

## 2011 Custom Machine and Work Rate Estimates

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2011 Production Season Costs						Updated 09.30.10
Farm Labor Unskilled <sup>7</sup> = \$ per hour	\$12.27					\$2.56 per gallon of fuel
Farm Labor skilled <sup>7</sup> = \$ per hour	\$14.73					\$2.820 per gallon lube & fuel cost
<b>TRACTORS ONLY:</b>		Total Machine Cost/ Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>		Est. Fuel Gal./Acre <sup>6</sup>
<b>No driver or fuel cost</b>						
	4WD - 260 hp.	\$54.21	\$81.20	11.44		32.26
	MFWD - 200 hp.	\$40.09	\$64.88	8.8		24.82
	MFWD - 130 hp.	\$31.17	\$45.05	5.72		16.13
<b>Est. Tractor Cost \$0.24 / hp / hr.</b>	2- WD - 75 hp.	\$26.93	\$19.38	3.3		9.31
<b>Est. Fuel use .044 gal. diesel / PTO hp</b>	2- WD - 40 hp.	\$20.90	\$11.23	1.76		4.96
<b>Auto Steer systems charge per acre</b>		\$2.29				
<b>TILLAGE OPERATIONS:</b>	Custom \$/Acre <sup>1</sup>	Total Machine Cost/ Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>		Est. Fuel Gal./Acre <sup>6</sup>
<b>Plowing: Moldboard (6 bottom)</b>	\$17.36	\$20.15	\$70.12	3.48		1.29
<b>Chisel Plow (23 ft.)</b>	\$12.23	\$10.09	\$85.77	8.50		0.64
<b>Chisel - front disk (16.3 ft.)</b>	\$14.01	\$12.46	\$114.76	9.21		1.04
<b>Disk - V.Ripper combo (17.6 ft. +15" deep)</b>	\$17.22	\$17.76	\$197.67	11.13		1.10
<b>Subsoiler 30" - 10ft (12 - 15")</b>	\$16.07	\$0.00	\$0.00	7.00		1.30
<b>Discing - tandem (21 ft)</b>	\$10.93	\$8.85	\$108.15	12.22		0.49
<b>Field Cultivator (23 ft.) + incorp.</b>	\$10.98	\$5.96	\$97.74	16.40		0.34
<b>Field Cultivator (23 ft.)</b>	\$10.15	\$5.47	\$90.75	16.59		0.34
<b>Harrow</b>	\$7.90					
<b>Soil Finisher</b>	\$11.35					
<b>Strip tillage</b>	\$15.54					
<b>Row Cultivate (12 rows)</b>	\$9.44	\$5.66	\$87.45	15.45		0.44
<b>Row Cultivate - high residue (12 rows)</b>	\$12.45	\$0.00	\$0.00	15.45		0.64
<b>Stalk Shredder (20 ft.)</b>	\$9.71	\$12.28	\$95.29	7.76		0.74
<b>Rotary Hoe (21 ft.)</b>	\$6.62	\$2.49	\$64.64	25.96		0.18
<b>Land Rolling</b>	\$7.25					
<b>High clearance self propelled sprayer</b>	\$7.00					
<b>Boom Sprayer - self-Prop. 60ft.</b>	\$5.45	\$5.25	\$173.72	33.09		0.11
<b>Boom Sprayer - pull type 50ft.</b>	\$5.44	\$2.64	\$67.61	25.61		0.10
<b>Spraying - road ditches / hr</b>	\$52.05					
<b>PLANTING:</b>	Custom \$/Acre <sup>1</sup>	Total Machine Cost/ Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>		Est. Fuel Gal./Acre <sup>6</sup>
<b>Planter - conventional w / fert 30" corn-soys</b>	\$13.92	\$10.85	\$151.90	14.00		0.34
<b>Planter - soybean 15" rows</b>	\$14.44					
<b>Planter - No Till w/fert (12 row)</b>	\$15.29	\$0.00	\$0.00	12.00		0.65
<b>Planter - Minimal Till (12 row)</b>	\$15.38	\$13.60	\$173.13	12.73		0.53
<b>Planter - soybean 15" rows</b>	\$14.98					
<b>GPS mapping addition to planting</b>	\$2.20	\$2.20				
<b>Drill Soybeans Conventional</b>	\$13.47					
<b>Drill - No Till (15 ft.)</b>	\$14.66	\$18.70	\$118.93	6.36		0.81
<b>Drill - No Till - drill only no tractor</b>	\$10.00					
<b>Drill press wheels - (20 ft)</b>	\$12.91	\$11.76	\$99.72	8.48		0.64
<b>Grain drill - only</b>	\$10.25					
<b>Pest Control - scouting</b>	\$4.50					
<b>SUGAR BEETS:</b>	Custom \$/Acre <sup>1</sup>	Total Machine Cost/ Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>		Est. Fuel Gal./Acre <sup>6</sup>
<b>Sugar Beets - Planting (12 row)</b>	\$19.58	\$28.79	\$287.90	10.00		0.65
<b>Sugar Beet Cultivation</b>	\$13.00	\$14.44	\$80.86	5.60		0.81
<b>Sugar Beet Topper (6 rows)</b>	\$12.50	\$15.41	\$82.14	5.33		0.58
<b>Sugar Beet Harvester (6 rows)</b>	\$75.00	\$78.97	\$239.28	3.03		2.24
<b>Sugar Beet Cart (20 ton)</b>	\$25.00	\$30.19	\$156.99	5.20		1.80
<b>HARVESTING:</b>	Custom \$/Acre <sup>1</sup>	Total Machine Cost/ Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>		Est. Fuel Gal./Acre <sup>6</sup>
<b>Combine - (Corn - 8 row head)</b>	\$28.20	\$32.23	\$135.37	4.20		1.93
<b>Combine - stalk chopper head</b>	\$33.45					
<b>Combine Small grains (20 ft head)</b>	\$24.63	\$28.27	\$191.95	6.79		1.31
<b>Combine Soybeans (25 ft. head)</b>	\$27.48	\$27.90	\$149.27	5.35		2.02
<b>Combine Soybeans - air reel</b>	\$29.75					
<b>Combine, cart, haul to storage - Corr.</b>	\$34.08					
<b>Combine, cart, haul to storage - Soybeans</b>	\$31.47					
<b>GPS mapping addition to harvesting</b>	\$2.20	\$2.20				
<b>Picker 2 row - Ear Corn + 3 wagons</b>	\$28.58					
<b>Combine Field Beans (belt pickup)</b>	\$29.80	\$30.74	\$115.28	3.75		3.40
<b>Pulling Dry Beans (knife 6 row)</b>	\$9.00	\$9.94	\$86.78	8.73		0.66

