



Farm Machinery Custom and Rental Rate Guide 2016/2017

in Manitoba



Farm Machinery Custom and Rental Rate Guide

The surest way to reach a business goal is to plan on it. Successful Manitoba farmers are focused business people. They have clear, flexible, short and long term business plans – and they monitor their plans regularly.

Whether you're starting, growing or passing along your business, you need a solid business plan. Manitoba Agriculture can help you build a plan for success.

Farm machinery makes up a significant part of the fixed and variable costs for any farm operation. The *Farm Machinery Custom and Rental Rate Guide* can help estimate these costs and provide the information you need to maximize farm profitability.

This guide is also available as an online calculator at www.manitoba.ca/agriculture.

Use this guide to help you prepare your plan for success.

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The rates provided are to be used as guidelines and should be interpreted and adjusted for individual situations if necessary.

This publication was completed with the valuable contribution of Prairie Agricultural Machinery Institute (PAMI).

This publication is available in multiple formats upon request.

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Purpose:

This guide has been established to provide approximate costs for renting equipment or obtaining custom farming operations from another farmer. **This guide is not intended for establishing rates for individuals or companies that rent equipment or contract custom farming operations as a business.**

The guide is applicable for two different situations. One is to suggest an equitable price for both parties when one farmer either rents a piece of equipment from another farmer or hires the other to do a farming operation (seeding, spraying, harvesting, etc.). In this situation the period of rented operation is usually relatively small in proportion to the use by the owner. The other use is when farmers share equipment and need to establish the values of machinery and farming operations contributed to each farm.

Caution:

Nearly every situation has unique circumstances and conditions. This guide cannot address every situation. It is up to the individual to recognize special circumstances and make suitable adjustments to cover differences. Acceptable terms should form part of a contract.

Method:

A critical step in establishing a rental rate is defining the cost of equipment ownership, which includes equipment value, financing, depreciation, repairs and maintenance. Since it is likely that factors will change for each situation, it was necessary to develop the following set of assumptions that form the basis for calculating costs.

Cost of ownership includes the cost of depreciation of the equipment due to use and years in service. Cost of ownership also includes an investment cost (ex: the cost to borrow money to purchase the equipment or the lost interest revenue if that money had been invested), housing and insurance costs.

Operating costs include repair, maintenance (broken and worn parts, oil, filters and labour for repair and service) and fuel use. In addition, there are operating labour costs and a margin to cover unexpected incidentals and specific conditions that affect work rates.

Assumptions:

Basic Assumption: In all cases, it is reasonable to assume that rented machinery is in good repair and is capable of performing the intended task in the same manner, and at the same productive rate, as similar machines of equal specification, ratings or category, regardless of age.

Equipment Value: The first assumption is setting the initial value based upon the typical suggested list price for a machine suitably equipped for the crops and conditions in the particular area where it is being used. The **purchase price** used is based upon the **average** of the **base list price** and the list price for that machine with **all available options**. For each piece of equipment and size category listed in this guide, a minimum of two manufacturers were surveyed to collect purchase price information.

Introduction

Finance Cost: It is assumed that 50 per cent of the initial price is trade-in, cash payment or both, with the remaining 50 per cent financed. It is also assumed that the loan will be paid back through equal monthly installments over seven years. The cost to borrow the 50 per cent of the purchase price was based on an average of Farm Credit Canada (FCC) interest rates for equipment loans with a seven-year payback. This annual borrowing rate is set at 5.5 per cent. The finance cost also includes an opportunity cost on the interest that could be earned if the down payment was invested in the markets rather than equipment. This opportunity rate is set at one per cent annually. Since the amount borrowed (subject to 5.5 per cent interest) and the amount put down (subject to one per cent opportunity) are assumed equal, the total financing rate is assumed to be the sum of the two rates (5.5% + 1% = 6.5%). This simplification results in a slight underestimation of the total financing cost compared to a calculation that separates the cost to borrow at 5.5 per cent and the value of an investment at one per cent. However, the other assumptions made to estimate this financing cost (interest rates and term of loan) have a much larger impact on the total finance cost, so this simplification is justified.

Many producers are able to secure lower interest rates or have different payback schedules. These parameters can be accommodated in the online calculator that allows producers to enter user-specific information to generate more accurate rental and custom rates.

Depreciation: After the first year of use, most machinery depreciates at a fairly consistent rate over the next 10 to 15 years (with typical use). Over that time about two-thirds of its **useful life** will have been used. That two-thirds of useful life is referred to in this guide as the **optimal life** and it represents the number of years equipment is owned until it depreciates to one third of its value (the **retained value**). A machine's useful life depends on many factors and may vary greatly in years and hours. The end of its useful life is when the cost of repair exceeds its market value.

This definition of depreciation is used to calculate part of the ownership cost of the equipment. The total depreciated value (purchase price minus retained value) is split equally over the years of optimal life. When calculating the depreciated value for tax purposes (capital cost allowance), the depreciated value changes from year to year depending on the allowable rate for each class of equipment. Most farm equipment falls under class 8 or class 10, which allow annual depreciation rates of 20 per cent and 30 per cent, respectively. This means actual depreciation amounts are relatively high over the first few years of ownership, steadily decreasing as the equipment value is reduced. This length of time (optimal life of equipment) is not defined by the capital cost allowance. The total depreciated value using either method (equally split among the years of optimal life or based on capital cost allowance rates) will be relatively close if a reasonable optimal life of the equipment is assumed. The optimal life for all equipment used in this Guide is listed in **Appendix F**.

Repair and Maintenance (R&M): Each machine's optimal life is typically measured in hours. Routine maintenance such as oil, lubricants and filters, as well as component wear or damage is associated with hours of use, regardless of when they occur over its life. Early on, repairs to equipment components are not usually as frequent and costly. However, during its life repair expenses will occur. Averaging the lifetime cost on a per hour basis provides a fair distribution of the repair costs. For this document, the average yearly basic maintenance and repairs have been added to what would be considered one major repair during the equipment's optimal life. These costs are divided by the hours accumulated over its optimal life.

Note that average repair and maintenance costs do not include extraordinary events brought about by extreme conditions, abuse or accident.

Fuel costs: Fuel costs can fluctuate dramatically. In this guide, the diesel fuel price is charged at \$0.929 per litre based on tax exemptions for fuel used in farming operations. The five per cent Goods and Services Tax (GST) was deducted based on allowable business deductions for fuel. Any power unit's fuel use is highly dependent upon the load (percentage of available power being used) and duty cycle (percentage of time at particular loads). To determine the cost based on fuel efficiency, 75 per cent load is assumed. For alternative loads, fuel usage can be determined by using charts in **Appendix H**.

The selection of the power unit and the operating conditions (yield, moisture, soil type, terrain, etc.) will also affect fuel use. This means that for similar tasks there can be a wide variation in fuel cost. For this reason, it is fair if the renter supplies or purchases fuel separately from the rental rate. A fuel cost estimate has been included based upon typical use and should be used only as a ball park indication of what fuel cost might be.

Work Rate: Instantaneous work rates are easily calculated based upon the implement's working width and its travel speed. However, in all field operations, there is a difference between the instantaneous work rate and the average work rate accomplished over several hours. This is referred to as field efficiency. Field efficiency can vary greatly depending upon work conditions such as field size and topography, soil or crop conditions, suitability of the equipment for the task and availability of support equipment. For this guide, a field efficiency of 80 per cent has been chosen and applied to all tasks.

Insurance and Housing: It is reasonable to expect that equipment owners will carry suitable insurance against accidental damage and for liability. Suitable housing is also a reasonable measure for maintaining equipment value and performance. These costs have been set at one per cent of the original purchase price of the machine.

Labour Rate: The labour rate has been set at \$20 per hour. It is intended only as a reflection of the labour market in Western Canada. This rate will vary depending upon availability and the individual's experience and skills. If more accurate labour costs are needed to reflect the varying skill levels required for different operations, producers can use the online calculator that allows users to input specific values for the labour rate for each operation.

Margin: When performing custom farming operations, conditions can be unpredictable. To account for unexpected cost increases brought about by difficult situations, it is customary to include a margin (or cushion) in the estimated custom rate. This margin has been set at 15 per cent to coincide with typical industry practices. For machinery rental, the margin is applied to the ownership costs and the repair and maintenance costs. For custom rates the margin is also applied to labour and fuel costs. **It should be noted that this margin does not cover overhead costs or other costs associated with business endeavors, nor does it cover the costs of a catastrophic breakdown.**

Introduction

Using the Guide:

Per acre rate: Equipment rental or custom rates are based upon the addition of all yearly costs divided by the typical hours of use. The hourly rate (\$/hr) divided by the work rate (acre/hr) yields a cost per acre (\$/acre) rate. The work rate accounts for equipment width, travel speed and the field efficiency of the operation. Refer to **Appendix D or E** for information on how to calculate the work rate. The dollars per acre rate is often used because it fixes the renter's cost and allows the owner or operator to adjust the operation to the conditions. This may mean either going slower to minimize machine damage and operator stress in difficult conditions or being able to go faster in favorable conditions without losing revenue.

Hours of use impact: When machinery is shared between co-operating farmers, a cost often needs to be assigned for the usage of each machine to define the value of its contribution. The yearly hours of use have greatly influenced the hourly rate. When yearly costs are divided by low usage, the hourly rate increases significantly. High usage reduces the hourly rate. This method tends to exaggerate the difference because it does not consider the effect on retained value, which is often determined by the machine's total hours. To achieve a fair evaluation, the difference in retained value or the value at the end of the equipment's optimal life, must be taken into account. Again, producers wishing to use their own value for annual hours of use can do so in the online calculator.

Additional Information:

This publication can be printed from the government's website at manitoba.ca/agriculture or copies can be requested from the Manitoba Agriculture Growing Opportunities (GO) Office. To find your nearest GO Office, call Manitoba Government Inquiry, toll free at 1-866-626-4862.

Online Calculator: An online calculator is also available at <http://www.gov.mb.ca/agriculture/business-and-economics/financial-management/machinery-costs.html>. It allows users to enter individual information. Using the online calculator allows producers to enter user-specific information that may have a large impact on the rental or custom rate (ex: interest rate, purchase price, annual hours of use, labour rate, etc.)

New Information and Clarifications for 2016-17 Guide

The custom rates presented in this guide are not valid for commercial custom operators (ex: custom sprayers). The rates in this guide are to be used as a guideline for cost recovery of equipment from farmer to farmer, not as a guideline for costing for a business. Business costs include extra liability insurance, overhead, skilled labour, etc. that will add to the cost for commercial custom operations.

The assumptions and calculation methods for the 2016-2017 guide are the same as those used in the 2012-2013 and 2014-2015 guides, with the following exceptions:

- Diesel fuel price decreased from \$1.05 to \$0.929 per litre. Previously, diesel fuel prices were based on a simple percentage increase or decrease from one year to the next, based on a monthly average (January). Due to the recent volatility in fuel prices, the new diesel rate was based on a one-year average (from January 1, 2015 to December 31, 2015). If the one year average was not used, the fuel prices in January 2016 would result in a diesel fuel rate of \$0.84 per litre. Although this value is valid for January 2016, it is unlikely to be valid for the entire two-year period for which this guide will be used.

- Purchase prices for all equipment have been updated, with the exception of rates related to guidance equipment which appears in the footnotes for most powered equipment.
- On average, purchase prices increased by approximately 18 per cent compared to the 2014-2015 guide. This is partially due to the exchange rate between CAD and USD currency. For the 2016-2017 guide, the exchange rate used was one USD = 1.29 CAD (or one CAD = 0.777 USD). Again, a one year average (from January 2015 to January 2016) was used to estimate the exchange rate due to the volatility of the value of the Canadian dollar. The actual exchange rate in January, 2016 was one USD = 1.43 CAD which is unlikely to be valid for the entire two-year period for which this guide will be used.
- In previous guides, the investment cost was calculated based on a 10-year loan payback period. This payback period was changed to seven years in the 2016-2017 guide to better reflect current industry practices.
- The annual hours of use for high clearance sprayers was reduced from 400 hours to 200 hours to better reflect actual industry practices. As a result, the rental rate and custom rates for high clearance sprayers in the 2016-2017 guide are considerably higher than in previous guides.
- Equipment and size categories that were **added** to this version of the guide due to rise in popularity and availability of purchase price information includes:
 - two wheel drive tractors (50 to 59 horsepower)
 - grain dryers (1,440 to 2,380 bushels per hour)
 - grain auger PTO (16-inch diameter, various lengths)
 - powered auger (10-inch diameter, various lengths)
 - self-propelled forage harvesters (700 to 799 horsepower)
 - balers (small square, 16 x 18-inch)
 - bale processor (six-foot round bales)
 - vertical tillage tools (compact and heavy duty, various widths)
 - high clearance sprayer (1,400 U.S. gallons, various boom lengths)
 - snow blower (front mount, various widths)
- Equipment with **different descriptions or size categories** compared to the previous version of the guide include:
 - belt grain conveyers
 - PTO sprayer (1,500 to 1,600 U.S. gallons)
 - cultivators (field, with tine harrows, various widths)
 - harrows (heavy, various widths)
 - post pounders (various new configurations)
- Equipment that was **removed** as no longer available or because the purchase price information was not available for this guide includes:
 - two-wheel drive tractors (150-plus horsepower)
 - powered auger (8-inch, 60 to 69 feet)
 - PTO sprayer (1,500 to 1,600 U.S. gallons) wheel booms

Equipment Summary

Equipment	Machine Size or Type	Rental Rate (per hour)	Custom Rate (per hour)	Average Custom Rate*
Tractors	2WD	\$18.76 to \$47.67	\$56.73 to \$100.62	
	FWA	\$13.96 to \$113.08	\$50.87 to \$191.70	
	4WD	\$105.06 to \$155.45	\$184.74 to \$275.77	
	Tracked	\$107.73 to \$200.73	\$182.07 to \$346.72	
Combine	Conv or Rotary	\$240.49 to \$342.32	\$303.06 to \$433.77	\$35.76 per acre
Combine Header		\$11.73 to \$229.50		
Swather		\$107.79 to \$143.11	\$154.32 to \$204.61	\$10.95 per acre
Swath Roller		\$2.23 to \$2.37		
Grain Bag Loader		\$26.96 to \$87.39	\$77.82 to \$180.90	
Grain Bag Extractor		\$50.21 to \$97.50	\$101.08 to \$177.30	
Grain Vac		\$63.09 to \$98.69	\$123.95 to \$192.20	
Grain Cart		\$13.45 to \$54.30	\$163.61 to \$279.11	
Grain Dryer		\$53.88 to \$149.42		
Grain Auger	PTO	\$4.12 to \$51.99	\$54.98 to \$229.58	
Grain Auger	Powered	\$5.89 to \$10.26		
Grain Conveyor	Belt	\$29.03 to \$86.84	\$79.90 to \$166.65	
Mower Conditioner	Self Propelled	\$162.67 to \$396.98	\$224.17 to \$488.43	\$21.91 per acre
Mower Conditioner	Pull Type	\$18.00 to \$46.61	\$68.86 to \$126.41	\$12.98 per acre
Hay Rakes		\$27.44 to \$57.17	\$78.31 to \$108.03	\$6.94 per acre
Forage Harvester	Self Propelled	\$249.65 to \$396.98	\$350.73 to \$549.39	\$41.39 per acre
Forage Harvester Header	Self Propelled	\$20.18 to \$112.03		
Forage Harvester	Pull Type	\$105.73 to \$168.14	\$223.34 to \$359.84	\$103.00 per acre
Forage Harvester Header	Pull Type	\$14.77 to \$51.19		
Baler	Small Square	\$23.98 to \$33.59	\$74.84 to \$84.46	\$0.46 per bale
Baler	Large Square	\$107.06 to \$148.42	\$224.67 to \$283.80	\$6.26 per bale
Baler	Round	\$29.12 to \$62.25	\$79.98 to \$126.43	\$7.65 per bale
Bale mover	Pull Type	\$28.59 to \$86.00	\$122.10 to \$221.38	
Bale mover	Self Propelled	\$184.65	\$237.59	
Air Drills		\$138.35 to \$372.13	\$330.04 to \$647.90	\$18.62 per acre
Air Hoe Drills		\$135.17 to \$319.96	\$319.90 to \$578.47	\$16.97 per acre
Air Disk Drills		\$148.53 to \$414.14	\$266.15 to \$605.84	\$17.30 per acre
Air Seeders		\$135.76 to \$261.77	\$296.77 to \$486.59	\$18.57 per acre
Row Crop Planters		\$182.57 to \$356.40	\$300.19 to \$533.99	\$23.77 per acre
Cultivators	Field, heavy duty	\$20.68 to \$49.60	\$100.48 to \$261.42	\$9.10 per acre
Discs	Offset, tandem	\$48.39 to \$99.56	\$153.59 to \$255.15	\$20.38 per acre
Vertical Tillage Tools	Compact, high speed	\$49.42 to \$179.66	\$167.03 to \$438.17	\$11.34 per acre
Vertical Tillage Tools	Heavy duty	\$45.87 to \$189.80	\$163.49 to \$414.61	\$12.10 per acre
Harrows	Mid, Heavy	\$34.48 to \$50.32	\$162.27 to \$275.13	\$4.75 per acre
Harrows	Packers	\$7.97 to \$13.24	\$87.78 to \$137.58	\$4.62 per acre
Land Roller		\$14.41 to \$88.83	\$65.27 to \$249.85	\$6.14 per acre
Rock Windrower (rake)		\$16.72 to \$30.11	\$67.59 to \$80.97	\$12.30 per acre
Rock Picker		\$35.01 to \$43.57	\$95.87 to \$107.76	
Land Scraper		\$49.61 to \$194.45	\$143.12 to \$410.04	
Sprayers	High clearance	\$241.69 to \$511.94	\$295.71 to \$609.81	\$5.03 per acre**
Sprayers	PTO	\$82.10 to \$110.95	\$175.61 to \$261.12	\$1.86 per acre**

* Use caution with these average figures, because they may not reflect actual situations. They should be used as a guideline only.

