



## 2014 Custom Machine and Work Rate Estimates

FIRM Team Fact Sheet Number 13-06

Available at <http://www.firm.msue.msu.edu>

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<b>LABOR:</b>							
Farm Labor Unskilled <sup>7</sup> = \$ 13.17 per hour				\$3.60 per gallon of fuel			
Farm Labor Skilled <sup>7</sup> = \$ 16.08 per hour				\$3.96 per gallon lube & fuel cost			
<b>TRACTORS ONLY:</b>							
		max.	min.	Custom \$/Acre <sup>1</sup>	Machine Cost \$/Hour	Est. Fuel Gal. / Hour	Est. Fuel Cost per Hour
<b>No Driver or fuel costs</b>							
	MFWD - +260 hp.	\$ 143.00	\$ 143.00	\$143.00	\$111.17	9.95	\$39.40
	MFWD - 200 hp.	\$ 125.00	\$ 55.47	\$86.44	\$77.13	7.04	\$27.88
	MFWD - 130 hp.	\$ 80.60	\$ 42.60	\$63.57	\$51.25	5.72	\$22.65
Est. Tractor Cost \$0.27/hp/hr.	2- WD - 75 hp.	\$ 56.88	\$ 20.25	\$36.13	\$23.30	3.3	\$13.07
Est. Fuel use .044 gal. diesel/PTO hp / hour	2- WD - 40 hp.			\$25.00	\$11.66	1.76	\$6.97
Auto Steer systems charge per acre				\$2.29			
<b>TILLAGE OPERATIONS:</b>							
	Custom \$/Acre <sup>1</sup>	max.	min.	Total Machine Cost/ Ac <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>	Est. Fuel Gal./Acre <sup>6</sup>
Plowing: Moldboard (6 bottom)	\$18.69	\$ 21.34	\$ 14.67	\$23.38	\$97.49	4.17	1.32
Chisel Plow (23 ft.)	\$16.65	\$ 20.50	\$ 11.65	\$11.14	\$145.15	13.03	0.60
Chisel – front disk (16.3 ft.)	\$16.68			\$13.87	\$127.74	9.21	0.97
Vertical tillage	\$19.25	\$ 22.45	\$ 15.48				
Disk-V.Ripper combo (17.5 ft)	\$20.53	\$ 21.00	\$ 19.50	\$21.60	\$194.83	9.02	1.47
Subsoiler 30" - 10ft (12-15")	\$18.98	\$ 21.67	\$ 15.56				
Discing - tandem (21 ft)	\$14.42	\$ 20.40	\$ 9.96	\$10.67	\$130.39	12.22	0.58
Field Cultivator (23 ft.) + incorp.	\$13.34	\$ 13.35	\$ 12.69	\$11.75	\$194.93	16.59	0.38
Field Cultivator (23 ft.)	\$12.45			\$6.46	\$107.17	16.59	0.32
Harrow	\$11.04	\$ 17.00	\$ 7.43				
Soil Finisher	\$15.99	\$ 18.44	\$ 13.85				
Strip tillage	\$18.71						
Row Cultivate (12 rows)	\$12.84	\$ 14.50	\$ 9.56	\$7.39	\$114.18	15.45	0.46
Row Cultivate-high residue (12rows)	\$15.58						
Stalk Shredder (20 ft.)	\$14.38	\$ 16.88	\$ 11.40	\$13.13	\$101.89	7.76	0.74
Rotary Hoe (21 ft.)	\$8.81	\$ 9.15	\$ 8.14	\$2.62	\$68.02	25.96	0.18
Land Rolling	\$8.10						
Highboy spraying	\$7.69						
Boom Sprayer-self-Prop.80ft.	\$7.85	\$ 11.20	\$ 5.56	\$6.58	\$290.31	44.12	0.14
Boom Sprayer-pull type 50ft.	\$6.69			\$3.70	\$94.76	25.61	0.10
Spraying- road ditches/ hr	62.83/hr						
<b>PLANTING:</b>							
	Custom \$/Acre <sup>1</sup>	max.	min.	Total Machine Cost/ Ac <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>	Est. Fuel Gal./Acre <sup>6</sup>
Planter- conventional (12row) w/fert 30" corn-soys	\$18.84	\$ 21.77	\$ 14.29	\$11.92	\$166.88	14.00	0.32
Planter- soybean 15" rows	\$17.37	\$ 21.11	\$ 14.62				
Planter- No Till w/fert (12 row)	\$20.33	\$ 22.56	\$ 17.54				
Planter- Min Till (12 row)	\$19.78	\$ 21.60	\$ 17.00	\$15.12	\$192.48	12.73	0.53
GPS mapping addition to planting	\$2.51						
Variable rate seeding	\$2.51						
Air Seeder Drill w/cart 52ft	\$18.14			\$18.50	\$408.11	22.06	0.45
Drill Soybeans Conventional	\$17.43	\$ 19.90	\$ 15.75				
Drill-AirSeeder with cart	\$19.58						
Drill- No Till (15 ft.)	\$18.60	\$ 22.07	\$ 16.01	\$24.29	\$154.48	6.36	0.81
Drill- No Till - drill only no tractor	\$12.25						

