



2015 Custom Machine and Work Rate Estimates

FIRM Team Fact Sheet Number 15-01
 Available at <http://www.firm.msue.msu.edu>
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2015 Production Season Costs

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Farm Labor Unskilled ⁷ = \$ per hour	\$12.70	\$2.95 per gallon of fuel
Farm Labor skilled ⁷ = \$ per hour	\$15.70	\$3.25 per gallon lube & fuel cost

TRACTORS ONLY:		max.	min.	Custom \$/Hour	Machine Cost \$/Hour	Est. Fuel Gal. / Hour	Est. Fuel Cost per Hour
No driver, or fuel cost	4WD - 260 hp.	\$ 144.00	\$ -	\$143.00	\$107.88	9.95	\$32.29
Ohio = 0.34/ hp hr	MFWD - 200 hp.	\$ 58.40	\$ 51.90	\$86.44	\$55.81	7.04	\$22.84
Iowa=\$0.28/ hp-hour (fuel not included)	MFWD - 130 hp.	\$ 38.10	\$ 34.57	\$63.57	\$36.70	5.72	\$18.56
Est. Tractor Cost \$0.27/hp/hr.	2- WD - 75 hp.	\$ 32.00	\$ 17.14	\$36.13	\$23.36	3.3	\$10.71
Est. Fuel use .044 gal. diesel/PTO hp / hour	2- WD - 40 hp.	\$ 25.00	\$ 14.50	\$25.00	\$14.65	1.76	\$5.71
Auto Steer systems charge per acre				\$2.29			

TILLAGE OPERATIONS:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Plowing: Moldboard (6 bottom)	\$18.63	\$ 25.00	\$ 13.00	\$23.51	\$98.04	4.17	1.32
Chisel Plow (23 ft.)	\$16.35	\$ 22.00	\$ 12.00	\$11.36	\$148.02	13.03	0.60
Chisel - front disk (16.3 ft.)	\$17.95	\$ 25.00	\$ 17.00	\$14.65	\$134.93	9.21	0.97
Vertical tillage	\$16.03	\$ 21.00	\$ 10.00				
Disk - V - Ripper combo (17.5 ft)	\$23.90	\$ 33.00	\$ 14.75	\$21.57	\$194.56	9.02	1.47
Subsoiler 30" - 10ft (12-15")	\$20.10	\$ 25.00	\$ 13.50				
Discing - tandem (21 ft)	\$15.12	\$ 20.00	\$ 7.50	\$10.87	\$132.83	12.22	0.58
Field Cultivator (23 ft.)	\$13.19	\$ 21.00	\$ 8.00	\$7.10	\$117.79	16.59	0.32
Harrow	\$11.25	\$ 13.00	\$ 4.00				
Soil Finisher	\$14.32	\$ 20.00	\$ 10.00				
Strip tillage	\$18.50						
Row Cultivate (12 rows)	\$14.12	\$ 19.00	\$ 8.00	\$7.55	\$116.65	15.45	0.46
Row Cultivate-high residue (12rows)	\$12.66						
Stalk Shredder (20 ft.)	\$12.80	\$ 17.50	\$ 6.50	\$13.12	\$101.81	7.76	0.74
Rotary Hoe (21 ft.)	\$9.07	\$ 15.00	\$ 5.50	\$2.78	\$72.17	25.96	0.18
Land Rolling	\$7.90	\$ 12.00	\$ 5.00				
Highboy spraying	\$10.13	\$ 16.00	\$ 4.50				
Boom Sprayer - self-Prop.80ft.	\$8.25	\$ 8.80	\$ 5.20	\$5.01	\$221.04	44.12	0.14
Boom Sprayer - pull type 50ft.	\$8.15	\$ 15.00	\$ 5.00	\$3.78	\$96.81	25.61	0.10
Spraying- road ditches/ hr	\$63.80	\$ 85.00	\$ 30.00				

