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Farm Machinery Economic Costs for 1997: Minnesota Estimates With Adjustments for Use in Canada

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Farm Machinery Economic Costs for 1997: Minnesota Estimates with Adjustments for Use in Canada

by

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Farm Machinery Economic Costs for 1997: Minnesota Estimates with Adjustments for Use in Canada

The tables in this publication contain estimates of farm machinery operations function costs for 1997. The estimates use an economic engineering approach. The data represents an average farming industry cost for specified machines and operations. As other states have reduced their extension programming in the area of farm machinery management, the Minnesota cost estimates have been receiving broader usage around the United States.

Many agricultural input suppliers today are taking a more active role in providing management education as a way of adding value to their products and helping their customers to make decisions about the products. One particular instance of this role is Deere and Company of Moline, Illinois. Deere now uses the figures from this report to provide economic cost estimates for its tillage equipment to make it easier for farmers to compare the cost of tillage with other weed control alternatives such as chemicals. Staff at Deere provided data which was used to refine the set of prices, tractor sizes, and operating speeds in this paper, for use by anyone with an interest in farm machinery operating costs. This paper is similar to University of Minnesota Extension Service folder FO-6696, "MINNESOTA FARM MACHINERY ECONOMIC COST ESTIMATES FOR 1997," but includes a second set of tables with costs expressed in Canadian dollar terms and with adjustments in fuel prices and taxes to Canadian levels, to make the information more useful to producers in Canada. It also includes data for a few additional items of tillage equipment not included in FO-6696.

Machine costs are separated into time and use related categories. Overhead costs accrue to the owner whether or not a machine is used. Overhead includes time-related economic costs: depreciation, interest, insurance and housing. There are no personal property taxes in Minnesota. Operating costs occur only when a machine is used. They include fuel, lubrication, use related repairs and labor charges an economic cost.

OVERHEAD COSTS: Time-related costs are prorated over a 12 year economic life. Salvage values are estimated based on procedures suggested in a February 1995 American Journal of Agricultural Economics article "Depreciation Patterns for Agricultural Machinery," by Timothy Cross and Gregory Perry. Salvage values at 12 years of life now range from 18 to 50 percent. Producers are keeping machinery longer than in the past. Managers, striving for cost control, are sometimes buying a second item often "twinned" to one now in use.

Purchase prices are discounted from manufacturers' list prices. A 10 percent discount off list price appears "normal." The tables include some adjustment for Minnesota sales tax, delivery and setup. An equivalent price adjustment for the income tax expensing option is not included. Insurance is 0.85 percent of new cost. A housing charge on average investment of 33 cents per square foot of shelter space needed per year is made.

A six percent "real" (inflation-adjusted) interest rate is used in the cost estimates. This real rate calculated by taking a nominal rate charged by lenders, minus a measure of the inflation rate per year expected over the years of ownership. The rationale for using the lower real rate is that inflation is expected to increase the income that the equipment will generate in the later years of its life, other things being equal. The first year's income is consequently an underestimate of productivity in later years. An interest charge based on the lower real rate correlates with the lower first year income.

Formulas used to compute machinery overhead costs:

$$\text{Depreciation, \$ per year} = \frac{\text{purchase cost} - \text{salvage value}}{\text{years you will use machine}}$$

$$\text{Interest, \$ per year} = \frac{\text{purchase cost} + \text{salvage value}}{\text{x interest rate}}$$

$$\text{Insurance, \$ per year} = \frac{\text{purchase cost} + \text{salvage value}}{2} \times \text{rate}$$

Housing, \$ per year = price per sq. foot x sq. feet shelter space required

Taxes per year = 0 (no taxes on personal property in Minnesota)

OPERATING COSTS: Fuel cost is calculated by multiplying the fuel consumption by the price of fuel, with fuel consumption assumed to be 0.053 gallons of diesel fuel per horsepower hour. The price of farm diesel fuel is projected at 85 cents per gallon. All power units, tractors, combines, trucks, etc., use diesel fuel. Lubrication cost is assumed to be 15 percent of fuel cost.

The formulas for repair and maintenance costs estimate total accumulated repair costs according to the accumulated hours of lifetime use. Repair and maintenance calculations are based on American Society of Agricultural Engineers formulas. The total cost is then divided to an average per hour cost estimate. The amount of annual use of a machine is an estimate of the number of hours a commercial farmer would use that particular machine in one year.

Labor is charged at an hourly wage rate, which includes a 30 percent benefits factor. Charge rates are \$9.00 per hour for unskilled labor and \$11.50 per hour for skilled labor. Labor per acre for an operation such as plowing or disking is calculated by using the work rate on the implement. Less labor per acre is used in a disking operation that covers more acres per hour than in a plowing operation.

The assumption made about the number of acres of use is a major influence on the average overhead and the average total machine function cost per acre.

These estimates will not represent any given individual's cost. They can still be used to help plan the cropping operation if more specific data are not available. Differences in buying power, repair programs, average annual use, and overall replacement programs should be considered when making adjustments.

Machinery costs are substantial; control of them is important. Custom charges are often based upon them. No one should do custom work unless the charge will cover operating costs plus a return for one's risk and time. Ideally, all allocated per acre or hour overhead costs should also be covered by anyone offering to do custom work. The market for custom work usually does not cover all costs. The market is usually somewhere in between the operating costs and the total of operating plus allocated per acre or hour overhead.

The following tables provide the 1997 machinery function costs broken down into several categories. Some relevant supporting data also are included.

Tractor or Combine Size	Net Cost of New Power Unit	Annual Hours of Use	- - Overhead -- Cost Per Year	- - Operating -- Expense Per Hour	- - Total Cost ¹ - Per Year / Hour of Use	Maint. & Repair Cost/Hr.	Diesel Use/Hr. Gallons
40	18,900	500	1,961	3.92	2.95	1.477	6.88
60	25,200	500	2,608	5.22	4.28	2.142	9.50
75	32,400	500	3,347	6.69	5.40	2.699	6,046
105 MFWD	46,800	550	4,898	8.91	6.47	3.558	8,456
130 MFWD	63,000	550	6,580	11.96	8.12	4.467	11,046
160 MFWD	74,400	600	8,149	13.58	10.07	6,044	14,193
200 MFWD	89,500	600	9,793	16.32	12.51	7,506	17,299
225 MFWD	99,000	500	10,798	21.60	13.64	6,818	17,616
260 4WD	105,300	500	11,480	22.96	15.58	7,788	19,268
310 4WD	109,800	500	11,967	23.93	18.26	9,128	21,095
360 4WD	120,600	500	13,136	26.27	21.06	10,531	23,667
425 4WD	142,300	500	15,484	30.97	24.87	12,433	27,917
Combine Small	101,700	300	11,671	38.90	28.08	8,424	20,095
Combine Med	117,900	300	13,547	45.16	32.58	9,775	23,323
Combine Large	132,900	300	15,287	50.96	37.64	11,293	26,580

¹Does not include labor charge.

