

# WORKSHOP OUTLINE

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1. Pre-Test
2. Production Risk
  - a. MPCl & IP Insurance Products
  - b. Specific Crops
3. **Diversification Issues**
  - a. **Price Risk**
  - b. **Diversification**
4. Product Availability
5. Evaluation

# Price Risk

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1. **Marketing Assistance Loans**
  - a. **2002 Farm Bill Changes**
  - b. **Loan Rate Levels**
  
2. **Crop Rotations and Price Risk**
  - a. **Price Risk Of Alternative Crops**
  - b. **Do More Crops Reduce Price Risk?**

# Marketing Assistance Loans

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1. **Loan Rates**
  - a. **Are More Generous For 2002-2003**
  - b. **Rates Decline For 2004-2007**
  - c. **New Crops With Loan Rates**
2. **FSRI “Locks In” National Average Loan Rates**
  - a. **Secretary Has No Discretion To Raise Or Lower Those Rates**
  - b. **Some Adjustment Across Counties When Establishing The New Loan Rates**

# Marketing Assistance National Loan Rates

Commodity	1996 FAIR Act 2001 Rate	2002 FSRI Act	
		2002-2003	2004-2007
Corn (bu)	\$1.89	\$1.98	\$1.95
Barley (bu)	\$1.65	\$1.88	\$1.85
Oats (bu)	\$1.21	\$1.35	\$1.33
*Wheat (bu)	\$2.58	\$2.80	\$2.75
*Minor Oilseeds (cwt)	\$9.30	\$9.60	\$9.30
Sorghum (bu)	\$1.71	\$1.98	\$1.95
Soybeans (bu)	\$5.26	\$5.00	\$5.00
Upland cotton (bu)	\$0.52	\$0.52	\$0.52
Rice (cwt)	\$6.50	\$6.50	\$6.50
Peanuts (Ton)		\$355	\$355

# Wheat Loan Rates

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1. **Beginning With The 2002 Crop Year, Loan Rates Will Be Established By Class**
  - a. **Hard Red Spring**
  - b. **Hard Red Winter**
  - c. **Soft Red Winter**
  - d. **Soft White**
  - e. **Durum**
2. **Hard White Wheat Loan Rate Is Equal To Hard Red Wheat Loan Rate**
3. **Durum Wheat Loan Rate Is Applicable For All Durum Subclasses**

# Wheat By Class - Montana County Loan Rate Ranges

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<u>Crop</u>	<u>Loan Rates</u>
Hard Red Spring	2.67 - 3.06
Hard Red Winter	2.51 – 2.99
Durum	3.23 – 3.83
Soft White	2.18 – 2.68

# **Oilseed Loan Rates**

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- 1. 2002 Crop Year Oilseed Loan Rates Will Be Differentiated By Oilseed Type**
- 2. Crambe And Sesame Seed Are Not Eligible For Loans Or LDPs**

# Oilseed Loan Rates

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Type of Oilseed	Loan Rate (per pound)
Oil-type Sunflower	\$0.0915
Other Sunflower	\$0.1210
Flaxseed	\$0.0698
Canola	\$0.0949
Rapeseed	\$0.0947
Safflower Seed	\$0.1253
Mustard Seed	\$0.0988



# Marketing Assistance National Loan Rates For Added Commodities

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<b>Commodity</b>	<b>2002-2003</b>	<b>2004-2007</b>
<b>Small Chickpeas (cwt)</b>	<b>\$7.56</b>	<b>\$7.53</b>
<b>Lentils (cwt)</b>	<b>\$11.94</b>	<b>\$11.72</b>
<b>Dry Peas (cwt)</b>	<b>\$6.33</b>	<b>\$6.22</b>
<b>Honey (lb)</b>	<b>\$0.60</b>	<b>\$0.60</b>
<b>Graded Wool (lb)</b>	<b>\$1.00</b>	<b>\$1.00</b>
<b>Nongraded Wool (lb)</b>	<b>\$0.40</b>	<b>\$0.40</b>
<b>Mohair (lb)</b>	<b>\$4.20</b>	<b>\$4.20</b>
<b>Unshorn Pelts (lb)</b>	<b>\$0.40</b>	<b>\$0.40</b>

# Price Risk

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# Do Alternative Crops Have Less Price Risk Than Wheat?