** Hauling water to field for spraying \$0.26 to \$1.77 per acre
Hauling grain from field to yard \$0.25 per bushel for first 3 miles plus \$0.02 per bushel for each additional mile
Hauling bales \$11.72 per bale (assuming a 6 mile haul, 12 bale PT bale mover)

Power Units

Two Wheel Drive Tractors										
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)
50-59 hp	\$67,400	14	11.37	4.94	2.45	18.76	13.02	20.00	4.95	56.73
60-69 hp	\$67,500	15	11.39	4.95	2.45	18.79	13.95	20.00	5.09	57.83
70-79 hp	\$78,700	16	13.28	5.77	2.86	21.91	14.88	20.00	5.23	62.02
80-89 hp	\$84,400	18	14.24	6.19	3.06	23.49	16.74	20.00	5.51	65.74
90-99 hp	\$108,800	21	18.35	7.98	3.95	30.28	19.53	20.00	5.93	75.74
100-119 hp	\$142,100	24	23.97	10.42	5.16	39.55	22.32	20.00	6.35	88.22
120+ hp	\$171,300	28	28.89	12.56	6.22	47.67	26.04	20.00	6.91	100.62

Annual hours of use: 300

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Power rating represents PTO power.

If tractor rating is given in net engine power, multiply by 0.88 to get PTO power

GPS is included, to take GPS out subtract \$3.28/hr for guidance and autosteer equipment costs. Add an additional hourly fee of \$3.00/hr if using prescription guidance.

Four Wheel Drive Tractors										
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)
350-399 hp	\$461,200	53	65.73	25.62	13.70	105.06	49.29	20.00	10.39	184.74
400-449 hp	\$507,400	72	72.32	28.19	15.08	115.59	66.96	20.00	13.04	215.59
450-499 hp	\$543,200	73	77.42	30.18	16.14	123.74	67.89	20.00	13.18	224.81
500-549 hp	\$607,400	78	86.57	33.74	18.05	138.36	72.54	20.00	13.88	244.78
550-599 hp	\$634,800	85	90.48	35.27	18.86	144.61	79.05	20.00	14.86	258.52
600+ hp	\$682,400	91	97.26	37.91	20.28	155.45	84.63	20.00	15.69	275.77

Annual hours of use: 450

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load refer to **Appendix H**.

Power rating represents engine power.

GPS is included, to take GPS out subtract \$3.28/hr for guidance and autosteer equipment costs. Add an additional hourly fee of \$3.00/hr if using prescription guidance.

Power Units

Front Wheel Assist Tractors										
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)
50-59 hp	\$60,600	13	8.64	3.50	1.82	13.96	12.09	20.00	4.81	50.87
60-69 hp	\$74,500	15	10.62	4.30	2.24	17.16	13.95	20.00	5.09	56.21
70-79 hp	\$90,100	16	12.84	5.21	2.71	20.75	14.88	20.00	5.23	60.86
80-89 hp	\$95,200	18	13.57	5.50	2.86	21.93	16.74	20.00	5.51	64.18
90-99 hp	\$124,900	20	17.80	7.22	3.75	28.77	18.60	20.00	5.79	73.16
100-119 hp	\$139,800	23	19.93	8.08	4.20	32.21	21.39	20.00	6.21	79.81
120-139 hp	\$180,700	27	25.76	10.44	5.43	41.63	25.11	20.00	6.77	93.51
140-159 hp	\$276,100	29	39.35	15.95	8.30	63.60	26.97	20.00	7.05	117.61
160-179 hp	\$296,000	31	42.19	17.10	8.89	68.19	28.83	20.00	7.32	124.34
180-199 hp	\$320,700	36	45.71	18.53	9.64	73.88	33.48	20.00	8.02	135.38
200-224 hp	\$361,700	41	51.55	20.90	10.87	83.32	38.13	20.00	8.72	150.16
225-249 hp	\$390,200	45	55.62	22.54	11.72	89.89	41.85	20.00	9.28	161.02
250-274 hp	\$452,900	47	64.55	26.17	13.61	104.33	43.71	20.00	9.56	177.59
275+ hp	\$490,900	52	69.97	28.36	14.75	113.08	48.36	20.00	10.25	191.70

Annual hours of use: 450

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load refer to **Appendix H**.

Power rating represents PTO power.

If tractor rating is given in net engine power, multiply by 0.88 to get PTO power.

GPS is included, to take GPS out subtract \$3.28/hr for guidance and autosteer equipment costs. Add an additional hourly fee of \$3.00/hr if using prescription guidance.

Tracked Tractors										
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)
300-349 hp	\$438,500	48	62.50	31.18	14.05	107.73	44.64	20.00	9.70	182.07
350-449 hp	\$551,600	77	78.62	39.22	17.68	135.52	71.61	20.00	13.74	240.87
450-549 hp	\$650,200	110	92.67	46.24	20.84	159.74	102.30	20.00	18.35	300.39
550-599 hp	\$728,000	112	103.76	51.77	23.33	178.86	104.16	20.00	18.62	321.64
600+ hp	\$817,000	115	116.45	58.10	26.18	200.73	106.95	20.00	19.04	346.72

Annual hours of use: 450

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Power rating represents engine power.

GPS is included, to take GPS out subtract \$3.28/hr for guidance and autosteer equipment costs. Add an additional hourly fee of \$3.00/hr if using prescription guidance.

Harvesting Grain

SP Combines						
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
Conventional - No Header						
Class 6 268 - 322 HP	\$529,100	42	169.68	52.91	33.39	255.98
Class 7 323 - 374 HP	\$563,100	50	180.58	56.31	35.53	272.42
Class 8 375 - 461 HP	\$653,500	60	209.57	65.35	41.24	316.16
Rotary - No Header						
Class 5 ≤ 267 HP	\$509,200	37	158.20	50.92	31.37	240.49
Class 6 268 - 322 HP	\$569,600	44	176.97	56.96	35.09	269.02
Class 7 323 - 374 HP	\$600,400	48	186.54	60.04	36.99	283.57
Class 8 375 - 461 HP	\$653,300	58	202.98	65.33	40.25	308.56
Class 9+ ≥ 462 HP	\$724,800	64	225.19	72.48	44.65	342.32

Conventional annual hours of use*: 200

Rotary annual hours of use*: 250

*Based on separator annual hours of use.

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Average purchase price for Class 10 combine is \$825,900. However, additional information specific to Class 10 combines (fuel consumption, power ratings, etc.) was not available at time of publication.

Harvesting Grain

SP Combines (continued)							
Machine Size	Purchase Price	Litre / Hour	Fuel Cost (\$/hr)	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)
Conventional - No Header							
Class 6 268 - 322 HP	\$529,100	42	39.06	20.00	8.86	323.90	9
Class 7 323 - 374 HP	\$563,100	50	46.50	20.00	9.98	348.90	11
Class 8 375 - 461 HP	\$653,500	60	55.80	20.00	11.37	403.33	14
Rotary - No Header							
Class 5 ≤ 267 HP	\$509,200	37	34.41	20.00	8.16	303.06	8
Class 6 268 - 322 HP	\$569,600	44	40.92	20.00	9.14	339.08	10
Class 7 323 - 374 HP	\$600,400	48	44.64	20.00	9.70	357.90	12
Class 8 375 - 461 HP	\$653,300	58	53.94	20.00	11.09	393.59	15
Class 9+ ≥ 462 HP	\$724,800	64	59.52	20.00	11.93	433.77	17

Conventional annual hours of use*: 200

Rotary annual hours of use*: 250

*Based on separator annual hours of use.

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Average purchase price for Class 10 combine is \$825,900. However, additional information specific to Class 10 combines (fuel consumption, power ratings, etc.) was not available at time of publication.

Harvesting Grain

Combine Headers					
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
Pickup Headers					
12-13FT	\$38,900	7.87	2.33	1.53	11.73
15 FT	\$39,800	8.06	2.39	1.57	12.02
Rigid Headers with Batt Reels					
20 FT	\$30,600	6.19	2.45	1.30	9.93
25 FT	\$41,500	8.40	3.32	1.76	13.48
30-35 FT	\$45,100	9.13	3.61	1.91	14.65
Flex Headers with Pickup Reels					
20 FT	\$48,200	12.37	4.82	2.58	19.77
25 FT	\$52,300	13.42	5.23	2.80	21.45
30 FT	\$60,900	15.62	6.09	3.26	24.97
35 FT	\$68,800	17.65	6.88	3.68	28.21
Draper Headers with Pickup Reels					
25 FT	\$95,400	24.48	9.54	5.10	39.12
30 FT	\$123,900	31.79	12.39	6.63	50.81
35 FT	\$131,600	33.76	13.16	7.04	53.96
40-45 FT	\$147,100	37.74	14.71	7.87	60.32
Corn Header					
6 row, 30" spacing	\$78,800	50.54	22.06	10.89	83.49
8 row, 30" spacing	\$105,300	67.54	29.48	14.55	111.58
12 row, 30" spacing	\$160,100	102.69	44.83	22.13	169.65
16-18 row, 20-30" spacing	\$216,600	138.92	60.65	29.94	229.50

Pick-up header annual hours of use: 250
 Rigid header annual hours of use: 250
 Flex header annual hours of use: 250
 Draper header annual hours of use: 250
 Corn header annual hours of use: 100

Calculation to determine the custom rate (\$/acre) for a combine using a specific combine header:

$$\text{Custom Rate (\$/acre)} = \frac{\text{Combine Custom Rate (\$/hr)} + \text{Header Rental Rate (\$/hr)}}{\text{Work Rate (acre/hr)}}$$

Example: For a Class 8 Conventional combine with a 30 ft Flex header:

$$\text{Custom Rate (\$/acre)} = \frac{\$403.33 + \$24.97}{14}$$

$$\text{Custom Rate (\$/acre)} = \$30.59$$

Harvesting Grain

Swathers							
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)
SP Swathers - Draper Header							
18-24 FT	\$222,800	22	71.45	22.28	14.06	107.79	20.46
25 FT	\$238,100	22	76.36	23.81	15.03	115.20	20.46
30 FT	\$282,600	32	90.63	28.26	17.83	136.72	29.76
35-40 FT	\$295,800	36	94.86	29.58	18.67	143.11	33.48

Swathers (continued)							
Machine Size	Purchase Price	Litre / Hour	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
SP Swathers - Draper Header							
18-24 FT	\$222,800	22	20.00	6.07	154.32	12.0	12.86
25 FT	\$238,100	22	20.00	6.07	161.72	16.0	10.11
30 FT	\$282,600	32	20.00	7.46	193.95	17.5	11.08
35-40 FT	\$295,800	36	20.00	8.02	204.61	21.0	9.74

Annual hours of use: 200

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Fuel efficiency is based on 126 hp (18-24' swather), 126 hp (25-29' swather), 190 hp (30-34' swather), and 226 hp (35'+ swather).

Swath Rollers					
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
10 FT drawn	\$3,400	1.72	0.34	0.31	2.37
10 FT attached	\$3,200	1.62	0.32	0.29	2.23

Annual hours of use: 100

Calculation to determine the custom rate (\$/acre) for a swather with a swath roller:

$$\text{Custom Rate (\$/acre)} = \frac{\text{Swather Custom Rate (\$/hr)} + \text{Roller Rental Rate (\$/hr)}}{\text{Work Rate of swather (acre/hr)}}$$

Example: For a 30 ft swather with a 10 ft attached roller:

$$\text{Custom Rate (\$/acre)} = \frac{\$193.95 + \$2.23}{17.5}$$

$$\text{Custom Rate (\$/acre)} = \$11.21$$

Harvesting Grain

Grain Bag Loader							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
9 FT Bagger	\$24,000	18.64	4.80	3.52	26.96	50.87 50 hp	77.82
10 FT Bagger	\$44,100	34.25	8.82	6.46	49.53	56.21 60 hp	105.74
12 FT Bagger	\$77,800	60.43	15.56	11.40	87.39	93.51 125 hp	180.90

Annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor. Additional labour to operate bagger should be added if required.

Grain Bag Extractor							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
9 FT Unloader	\$44,700	34.72	8.94	6.55	50.21	50.87 50 hp	101.08
10 FT Unloader	\$45,200	35.11	9.04	6.62	50.77	56.21 60 hp	106.98
12 FT Unloader	\$86,800	67.42	17.36	12.72	97.50	79.81 100 hp	177.30

Annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor. Additional labour and equipment to operate extractor should be added if required.

Grain Vac							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
2400-5000 bu/hr	\$32,600	41.82	13.04	8.23	63.09	60.86 70 hp	123.95
6000-10,000 bu/hr	\$51,000	65.42	20.40	12.87	98.69	93.51 120 hp	192.20

Annual hours of use: 50

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor. To obtain a total cost for grain vac, power unit, and fuel (but not labour), subtract \$23 from the Custom Rate (\$20/hr labour plus 15% margin).

Harvesting Grain

Grain Cart							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
500-750 bu	\$41,400	8.38	3.31	1.75	13.45	150.16 200 hp	163.61
750-1000 bu	\$79,900	16.17	6.39	3.38	25.95	150.16 215 hp	176.11
1050-1200 bu	\$110,100	22.29	8.81	4.66	35.76	177.59 260 hp	213.35
1300-1600 bu	\$155,600	31.50	12.45	6.59	50.54	191.70 335 hp	242.24
2000 bu	\$167,200	33.84	13.38	7.08	54.30	224.81 460 hp	279.11

Annual hours of use: 250

Notes: Power unit cost includes fuel, labour and margin. To obtain a total cost for grain cart, power unit, and fuel (but not labour), subtract \$23 from the Custom Rate (\$20/hr labour plus 15% margin). The power units for grain carts up to 2000 bu are front wheel assist tractors. The power unit for the 2000 bu grain cart is a four wheel drive tractor.

