

Spring 2008 MACHINE WORK RATES FOR SAGINAW VALLEY OF MICHIGAN

updated 3-27-08

LABOR:							
Full Time Labor - \$2,100 / month (Based on 200 hr. per month)	Part Time – \$7.50 / hour	2008 Production season cost adjusted for current fuel costs!					
	Milkers – \$9.25 / hour	\$4.00 per gallon of fuel					
TRACTORS:		\$ per Hour	Gallons per Hour	Est. Fuel Cost per hour			
(excluding operator and fuel costs)		4WD - 260 hp.	\$74.77	11.44	\$45.76		
		MFWD - 200 hp.	\$59.54	8.8	\$35.20		
		MFWD - 130 hp.	\$41.59	5.72	\$22.88		
Estimated Tractor Cost \$0.24/hp/hr.		2- WD - 75 hp.	\$18.50	3.3	\$13.20		
		2- WD - 40 hp.	\$10.77	1.76	\$7.04		
TILLAGE OPERATIONS:		Custom \$ per Acre ¹	Fuel Adj. Custom \$ per Acre ²	Total Machine Cost per Acre ³	Machine Rate per Hour ⁴	Acres per Hour ⁵	Gallons per Acre ⁶
Plowing: Moldboard (5 bottom)		\$15.50	\$17.18	\$20.26	\$70.49	3.48	1.29
Plowing: Rollover (5 bottom)		\$17.60	\$19.81	\$21.71	\$77.07	3.55	1.70
Chisel (15 ft.)		\$13.34	\$14.17	\$9.90	\$84.17	8.50	0.64
Chisel – front disk (16.3 ft.)		\$13.36	\$14.71	\$12.21	\$112.47	9.21	1.04
Disk-V. Ripper combo (17.6 ft.)		\$15.85	\$17.28	\$11.99	\$133.45	11.13	1.10
Subsoiler 30" – 10 ft		\$16.00	\$17.69	\$14.19	\$99.33	7.00	1.30
Discing - tandem (21 ft)		\$11.75	\$12.39	\$8.39	\$102.49	12.22	0.49
Field Cultivator (23 ft.) + incorp.		\$11.20	\$11.64	\$6.19	\$101.55	16.40	0.34
Field Cultivator (23 ft.)		\$10.35	\$10.79	\$5.68	\$94.26	16.59	0.34
Row Cultivate (12 rows)		\$8.38	\$8.95	\$5.32	\$82.22	15.45	0.44
Row Cultivate-high residue (12 rows)		\$10.25	\$11.08	\$6.08	\$93.97	15.45	0.64
Stalk Shredder (20 ft.)		\$8.67	\$9.63	\$11.59	\$89.95	7.76	0.74
Rotary Hoe (21 ft.)		\$6.20	\$6.43	\$2.41	\$62.67	25.96	0.18
Boom Sprayer-self-Prop. 60 ft.		\$5.70	\$5.84	\$5.53	\$183.09	33.09	0.11
Boom Sprayer-pull type 50 ft.		\$5.38	\$5.51	\$2.56	\$65.56	25.61	0.10
PLANTING:		Custom \$ per Acre ¹	Fuel Adj. Custom \$ per Acre ²	Total Machine Cost per Acre ³	Machine Rate per Hour ⁴	Acres per Hour ⁵	Gallons per Acre ⁶
Planter: conventional w/fertilizer (12 x 30" rows corn or soybeans)		\$15.00	\$15.44	\$9.93	\$139.05	14.00	0.34
Planter: No Till (12 row)		\$16.00	\$16.85	\$17.85	\$214.14	12.00	0.65
Planter: Min Till (12 row)		\$13.50	\$14.19	\$12.47	\$158.73	12.73	0.53
Drill: No Till (15 ft.)		\$13.80	\$14.85	\$19.00	\$120.86	6.36	0.81
Drill: press wheels - (20 ft)		\$12.60	\$13.43	\$11.63	\$98.64	8.48	0.64
Pest Control- scouting		\$4.50	\$4.50				
SUGAR BEETS:		Custom \$ per Acre ¹	Fuel Adj. Custom \$ per Acre ²	Total Machine Cost per Acre ³	Machine Rate per Hour ⁴	Acres per Hour ⁵	Gallons per Acre ⁶
Sugar Beet: Planting (12 row)		\$24.00	\$24.85	\$26.82	\$268.15	10.00	0.65
Sugar Beet: Cultivation		\$12.50	\$13.55	\$14.02	\$78.53	5.60	0.81
Sugar Beet: Topper (6 rows)		\$12.50	\$13.25	\$14.07	\$75.01	5.33	0.58
Sugar Beet: Harvester (6 rows)		\$65.45	\$68.36	\$71.14	\$215.56	3.03	2.24
Sugar Beet: Cart (20 ton)		\$20.00	\$22.34	\$28.84	\$149.97	5.20	1.80
HARVESTING:		Custom \$ per Acre ¹	Fuel Adj. Custom \$ per Acre ²	Total Machine Cost per Acre ³	Machine Rate per Hour ⁴	Acres per Hour ⁵	Gallons per Acre ⁶
Combine: (Corn -6 row head)		\$26.60	\$29.11	\$44.08	\$185.13	4.20	1.93
Combine: Small grains (20 ft head)		\$23.70	\$25.40	\$26.36	\$179.00	6.79	1.31
Combine: Soybeans (18 ft. head)		\$26.00	\$28.63	\$35.03	\$187.39	5.35	2.02
Pick- Ear Corn + 3 wagons		\$24.50	\$26.78	\$20.28	\$24.33	1.20	1.75
Combine: Field Beans (belt pickup)		\$27.00	\$31.42	\$33.34	\$125.03	3.75	3.40
Pulling Dry Beans (knife 6 row)		\$7.50	\$8.36	\$9.69	\$84.58	8.73	0.66
Pulling Dry Beans (rod 6 row)		\$9.00	\$9.86	\$8.63	\$75.32	8.73	0.66
Dry Bean – windrowing (6 row)		\$8.00	\$8.86	\$12.85	\$112.16	8.73	0.66
Grain Cart		\$0.05 per bushel					
Chopping Forage- Pull type (2 row corn)		\$2.50-\$4.00 per Ton	\$3.50-\$5.50/Ton	\$52.22	\$72.06	1.38	3.35
Chopping Forage – w / kernel processor		\$4.00 per Ton	\$5.00-7.00/ Ton				

