

# Energizing a Cooperative Class with Cooperative Feasibility Software



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## Challenges in Teaching An Undergraduate Cooperative Class

- Cooperative courses are often optional-  
Need a "hook" to attract students
- Cooperative Principles and Structure is  
not inherently exciting
- Many students do not identify with  
traditional farm supply/marketing  
cooperatives

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## Challenges-Continued

- Non-Ag Econ Majors have less accounting  
and business background and have more  
challenges understanding cooperative  
business structure and taxation
- Students often grasp the pieces but fail to  
understand how membership structure,  
equity structure, taxation, etc. fit together.

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## Hands-On Activities

- Today's student desire (demand) hands-on activities
- "Start Your Own Cooperative Project" is a great hands-on activity for a cooperative class

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## Advantages of Start Your Cooperative Project

- Introduces entrepreneurship topics
- Adds relevance to lecture topics
- Great source of examples
- Integrates the various topics covered in the lecture

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## Difficulties in Integrating Project into a Cooperative Class

- Teams with non-ag econ majors are unable to develop financial projections
- Financial projections are often too good to be true but finding the inconsistencies is time consuming
- Students reluctant to examine alternative structures

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## "Start Your Own Cooperative Project" OSU-AGEC 3463

- Begins with the 2<sup>nd</sup> class period
- Teams voluntarily organized around industry/coop type areas
- Teams meet periodically all semester and make decisions on their cooperative incorporating lecture information
- Teams provided with "Cooperative Feasibility Template"
- Ends with presentation and report

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## The Feasibility Assessment Template

- Standard Excel spreadsheet
- Incorporates cooperative equity structure, profit distribution and taxation
- Students can modify the template to fit their particular project

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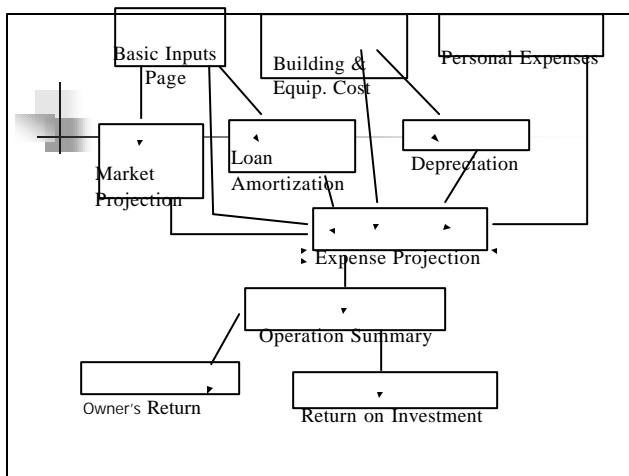
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## Inputs

- Information on capital structure and interest rates, tax and payroll benefits rates
- Major product(s) price, sales volume, and variable cost of production
- Information on the cost of the plant and equipment is entered on the "depreciation" sheet
- Personnel information is entered on "personnel expenses" sheet

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### Hay Cooperative

#### INPUT PRODUCTS, INITIAL VOLUME, MARGIN PER UNIT AND ANTICIPATED SALES GROWTH RATE

Product Name	Small Squares	Product Name	Round Bales
Units	tons	Units	tons
Initial Volume	5,000	Initial Volume	5,000
Sales growth	5%	Sales growth	5%
Price/unit	\$ 120.00	Price/unit	\$ 95.00
Product Name	Large Squares	Product Name	D
Units	tons	Units	lbs
Initial Volume	2,500	Initial Volume	0
Sales growth	5%	Sales growth	0%
Price/unit	\$ 120.00	Price/unit	\$ -

Percent Member Business 80%

#### VARIABLE COST OF PRODUCTION PER UNIT

Product	Unit	VC/unit
Small Squares	tons	\$ 85.00
Round Bales	tons	\$ 60.00
Large Squares	tons	\$ 85.00
D	lbs	\$ -

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## Cooperative Structure Inputs

- Tradeable stock
- Stock revolving period
- Dividends paid on preferred and common stock
- % to unallocated reserve
- % to cash patronage dividend
- % to qualified stock patronage dividend
- % to non-qualified stock patronage dividend
- % member business

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## Intermediate Calculations

- "Market Projection" creates a 10 year forecast of sales
- "Depreciation" calculates annual depreciation expenses for four categories of buildings and equipment
- "Personnel Expenses" calculates salary, benefit and overtime expenses for employees
- "Loan Amortization" calculates annual interest and principle payments

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### Ethanol Cooperative

Sales Projections		Year 1	Year 2	Year 3	Year 4	Year 5
Ethanol	gallons	40,000,000	41,600,000	43,264,000	44,994,560	46,794,342
DDGS	tons	5,000	5,200	5,408	5,624	5,849
C	lbs	0	0	0	0	0
D	lbs	0	0	0	0	0
		<b>40,005,000</b>	<b>41,605,200</b>	<b>43,269,408</b>	<b>45,000,184</b>	<b>46,800,192</b>
<b>Gross Sales Projection</b>						
This sheet summarizes the volume and price and sales growth information from the input page.						
		Year 1	Year 2	Year 3	Year 4	Year 5
<b>Ethanol</b>						
Total Volume		40,000,000	41,600,000	43,264,000	44,994,560	46,794,342
Price/Unit		\$1.20	\$1.20	\$1.20	\$1.20	\$1.20
Gross Sales		\$48,000,000	\$49,920,000	\$51,916,800	\$53,993,472	\$56,153,211
<b>DDGS</b>						
Total Volume		5,000	5,200	5,408	5,624	5,849
Price/Unit		\$120,000	\$120,000	\$120,000	\$120,000	\$120,000
Gross Sales		\$600,000	\$624,000	\$648,960	\$674,918	\$701,915

