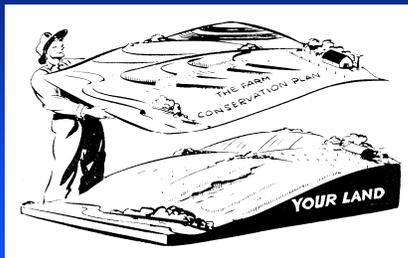


Hal Gordon
Natural Resources Conservation Service
West National Technical Service Center
Portland, Oregon

Economic Tools for Agriculture



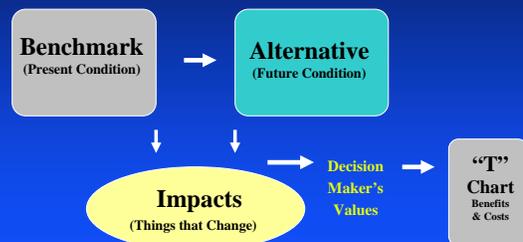
The Goal:
An Profitable Farm/Ranch



*After the resource specialist
has developed farm
alternatives, how will the
farm manager know if it's
Economical?*

Effects for Decision Making

Effects for Decision Making



"T" Chart

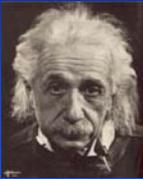
TREATMENT EFFECTS INFORMATION	
NAME/LOCATION - Your information	
DATE - Current date	
ALTERNATIVE: Describe the alternative to be analyzed	BENCHMARK: Describe the current farm activities
"+" POSITIVE EFFECTS (Benefits)	"-" NEGATIVE EFFECTS (Costs)
Identify all the benefits from the alternative • • • • • •	Identify all the costs of the alternative • • • • • •

Benefit Cost Analysis

Benefit & Cost Analysis

Economic analysis requires four simple steps:

1. Estimate Costs
2. Estimate Benefits
3. Convert to "Like Terms"
4. Compare Costs & Benefits



Benefit & Cost Analysis

Composting Facility Example



Benefit & Cost Analysis

	<u>PROBLEMS</u> Manure Management
	<u>SOLUTION</u> Compost Facility

<u>Composting Facility</u>	
Composting Building	\$30,000/Building
Composting Expenses	\$1,000/Year
Tons Compost Produced	75 Ton/Year
Value of Compost	\$85/Ton
Discount Rate	7%
Time Period	10 Years
Time Managing Compost	
Pasture Land out of Production	
Water Quality Improvement	
Reduced Odor	



1. Estimate Costs

<u>Additional Costs</u>	
Composting Facility	\$30,000/Building
Composting Expenses	\$1,000/Year
Time Managing Compost	
<u>Reduced Revenue</u>	
Lost Pasture Land	

2. Estimate Benefits

Reduced Costs

Reduced Odor
Water Quality Improvement

Additional Revenue

Compost Income \$9,000/Year

Step 3. Convert to "Like Terms"

- Convert to Dollars (If Possible)
- Same Units and Time Period
- \$/Unit/Year

Costs

Composting Expenses \$1,000/Year
Composting Facility \$30,000/Building

Amortization

Chicken Coop

Time Period 10 Years
Discount Rate 7 Percent
Present Value \$30,000
Payment ? (\$/Year)

AVERAGE ANNUAL COST TABLE

PER \$ OF INSTALLATION COST

LIFE YEARS	% INTEREST RATE							
	6	7	8	9	10	11	12	13
2	0.545	0.553	0.561	0.568	0.576	0.584	0.592	0.599
3	0.374	0.381	0.388	0.395	0.402	0.409	0.416	0.424
4	0.289	0.295	0.302	0.309	0.315	0.322	0.329	0.336
5	0.237	0.244	0.25	0.257	0.264	0.271	0.277	0.284
6	0.203	0.21	0.216	0.223	0.23	0.236	0.243	0.25
7	0.179	0.186	0.192	0.199	0.205	0.212	0.219	0.226
8	0.161	0.167	0.174	0.181	0.187	0.194	0.201	0.208
9	0.147	0.153	0.16	0.167	0.174	0.181	0.188	0.195
10	0.136	0.142	0.149	0.156	0.163	0.17	0.177	0.184
11	0.127	0.133	0.14	0.147	0.154	0.161	0.168	0.176
12	0.119	0.126	0.133	0.14	0.147	0.154	0.161	0.169
13	0.113	0.12	0.127	0.134	0.141	0.148	0.156	0.163
14	0.108	0.114	0.121	0.128	0.136	0.143	0.151	0.159
15	0.103	0.11	0.117	0.124	0.131	0.139	0.147	0.155
16	0.099	0.106	0.113	0.12	0.128	0.136	0.143	0.151
17	0.095	0.102	0.11	0.117	0.125	0.132	0.14	0.149
18	0.092	0.099	0.107	0.114	0.122	0.13	0.138	0.146

Step 3. Convert to "Like Terms"