Tillage Equipment	Tractor Size (HP)	Net Cost of A New Implement	- - Estimated -- Work Performed Acres/hr	Total Cost /Hour ¹	- - - Total Cost/Acre ² - - -	Labor Tractor + Machine + Charge	Total Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Chisel Plow	10 Ft	75	4,651	5.82	582	27.95	2.08	1.15
Chisel Plow	15 Ft	130 MFWD	5,974	8.73	873	37.74	2.30	0.97
Chisel Plow	19 Ft	160 MFWD	10,310	11.05	1,105	46.92	2.14	1.27
Chisel Plow	23 Ft	200 MFWD	13,016	13.38	1,338	55.68	2.15	1.32
Chisel Plow	31 Ft	225 MFWD	16,483	18.04	1,804	66.73	1.95	1.24
Chisel Plow	37 Ft	310 4 WD	18,801	21.53	2,153	76.92	1.96	1.19
Chisel Plow	47 Ft	360 4 WD	25,629	27.35	2,735	90.90	1.73	1.26
Chisel Plow	57 Ft	425 4 WD	34,602	33.16	3,316	111.01	1.68	1.39

¹ See footnotes at end of table.

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment /Hour ¹	Labor Tractor + Machine	Total Charge Dollars	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Tillage Equipment									
Chisel Plow, Front Disk 9 Ft	105 MFWD	6,659	5.41	541	33.95	2.84	1.74	1.70	6.28
Chisel Plow, Front Disk 16 Ft	200 MFWD	14,251	10.05	1,005	57.59	2.87	1.95	0.91	5.73
Chisel Plow, Front Disk 19 Ft	260 4WD	20,516	11.59	1,159	75.57	3.32	2.40	0.79	6.52
Chisel Plow, Disk 21 Ft Fold	310 4WD	21,515	13.14	1,314	80.55	3.21	2.22	0.70	6.13
Moldboard Plow 4-18	75	9,274	2.78	334	32.89	4.35	4.18	3.30	11.82
Moldboard Plow 5-18	105 MFWD	11,332	3.48	417	38.79	4.42	4.09	2.64	11.16
Moldboard Plow 6-18	130 MFWD	13,552	4.17	542	45.83	4.81	3.97	2.20	10.98
Moldboard Plow 8-18	160 MFWD	18,135	5.56	723	54.94	4.25	3.97	1.65	9.88
Moldboard Plow 10-18	260 4WD	26,342	6.95	1,043	78.52	5.54	4.43	1.32	11.29
Reversible Plow 2-18	60	2,119	1.39	209	21.30	6.83	1.89	6.60	15.32
Reversible Plow 5-18	160 MFWD	6,369	3.48	522	40.42	6.80	2.18	2.64	11.62
Reversible Plow 5-18 HD	160 MFWD	8,571	3.48	522	43.07	6.80	2.94	2.64	12.39
Reversible Plow 8-18	225 MFWD	11,917	5.56	835	58.64	6.33	2.56	1.65	10.54
Field Cultivator 12 Ft	75	4,668	9.02	1,082	27.11	1.34	0.65	1.02	3.01
Field Cultivator 18 Ft	105 MFWD	7,082	12.98	1,558	33.23	1.18	0.67	0.71	2.56
Field Cultivator 28 Ft	160 MFWD	11,787	20.19	2,423	47.18	1.17	0.71	0.45	2.34
Field Cultivator 37 Ft	225 MFWD	16,777	26.68	3,202	64.61	1.32	0.76	0.34	2.42
Field Cultivator 47 Ft	260 4WD	25,155	33.90	4,068	77.66	1.14	0.88	0.27	2.29
Field Cultivator 60 Ft	310 4WD	31,172	43.27	5,193	88.21	0.97	0.85	0.21	2.04
Tandem Disk 9 Ft Rigid	40	6,586	5.41	541	25.09	1.27	1.67	1.70	4.64
Tandem Disk 11 Ft Rigid	60	5,468	6.40	640	27.02	1.48	1.30	1.43	4.22
Tandem Disk 15 Ft Rigid	105 MFWD	10,838	8.73	873	40.74	1.76	1.85	1.05	4.67
Tandem Disk 21 Ft Fold	160 MFWD	16,655	12.22	1,222	57.50	1.94	2.02	0.75	4.71
Tandem Disk H.D. 12 Ft Rigid	130 MFWD	8,562	6.98	698	42.09	2.88	1.84	1.31	6.03
Tandem Disk H.D. 18 Ft Fold	160 MFWD	16,560	10.47	1,047	57.43	2.26	2.35	0.88	5.48
Tandem Disk H.D. 30 Ft Fold	360 4WD	27,759	17.45	1,745	97.11	2.71	2.33	0.53	5.56
Offset Disk 7 Ft	60	4,756	3.25	325	25.23	2.93	2.02	2.83	7.77
Offset Disk 12 Ft	105 MFWD	8,591	5.56	556	36.40	2.76	2.13	1.65	6.54
Offset Disk 16 Ft	130 MFWD	10,738	7.42	742	44.25	2.71	2.02	1.24	5.96
Offset Disk Wing 21 Ft	200 MFWD	19,165	9.74	974	64.07	2.96	2.68	0.94	6.58
Offset Disk Wing 23 Ft	225 MFWD	23,082	10.66	1,066	75.65	3.30	2.93	0.86	7.09
V-Ripper 25 O.C. 10 Ft	160 MFWD	9,715	6.18	618	45.79	3.83	2.09	1.49	7.41
V-Ripper 25 O.C. 14 Ft	200 MFWD	11,874	8.65	865	53.86	3.33	1.83	1.06	6.22
V-Ripper 25 O.C. 18 Ft	260 4WD	17,271	11.13	1,113	70.68	3.46	2.06	0.83	6.35
V-Ripper 25 O.C. 25 Ft	310 4WD	18,350	15.45	1,545	76.09	2.73	1.60	0.59	4.92