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## U.S. Average Prices: 1992-2000

<u>Crop</u>	<u>Risk Measure</u>
Barley	15.2%
Canola	18.5%
Dry Beans	15.4%
Dry Peas	27.8%
Flaxseed	20.8%
Lentils	19.9%
Mustard	19.3%
Safflower	13.4%
Sunflower	20.3%
Wheat – Spring	16.7%
Wheat – Winter	23.3%

# Do Additional Crops Reduce Price Risk?

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Depends On The Correlation Of Crop Prices

**Correlation** – A Measure Of Co-Movement Of Prices Over Time

**+1.00 =>** Two Prices Move Exactly The Same Over Time

**0.00 =>** Two Prices Have No Relationship Over Time

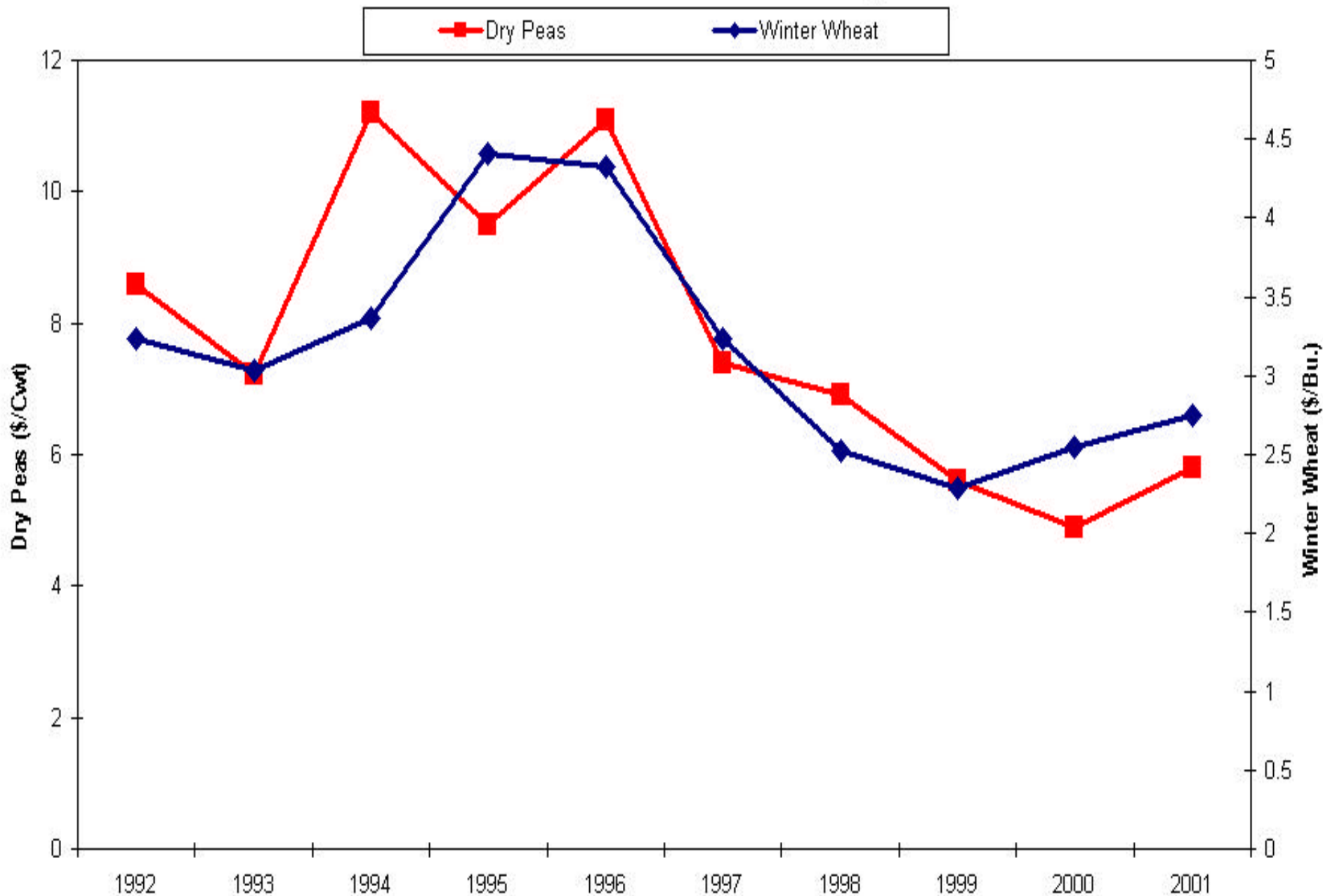
**-1.00 =>** Two Prices Move In Opposite Directions Over Time