Grain Dryer					
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
275-370 bu/hr	\$91,700	39.21	7.64	7.03	53.88
420-610 bu/hr	\$109,300	46.74	9.11	8.38	64.23
710-910 bu/hr	\$139,800	59.78	11.65	10.71	82.14
1060-1180 bu/hr	\$186,100	79.57	15.51	14.26	109.34
1440-2380 bu/hr	\$254,300	108.74	21.19	19.49	149.42

Annual hours of use: 150

Notes: Rental rate refers to equipment only. Power and fuel (propane or natural gas) consumption is highly dependent on ambient temperature, grain type, and required moisture reduction. Energy requirements require a separate calculation by specialized calculators that are not included in this Guide.

Harvesting Grain

Grain Auger (PTO)							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
8" 30-39 FT 2,700 bu/hr	\$5,900	2.99	0.59	0.54	4.12	50.87 50 hp	54.98
8" 40-49 FT 3,200 bu/hr	\$6,600	3.34	0.66	0.60	4.60	50.87 50 hp	55.47
8" 50-59 FT 3,200 bu/hr	\$8,300	4.20	0.83	0.75	5.78	50.87 50 hp	56.65
8" 60-69 FT 3,200 bu/hr	\$9,700	4.91	0.97	0.88	6.76	50.87 50 hp	57.63
10" 40-49 FT 5,400 bu/hr	\$8,100	4.10	0.81	0.74	5.65	60.86 75 hp	66.51
10" 50-59 FT 5,400 bu/hr	\$10,200	5.16	1.02	0.93	7.11	60.86 75 hp	67.97
10" 60-69 FT 5,400 bu/hr	\$13,000	6.58	1.30	1.18	9.06	60.86 75 hp	69.93
10" 70-79 FT 5,400 bu/hr	\$14,600	7.39	1.46	1.33	10.18	60.86 75 hp	71.04
10" 80-89 FT 5,400 bu/hr	\$18,900	9.56	1.89	1.72	13.17	60.86 75 hp	74.03
12" 70-79 FT 8,400 bu/hr	\$21,200	10.73	2.12	1.93	14.78	60.86 75 hp	75.64
12" 80-89 FT 8,400 bu/hr	\$23,000	11.64	2.30	2.09	16.03	60.86 75 hp	76.90
12" 90-99 FT 8,400 bu/hr	\$31,100	15.74	3.11	2.83	21.68	60.86 75 hp	82.54
12" 100+ FT 8,400 bu/hr	\$38,100	19.28	3.81	3.46	26.55	60.86 75 hp	87.42
13" 70-79 FT 9,700 bu/hr	\$27,200	13.76	2.72	2.47	18.95	79.81 100 hp	98.76
13" 80-89 FT 9,700 bu/hr	\$30,700	15.54	3.07	2.79	21.40	79.81 100 hp	101.21
13" 90-99 FT 9,700 bu/hr	\$34,500	17.46	3.45	3.14	24.05	79.81 100 hp	103.85
13" 100 FT 9,700 bu/hr	\$41,900	21.20	4.19	3.81	29.20	79.81 100 hp	109.01
16" 80-89 FT 21,000 bu/hr	\$54,000	27.33	5.40	4.91	37.64	124.34 175 hp	161.98
16" 90-99 FT 21,000 bu/hr	\$68,400	34.61	6.84	6.22	47.67	150.16 200 hp	197.83
16" 100-119 FT 21,000 bu/hr	\$66,600	33.70	6.66	6.05	46.41	161.02 225 hp	207.43
16" 120+ FT 21,000 bu/hr	\$74,600	37.75	7.46	6.78	51.99	177.59 250 hp	229.58

Annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor. To obtain a total cost for auger, power unit, and fuel (but not labour), subtract \$23 from the Custom Rate (\$20/hr labour plus 15% margin).

Harvesting Grain

Powered Auger					
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
8" 30-39 FT, 20 hp engine	\$7,800	3.95	1.17	0.77	5.89
8" 40-49 FT, 20 hp engine	\$10,300	5.21	1.55	1.01	7.77
8" 50-59 FT, 25 hp engine	\$10,800	5.47	1.62	1.06	8.15
10" 40-49 FT, 35 hp engine	\$11,700	5.92	1.76	1.15	8.83
10" 50-59 FT, 38 hp engine	\$13,600	6.88	2.04	1.34	10.26

Annual hours of use: 100

Notes: Power unit costs are included in rental rate. Rate does not include fuel or maintenance costs for engine.

Belt Grain Conveyor (PTO)							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
15-16" belt, 75 FT 6,000 bu/hr	\$22,500	20.52	4.73	3.79	29.03	50.87 50 hp	79.90
15-16", 85 FT 6,000 bu/hr	\$24,300	22.16	5.10	4.09	31.35	50.87 50 hp	82.22
20-24", 95 FT 11,000 bu/hr	\$40,000	36.48	8.40	6.73	51.61	64.18 80 hp	115.79
20-24", 105 FT 11,000 bu/hr	\$54,500	49.71	11.45	9.17	70.33	64.18 80 hp	134.51
20-24", 110 FT 11,000 bu/hr	\$59,000	53.81	12.39	9.93	76.13	79.81 100 hp	155.94
20-24", 120 FT 11,000 bu/hr	\$67,300	61.38	14.13	11.33	86.84	79.81 100 hp	166.65

Annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor. To obtain a total cost for auger, power unit, and fuel (but not labour), subtract \$23 from the Custom Rate (\$20/hr labour plus 15% margin).

Harvesting Hay

SP Mower/Conditioners							
Machine Size	Purchase Price	litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)
Disc Mower Conditioner 13-19 FT	\$220,700	36	94.37	47.08	21.22	162.67	33.48
Disc Mower Conditioner 30 FT	\$538,600	64	230.30	114.90	51.78	396.98	59.52
Sickle Mower Conditioner 14-18 FT	\$228,800	32	97.83	48.81	22.00	168.64	29.76

SP Mower/Conditioners (continued)							
Machine Size	Purchase Price	litre / Hour	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
Disc Mower Conditioner 13-19 FT	\$220,700	36	20.00	8.02	224.17	12.5	17.93
Disc Mower Conditioner 30 FT	\$538,600	64	20.00	11.93	488.43	23.0	21.24
Sickle Mower Conditioner 14-18 FT	\$228,800	32	20.00	7.46	225.86	8.5	26.57

Annual hours of use: 150

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Fuel efficiency is based on 226 hp (13-19' disc), 400 hp (30' disc), and 190 hp (14-18' sickle).

PT Mower/Conditioners									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
Sickle									
7-9 FT side pull	\$27,900	11.93	3.72	2.35	18.00	50.87 50 hp	68.86	4.3	16.01
12-14 FT	\$52,300	22.36	6.97	4.40	33.73	64.18 80 hp	97.92	7.0	13.99
16-18 FT	\$54,500	23.30	7.27	4.59	35.15	79.81 100 hp	114.96	9.6	11.97
Disc									
9-10 FT	\$43,000	18.39	7.17	3.83	29.39	56.21 60 hp	85.60	6.2	13.81
11-13 FT	\$57,200	24.46	9.53	5.10	39.09	73.16 90 hp	112.25	9.7	11.57
14-16 FT	\$68,200	29.16	11.37	6.08	46.61	79.81 100 hp	126.41	12.0	10.53

Sickle annual hours of use: 150

Disc annual hours of use: 150

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Harvesting Hay

Hay Rakes (Wheel)									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
16-20 FT bar	\$16,900	17.10	6.76	3.58	27.44	50.87 50 hp	78.31	9.6	8.16
21-30 FT wheel	\$26,800	27.12	10.72	5.68	43.52	50.87 50 hp	94.38	13.5	6.99
31-40 FT wheel	\$35,200	35.63	14.08	7.46	57.17	50.87 50 hp	108.03	19.0	5.69

Annual hours of use: 50

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

SP Forage Harvester										
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)
400-499 hp	\$507,200	73	115.65	101.44	32.56	249.65	67.89	20.00	13.18	350.73
500-599 hp	\$588,800	85	134.26	117.76	37.80	289.82	79.05	20.00	14.86	403.73
600-699 hp	\$705,600	97	160.89	141.12	45.30	347.31	90.21	20.00	16.53	474.05
700-799 hp	\$775,800	109	176.90	155.16	49.81	381.87	101.37	20.00	18.21	521.44
800-899 hp	\$806,500	121	183.90	161.30	51.78	396.98	112.53	20.00	19.88	549.39

Annual hours of use: 400

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Headers for SP Forage Harvester							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Work Rate (acre/hr)	Rental Rate (\$/acre)
Windrow Pickup, 9-14 FT width	\$41,000	9.35	8.20	2.63	20.18	15.0	1.35
Windrow Pickup, 14-17 FT width	\$49,100	11.20	9.82	3.15	24.17	18.0	1.34
Corn, 14-15 FT width	\$121,100	27.61	24.22	7.77	59.60	7.3	8.17
Corn, 19-20 FT width	\$168,100	38.33	33.62	10.79	82.74	9.7	8.53
Corn, 24-25 FT width	\$171,600	39.13	34.32	11.02	84.47	12.1	6.98
Corn, 29-30 FT width	\$227,600	51.90	45.52	14.61	112.03	14.3	7.83

Annual hours of use: 400

Calculation to determine the custom rate (\$/acre) for a SP or PT forage harvester using a specific header:

$$\text{Custom Rate (\$/acre)} = \frac{\text{Forage Harvester Rate (\$/hr)} + \text{Header Rental Rate (\$/hr)}}{\text{Work Rate (acre/hr)}}$$

Example: For a 500 hp SP Forage Harvester with a 15 FT windrow pickup header:

$$\text{Custom Rate (\$/acre)} = \frac{\$403.73 + \$24.17}{18}$$

$$\text{Custom Rate (\$/acre)} = \$23.77$$

Harvesting Hay

PT Forage Harvester							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
For up to 150 hp tractor	\$53,700	48.98	42.96	13.79	105.73	117.61 150 hp	223.34
For 151 to 250 hp tractor	\$77,100	70.32	61.68	19.80	151.80	150.16 200 hp	301.96
For up to 300 hp tractor	\$85,400	77.89	68.32	21.93	168.14	191.70 300 hp	359.84

Annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Headers for PT Forage Harvester							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Work Rate (acre/hr)	Rental Rate (\$/acre)
Windrow Pickup, 70-79" width	\$7,500	6.84	6.00	1.93	14.77	3.0	4.92
Windrow Pickup, 80-96" width	\$13,200	12.04	10.56	3.39	25.99	3.6	7.22
Corn, 2 row	\$13,000	11.86	10.40	3.34	25.60	2.4	10.67
Corn, 3 row	\$26,000	23.71	20.80	6.68	51.19	3.6	14.22

Annual hours of use: 100

Harvesting Hay

Balers									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/bale)
Large Round Balers									
4x4 FT bales	\$32,000	20.52	4.80	3.80	29.12	50.87 50 hp	79.98	17	4.70
4x5 FT bales	\$44,700	28.67	6.71	5.31	40.68	56.21 60 hp	96.89	15	6.46
4x6 FT bales	\$62,100	39.83	9.32	7.37	56.52	60.86 70 hp	117.38	15	7.83
5x5 FT bales	\$48,300	30.98	7.25	5.73	43.96	60.86 70 hp	104.82	12	8.74
5x6 FT bales	\$68,400	43.87	10.26	8.12	62.25	64.18 80 hp	126.43	12	10.54
Large Square Balers									
small 35x31x98"	\$172,100	73.59	19.50	13.96	107.06	117.61 145 hp	224.67	40	5.62
medium 35x47x98"	\$200,400	85.69	22.71	16.26	124.66	117.61 145 hp	242.28	40	6.06
large 50x47x102"	\$238,600	102.02	27.04	19.36	148.42	135.38 180 hp	283.80	40	7.09
Small Square Baler									
14x18x52" bales	\$34,400	17.41	3.44	3.13	23.98	50.87 50 hp	74.84	175	0.43
16x18x52" bales	\$48,200	24.39	4.82	4.38	33.59	50.87 50 hp	84.46	175	0.48

Large Round Balers annual hours of use: 100

Large Square Balers annual hours of use: 150

Small Square Balers annual hours of use: 100

Notes: Cost of twine is not included in above rates.

For the cost of twine add \$0.27/bale for 4' diameter, \$0.40/bale for 5' diameter and \$0.76/bale for 6' diameter. Add \$0.78/bale for large square and \$0.05/bale for small square

For the mesh wrap option, add \$4900 to the capital cost. For the cost of mesh add \$1.25/bale.

Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Harvesting Hay

PT Bale Movers (Self Load/Unload)							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
Round Bale 7-12 bale	\$27,900	17.89	6.98	3.73	28.59	93.51 120 hp	122.10
Round Bale 12-18 bale	\$41,400	26.55	10.35	5.54	42.44	135.38 180 hp	177.81
Large Square 4-6 bale	\$54,600	35.02	13.65	7.30	55.97	93.51 125 hp	149.48
Large Square 6-12 bale	\$64,700	41.50	16.18	8.65	66.33	93.51 125 hp	159.83
Large Square 12-20 bale	\$83,900	53.81	20.98	11.22	86.00	135.38 180 hp	221.38

Annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

SP Bale Mover						
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
Small bale mover, approx. 161 bales 14 x 18", 16 x 18"	\$270,200	28	115.53	45.03	24.08	184.65

SP Bale Mover (continued)						
Machine Size	Purchase Price	Litre / Hour	Fuel Cost (\$/hr)	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)
Small bale mover, approx. 161 bales 14 x 18", 16 x 18"	\$270,200	28	26.04	20.00	6.91	237.59

Annual hours of use: 150

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

Fuel efficiency is based on 173 hp.

Seeding and Fertility

Air Drills with Independent Openers									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
25-35 FT	\$242,700	77.83	42.47	18.05	138.35	191.70 275 hp	330.04	14.5	22.76
36-45 FT	\$313,800	100.63	54.92	23.33	178.88	191.70 300 hp	370.57	19.0	19.50
46-55 FT	\$431,100	138.25	75.44	32.05	245.75	184.74 375 hp	430.48	24.0	17.94
56-65 FT	\$482,100	154.61	84.37	35.85	274.82	224.81 450 hp	499.64	29.0	17.23
66-75 FT	\$625,500	200.59	109.46	46.51	356.56	244.78 525 hp	601.34	34.0	17.69
76-86 FT	\$652,800	209.35	114.24	48.54	372.13	275.77 600 hp	647.90	39.0	16.61

Annual hours of use: 200

Notes: Includes air tank.

The power units for air drills up to 45 FT are front wheel assist tractors. The power units for 46 ft to 86 FT air drills are four wheel drive tractors.

Power unit cost includes fuel, labour and margin for tractor.

Air drills, similar to air seeders, use a tillage tool bar, a towed commodity metering cart, pneumatic seed and fertilizer delivery systems, and soil-engagement tools for seed and/or fertilizer placement. However, unlike air seeders, the toolbar is supported by on-row packer gangs at the rear of the unit, and castoring wheels in front connected through a parallel linkage. Depth control is achieved through hydraulic adjustment of frame height through this linkage. Typically air drills are equipped with a floating hitch that pivots at the toolbar mainframe, minimizing tractor hitch weight, and maximizing downforce to the soil-engagement tools. Seed opener tools are commonly spoons, knives discs and paired-row tools, but rarely sweeps, as soil disturbance is generally targeted not to exceed the foot-print of the on-row packer wheels.