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment /Hour ¹	Labor Tractor + Machine	Total Charge Dollars	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
V-Ripper 30 O.C. 12.5 Ft	160 MFWD	8,121	7.73	773	43.84	3.06	1.42	1.19	5.67
V-Ripper 30 O.C. 17 Ft	200 MFWD	10,279	10.51	1,051	51.98	2.74	1.33	0.87	4.95
Comb Fld Cult Incorp 16 Ft	160 MFWD	18,075	11.54	1,154	59.11	2.05	2.28	0.80	5.12
Comb Fld Cult Incorp 23 Ft	200 MFWD	24,391	16.59	1,659	73.60	1.74	2.15	0.55	4.44
Comb Fld Cult Incorp 26 Ft	260 4WD	25,494	18.03	1,803	85.00	2.14	2.07	0.51	4.71
Comb Fld Cult Incorp 33 Ft	310 4WD	30,994	23.80	2,380	96.78	1.77	1.91	0.39	4.07
Comb Disk & V-Ripper 12.5 Ft	225 MFWD	17,437	6.44	644	67.95	5.47	3.66	1.43	10.55
Comb Disk & V-Ripper 17.5 Ft	360 4WD	23,396	9.02	902	88.29	5.25	3.53	1.02	9.79
Disk,Fld Cult Finish 13 Ft	130 MFWD	14,179	9.79	979	49.13	2.05	2.03	0.94	5.02
Disk,Fld Cult Finish 22 Ft	200 MFWD	18,544	9.79	979	63.64	2.95	2.62	0.94	6.50
Disk,Fld Cult Finish 30 Ft	260 4WD	26,648	15.45	1,545	84.26	2.49	2.36	0.59	5.45
Disk,Fld Cult Finish 38 Ft	310 4WD	24,447	9.79	979	85.17	4.31	3.45	0.94	8.70
Roller Harrow 12 Ft	75	8,236	7.42	742	32.82	1.63	1.56	1.24	4.42
Roller Harrow 28 Ft	160 MFWD	21,447	17.31	1,731	62.17	1.37	1.69	0.53	3.59
Springtooth Drag 30 Ft	60	7,453	21.64	649	45.09	0.44	1.20	0.45	2.08
Springtooth Drag 48 Ft	75	9,406	34.62	1,212	51.29	0.35	0.85	0.28	1.48
Spring Tooth Drag 58 Ft	105 MFWD	11,000	41.83	4,183	39.14	0.37	0.35	0.22	0.94
Planting Equipment									
Row Crop Planter 4-36	40	10,184	5.60	392	38.18	1.23	3.21	2.38	6.82
Row Crop Planter 6-30	60	15,040	7.00	490	49.14	1.36	3.76	1.91	7.02
Row Crop Planter 8-30	75	20,290	9.33	653	60.77	1.30	3.79	1.43	6.51
Row Crop Planter 12-30	105 MFWD	32,637	14.00	980	85.45	1.10	4.05	0.95	6.10
Min-Til Planter 4-36	60	16,817	5.09	356	52.05	1.87	5.74	2.62	10.22
Min-Til Planter 6-30	75	23,160	6.36	509	61.47	1.90	5.66	2.10	9.66
Min-Til Planter 8-30	105 MFWD	27,640	8.48	594	76.51	1.81	5.63	1.57	9.02
Min-Til Planter 12-30	160 MFWD	46,599	12.73	1,273	98.11	1.86	4.80	1.05	7.71
Min-Til Planter 16-30	200 MFWD	63,994	12.73	1,655	112.92	2.27	5.56	1.05	8.87
Potato Planter Filler	None	11,542	5.75	322	25.00	0.00	4.35	0.00	4.35
Potato Row Marker 4 Row	130 MFWD	10,795	4.98	214	61.28	4.03	5.41	2.86	12.31
Potato Row Marker 6 Row	160 MFWD	17,271	7.47	321	81.00	3.17	5.77	1.91	10.84
Potato Row Marker 8 Row	160 MFWD	21,588	10.79	464	91.91	2.19	5.00	1.32	8.52
Potato Planter 4 Row	130 MFWD	32,382	3.83	214	111.84	5.24	17.32	6.64	29.20
Potato Planter 6 Row	130 MFWD	43,177	5.75	322	134.04	3.50	15.41	4.42	23.33
Potato Planter 8 Row	160 MFWD	59,418	8.30	465	170.96	2.85	14.68	3.06	20.59
Beet Planter 12 Row	105 MFWD	27,345	4.67	280	83.06	3.29	11.45	3.06	17.80
Grain Drill 25 Ft	130 MFWD	25,674	10.61	848	72.96	1.89	3.78	1.20	6.88
Grain Drill 30 Ft	130 MFWD	31,269	12.73	1,018	81.56	1.58	3.83	1.00	6.41

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment Cost /Hour ¹	Labor Cost	Total Cost/Acre ²	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Tractor + Machine + Charge Dollars									
Grain Drill 35 Ft	160 MFWD	34,947	14.85	1,188	90.80	1.59	3.66	0.86	6.12
Presswheel Drill 12 Ft	75	16,756	5.09	382	52.27	2.38	5.39	2.51	10.27
Presswheel Drill 16 Ft	105 MFWD	21,794	6.79	509	63.77	2.26	5.25	1.88	9.39
Presswheel Drill 20 Ft	130 MFWD	24,365	8.48	636	72.76	2.37	4.70	1.50	8.58
Presswheel Drill 30 Ft	160 MFWD	37,435	12.73	1,018	94.54	1.86	4.57	1.00	7.43
Presswheel Drill 40 Ft	200 MFWD	48,515	16.97	1,358	116.79	1.70	4.43	0.75	6.88
Air Seeder Drill 36 Ft	260 4WD	52,926	15.27	1,222	133.18	2.52	5.36	0.84	8.72
No-Till Drill 15 Ft	130 MFWD	27,097	6.36	509	74.86	3.16	6.60	2.01	11.76
No-Till Drill 20 Ft	160 MFWD	40,136	8.48	679	98.49	2.79	7.32	1.50	11.61
No-Till Drill 30 Ft	200 MFWD	52,423	12.73	1,018	122.59	2.27	6.36	1.00	9.63
Crop Maintenance Equipment									
Cultivator 4-36	75	3,184	6.18	618	25.54	1.96	0.66	1.51	4.13
Cultivator 6-30	60	3,784	7.73	773	23.71	1.23	0.63	1.21	3.07
Cultivator 8-30	130 MFWD	5,395	10.30	1,030	36.35	1.95	0.67	0.91	3.53
Cultivator 12-30	160 MFWD	9,981	15.45	1,545	45.40	1.53	0.80	0.61	2.94
Cultivator 16-30	200 MFWD	13,334	20.61	2,061	54.73	1.40	0.80	0.45	2.66
Cultivator 24-22	225 MFWD	28,398	22.67	2,267	79.19	1.55	1.53	0.41	3.49
Cultivator Hi Res 4-36	75	5,819	6.18	618	28.77	1.96	1.17	1.53	4.65
Cultivator Hi Res 6-30	105 MFWD	7,942	7.73	773	34.55	1.99	1.27	1.21	4.47
Cultivator Hi Res 8-30	160 MFWD	10,800	10.30	1,030	46.31	2.30	1.29	0.91	4.50
Cultivator Hi Res 12-30	225 MFWD	18,318	15.45	1,545	68.41	2.28	1.45	0.70	4.43
Rotary Hoe 15 Ft	75	3,681	18.55	1,855	26.82	0.65	0.29	0.50	1.45
Rotary Hoe 21 Ft	105 MFWD	5,473	25.96	2,596	32.72	0.59	0.31	0.36	1.26
Rotary Hoe 30 Ft	160 MFWD	8,351	37.09	3,709	45.05	0.64	0.32	0.25	1.21
Potato Cultivator 4 Row	75	4,112	5.36	778	25.75	2.25	0.80	1.75	4.80
Potato Cultivator 6 Row	105 MFWD	6,271	8.04	1,126	31.44	1.91	0.83	1.16	3.91
Sugar Beet Cult 12 Row	105 MFWD	9,281	5.60	336	41.58	2.75	3.01	1.67	7.43
S-P Boom Sprayer 47 Ft	None	49,464	25.92	2,592	89.21	0.00	2.89	0.55	3.44
S-P Boom Sprayer 60 Ft	None	61,502	33.09	3,309	107.34	0.00	2.81	0.43	3.24
Sprayer 30 Ft	40	4,009	15.36	1,229	28.78	0.45	0.49	0.94	1.87
Boom Sprayer 50 Ft	60	5,088	25.61	2,561	32.17	0.37	0.32	0.56	1.26
Sprayer Hi Pres 50 Ft	60	21,382	23.64	2,364	56.63	0.40	1.39	0.61	2.40
Anhydrous Appl. 30 Ft	160 MFWD	16,653	12.73	509	88.63	1.86	4.16	0.94	6.96
Fert Sprd 4 T40 Ft	60	8,636	23.76	713	56.15	0.40	1.46	0.50	2.36
Corn Stalk Chopper 12 Ft	60	7,659	4.65	465	30.61	2.04	2.41	2.13	6.58
Potato Shredder 18 Ft	130 MFWD	11,256	6.98	698	46.61	2.88	2.38	1.42	6.68
Rock Picker 6 Ft	75	11,255	1.42	85	50.85	8.53	19.71	7.62	35.85

