

# **Mother Nature and Father Market: Using an Agribusiness Simulation for Human Capital Development**

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## **One-way lecture directed by the teacher towards students:**

- *has been the traditional approach to higher education,*
- *reputedly started at the University of Bologna in Italy in the 1300's.*
- *Students are explicitly expected to passively sit and take notes.*

- ***Many of us who went to the university in the 1960's, 70's, 80's and 90's***
- ***experienced lectures as a common means of teaching.***
- ***Much research and discussion has been done about the effectiveness of the lecture method***
- ***with no conclusive finding.***

➤ ***In the past 50 years there have emerged other methods for teaching including:***

- ***Cooperative learning,***
- ***Independent study,***
- ***Research based learning, and***
- ***Simulation gaming***

# OBJECTIVES

- **Illustrate the use of an agribusiness simulation game.**
- **Show how it fosters more active learning,**
- **And achieves higher order learning skills.**

# Husker Agribusiness Simulation

- **Based on Purdue's Grain Elevator Farm Supply Simulation developed in 1969 by Emerson Babb & Lawrence Bohl**
- **Requires decision making on prices for for feed, fertilizer, services and grain merchandising**
- **Plus, non-price decisions on advertising, inventory ordering, borrow money, capital spending, etc.**
- **Output: income statement, balance sheet, operating information and market share**

OPERATING STATEMENT

		PERCENT CONTRIBUTION	
=====		TO GROSS SALES	
SALES--DOLLARS--			
COMPLETE HOG FEED	-BULK-	23303.80	1.53
HOG SUPPLEMENT	-BULK-	61610.00	4.04
PIG FEED	-BAGGED-	22408.17	1.47
COMPLETE BEEF FEED	-BULK-	6361.30	.42
BEEF SUPPLEMENT	-BULK-	28584.41	1.87
COMPLETE LAYER FEED	-BULK-	32610.95	2.14
OTHER FEED	-BAGGED-	45643.37	2.99
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TOTAL FEED		<u>220522.00</u> *	14.46
BAGGED FERTILIZER		40460.19	2.65
BULK FERTILIZER		70284.00	4.61
ANHYDROUS		29570.14	1.94
OTHER FERTILIZER		14738.02	.97
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TOTAL FERTILIZER		<u>155052.40</u> *	10.17
CORN MARKETING		512245.80	33.59
SOYBEAN MARKETING		381028.70	24.99
WHEAT MARKETING		122507.80	8.03
		-----	-----
TOTAL GRAIN MARKETING		<u>1015782.00</u> *	66.61
TOTAL OTHER FARM SUPPLIES		<u>133561.80</u> *	8.76
	TOTAL	1524918.00	

GROSS MARGIN ON SALES --DOLLARS--

COMPLETE HOG FEED	-BULK-	3574.63	10.40
HOG SUPPLEMENT	-BULK-	7660.00	15.32
PIG FEED	-BAGGED-	3561.19	16.42
COMPLETE BEEF FEED	-BULK-	-1662.15	-12.15
BEEF SUPPLEMENT	-BULK-	3654.45	15.04
COMPLETE LAYER FEED	-BULK-	5020.07	11.59
OTHER FEED	-BAGGED-	6073.33	13.66
		-----	
TOTAL FEED		<u>27881.52</u>	*
BAGGED FERTILIZER		2749.16	5.73
BULK FERTILIZER		11184.00	9.32
ANHYDROUS		4745.53	11.68
OTHER FERTILIZER		2238.82	10.55
		-----	
TOTAL FERTILIZER		<u>20917.51</u>	*
CORN MARKETING		36589.00	.080
SOYBEAN MARKETING		16012.13	.108
WHEAT MARKETING		-43043.27	-.520
		-----	
TOTAL GRAIN MARKETING		<u>9557.85</u>	*
TOTAL OTHER FARM SUPPLIES		<u>26712.36</u>	*

TOTAL

85069.24



## OPERATING EXPENSES --DOLLARS--

FIXED FACILITY AND OTHER COST	28015.26
VARIABLE SERVICES COST	14267.85
OTHER VARIABLE COST	55544.41
FIXED FEED TRUCK COST	105.84
VARIABLE FEED TRUCK COST	3471.42
TRUCK RENTAL	.00
LABOR COST	19574.82
LABOR OVERTIME COST	.00
BAD DEBT LOSS	1018.27
INTEREST CHARGES	2880.00
ADVERTISING EXPENSES	5500.00