An air drill with independent depth control openers utilizes a tool bar frame supported by wheels ahead of and behind the main frame a towed commodity metering cart, pneumatic seed and fertilizer delivery. Hydraulic, independently-controlled shank assemblies complete with gauge wheel packers are fixed to the toolbar frame. Seed/fertilizer placement depth is controlled through adjustment of the gauge wheels, and packing pressure is regulated with hydraulic force. Either hoe or disk openers can be mounted to the shank assemblies, depending on the manufacturer of the implement. Independent depth control openers offer the advantage of improved ground-following capabilities, and precision seed/fertilizer placement depth control.

Air Hoe Drills									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
27-40 FT	\$249,700	80.08	37.46	17.63	135.17	184.74 350 hp	319.90	16.0	19.99
41-50 FT	\$309,000	99.09	46.35	21.82	167.26	184.74 375 hp	351.99	22.0	16.00
51-60 FT	\$394,200	126.42	59.13	27.83	213.38	224.81 450 hp	438.19	27.0	16.23
61-70 FT	\$485,400	155.66	72.81	34.27	262.74	244.78 525 hp	507.52	32.0	15.86
71+ FT	\$591,100	189.56	88.67	41.73	319.96	258.52 550 hp	578.47	34.5	16.77

Annual hours of use: 200

Notes: Includes appropriately sized air tank.

The power units for all air hoe drills are four wheel drive tractors.

Power unit cost includes fuel, labour and margin for tractor.

Air Hoe Drills are air drills that use soil engagement tools that plow an opening into the soil for seed and/or fertilizer placement. There are several different types of tools on the market that fall into the Hoe drill category. The specific type of tool used depends on the shank or tool holder used, the amount of allowable soil disturbance and seed placement options.

Seeding and Fertility

Air Disk Drills									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
30 FT	\$274,400	88.00	41.16	19.37	148.53	117.61 150 hp	266.15	15.0	17.74
40 FT	\$329,000	105.51	49.35	23.23	178.09	150.16 200 hp	328.25	19.0	17.28
50 FT	\$439,900	141.07	65.99	31.06	238.11	177.59 250 hp	415.70	24.0	17.32
60 FT	\$522,300	167.50	78.35	36.88	282.72	191.70 300 hp	474.42	29.0	16.36
70 FT	\$765,100	245.36	114.77	54.02	414.14	191.70 350 hp	605.84	34.0	17.82

Annual hours of use: 200

Notes: Includes appropriately sized air tank.

The power units for all air disc drills are front wheel assist tractors.

Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Air Disk Drills are air drills that use a soil engagement tool that cuts an opening into the soil for seed and/or fertilizer placement. The tool is typically a circular disk or coulter blade. Several variants of the disk are on the market with or without waves or notches, and/or may utilize a multiple disk arrangement or cleaner wheel options.

Air Seeders									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
25-30 FT	\$250,800	80.43	37.62	17.71	135.76	161.02 240 hp	296.77	13.0	22.83
31-40 FT	\$297,900	95.53	44.69	21.03	161.25	177.59 270 hp	338.84	17.0	19.93
41-50 FT	\$379,900	121.83	56.99	26.82	205.64	184.74 375 hp	390.38	22.0	17.74
51-60 FT	\$405,300	129.98	60.80	28.62	219.39	215.59 425 hp	434.98	27.0	16.11
61+ FT	\$483,600	155.09	72.54	34.14	261.77	224.81 450 hp	486.59	30.0	16.22

Annual hours of use: 200

Notes: Includes appropriately sized air tank.

The power units for air seeders up to 40 FT are front wheel assist tractors. The power units for air seeders from 41 FT to 61+ FT are four wheel drive tractors.

Work rates may require adjustment for heavy straw conditions or high fertilizer rates. Refer to Custom Rate calculation worksheet in **Appendix I**

Air seeders use a medium or heavy duty cultivator as a tillage tool bar, a towed commodity metering cart, pneumatic seed and fertilizer delivery systems and tillage soil-engagement tools for seed and/or fertilizer placement. The cultivator's fixed-frame hitch (connected to tractor drawbar) and in-frame wheels support the implement, and hence depth control of the soil-opener tools is controlled by hydraulically actuating the height of the cultivator frame. Options for soil engagement and seed opener tools include sweeps, spoons, or knives. Appropriate seed-row finishing equipment such as harrows, coil packers, or gang packers are attached to the back of the cultivator frame (separate from the tillage tools).

Seeding and Fertility

Anhydrous Ammonia Applicator (Add-On)					
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
30-60 FT Less Tillage tool and Nurse Tank&Trailer	\$16,250	5.21	1.63	1.03	7.86

Annual hours of use: 200

Notes: This requires a nurse tank, trailer and heavy duty cultivator.

Liquid Fertilizer Applicator (Add-On)					
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
25-40 FT (1600-1800 gal. tank and cart, less tillage tool)	\$31,800	10.20	3.18	2.01	15.39
40-60 FT (2400-3200 gal. tank and cart, less tillage tool)	\$39,800	12.76	3.98	2.51	19.25
60-75 FT (4300 gal. tank and cart, less tillage tool)	\$72,300	23.19	7.23	4.56	34.98

Annual hours of use: 200

Granular Fertilizer Applicators									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
Granular Fertilizer Spreader (Add-on) (Cultivator Mount Up to 40 FT)	\$14,600	7.39	2.19	1.44	11.02				
Granular Fertilizer Spreader (Add-on) (Cultivator Mount Up to 80 FT)	\$16,500	8.35	2.48	1.62	12.45				
Granular Fertilizer Spreader 123-176 CU FT (Trailer 36-40 FT)	\$39,700	20.09	5.96	3.91	29.95	60.86 70 hp	90.82	22.0	4.13
Granular Fertilizer Spreader 229-370 CU FT (Trailer 40-60 FT)	\$62,300	31.53	9.35	6.13	47.01	64.18 80 hp	111.19	29.0	3.83

Annual hours of use: 200

Notes: Work rates may require adjustment for high fertilizer rates. Refer to Custom Rate calculation worksheet in **Appendix I**.

Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Seeding and Fertility

Other Row Crop Planters									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
12 row planter	\$121,000	110.36	48.40	23.81	182.57	117.61 150 hp	300.19	14.6	20.56
16 row planter	\$165,500	150.95	66.20	32.57	249.72	135.38 180 hp	385.10	19.4	19.85
24 row planter	\$302,400	275.81	120.96	59.52	456.29	161.02 230 hp	617.30	29.1	21.21
12/24 split row planter	\$187,800	171.29	75.12	36.96	283.37	150.16 210 hp	433.54	14.6	29.69
16/32 split row planter	\$236,200	215.43	94.48	46.49	356.40	177.59 250 hp	533.99	19.4	27.53

Annual hours of use: 100

Notes: Work rates may require adjustment for heavy straw conditions or high fertilizer rates. Refer to Custom Rate calculation worksheet in **Appendix I**.

Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Soil Preparation

Cultivators									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
Cultivators, field (with tine harrows)									
24 FT	\$54,800	13.87	4.11	2.70	20.68	79.81 110 hp	100.48	13.96	7.20
30 FT	\$63,800	16.14	4.79	3.14	24.06	93.51 130 hp	117.57	17.45	6.74
35 FT	\$70,500	17.84	5.29	3.47	26.60	124.34 165 hp	150.94	20.36	7.41
40 FT	\$82,100	20.77	6.16	4.04	30.97	135.38 180 hp	166.35	23.27	7.15
45 FT	\$86,000	21.76	6.45	4.23	32.44	150.16 200 hp	182.61	26.18	6.97
50 FT	\$126,600	32.03	9.50	6.23	47.75	150.16 220 hp	197.92	29.09	6.80
60 FT	\$131,500	33.27	9.86	6.47	49.60	161.02 240 hp	210.62	34.91	6.03
Cultivators, heavy duty (with tine harrows)									
23-30 FT	\$78,300	19.81	5.87	3.85	29.53	135.38 190 hp	164.91	15.70	10.50
31-40 FT	\$81,400	20.60	6.11	4.01	30.71	161.02 240 hp	191.73	20.60	9.31
41-50 FT	\$101,800	25.76	7.64	5.01	38.40	184.74 350 hp	223.14	26.40	8.45
51-62 FT	\$121,500	30.74	9.11	5.98	45.83	215.59 400 hp	261.42	32.20	8.12

Annual hours of use: 200

Notes: The power units for all field cultivators, and heavy duty cultivators up to 40 ft are front wheel assist tractors. The power units for heavy duty cultivators 41 ft and wider are four wheel drive tractors.

Power unit cost includes fuel, labour and margin for tractor.

Soil Preparation

Discs									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
Discs, heavy offset									
10-12 FT	\$39,800	40.28	23.88	9.62	73.78	79.81 105 hp	153.59	5.50	27.93
14-16 FT	\$48,000	48.58	28.80	11.61	88.99	117.61 150 hp	206.60	7.50	27.55
17-20 FT	\$53,700	54.35	32.22	12.99	99.56	135.38 180 hp	234.93	9.20	25.54
Discs, heavy tandem									
24-30 FT	\$78,300	26.42	15.66	6.31	48.39	135.38 180 hp	183.77	13.00	14.14
31-35 FT	\$93,200	31.44	18.64	7.51	57.59	150.16 210 hp	207.76	16.00	12.98
36-42 FT	\$125,500	42.34	25.10	10.12	77.56	177.59 250 hp	255.15	18.00	14.17

Heavy offset annual hours of use: 50

Heavy tandem annual hours of use: 150

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Soil Preparation

Vertical Tillage Tools									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
Compact, high speed disk									
10-15 FT	\$50,200	25.40	17.57	6.45	49.42	117.61 150 hp	167.03	12.12	13.78
16-20 FT	\$81,900	41.44	28.67	10.52	80.62	161.02 225 hp	241.64	17.45	13.84
21-25 FT	\$87,500	44.28	30.63	11.24	86.14	191.70 275 hp	277.84	22.30	12.46
26-30 FT	\$101,700	51.46	35.60	13.06	100.11	184.74 350 hp	284.85	27.15	10.49
31-35 FT	\$118,900	60.17	41.62	15.27	117.05	215.59 400 hp	332.64	32.00	10.40
36-40 FT	\$159,700	80.81	55.90	20.51	157.21	224.81 450 hp	382.02	36.85	10.37
41-45 FT	\$174,000	88.05	60.90	22.34	171.29	244.78 525 hp	416.08	41.70	9.98
46-50 FT	\$182,500	92.35	63.88	23.43	179.66	258.52 575 hp	438.17	46.55	9.41
Heavy duty, compact high speed disk									
10-15 FT	\$46,600	23.58	16.31	5.98	45.87	117.61 150 hp	163.49	12.12	13.49
16-20 FT	\$108,900	55.11	38.12	13.98	107.21	161.02 225 hp	268.23	17.45	15.37
21-25 FT	\$135,000	68.32	47.25	17.34	132.91	191.70 275 hp	324.60	22.30	14.55
26-30 FT	\$147,600	74.69	51.66	18.95	145.30	184.74 350 hp	330.04	27.15	12.16
31-35 FT	\$167,300	84.66	58.56	21.48	164.70	215.59 400 hp	380.29	32.00	11.88
36-40 FT	\$192,800	97.56	67.48	24.76	189.80	224.81 450 hp	414.61	36.85	11.25

Compact annual hours of use: 100

Heavy duty annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for tractor.

The power units for vertical tillage tools up to 25 FT are front wheel assist tractors.

The power units for vertical tillage tools 26 FT to 50+ FT are four wheel drive.

Soil Preparation

Harrows									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
Harrows, mid									
50-60 FT	\$45,400	25.72	7.26	4.95	37.93	124.34 165 hp	162.27	29	5.60
70-90 FT	\$51,200	29.00	8.19	5.58	42.77	161.02 240 hp	203.79	40	5.09
Harrows, heavy									
28-40 FT	\$45,700	23.13	6.86	4.50	34.48	150.16 200 hp	184.65	43	4.29
41-50 FT	\$49,600	25.10	7.44	4.88	37.42	161.02 225 hp	198.44	43	4.61
51-60 FT	\$51,600	26.11	7.74	5.08	38.93	177.59 250 hp	216.52	43	5.04
61-70 FT	\$55,700	28.19	8.36	5.48	42.03	184.74 350 hp	226.77	50	4.54
71-80 FT	\$60,000	30.36	9.00	5.90	45.26	215.59 400 hp	260.85	58	4.50
81+ FT	\$66,700	33.75	10.01	6.56	50.32	224.81 450 hp	275.13	63	4.37
Harrow packers									
25-30 FT	\$29,200	6.20	0.73	1.04	7.97	79.81 100 hp	87.78	15	5.85
31-40 FT	\$34,500	7.33	0.86	1.23	9.42	93.51 120 hp	102.93	25	4.12
41-50 FT	\$46,200	9.81	1.16	1.64	12.61	124.34 160 hp	136.95	30	4.57
51-62 FT	\$48,500	10.30	1.21	1.73	13.24	124.34 160 hp	137.58	35	3.93

Mid harrows annual hours of use: 75

Heavy annual hours of use: 100

Packers annual hours of use: 200

Notes: The power units for heavy harrows up to 60 ft are front wheel assist tractors. The power units for heavy harrows 61 ft and wider are four wheel drive tractors.

Power unit cost includes fuel, labour and margin for tractor.

Soil Preparation

Land Roller									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
11-20 FT fixed or 3 PT	\$15,500	10.46	2.07	1.88	14.41	50.87 50 hp	65.27	9.0	7.25
20 FT hydraulic swing	\$28,100	18.96	3.75	3.41	26.11	56.21 60 hp	82.32	11.6	7.10
32-52 FT (3 roller sections)	\$50,200	33.87	6.69	6.08	46.65	93.51 125 hp	140.15	24.4	5.74
46-62 FT (5 roller sections)	\$72,200	48.71	9.63	8.75	67.09	117.61 150 hp	184.70	31.3	5.90
64-85 FT (5 roller sections)	\$85,800	57.89	11.44	10.40	79.73	150.16 220 hp	229.89	43.2	5.32
65-89 FT (7 roller sections)	\$95,600	64.50	12.75	11.59	88.83	161.02 240 hp	249.85	45.0	5.55

Annual hours of use: 75

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Rock Windrower (Rake)									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
8-9 FT	\$12,000	12.14	2.40	2.18	16.72	50.87 50 hp	67.59	4.9	13.79
12-14 FT	\$21,600	21.86	4.32	3.93	30.11	50.87 50 hp	80.97	7.5	10.80

Annual hours of use: 50

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Rock Pickers									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
1.5-2.5 CU. yard	\$29,000	24.64	5.80	4.57	35.01	60.86 75 hp	95.87		
3.0-3.3 CU. yard	\$36,100	30.67	7.22	5.68	43.57	64.18 85 hp	107.76		

Annual hours of use: 50

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Soil Preparation

Land Scraper							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
6.0-7.9 CU. yard	\$29,700	33.86	9.28	6.47	49.61	93.51 130 hp	143.12
8.0-9.0 CU. yard	\$54,400	62.02	17.00	11.85	90.87	135.38 180 hp	226.25
10.0-10.9 CU. yard	\$78,500	89.50	24.53	17.10	131.14	150.16 200 hp	281.30
11.0-12.9 CU. yard	\$92,000	104.89	28.75	20.05	153.69	191.70 275 hp	345.38
15.0+ CU. yard	\$116,400	132.71	36.38	25.36	194.45	215.59 425 hp	410.04

Annual hours of use: 80

Notes: The power units for land scrapers up to 12.9 CU. yard are front wheel assist tractors. The power unit for the 15.0 CU. yard machine size and greater is a four wheel drive tractor.

Power unit cost includes fuel, labour and margin for tractor.

