Combining Crop Insurance with Futures and Options to Manage Revenue Risk

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Outline

- Insurance products to consider
  - APH and CRC
- Review of using futures and options to manage price risk
- Example of combining insurance with futures and options

Why consider crop insurance?

- Goal of risk management is to protect revenue
  - Futures, options, LDP's are effective in managing price risk
  - BUT you still need to produce a crop

Why Consider Crop Insurance? Uncle Sam will Help Pay!

Coverage Level %	Subsidy %	You Pay %
50	67	33
55	64	36
60	64	36
65	59	41
70	59	41
75	55	45
80	48	52
85	38	62

Insurance Products: What are they and how do they work?

Actual Production History (APH) Insurance

- Only protects against yield loss
- Insurance protection based on historic farm-level yields
  - Average of:
    - Minimum of four consecutive years
    - Maximum of ten consecutive years
- Varying levels of protection
  - 50%, 55%, 60%, 70%, 75% of APH Yield
  - 80%, 85% levels available for some crops and some counties

APH Insurance (Continued)

- Indemnity when Harvested yield < APH x Coverage Level
- Production losses are valued at prices determined by the Federal Crop Insurance Corporation (part of USDA's Risk Management Agency). For 2005, the prices are:
  - Corn = $2.20
  - Soybeans = $5.00
  - Cotton = $0.52
- Choose to insure at price levels ranging from 55% to 100% of FCIC prices
  - I will use 100% price election for all of the examples.

APH Example: Corn (NI)

- APH = 81 bu/a; 65% Coverage Level; APH Price $2.20
- Guarantee = 81 bu/a x 65% = 53 bu/a
- Harvested 47 bu/a
- Indemnity = (53 – 47) x $2.20
  = 6 x $2.20 = $13.20 per acre
- Premium = $5.04 per acre
- Net Indemnity = $13.20 - $5.04 = $8.16/a

APH Example 2 – Soybeans (NI)

- APH Yield = 34 bu/a; 65% Coverage; APH Price $5.00/bu
- Guarantee = 34 x 65% = 22 bu/a
- Harvest = 19 bu/a
- Indemnity = (22 – 19) x $5.00 = $15.00/a
- Premium = $7.58 per acre
- Net Indemnity = $15 - $7.58 = $7.42/a

Crop Revenue Coverage (CRC)

- Protects Revenue -- Insures against low yields and/or prices
- Insurance protection based on historic farm-level yields
  - Average of:
    - Minimum of four consecutive years
    - Maximum of ten consecutive years
- Varying levels of protection
  - 50%, 55%, 60%, 70%, 75% of APH Yield
  - 80%, 85% levels available for some crops and counties

CRC Insurance Vocabulary

- Minimum Guaranteed Revenue
  - Base Price x APH Yield x Coverage Level

- Base Price – Minimum price revenue is insured. Price is based on Futures Market
  - Corn: Dec 15-Jan 14 Average – Sep Contract
  - Soybeans: Dec 15-Jan 14 Average – Sep Contract
  - Cotton: Jan 15-Feb 14 Average – Dec Contract