TOTAL	130377.90
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NET OPERATING MARGIN

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-15143.34

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PAGE 3

NET OPERATING MARGIN (BROUGHT FORWARD)

-15143.34

INTEREST ON INVESTMENT

1590.00

PROFIT ON HOG CONTRACTING

-1.26

PROFIT ON LAYER CONTRACTING

.00

OTHER INCOME

4073.09

TOTAL OTHER INCOME

5661.83

NET REVENUE

-----  
-9481.51

NET REVENUE--PERCENT OF SALES--

-.62

BALANCE SHEET

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ASSETS --DOLLARSS--

CASH	20421.78	
INVESTMENTS	26500.00	
ACCOUNTS RECEIVABLE	30548.17	
INVENTORY	80000.00	
FACILITIES	247289.99	
TRUCKS	423.36	

	TOTAL	405183.30
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LIABILITIES

LONG TERM DEBT	50000.00	
BANK NOTES	2000.00	

	TOTAL	52000.00
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NET WORTH		----- 353183.30
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NET WORTH TO FIXED ASSETS		1.43
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RETURN ON INVESTMENT		-2.68
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GENERAL INFORMATION

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SALES --TONS--

COMPLETE HOG FEED	-BULK-	343.71
HOG SUPPLEMENT	-BULK-	500.00
PIG FEED	-BAGGED-	216.88
COMPLETE BEEF FEED	-BULK-	136.80
BEEF SUPPLEMENT	-BULK-	242.98
COMPLETE LAYER FEED	-BULK-	433.14
OTHER FEED	-BAGGED-	444.61

TOTAL FEED		-----
		<u>2318.12</u> *

BAGGED FERTILIZER		479.78
BULK FERTILIZER		1200.00
ANHYDROUS		406.29
OTHER FERTILIZER		212.21

TOTAL FERTILIZER		-----
		<u>2298.29</u> *

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CORN MARKETING	-BU-	457362.30
SOYBEAN MARKETING	-BU-	148260.20
WHEAT MARKETING	-BU-	82775.52

TOTAL GRAIN MARKETING		-----
		<u>688398.00</u> *

GRAIN BUSINESS LOST DUE TO SHORT STORAGE

CORN	-BU-	459374.60
SOYBEANS	-BU-	148912.50
WHEAT	-BU-	83139.71

## **Classroom Use:**

- **Students are divided into three-person groups.**
- **Oligopolistic competition in a market area.**
- **A group competes with two to four other firms in their market.**
- **Usually, there are 5 or 6 market areas for a total of 15 to 24 agribusinesses operating in the classroom.**

## **Classroom Use (continued):**

- **Decisions are made once per week for 12 weeks, and**
- **weekly key results for each group is explicitly shared with the entire class.**
- **When posting on the board, the teacher role plays as the CEO, and**
- **can make terse, judgmental comments about a group's performance.**
- **For example, “Why in the world is the Lincoln Agribusiness losing so much money? Good grief!”**

## **Classroom Use (continued):**

- **Lecture and other supporting course content were keyed to the agribusiness. For example:**
- **How does the economics of the firm relate to an income statement?**
- **What is the economics of price decisions in an oligopoly market?**
- **How do managers use discounted cash flow analysis to evaluate and make long-term capital investment decisions?**

# MOTHER NATURE

## ➤ Sinclair grain elevator disaster



# **CAPITAL INVESTMENT DECISION**

- **Nebraska Farm Supply is reluctant to invest in replacing 80,000 bushels of recently destroyed grain storage.**
- **The general manager and owner have come to you for help in making the decision to go ahead and rebuild, or to do nothing.**



- In advising the general manager, show all work and give:
- the present value of cash flows for years 1 thru 10,
  - salvage value,
  - the total present value, and
  - the net present value.