# **Do Additional Crops Reduce Price Risk?**

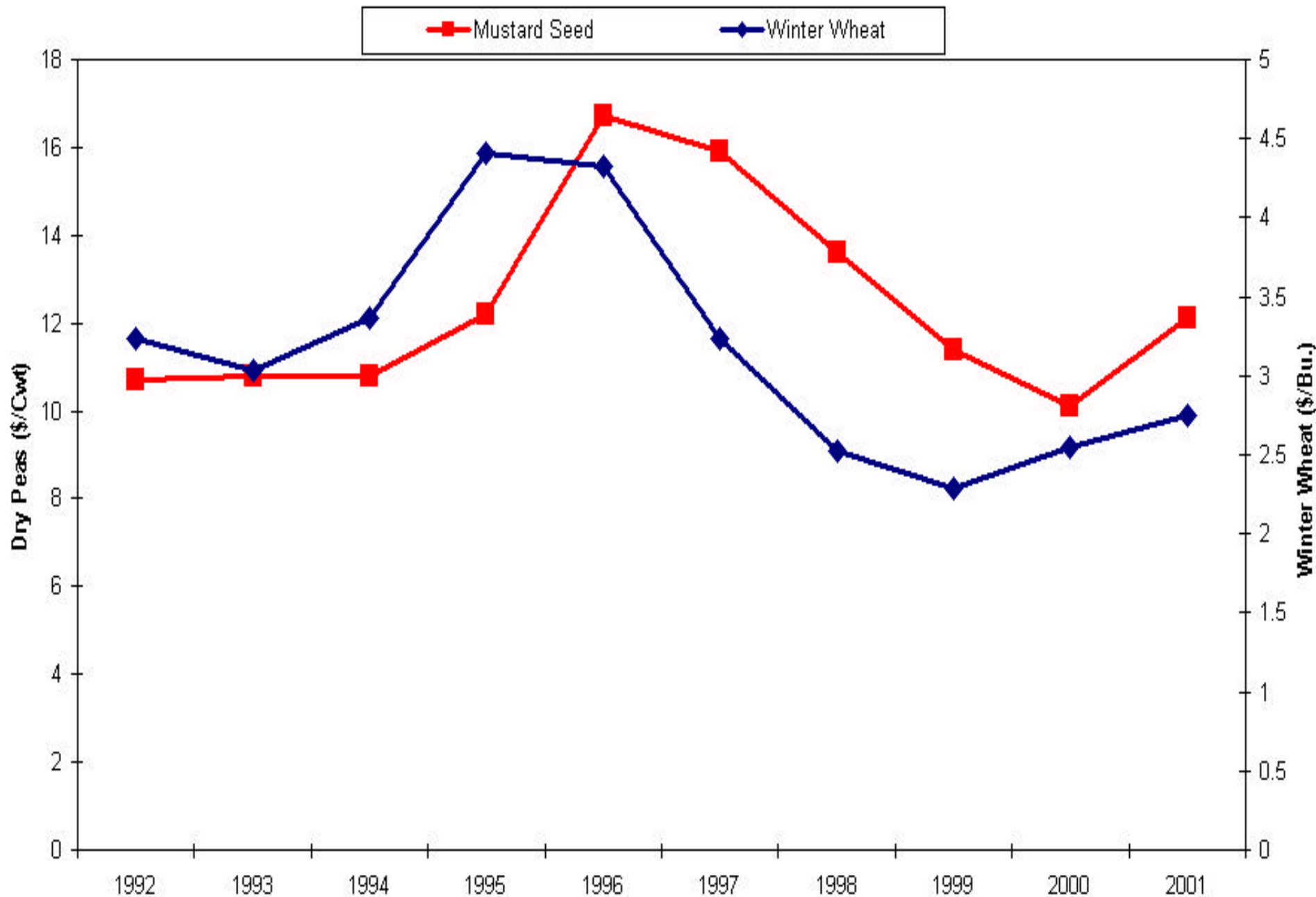
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- 1. To Reduce Overall Price Risk**
  - a. Want Crop Prices To Have Low Correlations**
  - b. Better Yet, Negative Correlations**
  
- 2. Alternative Crop Prices Tend To Be Relatively Highly Correlated With Wheat Prices**
  - a. +0.43 (Mustard Seed)**
  - b. +0.81 (Dry Peas)**