<b>HARVESTING:</b>	Custom \$/Acre <sup>1</sup>	Total Machine Cost/ Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acres/Hr. <sup>5</sup>	Est. Fuel Gal./Acre <sup>6</sup>
Pulling Dry Beans (rod 6 row)	\$8.00	\$8.71	\$76.04	8.73	0.66
Dry Bean - windrowing (6 row)	\$9.50	\$13.80	\$120.47	8.73	0.66
Grain Cart - corn / acre	\$6.35				
Chopping Forage - Pull type (2 row corn head,	\$3.00-\$4.50 per Ton	\$55.21	\$76.19	1.38	3.35
Chopping Forage - w/kernel processor	\$4.25-\$4.75 per Ton				
Chopping Forage - Pull type Pickup head - 12ft	\$5.72 per Ton	\$37.39	\$152.18	4.07	1.86
Chopping Forage - Self-propelled (3 row corn head,	\$4.50- \$6.00 per Ton	\$54.33	\$74.98	1.38	3.35
Silo Filling - Tower silo: 1 Tractor, 1 Chopper & Driver, 2 Wagons	\$6.50-\$7.50 per Ton				
Bunker Filling: Chopper and 3 forage wagons or 2 trucks & packer	\$7.50 \$8.50 per Ton				
Silage Bagging per ft. (9 ft diameter)	\$4.65 per ft.				
Mowing	\$11.83				
Raking - Hay 9ft.	\$5.28	\$6.00	\$20.94	3.49	0.50
Tedding	\$6.68				
Windrowing - hay or straw	\$12.15	\$15.04	\$52.49	3.49	0.50
Mower - Conditioner Pull-type (9 ft.)	\$13.37	\$13.17	\$57.82	4.39	0.40
Mower - Conditioner - Self Propelled (16 ft)	\$16.75	\$22.18	\$172.12	7.76	0.40
Mower - Conditioner - Rotary (12 ft)	\$10.50	\$8.51	\$66.04	7.76	0.40
Small Square Baling Hay	\$0.66 per bale	\$12.58	\$44.03	3.50	0.75
Straw	\$0.57 per bale				
Mow, Rake, Baler & Handle - small sqr.	\$2.00- \$3.00 per bale				
Baler, Rake & Handle - Lrg Round	\$10.50-\$13.50 per bale				
Complete Hay harvesting takes % of crop per bale	52%				
Baling Round - 600-800 # per bale	\$9.00	\$7.63	\$20.98	2.75	1.00
Baling Round - 1200 - 1500 #	\$10.44 per bale	\$8.27	\$25.14	3.04	0.77
Baler 1000# Round / with wrapper	\$10-\$12.50 per bale	\$8.52	\$25.65	3.01	0.88
Baling - 1500 # - Lrg. Round-stalks/straw	\$11.40 per bale	\$12.25	\$37.24	3.04	1.00
Baling - 1500 # - Lrg. Round-stalks/straw-with wrap	\$13.40 per bale	\$0.25	\$0.76	3.04	1.00
Baling - Lrg Sqr. Hay 4x3x6	\$10.50-\$12.75 per bale	\$11.85	\$137.93	11.64	0.49
Baling - Lrg Sqr. Hay 4x3x8	\$12-\$13.50 per bale				
<b>FERTILIZER:</b>	Custom \$/Acre <sup>1</sup>	Total Machine Cost/ Acre <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	\$4.96				
Lime application	\$6.25				
Fertilizer - Liquid-Knifed In	\$10.45				
Liquid - Sprayed:	\$5.95				
Fertilizer - Anhydrous: 21 ft.	\$10.32				
Fertilizer - Anhydrous NoTill 32 ft.	\$11.24				
GPS mapping addition to fertilization	\$2.20	\$2.20			
Manure Hauling-semi-solid - Load&Spread / hr.	\$75.69 per hr				
Liquid Manure Injected Spreader / 1000 gal.	\$11.95 per 1000 gal.				
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.)	\$9.00 per 1000 gal.				
Manure Pump, Hauling, Injecting - 1000 gal. liquid (9500 gallon cap.)	\$12.50 per 1000 gal.				
Bobcat/Skid Loader / day	\$75 to \$130 per day				
Ditch Mowing	\$57 per hour				
Brush Hogging	\$60 to \$70 per hour				
Grain Drying - continuous flow / point / bu.	\$0.046/pt./bu.				
Grain Drying - inbin dryer /point/bu.	\$0.052/pt/bu.				
Grain Auger / bu.	\$0.050 per bu.				
Grain Storage / mo.	\$0.032/bu./mo.				
Grain Storage /yr	\$ 0.164 per bu.				
Grain Haul - per bu. - field to farmstead	\$0.09 /up to 10 mi / bu.				
Rock picking	\$11.70				
Custom Farming - Corn	\$100 to \$122.55	(all machine operations for growing & harvest)			
Custom Farming - Soybeans	\$89 to \$122.62	(all machine operations for growing & harvest)			
Custom Farming - Sm Grains	\$79 to \$101.21	(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 \$2.56 Diesel Price ==> \$2.82 \*\* base fuel & lube price used

