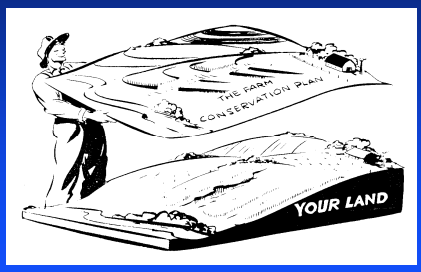
*Hal Gordon*
*Natural Resources Conservation Service*
*West National Technical Service Center*
*Portland, Oregon*

## Economic Tools for Agriculture

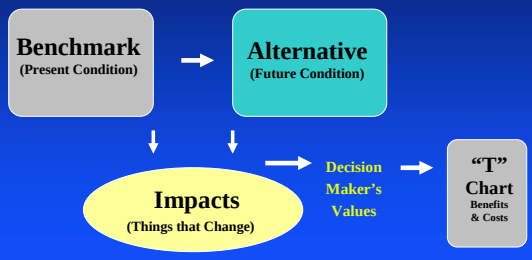
## The Goal:
## An Profitable Farm/Ranch




***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

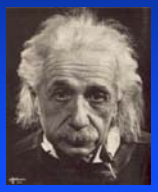
| TREATMENT EFFECTS INFORMATION | |
|---|---|
| NAME/LOCATION – Your information<br>DATE – Current date | |
| ALTERNATIVE:<br>Describe the alternative to be analyzed | BENCHMARK:<br>Describe the current farm activities |
| "+" POSITIVE EFFECTS (Benefits) | "-" NEGATIVE EFFECTS (Costs) |
| Identify all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

# 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

**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

## 1. Estimate Costs

**Additional Costs**

| | |
|---|---|
| Composting Facility | $30,000/Building |
| Composting Expenses | $1,000/Year |

Time Managing Compost

**Reduced Revenue**

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 | % INTEREST RATE | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| YEARS | 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<br>DATE – 10/25/2008 | |
| **ALTERNATIVE:**<br>Build composting facility<br>40' X 36' X 5' Roof with Concrete Pad<br>Sell compost to local nursery | **BENCHMARK:**<br>300-head dairy, 500 acres pasture<br>90 days animal waste storage<br>100 acres short for proper manure application |
| **"+" POSITIVE EFFECTS (Benefits)** | **"-" NEGATIVE EFFECTS (Costs)** |
| Compost Income<br><br>Water Quality Improvement<br>Reduced Odor | Composting Facility<br>Composting Equipment<br><br>Composting O&M Expenses<br>Time managing compost<br>Less pasture land |

**Level II**

| TREATMENT EFFECTS INFORMATION | |
|---|---|
| NAME/LOCATION – Hal Gordon, Rocking Raindrop Ranch, Aloha, Oregon<br>DATE – 10/25/2008 | |
| **ALTERNATIVE:**<br>Build composting facility<br>40' X 36' X 5' Roof with Concrete Pad<br>Sell compost to local nursery | **BENCHMARK:**<br>300-head dairy, 500 acres pasture<br>90 days animal waste storage<br>100 acres short for proper manure application |
| **"+" POSITIVE EFFECTS (Benefits)** | **"-" NEGATIVE EFFECTS (Costs)** |
| Compost Income = $6,000/Year<br>75 ton compost/year @ $80/ton<br>Water Quality Improvement<br>Reduced Odor | Composting Facility = $25,000<br>Composting Equipment = $5,000<br><br>Composting O&M Expenses = $1,000/Year<br>Time managing compost<br>Less pasture land |