PLANTING:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Planter- conventional - w/fert & insect 30" corn-soys	\$19.13	\$ 30.00	\$ 13.00	\$15.00	\$191.25	12.75	0.32
Planter- conventional no attachments	\$18.25	\$ 28.00	\$ 12.00	\$13.07	\$169.91	13.00	0.32
Planter only	\$12.55						
Planter only - notill	\$13.15						
Planter- soybean 15" rows	\$18.59						
Planter- No Till w/splitter & w/fert	\$20.52	\$ 30.00	\$ 15.00	\$17.11			
Planter- Min Till with fert&insect	\$21.07	\$ 27.00	\$ 15.00	\$14.83	\$188.79	12.73	0.53
Planter conventional - Dry Beans	\$19.63						
Variable rate seeding	\$3.15	\$ 5.00	\$ 1.00				
Air Seeder Drill w/cart 52ft				\$19.76	\$435.91	22.06	0.45
Drill Soybeans Conventional	\$15.92	\$ 24.00	\$ 12.00				
Drill - No Till (15 ft.)	\$18.37	\$ 28.00	\$ 14.00	\$24.78	\$157.60	6.36	0.81
Drill - No Till - drill only no tractor	\$12.15	\$ 18.00	\$ 8.00				
Drill Grain, press wheels	\$15.72	\$ 20.00	\$ 10.00	\$13.78	\$116.85	8.48	0.61
Grain drill- only-no tractor	\$10.35	\$ 15.00	\$ 6.00				
Seed Tender	\$3.75	\$ 6.00	\$ 2.00				
Pest Control - scouting	\$2.00						

SUGAR BEETS:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Sugar Beets - Planting (12 row)	\$28.28				\$0.00	4.67	0.99
Sugar Beet Cultivation	\$16.03				\$0.00	5.60	0.81
Sugar Beet Topper	\$15.40				\$0.00	7.13	0.56
Sugar Beet Harvester	\$95.95				\$0.00	3.03	2.22
Sugar Beet Cart	\$35.35				\$0.00	5.20	1.80
HARVESTING:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Combine - (Corn)	\$31.76	\$ 55.00	\$ 25.00	\$46.92	\$318.59	6.79	2.35
Combine - stalk chopper head	\$41.05	\$ 57.00	\$ 30.75				
Combine Small grains (20 ft head)	\$30.44	\$ 35.00	\$ 20.00	\$33.33	\$226.31	6.79	1.49
Combine Soybeans (25 ft. head)	\$31.82	\$ 53.00	\$ 24.00		\$0.00	7.42	1.95
Combine Soybeans- air reel- flex	\$37.05	\$ 42.00	\$ 32.00	\$39.82			
Combine, cart, haul to storage - Corn	\$42.63	\$ 90.00	\$ 30.00				
Combine, cart, haul to storage - Soybeans	\$41.88	\$ 85.00	\$ 30.00				
GPS mapping addition to harvesting	\$2.90	\$ 5.00	\$ 1.00				
Picker 2 row - Ear Corn + 3 wagons	\$29.27	\$ 35.00	\$ 25.00				
Combine Field Beans (belt pickup)	\$36.67			\$31.08	\$207.93	6.69	1.81
Pulling Dry Beans (knife 6 row)	\$9.50						
Pulling Dry Beans (rod 6 row)	\$8.50						
Dry Bean – windrowing (6 row)	\$9.50						
Grain Cart - corn / acre	\$5.83	\$ 15.00	\$ 2.00	\$21.42	\$147.16	6.87	1.44
Grain Cart only - corn / acre	\$4.23	\$ 10.00	\$ 2.00				
Chopping Forage- Pull type	\$6.50/ ton	\$ 175.00	\$ 60.00				
Chopping Forage -Pull type Pickup hd-10ft	\$9.50/ ton						
Chopping Forage-Self-propelled /hr	\$247/ hr.	\$ 750.00	\$ 70.00	\$50.36	\$69.50	1.38	2.35
Chopping Silage- Self propelled- per ton	\$6.18	\$ 10.00	\$ 5.00				
Chopping Haylage- Self propelled	\$8.09	\$ 12.50	\$ 7.50				
Snapple/ acre	\$54.05	\$ 69.50	\$ 50.00				
Silo Filling-Tower silo; /ton 1Tractor, 1Chopper & Driver, Wagons	\$9.53 per ton						
Haylage chopping per ton	\$8.53 per ton						
Bunk Filling- chop, haul, filling & packing / ton	\$9.85						
Silage Bagging per ft. (9 ft diameter)	\$9.15	\$ 13.33	\$ 9.00				
Mowing	\$13.47	\$ 16.00	\$ 9.00				
Raking	\$7.02	\$ 10.00	\$ 4.00	\$6.52	\$22.75	3.49	0.50
Tedding	\$7.30	\$ 8.00	\$ 8.00				
Windrowing - hay or straw	\$7.70	\$ 16.50	\$ 5.00				
Mower-Conditioner Pull-type (9 ft.)	\$14.88	\$ 19.00	\$ 11.00	\$14.22	\$62.43	4.39	0.40
Mower-Conditioner- Self Propelled (16ft)	\$13.66						
Mower - Conditioner- Rotary (12ft)				\$9.48	\$73.56	7.76	0.38
Small Square Baling Hay	\$0.89 per bale	\$ 1.10	\$ 0.50				
Straw	\$0.72 per bale						
Mow, Rake, Baler & Handle - small sq.	\$1.85 per bale	\$ 1.00	\$ 4.00				
Baler, Rake & Handle - Lrg Round	\$20.50/bale						
Complete Hay harvesting per ton	\$35.00						
Wrapping Bales		\$ 10.00	\$ 4.00				
Baling Round- 600-800 # per bale	\$8.23 per bale	\$ 10.00	\$ 5.50				
Baling Round -1200 -1500 # per bale	\$11.14 per bale	\$ 14.00	\$ 8.00				
Baler 1000# Round/ with wrapper	\$12.08 per bale						
Mow-Rake-Bale-fld Haul- Lrg. Round/bale	\$19.76 per bale						
Baling -1500 # Lrg. Round - straw	\$14.24 per bale						
Baling -1500 # Lrg. Round - corn stalks	\$15.50 per bale						
Baling -1500 # Lrg. Round - straw - with wrap	\$16.24 per bale	\$ 16.00	\$ 10.00		\$0.00	3.04	0.49
Baling -1500 # Lrg. Round - Corn Stalks w/wrap	\$17.50 per bale						
Picking up w/accumulator- lrg.sq.bale	\$3.42	\$ 4.00	\$ 1.75				
Baling – Lrg Sqr. Hay 4x3x6	\$12.58 per bale	\$ 12.00	\$ 8.00		\$0.00	11.64	0.49
Hauling round bales/bale/loaded mile	\$0.14	\$ 0.20	\$ 0.01				
Hauling square bales/bale/loaded mile	\$0.09	\$ 0.20	\$ 0.01				
Baled & Wrapped - plastic	\$18.00						
Baling – Lrg Sqr. Hay 4x3x8	\$13.75						