- Convert to Dollars (If Possible)
- Same Units and Time Period
- \$/Unit/Year

Costs

Compost Expenses \$1,000/Year
Compost Facility ~~-\$30,000/Building~~
7% Interest, 10 Years = .142 * \$30,000 = \$4,260/Year

Benefits

Compost Income \$6,000/Year

Step 4. Compare Costs & Benefits

Costs

Compost Expenses \$1,000/Year
Compost Facility ~~\$4,260/Year~~
\$5,260/Year

Benefits

Compost Income \$6,000/Year

Net Benefit: \$740/Year

Partial Budgeting

Partial Budgeting

- Systematically displays the Benefits and Costs
- Only “things that change” are considered
- Simplifies data collection
- Use a “T” chart to display the “effects”

Benefit & Cost Analysis

PROBLEMS
Manure Management

SOLUTION
Compost Facility

Composting Facility

Composting Building \$30,000/Building
 Composting Expenses \$1,000/Year
 Tons Compost Produced 75 Ton/Year
 Value of Compost \$85/Ton
 Discount Rate 7%
 Time Period 10 Years

Time Managing Compost
 Pasture Land out of Production
 Water Quality Improvement
 Reduced Odor



“T” Chart

- Level I Qualitative Statements
- Level II Units of Measurement, Dollars
- Level III Economic and Financial Analysis

Level I

TREATMENT EFFECTS INFORMATION	
NAME/LOCATION – Hal Gordon, Rocking Raindrop Ranch, Aloha, Oregon	
DATE – 10/25/2008	
ALTERNATIVE: Build composting facility 40' X 30' X 5' Roof with Concrete Pad Sell compost to local nursery	BENCHMARK: 300-head dairy, 500 acres pasture 90 days animal waste storage 100 acres short for proper manure application
“+” POSITIVE EFFECTS (Benefits)	“-” NEGATIVE EFFECTS (Costs)
Compost Income	Composting Facility
Water Quality Improvement	Composting Equipment
Reduced Odor	Composting O&M Expenses
	Time managing compost
	Less pasture land

Level II

TREATMENT EFFECTS INFORMATION	
NAME/LOCATION – Hal Gordon, Rocking Raindrop Ranch, Aloha, Oregon	
DATE – 10/25/2008	
ALTERNATIVE: Build composting facility 40' X 30' X 5' Roof with Concrete Pad Sell compost to local nursery	BENCHMARK: 300-head dairy, 500 acres pasture 90 days animal waste storage 100 acres short for proper manure application
“+” POSITIVE EFFECTS (Benefits)	“-” NEGATIVE EFFECTS (Costs)
Compost Income = \$6,000/Year	Composting Facility = \$25,000
75 ton compost/year @ \$80/ton	Composting Equipment = \$5,000
Water Quality Improvement	Composting O&M Expenses = \$1,000/Year
Reduced Odor	Time managing compost
	Less pasture land

Level III

TREATMENT EFFECTS INFORMATION	
NAME/LOCATION – Hal Gordon, Rocking Raindrop Ranch, Aloha, Oregon DATE – 10/25/2008	
ALTERNATIVE: Build composting facility 40' X 30' X 5' Roof with Concrete Pad Sell compost to local nursery	BENCHMARK: 300-head dairy, 500 acres pasture 90 days animal waste storage 100 acres short for proper manure application
“+” POSITIVE EFFECTS (Benefits)	“-” NEGATIVE EFFECTS (Costs)
Compost Income = \$6,000/Year 75 ton compost/year @ \$80/ton Water Quality Improvement Reduced Odor Total Benefits = \$6,000/Year	Composting Facility = \$25,000 Composting Equipment = \$5,000 7%, 10 Years = .142 * \$30,000 = \$4,260/Year Composting O&M Expenses = \$1,000/Year Time managing compost Less pasture land Total Costs = \$5,260/Year Net Income = \$740/Year

Investment Analysis

(Time Value of Money)

Time Value of Money

Investors Want to Know:



- Total installation cost
- Annual benefits
- The loan payments
- Years to “break-even”
- Rate of return on investment
- Etc.

Time Value of Money

“A bird in the hand is worth two in the bush”



- “Value” depends on when you receive something
- We prefer \$100 today over \$100 next year
 - ◆ Invest and receive “interest”
 - ◆ May not get \$100 next year

Time Value of Money

- Time Period (Years)
- Discount Rate (%)
- Present Value (\$)
- Future Value (\$)
- Payment (\$)



Time Value of Money

- Money has a time value attached to it
- \$1 today = \$1 + interest tomorrow
- Comparison of \$ today to \$ future
- Useful to compare \$ in different time periods
- Use amortization and discounting

Present Value

- One-time value
- Today
- Installation Cost



Annuity

- Average annual values
- Annual costs
- Annual benefits
- O&M costs



Future Value

- One-time value
- In the Future
- Replacement cost



Amortization

- The payment to pay off a loan
- Spread the cost of an investment over its life
- "Periodic" can be in years, quarters, months

Amortization Example

Used Truck

Time Period 10 Years
 Discount Rate 5 Percent
 Present Value \$5,000
 Payment ?

