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MACHINERY COST ESTIMATES: SUMMARY

September 2023

More details on costs in this publication are given in four publications available in the management section of *farmdoc* (www.farmdoc.uiuc.edu) within the machinery cost section.

Table 1. List Prices and Estimated Costs Per Hour for Tractors of Different Sizes.

Tractor ¹	List Price ²	----- Costs -----			Fuel Use
		Total	= Overhead	+ Fuel + Labor	Per Hour
	\$/tractor	----- \$ per hour -----			gal.
85 PTO Hp Tractor	196,739	96.30	58.90	14.30 23.10	3.7
95 PTO Hp Tractor	205,451	100.60	61.50	16.00 23.10	4.2
110 PTO Hp Tractor	250,231	116.60	75.00	18.50 23.10	4.8
120 PTO Hp Tractor	257,854	120.50	77.20	20.20 23.10	5.2
140 PTO Hp Tractor	282,644	131.40	84.70	23.60 23.10	6.1
155 PTO Hp Tractor	297,566	138.30	89.10	26.10 23.10	6.8
175 PTO Hp Tractor	312,432	146.20	93.60	29.50 23.10	7.7
205 PTO Hp Tractor	386,456	173.50	115.80	34.60 23.10	9.0
225 PTO Hp Tractor	401,654	181.30	120.30	37.90 23.10	9.8
240 PTO Hp Tractor	416,853	188.50	124.90	40.50 23.10	10.5
260 PTO Hp Tractor	528,259	225.20	158.30	43.80 23.10	11.4
285 PTO Hp Tractor	548,201	235.40	164.20	48.10 23.10	12.5
310 PTO Hp Tractor	579,945	249.10	173.70	52.30 23.10	13.6
390 Engine Hp Tractor	520,995	245.00	156.10	65.80 23.10	17.1
440 Engine Hp Tractor	559,017	264.80	167.50	74.20 23.10	19.3
490 Engine Hp Tractor	602,796	286.30	180.60	82.60 23.10	21.5
590 Engine Hp Tractor	675,931	325.10	202.50	99.50 23.10	25.8
640 Engine Hp Tractor	726,306	348.60	217.60	107.90 23.10	28.0

¹ List price includes either MFWD or 4WD for all tractors.

² List prices for 2023. Purchase price is assumed to be 85% of the list price.

³ Sum of overhead, fuel, and labor costs.

⁴ Includes depreciation, interest, insurance, housing, and repair costs. These per hour charges are appropriate for calculating rental costs when the person renting the tractor provides fuel and labor.

⁵ Fuel costs are based on a price of \$3.50 per gallon for diesel fuel. Fuel costs vary depending on fuel use. Use varies with load on the tractor.

⁶ Labor costs are based on a \$21.00 per hour labor charge. Labor time is assumed to be ten percent higher than tractor hours.

Table 2. Per Acre Field Operation Costs.

Operation	Total =	Tractor Overhead +	Implement Overhead +	Fuel & Lube +	Labor	Fuel Use
Primary tillage	----- \$ per acre -----					gal
Chisel plow	18.40	8.30	6.50	2.50	1.10	0.6
Disk ripper (disk, chisel, rolling bk)	36.40	11.80	15.00	7.80	1.80	2.0
Combination ripper	38.00	12.40	15.70	8.10	1.80	2.1
Vertical tillage, rolling basket	17.60	6.00	9.00	1.80	0.80	0.5
Moldboard plow	53.00	24.50	16.30	7.30	4.90	1.9
Mulch tiller (disk, chisel)	29.00	14.30	7.60	4.30	2.80	1.1
Offset disk	25.30	12.10	7.20	3.60	2.40	0.9
Strip tillage (strips only)	25.90	6.70	14.60	3.60	1.00	0.9
Minimum till ripper	33.70	17.80	4.80	8.50	2.60	2.2
Secondary tillage						
Field cultivator	14.60	4.90	6.90	2.10	0.70	0.5
Mulch finisher (disk, chisel, drag)	22.00	7.60	11.10	2.30	1.00	0.6
Tandem disk	17.80	6.20	8.50	2.00	1.10	0.5
High performance disk	18.20	5.20	8.30	3.90	0.80	1.0
Planting						
Broadcast seeding	6.50	3.70	0.50	0.90	1.40	0.2
Conventional planter	21.40	5.70	12.90	1.70	1.10	0.4
Split-row planter ¹	18.70	5.90	9.80	1.90	1.10	0.5
No-till planter	23.30	5.90	14.40	1.90	1.10	0.5
Grain drill	20.20	7.30	8.90	2.00	2.00	0.5
No-till drill	36.00	12.10	17.20	3.40	3.30	0.9
Air disk drill with commodity cart	33.80	7.80	22.70	2.30	1.00	0.6
Crop care						
Rotary hoe	8.00	2.80	3.60	0.80	0.80	0.2
Row cultivating	19.20	6.60	9.20	2.10	1.30	0.5
Spraying and ammonia application						
Self-propelled	5.80		5.50	0.10	0.20	0.0
Pull-type	5.80	1.20	3.80	0.30	0.50	0.1
Anhydrous ammonia	21.10	7.10	10.90	2.10	1.00	0.5
Liquid fertilizer applicator	9.70	3.70	4.20	1.10	0.70	0.3
Mowing²	34.40	14.60	11.70	4.10	4.00	1.1

¹ Cost applies to soybean acres only.

² Mowing costs are \$200.10 per hour

Table 3. Summary of Harvesting Costs.

Combining¹	
Corn	\$50.70 per acre
Soybean	\$44.00 per acre
Grain Cart²	
Corn	\$20.00 per acre
Soybean	\$11.00 per acre
Grain Hauling³	\$0.14 per bu.

¹ Based on a 470 HP combine used on 2,500 acres.

² Based on a \$87,700 grain cart used on 1,900 acres.

³ Hauling costs from field to storage will vary depending on distance to storage, unloading time, and other factors.

Table 4. Costs of Forage Operations.

Operation	Total	Tractor Overhead	Implement Overhead	Fuel & Lube	Labor
----- \$ per acre -----					
Cutting and conditioning hay					
Sickle bar mower	34.00	17.50	4.90	4.80	6.80
Rotary mower	22.00	9.20	6.70	2.50	3.60
Pull-type mower/conditioner	26.20	10.40	8.90	4.10	2.80
Self-propelled mower/conditioner	35.30	--	28.10	5.10	2.10
Rake (side delivery)	13.70	5.20	5.10	1.40	2.00
Rake (wheeled)	9.60	4.70	1.80	1.30	1.80
Tedder	12.50	5.70	2.90	1.60	2.30
Baling hay					
Small square baler	43.70	18.80	10.90	6.90	7.10
1,000 lb. square baler	37.60	10.20	20.60	4.20	2.60
Round baler	39.70	17.30	9.60	6.30	6.50
Forage harvesting as silage					
Pull-type forage harvester					
First cut hay	48.20	20.80	13.20	10.20	4.00
Remaining cuts	39.40	17.00	10.80	8.40	3.20
Corn silage	148.20	63.00	42.10	31.00	12.10
Self-propelled forage harvester					
First cut hay	40.60	--	20.40	17.30	2.90
Remaining cuts	33.10	--	16.70	14.10	2.30
Corn silage	173.90	--	146.10	23.90	3.90

From *Machinery Cost Estimates: Field Operations* and *Machinery Cost Estimates: Forage Field Operations* available on *farmdoc* (www.farmdoc.illinois.edu).

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