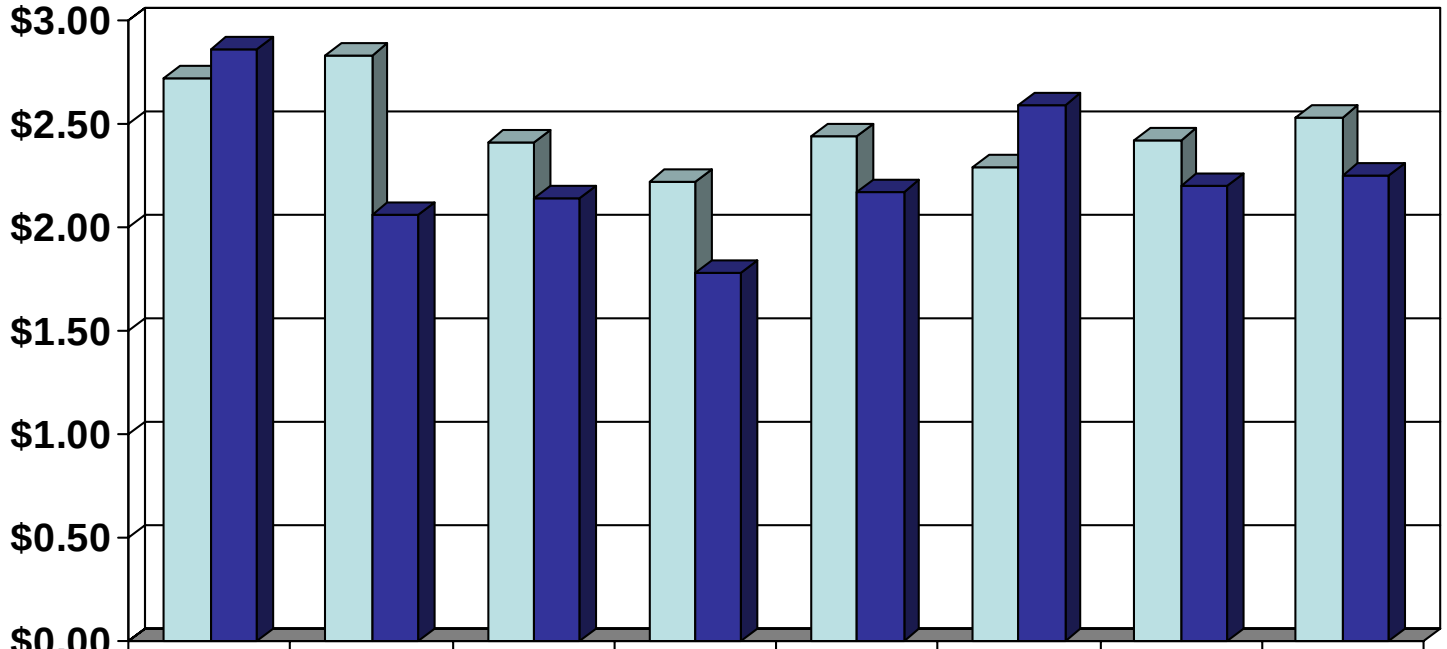
CRC Insurance Vocabulary (continued)

- Harvest Price – Used to determine if indemnity is paid. Based on Futures Market Prices
  - Corn and soybeans – August average of Sep Contracts
  - Cotton – November average of Dec Contract
- Harvest Guarantee Revenue
  - Harvest Price x APH Yield x Coverage Level
- Final Guarantee Revenue = Larger of Base or Harvest Guarantee

CRC Insurance (continued)

- Calculated Revenue
  - Actual Yield x Harvest Price
- Indemnity paid when
  - Calculated Revenue < Guaranteed Revenue
- Payments can be triggered from low prices and/or low yields