AVERAGE ANNUAL COST TABLE

PER \$ OF INSTALLATION COST

LIFE YEARS	% INTEREST RATE							
	5	7	8	9	10	11	12	13
2	0.538	0.553	0.561	0.568	0.576	0.584	0.592	0.599
3	0.367	0.381	0.388	0.395	0.402	0.409	0.416	0.424
4	0.282	0.295	0.302	0.309	0.315	0.322	0.329	0.336
5	0.231	0.244	0.25	0.257	0.264	0.271	0.277	0.284
6	0.197	0.21	0.216	0.223	0.23	0.236	0.243	0.25
7	0.173	0.186	0.192	0.199	0.205	0.212	0.219	0.226
8	0.155	0.167	0.174	0.181	0.187	0.194	0.201	0.208
9	0.141	0.153	0.16	0.167	0.174	0.181	0.188	0.195
10	0.130	0.142	0.149	0.156	0.163	0.17	0.177	0.184
11	0.120	0.133	0.14	0.147	0.154	0.161	0.168	0.176
12	0.113	0.126	0.133	0.14	0.147	0.154	0.161	0.169
13	0.106	0.113	0.127	0.134	0.141	0.148	0.156	0.163
14	0.101	0.114	0.121	0.128	0.136	0.143	0.151	0.159
15	0.096	0.11	0.117	0.124	0.131	0.139	0.147	0.155
16	0.092	0.106	0.113	0.12	0.128	0.136	0.143	0.151
17	0.089	0.102	0.11	0.117	0.125	0.132	0.14	0.149
18	0.086	0.099	0.107	0.114	0.122	0.13	0.138	0.146

Amortization Example

Used Truck

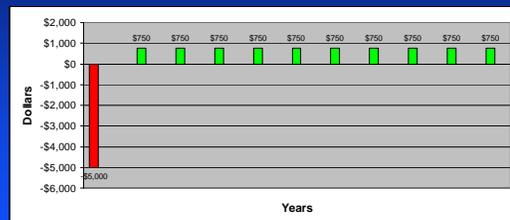
Time Period 10 Years
 Discount Rate 8 Percent
 Present Value \$5,000
 Payment \$650/Year
 (.130 X \$5,000 = \$650)

Present Value X Amortization Factor (i, Yrs) = Payment

One-Time Cost and Annual Benefits

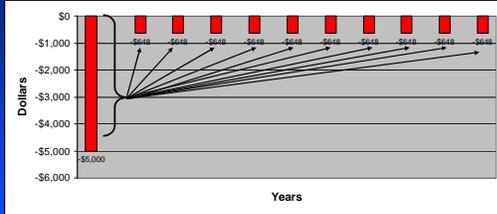
How do you compare costs and benefits over different time periods?

\$5,000 farm improvement creates \$750/Year income benefit



Amortize the One-Time Cost

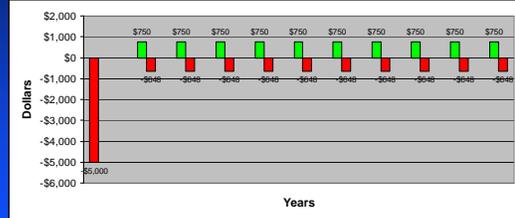
\$5,000 One Time Cost = \$648 Annual Cost (10-Year, 5% Interest)



Compare Annual Benefits to Annual Costs

The Annual Benefits are Greater than the Annual Costs

\$750 Benefit - \$648 Cost = +\$102/Year



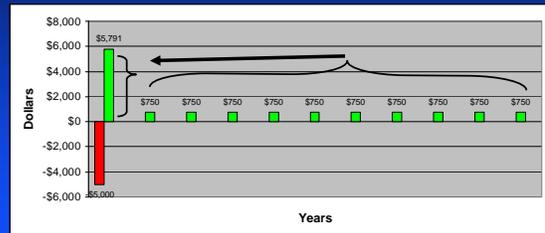
Discounting

- Converts future values to a one-time present value
- Present value is the value today, here and now
- Net Present Value analysis

Compared One Time Cost to One Time Benefit

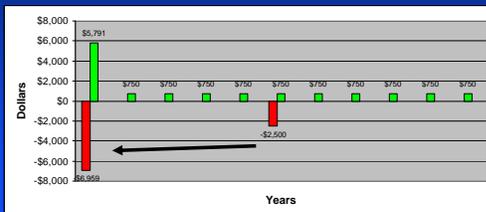
Discount \$750 Annual Benefit to \$5,791 Present Value (10-Year, 5% Interest)

\$5,791 Benefit > \$5,000 Cost



Compare "One Time" and "Future One-Time" Costs to One Time Benefit

Discount \$2,500 Cost to \$1,959 Present Value (5-Year, 5% Interest)
 $\$5,000 + \$1,959 = \$6,959$



Discount Rate

- Interest rate to borrow money
- Bank, credit union, family loan, etc
- Federal project discount rate
- Includes risk and inflation

Break Even Analysis

Break-Even Analysis

Solve for:

- “How much can I afford”
- “How long to get my money back”
- “Return on the investment”

How many years to break-even on my compost facility?