➤ **Groups need to find the following:**

- **The replacement cost is \$1.50 per bushel.**
- **Three-fourths of the grain volume is merchandised with an annual turnover of 6.5, and one-fourth is stored with a turnover of 4.**
- **Gross margins are 4 and 8 cents/bu, respectively.**
- **Variable cash costs are the same as in the simulation-game.**

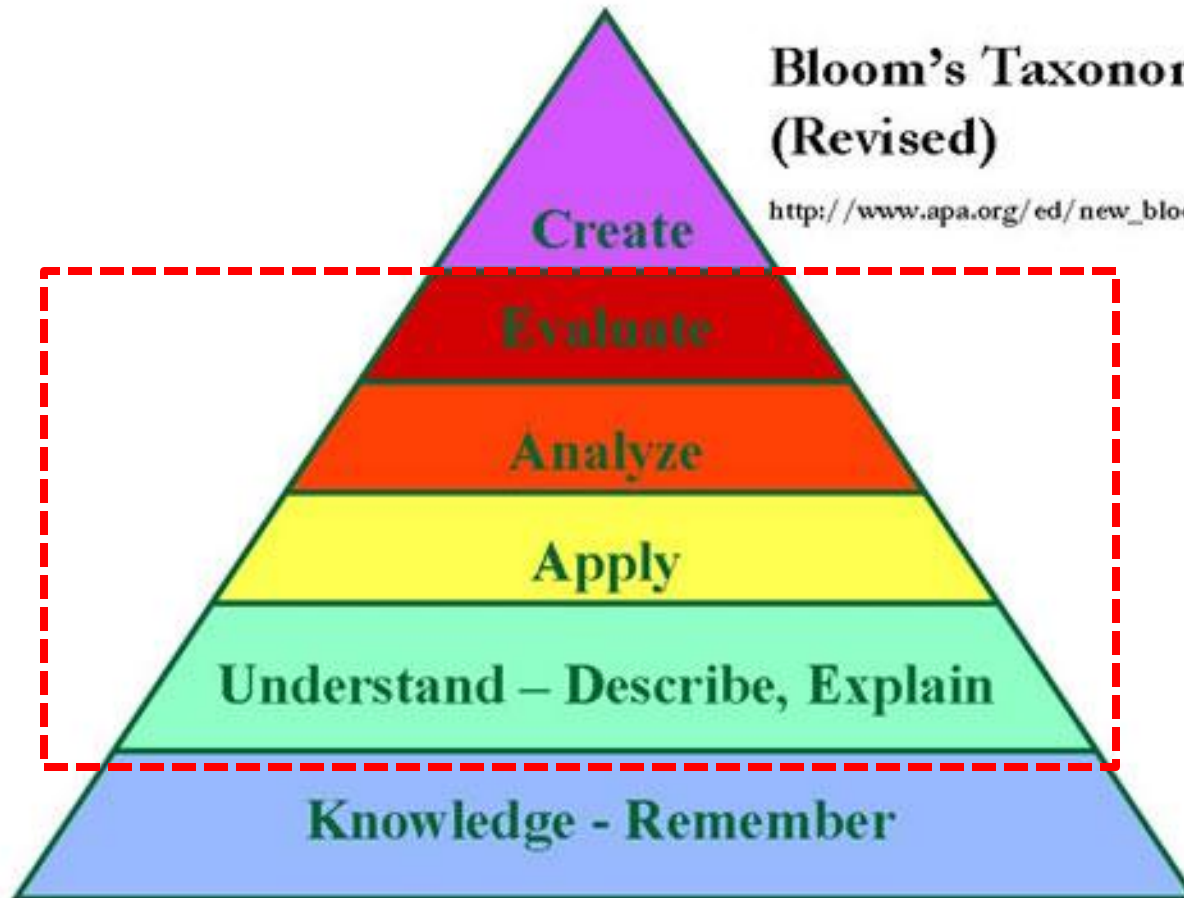
- **Depreciation is straight line over 20 years.**
- **The time horizon for the analysis is ten years.**
- **Salvage value (in present value \$'s) discounts the cash flow from years 11 through 20, back to the present.**
- **The cost of funds is 6% and a return of 12% is considered good.**

# FATHER MARKET

- **There are additional opportunities for the teacher to intervene in the business environment – behind the scenes:**
- **Market potential – raise or lower sales**
- **Cost of goods sold – increase or squeeze margins**
- **Selling prices for corn, soybeans and wheat – cover costs or not**

## Bloom's Taxonomy (Revised)

[http://www.apa.org/ed/new\\_blooms.html](http://www.apa.org/ed/new_blooms.html)



Based on an APA adaptation of Anderson, L.W. & Krathwohl, D.R. (Eds.) (2001)

**QUESTIONS ?**