

## **MSU Extension Publication Archive**

Archive copy of publication, do not use for current recommendations. Up-to-date information about many topics can be obtained from your local Extension office.

Custom Machine Work Rates in Michigan  
Michigan State University Cooperative Extension Service  
Dennis Stein, Agricultural Economics  
Revised October 2009  
4 pages

The PDF file was provided courtesy of the Michigan State University Library

**Scroll down to view the publication.**

## 2009-2010 Custom Machine and Work Rate Estimates

Edited by: Dennis Stein, Extension Educator, District Farm Business Management, Michigan State University Extension  
362 Green Street, Caro MI 48723 ♦ 989-672-3870 ♦ email: [steind@msu.edu](mailto:steind@msu.edu) ♦ webpage: <http://www.msu.edu/user/steind>

2009-10 Production season cost adjusted for current fuel!

Farm Labor Unskilled = \$10.50 per hour

\$2.05 per gallon of fuel

Farm Labor Skilled = \$13.50 per hour

\$2.25 per gallon fuel & lube cost

TRACTORS ONLY:					
	\$ per Hour	Est. Fuel Use Gal. per Hour	Est. Fuel Cost per Hour		
4WD - 260 hp.	\$84.60	11.44	\$25.74		
MFWD - 200 hp.	\$68.20	8.8	\$19.80		
MFWD - 130 hp.	\$46.45	5.72	\$12.87		
Est. Tractor Cost \$0.24/hp/hr.	2- WD - 75 hp.	\$21.20	3.3	\$7.43	
Est. Fuel use .044 gal. diesel/PTO hp	2- WD - 40 hp.	\$12.40	1.76	\$3.96	
TILLAGE OPERATIONS:					
	Custom \$ per Acre <sup>1</sup>	Total Machine Cost per Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acre per Hour. <sup>5</sup>	Est. Fuel Gal. per Acre <sup>6</sup>
Plowing: Moldboard (5 bottom)	\$15.20	\$17.96	\$62.50	3.48	1.29
Plowing: Rollover (5 bottom)	\$17.30	\$19.00	\$67.45	3.55	1.70
Chisel (15 ft.)	\$13.50	\$8.72	\$74.12	8.50	0.64
Chisel - front disk (16.3 ft.)	\$15.80	\$11.76	\$108.31	9.21	1.04
Disk-V.Ripper combo (17.6 ft. +15" deep)	\$17.10	\$17.05	\$189.77	11.13	1.10
Subsoiler 30" - 10 ft (12-15")	\$16.80	\$17.10	\$119.70	7.00	1.30
Discing - tandem (21 ft)	\$11.40	\$8.22	\$100.45	12.22	0.49
Field Cultivator (23 ft.) + incorporating	\$11.20	\$5.20	\$85.28	16.40	0.34
Field Cultivator (23 ft.)	\$9.90	\$5.66	\$93.90	16.59	0.34
Harrow	\$7.55				
Soil Finisher	\$12.70				
Strip tillage	\$16.55				
Row Cultivate (12 rows)	\$8.90	\$5.60	\$86.52	15.45	0.44
Row Cultivate - high residue (12 rows)	\$11.50	\$10.00	\$154.50	15.45	0.64
Stalk Shredder (20 ft.)	\$9.90	\$11.61	\$90.09	7.76	0.74
Rotary Hoe (21 ft.)	\$6.50	\$2.30	\$59.71	25.96	0.18
Land Rolling	\$7.90				
Highboy spraying	\$7.15				
Boom Sprayer - Self-Propelled 60 ft.	\$5.45	\$5.18	\$171.41	33.09	0.11
Boom Sprayer - Pull type 50 ft.	\$5.40	\$2.64	\$67.61	25.61	0.10
Spraying - Road Ditches per hr.	\$48.40				
PLANTING:					
	Custom \$ per Acre <sup>1</sup>	Total Machine Cost per Acre <sup>3</sup>	Machine Rate per Hour <sup>4</sup>	Acre per Hour. <sup>5</sup>	Est. Fuel Gal. per Acre <sup>6</sup>
Planter - conventional with fertilizer (12 x 30" rows corn or soybeans)	\$14.60	\$10.35	\$144.90	14.00	0.34
Planter - soybean 15" rows	\$15.50				
Planter - No Till with fertilizer (12 row)	\$16.30	\$12.95	\$155.40	12.00	0.65
Planter - Minimal Till (12 row)	\$16.50	\$12.95	\$164.85	12.73	0.53
Planter - soybean 15" rows	\$15.50				
Drill - No Till (15 ft.)	\$15.30	\$15.77	\$100.30	6.36	0.81
Drill - No Till - drill only	\$11.90				
Drill press wheels - (20 ft)	\$13.30	\$11.42	\$96.84	8.48	0.64
Grain drill	\$13.20				
Pest Control - scouting	\$4.20				
Soil Testing	\$7.10 per acre with GPS mapping				