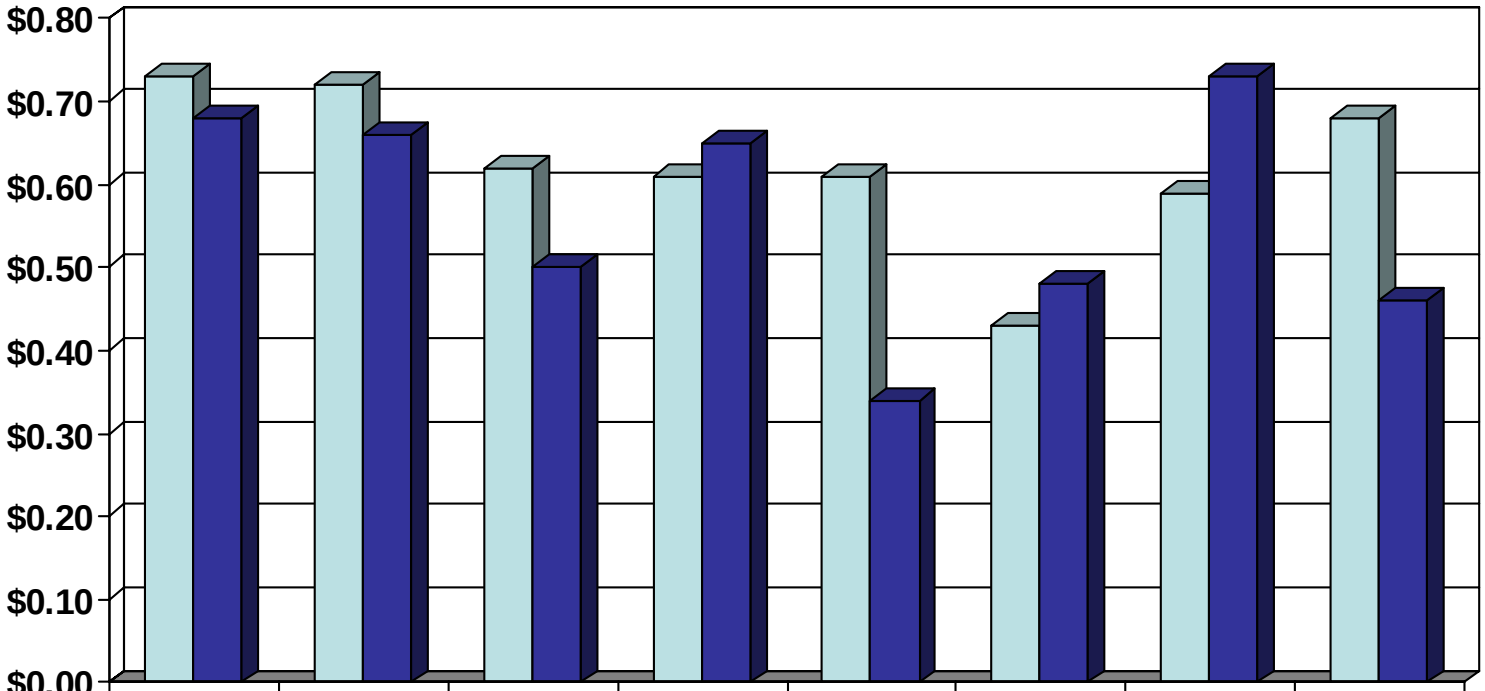
CRC Corn Base and Harvest Prices for the Southeast



	1997	1998	1999	2000	2001	2002	2003	2004
Base	2.72	2.83	2.41	2.22	2.44	2.29	2.42	2.53
Harvest	2.86	2.06	2.14	1.78	2.17	2.59	2.20	2.25

Prices decreased 6 of 8 years!

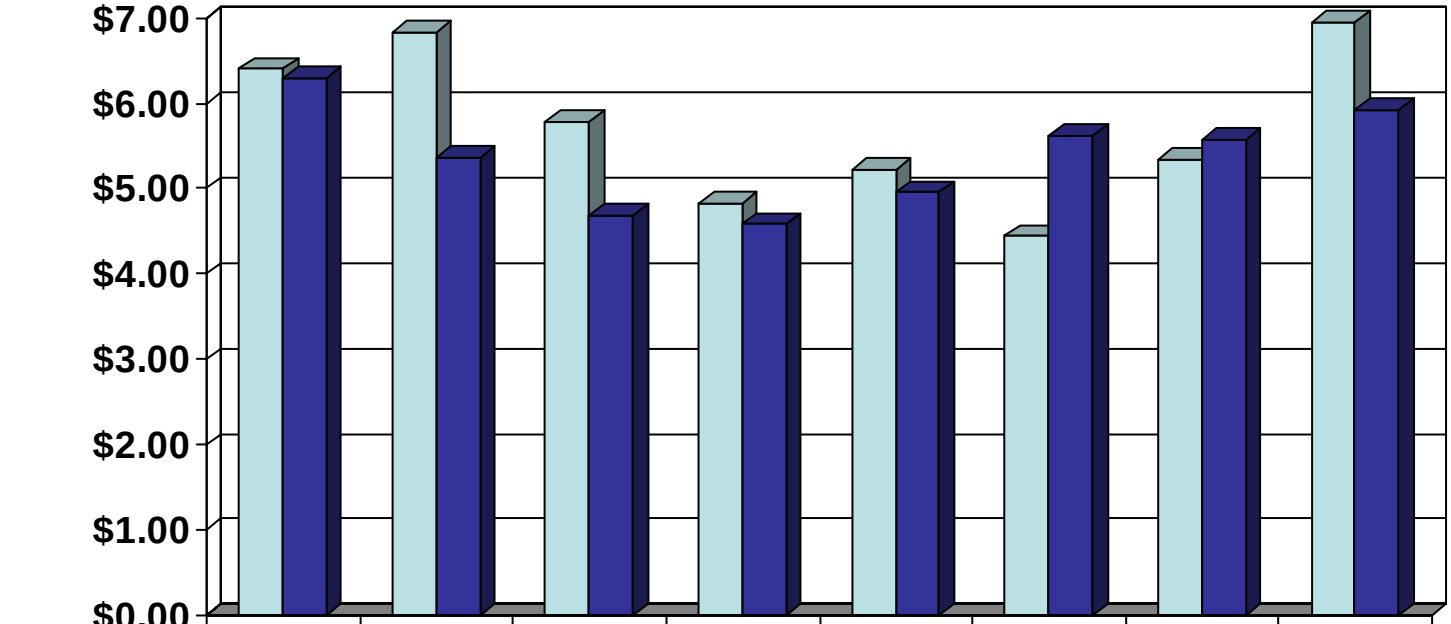
CRC Cotton Base and Harvest Prices for the Southeast