Sprayers

High Clearance Sprayer							
Machine Size	Purchase Price	Litre / Hour	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Fuel Cost (\$/hr)
600-799 US gal, 80 FT boom	\$286,900	29	159.96	50.21	31.53	241.69	26.97
800-900 US gal, 90 FT boom	\$346,200	36	193.02	60.59	38.04	291.65	33.48
800-900 US gal, 100 FT boom	\$447,500	36	249.50	78.31	49.17	376.98	33.48
1000 US gal, 90 FT boom	\$414,500	41	231.10	72.54	45.55	349.18	38.13
1000 US gal, 100 FT boom	\$451,600	41	251.79	79.03	49.62	380.44	38.13
1000 US gal, 120 FT boom	\$477,900	41	266.45	83.63	52.51	402.59	38.13
1200 US gal, 90 FT boom	\$480,200	52	267.73	84.04	52.76	404.53	48.36
1200 US gal, 100 FT boom	\$441,600	52	246.21	77.28	48.52	372.01	48.36
1200 US gal, 120 FT boom	\$553,100	52	308.38	96.79	60.78	465.95	48.36
1400 US gal, 90 FT boom	\$549,000	61	306.09	96.08	60.32	462.49	56.73
1400 US gal, 100 FT boom	\$549,000	61	306.09	96.08	60.32	462.49	56.73
1400 US gal, 120 FT boom	\$605,600	61	337.65	105.98	66.54	510.17	56.73
1600 US gal, 90 FT boom	\$551,200	70	307.32	96.46	60.57	464.35	65.10
1600 US gal, 100 FT boom	\$551,200	70	307.32	96.46	60.57	464.35	65.10
1600 US gal, 120 FT boom	\$607,700	70	338.82	106.35	66.78	511.94	65.10

High Clearance Sprayer (continued)							
Machine Size	Purchase Price	Litre / Hour	Labour Cost (\$/hr)	Margin on Labour & Fuel (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
600-799 US gal, 80 FT boom	\$286,900	29	20.00	7.05	295.71	78	3.79
800-900 US gal, 90 FT boom	\$346,200	36	20.00	8.02	353.15	87	4.06
800-900 US gal, 100 FT boom	\$447,500	36	20.00	8.02	438.49	97	4.52
1000 US gal, 90 FT boom	\$414,500	41	20.00	8.72	416.03	87	4.78
1000 US gal, 100 FT boom	\$451,600	41	20.00	8.72	447.29	97	4.61
1000 US gal, 120 FT boom	\$477,900	41	20.00	8.72	469.44	116	4.05
1200 US gal, 90 FT boom	\$480,200	52	20.00	10.25	483.14	87	5.55
1200 US gal, 100 FT boom	\$441,600	52	20.00	10.25	450.63	97	4.65
1200 US gal, 120 FT boom	\$553,100	52	20.00	10.25	544.56	116	4.69
1400 US gal, 90 FT boom	\$549,000	61	20.00	11.51	550.73	87	6.33
1400 US gal, 100 FT boom	\$549,000	61	20.00	11.51	550.73	97	5.68
1400 US gal, 120 FT boom	\$605,600	61	20.00	11.51	598.41	116	5.16
1600 US gal, 90 FT boom	\$551,200	70	20.00	12.77	562.21	87	6.46
1600 US gal, 100 FT boom	\$551,200	70	20.00	12.77	562.21	97	5.80
1600 US gal, 120 FT boom	\$607,700	70	20.00	12.77	609.81	116	5.26

Annual hours of use: 200

Notes: Fuel type is diesel, with a 75% load assumption. To calculate fuel consumption with alternative load, refer to **Appendix H**.

For cost of hauling water to field see **Appendix A (C)**.

These rates are not intended to be compared to commercial custom spraying rates. Refer to the introduction of this Guide for more information.

GPS is included, to take GPS out subtract \$3.28/hr for guidance and autosteer equipment costs. Add an additional hourly fee of \$3.00/hr if using prescription guidance.

Sprayers

PTO Sprayer									
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)	Work Rate (acre/hr)	Custom Rate (\$/acre)
1000-1250 US gal 80 FT suspended boom width	\$58,900	53.72	17.67	10.71	82.10	93.51 130 hp	175.61	93	1.89
1000-1250 US gal 90 FT suspended boom width	\$59,500	54.27	17.85	10.82	82.94	93.51 130 hp	176.45	105	1.68
1000-1250 US gal, 100 FT suspended boom width	\$68,100	62.11	20.43	12.38	94.92	93.51 130 hp	188.43	116	1.62
1500-1600 US gal 80-99 FT wheel boom width	\$62,900	57.37	18.87	11.44	87.68	150.16 200 hp	237.84	105	2.27
1500-1600 US gal 100-119 FT wheel boom width	\$71,000	64.76	21.30	12.91	98.97	150.16 200 hp	249.13	128	1.95
1500-1600 US gal 120-139 FT wheel boom width	\$79,600	72.60	23.88	14.47	110.95	150.16 200 hp	261.12	151	1.73

Annual hours of use: 100

Notes: For cost of hauling water to field see **Appendix A (C)**.

Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Miscellaneous

Snow Blower							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
Rear mount, 60-69"	\$3,300	3.34	0.66	0.60	4.60	50.87 50 hp	55.47
Rear mount, 70-79"	\$6,000	6.07	1.20	1.09	8.36	50.87 50 hp	59.23
Rear mount, 80-89"	\$10,400	10.53	2.08	1.89	14.50	60.86 70 hp	75.37
Rear mount, 90+"	\$13,600	13.76	2.72	2.47	18.95	79.81 110 hp	98.76
Front mount, 60-69"	\$7,300	7.39	1.46	1.33	10.18	50.87 50 hp	61.04
Front mount, 70-79"	\$9,700	9.82	1.94	1.76	13.52	50.87 50 hp	64.39
Front mount, 80-96"	\$10,800	10.93	2.16	1.96	15.05	56.21 65 hp	71.26
Front mount, 97+"	\$20,900	21.15	4.18	3.80	29.13	73.16 90 hp	102.29

Annual hours of use: 50

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Front End Loader							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
For 40-59 hp tractor	\$7,600	3.85	2.51	0.95	7.31	57.83 65 hp	65.15
For 50-99 hp tractor	\$10,600	5.36	3.50	1.33	10.19	62.02 75 hp	72.21
For 100-149 hp tractor	\$15,800	8.00	5.21	1.98	15.20	100.62 125 hp	115.81
For 150-199 hp tractor	\$16,800	8.50	5.54	2.11	16.15	124.34 175 hp	140.49
For 200+ hp tractor	\$24,900	12.60	8.22	3.12	23.94	150.16 200 hp	174.10

Annual hours of use: 100

Notes: The power units for 149 hp and lower tractors are 2 wheel drive. The power units for 150 hp and higher tractors are front wheel assist.

Power unit cost includes fuel, labour and margin for tractor.

Miscellaneous

Post Pounder							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
Post pounder 3PT hitch mount	\$7,000	8.86	2.63	1.72	13.21	50.87 55 hp	64.07
Post pounder trailer mounted PTO	\$9,200	11.64	3.45	2.26	17.35	50.87 55 hp	68.22
Post pounder trailer mounted with engine	\$11,600	14.68	4.35	2.85	21.88	50.87 55 hp	72.75
Post pounder skid steer mounted	\$8,900	11.26	3.34	2.19	16.79	50.87 55 hp	67.65

Annual hours of use: 40

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Livestock Trailer					
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)
16 FT bumper	\$12,400	7.95	2.48	1.56	11.99
20 FT gooseneck	\$17,000	10.90	3.40	2.15	16.45
24 FT gooseneck	\$22,000	14.11	4.40	2.78	21.29

Annual hours of use: 100

Tub Grinder							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
80-175 PTO hp	\$56,500	24.16	11.30	5.32	40.78	124.34 175 hp	165.12
200-315 PTO hp	\$88,500	37.84	17.70	8.33	63.87	191.70 315 hp	255.57

Annual hours of use: 150

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

For alternative size tractors refer to front wheel assist tractors in the power units section of this guide.

Miscellaneous

Vertical Feed Mixer							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
280-360 CU. FT	\$37,200	11.93	4.65	2.49	19.07	79.81 110 hp	98.87
500-750 CU. FT	\$59,100	18.95	7.39	3.95	30.29	93.51 135 hp	123.80
830-1150 CU. FT	\$76,800	24.63	9.60	5.13	39.36	117.61 150 hp	156.98

Annual hours of use: 200

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Grinder Mixers, Feed Mixers, and Bale Processors							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
Grinder Mixers							
360-440 CU. FT	\$38,700	12.41	5.81	2.73	20.95	93.51 120 hp	114.45
550-750 CU. FT	\$58,700	18.82	8.81	4.14	31.77	150.16 200 hp	181.93
Feed Mixers							
Two 6 FT Bale, 40 bu grain	\$41,400	13.28	6.21	2.92	22.41	79.81 100 hp	102.22
Bale Processors							
Two 6 FT Round Bale	\$31,800	10.20	4.77	2.25	17.22	117.61 155 hp	134.83
Six 6 FT Round Bale	\$43,500	13.95	6.53	3.07	23.55	124.34 175 hp	147.89

Annual hours of use: 200

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

Miscellaneous

Manure Spreader (Solid)							
Machine Size	Purchase Price	Ownership Cost (\$/hr)	Repair & Maint. (R&M) Cost (\$/hr)	Margin on Ownership and R&M (\$/hr)	Rental Rate (\$/hr)	Power Unit Cost (\$/hr)	Custom Rate (\$/hr)
80-149 CU. FT level chain unload	\$20,500	18.70	9.02	4.16	31.88	56.21 60 hp	88.08
150-199 CU. FT level chain unload	\$27,500	25.08	12.10	5.58	42.76	64.18 80 hp	106.94
200-249 CU. FT level chain unload	\$34,000	31.01	14.96	6.90	52.87	73.16 90 hp	126.02
250-299 CU. FT level chain unload	\$34,700	31.65	15.27	7.04	53.96	93.51 120 hp	147.46
300-399 CU. FT level chain unload	\$57,500	52.44	25.30	11.66	89.40	93.51 125 hp	182.91
400-500 CU. FT level chain unload	\$63,200	57.64	27.81	12.82	98.27	117.61 150 hp	215.88
250-299 CU. FT level side discharge	\$50,500	46.06	22.22	10.24	78.52	79.81 110 hp	158.33
300-399 CU. FT level side discharge	\$53,800	49.07	23.67	10.91	83.65	117.61 140 hp	201.27
400-500 CU. FT level side discharge	\$76,400	69.68	33.62	15.49	118.79	135.38 180 hp	254.17
500+ CU. FT level side discharge	\$80,900	73.79	35.60	16.41	125.79	150.16 200 hp	275.96
250-300 CU. FT, hydraulic push, vertical beaters	\$60,100	54.82	26.44	12.19	93.45	93.51 120 hp	186.96
400-500 CU. FT, hydraulic push, vertical beaters	\$75,500	68.86	33.22	15.31	117.39	117.61 150 hp	235.01

Annual hours of use: 100

Notes: Power unit cost includes fuel, labour and margin for front wheel assist tractor.

A. Hauling Grain from Field to Yard

Truck cost - excluding labour	\$113.00/hour*
Auger cost - 8 inch x 60' with gas engine (excluding labour)	\$8.15/hour
Labour cost	\$20.00/hour

Distance from Field to Yard (miles)	0.5	1	1.5	2	3	4	6	10
TIME USE								
(A) Time unload twice from one combine or once from each of two combines (min)	10	10	10	10	10	10	10	10
(B) Travel Time to Yard and Return (min)	4	6.5	8.5	10	12	15	21	33
(C) Time truck running during unload (min)	4	4	4	4	4	4	4	4
(D) Truck Running Time per Trip (min)	18	20.5	22.5	24	26	29	35	47
(E) Total Unload Time at Bin (min)	7	7	7	7	7	7	7	7
Wait Time in Field (truck not running) (min)								
(F) Hauling from one combine (min)	47	44.5	42.5	41	39	36	30	18
(G) Hauling from two combines (min)	11	8.5	6.5	5	3	0	0	0
Total Time per Trip								
(H) Hauling from one combine (min)	68	68	68	68	68	68	68	68
(I) Hauling from two combines (min)	32	32	32	32	32	32	38	50
COMPONENT COSTS PER TRIP								
(J) Truck costs per trip	\$33.90	\$38.61	\$42.38	\$45.20	\$48.97	\$54.62	\$65.92	\$88.52
(K) Auger costs per trip	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95	\$0.95
(L) Labour costs per trip (one combine)	\$22.67	\$22.67	\$22.67	\$22.67	\$22.67	\$22.67	\$22.67	\$22.67
(M) Labour costs per trip (two combines)	\$10.67	\$10.67	\$10.67	\$10.67	\$10.67	\$10.67	\$12.67	\$16.67
CUSTOM RATE (\$/hr) (includes 15% margin)								
(N) Hauling from one combine	\$58.36	\$63.14	\$66.96	\$69.83	\$73.65	\$79.39	\$90.85	\$113.78
(O) Hauling from two combines	\$98.15	\$108.30	\$116.42	\$122.51	\$130.64	\$142.82	\$144.42	\$146.47
CUSTOM RATE (\$/bu) (includes 15% margin)								
(P) Hauling from one combine (bu/hr = 300)	\$0.19	\$0.21	\$0.22	\$0.23	\$0.25	\$0.26	\$0.30	\$0.38
(Q) Hauling from one combine (bu/hr = 600)	\$0.16	\$0.18	\$0.19	\$0.20	\$0.22	\$0.24	\$0.24	\$0.24

Calculations used to determine costs:

$$D = A + B + C$$

$$H = A + B + E + F$$

$$I = A + B + E + G$$

$$J = D / (60 \text{ min/hr}) \times (\text{truck cost})$$

$$K = E / (60 \text{ min/hr}) \times (\text{auger cost})$$

$$L = H / (60 \text{ min/hr}) \times (\text{labour cost})$$

$$M = I / (60 \text{ min/hr}) \times (\text{labour cost})$$

$$\# \text{ trips/hr one combine} = (60 \text{ min/hr}) / H$$

$$\# \text{ trips/hr two combines} = (60 \text{ min/hr}) / I$$

$$N = (J + K + L) \times (60 \text{ min/hr}) / H \times 1.15$$

$$O = (J + K + M) \times (60 \text{ min/hr}) / I \times 1.15$$

$$P = N / (300 \text{ bu/hr})$$

$$Q = O / (600 \text{ bu/hr})$$

* Truck cost based on \$120,000.00 purchase price, 150 hours of annual usage, 2.5% repair and maintenance rate, \$0.93/L diesel, 27 L/hr fuel usage, 15% fuel margin, and 15 year optimal life

Appendix A

B. Hauling Large Bales from Field to Yard

The following cost calculation of hauling large round bales from the field to the yard includes the cost of a large round bale mover, tractor, and labour. The large round bale mover can pick up large round bales in the field, transport them to the yard, and unload them automatically.