Tractor Size (HP)	Net Cost of A New Implement	Work Performed Acres/hr	- - Estimated	- - Total Cost / Acre ²	Equipment Cost / Hour ¹	Total Cost / Acre ²	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Harvesting Equipment								
Mower-Conditioner 9 Ft	40	11,484	4.36	349	35.08	1.58	4.19	2.27
Rotary Hay Mower 6 Ft	40	5,643	2.91	291	25.52	2.36	3.32	3.09
Rotary Mow/Cond 9 Ft	75	14,318	4.36	349	43.91	2.77	5.13	2.17
Hay Rake (Hyd) 9 Ft	40	3,735	3.49	698	19.10	1.97	0.92	2.58
Hay Swather-Cond 12 Ft	60	19,620	5.82	465	49.91	1.63	5.40	1.55
Swather-Cond 16 Ft Self-Prop	None	61,920	7.76	621	101.43	0.00	11.91	1.16
Grain Swather 18 Ft Pull Type	75	9,612	8.73	698	36.08	1.39	1.72	1.03
Grain Swather 21 Ft Pull Type	75	14,169	10.18	815	42.73	1.19	2.12	0.88
Grain Swather 21 Ft Self-Prop	None	43,177	10.18	815	75.04	0.00	6.49	0.88
Hay Baler Pto Twine	40	12,500	3.78	756	32.81	1.82	3.48	3.38
Round Baler 1000 Lb	60	14,549	3.01	603	41.14	3.15	7.18	3.31
Round Baler 1500 Lb	60	17,856	4.64	927	46.05	2.05	5.73	2.15
Rd Baler/Wrap 1000 Lb	60	20,483	3.01	603	49.90	3.15	10.09	3.31
Rd Bale Wrapper Silage	60	16,335	2.48	372	42.32	3.83	9.60	3.63
Bale Wrapper Dry Hay	40	7,042	2.48	372	26.22	2.77	4.17	3.63
Forage Harvester 2 Row	105 MFWD	19,787	1.65	165	52.63	9.29	14.80	7.72
Forage SP Harvstr 2 Row	None	132,323	2.04	305	124.36	0.00	54.80	6.27
Forage SP Harvstr 3 Row	None	159,235	3.05	458	147.50	0.00	44.11	4.18
Large Forage Blower	60	4,919	1.00	50	29.61	9.50	11.11	9.00
Combine Grain Head 15'	Combine Small	9,600	5.09	1,018	86.37	13.16	1.30	2.51
Combine Grain Hd 20'	Combine Med	12,050	6.79	1,358	98.81	11.45	1.22	1.88
Combine Grain Head 30'	Combine Large	16,750	10.18	2,036	112.87	8.70	1.13	1.25
Corn Combine 4-36	Combine Small	16,025	3.36	672	90.78	19.94	3.28	3.80
Corn Combine 4-30	Combine Small	17,579	2.80	560	91.80	23.92	4.30	4.56
Corn Combine 6-30	Combine Med	23,450	4.20	840	106.61	18.51	3.83	3.04
Corn Combine 8-30	Combine Med	28,140	5.09	1,018	109.85	15.27	3.80	2.51
Corn Combine 12-30	Combine Large	43,350	7.64	1,527	131.02	11.60	3.88	1.67
Potato Windrower 2 Row	75	28,065	1.49	149	59.43	8.09	25.19	6.51
Potato Windrower 4 Row	105 MFWD	61,576	2.99	299	106.85	5.15	27.37	3.25
Potato Harvester Seed 2 Row	130 MFWD	59,418	1.38	295	104.08	14.57	34.18	26.74
Potato Harvester Seed 4 Row	130 MFWD	93,959	2.76	590	131.32	7.28	26.96	13.37
Potato Harvester 2 Row	130 MFWD	48,623	1.84	294	101.91	10.92	24.45	20.06
Disk Bean Top Cutter 6R	105 MFWD	11,565	6.40	512	46.86	2.40	2.93	1.99
Sugar Beet Lifter 4 Row	105 MFWD	42,250	3.47	277	113.69	4.44	24.69	3.68
Sugar Beet Lifter 6 Row	130 MFWD	55,100	5.20	520	131.77	3.86	19.02	2.45
Sugar Beet Topper 6 Row	75	16,756	5.33	427	52.22	2.27	5.37	2.16