<b>PLANTING:</b>	Custom \$/Acre <sup>1</sup>	max.	min.	Total Machine Cost/ Ac <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>	Est. Fuel Gal./Acre <sup>6</sup>
Drill press wheels - (20 ft)	\$16.26	\$ 20.90	\$ 12.46	\$12.81	\$108.63	8.48	0.61
Grain drill- only-no tractor	\$10.17						
Seed Tender	\$3.13						
Pest Control- scouting	\$5.00						
<b>SUGAR BEETS:</b>	Custom \$/Acre <sup>1</sup>	max.	min.	Total Machine Cost/ Ac <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>	Est. Fuel Gal./Acre <sup>6</sup>
Sugar Beets - Planting (12 row)	\$28.25				\$0.00	4.67	0.99
Sugar Beet Cultivation	\$14.91				\$0.00	5.60	0.81
Sugar Beet Topper (8 rows)	\$15.63				\$0.00	7.13	0.56
Sugar Beet Harvester (6 rows)	\$97.38				\$0.00	3.03	2.22
Sugar Beet Cart ( 20 ton)	\$35.88				\$0.00	5.20	1.80
<b>HARVESTING:</b>	Custom \$/Acre <sup>1</sup>	max.	min.	Total Machine Cost/ Ac <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>	Est. Fuel Gal./Acre <sup>6</sup>
Combine - (Corn -8 row head)	\$31.15	\$ 32.90	\$ 26.36	\$43.53	\$295.57	6.79	2.35
Combine - stalk chopper head	\$33.18	\$ 38.00	\$ 26.41				
Combine Small grains (20 ft head)	\$28.95	\$ 32.10	\$ 22.00	\$0.00	\$0.00	6.79	1.49
Combine Soybeans (25 ft. head)	\$30.72			\$0.00	\$0.00	7.42	1.95
Combine Soybeans- air reel- flex	\$38.21	\$ 39.55	\$ 35.00				
Combine, cart, haul to storage - Corn	\$42.87	\$ 46.15	\$ 37.50				
Combine, cart, haul to storage - Soybeans	\$36.99	\$ 43.80	\$ 29.45				
GPS mapping addition to harvesting	\$2.51						
Picker 2 row- Ear Corn + 3 wagons	\$28.24						
Combine Field Beans (belt pickup)	\$33.75			\$33.90	\$226.79	6.69	1.81
Pulling Dry Beans (knife 6 row)	\$9.50			\$0.00	\$0.00	8.73	0.66
Pulling Dry Beans (rod 6 row)	\$8.50			\$0.00	\$0.00	8.73	0.66
Dry Bean – windrowing (6 row)	\$9.50			\$21.34	\$186.30	8.73	0.66
Grain Cart- corn / acre	\$6.30	\$ 6.80	\$ 5.50	\$0.00	\$0.00	6.87	1.44
Chopping Forage - Pull type (2 Row corn head) / ton	\$6.12/ ton	\$ 6.50	\$ 5.45	\$60.27	\$83.17	1.38	3.35
Chopping Forage - Pull type Pickup head-10ft/hr.	\$9.45/ ton			\$25.00	\$101.75	4.07	1.40
Chopping Forage-Self-propelled (6 row corn head)	\$247/ hr.			\$47.61	\$65.70	1.38	2.35
Silo Filling-Tower silo: 1 Tractor, 1Chopper & Driver, Wagons	\$9.53/ ton	\$ 13.62	\$ 7.90				
Bunker: Chopper and forage wagons or trucks & packer	\$13/ ton						
Haylage	\$9.50/ ton						
Silage Bagging per ft. (9 ft diameter)	\$8.54/ ton	\$ 10.15	\$ 4.85				
Mowing	\$15.14	\$ 20.33	\$ 11.45				
Raking – Hay 9ft.	\$8.00	\$ 13.85	\$ 4.19	\$6.04	\$21.08	3.49	0.50
Tedding	\$6.27						
Windrowing - hay or straw	\$12.30	\$ 12.50	\$ 11.50				
Mower-Conditioner Pull-type (9 ft.)	\$15.55	\$ 19.35	\$ 12.62	\$13.50	\$59.27	4.39	0.40
Mower-Conditioner- Self Propelled (16ft)	\$16.13	\$ 19.35	\$ 13.00	\$0.00	\$0.00	7.76	0.64
Mower - Conditioner- Rotary (12ft)	\$14.99	\$ 15.75	\$ 13.49	\$9.28	\$72.01	7.76	0.38
Small Square Baling Hay	\$0.82 per bale	\$ 0.97	\$ 0.60	\$13.95	\$48.83	3.50	0.40
Straw	\$0.75 per bale	\$ 0.85	\$ 0.55				
Mow, Rake, Baler & Handle - small square	\$1.77 per bale	\$ 2.00	\$ 1.45				
Baler, Rake & Handle: Lrg Round	\$20.50/bale						
Complete Hay harvesting per ton	\$34.44						
Baling Round- 600-800 # per bale	\$9.00 per bale	\$ 10.00	\$ 7.70				
Baling Round -1200 -1500 #	\$11.23 per bale						
Baler 1000# Round/ with wrapper	\$11.97 per bale	\$ 12.36	\$ 11.00	\$9.18	\$27.63	3.01	0.35
Mow-Rake-Bale-fld Haul- Lrg. Round/bale	\$19.76 per bale	\$ 20.05	\$ 18.50				
Baling -1500 #- Lrg. Round - stalks/straw	\$12.47 per bale	\$ 14.00	\$ 11.00				
Baling -1500 #- Lrg. Round stalks / straw - with wrap	\$13.82 per bale	\$ 15.45	\$ 12.00	\$13.00	\$39.52	3.04	0.49
Baling – Lrg Sqr. Hay 4x3x6	\$10.58 per bale	\$ 12.17	\$ 8.35	\$12.96	\$150.85	11.64	0.49
Baling – Lrg Sqr. Hay 4x3x8	\$13.98 per bale	\$ 14.02	\$ 13.25				