1 Custom \$ per acre: Represents the rate obtained from surveys of actual farm data surveys for 2009 & 2010 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. These numbers include cost for the machine, power un & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above.

3 Total Machine Cost/Acre: Includes tractor, fuel cost\*\*, 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 2010", 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 operation and ownership cost of machinery supported by ©University of Minnesota, Machinery Economic cost estimates for 2010. If the machine is run at full capacity (or engine clock hours) this per acre rate should be 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 Est. Fuel 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 per hour on an average. Your individual machine's fuel use may vary from this number.

7 Labor cost: Charged for this table at a rate of \$14.00 per hour unskilled tasks and \$17.50 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. The references listed below were used collectively to build the summary information listed above:

- Michigan State University Extension - E-2131 *Custom Work Rates in Michigan - 10/2002* at <http://www.aec.msu.edu/agecon/aecreports/aec613.pdf>
- University of Minnesota - *Machinery Economic Cost Estimates for 2010* © --2010 at <http://www.apec.umn.edu/faculty/wlazarus/documents/machdata.pdf>
- Iowa State University - *2010 Iowa Farm Custom Rate Survey -FM1698* at <http://www.extension.iastate.edu/publications/fm1698.pdf>
- The Ohio State University - *Ohio Farm Custom Rates®-2008* at <http://agvanwert.files.wordpress.com/2010/06/32543328-oam-custom-rates-1.pdf>
- University of Illinois - *Machinery Cost Estimates® 4-2010* at <http://www.farmdoc.illinois.edu/manage/machinery/machinery%20summary%202010.pdf>
- University of Nebraska Lincoln - *2010 Nebraska Farm Custom Rates* at <http://www.agecon.unl.edu/resource/2010Part1.pdf>
- Kansas State Univeristy - *2009 Kansas Farm Custom Rates* at [http://www.nass.usda.gov/Statistics\\_by\\_State/Kansas/Publications/Custom\\_Rates/custom09.pdf](http://www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Custom_Rates/custom09.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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Major shifts in power fuel cost during the past few years 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%.

## 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. <b>Depreciation:</b> $\frac{\text{original cost} - \text{salvage value}}{\text{years of use}}$		\$	
2. <b>Interest:</b> $\text{interest rate} \times \text{AIV}^a$		\$	
3. <b>Repairs:</b> estimated 2 to 5 % of original cost		\$	
4. <b>Taxes:</b> (0 in Michigan -i.e., no taxes on personal property used in agriculture)		\$	
5. <b>Insurance:</b> (estimated 0.5% x AIV for insurance premium,		\$	
6. <b>Total ownership cost per year</b> (add lines 1 thru 5)		\$	
A. <b>Ownership cost per unit: total ownership cost ÷ estimated annual use (acre, hour, bushel, ton)</b>	(A)	\$	

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

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

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.

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