	1997	1998	1999	2000	2001	2002	2003	2004
Base	0.73	0.72	0.62	0.61	0.61	0.43	0.59	0.68
Harvest	0.68	0.66	0.50	0.65	0.34	0.48	0.73	0.46

Prices decreased 5 of 8 years!

CRC Soybean Base and Harvest Prices for the Southeast



	1997	1998	1999	2000	2001	2002	2003	2004
Base	$6.40	$6.83	$5.78	$4.83	$5.23	$4.44	$5.34	$6.95
Harvest	$6.29	$5.36	$4.69	$4.58	$4.96	$5.62	$5.57	$5.93

Prices decreased 6 of 8 years!

CRC Example – Corn (NI) Triggered by Yield

- 81 bu/a APH; 65% Coverage;
- Base Price = $2.22; Harvest = $2.35
- Min. Guarantee = 81 x 65% x $2.22 = $116.88
- Harvest Guarantee = 81 x 65% x $2.35 = $123.73
- Final Guarantee = $123.73
- Harvest = 47 bu/a
- Calc. Rev = 47 x $2.35 = $110.45
- Indemnity = $123.73 - $110.45 = $13.28/a
- Premium paid = $7.19/a
- Net Indemnity = $6.09/a

CRC Example – Corn (NI) Triggered by Yield and Price

- 81 bu/a APH; 65% Coverage;
- Base Price = $2.22; Harvest = $1.78 (2000)
- Final Guarantee = 81 x 65% x $2.22 = $116.88
- Harvest = 47 bu/a
- Calc. Rev = 47 x $1.78 = $83.66
- Indemnity = $116.88 - $83.66 = $33.22/a
- Premium paid = $7.19/a
- Net Indemnity = $26.03/a