FERTILIZER:	Custom \$/Acre <sup>1</sup>	max.	min.	Total Machine Cost/ Ac <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>	Est. Fuel Gal./Acre <sup>6</sup>
Fertilizer Dry Bulk: Spreading	\$6.99	\$ 10.70	\$ 4.95				
Lime application	\$9.29	\$ 12.90	\$ 6.30				
Fertilizer- Liquid-Knifed In	\$11.18	\$ 12.30	\$ 8.94				
Liquid-Sprayed:	\$7.60	\$ 11.30	\$ 5.37				
Fertilizer- Anhydrous: 21 ft.	\$12.10	\$ 12.40	\$ 10.99				
Manure Hauling-semi-solid - Load&Spread / hr.	87.59 per hr	\$ 126.00	\$ 54.20	\$38.66	\$77.32	2.00	2.31
Liquid Manure Haul - Injected Spreader- 1000 gal.	11.22 per 1000 gal.	\$ 11.90	\$ 10.00	\$11.35	\$5.68	0.50	2.86
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.) per hour	\$92 / hour						
Manure Pump, Hauling, Injecting 1000 gal. - liquid (9500 gallon cap.)	\$12.50 per 1000 gal.						
Bobcat/Skid Loader / hr.	\$75.85 per hr.	\$ 76.00	\$ 72.00				
Ditch Mowing	\$59.81 per hour						
Brush Hogging	\$22.05	\$ 28.60	\$ 14.46				
Grain Drying- continuous flow / point / bu.	\$0.04/pt./bu.	\$ 0.05	\$ 0.03				
Grain Drying- in bin dryer / point / bu.	\$0.06/pt./bu.	\$ 0.07	\$ 0.04				
Grain Auger / bu.	\$0.07 per bu.						
Grain Storage / mo.	\$0.05/bu./mo.	\$ 0.06	\$ 0.03				
Grain Storage for season	\$ 0.21 per bu.						
Grain Haul - per bu.- field to farmstead	\$0.09/ up to 10 miles			.16/25mi			
Grain Haul - per bu.- farm to market - 25mi	\$0.17/ up to 25 miles	\$ 0.18	\$ 0.16				
Power Washing per hr.	42.38						
Rock picking	\$13.79						
Custom Farming- Corn	\$115.44	\$ 126.65	\$ 95.00				(all machine operations for growing & harvest)
Custom Farming- Soybeans	\$97.18	\$ 112.40	\$ 80.00				(all machine operations for growing & harvest)
Custom Farming- Small Grains	\$85.00	\$ 89.50	\$ 76.67				(all machine operations for growing & harvest)