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Chopping Forage – Pull type Pickup head-12 ft	\$3.75 per Ton	\$5.00- 6.00/ Ton	\$21.68	\$71.76	3.31	1.40
Chopping Forage-Self-propelled - (3 row corn head)	\$3.50- \$4.75 per Ton	\$3.75- \$5.50 per ton	\$54.40	\$138.71	2.55	4.92
Silo Filling - Tower silo: 1 Tractor, Driver 1 Chopper & Wagons	\$5.50 per Ton	\$5.50- \$7.75/ Ton	6.35 / Ton			
Silo Bunker: Chopper & 3 forage wagons	\$6.85 per Ton	\$6.70- 8.00/ ton	4.75 / Ton			
Silage Bagging (9 ft diameter)	\$6.25 per ft.	\$6.25 per ft.	\$6.05/ft			
Raking – Hay 9 ft.	\$6.00	\$6.65	\$8.58	\$29.94	3.49	0.50
Mower-Conditioner: Pull-type (9 ft.)	\$12.75	\$13.27	\$12.30	\$54.00	4.39	0.40
Mower-Conditioner: Self Propelled (16 ft)	\$13.50	\$14.02	\$20.40	\$158.30	7.76	0.40
Small Square Baling: Hay	\$0.50 per bale	\$0.52 per bale	\$11.81	\$41.32	3.50	0.75
Small Square Baling: Straw	\$0.45 per bale	\$0.47 per bale				
Baler, Mow, Rake & Handle - small square	\$1.25- \$1.50 per bale	\$1.75 to \$2.25 per				
Baler, Large Round: Mow, Rake & Handle	\$8.00 per bale	\$8.25- 9.50/ bale				
Baler- 600-800 # bale	\$6.90 per bale	\$6.98- 7.50/ bale				
Baling -1500 #- Large Round	\$ 8.35 per bale	\$8.50- 9.75/ bale			3.04	0.77
Large Square: Baling – Hay	\$7.50- \$8.00 per bale	\$7.50 -9.50/ bale			3.05	0.35
Baler 1000# Round / with wrapper	\$9.35 per bale	\$9.00-10.50/ bale			3.01	0.88
FERTILIZER:	Custom \$ per Acre ¹	Fuel Adj. Custom \$ per Acre ²	Total Machine Cost per Acre ³	Machine Rate per Hour ⁴	Acres per Hour ⁵	Gallons per Acre ⁶
Fertilizer Dry Bulk: Spreader Only	\$4.35					
Lime application	\$5.25		\$6.50			
Fertilizer- Liquid-Knifed In: Equip. Only	\$9.50					
Liquid-Sprayed: Equip. Only	\$5.38					
Fertilizer- Anhydrous: 21 ft.	\$10.00	\$10.82	\$7.32	\$81.97	11.20	0.63
Fertilizer - Anhydrous No-Till 32 ft.	\$10.00	\$10.53	\$6.28	\$106.87	17.01	0.41
Manure Hauling - semi-solid (300 bu.)	45/ hr					
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.)	\$10.50 per 1000 gal.	\$10.50 per 1000 gal.				
Manure Pump, Hauling, Injecting – liquid (9500 gallon cap.)	\$12.50 per 1000 gal.	\$12.50 per 1000 gal.				
MISCELLANEOUS WORK:	Custom \$ per Acre ¹	Fuel Adj. Custom \$ per Acre ²	Total Machine Cost per Acre ³	Machine Rate per Hour ⁴	Acres per Hour ⁵	Gallons per Acre ⁶
Ditch Mowing			\$27.72			
Grain Drying	\$0.035/pt./bu.	\$.035-.045/pt/bu				
Grain Storage	\$0.035/bu./mo.	\$.04-.05/bu/mo				
Custom Farming- Corn	\$88.60	96.79	\$87.14			(all machine operations for growing & harvest)
Custom Farming- Soybeans	79.15	96.33	\$71.71			(all machine operations for growing & harvest)
Custom Farming- Small Grains	64.25	93.08	\$96.42			(all machine operations for growing & harvest)