Assume:

- a. 12 bale PT large round bale mover custom rate: \$122.10/hour
- b. 120 horsepower tractor (included in custom rate for bale mover)
- c. Two mile haul takes 30 minutes (4 miles round trip) 24 bales/hour
- d. Six mile haul takes 60 minutes (12 mile round trip) 12 bales/hour

$$\text{Cost per bale - two mile haul} \quad \frac{\$122.10}{24} = \$5.09$$

$$\text{Cost per bale - six mile haul} \quad \frac{\$122.10}{12} = \$10.18$$

Assume:

- a. 18 bale PT large round bale mover custom rate: \$177.81 /hour
- b. 180 horsepower tractor (included in custom rate for bales)
- c. Two mile haul takes 40 minutes (4 miles round trip) 27 bales/hour
- d. Six mile haul takes 70 minutes (12 mile round trip) 15 bales/hour

$$\text{Cost per bale - two mile haul} \quad \frac{\$177.81}{27} = \$6.59$$

$$\text{Cost per bale - six mile haul} \quad \frac{\$177.81}{15} = \$11.52$$

C. Hauling Water for Field Spraying - SP Sprayer

	2.5 gallon/acre		5.0 gallon/acre		10 gallon/acre		20 gallon/acre	
	part time driver	full time driver	part time driver	full time driver	part time driver	full time driver	part time driver	full time driver
(A) Acres sprayed per hr is avg. of 80' and 100' booms	99.0	99.0	94.5	94.5	85.5	85.5	67.5	67.5
(B) Labour cost/hr	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
(C) Truck cost per hour*	113	113	113	113	113	113	113	113
(D) Truck hauls 1200 gal/load	1200	1200	1200	1200	1200	1200	1200	1200
(E) Acres per load = 1200 gal/(gal/ac)	480	480	240	240	120	120	60	60
(F) Hours per load = 1200 gal/(gal/ac)/(ac/hr)	4.85	4.85	2.54	2.54	1.40	1.40	0.89	0.89
(G) Truck driving time going for water (min)	13.3	13.3	25.3	25.3	45.5	45.5	88.3	88.3
(H) Driving time in the field (min)	1.8	1.8	3.5	3.5	6.3	6.3	12.3	12.3
(I) Total time minutes per 160 acres (min)**	15.1	15.1	28.8	28.8	51.8	51.8	100.6	100.6
(J) Truck cost for 160 acres	28.44	28.44	54.24	54.24	97.56	97.56	189.46	189.46
(K) Labour cost for 160 acres	5.03	5.03	9.60	9.60	17.27	17.27	33.53	33.53
(L) Truck and labour cost for 160 acres	33.47	33.47	63.84	63.84	114.82	114.82	223.00	223.00
(M) Add 15% margin	5.02	5.02	9.58	9.58	17.22	17.22	33.45	33.45
(N) Total cost of hauling for 160 acres	38.49	38.49	73.42	73.42	132.05	132.05	256.45	256.45
(O) Cost of purchase or pumping water for 160 ac**	3.33	3.33	6.67	6.67	13.33	13.33	26.67	26.67
(P) Cost per 160 acres for hauling and water	41.83	41.83	80.08	80.08	145.38	145.38	283.11	283.11
(Q) Cost per acre of hauling water	0.26	0.26	0.50	0.50	0.91	0.91	1.77	1.77

Calculations used to determine values:

$$J = C \times I / (60 \text{ min/hr})$$

$$K = B \times I / (60 \text{ min/hr})$$

$$I = J + K$$

$$M = L \times 15\%$$

$$N = L + M$$

$$O = \text{gal/acre} \times \text{acres/gal} \times \text{cost/load} \\ = 2.5 \times 160 / 1200 \times 10.00$$

$$P = N + O$$

$$Q = P / 160$$

* Truck cost based on \$120,000 purchase price, 150 hours of annual use, 2.5% repair and maintenance rate, and 15 year optimal life.

** Based on one load taking 41 minutes.

*** Based on one load costing \$10.

Appendix A

D. Rental of Farm Buildings and Bins

To determine the fair rental rate for farm buildings, consider:

	Your Value	Example
Replacement cost of building		\$20,000
Retained value of building (at end of years of service)		\$8,000
Interest rate (opportunity cost not included)		5.50%
Repair rate (% of replacement cost)*		0.50%
Annual insurance premium		\$60
Optimal life		30

Calculate:

A. Depreciation:

(Replacement cost - Retained Value) / Optimal Life =

B. Interest Cost:

(Replacement cost) x (1.98 (Interest Rate) - 0.0054) / Years of Loan =

This assumes 50% borrowed and 7 year loan

C. Insurance:

Annual insurance premiums =

D. Repairs:

Annual repair rate x Replacement cost =

Total = A + B + C + D

Example

A. Depreciation: (\$20,000 - \$8,000) / 30 =

\$400

B. Interest Cost: (\$20,000 x (1.98 (0.055) - 0.0054)) / 10 =

\$207

C. Insurance: \$60 =

\$60

D. Repairs: \$20,000 x 0.005 =

\$100

\$767 per year

(divide by number of bushels to get \$/year per bu)

* Repair rates are difficult to estimate. Steel buildings (bins and quonsets) might be 0.5% of replacement cost per year. Aeration fans might be higher. Wood buildings might be 1 to 3% of the replacement cost.

For bins with aeration or natural air drying, include the purchase cost of the fan and air distribution system in the replacement cost value. Add \$0.52/hr for a 7 hp fan, \$0.37/hr for a 5 hp fan and \$0.22/hr for a 3 hp fan for electricity costs.

Self Propelled Combine Classification (Current Models)

Size	Acre/Hour	Manufacturer	Model
Class 5	≤ 267 hp / 250 bu hopper 8 ac/hr	John Deere	S550
		CASE IH	5088
Class 6	268-322 hp / 300-315 bu hopper 9-10 ac/hr	CNH	CX8070
		CNH	CR6090
		John Deere	S660
		CASE IH	6088
		Gleaner	S67
		Gleaner	A66
		Claas Lexion MF	730 9520
Class 7	323-374 hp / 300-370 bu hopper 11-12 ac/hr	CNH	CX8080
		CNH	CR7090
		John Deere	T670
		John Deere	S670
		CASE IH	7088
		CASE IH	7120
		Gleaner	S77
		Gleaner	A76
		Claas Lexion	670
		Class Lexion MF	740 9540
Class 8	375-461 hp / 350-400 bu hopper 14-15 ac/hr	CNH	CX8090
		CNH	CR8090
		John Deere	S680
		CASE IH	8120
		Gleaner	A86
		Claas Lexion	680
		Claas Lexion MF	750 9560
Class 9 & 10	≥ 462 hp / 350-400 bu hopper 17 ac/hr	CNH	CR9090
		John Deere	S690
		CASE IH	9120
		Claas Lexion	760
		Claas Lexion	770

Appendix C

Formulas Used in Calculations

A) **Ownership costs** per hour are the sum of (i) depreciation, (ii) Investment costs, (iii) insurance and housing.

i) **Depreciation** represents the value of equipment over the hours it is owned.

$$\text{Depreciation Cost (\$/hr)} = (\text{Purchase Price} - \text{Retained Value}) / (\text{Optimal Life}) / (\text{Annual hrs of use})$$

Where:

- purchase price = average purchase price of manufacturer's base list price and the list price with all available options
- retained value = value of equipment at end of ownership
- optimal life = number of years before trade-in or two-thirds of useful life in years
- annual hours of use = typical number of hours equipment is used in one year

For example, for a conventional combine with a purchase price of \$300,000, a retained value of \$100,000 at the end of its 15 year optimal life, and 200 annual hours of usage, the depreciation cost is:

$$\text{Depreciation Cost (\$/hr)} = ((300,000 - 100,000) / 15) / 200 = \$66.67/\text{hr}$$

ii) **Investment** represents the interest cost of borrowing money to purchase the equipment along with the opportunity cost of the down payment.

It is assumed that 50 per cent of the purchase price is financed over a seven-year loan term (84 months). The interest is compounded monthly, so each month is considered one payment period.

In the printed and online guide, amortization tables were used to determine the total interest paid over the seven-year loan. This total interest cost was divided by the optimal life and annual hours of use (see **Appendix F**) to determine an interest cost per hour.

To allow calculation of the investment cost by hand, a simplified equation was developed, based on the amortization tables, to calculate the total investment cost over the life of the loan for each piece of equipment (which has a unique purchase price, optimal life and annual hours of use):

$$\text{Investment Cost (\$/hr)} = \text{Purchase Price} \times \{[1.98 \times (\text{Interest Rate \%} / 100\%)] - 0.054\} / \text{Optimal Life} / \text{Annual hrs of Use}$$

The interest rate used in the equation included the actual borrowing rate (5.5 per cent on average) plus the opportunity cost of the down payment (the down payment could have been invested instead at an opportunity rate of one per cent. Since 50 per cent of the purchase price is financed and 50 per cent is paid down, the interest rate used in the equation is the sum of the two interest rates (borrowed + opportunity = 6.5 per cent).

For example, for a conventional combine (borrowing rate = 5.5 per cent, opportunity rate = one per cent, \$300,000 purchase price, 15 year optimal life, 200 hours annual usage), the investment cost is:

$$\text{Investment Cost (\$/hr)} = 300,000 \times \{[1.98 \times (6.5 \% / 100\%)] - 0.054\} / 200$$

$$\text{Investment Cost (\$/hr)} = 300,000 \times \{0.1233\} / 15 / 200$$

$$\text{Investment Cost} = \$12.33/\text{hr}$$

iii) **Insurance and Housing** are assumed to be 1 percent of the purchase price per year

For the conventional combine with a \$300,000 purchase price and 200 hours/year:

$$\text{Insurance \& Housing Cost (\$/hr)} = [(1\% / 100\%) \times (300,000)] / 200 = \$15/\text{hr}$$

Therefore, the total ownership cost for this conventional combine is:

$$\text{Ownership Cost} = \text{Depreciation} + \text{Investment} + \text{Insurance \& Housing} = \\ \$66.67/\text{hr} + \$12.23/\text{hr} + \$15/\text{hr} = \$94/\text{hr}$$

Appendix C

- B) Repair and Maintenance Costs** are calculated based on a repair rate that represents the repair costs per year of ownership. These repair rates were determined by estimating the total repair and maintenance costs over the ownership of the equipment (including oil and filters, general maintenance and one major rebuild). The total repair cost was divided by the ownership years and purchase price to determine the repair rates used in the guide.

Repair and Maintenance Costs (\$/hr) = [(Repair Rate (%) / 100%) x (Purchase Price)] / Annual hours of use.

For example, for a conventional combine, the annual cost of a repair program is approximately \$3,000, the annual cost of oil changes is approximately \$500 and the cost of one major rebuild is approximately \$70,000 (\$4,666 per year assuming 15 years of ownership). Therefore, the total repair cost per year is \$8,166. This represents 2.8 per cent of the purchase price. For the rental rates in the guide, repair rates (based on a percentage of purchase price) were established for each type of equipment (refer to **Appendix F**).

Repair and Maintenance Cost (\$/hr) = [(2.8%) / (100%) x (300,000)] / 200 = \$42/hr

- C) Margin on Ownership and Repair and Maintenance** represents a cushion (or contingency) and is calculated by:

Margin = (Margin (%) / 100%) x (Ownership Cost + Repair and Maintenance Cost)

For the conventional combine example, the margin on ownership and repair and maintenance is:

Margin = (15%)/(100%) x (94 + 42) = \$20.40/hr

- D) Rental Rate** per hour is the sum of the ownership costs, repair and maintenance costs, and margin on ownership and repair and maintenance.

Rental Rate (\$/hr) = Ownership Cost + Repair and Maintenance Cost + Margin

For the conventional combine example, the total rental rate is:

Rental Rate = 94 + 42 + 20.40 = \$156.40/hr

- E) Fuel Costs** are calculated by:

Fuel cost (\$/hr) = Fuel efficiency (L/hr) Price of fuel (\$/L)

For example, for a conventional combine the fuel efficiency is approximately 30 litres per hour and the price of diesel is \$0.929 per litre:

Fuel cost (\$/hr) = 30 x .929 = \$27.87/hr

- F) Labour Costs** are assumed to be \$20/hr.

- G) Margin on Fuel and Labour** is calculated by:

Margin = (Margin (%) / 100%) x (Fuel Cost + Labour Cost)

- H) Custom Rate** per hour is the sum of the rental rate, fuel and labour cost, and a margin on fuel and labour.

Custom Rate(\$/hr) = Rental Rate(\$/hr) + Fuel cost (\$/hr) + Labour (\$/hr) + Margin on fuel and labour (\$/hr)

For the conventional combine example, the custom rate is:

Custom Rate = \$156.40 + \$27.87 + \$20.00 + \$7.18 = \$221.45 / hr

The custom rental rate (per acre) is calculated by:

Custom Rate (\$/acre) = (Custom Rate (\$/hr) / (Work Rate (acre/hr)

Combine headers are considered as an add-on rental rate to the custom rate since the rental rate does not include fuel, labor or a margin on fuel and labor. For example, for a conventional combine, if the rental rate for a 15-foot pickup header is \$10.54 per hour, and the work rate of the combine and header combined is nine acres per hour, then the custom rate is:

Custom Rate (\$/acre) = (221.45 + 10.54)/9 = \$24.67/acre

Appendix D

Rental Rate Calculation Worksheet

The Ownership Cost per hour is the sum of (i) depreciation Cost, (ii) investment cost, and (iii) insurance and housing costs.

$$\text{i) Depreciation Cost (\$/hr)} = (\text{Purchase Price} - \text{Retained Value}) / (\text{Optimal Life} / \text{Annual Hours of Use})$$

$$\text{ii) Investment Cost (\$/hr)} = \text{Purchase Price} \times (1.98 \times \text{Interest Rate} - 0.054) / (\text{Optimal Life} / \text{Annual Hours of Use})$$

The total cost of borrowing depends on the interest rate and the purchase price. The regression factors in the above equation (1.98 and 0.054) account for this. This calculation assumes that 50 per cent of the purchase price is borrowed, the payback period of the loan is seven years and equal payments are made monthly.

$$\text{iii) Insurance and Housing Cost (\$/hr)} = \frac{\text{Purchase Price} \times 0.01}{\text{Annual Hours of Use}}$$

The total rental rate (\$/hr) is the sum of the ownership cost, repair and maintenance cost, and margin.

$$\text{iv) Repair and Maintenance Cost (\$/hr)} = \frac{\text{Repair Rate} \times \text{Purchase Price}}{\text{Annual Hours of Use}}$$

$$\text{v) Margin (\$/hr)} = \text{Margin} \times (\text{Ownership Cost} + \text{Repair and Maintenance Cost})$$

The rental rate (\$/acre) can be estimated by dividing the total rental rate (\$/hr) by the work rate (acre/hr).

$$\text{vi) Work Rate (acre/hr)} = \text{Width (ft)} \times \text{Speed (mph)} \times \text{Field Efficiency} \times \frac{5280 \text{ ft/mile}}{43560 \text{ ft}^2/\text{acre}}$$

The **purchase price** is the cash value of the new equipment without a trade-in.

The **retained value** of the equipment is the value at the end of its optimal life (assumed to be 33 per cent of the purchase price).

The **optimal life** of the equipment is the years of useful life before trade-in (refer to **Appendix F** for typical values).

The **annual hours of use** are the typical number of hours equipment is used in one year (refer to **Appendix F** for typical values).

The **interest rate** can be used to represent the cost of borrowing only or the cost of borrowing plus the lost revenue of investment. For this calculation, the interest rate must be presented as a decimal (ex: 5% = 0.05).

Typical **repair rates** for equipment can be found in **Appendix F**. The repair rate must be presented as a decimal (ex: 2% = 0.02).

The **margin** represents a profit for the farmer (assumed to be 15 per cent). The margin must be presented as a decimal (ex: 15% = 0.15).

The **width** represents the implement width.

The **speed** is the average ground speed.

The **field efficiency** accounts for time spent turning, filling and emptying equipment. Average field efficiency for tillage operations is 80 per cent. Average field efficiency for seeding and harvesting operations is 69 per cent. The field efficiency must be presented as a decimal (ex: 69% = 0.69).

Custom Rate Calculation Worksheet

The custom rate (\$/hr) is the sum of the rental rate (\$/hr), Appendix C), the fuel cost (\$/hr), the labour cost (\$/hr) and the margin on fuel and labour (\$/hr). Custom operations may include costs for a power unit only (ex: combine) or a power unit and equipment (ex: tractor and air seeder).

Power Unit Cost (\$/hr) = Rental Rate + Fuel Cost + Labour Cost + Margin on Fuel and Labour.

