

WORKSHOP OUTLINE

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

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

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

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 - Wyoming County Loan Rate Ranges

<u>Crop</u>	<u>Loan Rates</u>
Hard Red Spring	2.62 – 2.86
Washakie	2.71
Park	2.81
Hard Red Winter	2.51 – 2.83
Washakie	2.63
Park	2.68
Soft White	2.18 – 2.68
Park	2.38

Oilseed Loan Rates

- 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

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

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

Price Risk

1. **Marketing Assistance Loans**
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2. **Crop Rotations and Price Risk**
 - a. **Price Risk Of Alternative Crops**
 - b. **Do More Crops Reduce Price Risk?**

Do Alternative Crops Have Less Price Risk Than Wheat?

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?

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

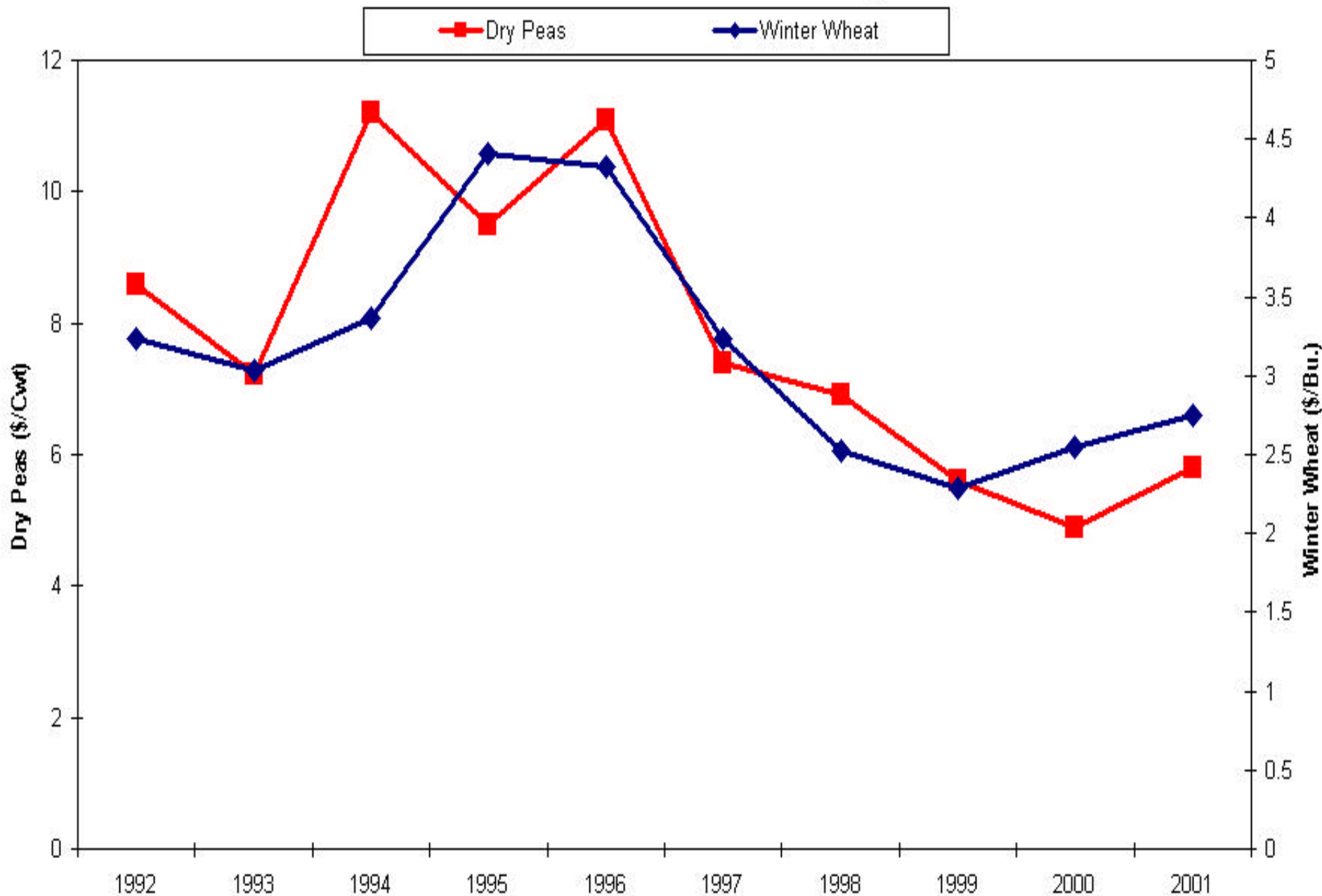
0.00 => Two Prices Have No Relationship Over Time