Present Value = \$30,000 (Build Compost Facility)

Payment = \$6,000 (Net Income)

Interest Rate = 7%

$\text{Present Value} \times \text{Amortization Factor (i, Yrs)} = \text{Payment}$

$\text{Amortization Factor (i, Yrs)} = \text{Payment} / \text{Present Value}$

$\text{Amortization Factor (i, Yrs)} = \$6,000 / \$30,000 = .200$

See Amortization Chart at 7% and intersection .200 = 6.5 Years

AVERAGE ANNUAL COST TABLE

PER \$ OF INSTALLATION COST

LIFE YEARS	% INTEREST RATE											
	6	7	8	9	10	11	12	13	14	15	16	
2	0.545	0.553	0.561	0.568	0.576	0.584	0.592	0.599				
3	0.374	0.381	0.388	0.395	0.402	0.409	0.416	0.424				
4	0.289	0.295	0.302	0.309	0.315	0.322	0.329	0.336				
5	0.237	0.244	0.25	0.257	0.264	0.271	0.277	0.284				
6	0.203	0.21	0.216	0.223	0.23	0.236	0.243	0.25				
7	0.179	0.186	0.192	0.199	0.205	0.212	0.219	0.226				
8	0.161	0.167	0.174	0.181	0.187	0.194	0.201	0.208				
9	0.147	0.153	0.16	0.167	0.174	0.181	0.188	0.195				
10	0.136	0.142	0.149	0.156	0.163	0.17	0.177	0.184				
11	0.127	0.133	0.14	0.147	0.154	0.161	0.168	0.176				
12	0.119	0.126	0.133	0.14	0.147	0.154	0.161	0.169				
13	0.113	0.113	0.127	0.134	0.141	0.148	0.156	0.163				
14	0.108	0.114	0.121	0.128	0.136	0.143	0.151	0.159				
15	0.103	0.11	0.117	0.124	0.131	0.139	0.147	0.155				
16	0.099	0.106	0.113	0.12	0.128	0.136	0.143	0.151				
17	0.095	0.102	0.11	0.117	0.125	0.132	0.14	0.149				
18	0.092	0.099	0.107	0.114	0.122	0.13	0.138	0.146				

Return on investment (i%) on my compost facility?

Present Value = \$30,000 (Build Compost Facility)

Payment = \$6,000 (Net Income)

Years = 8

$\text{Present Value} \times \text{Amortization Factor (i, Yrs)} = \text{Payment}$

$\text{Amortization Factor (i, Yrs)} = \text{Payment} / \text{Present Value}$

$\text{Amortization Factor (i, Yrs)} = \$6,000 / \$30,000 = .200$

See Amortization Chart at 8 Yrs and intersection .200 = 12%

AVERAGE ANNUAL COST TABLE

PER \$ OF INSTALLATION COST

LIFE YEARS	% INTEREST RATE											
	6	7	8	9	10	11	12	13	14	15	16	
2	0.545	0.553	0.561	0.568	0.576	0.584	0.592	0.599				
3	0.374	0.381	0.388	0.395	0.402	0.409	0.416	0.424				
4	0.289	0.295	0.302	0.309	0.315	0.322	0.329	0.336				
5	0.237	0.244	0.250	0.257	0.264	0.271	0.277	0.284				
6	0.203	0.21	0.216	0.223	0.23	0.236	0.243	0.25				
7	0.179	0.186	0.192	0.199	0.205	0.212	0.219	0.226				
8	0.161	0.167	0.174	0.181	0.187	0.194	0.201	0.208				
9	0.147	0.153	0.16	0.167	0.174	0.181	0.188	0.195				
10	0.136	0.142	0.149	0.156	0.163	0.17	0.177	0.184				
11	0.127	0.133	0.14	0.147	0.154	0.161	0.168	0.176				
12	0.119	0.126	0.133	0.14	0.147	0.154	0.161	0.169				
13	0.113	0.113	0.127	0.134	0.141	0.148	0.156	0.163				
14	0.108	0.114	0.121	0.128	0.136	0.143	0.151	0.159				
15	0.103	0.11	0.117	0.124	0.131	0.139	0.147	0.155				
16	0.099	0.106	0.113	0.12	0.128	0.136	0.143	0.151				
17	0.095	0.102	0.11	0.117	0.125	0.132	0.14	0.149				
18	0.092	0.099	0.107	0.114	0.122	0.13	0.138	0.146				

Net income required (\$/year) to pay off compost facility in 5 years at 8%?

Present Value = \$30,000 (Build Compost Facility)
 Interest Rate = 8%
 Years = 5

Present Value X Amortization Factor (i, Yrs) = Payment

Amortization Factor (8%, 5 Yrs) = .250
 \$30,000 * .250 = \$7,500/Year

How much can I afford to spend today if my net income is \$5,000/year, over 5 years at 8%?

