

Can You Afford That New Equipment?



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John Molenhuis and Dave
McLeod, OMAFRA

Today

- Machinery benchmarks
- Machinery costs
- Machinery options
- Machinery cost examples
 - Combine
 - Planter



“At the present time, not only is the price of land rising, but the equipment of a farm requires more capital because of increased use of improved machinery. This is likely to increase more and more as the years go by.”



The Rural Efficiency Guide
1917

How do you afford expensive machinery?

Google insights

- You have to put hours on the machine
- Run old stuff and fix it up
- Don't wait till you "have to have it"
- Get a job on the side
- Don't do the math on what the neighbors are running, do the math on what works best for your farm



Machinery benchmarks – assessing investment levels



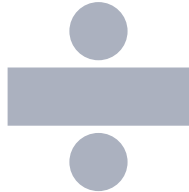
- Machinery investment per acre
- Machinery investment to sales ratio
- Machinery cost per acre



Machinery investment per acre



Market
Value of
Machinery



of Acres

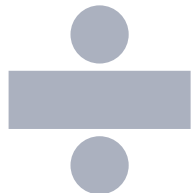


Machinery
investment
per acre

– Target \$400 - \$500 per acre



\$250,000
Machinery
Investment



500
Acres



\$500 per
acre

Machinery investment to Sales ratio

- Gauges farm's ability to pay machinery costs



- Target less than 2



Machinery cost per acre

- “isn't how much per month, but how much per acre”
- Machinery cost per acre
 - Knowing your own costs per acre
 - Compare to custom rates
- Will demonstrate in more detail in planter and combine examples



What is your machinery budget?

5 year average – 2011 to 2015

Per Acre	Corn	Soybean	Wheat
Revenue	\$846	\$573	\$539
Machinery costs			
All other costs*	\$597	\$339	\$343
Margin for Machinery	\$248	\$234	\$196

*Source: Field Crop Budgets

What are **your** machinery costs? Are you higher or lower?

How does this compare to Custom Rates?	\$178 (conventional tillage)	\$107 (no till)	\$115 (no till)
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Are “Can you afford it” and “Can you justify it” the same question?

What are your machinery costs

Variable Costs (Use related)

- Fuel and lubricants
- Repairs
- Labour

Fixed Costs (Time related)

- Insurance and housing
- Interest
- Depreciation



Calculating new machinery costs

Agricultural Engineering formulas

- Variable (Operating) Costs
 - Fuel and Lubricants
 - Litres x Fuel Cost/L x 1.15(lubricants)
 - Diesel fuel consumption (L/hr)
 - » $0.167 \times \text{PTO HP/hr}$
 - Gasoline (L/hr)
 - » $0.229 \times \text{PTO HP/hr}$
 - Repairs
 - Purchase price x % repair rate (based on hours)
 - Labour
 - Wage rate x Hours



Calculating new machinery costs

- Fixed (Ownership) Costs

- Depreciation

$$\frac{\text{New price} - \text{trade in value}}{\text{Expected Life (Years)}}$$

- Interest

$$\frac{(\text{New price} + \text{trade in value}) \times \text{interest rate}}{2}$$

- Insurance and Housing

- 1% of Purchase Cost



Machinery Decisions

- Your options
 - **New**
 - **Used**
 - Repair
 - Lease
 - **Rental**
 - **Custom work**



Combine Examples

- New
 - 265 hp Combine (Class 5)
 - 6 row Corn head
 - 20 ft Grain head
 - \$600,000
- Used – 20 years old
 - Same size
 - \$80,000
- Cost comparison
 - Using ag engineering formulas and different farm sizes



New Combine:

Class 5, 6 row corn, 20 ft grain, \$600,000

Acres per Year	500	750	1000	1500	2000
Hours per year	63	94	125	188	250
Operating Costs/ ac	\$11.44	\$12.64	\$13.94	\$16.56	\$19.28
Fixed Costs/ac	\$117.20	\$78.13	\$58.60	\$39.07	\$29.30
Annual Costs/Ac	\$128.64	\$90.77	\$72.54	\$55.64	\$48.59

Custom Combine Rate = \$43 per acre

Will timeliness become an issue as it covers more acres? ¹⁵

Used Combine:

20 years, 3000 hours, \$80,000

Acres per Year	250	320	500
Hours per year	35	44	69
Operating Costs	\$ 14.17	\$ 13.47	\$ 12.57
Fixed Costs	\$ 38.16	\$ 29.81	\$ 19.08
Annual Costs	\$ 52.33	\$ 43.28	\$ 31.65

Custom Combine Rate = \$43 per acre

No till drill Examples

- New
 - 15 ft
 - \$80,000
- Used – 20 years old
 - Same size
 - \$20,000
- Tractor Costs based on 150 HP
- Cost comparison
 - Using ag engineering formulas and different farm sizes



New

15 ft No Till Drill, \$80,000

Acres per Year	250	500	750
Tractor costs	\$10	\$10	\$10
Operating Costs	\$1.09	\$2.33	\$3.64
Fixed Costs	\$27.46	\$13.73	\$9.15
Drill Costs	\$28.55	\$16.06	\$12.80
Tractor + Drill Costs	\$38.55	\$26.06	\$22.80

Custom No Till Planting Rate = \$24 per acre

No Till Rental Rate = \$12/acre (Iron Solutions Guide)

Used

15 ft No Till Drill, \$20,000

Acres per Year	250	320	500
Tractor Costs	\$ 10.00	\$ 10.00	\$ 10.00
Operating Costs	\$ 4.00	\$ 3.00	\$ 2.67
Fixed Costs	\$ 8.34	\$ 4.17	\$ 2.78
Drill costs	\$ 12.34	\$ 7.17	\$ 5.45
Tractor and Drill Costs	\$ 22.34	\$ 17.17	\$ 15.45

Custom No Till Planting Rate = \$24 per acre

No Till Rental Rate = \$12/acre (Iron Solutions Guide)₁₉

The affect of delays (especially planting and harvest)

- Assumptions
 - 158 bushels/acre @ \$4.70/bushel
 - a delay in planting or harvest results in a 5% loss
- Result
 - 7.9 bushels per acre reduction
 - The cost is $7.9 \times \$4.70/\text{bu} = \37
- *What does this now do to the cost estimates....?*



Other questions/things to consider

- What are you giving up owning your own equipment
 - Timeliness/access
 - Efficiency
 - Technology gains
- Input cost savings – purchasing through custom operator on bigger volumes
- Buying used: be prepared to spend some money getting it field ready



Other questions/things to consider

- Do you have the handling facilities
 - Bulk seed handling
 - Chemical storage
- Access to indoor machinery storage
- Machine shop for repairs
 - Are you or someone on your farm handy?



Machinery Online Resources

- **OMAFRA - Business Management** www.ontario.ca/agbusiness
 - **Machinery Cost Calculators** – Farm Business Decision Calculators
 - **Factsheets**
 - Budgeting Farm Machinery Costs
 - Guide to Custom Farmwork Rates
 - Leasing Farm Equipment
- **Farm Machinery Cost Calculator – Alberta**

This online tool allows you to calculate ownership and operating costs of common farm equipment.

www.agric.gov.ab.ca, select Decision Making Tools
- **Field Capacity and Fieldwork Days Calculators - Iowa State University**

Machinery cost calculators and factsheets.

 - <http://www.extension.iastate.edu/agdm/cdmachinery.html>



Thank you...

- What is your machinery budget
- Machinery – Use it!
 - especially true for New (or nearly new)
- Used equipment (new to you)
 - Can save money but consider all factors