<b>SUGAR BEETS:</b>	<b>Custom \$ per Acre <sup>1</sup></b>	<b>Total Machine Cost per Acre <sup>3</sup></b>	<b>Machine Rate per Hour<sup>4</sup></b>	<b>Acre per Hour. <sup>5</sup></b>	<b>Est. Fuel Gal. per Acre</b>
Sugar Beets - Planting (12 row)	\$26.00	\$27.48	\$274.80	10.00	0.65
Sugar Beet Cultivation	\$13.00	\$13.42	\$75.15	5.60	0.81
Sugar Beet Topper (6 rows)	\$12.50	\$140.02	\$746.31	5.33	0.58
Sugar Beet Harvester (6 rows)	\$65.50	\$75.16	\$227.73	3.03	2.24
Sugar Beet Cart ( 20 ton)	\$20.00	\$30.58	\$159.02	5.20	1.80
<b>HARVESTING:</b>	<b>Custom \$ per Acre <sup>1</sup></b>	<b>Total Machine Cost per Acre <sup>3</sup></b>	<b>Machine Rate per Hour<sup>4</sup></b>	<b>Acre per Hour. <sup>5</sup></b>	<b>Est. Fuel Gal. per Acre</b>
Combine - (Corn - 8 row head)	\$27.00	\$40.38	\$169.60	4.20	1.93
Combine - stalk chopper head	\$33.50				
Combine Small grains (20 ft. head)	\$25.30	\$26.70	\$181.29	6.79	1.31
Combine Soybeans (25 ft. head)	\$26.50	\$26.87	\$143.75	5.35	2.02
Combine, cart, trucking - Corn	\$38.10				
Combine, cart, trucking - Soybeans	\$34.70				
Pick 2 row - Ear Corn + 3 wagons	\$28.00			1.20	1.75
Combine Field Beans (belt pickup)	\$28.00	\$28.77	\$107.89	3.75	3.40
Added charge for GPS mapping service/ acre	\$1.90	\$2.10			
Pulling Dry Beans (knife 6 row)	\$8.50	\$9.50	\$82.94	8.73	0.66
Pulling Dry Beans (rod 6 row)	\$8.00	\$8.27	\$72.20	8.73	0.66
Dry Bean – windrowing (6 row)	\$10.00	\$13.01	\$113.58	8.73	0.66
Grain Cart	\$0.05 per bushel				
Chopping Forage- Pull type (2 row corn head)	\$2.50-\$4.00 per ton	\$55.21	\$76.19	1.38	3.35
Chopping Forage – with kernel processor	\$4.00 per ton				
Chopping Forage - Pull type Pickup head-12ft.	\$3.75 per ton	\$22.42	\$74.21	3.31	1.40
Chopping Forage - Self Propelled (3 row corn head)	\$3.50- \$4.75 per ton			2.55	4.92
Silo Filling-Tower silo: 1 Tractor, 1 Chopper & Driver, 2 Wagons	\$5.50-\$7.50 per ton				
Silo Bunker: Chopper & 3 forage wagons or 2 trucks	\$5.50 \$7.50 per ton				
Silage Bagging (9 ft. diameter)	\$5.00 per foot				
Mowing	\$12.70				
Raking – Hay 9 ft.	\$6.50	\$5.38	\$18.78	3.49	0.50
Tedding	\$6.00				
Windrowing	\$10.65	\$10.63	\$37.10	3.49	0.50
Mower - Conditioner Pull - type (9 ft.)	\$13.40	\$12.95	\$56.85	4.39	0.40
Mower - Conditioner - Self Propelled (16ft)	\$16.50	\$20.73	\$160.86	7.76	0.40
Small Square Baling Hay	\$0.53 per bale	\$12.21	\$42.74	3.50	0.75
Small Square Baling Straw	\$0.49 per bale				
Mow, Rake, Bale & Handle - small square	\$1.25- \$2.25 per				
Mow, Rake, Bale & Handle - Large Round	\$8.50-\$9.50 per				
Complete Hay harvesting takes % of crop	52%				
Baling - 600-800 # bale	\$8.22 per bale	\$6.51	\$17.90	2.75	1.00
Baling - 1500 # - Large. Round	\$10.90 per bale	\$7.65	\$23.26	3.04	0.77
Baling - 1500 # - Large. Round (stalks or straw)	\$11.70 per bale				
Baling – Large Square Hay 4x3	\$8.00 - \$9.75 per	\$16.80	\$195.55	11.64	0.49
Baler 1000# Round with wrapper	\$10 - \$13.50 per	\$9.73	\$29.29	3.01	0.88
<b>FERTILIZER:</b>	<b>Custom \$ per Acre <sup>1</sup></b>	<b>Total Machine Cost per Acre <sup>3</sup></b>	<b>Machine Rate per Hour<sup>4</sup></b>	<b>Acre per Hour. <sup>5</sup></b>	<b>Est. Fuel Gal. per Acre</b>
Fertilizer Dry Bulk: Spreader Only	\$4.40				
Lime application	\$6.70				
Fertilizer - Liquid-Knifed In: Equipment Only	\$10.00				
Liquid - Sprayed: Equipment Only	\$6.10				
Fertilizer - Anhydrous: 21 ft.	\$9.60				
Fertilizer - Anhydrous NoTill 32 ft.	\$11.00				