Fuel cost is calculated by adding fuel, oil and lube calculated by adding 10% to the power fuel cost.

\$3.60 Fuel Price : **\$3.960** \*\* base fuel & lube price used

1 **Custom \$ per acre:** Represents the rate obtained from surveys of actual farm data surveys for 2012 & 2013 from Universities listed below to do this type of machine work for another farm on a general basis. Higher or lower rates apply in each situation depending on crop conditions, soil conditions, size of fields and there locations. This numbers includes machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above. Rate adjusted 2.5% above 2013 values.

3 **Total Machine Cost/Acre:** Includes tractor, fuel cost<sup>7</sup>, lubricants, repairs, maintenance, labor and overhead costs including depreciation. This could be considered as an estimate of the ownership cost and operation of this machine on a per acre basis. No profit or return to management, which would be necessary for on going enterprises were included in this number. Values are based on "Farm Machinery Economic Cost Estimates for 2012, University of Minnesota

4 **Machine Rate per Hour:** This number takes the Total Machine Cost per Acre and factors in the estimated Acres per Hour to give a value that represents an estimate of the hourly operational and ownership cost of machinery supported by ©University of Minnesota, Machinery Economic cost estimates for 2012. If the machine is run at full capacity (or engine clock hours) this per acre rate should be in the custom work value generated.

5 **Acres/ Hour:** This is an estimate of the acres this machine should average on a per hour basis with normal down time.

6 **Gal./ Acre:** This is an estimated machine use of fuel consumed to do this activity and is based on a factor of 0.044 gallons of diesel fuel per PTO horsepower-hour on an average. Your individual machines fuel use may vary from this number.

7 **Labor cost :** Charged for this table at a rate of \$15.00 per hour for unskilled tasks and \$20.00 per hour for skilled labor (planter, sprayer, harvester). Costs were developed as an adjusted estimate of common rates being used by farms in this area to cover their cost of operation.

Major shifts in power fuel cost during the past few year has had an impact on and has changed the cost of machine operational cost.

As a thumb rule it is estimated that each \$1.00 increase in fuel cost, will increase most machine operations by an additional 15%.