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

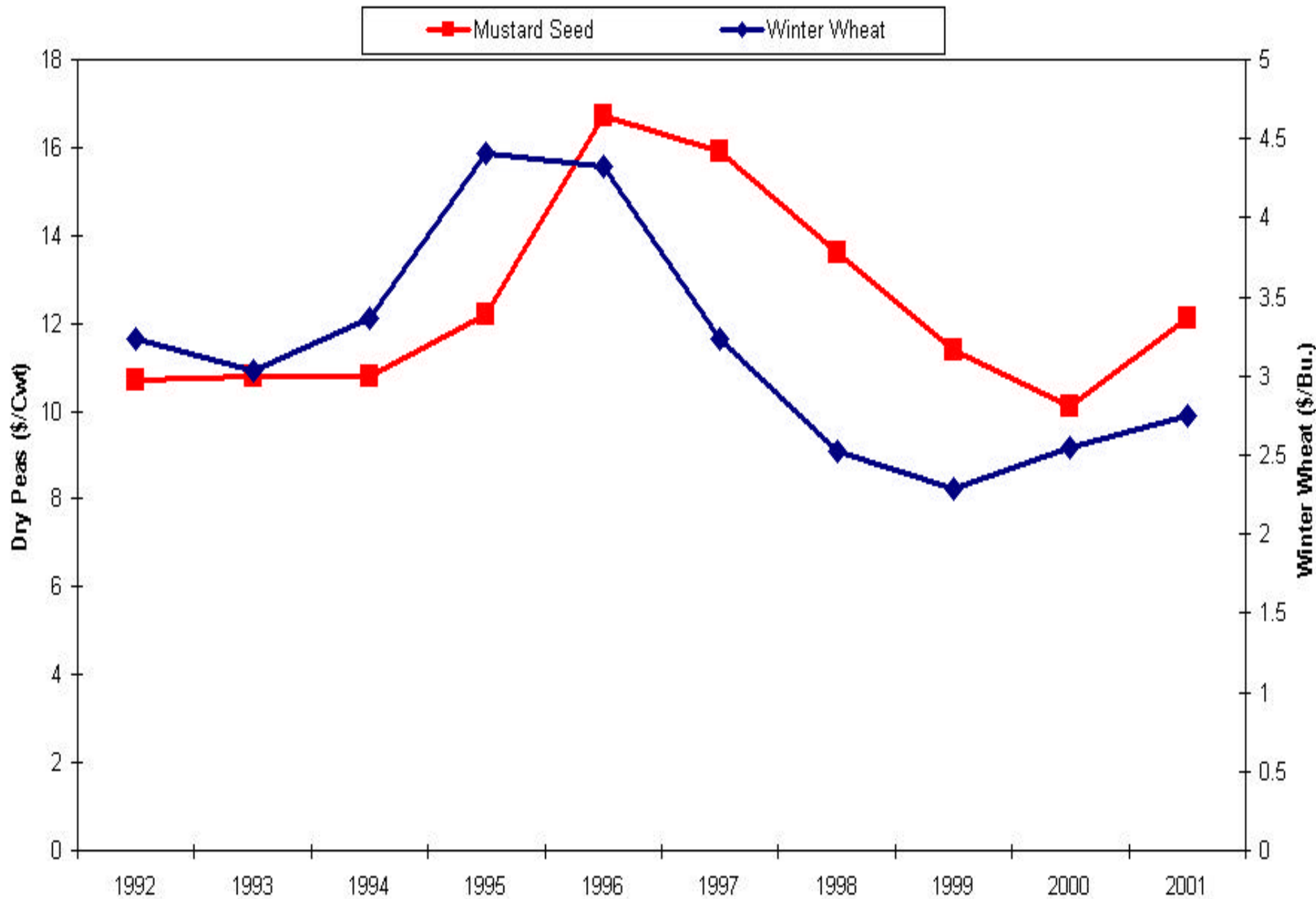
Do Additional Crops Reduce Price Risk?

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?

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

Do Additional Crops Reduce Price Risk?

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

Do Additional Crops Reduce Price Risk?

Rotation	Overall Price Risk
50% Spring Wheat, 50% Winter Wheat	19.7%
45% Spring Wheat, 45% Winter Wheat, 5% Flaxseed, 5% Dry Peas	19.6%
40% Spring Wheat, 40% Winter Wheat, 5% Flaxseed, 5% Dry Peas, 5% Sunflower, 5% Mustard	17.8%

Do Additional Crops Reduce Price Risk?

Rotation	Overall Price Risk
50% Spring Wheat, 50% Winter Wheat	19.7%
45% Spring Wheat, 45% Winter Wheat, 5% Flaxseed, 5% Dry Peas	19.6%
40% Spring Wheat, 40% Winter Wheat, 5% Flaxseed, 5% Dry Peas, 5% Sunflower, 5% Mustard	17.8%
35% Spring Wheat, 35% Winter Wheat, 5% Flaxseed, 5% Dry Peas, 5% Sunflower, 5% Mustard, 5% Canola, 5% Dry Beans	16.6%

Do Additional Crops Reduce Price Risk?