<b>FERTILIZER:</b>	<b>Custom \$ per Acre <sup>1</sup></b>	<b>Total Machine Cost per Acre <sup>3</sup></b>	<b>Machine Rate per Hour<sup>4</sup></b>	<b>Acre per Hour. <sup>5</sup></b>	<b>Est. Fuel Gal. per Acre</b>
Manure Hauling - semi-solid - Load & Spread	\$81/per hr				
Liquid Manure Spreader	\$27.00				
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.)	\$10.00 per 1000 gal.				
Manure Pump, Hauling, Injecting - liquid (9500 gallon cap.)	\$12.00 per 1000 gal.				
<b>MISCELLANEOUS WORK:</b>	<b>Custom \$ per Acre <sup>1</sup></b>	<b>Total Machine Cost per Acre <sup>3</sup></b>	<b>Machine Rate per Hour<sup>4</sup></b>	<b>Acre per Hour. <sup>5</sup></b>	<b>Est. Fuel Gal. per Acre</b>
Bobcat / Skid Loader per day	\$130.00		\$50.70		
Ditch Mowing	\$57per hour		\$57.30		
Brush Hogging	\$56 per hour				
Grain Drying - continuous flow	\$0.04 /pt./ bushel				
Grain Auger bushel	\$0.055 per bushel				
Grain Storage per month	\$0.03 per bushel per month				
Grain Storage year	\$0.15 bushel				
Grain Haul - farm to field	\$0.85 per 10 miles				
Rock picking	\$11.70				
Custom Farming - Corn	\$96.40		(all machine operations for growing & harvest)		
Custom Farming - Soybeans	\$86.60		(all machine operations for growing & harvest)		
Custom Farming - Small Grains	\$78.70		(all machine operations for growing & harvest)		

Labor charged for this table at a rate of \$10.50 per hour unskilled tasks and \$13.50 per hour for skilled labor (planter, sprayer, harvester).