Payment = \$5,000
 Interest Rate = 8%
 Years = 5

Present Value X Amortization Factor (i, Yrs) = Payment
Present Value = Payment / Amortization Factor (i, Yrs)

Amortization Factor (8%, 5 Yrs) = .250
 \$5,000/Year / .250 = \$20,000

Financial versus Economic Analysis

Financial Analysis vs. Economic Analysis

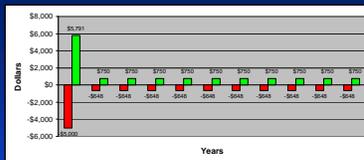
Economic analysis:

- Is it Profitable?
- Compare benefits & costs over the project's life

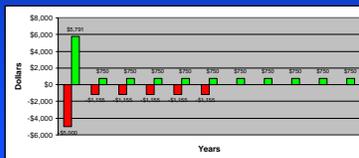
Financial analysis:

- Is it Affordable?
- Compare benefits & costs over the loan period

Economic Analysis: PV \$5,000 = \$648 Annual Cost (10-Year, 5%)

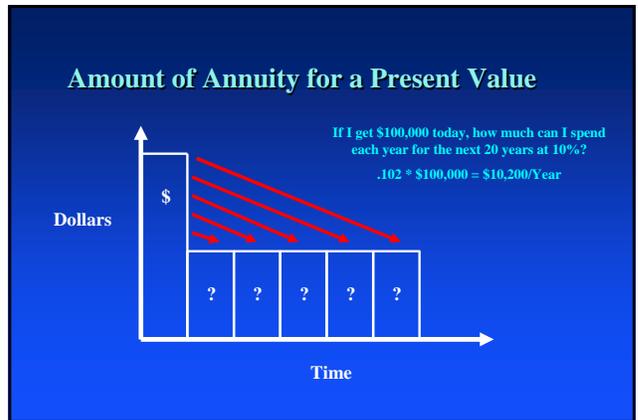
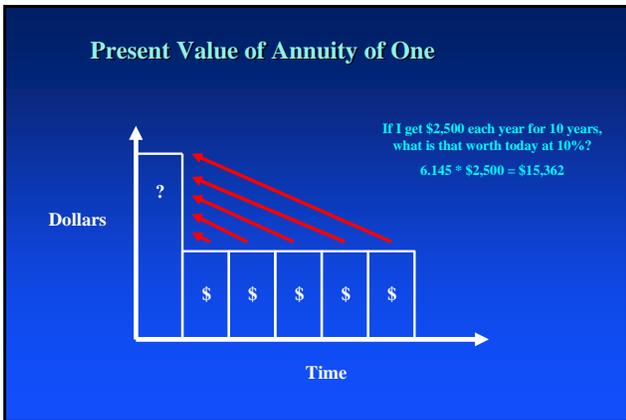
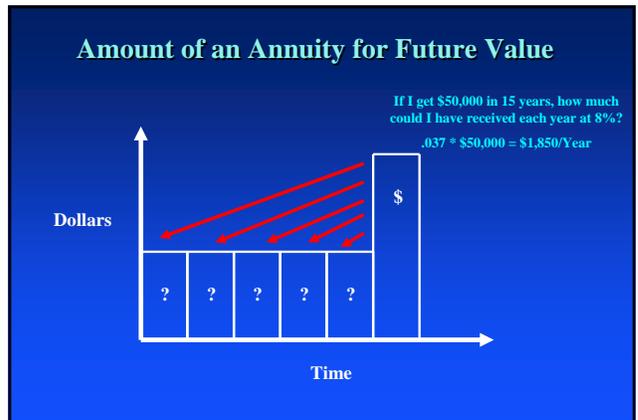
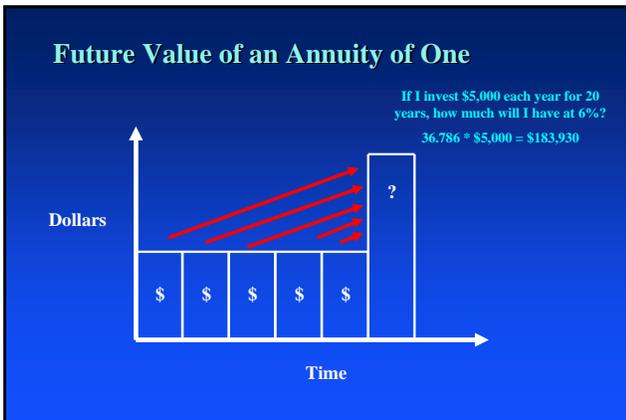
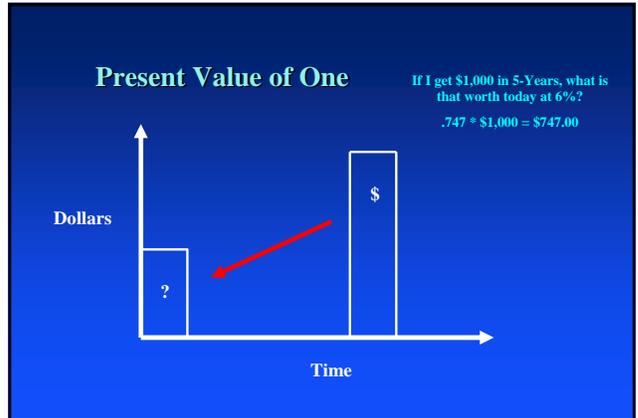
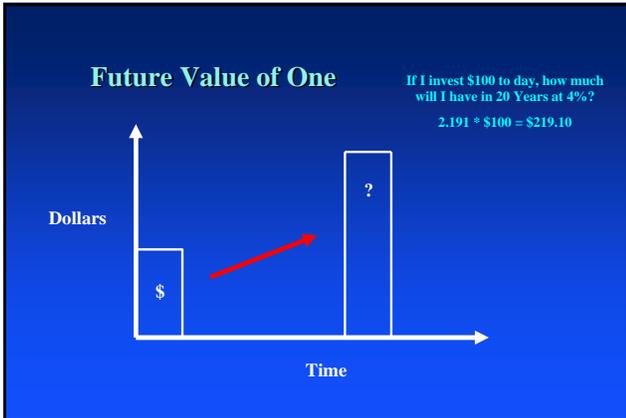