# Prices for U.S. Winter Wheat and Dry Peas: 1992-2001



# Prices for U.S. Winter Wheat and Mustard Seed: 1992-2001



# Do Additional Crops Reduce Price Risk?

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Rotation	Overall Price Risk
50% Spring Wheat, 50% Winter Wheat	19.7%



# Do Additional Crops Reduce Price Risk?

<b>Rotation</b>	<b>Overall Price Risk</b>
<b>50% Spring Wheat, 50% Winter Wheat</b>	<b>19.7%</b>
<b>45% Spring Wheat, 45% Winter Wheat, 5% Flaxseed, 5% Dry Peas</b>	<b>19.6%</b>

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<b>35% Spring Wheat, 35% Winter Wheat, 5% Flaxseed, 5% Dry Peas, 5% Sunflower, 5% Mustard, 5% Canola, 5% Dry Beans</b>	<b>16.6%</b>

# Do Additional Crops Reduce Price Risk?

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<b>50% Spring Wheat, 50% Winter Wheat</b>	<b>19.7%</b>
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<b>Equal Amounts of All 10 Crops</b>	<b>15.3%</b>

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# Diversification and Risk

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## Diversification Issues

1. **Actions Which Reduce Risk Without Loss Of Mean Returns**
2. **Is The Adoption Of An Additional Crop A Diversification Strategy?**
3. **Maybe:**
  - a. **Stock Portfolio Example**

# Diversification and Risk

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1. **Two Diversification Aspects Of Additional Crop Enterprises**
  - a. **Rotational Effect: Can *Enhance* Returns And Productivity**
    - » **Improve Soil Characteristics**
    - » **Break Weed/Insect Cycles**
    - » **Reduce Disease Vectors**
    - » **Source of Nitrogen**

# Diversification and Risk

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## b. Diversification Effects:

- » **Additional Enterprises Can Reduce The *Variation* Of Returns While Maintaining Average Returns**
- » **But, Diversification Can Increase Costs**
  - **Machinery Complements**
  - **Timeliness**
  - **Learning Curves**



# Diversification and Risk

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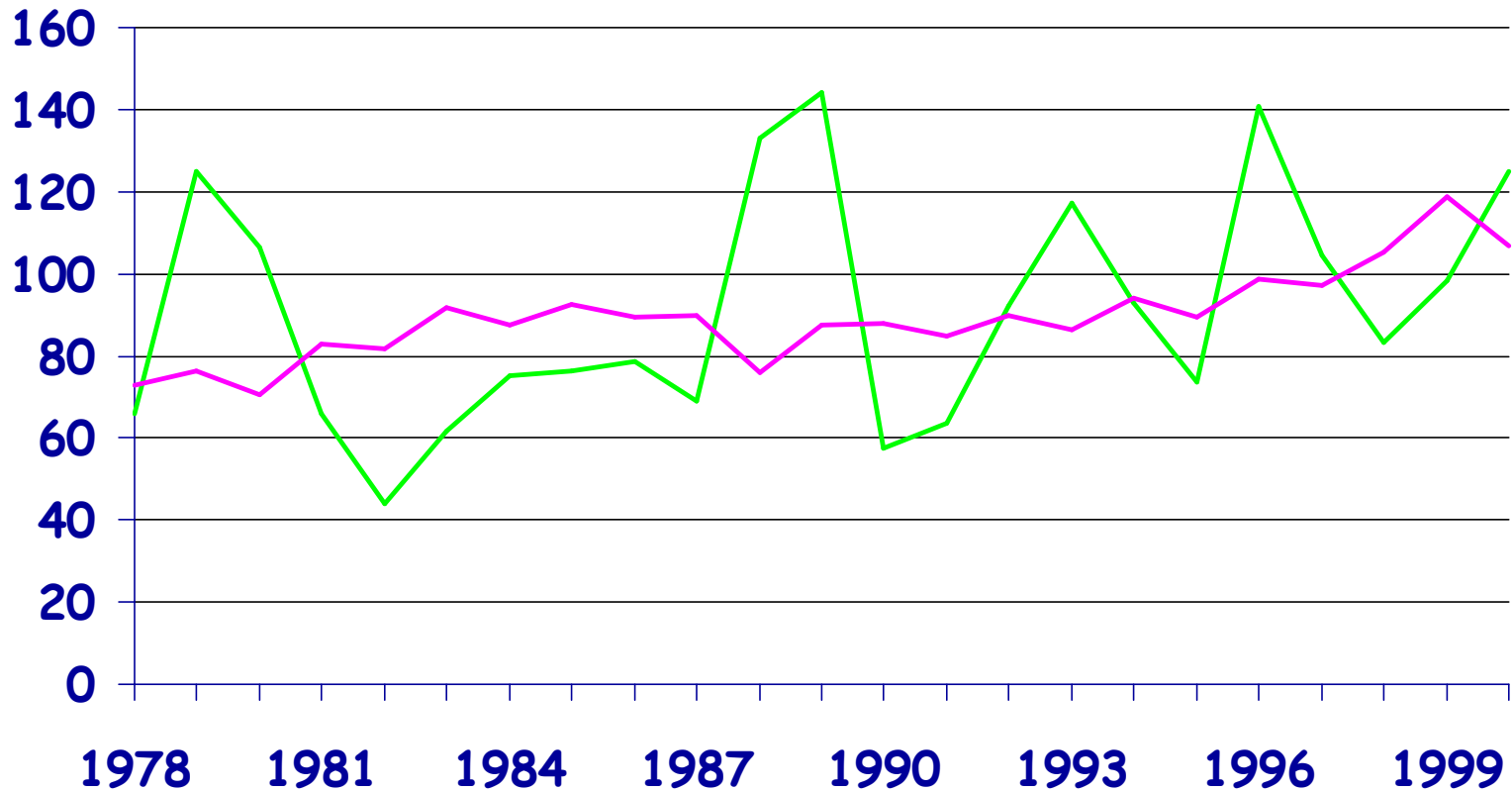
## Example:

