

**Acquiring Machinery Services Session 1:  
Owning, Leasing, Renting, and Custom Hire**

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MAST Program  
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**Purpose of module**

- Develop an understanding of the costs associated with owning and operating machinery
- Trying to reduce decisions to numbers
  - Custom hire
  - Own vs. rent
  - Lease vs. purchase
  - Trading strategies
- See also... *Leasing vs. Buying Farm Machinery* available on [agmanager.info](http://agmanager.info)

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**Module:  
Acquiring Machinery Services**

**Session: Lease, purchase, rent, custom hire**

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## The Options

- **Purchase**
  - Traditional method of obtaining machinery
  - Machine purchased with equity or loan
  - Machine set up on tax depreciation schedule
  - Owner pays all variable operating costs (fuel, labor, repairs)
- **Lease**
  - Long-term contract for the use of equipment
  - Machinery dealer/leasing company essentially provides financing
  - Farm manager responsible for insurance, taxes (if any), and repairs not covered by warranty
  - Lease payments tax deductible
  - Farm manager pays variable operating costs (fuel, labor, routine maintenance)

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## The Options

- **Rent**
  - Short-term contract for use of machinery
  - Machinery rented by hour, day, week, month, acre, etc.
  - All ownership costs (market depreciation, interest, insurance, taxes, and major repairs) are passed on to the renter
  - Renter pays all variable operating costs (fuel, labor, routine maintenance)
  - Rental costs and operating costs are tax deductible
- **Custom Hire**
  - Short-term agreement for specific work to be done
  - Operating and ownership costs paid indirectly by farm manager
  - Custom hire costs are tax deductible

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## Machinery Options ...



### *Considerations that affect decision:*

- Capital outlay
- Cash-flow requirements
- Repairs and maintenance
- Control over use and timeliness of operation
- Risk of obsolescence
- Tax situation
- Labor availability
- Credit availability



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## Machinery Options ...

*The games people play ...*

- off balance sheet financing
- improved reported earnings
- increased return on assets
- lower level decision making
- capital budget constraints

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## Lease vs. purchase example ...

Comparing The Options		Lease Program		Lease Program
<b>New John Deere Sprayer 4720</b>				
Selling Price	\$160,000.00			
Amount Financed	\$128,000.00			
Finance Option	Installment Note**	Lease Program	Lease Program	
Term	60 months	60 months	36 months	
Hrs	N/A	600	600	
Down Payment	\$32,000.00	N/A	N/A	
Amount Financed	\$128,000.00	\$160,000.00	\$160,000.00	
Advance Payment	N/A	\$29,083.00	\$34,841.00	
Purchase Option	N/A	\$51,000.00	\$79,500.00	
Rate (fixed)	6.60%	N/A	N/A	
Payment	\$30,890.00	\$29,083.00	\$34,841.00	
Total Operating Cost	\$186,450.00	\$196,415.00	\$184,023.00	
Difference in Operating Cost From Installment Note		(\$9,965.00)	\$2,427.00	
*The above example is for the 2005 issue of the equipment. Always discuss your equipment purchase with your equipment dealer.		5 payments of \$30,890+\$32,000 downpayment	5 payments of \$29,083+\$51,000 purchase	3 payments of \$34,841+\$79,500 purchase

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What about when payments are made?  
 What about income tax implications?  
 Why not compare with buying outright for \$160,000?

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### Net present value (cost) analysis ...

Method of analyzing or comparing investments that explicitly considers the time value of money in cash flows.

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### Time Value of Money

$$V_n = V_0 * (1 + i)^n$$

where,

$V_n$  = future value (FV<sub>0</sub>)

$V_0$  = present value (PV<sub>0</sub>)

$i$  = interest rate

$n$  = years in the future

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### Time Value of Money

$$FV_0 = PV_0 * (1 + i)^n$$

rearranging terms gives ...

$$PV_0 = \frac{FV_0}{(1 + i)^n}$$

where,

$1 / (1 + i)^n$  = discount factor (rate)

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### Time Value of Money

$$FV_0 = PV_0 * (1+i)^n$$

rearranging terms gives ...

$$PV_0 = \frac{FV_0}{(1+i)^n}$$

substituting yearly cash flows ( $CF_n$ ) for  $FV_0$  gives ...

$$PV_0 = \sum_{n=0}^{n=N} \frac{CF_n}{(1+i)^n}$$

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### Present value discount factor ...

$$PV \text{ factor} = 1/(1+i)^n$$

where:  $i$  = interest rate  
 $n$  = year

Example discount factor with interest rate of 10%

$$PV \text{ discount factor in year 1} = 1/(1+.10)^1 = 0.909$$

$$PV \text{ discount factor in year 2} = 1/(1+.10)^2 = 0.826$$

$$PV \text{ discount factor in year 3} = 1/(1+.10)^3 = 0.751$$

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### Present Value of Future Cash Flows

$$PV \text{ factor} = 1/(1+i)^n$$

Interest rate ( $i$ ) = 10%

Year	Cash Flow	Present Value (Discount) Factor	Present Value
1	\$1,000	0.909	\$909
2	\$1,000	0.826	\$826
3	\$1,000	0.751	\$751
4	\$1,000	0.683	\$683
5	\$1,000	0.621	\$621
Total	\$5,000		\$3,709

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### Net present value (cost) analysis ...

- In general, the NPV of an investment should be based on the after-tax cash flow.
- If after-tax cash flows are used, the relevant discount factor becomes the after-tax cost of capital.

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### Marginal tax rate ...

Example of a marginal tax rate:

<i>Federal rate</i>	<i>15.0%</i>
<i>Self-employment</i>	<i>15.3%</i>
<i>State rate</i>	<i>5.0%</i>
<i>Marginal tax rate</i>	<i>35.3%</i>

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### Discount rate ...

- Discount rate should reflect the cost of capital (COC) or the cost of funds used to finance the operation (minimum acceptable compound annual rate of return).
- Cost of capital (COC) will depend on:
  1. Cost of debt capital (loan interest rate)
  2. Cost of equity capital (opportunity costs)
  3. Leverage position
  4. Marginal tax rate

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### Discount rate ...

Example of an after-tax discount rate:

$$\frac{\text{Interest on borrowed capital} \times \% \text{ leverage} \times (1 - \text{tax rate}) + \text{Interest on earned equity} \times \% \text{ equity} \times (1 - \text{tax rate})}{\text{Weighted average cost of capital (WACC)}}$$

$$\begin{array}{r} 8\% \times 40\% \times (1 - 35.3\%) = 2.07\% \\ + 12\% \times 60\% \times (1 - 35.3\%) = 4.66\% \\ \hline \text{WACC} = 6.73\% \end{array}$$

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### Discount rate ...

We typically recommend the same rate of return be charged to equity and borrowed capital in calculating the discount rate.

$$\frac{\text{Interest rate} \times (1 - \text{tax rate})}{\text{After-tax discount rate}}$$

$$8\% \times (1 - 35.3\%) = 5.18\%$$

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**End of Session:**

**Lease, purchase, rent, custom hire**



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