FERTILIZER:	Custom \$/Acre ¹	max.	min.	Total Machine Cost/ Ac ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
<i>Fertilizer Dry Bulk: Spreading</i>	\$5.93	\$ 9.00	\$ 2.00				
<i>Fertilizer dry Bulk Spreader only</i>	\$3.63	\$ 4.50	\$ 3.00				
<i>Lime application</i>	\$7.15	\$ 10.00	\$ 3.00				
<i>Fertilizer- Liquid-Knifed In</i>	\$12.90	\$ 20.00	\$ 13.00				
<i>Fertilizer - side dressing</i>	\$11.58	\$ 18.50	\$ 6.00				
<i>Liquid-Sprayed:</i>	\$7.54	\$ 12.00	\$ 5.00				
<i>Fertilizer- Anhydrous: 21 ft.</i>	\$13.00	\$ 20.00	\$ 6.75				
<i>Soil Testing - GPS grid samples</i>	\$7.65	\$ 10.00	\$ 2.50				
<i>Manure Hauling-semi-solid Load & Spread per hr.</i>	\$115.60	\$ 150.00	\$ 75.00				
<i>Liquid Manure Spreader Injected -1000 gal.</i>	\$10.98	\$ 16.00	\$ 10.00	74.47/ 6000GAL			
<i>Liquid Manure spreader only /hr.</i>	\$41.35	\$ 50.00	\$ 35.00				
<i>Solid Manure spreader only /hr</i>	\$53.63	\$ 45.00	\$ 35.00				
<i>Liquid Manure injected Drag Line -1000 gal.</i>	\$12.35	\$ 15.00	\$ 10.00				
<i>Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.) per hour</i>	\$92 per hour						
<i>Manure Pump, Hauling, Injecting 1000 gal. liquid (9500 gallon cap.)</i>	\$12.50/1000 gal.						
<i>Bobcat/Skid Loader / hr.</i>	\$53.40	\$ 80.00	\$ 30.00				
<i>Mowing CRP or pasture / acre</i>	\$18.35	\$ 30.00	\$ 10.00				
<i>Ditch Mowing</i>	\$59.81 per hour						
<i>Brush Hogging / acre</i>	\$23.42	\$ 40.00	\$ 20.00				
<i>Grain Drying- continuous flow /point/ bu.</i>	\$0.04/pt./bu.	\$ 0.06	\$ 0.04				
<i>Grain Drying - inbin dryer /point/bu.</i>	\$0.06/pt./bu.	\$ 0.07	\$ 0.05				
<i>Grain Auger/ bu.</i>	\$0.05	\$ 0.10	\$ 0.01				
<i>Grain Auger only / bu</i>	\$0.04	\$ 0.08	\$ 0.02				
<i>Blower- silo filling / hour</i>	\$19.90	\$ 35.00	\$ 9.00				
<i>Grain Storage/ mo.</i>	\$0.06/bu./mo.	\$ 0.10	\$ 0.03				
<i>Grain Storage for season</i>	\$ 0.21 per bu.	\$ 0.50	\$ 0.09				
<i>Grain Haul - per bushel - field to farmstead</i>	\$0.09/ up to 10 miles	\$ 0.15	\$ 0.06	.098/ 5miles			
<i>Grain Haul - per bushel - farm to mkt 25mi</i>	\$0.17/ up to 25 miles	\$ 0.30	\$ 0.09				
<i>Power Washing per hr.</i>	42.38						
<i>Rock picking</i>	\$14.85	\$ 20.00	\$ 9.00				
<i>Auto Steer System</i>	\$1.36						
<i>Machine storage square foot per year</i>	\$0.51						
<i>Custom Farming - Corn</i>	\$111.44	\$ 175.00	\$ 82.00	(all machine operations for growing & harvest)			
<i>Custom Farming - Soybeans</i>	\$97.31	\$ 170.00	\$ 78.00	(all machine operations for growing & harvest)			
<i>Custom Farming - Sm Grains</i>	\$96.43	\$ 100.00	\$ 82.50	(all machine operations for growing & harvest)			