- University of Minnesota: Machinery Economic cost estimates for 2013 © -- <http://faculty.apec.umn.edu/wlazarus/documents/machdata.pdf>
- Iowa State University: 2013 Iowa Farm Custom Rate Survey - Ag Decision Maker @ <http://www.extension.iastate.edu/agdm/crops/html/a3-10.html>
- Kansas State University: 2013 Projected Custom Rates for Kansas @ [http://www.agmanager.info/farmmgmt/machinery/Tools/KCD\\_CustomRates\(Sep2013\).pdf](http://www.agmanager.info/farmmgmt/machinery/Tools/KCD_CustomRates(Sep2013).pdf)
- Texas A&M University: 2011 Texas Agricultural Custom Rates @ <http://agecoext.tamu.edu/files/2013/08/2011TxCustomRates04-22-11.pdf>
- NASS- USDA & Pennsylvania Department of Ag: 2013 Machinery Custom Rates- Adam Pike, April 2013 [http://pss.uvm.edu/vtcrops/articles/PA\\_CustomRates\\_2013.p](http://pss.uvm.edu/vtcrops/articles/PA_CustomRates_2013.p)
- University of Kentucky: Custom Machinery Rates March 2013 @ <http://www2.ca.uky.edu/cmsspubclass/files/ghalich/CustomMachineryRatesKentucky2013.pdf>
- Purdue Extension: 2013 Indiana Farm Custom Rates 06-13 @ <http://www.extension.purdue.edu/extmedia/ec/ec-130-w.pdf>
- University of Illinois: Machinery Cost Estimates© 5-2012, Univ. of Illinois @ <http://farmdoc.illinois.edu/manage/machinery/summary%202012.pdf>
- University of Nebraska Lincoln: 2012 Nebraska Farm Custom Rates May2012 @ <http://ianrpubs.unl.edu/epublic/live/ec823/build/ec823.pdf>

\* This report is a summary of information extracted from various sources. Your actual cost may vary greatly from the numbers presented. It is recommended that you calculate your own cost and economic returns necessary for the operation of machinery and equipment on your individual farm.

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# HOW TO FIGURE YOUR MACHINE WORK RATES

If you are hiring or doing custom work, the following will help you determine the custom rate. Custom rates are based on tradition or usual rates set in the community, the bargaining positions of both parties (i.e., availability of machinery services and demand for machinery services in your local area) and cost of operating the machines on your farm.

Cost of ownership and operation can be determined as follows:

Ownership cost per unit (e.g., acre, bushel, ton, hour) using the DIRT 5:

1. Depreciation: $\frac{\text{original cost} - \text{salvage value}}{\text{years of use}}$		\$ _____
2. Interest: interest rat x AIV <sup>a</sup>		\$ _____
3. Repairs: estimated 2 to 5 % of original cost		\$ _____
4. Taxes: (0 in Michigan - i.e., no taxes on personal property used in agriculture)		\$ _____
5. Insurance: (estimated 0.5% x AIV for insurance premium)		\$ _____
6. Total ownership cost per year (add lines 1 thru 5)		\$ _____
A. Ownership cost per unit: total ownership cost ÷ estimated annual use (acre, hour, bushel, ton)	(A)	\$ _____
Operating Cost per (acre, hour, bushel, ton)		
1. Tractor: fuel (gallon fuel per unit x price/gallon) x 1.15 <sup>b</sup>		\$ _____
2. Machine: gas or fuel gallons per unit x 1.15 <sup>b</sup>		\$ _____
3. Labor: hours per unit x wage rate (if labor wage unit is per acre, bushel or ton multiply this wage by acres bushels or tons per hour to determine wage/hour)		\$ _____
B. Total operating cost per unit	(B)	\$ _____
C. Total ownership and <b>operating cost</b> per unit	(A+B)	\$ _____
D. Desired profit margin and / or risk premium		_____ %
E. Custom Rate (per acre, hour, bushel, ton)     Line C x [1+(Line D/100)]		\$ _____

a Average investment value (AIV) = (original cost basis - salvage value) ÷ 2.

b The addition of 15 percent above fuel cost is for oil & lube. maintenance.

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