Level III

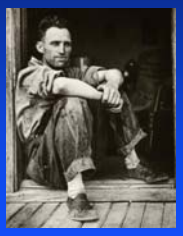
| TREATMENT EFFECTS INFORMATION | |
|---|---|
| NAME/LOCATION – Hal Gordon, Rocking Raindrop Ranch, Aloha, Oregon<br>DATE – 10/25/2008 | |
| ALTERNATIVE:<br>Build composting facility<br>40' X 36' X 5' Roof with Concrete Pad<br>Sell compost to local nursery | BENCHMARK:<br>300-head dairy, 500 acres pasture<br>90 days animal waste storage<br>100 acres short for proper manure application |
| "+" POSITIVE EFFECTS (Benefits) | "-" NEGATIVE EFFECTS (Costs) |
| Compost Income = $6,000/Year<br>75 ton compost/year @ $80/ton<br>Water Quality Improvement<br>Reduced Odor<br><br>Total Benefits = $6,000/Year | Composting Facility = $25,000<br>Composting Equipment = $5,000<br>7%, 10 Years = .142 * $30,000 = $4,260/Year<br>Composting O&M Expenses = $1,000/Year<br>Time managing compost<br>Less pasture land<br><br>Total Costs = $5,260/Year<br><br>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 it's 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 | % INTEREST RATE | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| YEARS | 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 |

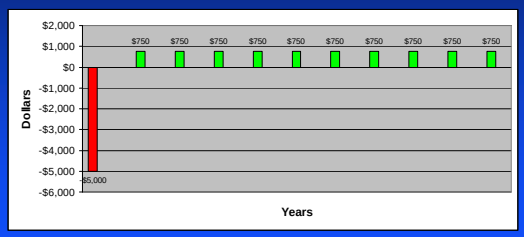
(.130 X $5,000 = $650)

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

## One-Time Cost and Annual Benefits

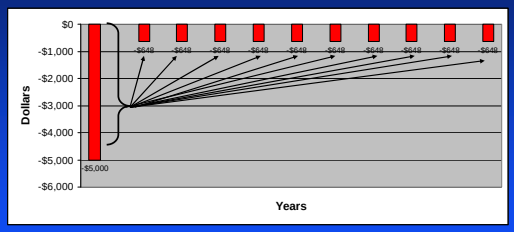
How do you compare costs and benefits over different time periods?

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



## Amortize the One-Time Cost

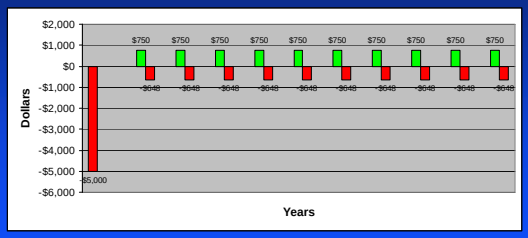
**$5,000 One Time Cost = $648 Annual Cost (10-Year, 5% Interest)**




## Compare Annual Benefits to Annual Costs

**The Annual Benefits are Greater than the Annual Costs**

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



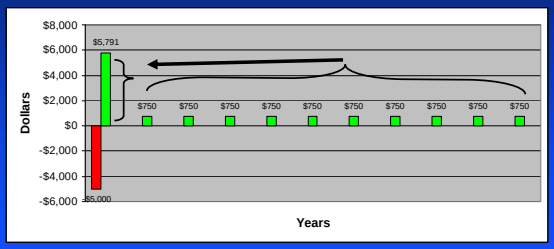

## Discounting

- 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

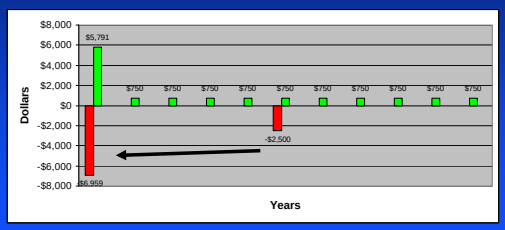
**Discount $750 Annual Benefit to $5,791 Present Value (10-Year, 5% Interest)**

**$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%

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

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 |
|---|---|---|---|---|---|---|---|---|
| 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

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

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 |
|---|---|---|---|---|---|---|---|---|
| 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 |
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| 14 | 0.108 | 0.114 | 0.121 | 0.128 | 0.136 | 0.143 | 0.151 | 0.159 |
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| 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

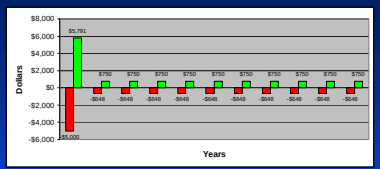
# Financial versus Economic Analysis

## Financial Analysis vs. Economic Analysis

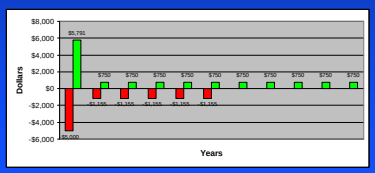
**Economic analysis:**
- Is it Profitable?
- Compare benefits & costs over the project's life