Financial Analysis: PV \$5,000 = \$1,155 Annual Cost (5-Year, 5%)



Interest and Annuity Tables

INTEREST AND ANNUITY TABLES									
ANNUAL INTEREST RATE: 5%									
PERIOD	PERCENT	PRESENT VALUE OF \$1	PRESENT VALUE OF ANNUITY OF \$1	AMOUNT OF \$1 PER ANNUM TO AMOUNT OF \$1	AMOUNT OF \$1 PER ANNUM TO AMOUNT OF \$1	AMOUNT OF \$1 PER ANNUM TO AMOUNT OF \$1	AMOUNT OF \$1 PER ANNUM TO AMOUNT OF \$1	AMOUNT OF \$1 PER ANNUM TO AMOUNT OF \$1	AMOUNT OF \$1 PER ANNUM TO AMOUNT OF \$1
1	5%	0.952	0.952	0.952	0.952	1.000	1.000	1.000	1.000
2	5%	0.907	1.853	1.853	1.853	1.051	1.051	1.051	1.051
3	5%	0.863	2.723	2.723	2.723	1.105	1.105	1.105	1.105
4	5%	0.819	3.517	3.517	3.517	1.161	1.161	1.161	1.161
5	5%	0.776	4.237	4.237	4.237	1.219	1.219	1.219	1.219
6	5%	0.733	4.889	4.889	4.889	1.279	1.279	1.279	1.279
7	5%	0.690	5.471	5.471	5.471	1.341	1.341	1.341	1.341
8	5%	0.648	6.000	6.000	6.000	1.405	1.405	1.405	1.405
9	5%	0.606	6.485	6.485	6.485	1.471	1.471	1.471	1.471
10	5%	0.564	6.935	6.935	6.935	1.539	1.539	1.539	1.539
11	5%	0.522	7.359	7.359	7.359	1.609	1.609	1.609	1.609
12	5%	0.480	7.757	7.757	7.757	1.681	1.681	1.681	1.681
13	5%	0.438	8.129	8.129	8.129	1.755	1.755	1.755	1.755
14	5%	0.396	8.484	8.484	8.484	1.831	1.831	1.831	1.831
15	5%	0.354	8.822	8.822	8.822	1.909	1.909	1.909	1.909
16	5%	0.312	9.143	9.143	9.143	1.989	1.989	1.989	1.989
17	5%	0.270	9.447	9.447	9.447	2.071	2.071	2.071	2.071
18	5%	0.228	9.734	9.734	9.734	2.155	2.155	2.155	2.155
19	5%	0.186	10.004	10.004	10.004	2.241	2.241	2.241	2.241
20	5%	0.144	10.257	10.257	10.257	2.329	2.329	2.329	2.329
21	5%	0.102	10.493	10.493	10.493	2.419	2.419	2.419	2.419
22	5%	0.060	10.713	10.713	10.713	2.511	2.511	2.511	2.511
23	5%	0.018	10.917	10.917	10.917	2.605	2.605	2.605	2.605
24	5%	0.000	11.105	11.105	11.105	2.701	2.701	2.701	2.701
25	5%	0.000	11.278	11.278	11.278	2.800	2.800	2.800	2.800
26	5%	0.000	11.436	11.436	11.436	2.901	2.901	2.901	2.901
27	5%	0.000	11.580	11.580	11.580	3.004	3.004	3.004	3.004
28	5%	0.000	11.710	11.710	11.710	3.109	3.109	3.109	3.109
29	5%	0.000	11.827	11.827	11.827	3.216	3.216	3.216	3.216
30	5%	0.000	11.931	11.931	11.931	3.325	3.325	3.325	3.325
31	5%	0.000	12.023	12.023	12.023	3.436	3.436	3.436	3.436
32	5%	0.000	12.112	12.112	12.112	3.549	3.549	3.549	3.549
33	5%	0.000	12.199	12.199	12.199	3.664	3.664	3.664	3.664
34	5%	0.000	12.283	12.283	12.283	3.781	3.781	3.781	3.781
35	5%	0.000	12.365	12.365	12.365	3.900	3.900	3.900	3.900
36	5%	0.000	12.444	12.444	12.444	4.021	4.021	4.021	4.021
37	5%	0.000	12.521	12.521	12.521	4.144	4.144	4.144	4.144
38	5%	0.000	12.596	12.596	12.596	4.269	4.269	4.269	4.269
39	5%	0.000	12.669	12.669	12.669	4.396	4.396	4.396	4.396
40	5%	0.000	12.740	12.740	12.740	4.525	4.525	4.525	4.525
41	5%	0.000	12.809	12.809	12.809	4.656	4.656	4.656	4.656
42	5%	0.000	12.876	12.876	12.876	4.789	4.789	4.789	4.789
43	5%	0.000	12.941	12.941	12.941	4.924	4.924	4.924	4.924
44	5%	0.000	13.004	13.004	13.004	5.061	5.061	5.061	5.061
45	5%	0.000	13.065	13.065	13.065	5.200	5.200	5.200	5.200
46	5%	0.000	13.124	13.124	13.124	5.341	5.341	5.341	5.341
47	5%	0.000	13.181	13.181	13.181	5.484	5.484	5.484	5.484