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated -- Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ² - - -	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
			/Hour ¹	Equipment	Labor	Total
				Tractor + Machine	+ Charge Dollars	
Sugar Beet Topper 12 Row	160 MFWD	32,382	10.67	853	90.36	2.22
Sugar Beet Wagon 8 Ton	75	8,944	3.47	277	35.18	3.49
Sugar Beet Wagon 20 Ton	200 MFWD	35,620	5.20	520	83.23	5.54
Sugar Beet Wagon 24 Ton	225 MFWD	37,779	5.20	520	92.34	6.78
Manure Spreader 150 Bu	75	5,324	3.49	349	31.51	3.46
Manure Spreader 300 Bu	105 MFWD	7,284	3.49	349	38.55	4.40
Manure Spreader 400 Bu	130 MFWD	11,558	4.65	465	51.39	4.31
Gravity Grain Box 185 Bu	60	2,262	1.65	215	21.34	5.74
Gravity Grain Box 240 Bu	75	2,930	1.65	215	24.65	7.31
Baled Hay Wagon	40	2,723	3.78	945	27.06	1.82
Forage Wagon 14 Ft	40	9,200	1.65	215	25.80	4.16
Forage Wagon 16 Ft	40	10,279	1.65	215	26.77	4.16
1 Ton Hay Stacker	60	20,714	4.15	829	43.84	2.29
3 Ton Hay Stacker	75	30,686	4.84	1,064	56.56	2.50
6 Ton Hay Stacker	105 MFWD	49,550	5.53	1,548	80.08	2.78

¹Total cost per hour is calculated as yearly depreciation, interest, insurance, housing and repairs divided by hours used per year. Implement and power unit costs are summed. Fuel, lubricants and labor are added to the total.

²Total cost per acre is total cost per hour divided by acres per hour. Includes operating expenses, labor, and overhead costs.

³Operating expenses are included in total cost/acre. Operating expenses include fuel, lubricants, repairs and maintenance, but not labor. Labor is listed separately.

CONVERSION OF THE MINNESOTA COST ESTIMATES TO CANADIAN ECONOMIC CONDITIONS

The above cost estimates may be more useful to Canadian farm operators if some simple adjustments are made. The Minnesota cost estimates were converted to Canadian dollar terms using an April, 1997 conversion rate of \$1.3974 Canadian dollars per \$1.00 U.S. Machinery prices, interest and insurance rates, and the equipment shelter charge were assumed to be the same, apart from the currency conversion, based on information provided by the machinery manufacturer and Canadian machinery dealers. The hourly charge for the machinery operator's wage and fringe benefits is \$12.60 for an unskilled operator and \$16.10 for operations requiring a skilled operator.

The only two cost items that are assumed to be different from costs under Minnesota conditions are fuel and taxes. The diesel fuel price is \$1.50 per gallon, or just under \$0.40 per liter. Canadian sales taxes on machinery (the GST and PST) are rebated on farm machinery so are not included here. Minnesota charges a 2.5 percent sales tax on machinery sales above the trade-in value, so this tax is included in the Minnesota cost estimates on the difference between the purchase price and salvage value.

Tractor or Combine Size	Net Cost of New Power Unit	Annual Hours of Use	- - Overhead - -			- - Operating - -			- Total Cost -			Maint. & Repair Cost/Hr.	Diesel Use/Hr. Gallons
			Year	Hour	Hour	Expense Per Hour	Year	Hour	Per Year	/ Hour of Use	Maint. & Repair Cost/Hr.		
Canadian Dollars													
40	26,400	500	2,698	5.40	4.89	2,445	5,143	10.29	1.23	2.1			
60	35,200	500	3,589	7.18	7.13	3,564	7,154	14.31	1.64	3.2			
75	45,300	500	4,611	9.22	8.97	4,485	9,096	18.19	2.11	4.0			
105 MFWD	65,400	550	6,739	12.25	11.04	6,071	12,810	23.29	1.44	5.6			
130 MFWD	88,000	550	9,049	16.45	13.82	7,602	16,651	30.27	1.94	6.9			
160 MFWD	103,900	600	11,181	18.63	17.12	10,273	21,454	35.76	2.49	8.5			
125,100	125,100	600	13,448	22.41	21.29	12,773	26,221	43.70	3.00	10.6			
200 MFWD	138,300	500	14,823	29.65	23.34	11,669	26,492	52.98	2.77	11.9			
225 MFWD	147,100	500	15,759	31.52	26.71	13,357	29,115	58.23	2.94	13.8			
260 4WD	153,400	500	16,429	32.86	31.41	15,705	32,134	64.27	3.07	16.4			
310 4WD	168,500	500	18,035	36.07	36.28	18,142	36,176	72.35	3.37	19.1			
360 4WD	198,900	500	21,267	42.53	42.83	21,417	42,684	85.37	3.98	22.5			
425 4WD	142,100	300	15,987	53.29	42.76	12,828	28,815	96.05	25.85	9.8			
Combine Small	164,800	300	18,565	61.88	49.62	14,887	33,452	111.51	29.97	11.4			
Combine Med	185,700	300	20,942	69.81	57.55	17,265	38,207	127.36	33.78	13.8			

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment /Hour ¹	Labor Tractor + Machine	Total Charge Dollars	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Canadian Dollars									
Tillage Equipment									
Chisel Plow 10 Ft	75	6,500	5.82	582	40.30	3.13	1.59	2.21	6.93
Chisel Plow 15 Ft	130 MFWD	8,348	8.73	873	54.87	3.47	1.35	1.47	6.29
Chisel Plow 19 Ft	160 MFWD	14,408	11.05	1,105	68.12	3.23	1.77	1.16	6.16
Chisel Plow 23 Ft	200 MFWD	18,188	13.38	1,338	81.03	3.27	1.83	0.96	6.06
Chisel Plow 31 Ft	225 MFWD	23,033	18.04	1,804	96.75	2.94	1.71	0.71	5.36
Chisel Plow 37 Ft	310 4WD	26,273	21.53	2,153	112.52	2.99	1.64	0.60	5.23
Chisel Plow 47 Ft	360 4WD	35,814	27.35	2,735	132.84	2.65	1.74	0.47	4.86
Chisel Plow 57 Ft	425 4WD	48,353	33.16	3,316	161.93	2.57	1.92	0.39	4.88
Chisel Plow, Front Disk 9 Ft	105 MFWD	9,305	5.41	541	49.09	4.31	2.39	2.38	9.07
Chisel Plow, Front Disk 16 Ft	200 MFWD	19,914	10.05	1,005	83.52	4.35	2.68	1.28	8.31
Chisel Plow, Front Disk 19 Ft	260 4WD	28,668	11.59	1,159	109.45	5.02	3.31	1.11	9.44
Chisel Plow, Disk 21 Ft Fold	310 4WD	30,066	13.14	1,314	117.30	4.89	3.06	0.98	8.93
Moldboard Plow 4-18	75	12,959	2.78	334	47.16	6.54	5.79	4.62	16.95
Moldboard Plow 5-18	105 MFWD	15,835	3.48	417	55.88	6.70	5.68	3.70	16.07
Moldboard Plow 6-18	130 MFWD	18,938	4.17	542	66.11	7.26	5.51	3.08	15.84
Moldboard Plow 8-18	160 MFWD	25,342	5.56	723	79.27	6.43	5.51	2.31	14.25
Moldboard Plow 10-18	260 4WD	36,810	6.95	1,043	113.85	8.37	6.15	1.85	16.37
Reversible Plow 2-18	60	2,961	1.39	209	30.80	10.29	2.62	9.24	22.15
Reversible Plow 5-18	160 MFWD	8,900	3.48	522	59.14	10.28	3.03	3.70	17.01
Reversible Plow 5-18 HD	160 MFWD	11,977	3.48	522	62.81	10.28	4.08	3.70	18.06
Reversible Plow 8-18	225 MFWD	16,653	5.56	835	85.59	9.52	3.55	2.31	15.38
Field Cultivator 12 Ft	75	6,523	9.02	1,082	39.13	2.02	0.90	1.43	4.34
Field Cultivator 18 Ft	105 MFWD	9,897	12.98	1,558	48.16	1.79	0.93	0.99	3.71
Field Cultivator 28 Ft	160 MFWD	16,472	20.19	2,423	68.49	1.77	0.98	0.64	3.39
Field Cultivator 37 Ft	225 MFWD	23,444	26.68	3,202	93.83	1.99	1.05	0.48	3.52
Field Cultivator 47 Ft	260 4WD	35,152	33.90	4,068	112.58	1.72	1.22	0.38	3.32
Field Cultivator 60 Ft	310 4WD	43,559	43.27	5,193	128.18	1.49	1.18	0.30	2.96
Tandem Disk 9 Ft Rigid	40	9,204	5.41	541	35.58	1.90	2.30	2.38	6.58
Tandem Disk 11 Ft Rigid	60	7,640	6.40	640	38.66	2.24	1.80	2.01	6.04
Tandem Disk 15 Ft Rigid	105 MFWD	15,145	8.73	873	58.46	2.67	2.56	1.47	6.70
Tandem Disk 21 Ft Fold	160 MFWD	23,274	12.22	1,222	82.61	2.93	2.78	1.05	6.76