Labor charged for this table at a rate of \$10.50 per hour unskilled tasks and \$13.00 per hour for skilled labor (planter, sprayer, harvester).

Fuel cost is calculated by adding fuel, oil and lube calculated by adding 15% to the power fuel cost. ** \$4.00 base fuel price used.

1 Custom \$ per acre: Represents the rate obtained from surveys of actual farm data 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 included machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs above. 2007 Iowa Farm Custom Rate Survey, Iowa State University; Ohio Farm Custom Rates -2006, The Ohio State University.

2 Custom \$ per acre: Is the Custom \$ per acre: adjusted to reflect the change in fuel cost from \$2.70 per gallon to the current value at \$4.00 per gallon.

3 Total Machine Cost / Acre: Includes adjusted 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 2007, University of Minnesota 09/2007.

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 2007. If the machine is run at full capacity (or engine clock hours) this per acre rate should be in the custom work value generated.

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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.

Numbers 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
<http://www.aec.msu.edu/agecon/aecreports/aec613.pdf>
- © University of Minnesota - Machinery Economic cost estimates for 2007- 09/07
<http://www.extension.umn.edu/distribution/businessmanagement/DF6696.pdf>
- The Ohio State University- Ohio Farm Custom Rates -2006;
<http://www-agecon.ag.ohio-state.edu/programs/FarmManagement/OhioFarmCustomRates2006.pdf>
- Iowa State University- 2007 Iowa Farm Custom Rates – FM1698
<http://www.extension.iastate.edu/agdm/crops/pdf/a3-10.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. Edited by Dennis Stein, Extension Educator, District Farm Business Management, Michigan State University Extension. revised on 11/07/07. Major shifts in power fuel cost during the past year are having an impact on and have changed the cost of machine operational costs. This information Sheet has made an effort to bring our cost estimates more in line with current fuel costs **. It is suggested that an increase of \$1.00 in fuel cost, will increase most machine operations by 15%.

HOW TO FIGURE YOUR MACHINE WORK RATES – example worksheet			
If you are hiring or doing custom machine work, the following table may help you determine a machine work rate for your farm situation. Machine work rates should represent a value that will cover your total cost of operation and an allocation for overhead costs. The following are the basic components of developing your cost of ownership and operation for any given machine:			
Ownership cost per unit (e.g., acre, bushel, ton, hour) using the <i>DIRT</i>15:			
1. Depreciation: $\frac{\text{original cost} - \text{salvage value}}{\text{years of use}}$	base units \$15,000.00		\$15,000.00
	10		
2. Interest: interest rate x AIV ^a	0.07	int. %	\$525.00
3. Repairs: estimated 2 to 5 % of original cost	0.03	rpt. %	\$450.00
4. Taxes: (0 in Michigan -i.e., no taxes on personal property used in agriculture)			\$0.00
5. Insurance: (estimated 0.5% x AIV for insurance premium)	0.005	ins. %	\$37.50
6. Total ownership cost per year (add lines 1 thru 5)			\$2,512.50
Operating Cost per (acre, hour, bushel, ton)			
A. Ownership cost per unit: total ownership cost ÷ estimated annual use (acre, hour, bushel, ton)	1000	units (A)	\$2.51
1. Tractor: fuel (gallons of fuel per unit x price ÷ gallon)	5.5	units	
	\$2.50	\$/gal	\$13.75
2. Machine: gas or fuel gallons per unit x 1.15 ^b			\$15.81
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)			\$4.00
B. Total operating cost per unit		(B)	\$19.81
C. Total ownership and operating cost per unit		(A + B)	\$22.33
D. Desired profit margin and / or risk premium	5.0	%	
E. Custom Rate (per acre, hour, bushel, ton) <i>Line C x [1+(Line D ÷ 100)]</i>			\$23.44
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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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 rates usual 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 rate x 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: 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 ÷ 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	4.5 %	
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.