48	5%	0.000	13.236	13.236	13.236	5.629	5.629	5.629	5.629
49	5%	0.000	13.289	13.289	13.289	5.776	5.776	5.776	5.776
50	5%	0.000	13.340	13.340	13.340	5.925	5.925	5.925	5.925
51	5%	0.000	13.389	13.389	13.389	6.076	6.076	6.076	6.076
52	5%	0.000	13.436	13.436	13.436	6.229	6.229	6.229	6.229
53	5%	0.000	13.481	13.481	13.481	6.384	6.384	6.384	6.384
54	5%	0.000	13.524	13.524	13.524	6.541	6.541	6.541	6.541
55	5%	0.000	13.565	13.565	13.565	6.700	6.700	6.700	6.700
56	5%	0.000	13.604	13.604	13.604	6.861	6.861	6.861	6.861
57	5%	0.000	13.641	13.641	13.641	7.024	7.024	7.024	7.024
58	5%	0.000	13.676	13.676	13.676	7.189	7.189	7.189	7.189
59	5%	0.000	13.709	13.709	13.709	7.356	7.356	7.356	7.356
60	5%	0.000	13.740	13.740	13.740	7.525	7.525	7.525	7.525
61	5%	0.000	13.769	13.769	13.769	7.696	7.696	7.696	7.696
62	5%	0.000	13.796	13.796	13.796	7.869	7.869	7.869	7.869
63	5%	0.000	13.821	13.821	13.821	8.044	8.044	8.044	8.044
64	5%	0.000	13.844	13.844	13.844	8.221	8.221	8.221	8.221
65	5%	0.000	13.865	13.865	13.865	8.400	8.400	8.400	8.400
66	5%	0.000	13.884	13.884	13.884	8.581	8.581	8.581	8.581
67	5%	0.000	13.901	13.901	13.901	8.764	8.764	8.764	8.764
68	5%	0.000	13.916	13.916	13.916	8.949	8.949	8.949	8.949
69	5%	0.000	13.929	13.929	13.929	9.136	9.136	9.136	9.136
70	5%	0.000	13.940	13.940	13.940	9.325	9.325	9.325	9.325
71	5%	0.000	13.949	13.949	13.949	9.516	9.516	9.516	9.516
72	5%	0.000	13.956	13.956	13.956	9.709	9.709	9.709	9.709
73	5%	0.000	13.961	13.961	13.961	9.904	9.904	9.904	9.904
74	5%	0.000	13.964	13.964	13.964	10.101	10.101	10.101	10.101
75	5%	0.000	13.965	13.965	13.965	10.300	10.300	10.300	10.300
76	5%	0.000	13.964	13.964	13.964	10.501	10.501	10.501	10.501
77	5%	0.000	13.961	13.961	13.961	10.704	10.704	10.704	10.704
78	5%	0.000	13.956	13.956	13.956	10.909	10.909	10.909	10.909
79	5%	0.000	13.949	13.949	13.949	11.116	11.116	11.116	11.116
80	5%	0.000	13.940	13.940	13.940	11.325	11.325	11.325	11.325
81	5%	0.000	13.929	13.929	13.929	11.536	11.536	11.536	11.536
82	5%	0.000	13.916	13.916	13.916	11.749	11.749	11.749	11.749
83	5%	0.000	13.901	13.901	13.901	11.964	11.964	11.964	11.964
84	5%	0.000	13.884	13.884	13.884	12.181	12.181	12.181	12.181
85	5%	0.000	13.865	13.865	13.865	12.400	12.400	12.400	12.400
86	5%	0.000	13.844	13.844	13.844	12.621	12.621	12.621	12.621
87	5%	0.000	13.821	13.821	13.821	12.844	12.844	12.844	12.844
88	5%	0.000	13.796	13.796	13.796	13.069	13.069	13.069	13.069
89	5%	0.000	13.769	13.769	13.769	13.296	13.296	13.296	13.296
90	5%	0.000	13.740	13.740	13.740	13.525	13.525	13.525	13.525
91	5%	0.000	13.709	13.709	13.709	13.756	13.756	13.756	13.756
92	5%	0.000	13.676	13.676	13.676	13.989	13.989	13.989	13.989
93	5%	0.000	13.641	13.641	13.641	14.224	14.224	14.224	14.224
94	5%	0.000	13.604	13.604	13.604	14.461	14.461	14.461	14.461
95	5%	0.000	13.565	13.565	13.565	14.700	14.700	14.700	14.700
96	5%	0.000	13.524	13.524	13.524	14.941	14.941	14.941	14.941
97	5%	0.000	13.481	13.481	13.481	15.184	15.184	15.184	15.184
98	5%	0.000	13.436	13.436	13.436	15.429	15.429	15.429	15.429
99	5%	0.000	13.389	13.389	13.389	15.676	15.676	15.676	15.676
100	5%	0.000	13.340	13.340	13.340	15.925	15.925	15.925	15.925