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment /Hour ¹	Labor Tractor + Machine	Total Charge Dollars	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Canadian Dollars									
Tandem Disk H.D. 12 Ft Rigid	130 MFWD	11,964	6.98	698	60.82	4.34	2.53	8.71	2.55
Tandem Disk H.D. 18 Ft Fold	160 MFWD	23,141	10.47	1,047	82.51	3.41	3.24	1.23	7.88
Tandem Disk H.D. 30 Ft Fold	360 4WD	38,790	17.45	1,745	141.17	4.15	3.21	0.74	8.09
Offset Disk 7 Ft	60	6,645	3.25	325	36.18	4.41	2.78	3.96	11.15
Offset Disk 12 Ft	105 MFWD	12,004	5.56	556	52.46	4.19	2.93	2.31	9.43
Offset Disk 16 Ft	130 MFWD	15,005	7.42	742	63.77	4.08	2.78	1.73	8.60
Offset Disk Wing 21 Ft	200 MFWD	26,781	9.74	974	92.44	4.49	3.69	1.32	9.49
Offset Disk Wing 23 Ft	225 MFWD	32,255	10.66	1,066	108.85	4.97	4.03	1.21	10.21
V-Ripper 25 O.C. 10 Ft	160 MFWD	13,575	6.18	618	66.55	5.78	2.90	2.08	10.76
V-Ripper 25 O.C. 14 Ft	200 MFWD	16,592	8.65	865	78.51	5.05	2.54	1.49	9.07
V-Ripper 25 O.C. 18 Ft	260 4WD	24,134	11.13	1,113	102.90	5.23	2.86	1.16	9.25
V-Ripper 25 O.C. 25 Ft	310 4WD	25,642	15.45	1,545	111.35	4.16	2.22	0.83	7.21
V-Ripper 30 O.C. 12.5 Ft	160 MFWD	11,348	7.73	773	63.85	4.63	1.97	1.66	8.26
V-Ripper 30 O.C. 17 Ft	200 MFWD	14,364	10.51	1,051	75.91	4.16	1.84	1.22	7.22
Comb Fld Cult Incorp 16 Ft	160 MFWD	25,258	11.54	1,154	84.83	3.10	3.14	1.11	7.35
Comb Fld Cult Incorp 23 Ft	200 MFWD	34,084	16.59	1,659	105.61	2.63	2.96	0.77	6.37
Comb Fld Cult Incorp 26 Ft	260 4WD	35,626	18.03	1,803	122.48	3.23	2.85	0.71	6.79
Comb Fld Cult Incorp 33 Ft	310 4WD	43,311	23.80	2,380	139.72	2.70	2.63	0.54	5.87
Comb Disk & V-Ripper 12.5 Ft	225 MFWD	24,366	6.44	644	98.25	8.23	5.03	2.00	15.26
Comb Disk & V-Ripper 17.5 Ft	360 4WD	32,693	9.02	902	128.97	8.03	4.85	1.43	14.31
Disk,Fld Cult Finish 13 Ft	130 MFWD	19,813	9.79	979	70.49	3.09	2.80	1.31	7.20
Disk,Fld Cult Finish 22 Ft	200 MFWD	25,913	9.79	979	91.86	4.46	3.61	1.31	9.38
Disk,Fld Cult Finish 30 Ft	260 4WD	37,238	15.45	1,545	121.41	3.77	3.26	0.83	7.86
Disk,Fld Cult Finish 38 Ft	310 4WD	34,162	9.79	979	123.67	6.57	4.76	1.31	12.64
Roller Harrow 12 Ft	75	11,509	7.42	742	46.95	2.45	2.14	1.73	6.33
Roller Harrow 28 Ft	160 MFWD	29,970	17.31	1,731	89.01	2.07	2.33	0.74	5.14
Springtooth Drag 30 Ft	60	10,415	21.64	649	63.66	0.66	1.65	0.63	2.94
Springtooth Drag 48 Ft	75	13,144	34.62	1,212	72.55	0.53	1.18	0.39	2.10
Spring Tooth Drag 58 Ft	105 MFWD	15,371	41.83	4,183	56.34	0.56	0.49	0.30	1.35
Planting Equipment									
Row Crop Planter 4-36	40	14,230	5.60	392	53.76	1.84	4.43	3.34	9.60
									1.48
									0.38