Rotation	Overall Price Risk
50% Spring Wheat, 50% Winter Wheat	19.7%
45% Spring Wheat, 45% Winter Wheat, 5% Flaxseed, 5% Dry Peas	19.6%
40% Spring Wheat, 40% Winter Wheat, 5% Flaxseed, 5% Dry Peas, 5% Sunflower, 5% Mustard	17.8%
35% Spring Wheat, 35% Winter Wheat, 5% Flaxseed, 5% Dry Peas, 5% Sunflower, 5% Mustard, 5% Canola, 5% Dry Beans	16.6%
Equal Amounts of All 10 Crops	15.3%

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Diversification and Risk

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

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

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

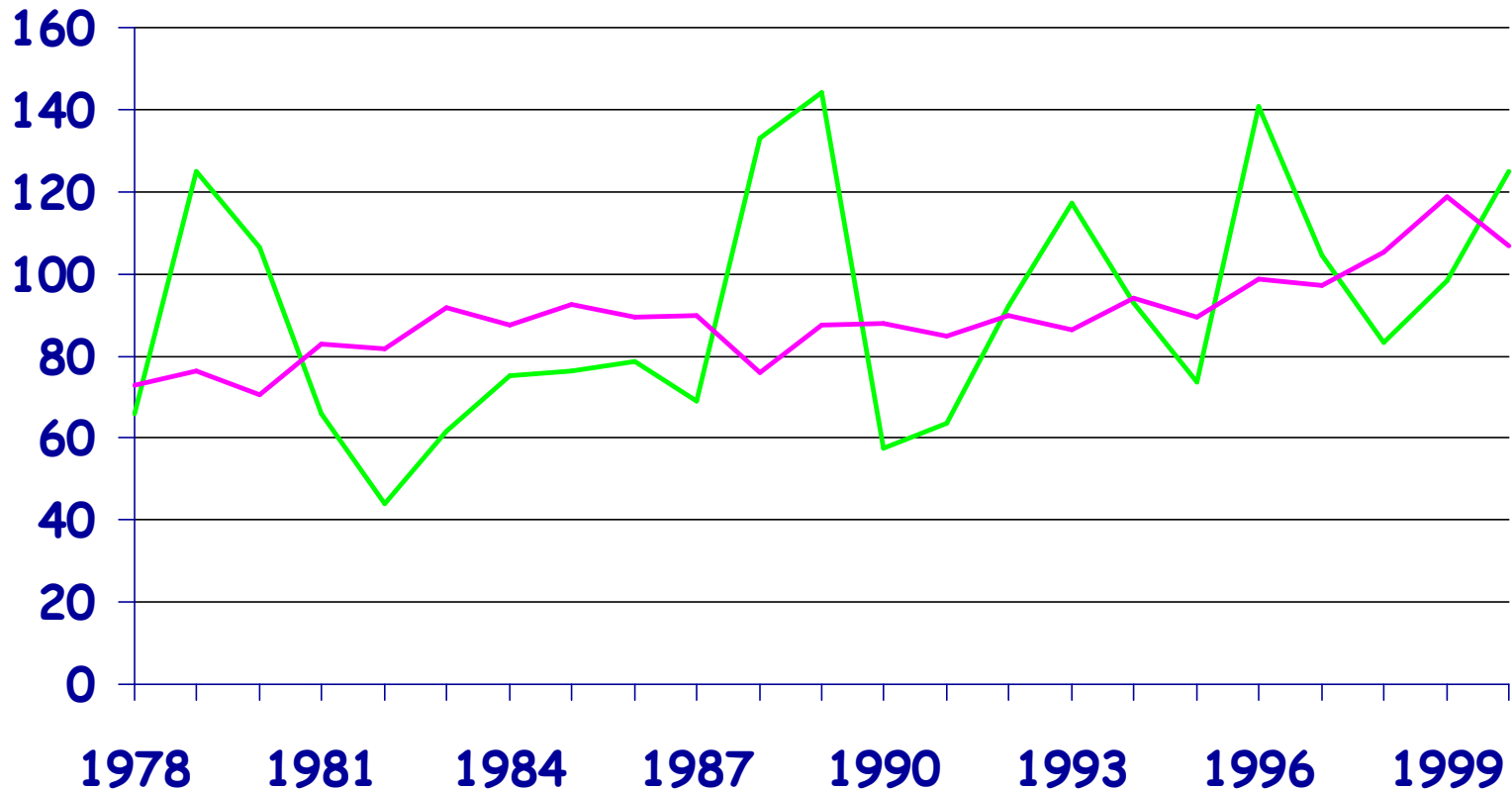
Example:

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

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

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

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 σ_{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

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

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

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?