Fuel cost is calculated by adding fuel, oil and lube **\$2.95 Fuel Price** ⇒ **\$3.245** ** base fuel & lube price used

1 **Custom \$ per acre:** Represents the rate obtained from surveys of actual farm data surveys for 2014 & 2015 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 their locations. This numbers includeds machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above.

2 **Custom \$ per acre:** Is the Custom \$ per acre: adjusted to reflet a fuel and lubrication from the base fuel price noted above.

3 **Total Machine Cost/Acre:** Includes tractor, fuel cost⁷, 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 2014, 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 2014.

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 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 2014 © - <http://faculty.apec.umn.edu/wlazarus/documents/machdata.pdf>
- Iowa 2015 Iowa Farm Custom Rate Survey - Ag Decision Maker - <http://www.extension.iastate.edu/agdm/crops/pdf/a3-10.pdf>
- Ohio State University - Ohio Farm Custom Rates 2014 - by Barry Ward http://ohioline.osu.edu/ae-fact/pdf/Ohio_Farm_Custom_Rates_AEDE_11_14.pdf
- Texas A&M University, 2013 Texas Agricultural Custom Rates - <http://agecoext.tamu.edu/files/2013/07/CustomRateSurveyMay2013.pdf>
- NASS- USDA & Pennsylvania Department of Ag, by Adam W. Pike - http://www.nass.usda.gov/Statistics_by_State/Pennsylvania/Publications/Machinery_Custom_Rates/CustomRates%202014.pdf
- Nebraska 2014 Farm Custom Rates Part 1 by Roger Wilson - <http://www.ianrpubs.unl.edu/live/ec823/build/ec823.pdf>
- Nebraska 2014 Farm Custom Rates Part 2 by Roger Wilson - <http://www.ianrpubs.unl.edu/public/live/ec826/build/ec826.pdf>
- University of Illinois - Machinery Cost Estimates© 5-2012, Univ. of Illinois @ <http://farmdoc.illinois.edu/manage/machinery/summary%202012.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 DIRT1 5:

1. Depreciation: $\frac{\text{original cost} - \text{salvage value}}{\text{years of use}}$		\$	
2. Interest: $\text{interest rate} \times \text{AIV}^a$		\$	
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: $\text{total ownership cost} \div \text{estimated annual use (acre, hour, bushel, ton)}$	(A)	\$	


Operating Cost per (acre, hour, bushel, ton)

1. Tractor: fuel (gallon fuel per unit x price/gallon) x 1.15 ^b		\$	
2. Machine: gas or fuel gallons per unit x 1.15 ^b		\$	
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 operating cost per unit	(A+B)	\$	
D. Desired profit margin and / or risk premium		%	
E. Custom Rate (per acre, hour, bushel, ton) $\text{Line C} \times [1 + (\text{Line D}/100)]$		\$	

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.

Custom Machine rate calculator is available on line at Ohio State University: <http://aede.osu.edu/research/osu-farm-management/decision-tools>

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