- i) Use **Appendix C** to calculate the rental rate of the power unit (\$/hr)
- ii) $Fuel\ Cost\ (\$/hr) = Fuel\ usage\ (L/hr) \times Fuel\ price\ (\$/L)$

Fuel usage can be estimated using the chart in **Appendix H**

- iii) $Labour\ Cost\ (\$/hr)$
- iv) $Margin\ on\ Fuel\ and\ Labour\ (\$/hr) = Margin \times (Fuel\ Cost + Labour\ Cost)$

Machine Cost (\$/hr) = rental rate based on **Appendix C** (if applicable)

$Total\ Custom\ Rate\ (\$/hr) = Power\ Unit\ Cost + Machine\ Cost$

$Total\ Custom\ Rate\ (\$/acre) = \frac{Power\ Unit\ Cost\ (\$/hr) + Machine\ Cost\ (\$/hr)}{Work\ Rate\ (acre/hr)}$

- v) $Work\ Rate\ (acre/hr) = Width\ (ft) \times Speed\ (mph) \times Field\ Efficiency \times \frac{5280\ ft/mile}{43560\ ft^2/acre}$

Appendix F

Machinery Cost Calculation Guide

Machine	Column A	Column B	Column C
	Annual Hours of Use	Optimal Life (years)	Repair Rate (% of purchase price)
Tractors			
2WD	300	20	2.2
Front wheel assist	450	15	2.6
4WD	450	15	2.5
Tracked	450	15	3.2
Combines			
SP Conventional	200	15	2.0
SP Rotary	250	12	2.5
Combine headers			
Rigid headers with batt reels	250	20	2.0
Pickup headers	250	20	1.5
Flex headers with pickup reels	250	15	2.5
Draper headers with pickup reels	250	15	2.5
Corn headers	100	15	2.8
Swathers SP	200	15	2.0
Swath rollers	100	20	1.0
Grain bag loaders	100	12	2.0
Grain bag extractors	100	12	2.0
Grain vacs	50	15	2.0
Grain carts	250	20	2.0
Grain dryers	150	15	1.3
Powered augers	100	20	1.5
PTO augers	100	20	1.0
Belt conveyors	100	10	2.1
SP Mower/conditioner	150	15	3.2
PT Mower/conditioner (sickle)	150	15	2.0
PT Mower/conditioner (disc)	150	15	2.5
Hay Rakes	50	20	2.0
Forage Harvesters			
Powered	400	10	8.0
Pull-type	100	10	8.0
Balers			
Round	100	15	1.5
Large square	150	15	1.7
Small square	100	20	1.0

Appendix F

Machine	Column A	Column B	Column C
	Annual Hours of Use	Optimal Life (years)	Repair Rate (% of purchase price)
Bale movers			
Large Round	100	15	2.5
Large Square	100	15	2.5
Small Square	100	20	1.5
Air drills (independent openers)	200	15	3.5
Air disk drills	200	15	3.0
Air hoe drills	200	15	3.0
Air seeder	200	15	3.0
Ammonia applicator	200	15	2.0
Liquid fertilizer applicator	200	15	2.0
Granular fertilizer applicator	100	20	1.5
Row crop planter	100	10	4.0
Cultivators field	200	20	1.5
Cultivator heavy duty	200	20	1.5
Heavy offset discs	50	20	3.0
Heavy tandem discs	150	20	3.0
Vertical tillage tools	100	20	3.5
Vertical tillage tools heavy duty	100	20	3.5
Standard harrows	75	25	1.2
Heavy harrows	100	20	1.5
Harrow packers	200	25	0.5
Land rollers	75	20	1.0
Rock windrowers (rakes)	50	20	1.0
Rock pickers	50	25	1.0
Land scraper	80	10	2.5
High clearance sprayers	200	8	3.5
PTO sprayers	100	10	3.0
Snow blower	50	20	1.0
Post pounder	40	20	1.5
Front end loader	100	20	3.3
Livestock trailers	100	15	2.0
Tub grinder	150	15	3.0
Vertical feed mixer	200	15	2.5
Bale Processors	200	15	3.0
Grinder mixers and feed mixers	200	15	3.0
GPS Precision farming add-on	500	10	1.0

Appendix G

Factors to Consider When Custom Hiring

Custom hiring is a business arrangement. The terms of the arrangement should be written in a formal agreement. If unwritten, the terms are more likely to be misunderstood in case of a dispute. The following factors should be considered in a custom hiring agreement.

Timeliness

Significant loss can occur if an operation is not started or completed on time. To facilitate planning, a custom hiring agreement should include a schedule of operations for both parties. For example, when the custom combiner is picking up swathed grain, the schedule would outline time periods for swathing by the owner and combining by the custom operator. Such a schedule would be subject to weather conditions and crop maturity.

Operations

The parties should write into the agreement the exact operations to be performed by each party and the machine, materials and labour to be supplied by each.

Rate Schedule

The custom operator should stipulate the rate for each operation to be performed on the basis of acreage, time (hour, day and week) or total operation performed.

Management

A custom hiring agreement should ensure that the custom operator will employ acceptable management practices in his or her operations.

Terms of Payment

A custom hiring agreement should stipulate terms of payment for custom operations. As well, the custom operator should bill the client upon the completion of each custom operation. The bill should indicate actual units (hours, acres, etc.) completed, the rate charged per unit, the total charge and payment due date

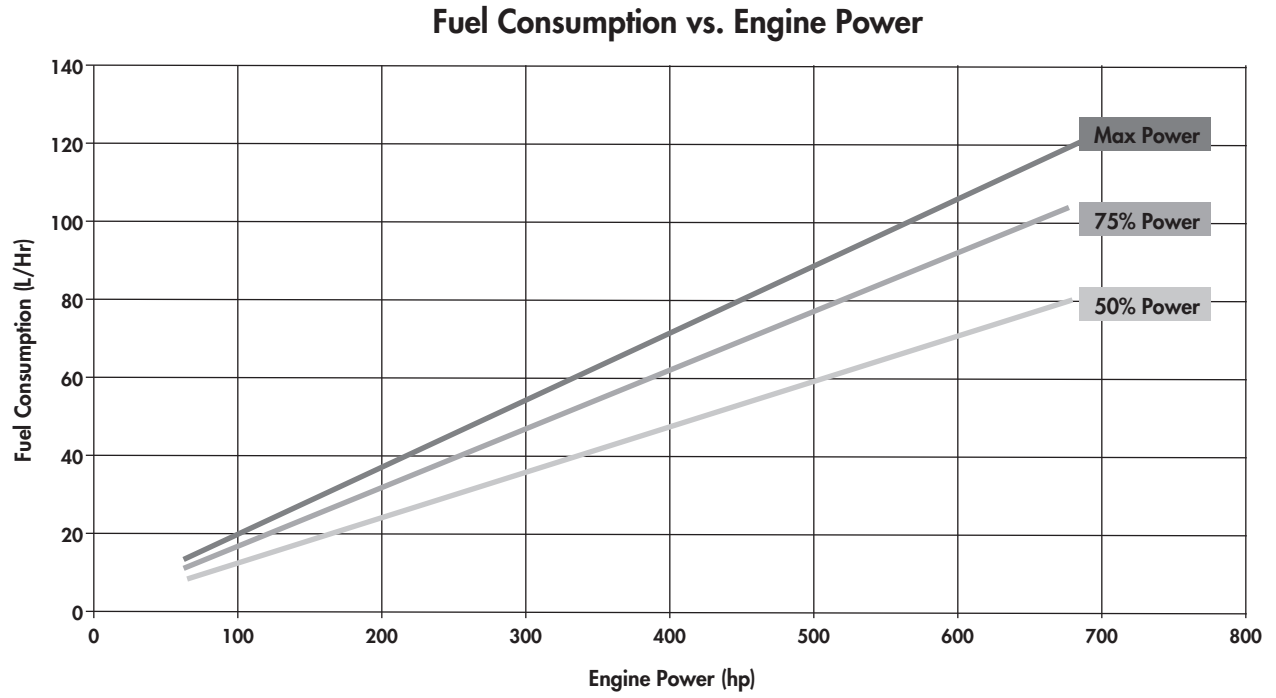
Termination

A minimum period for notice of termination should be included in a custom hiring agreement. A penalty should be stipulated for unjustified termination within the term of the agreement.

Insurance

A custom operator may be considered differently than a farmer when insuring. It is advised that this point be clarified with the insurance company if one considers doing custom work or renting equipment.

Fuel Consumption Based on Engine Size



Appendix I

Work Rate Table

Dollars per Hectare or Acre													
Hectares or acres per hour	Dollars Per Hour												
	\$20.00	\$30.00	\$40.00	\$50.00	\$60.00	\$70.00	\$80.00	\$90.00	\$100.00	\$110.00	\$120.00	\$130.00	\$140.00
2.0	\$10.00	\$15.00	\$20.00	\$25.00	\$30.00	\$35.00	\$40.00	\$45.00	\$50.00	\$55.00	\$60.00	\$65.00	\$70.00
2.5	\$8.00	\$12.00	\$16.00	\$20.00	\$24.00	\$28.00	\$32.00	\$36.00	\$40.00	\$44.00	\$48.00	\$52.00	\$56.00
3.0	\$6.67	\$10.00	\$13.33	\$16.67	\$20.00	\$23.33	\$26.67	\$30.00	\$33.33	\$36.67	\$40.00	\$43.33	\$46.67
3.5	\$5.71	\$8.57	\$11.43	\$14.29	\$17.14	\$20.00	\$22.86	\$25.71	\$28.57	\$31.43	\$34.29	\$37.14	\$40.00
4.0	\$5.00	\$7.50	\$10.00	\$12.50	\$15.00	\$17.50	\$20.00	\$22.50	\$25.00	\$27.50	\$30.00	\$32.50	\$35.00
4.5	\$4.44	\$6.67	\$8.89	\$11.11	\$13.33	\$15.56	\$17.78	\$20.00	\$22.22	\$24.44	\$26.67	\$28.89	\$31.11
5.0	\$4.00	\$6.00	\$8.00	\$10.00	\$12.00	\$14.00	\$16.00	\$18.00	\$20.00	\$22.00	\$24.00	\$26.00	\$28.00
5.5	\$3.64	\$5.45	\$7.27	\$9.09	\$10.91	\$12.73	\$14.55	\$16.36	\$18.18	\$20.00	\$21.82	\$23.64	\$25.45
6.0	\$3.33	\$5.00	\$6.67	\$8.33	\$10.00	\$11.67	\$13.33	\$15.00	\$16.67	\$18.33	\$20.00	\$21.67	\$23.33
6.5	\$3.08	\$4.62	\$6.15	\$7.69	\$9.23	\$10.77	\$12.31	\$13.85	\$15.38	\$16.92	\$18.46	\$20.00	\$21.54
7.0	\$2.86	\$4.29	\$5.71	\$7.14	\$8.57	\$10.00	\$11.43	\$12.86	\$14.29	\$15.71	\$17.14	\$18.57	\$20.00
7.5	\$2.67	\$4.00	\$5.33	\$6.67	\$8.00	\$9.33	\$10.67	\$12.00	\$13.33	\$14.67	\$16.00	\$17.33	\$18.67
8.0	\$2.50	\$3.75	\$5.00	\$6.25	\$7.50	\$8.75	\$10.00	\$11.25	\$12.50	\$13.75	\$15.00	\$16.25	\$17.50
8.5	\$2.35	\$3.53	\$4.71	\$5.88	\$7.06	\$8.24	\$9.41	\$10.59	\$11.76	\$12.94	\$14.12	\$15.29	\$16.47
9.0	\$2.22	\$3.33	\$4.44	\$5.56	\$6.67	\$7.78	\$8.89	\$10.00	\$11.11	\$12.22	\$13.33	\$14.44	\$15.56
9.5	\$2.11	\$3.16	\$4.21	\$5.26	\$6.32	\$7.37	\$8.42	\$9.47	\$10.53	\$11.58	\$12.63	\$13.68	\$14.74
10.0	\$2.00	\$3.00	\$4.00	\$5.00	\$6.00	\$7.00	\$8.00	\$9.00	\$10.00	\$11.00	\$12.00	\$13.00	\$14.00
10.5	\$1.90	\$2.86	\$3.81	\$4.76	\$5.71	\$6.67	\$7.62	\$8.57	\$9.52	\$10.48	\$11.43	\$12.38	\$13.33
11.0	\$1.82	\$2.73	\$3.64	\$4.55	\$5.45	\$6.36	\$7.27	\$8.18	\$9.09	\$10.00	\$10.91	\$11.82	\$12.73
11.5	\$1.74	\$2.61	\$3.48	\$4.35	\$5.22	\$6.09	\$6.96	\$7.83	\$8.70	\$9.57	\$10.43	\$11.30	\$12.17
12.0	\$1.67	\$2.50	\$3.33	\$4.17	\$5.00	\$5.83	\$6.67	\$7.50	\$8.33	\$9.17	\$10.00	\$10.83	\$11.67
12.5	\$1.60	\$2.40	\$3.20	\$4.00	\$4.80	\$5.60	\$6.40	\$7.20	\$8.00	\$8.80	\$9.60	\$10.40	\$11.20
13.0	\$1.54	\$2.31	\$3.08	\$3.85	\$4.62	\$5.38	\$6.15	\$6.92	\$7.69	\$8.46	\$9.23	\$10.00	\$10.77
13.5	\$1.48	\$2.22	\$2.96	\$3.70	\$4.44	\$5.19	\$5.93	\$6.67	\$7.41	\$8.15	\$8.89	\$9.63	\$10.37
14.0	\$1.43	\$2.14	\$2.86	\$3.57	\$4.29	\$5.00	\$5.71	\$6.43	\$7.14	\$7.86	\$8.57	\$9.29	\$10.00
14.5	\$1.38	\$2.07	\$2.76	\$3.45	\$4.14	\$4.83	\$5.52	\$6.21	\$6.90	\$7.59	\$8.28	\$8.97	\$9.66
15.0	\$1.33	\$2.00	\$2.67	\$3.33	\$4.00	\$4.67	\$5.33	\$6.00	\$6.67	\$7.33	\$8.00	\$8.67	\$9.33
15.5	\$1.29	\$1.94	\$2.58	\$3.23	\$3.87	\$4.52	\$5.16	\$5.81	\$6.45	\$7.10	\$7.74	\$8.39	\$9.03
16.0	\$1.25	\$1.88	\$2.50	\$3.13	\$3.75	\$4.38	\$5.00	\$5.63	\$6.25	\$6.88	\$7.50	\$8.13	\$8.75
16.5	\$1.21	\$1.82	\$2.42	\$3.03	\$3.64	\$4.24	\$4.85	\$5.45	\$6.06	\$6.67	\$7.27	\$7.88	\$8.48
17.0	\$1.18	\$1.76	\$2.35	\$2.94	\$3.53	\$4.12	\$4.71	\$5.29	\$5.88	\$6.47	\$7.06	\$7.65	\$8.24
17.5	\$1.14	\$1.71	\$2.29	\$2.86	\$3.43	\$4.00	\$4.57	\$5.14	\$5.71	\$6.29	\$6.86	\$7.43	\$8.00
18.0	\$1.11	\$1.67	\$2.22	\$2.78	\$3.33	\$3.89	\$4.44	\$5.00	\$5.56	\$6.11	\$6.67	\$7.22	\$7.78