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment /Hour ¹	Labor Tractor + Machine	Total Charge Dollars	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Canadian Dollars									
Row Crop Planter 6-30	60	21,017	7.00	490	69.27	2.04	5.18	2.67	9.90
Row Crop Planter 8-30	75	28,353	9.33	653	85.63	1.95	5.22	2.00	9.17
Row Crop Planter 12-30	105 MFWD	45,607	14.00	980	120.26	1.66	5.59	1.33	8.59
Min-Til Planter 4-36	60	23,501	5.09	356	73.30	2.81	7.92	3.67	14.40
Min-Til Planter 6-30	75	32,363	6.36	509	86.62	2.86	7.82	2.93	13.61
Min-Til Planter 8-30	105 MFWD	38,624	8.48	594	107.92	2.74	7.77	2.20	12.72
Min-Til Planter 12-30	160 MFWD	65,118	12.73	1,273	138.86	2.81	6.63	1.47	10.91
Min-Til Planter 16-30	200 MFWD	89,425	12.73	1,655	160.20	3.43	7.69	1.47	12.59
Potato Planter Filler	None	16,128	5.75	322	34.53	0.00	6.01	0.00	6.01
Potato Row Marker 4 Row	130 MFWD	15,084	4.98	214	87.35	6.08	7.45	4.01	17.54
Potato Row Marker 6 Row	160 MFWD	24,134	7.47	321	115.08	4.79	7.95	2.67	15.41
Potato Row Marker 8 Row	160 MFWD	30,167	10.79	464	130.12	3.31	6.89	1.85	12.05
Potato Planter 4 Row	130 MFWD	45,251	3.83	214	157.35	7.90	23.89	9.29	41.08
Potato Planter 6 Row	130 MFWD	60,335	5.75	322	187.95	5.27	21.25	6.19	32.71
Potato Planter 8 Row	160 MFWD	83,031	8.30	465	239.43	4.31	20.24	4.29	28.84
Beet Planter 12 Row	105 MFWD	38,211	4.67	280	116.95	4.99	15.79	4.28	25.06
Grain Drill 25 Ft	130 MFWD	35,877	10.61	848	103.51	2.85	5.22	1.68	9.76
Grain Drill 30 Ft	130 MFWD	43,695	12.73	1,018	115.38	2.38	5.28	1.40	9.07
Grain Drill 35 Ft	160 MFWD	48,835	14.85	1,188	128.70	2.41	5.06	1.20	8.67
Presswheel Drill 12 Ft	75	23,415	5.09	382	73.90	3.57	7.43	3.51	14.52
Presswheel Drill 16 Ft	105 MFWD	30,455	6.79	509	90.34	3.43	7.24	2.63	13.31
Presswheel Drill 20 Ft	130 MFWD	34,047	8.48	636	103.23	3.57	6.49	2.11	12.17
Presswheel Drill 30 Ft	160 MFWD	52,311	12.73	1,018	133.85	2.81	6.30	1.40	10.52
Presswheel Drill 40 Ft	200 MFWD	67,794	16.97	1,358	165.36	2.58	6.12	1.05	9.74
Air Seeder Drill 36 Ft	260 4WD	73,959	15.27	1,222	189.13	3.81	7.40	1.17	12.38
No-Till Drill 15 Ft	130 MFWD	37,866	6.36	509	106.14	4.76	9.11	2.81	16.68
No-Till Drill 20 Ft	160 MFWD	56,085	8.48	679	139.31	4.21	10.10	2.11	16.42
No-Till Drill 30 Ft	200 MFWD	73,256	12.73	1,018	173.37	3.43	8.78	1.40	13.62
Crop Maintenance Equipment									
Cultivator 4-36	75	4,450	6.18	618	36.95	2.94	0.91	2.12	5.98
Cultivator 6-30	60	5,287	7.73	773	34.13	1.85	0.87	1.70	4.42
Cultivator 8-30	130 MFWD	7,538	10.30	1,030	52.94	2.94	0.93	1.27	5.14

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment /Hour ¹	Labor Tractor + Machine	Total Charge Dollars	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Canadian Dollars									
Cultivator 12-30	160 MFWD	13,947	15.45	1,545	66.00	2.31	1.11	0.85	4.27
Cultivator 16-30	200 MFWD	18,633	20.61	2,061	79.70	2.12	1.11	0.64	3.87
Cultivator 24-22	225 MFWD	39,683	22.67	2,267	113.97	2.34	2.11	0.58	5.03
Cultivator Hi Res 4-36	75	8,132	6.18	618	41.43	2.94	1.62	2.14	1.44
Cultivator Hi Res 6-30	105 MFWD	11,098	7.73	773	49.98	3.01	1.76	1.70	6.70
Cultivator Hi Res 8-30	160 MFWD	15,092	10.30	1,030	67.27	3.47	1.79	1.27	6.47
Cultivator Hi Res 12-30	225 MFWD	25,597	15.45	1,545	99.07	3.43	2.00	0.98	6.41
Rotary Hoe 15 Ft	75	5,144	18.55	1,855	38.70	0.98	0.40	0.71	2.09
Rotary Hoe 21 Ft	105 MFWD	7,648	25.96	2,596	47.41	0.90	0.42	0.50	1.83
Rotary Hoe 30 Ft	160 MFWD	11,670	37.09	3,709	65.44	0.96	0.45	0.35	1.76
Potato Cultivator 4 Row	75	5,746	5.36	778	37.25	3.39	1.11	2.44	6.95
Potato Cultivator 6 Row	105 MFWD	8,763	8.04	1,126	45.69	2.90	1.16	1.63	5.68
Sugar Beet Cult 12 Row	105 MFWD	12,969	5.60	336	59.68	4.16	2.34	10.66	2.27
S-P Boom Sprayer 47 Ft	None	69,121	25.92	2,592	123.65	0.00	3.99	0.78	4.77
S-P Boom Sprayer 60 Ft	None	85,942	33.09	3,309	148.74	0.00	3.89	0.61	4.49
Sprayer 30 Ft	40	5,602	15.36	1,229	40.83	0.67	0.68	1.31	2.66
Boom Sprayer 50 Ft	60	7,110	25.61	2,561	45.92	0.56	0.45	0.79	1.79
Sprayer Hi Pres 50 Ft	60	29,879	23.64	2,364	79.75	0.61	1.92	0.85	3.37
Anhydrous Appl. 30 Ft	160 MFWD	23,270	12.73	509	125.70	2.81	5.75	1.32	9.88
Fert Sprd 4 T/40 Ft	60	12,067	23.76	713	78.92	0.60	2.01	0.71	3.32
Corn Stalk Chopper 12 Ft	60	10,703	4.65	465	43.62	3.07	3.32	2.98	9.37
Potato Shredder 18 Ft	130 MFWD	15,730	6.98	698	67.07	4.34	3.28	1.99	9.61
Rock Picker 6 Ft	75	15,728	1.42	85	71.87	12.83	27.19	10.66	50.68
Harvesting Equipment									
Mower-Conditioner 9 Ft	40	16,048	4.36	349	49.33	2.36	5.77	3.18	11.30
Rotary Hay Mower 6 Ft	40	7,886	2.91	291	36.22	3.54	4.58	4.33	12.45
Rotary Mow/Cond 9 Ft	75	20,008	4.36	349	62.19	4.17	7.05	3.03	14.25
Hay Rake (Hyd) 9 Ft	40	5,219	3.49	698	27.34	2.95	1.28	3.61	7.83
Hay Swather-Cond 12 Ft	60	27,417	5.82	465	70.13	2.46	7.43	2.17	12.05
Swather-Cond 16 Ft Self-Prop	None	86,527	7.76	621	140.78	0.00	16.52	1.62	18.15
Grain Swather 18 Ft Pull Type	75	13,432	8.73	698	51.41	2.08	2.36	1.44	5.89
Grain Swather 21 Ft Pull Type	75	19,799	10.18	815	60.54	1.79	2.92	1.24	5.95