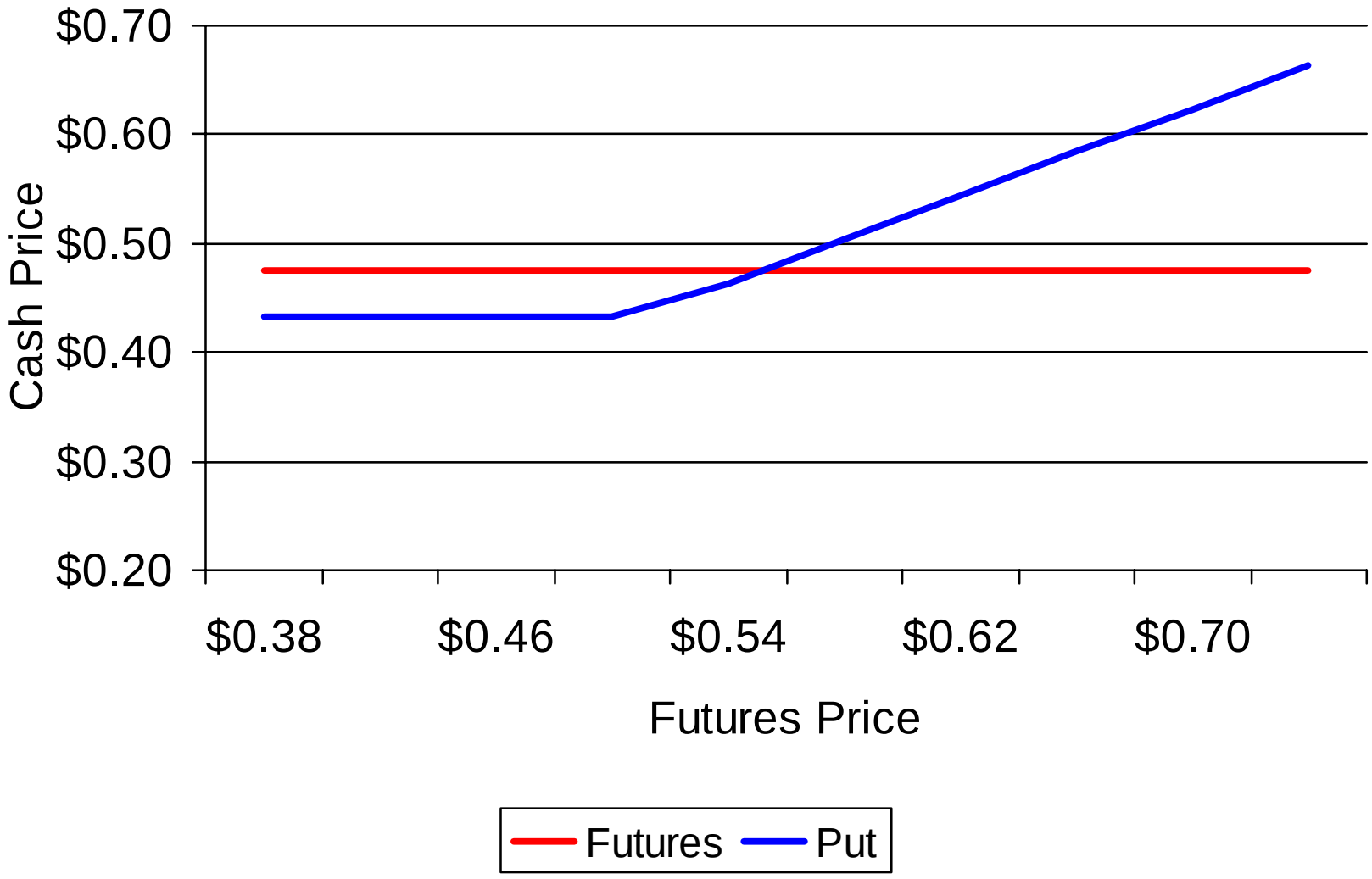
CRC Example – Cotton (NI) Triggered by Low Prices

- 620 lbs/a APH; 65% Coverage;
- Base Price = $0.61; Harvest = $0.34 (2001)
- Final Guarantee = 620 x 65% x $0.61 = $245.83
- Harvest = 585 lbs/a
- Calc. Rev = 585 x $0.34 = $198.90
- Indemnity = $245.83 - $198.90 = $46.93
- Premium paid = $14.47/a
- Net Indemnity = $32.46/a

Review of Using Futures and Options to Manage Price Risk

- Dec Cotton = $0.5110
- Dec Cotton Put, $0.51 Strike = $0.0413
- Basis =-$0.035

Price Protection with Futures & Options



Example of Combining APH/CRC with Futures/Options

- What if:
  - Sell futures contract (Dec. Corn, Dec Cotton, Nov. Soybeans) last Week in February
- OR
  - Buy near-money Put last Week in February
- Plus
  - Purchase APH or CRC Insurance (65% Level) in the last Week of February

Example of Combining APH/CRC with Futures/Options (Continued)

- In October
  - Buy back Futures Contract 1st Week in October
  - Sell Put (if valuable) in 1st Week in October
- Calculate the net revenue from insurance indemnities plus futures or options less insurance and hedging costs