Work Rate Table

Dollars per Hectare or Acre													
Hectares or acres per hour	Dollars Per Hour												
	\$150.00	\$160.00	\$170.00	\$180.00	\$190.00	\$200.00	\$210.00	\$220.00	\$230.00	\$240.00	\$250.00	\$260.00	\$270.00
4.0	\$37.50	\$40.00	\$42.50	\$45.00	\$47.50	\$50.00	\$52.50	\$55.00	\$57.50	\$60.00	\$62.50	\$65.00	\$67.50
4.5	\$33.33	\$35.56	\$37.78	\$40.00	\$42.22	\$44.44	\$46.67	\$48.89	\$51.11	\$53.33	\$55.56	\$57.78	\$60.00
5.0	\$30.00	\$32.00	\$34.00	\$36.00	\$38.00	\$40.00	\$42.00	\$44.00	\$46.00	\$48.00	\$50.00	\$52.00	\$54.00
5.5	\$27.27	\$29.09	\$30.91	\$32.73	\$34.55	\$36.36	\$38.18	\$40.00	\$41.82	\$43.64	\$45.45	\$47.27	\$49.09
6.0	\$25.00	\$26.67	\$28.33	\$30.00	\$31.67	\$33.33	\$35.00	\$36.67	\$38.33	\$40.00	\$41.67	\$43.33	\$45.00
6.5	\$23.08	\$24.62	\$26.15	\$27.69	\$29.23	\$30.77	\$32.31	\$33.85	\$35.38	\$36.92	\$38.46	\$40.00	\$41.54
7.0	\$21.43	\$22.86	\$24.29	\$25.71	\$27.14	\$28.57	\$30.00	\$31.43	\$32.86	\$34.29	\$35.71	\$37.14	\$38.57
7.5	\$20.00	\$21.33	\$22.67	\$24.00	\$25.33	\$26.67	\$28.00	\$29.33	\$30.67	\$32.00	\$33.33	\$34.67	\$36.00
8.0	\$18.75	\$20.00	\$21.25	\$22.50	\$23.75	\$25.00	\$26.25	\$27.50	\$28.75	\$30.00	\$31.25	\$32.50	\$33.75
8.5	\$17.65	\$18.82	\$20.00	\$21.18	\$22.35	\$23.53	\$24.71	\$25.88	\$27.06	\$28.24	\$29.41	\$30.59	\$31.76
9.0	\$16.67	\$17.78	\$18.89	\$20.00	\$21.11	\$22.22	\$23.33	\$24.44	\$25.56	\$26.67	\$27.78	\$28.89	\$30.00
9.5	\$15.79	\$16.84	\$17.89	\$18.95	\$20.00	\$21.05	\$22.11	\$23.16	\$24.21	\$25.26	\$26.32	\$27.37	\$28.42
10.0	\$15.00	\$16.00	\$17.00	\$18.00	\$19.00	\$20.00	\$21.00	\$22.00	\$23.00	\$24.00	\$25.00	\$26.00	\$27.00
10.5	\$14.29	\$15.24	\$16.19	\$17.14	\$18.10	\$19.05	\$20.00	\$20.95	\$21.90	\$22.86	\$23.81	\$24.76	\$25.71
11.0	\$13.64	\$14.55	\$15.45	\$16.36	\$17.27	\$18.18	\$19.09	\$20.00	\$20.91	\$21.82	\$22.73	\$23.64	\$24.55
11.5	\$13.04	\$13.91	\$14.78	\$15.65	\$16.52	\$17.39	\$18.26	\$19.13	\$20.00	\$20.87	\$21.74	\$22.61	\$23.48
12.0	\$12.50	\$13.33	\$14.17	\$15.00	\$15.83	\$16.67	\$17.50	\$18.33	\$19.17	\$20.00	\$20.83	\$21.67	\$22.50
12.5	\$12.00	\$12.80	\$13.60	\$14.40	\$15.20	\$16.00	\$16.80	\$17.60	\$18.40	\$19.20	\$20.00	\$20.80	\$21.60
13.0	\$11.54	\$12.31	\$13.08	\$13.85	\$14.62	\$15.38	\$16.15	\$16.92	\$17.69	\$18.46	\$19.23	\$20.00	\$20.77
13.5	\$11.11	\$11.85	\$12.59	\$13.33	\$14.07	\$14.81	\$15.56	\$16.30	\$17.04	\$17.78	\$18.52	\$19.26	\$20.00
14.0	\$10.71	\$11.43	\$12.14	\$12.86	\$13.57	\$14.29	\$15.00	\$15.71	\$16.43	\$17.14	\$17.86	\$18.57	\$19.29
14.5	\$10.34	\$11.03	\$11.72	\$12.41	\$13.10	\$13.79	\$14.48	\$15.17	\$15.86	\$16.55	\$17.24	\$17.93	\$18.62
15.0	\$10.00	\$10.67	\$11.33	\$12.00	\$12.67	\$13.33	\$14.00	\$14.67	\$15.33	\$16.00	\$16.67	\$17.33	\$18.00
15.5	\$9.68	\$10.32	\$10.97	\$11.61	\$12.26	\$12.90	\$13.55	\$14.19	\$14.84	\$15.48	\$16.13	\$16.77	\$17.42
16.0	\$9.38	\$10.00	\$10.63	\$11.25	\$11.88	\$12.50	\$13.13	\$13.75	\$14.38	\$15.00	\$15.63	\$16.25	\$16.88
16.5	\$9.09	\$9.70	\$10.30	\$10.91	\$11.52	\$12.12	\$12.73	\$13.33	\$13.94	\$14.55	\$15.15	\$15.76	\$16.36
17.0	\$8.82	\$9.41	\$10.00	\$10.59	\$11.18	\$11.76	\$12.35	\$12.94	\$13.53	\$14.12	\$14.71	\$15.29	\$15.88
17.5	\$8.57	\$9.14	\$9.71	\$10.29	\$10.86	\$11.43	\$12.00	\$12.57	\$13.14	\$13.71	\$14.29	\$14.86	\$15.43
18.0	\$8.33	\$8.89	\$9.44	\$10.00	\$10.56	\$11.11	\$11.67	\$12.22	\$12.78	\$13.33	\$13.89	\$14.44	\$15.00
18.5	\$8.11	\$8.65	\$9.19	\$9.73	\$10.27	\$10.81	\$11.35	\$11.89	\$12.43	\$12.97	\$13.51	\$14.05	\$14.59
19.0	\$7.89	\$8.42	\$8.95	\$9.47	\$10.00	\$10.53	\$11.05	\$11.58	\$12.11	\$12.63	\$13.16	\$13.68	\$14.21
19.5	\$7.69	\$8.21	\$8.72	\$9.23	\$9.74	\$10.26	\$10.77	\$11.28	\$11.79	\$12.31	\$12.82	\$13.33	\$13.85
20.0	\$7.50	\$8.00	\$8.50	\$9.00	\$9.50	\$10.00	\$10.50	\$11.00	\$11.50	\$12.00	\$12.50	\$13.00	\$13.50

Appendix J

Dollars per Bale													
Bales per hour	Dollars Per Hour												
	\$40.00	\$50.00	\$60.00	\$70.00	\$80.00	\$90.00	\$100.00	\$110.00	\$120.00	\$130.00	\$140.00	\$150.00	\$160.00
10	\$4.00	\$5.00	\$6.00	\$7.00	\$8.00	\$9.00	\$10.00	\$11.00	\$12.00	\$13.00	\$14.00	\$15.00	\$16.00
12	\$3.33	\$4.17	\$5.00	\$5.83	\$6.67	\$7.50	\$8.33	\$9.17	\$10.00	\$10.83	\$11.67	\$12.50	\$13.33
14	\$2.86	\$3.57	\$4.29	\$5.00	\$5.71	\$6.43	\$7.14	\$7.86	\$8.57	\$9.29	\$10.00	\$10.71	\$11.43
16	\$2.50	\$3.13	\$3.75	\$4.38	\$5.00	\$5.63	\$6.25	\$6.88	\$7.50	\$8.13	\$8.75	\$9.38	\$10.00
18	\$2.22	\$2.78	\$3.33	\$3.89	\$4.44	\$5.00	\$5.56	\$6.11	\$6.67	\$7.22	\$7.78	\$8.33	\$8.89
20	\$2.00	\$2.50	\$3.00	\$3.50	\$4.00	\$4.50	\$5.00	\$5.50	\$6.00	\$6.50	\$7.00	\$7.50	\$8.00
22	\$1.82	\$2.27	\$2.73	\$3.18	\$3.64	\$4.09	\$4.55	\$5.00	\$5.45	\$5.91	\$6.36	\$6.82	\$7.27
24	\$1.67	\$2.08	\$2.50	\$2.92	\$3.33	\$3.75	\$4.17	\$4.58	\$5.00	\$5.42	\$5.83	\$6.25	\$6.67
26	\$1.54	\$1.92	\$2.31	\$2.69	\$3.08	\$3.46	\$3.85	\$4.23	\$4.62	\$5.00	\$5.38	\$5.77	\$6.15
28	\$1.43	\$1.79	\$2.14	\$2.50	\$2.86	\$3.21	\$3.57	\$3.93	\$4.29	\$4.64	\$5.00	\$5.36	\$5.71
30	\$1.33	\$1.67	\$2.00	\$2.33	\$2.67	\$3.00	\$3.33	\$3.67	\$4.00	\$4.33	\$4.67	\$5.00	\$5.33
100	\$0.40	\$0.50	\$0.60	\$0.70	\$0.80	\$0.90	\$1.00	\$1.10	\$1.20	\$1.30	\$1.40	\$1.50	\$1.60
110	\$0.36	\$0.45	\$0.55	\$0.64	\$0.73	\$0.82	\$0.91	\$1.00	\$1.09	\$1.18	\$1.27	\$1.36	\$1.45
120	\$0.33	\$0.42	\$0.50	\$0.58	\$0.67	\$0.75	\$0.83	\$0.92	\$1.00	\$1.08	\$1.17	\$1.25	\$1.33
130	\$0.31	\$0.38	\$0.46	\$0.54	\$0.62	\$0.69	\$0.77	\$0.85	\$0.92	\$1.00	\$1.08	\$1.15	\$1.23
140	\$0.29	\$0.36	\$0.43	\$0.50	\$0.57	\$0.64	\$0.71	\$0.79	\$0.86	\$0.93	\$1.00	\$1.07	\$1.14
150	\$0.27	\$0.33	\$0.40	\$0.47	\$0.53	\$0.60	\$0.67	\$0.73	\$0.80	\$0.87	\$0.93	\$1.00	\$1.07
160	\$0.25	\$0.31	\$0.38	\$0.44	\$0.50	\$0.56	\$0.63	\$0.69	\$0.75	\$0.81	\$0.88	\$0.94	\$1.00
170	\$0.24	\$0.29	\$0.35	\$0.41	\$0.47	\$0.53	\$0.59	\$0.65	\$0.71	\$0.76	\$0.82	\$0.88	\$0.94
180	\$0.22	\$0.28	\$0.33	\$0.39	\$0.44	\$0.50	\$0.56	\$0.61	\$0.67	\$0.72	\$0.78	\$0.83	\$0.89
190	\$0.21	\$0.26	\$0.32	\$0.37	\$0.42	\$0.47	\$0.53	\$0.58	\$0.63	\$0.68	\$0.74	\$0.79	\$0.84
200	\$0.20	\$0.25	\$0.30	\$0.35	\$0.40	\$0.45	\$0.50	\$0.55	\$0.60	\$0.65	\$0.70	\$0.75	\$0.80
210	\$0.19	\$0.24	\$0.29	\$0.33	\$0.38	\$0.43	\$0.48	\$0.52	\$0.57	\$0.62	\$0.67	\$0.71	\$0.76
220	\$0.18	\$0.23	\$0.27	\$0.32	\$0.36	\$0.41	\$0.45	\$0.50	\$0.55	\$0.59	\$0.64	\$0.68	\$0.73
230	\$0.17	\$0.22	\$0.26	\$0.30	\$0.35	\$0.39	\$0.43	\$0.48	\$0.52	\$0.57	\$0.61	\$0.65	\$0.70
240	\$0.17	\$0.21	\$0.25	\$0.29	\$0.33	\$0.38	\$0.42	\$0.46	\$0.50	\$0.54	\$0.58	\$0.63	\$0.67
250	\$0.16	\$0.20	\$0.24	\$0.28	\$0.32	\$0.36	\$0.40	\$0.44	\$0.48	\$0.52	\$0.56	\$0.60	\$0.64

Appendix J

Hectares per Hour (at 80% field efficiency)													
Speed in km/h	Width in Metres												
	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0
2	0.32	0.48	0.64	0.80	0.96	1.12	1.28	1.44	1.60	1.76	1.92	2.08	2.24
4	0.64	0.96	1.28	1.60	1.92	2.24	2.56	2.88	3.20	3.52	3.84	4.16	4.48
5	0.80	1.20	1.60	2.00	2.40	2.80	3.20	3.60	4.00	4.40	4.80	5.20	5.60
6	0.96	1.44	1.92	2.40	2.88	3.36	3.84	4.32	4.80	5.28	5.76	6.24	6.72
7	1.12	1.68	2.24	2.80	3.36	3.92	4.48	5.04	5.60	6.16	6.72	7.28	7.84
8	1.28	1.92	2.56	3.20	3.84	4.48	5.12	5.76	6.40	7.04	7.68	8.32	8.96
9	1.44	2.16	2.88	3.60	4.32	5.04	5.76	6.48	7.20	7.92	8.64	9.36	10.08
10	1.60	2.40	3.20	4.00	4.80	5.60	6.40	7.20	8.00	8.80	9.60	10.40	11.20
11	1.76	2.64	3.52	4.40	5.28	6.16	7.04	7.92	8.80	9.68	10.56	11.44	12.32
12	1.92	2.88	3.84	4.80	5.76	6.72	7.68	8.64	9.60	10.56	11.52	12.48	13.44
13	2.08	3.12	4.16	5.20	6.24	7.28	8.32	9.36	10.40	11.44	12.48	13.52	14.56
14	2.24	3.36	4.48	5.60	6.72	7.84	8.96	10.08	11.20	12.32	13.44	14.56	15.68
15	2.40	3.60	4.80	6.00	7.20	8.40	9.60	10.80	12.00	13.20	14.40	15.60	16.80
16	2.56	3.84	5.12	6.40	7.68	8.96	10.24	11.52	12.80	14.08	15.36	16.64	17.92
17	2.72	4.08	5.44	6.80	8.16	9.52	10.88	12.24	13.60	14.96	16.32	17.68	19.04
18	2.88	4.32	5.76	7.20	8.64	10.08	11.52	12.96	14.40	15.84	17.28	18.72	20.16

Acres per Hour (at 80% field efficiency)													
Speed in mph	Width in Feet												
	6.0	10.0	14.0	18.0	22.0	26.0	30.0	34.0	38.0	42.0	46.0	50.0	54.0
3	1.75	2.91	4.07	5.24	6.40	7.56	8.73	9.89	11.05	12.22	13.38	14.55	15.71
4	2.33	3.88	5.43	6.98	8.53	10.08	11.64	13.19	14.74	16.29	17.84	19.39	20.95
5	2.91	4.85	6.79	8.73	10.67	12.61	14.55	16.48	18.42	20.36	22.30	24.24	26.18
6	3.49	5.82	8.15	10.47	12.80	15.13	17.45	19.78	22.11	24.44	26.76	29.09	31.42
7	4.07	6.79	9.50	12.22	14.93	17.65	20.36	23.08	25.79	28.51	31.22	33.94	36.65
8	4.65	7.76	10.86	13.96	17.07	20.17	23.27	26.38	29.48	32.58	35.68	38.79	41.89
9	5.24	8.73	12.22	15.71	19.20	22.69	26.18	29.67	33.16	36.65	40.15	43.64	47.13
10	5.82	9.70	13.58	17.45	21.33	25.21	29.09	32.97	36.85	40.73	44.61	48.48	52.36
11	6.40	10.67	14.93	19.20	23.47	27.73	32.00	36.27	40.53	44.80	49.07	53.33	57.60
12	6.98	11.64	16.29	20.95	25.60	30.25	34.91	39.56	44.22	48.87	53.53	58.18	62.84

Notes and Calculations

Photo courtesy of Devin Lung.



For more information

- Contact your local Manitoba Agriculture – Growing Opportunities (GO) Office.
- To find your nearest GO Office, call Manitoba Government Inquiry, toll free at **1-866-626-4862**.
- To find out more about the federal-provincial *Growing Forward 2* initiative and provincial programs and services, go to manitoba.ca/agriculture.

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