**Financial analysis:**
- Is it Affordable?
- Compare benefits & costs over the loan period

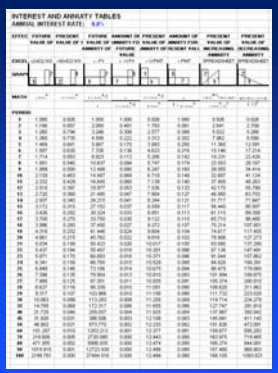
**Economic Analysis:** PV $5,000 = $648 Annual Cost (10-Year, 5%)




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



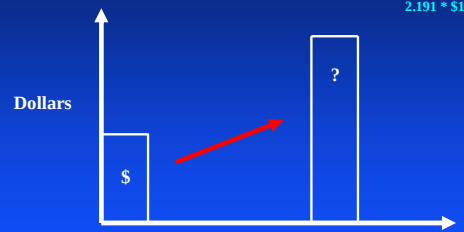

## Interest and Annuity Tables



## Future Value of One

If I invest $100 to day, how much will I have in 20 Years at 4%?

2.191 * $100 = $219.10




## Present Value of One

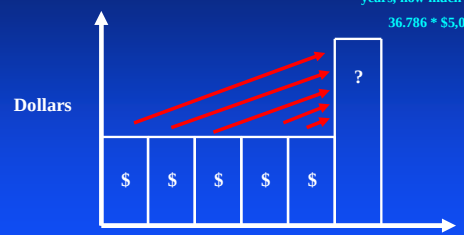
If I get $1,000 in 5-Years, what is that worth today at 6%?

.747 * $1,000 = $747.00


## Future Value of an Annuity of One

If I invest $5,000 each year for 20 years, how much will I have at 6%?

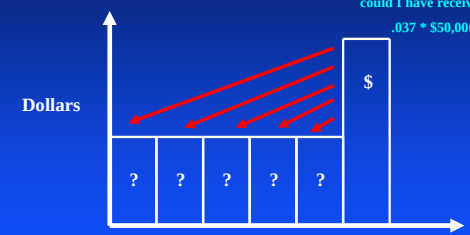
36.786 * $5,000 = $183,930




## Amount of an Annuity for Future Value

If I get $50,000 in 15 years, how much could I have received each year at 8%?

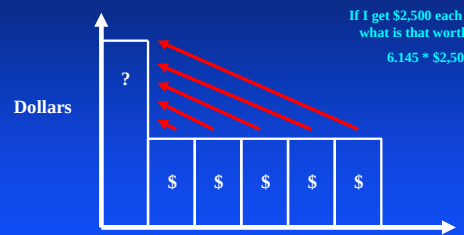
.037 * $50,000 = $1,850/Year




## Present Value of Annuity of One

If I get $2,500 each year for 10 years, what is that worth today at 10%?

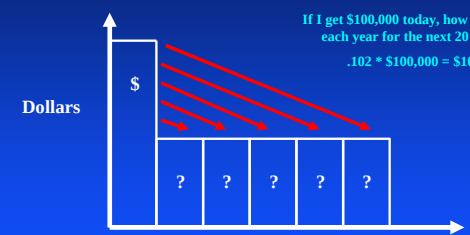
6.145 * $2,500 = $15,362




## Amount of Annuity for a Present Value

If I get $100,000 today, how much can I spend each year for the next 20 years at 10%?

.102 * $100,000 = $10,200/Year



## Economic Data

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

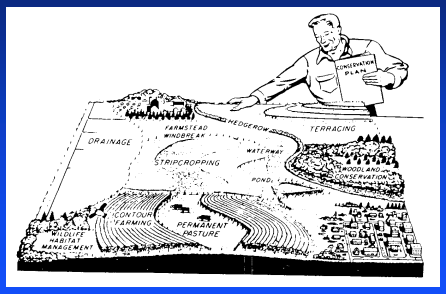
**NRCS Economic Tools Website:**

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