1. **Consider Returns To Land from 2 Crops**
  - a. ***Exotic Peas*: \$91/acre**
  - b. **Malting Barley: \$89/acre**
  
2. **Own A 200 Acre Farm**
  - a. **Rent To A Producer Of Malting Barley?**
  
  - b. **Rent To A Producer Of Both In The Interest Of Diversification?**

# Returns to Specific Crops

## Returns to Land (\$/acre)

\$/acre



— Exotic Peas — Malting Barley

# Diversification and Risk

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## Average Returns For the Farm

1. **200 Acres Of Malting Barley**
  - a.  **$\$89 * 200 \text{ Acres} = \$17,800$**
  
2. **100 Acres Of Malting Barley And 100 Acres Of Exotic Peas**
  - a.  **$(\$89 * 100) + (\$91 * 100) = \$18,000$**
  
3. **About The Same Returns**

# Diversification and Risk

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## Variance of Returns

### 1. 200 Acres Of Malting Barley

a.  $V(k_1 Y_1) = k_1^2 * \text{pointing hand} \sigma_1^2$

b.  $(200)^2 * 118 = 4,720,000$

# Diversification and Risk

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## Variance of Returns

1. 100 Acres Of Malting Barley And 100 Acres Of Exotic Peas
  - a. Linear Combination Of Random Variables
2.  $V(Y_1 Y_2) = (k_1^2 * \sigma_1^2) + (k_2^2 * \sigma_2^2) + (2k_1 k_2 \sigma_{12})$ 
  - a. Where  $\sigma_{12}$  is the covariance of  $Y_1 Y_2$
  - b.  $(100^2 * 118) + (100^2 * 799) + (2 * 100 * 100 * 36)$
  - c. Which Equals **9,890,000**
3. Approximately 2 times The Variation Of Malting Barley Only

# Diversification and Risk

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## Variance of Returns

1. **200 Acres Malting Barley = 4,720,000**
2. **100 Acres of Malting Barley and  
100 Acres of Exotic Peas = 9,980,000**
3. **180 Acres of Malting Barley and  
20 Acres of Exotic Peas = 4,402,000**

# Summary Of Diversification

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1. **Many Crops Face Similar Production Risks**
  - a. **Must Consider The Ability To Manage Production Risk**
    - **Crop Insurance?**
    - **Herbicides?**
  - b. **Must Consider Opportunities To Manage Price Risk**
    - **Futures Markets?**
    - **Contracting?**
    - **Storage?**

# Summary Of Diversification

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2. **Many Traditional And Alternative Crop Prices Move Together Over Time**
3. **Some Alternative Crops Prices Are Quite Variable**
4. **Some Alternative Crops Have Additional Inherent Risks**
  - a. **Yields**
  - b. **Expected Net Returns**
  - c. **Labor & Machinery Utilization**



# QUESTIONS?

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