Economic Data

It is more important to know "where" to get economic data, than to "have" economic data, economic data is only good "today"

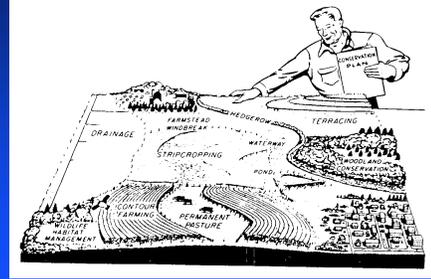
NRCS Economic Tools Website:

<http://www.economics.nrcs.usda.gov/>

State Information – Oregon:

Oregon State University Agricultural and Resource Economics Department
 Oregon Agricultural Enterprise Budgets
 Oregon Agricultural Information Network
 OSU Extension Service
 OSU Extension Service Agricultural Publications (Inc. Budgets)
 Oregon Department of Agriculture
 Oregon Agricultural Statistics Service - USDA
 NRCS Oregon
 NRCS Oregon Technical Resources
 NRCS Oregon Field Office Tech Guide
 NRCS Oregon Economics Page
 NRCS Economist: Sophia Glenn
 NRCS Program Cost Lists

The End



Class Exercise



"T" Chart Example

Pasture Improvement

Brush Control	\$50/Acre
Reseed Pasture	\$65/Acre
Discount Rate	7%
Time Period	10 Years
Weed Control	\$15/Acre/Year
Forage Increase	3 AUMs/Acre/Year
Forage Value	\$12/AUM
Forage Quality Improvement	
Migratory Spring Goose Habitat/Grazing	
Reduced Erosion (2 Tons)	
Water Quality Improvement	

PROBLEMS
 Plant Productivity,
 Erosion, Profitability

SOLUTION
 Pasture Seeding, Brush
 & Weed Control



Class Exercise: "T" Chart

CONSERVATION TREATMENT EFFECTS INFORMATION	
NAME -	LOCATION - DATE -
SETTING -	
CONSERVATION TREATMENT:	RESOURCE PROBLEMS:
POSITIVE EFFECTS (Benefits)	NEGATIVE EFFECTS (Costs)

"T" Chart

CONSERVATION TREATMENT EFFECTS INFORMATION	
NAME - H. Gordon, Rocking Raindrop LOCATION - Aloha, Oregon DATE - 7/12/2004	
CONSERVATION MANAGEMENT UNIT - Pasture, Willamette Valley, Oregon	
CONSERVATION TREATMENT:	RESOURCE PROBLEMS:
Pasture Seeding, Brush & Weed Control	Plant Productivity, Erosion, Profitability
"+" POSITIVE EFFECTS (Benefits)	"-" NEGATIVE EFFECTS (Costs)
Forage Quality Improvement Reduced Erosion, 2 Tons/Acre Water Quality Improvement Goose Habitat Improves Bird Watching Forage Increase 3 AUMs Year X \$12/AUM = \$36/Ac/Year Total Benefits = \$36/Ac/Year	Goose Habitat Increases Trespassing Brush Control \$50/Acre Reseed Pasture \$65/Acre \$115/Acre 7% Interest, 10 Years = .142 X \$115 = \$16.33 Annual Installation Cost = \$16.33/Acre/Year Weed Control \$15.00/Acre/Year Total Costs = \$31.33/Acre/Year