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## Projected Income and Expense Statements

- Template provides a simple 10 year income and expense statement for the project
- Statement summaries gross sales, variable and fixed expenses, before tax profits, taxes and after tax profits
- Simple projection of cash flows from operations is also created

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Utilities		\$	9,300	\$	9,393	\$	9,487	
<b>Total Variable</b>	<b>\$</b>	<b>-</b>	<b>\$</b>	<b>9,300</b>	<b>\$</b>	<b>9,393</b>	<b>\$</b>	<b>9,487</b>
Fixed Maintenance		\$	953	\$	963	\$	972	
Insurance		\$	1,906	\$	1,925	\$	1,944	
Property Tax		\$	477	\$	481	\$	486	
Depreciation		\$	1,244	\$	1,748	\$	1,419	
Interest		\$	4,603	\$	4,418	\$	4,221	
<b>Total Fixed</b>	<b>\$</b>	<b>-</b>	<b>\$</b>	<b>9,183</b>	<b>\$</b>	<b>9,535</b>	<b>\$</b>	<b>9,042</b>
Other								
Supplies	\$	750	\$	200	\$	202	\$	204
Miscellaneous*	\$	300	\$	300	\$	303	\$	306
<b>Total Other</b>	<b>\$</b>	<b>1,050</b>	<b>\$</b>	<b>500</b>	<b>\$</b>	<b>505</b>	<b>\$</b>	<b>510</b>
Income Taxes		\$	5,382	\$	5,630	\$	5,806	
<b>Total Expenses</b>	<b>\$</b>	<b>1,050</b>	<b>\$</b>	<b>24,365</b>	<b>\$</b>	<b>25,063</b>	<b>\$</b>	<b>24,846</b>

**House  
Coop  
Expenses**

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	Year 0	Year 1	Year 2	Year 3
House #1	\$0	\$12,675	\$12,802	\$12,930
House #2	\$0	\$12,675	\$12,802	\$12,930
House #3	\$0	\$12,675	\$12,802	\$12,930
D	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$38,025</b>	<b>\$38,405</b>	<b>\$38,789</b>
Expenses				
Variable	\$0	\$9,300	\$9,393	\$9,487
Fixed	\$0	\$9,183	\$9,535	\$9,042
Other	\$1,050	\$500	\$505	\$510
<b>Total Expenses</b>	<b>\$1,050</b>	<b>\$18,983</b>	<b>\$19,433</b>	<b>\$19,039</b>
<b>EBIT</b>	<b>(\$1,050)</b>	<b>\$21,158</b>	<b>\$19,844</b>	<b>\$20,497</b>
Profit before Patronage	(\$1,050)	\$16,555	\$15,425	\$16,275
Cash Patronage Refund	\$	1,655	\$	1,543
Qualified Patronage Refund		\$6,622	\$6,170	\$6,510
Non-Qualified Redeemed		\$0	\$0	\$0
Before Tax Income		\$10,765	\$11,259	\$11,612
Tax	\$	5,382	\$	5,630
<b>After Tax Profit</b>	<b>(\$1,050)</b>	<b>\$5,382</b>	<b>\$5,630</b>	<b>\$5,806</b>

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**Return on Investment**

- Payback Period
- Internal Rate of Return
- Net Present Value
- Present Value Benefit/cost ratio
- Return on Total Assets
- Return of Equity

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### Hay Cooperative: Return on Investment

Total PV of Income	\$9,340,955		
Total PV of Expenses	\$8,730,418		
Net Present Value	\$610,537		
Internal Rate of Return	31.58%		
PV Benefit/PV Cost Ratio	1.07		
Return on Assets	-20.54%	7.25%	5.77%
(after tax income/total PPE investment)			
Average Return on Assets			21.75%
Payback Period (years)	4		

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### Owner's Return

- Based on cash actually flowing to owners through cash patronage, preferred stock dividends and redeemed qualified and non-qualified stock
- If tradeable stock was selected market value appreciation is estimated
- Ending stock value based on 5 times EBIT
- Similar NPV, IRR, and ROI measures

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### Hay Cooperative: Owners Realized Return

Cash flows	(\$183,850)	\$ 12,019	\$ 14,331
Net Present Value: Common	(\$54,536)		
Internal Rate of Return: comn	4%		
<b>Preferred Stock Return</b>			
Dividends	12000	12000	12000
Return on Investment	12%	12%	12%
Average ROI Preferred	12%		

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## Teachable Moments Using the Template

- Raising equity: student's find out that their concept of reasonable member investment is insufficient
- Cash flow: students have to revisit decisions on stock dividends, cash patronage and non-qualified stock

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## Teachable Moments (continued)

- Owner's Return: Students come to realize how cooperative structure impacts the actual return realized by the member
- "Now it Cash Flows but the ROI to the owners is low"

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## Instructor's Perspective

- Worried that the template would make it too easy
- Instead I discovered that students gained a better understanding of financial issues
- Leveled the playing field with non-majors
- Easier to grade- I know where everything is and its internally consistent

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## Summary

- Cooperative Feasibility Template has helped to bring cooperative principles alive
- Integrates principles of equity structure, leverage, taxation, profit distribution and return on investment
- Students Love It!

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