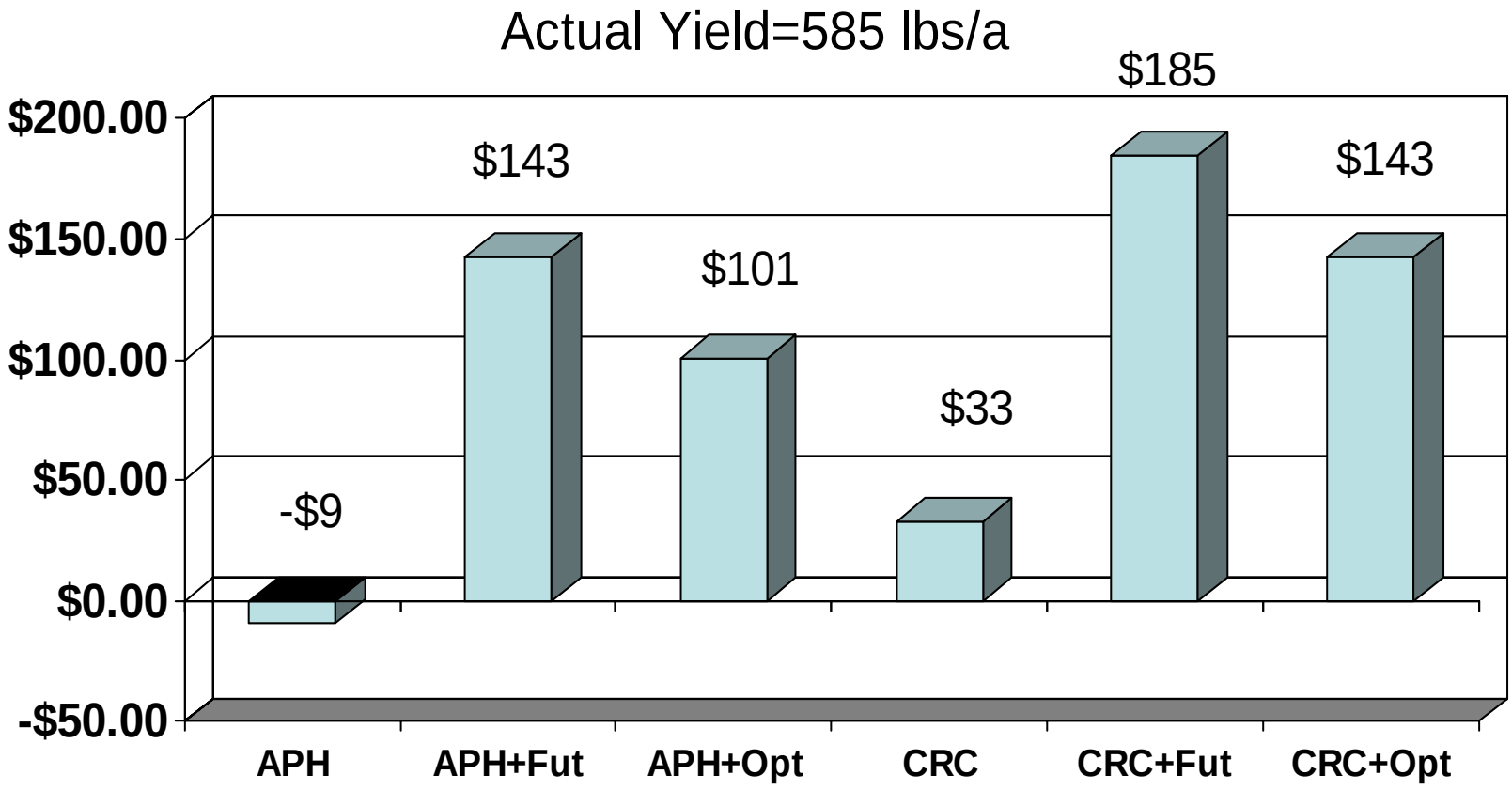
How am I doing this?

- Using Futures and Options prices from 1997-2003
- Farm-level yields from a South Carolina Farm
- Identified some years when combinations of futures/options and insurance would have provided additional revenue protection