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated --		Total Cost /Hour ¹	- - - Total Cost/Acre ² - - -		Operating Expense / Acre ³	Diesel Fuel Gal/Ac
		Acres/hr	Work Performed Ac/yr		Equipment	Labor		
Canadian Dollars								
Grain Swather 21 Ft Self-Prop	None	60,335	10.18	815	104.54	0.00	9.03	1.24
Hay Baler Pto Twine	40	17,468	3.78	756	46.42	2.72	4.83	4.73
Round Baler 1000 Lb	60	20,331	3.01	603	58.39	4.75	9.99	4.64
Round Baler 1500 Lb	60	24,952	4.64	927	65.21	3.09	7.96	3.02
Rd Baler/Wrap 1000 Lb	60	28,623	3.01	603	70.57	4.75	14.03	4.64
Rd Bale Wrapper Silage	60	22,827	2.48	372	59.96	5.76	13.32	5.08
Bale Wrapper Dry Hay	40	9,840	2.48	372	37.24	4.14	5.78	5.08
Forage Harvester 2 Row	105 MFWD	27,650	1.65	165	74.95	14.08	20.42	10.80
Forage SP Harvstr 2 Row	None	184,909	2.04	305	172.98	0.00	76.17	8.78
Forage SP Harvstr 3 Row	None	222,515	3.05	458	205.30	0.00	61.36	5.85
Large Forage Blower	60	6,873	1.00	50	42.22	14.31	15.32	12.60
Combine Grain Head 15'	Combine Small	13,415	5.09	1,018	123.03	18.87	1.79	3.51
Combine Grain Hd 20'	Combine Med	16,839	6.79	1,358	140.80	16.43	1.68	2.63
Combine Grain Head 30'	Combine Large	23,406	10.18	2,036	161.05	12.51	1.55	1.76
Corn Combine 4-36	Combine Small	22,394	3.36	672	129.10	28.59	4.52	5.32
Corn Combine 4-30	Combine Small	24,565	2.80	560	130.50	34.30	5.92	6.38
Corn Combine 6-30	Combine Med	32,768	4.20	840	151.52	26.55	5.27	4.26
Corn Combine 8-30	Combine Med	39,323	5.09	1,018	155.99	21.90	5.23	3.51
Corn Combine 12-30	Combine Large	60,578	7.64	1,527	186.02	16.68	5.34	2.34
Potato Windrower 2 Row	75	39,218	1.49	149	83.61	12.18	34.68	9.11
Potato Windrower 4 Row	105 MFWD	86,047	2.99	299	149.48	7.80	37.68	4.55
Potato Harvester Seed 2 Row	130 MFWD	83,031	1.38	295	147.15	21.96	47.32	37.44
Potato Harvester Seed 4 Row	130 MFWD	131,298	2.76	590	184.85	10.98	37.33	18.72
Potato Harvester 2 Row	130 MFWD	67,946	1.84	294	144.05	16.47	33.81	28.08
Disk Bean Top Cutter 6R	105 MFWD	16,161	6.40	512	66.93	3.64	4.03	2.79
Sugar Beet Lifter 4 Row	105 MFWD	59,040	3.47	277	159.26	6.72	34.08	5.16
Sugar Beet Lifter 6 Row	130 MFWD	76,996	5.20	520	184.86	5.82	26.29	3.44
Sugar Beet Topper 6 Row	75	23,415	5.33	427	73.72	3.41	7.39	3.02
Sugar Beet Topper 12 Row	160 MFWD	45,251	10.67	853	127.88	3.35	7.13	1.51
Sugar Beet Wagon 8 Ton	75	12,499	3.47	277	50.23	5.25	5.61	3.64
Sugar Beet Wagon 20 Ton	200 MFWD	49,776	5.20	520	118.97	8.40	12.05	2.42
Sugar Beet Wagon 24 Ton	225 MFWD	52,793	5.20	520	131.98	10.19	12.77	2.42
Manure Spreader 150 Bu	75	7,439	3.49	349	45.18	5.21	4.05	3.68

Tractor Size (HP)	Net Cost of A New Implement	- - Estimated Work Performed Acres/hr	Total Cost Ac/yr	- - - Total Cost/Acre ²	Equipment /Hour ¹	Labor Tractor + Machine	Total Charge Dollars	Operating Expense / Acre ³	Diesel Fuel Gal/Ac
Canadian Dollars									
Manure Spreader 300 Bu	105 MFWD	10,178	3.49	349	55.46	6.67	5.53	3.68	15.89
Manure Spreader 400 Bu	130 MFWD	16,151	4.65	465	73.68	6.50	6.56	2.76	15.83
Gravity Grain Box 185 Bu	60	3,160	1.65	215	30.84	8.65	2.38	7.62	18.64
Gravity Grain Box 240 Bu	75	4,094	1.65	215	35.71	10.99	2.97	7.62	21.58
Baled Hay Wagon	40	3,806	3.78	945	38.51	2.72	0.80	6.66	10.18
Forage Wagon 14 Ft	40	12,856	1.65	215	36.60	6.22	8.29	7.62	22.12
Forage Wagon 16 Ft	40	14,364	1.65	215	37.94	6.22	9.10	7.62	22.93
1 Ton Hay Stacke	60	28,946	4.15	829	62.10	3.45	7.22	4.31	14.98
3 Ton Hay Stacke	75	42,880	4.84	1,064	80.06	3.76	9.10	3.70	16.55
6 Ton Hay Stacke	105 MFWD	69,242	5.53	1,548	113.36	4.21	13.06	3.23	20.51
								10.44	1.01

¹Total cost per hour is calculated as yearly depreciation, interest, insurance, housing and repairs divided by hours used per year. Implement and power unit costs are summed. Fuel, lubricants and labor are added to the total.

²Total cost per acre is total cost per hour divided by acres per hour. Includes operating expenses, labor, and overhead costs.

³Operating expenses are included in total cost/acre. Operating expenses include fuel, lubricants, repairs and maintenance, but not labor. Labor is listed separately.