Fuel cost is calculated by adding fuel, oil and lube calculated by adding 10% to the power fuel cost. \*\* \$2.25 base fuel & lube price used.

1 Custom \$ per acre: Represents the rate obtained from surveys of actual farm data in 2008 & 2009 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 number includes machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above. Values are based on "2009 Iowa Farm Custom Rate Survey" by Iowa State University; "Ohio Farm Custom Rates -2008" by The Ohio State University.

3 Total Machine Cost per Acre: Includes 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 2009" by the University of Minnesota, 06/2009.

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 the University of Minnesota, "Machinery Economic Cost Estimates for 2009". 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 per 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. per 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 average. Your individual machine's fuel use may vary from this number.

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" - 10/02 at <http://aec.msu.edu/aecreports/aec613.pdf>
- University of Minnesota --"Machinery Economic Cost Estimates for 2009©" - 06/09 at <http://www.apec.umn.edu/faculty/wlazarus/interests-farmmachinery.html>
- Iowa State University- "2009 Iowa Farm Custom Rates©" – FM1698 at <http://www.extension.iastate.edu/agdm/crops/pdf/a3-10.pdf>
- The Ohio State University – "Ohio Farm Custom Rates©" – 2008 at [http://ohioline.osu.edu/ae-fact/pdf/Custom\\_Rates\\_08.pdf](http://ohioline.osu.edu/ae-fact/pdf/Custom_Rates_08.pdf)
- University of Illinois – "Machinery Cost Estimates©" - 5/2008 at <http://www.farmdoc.illinois.edu/manage/index.asp>
- University of Kentucky – "Custom Machinery Rates for Kentucky©" – 6/08 at <http://www.ca.uky.edu/cmspubsclass/files/extensionpubs/departmentseries/2009-04.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. This document was compiled by: Dennis Stein, District Farm Business Management, Extension Educator, Michigan State University Extension, 362 Green Street, Caro, Michigan, 48723. Email: [steind@msu.edu](mailto:steind@msu.edu) or Web page: <http://www.mus.edu/user/steind> Revised on 10.29.2009.

Major shifts in power fuel cost during the past few years has had an impact on and has changed the cost of machine operational costs. As a rule of thumb, it is estimated that each \$1.00 increase in fuel cost will increase most machine operations by an additional 15%.

Edited by: Dennis Stein, Extension Educator, District Farm Business Management, Michigan State University Extension  
 362 Green Street, Caro MI 48723 ♦ 989-672-3870 ♦ email: [steind@msu.edu](mailto:steind@msu.edu) ♦ webpage: <http://www.msu.edu/user/steind>

## HOW TO FIGURE YOUR MACHINE WORK RATES

If you are hiring or doing custom work, the following worksheet 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 *DIRTI 5*:

1. Depreciation: original cost - salvage value years of use		\$ _____
2. Interest: interest rate 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 (gallons of fuel per unit x price per 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 operating cost per unit	(A + B)	\$ _____
D. Desired profit margin and / or risk premium	4.5 %	
<b>E. Custom Rate (per acre, hour, bushel, ton)</b> <b>Line C x [1+(Line D ÷ 100)]</b>		\$ _____

- 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.

MSU is an affirmative-action, equal-opportunity employer. Michigan State University Extension programs and materials are open to all without regard to race, color, national origin, gender, gender identity, religion, age, height, weight, origin, disability, political beliefs, sexual orientation, marital status, family status or veteran status.

This information is for educational purposes only. Reference to commercial products or trade names does not imply endorsement by the MSU Extension or bias against those not mentioned. This bulletin becomes public property upon publication and maybe reprinted verbatim as separate or with another publication with credit to MSU. Reprinting cannot be used to endorse or advertise a commercial product or company.