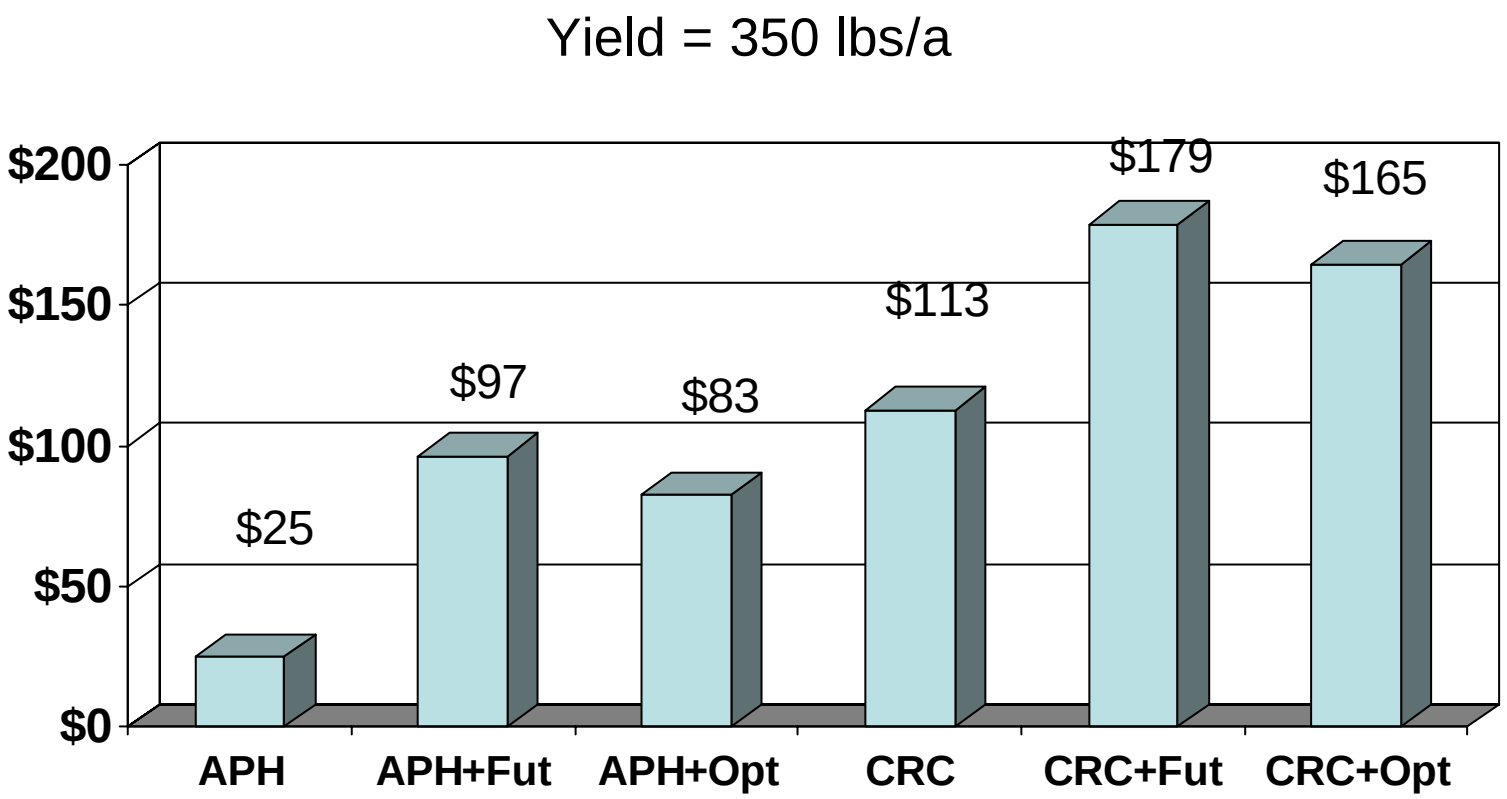
Example: Cotton (NI) in 2001

- APH Yield = 621 lbs/a;
- CRC Base Price = $0.61; Harvest = $0.34
- Sold Dec Futures @ $0.58; Buy @ $0.35
- Buy Put @ $0.02; Sold @ $0.21

Combining Futures, Options, and Insurance – No Yield Loss (2001 Cotton)



Combining Futures, Options, & Insurance – Yield Loss (2001 Cotton)



Why Crop Insurance?

- Meant to provide some revenue when experience loss
  - Crop Insurance is not designed to enhance income
- Revenue protection should be the focus
- However, combining insurance with futures and options may provide additional revenue and additional revenue protection

Additional Benefits

- Premiums subsidized
- Premiums tax deductible
- Premiums not due until harvest
- Decision to purchase or continue to use APH and CRC is February 28, 2005

Thank You for Your Attention!

I would be happy to answer any questions that you may have.

If you have any questions, please email:
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