 20 Ft	130 HP MFWD	\$192,000	11.64	2,909	\$1.71	\$4.18	\$3.18	\$4.42	\$3.57	\$2.35	\$	19.41
Forage Harvester, Pull-Type w/Corn Head 3 Row, 7.5 Ft	160 HP MFWD	\$96,500	2.07	414	\$11.86	\$27.52	\$17.92	\$13.15	\$2.83	\$10.98	\$	84.24
Forage Harvester, Pull-Type w/Pickup Head 12 Ft	105 HP MFWD	\$84,500	3.31	662	\$4.86	\$10.65	\$11.20	\$7.20	\$1.55	\$6.03	\$	41.49
Forage Harvester, Self-Prop Corn Head 6 Row, 15 Ft	625 HP SP Forage Harvester Base Unit	\$107,000	5.09	1,018	\$7.70	\$40.54	\$7.28	\$1.68	\$1.27	\$5.08		\$63.56
Forage Harvester, Self-Prop Corn Head 8 Row, 20 Ft	625 HP SP Forage Harvester Base Unit	\$141,000	6.79	1,358	\$10.27	\$25.92	\$5.46	\$1.66	\$1.26	\$4.95		\$49.52
Forage Harvester, Self-Prop Pickup Head 12 Ft	400 HP SP Forage Harvester Base Unit	\$35,000	4.07	815	\$8.21	\$39.54	\$9.10	\$0.69	\$0.52	\$2.32		\$60.38

		Net Cost	Estin	nated	Dower (Cost/Acre ² -		Imple	ement Cost/	Acre	Total
Implement	Tractor Size (HP)	of a New	Work Pe	erformed	-Power (Jost/Acre -	Labor Cost Per Acre	Repairs	Deprec-	Overhead ³	Cost
		Implement ¹	Acres/hr	Acres/yr	Fuel	Other		Repairs	iation	Overnead	Per Acre⁴
Forage Harvester, Self-Prop Pickup Head (2X windrows) 24 Ft	625 HP SP Forage Harvester Base Unit	\$35,000	8.15	1,629	\$6.42	\$23.74	\$4.55	\$0.34	\$0.26	\$1.16	\$36.46
Combine Platform 20 Ft	275 HP Combine	\$36,000	5.94	1,188	\$7.10	\$37.08	\$6.24	\$0.79	\$2.09	\$1.01	\$54.31
Combine Platform 25 Ft	375 HP Combine	\$43,500	7.42	1,485	\$6.45	\$36.14	\$4.99	\$0.77	\$2.02	\$0.96	\$51.33
Combine Platform 30 Ft	375 HP Combine	\$51,000	8.91	1,782	\$7.74	\$27.75	\$4.16	\$0.75	\$1.97	\$0.93	\$43.31
Combine Corn Hd 6 Row-30, 15 Ft	275 HP Combine	\$66,000	5.09	1,018	\$5.64	\$45.91	\$7.28	\$1.70	\$4.46	\$2.08	\$67.07
Combine Corn Hd 8 Row-30, 20 Ft	275 HP Combine	\$85,500	6.79	1,358	\$7.71	\$30.95	\$5.46	\$1.65	\$4.34	\$2.03	\$52.13
Combine Chopping Corn Hd 8 Row-30, 20 Ft	275 HP Combine	\$115,000	6.79	1,358	\$7.02	\$31.64	\$5.46	\$7.65	\$3.59	\$3.29	\$58.65
Combine Corn Hd 12 Row-30, 30 Ft	375 HP Combine	\$131,000	10.18	2,036	\$8.27	\$22.79	\$3.64	\$1.69	\$4.43	\$2.03	\$42.84
Combine Corn Hd 12 Row-22, 22 Ft	375 HP Combine	\$129,000	7.47	1,493	\$6.22	\$36.14	\$4.96	\$2.26	\$5.95	\$2.73	\$58.26
Combine Chopping Corn Hd 12 Row- 30, 30 Ft	440 HP Combine	\$174,000	10.18	2,036	\$7.46	\$25.26	\$3.64	\$7.72	\$3.62	\$3.28	\$50.98
Combine Chopping Corn Hd 12 Row- 22, 22 Ft	440 HP Combine	\$170,000	7.47	1,493	\$5.36	\$39.26	\$4.96	\$10.29	\$4.82	\$4.37	\$69.07
Combine Belt Pickup Hd 23 Ft	275 HP Combine	\$56,000	7.81	832	\$5.40	\$28.22	\$4.75	\$0.47	\$4.48	\$2.18	\$45.49
Grain Cart 30 Ft	225 HP MFWD	\$152,000	6.87	1,375	\$5.02	\$12.92	\$3.63	\$6.07	\$5.98	\$3.80	\$37.42
Sugar Beet Harvester, Self-Propelled 15 Ft	None	\$880,000	7.73	773	\$17.42	\$0.00	\$5.40	\$78.85	\$53.41	\$41.98	\$197.07
Sugar Beet Harvester, Pull-Type 15 Ft	310 HP 4WD	\$247,500	4.73	378	\$10.05	\$21.81	\$8.83	\$33.90	\$30.69	\$24.71	\$130.00
Stalk Shredder 20 Ft	130 HP MFWD	\$40,500	7.76	776	\$2.57	\$6.27	\$3.19	\$1.75	\$2.45	\$2.18	\$18.40

¹Net cost of a new unit assumes no trade-in. Farm machinery is exempt from sales tax in Michigan so no sales tax is included.

²Power cost per acre for the power unit assigned to each implement multiplied times that implement's acres/hour equals that power unit's total cost per hour shown in the "Tractors, Combines, and Self-Propelled Forage Harvesters (Without Heads)" table above.

³Overhead per acre will vary with annual use.

⁴Total cost/acre is total cost per hour divided by acres per hour. Includes fuel, lubricants, power and equipment repairs and maintenance, labor, and overhead costs including depreciation. Fuel is included in power cost.



(D) Total Tractor

Ownership Costs

Calculating Custom Rates

If you are hiring or doing custom work, the following will help you determine the appropriate custom rate. Custom rates are based on (1) tradition or usual rates set in the community, (2) bargaining position of both parties (i.e., availability of machinery services and demand for machinery services in your local area), and (3) costs of owning and operating the machine on your farm. Cost for ownership and operation can be determined as follows:

Tractor Ownership Costs

		original cost - value at final sale	
	Depreciation	years of use	\$ per year
	Interest	interest rate * current value	\$ per year
	Repairs	estimated 2%-5% of original cost	\$ per year
	Taxes	No personal property tax in Michigan	\$ per year
	Insurance	estimated 0.5% * current value	\$ per year
(A)	Total Annual Tractor	Ownership Costs	\$ per year
(B)	Total tractor hours		 hours
(C)	Units per tractor hou	r	 acres per hour

 $A \div (B \div C)$

per acre

Calculating Custom Rates (p. 2)

Implement Ownership Costs

Depreciation	original cost - value at final sale years of use	\$ per year
Interest	interest rate * current value	\$ per year
Repairs	estimated 2%-5% of original cost	\$ per year
Taxes	No personal property tax in Michigan	\$ per year
Insurance	estimated 0.5% * current value	\$ per year

per year

(F) Total units

acres

(G) Total Implement Ownership Costs

__<u>E__</u> F \$ _____per acre

Calculating Custom Rates (p. 3)

Operating Costs

Labor	hours per unit * wage rate	\$ per acre
(н) Total Operating Co	sts	\$ per acre