Crop Insurance and the 2014 Farm Bill: Tools to Manage Farm Risk

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Meeting of the Research Centers Administrators Society

Atlanta, Georgia

February 2, 2015

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Outline

- Stylized facts of crop insurance
- Overview of insurance terminology
- Description of crop insurance products
  - Farm vs. Area Coverage
  - Revenue vs. Yield Protection
- Example of risk protection with Revenue Protection (RP) and Yield Protection (YP) insurance

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Key Assumption

- Assuming that the insured production is grown by the university using best management practices in a commercial-type setting
- If your research farm is studying the 50 most exotic ways to kill a corn plant, farm-level insurance wouldn't be applicable

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Information Sources

- Presentation draws upon Extension Bulletins developed/posted at Iowa State University (http://www.extension.iastate.edu/agdm/)
  - Dates will vary by crop and location. Contact your respective Extension Specialist)

Publication #	Title
A1-48	Current Crop Insurance Policies
A1-50	Important Crop Insurance Dates
A1-54	Revnue Protection Insurance
A1-55	Proven Yields and Insurance Units

Crop Insurance Stylized Facts

- Crop insurance is the foundation of farmers' safety-net
  - Program's liability increased from $13.6 billion in 1994 to $123.5 billion in 2013
  - Insured acres increased from 99.6 million to 295.7 million from 1994 to 2013
  - Also have livestock policies that provide Gross Margin (Value of Livestock – Feed Costs) for dairy, beef, swine
- Crop insurance spending projected at 9.4% of total 2014 Farm Bill as compared to 4.6% for commodity programs

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Alphabet Soup and USDA Programs

- Like learning a foreign language especially with the use of acronyms

- Refer to Extension fact sheets to reinforce the insurance concepts for your state

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Alphabet Soup and USDA Programs

- Crop Insurance is administered by the Risk Management Agency (RMA) in a public sector / private sector partnership
  - Sold by insurance agents
- Farm Programs are administered by the Farm Service Agency (FSA)

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Types of Insurance Policies

- Farm-level products (COMBO)
  - Yield Protection (YP)
  - Revenue Protection (RP)
- Area risk protection insurance (ARPI)
  - County-level protection
  - Revenue or yield based policies analogous to the farm-level products
- Presentation will focus on farm-level products

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Area Risk Products – Pros and Cons

- Pros:
  - If lack farm yield data, Area Risk protection may be better as the protection is based on county NASS yields which may be much higher than the substitute yields used by RMA
  - Low cost – less likely to trigger loss unless large-spread yield loss in county
- Cons:
  - Not very effective in managing risk if farm yields are not significantly, positively correlated with county yields

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Yield Risks Protected by Insurance

- Adverse weather (droughts, floods, frost, excessive moisture)
- Failure of irrigation due to lack of water supply
- Fire (caused by a natural disaster)
- Plant disease/insects (assuming proper management)
- Wildlife damage
  - All assume proper management practices. Can't collect through negligence. (RMA does audits and will attempt to collect on fraudulent activities)

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Actual Production History (APH)

- COMBO Insurance (YP and RP) protection based on farm's yield history (APH)
- Need a minimum of 4 consecutive years and a maximum of 10 consecutive years of yield data.
  - APH is a simple average
- Lack of data is a problem for many farmers
  - Should not be an issue for farms tasked with conducting research
  - Prove yields through sales receipts, farm storage records, commercial storage

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Actual Production History (APH)

- If lack four consecutive years, a substitute is used called a Transitional Yield (T-Yield)
  - Based on the county's 10-year average yield (but is a "black-box" formula as this number is from RMA and not NASS)
- If you lack farm-level data, use 65% of the county's T-Yield for the APH yield
  - 80% with 1-year of farm data
  - 90% with 2-years
  - 100% with 3-years of farm data
- APH can't vary +/- 10% year-to-year

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APH Example

	County T-Yield for Corn is: 120 bushels/acre				
	4 Years of Records	**3 Years of Records**	**2 Years of Records**	**1 Year of Records**	**No Records**
Year 1	145	100% x 120 = 120	90% x 120 = 108	80% x 120 = 96	65% x 120 = 78
Year 2	98	98	90% x 120 = 108	80% x 120 = 96	65% x 120 = 78
Year 3	117	117	117	80% x 120 = 96	65% x 120 = 78
Year 4	138	138	138	138	65% x 120 = 78
APH Yield	124.5	118.25	117.75	106.50	78.00

Using T-Yields is like having a teenage driver

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Insurable Units

- Each parcel of land that is insured independently of another parcel is called a **unit**
  - Farmers have the ability to insure production in varying units.
- Have the ability to separate insurance units to provide different protection for higher risk/lower risk farms. Pay different premiums based on risk.
- Enterprise Units: all of the crop produced in the county in one insured unit
  - Lower cost due to diversification of risk
  - Very popular

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Insurance Coverage Levels

- Purchase coverage at 55% - 75% of APH Yield (up to 85% for some crops/counties) in 5% intervals

- Example: A corn farm with an APH Yield of 150 bushels/acre at 80% coverage insures: 150 x 80% = 120 bushels

- Premium subsidy depends upon unit structure and coverage level

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Crop Insurance Subsidies

- Varies by coverage level and unit structure
- Paid directly to insurance company

Coverage Level	Basic Units Optional Units	Enterprise Units
50%	67%	80%
55%	64%	80%
60%	64%	80%
65%	59%	80%
70%	59%	80%
75%	55%	77%
80%	48%	68%
85%	38%	53%

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Yield Protection (YP) Insurance

- Only protects against farm-level yield loss
- Loss valued at prices determine by the futures market
  - Corn (Kentucky) uses December futures contract closing prices for month of February
  - Soybeans (Kentucky) uses November futures contract closing prices for month of February
- YP and RP use futures contracts to determine price
  - discovery period and contract varies by crop/state

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Yield Protection (YP) Insurance

- Production Guarantee = APH Yield x Coverage Level
  - 50 APH soybean yield x 75% Coverage = 37.5 bushels guaranteed
  - Indemnity triggered when farm yield is less than 37.5
  - Production loss valued at a price determined by the futures market (projected price)
    - If the Projected Price was $9.00, then any production loss would be paid at $9 per bushel
    - Projected price changes from year-to-year

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YP Insurance Example

	Corn	Comment
APH Yield	150	Farm's APH Yield
Coverage Level	80%	Chosen by farmer
Production Guarantee	120	APH x Coverage Level
Farm Yield	80	Actual farm yield
Production Loss	40	120 - 80 = 40
Projected Price	$4.00	Determined by Futures Market prior to planting
Gross Indemnity per Acre	160	$4 x 40 = $160
Producer paid Premium	$8.50	Less subsidy. Varies by crop,
Net Indemnity per Acre	$151.50	policy, state and coverage level.

Revenue Protection (RP) Insurance

- Protects against farm-level yield loss or lower market prices
- Price protection determine by the futures market. Protection uses higher of Projected / Harvest Price
  - Projected Price (prior to planting)
    - Corn (Kentucky) uses December futures contract closing prices for month of February
    - Soybeans (Kentucky) uses November futures contract closing prices for month of February
  - Harvest price (prior to harvest)
    - Dec Corn/Nov. Soybeans closing prices in October
- Price discovery period and futures contract used varies by crop/state

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RP Insurance Example – Triggered by Lower Yields

	Corn	Comment
APH Yield	150	Farm's APH Yield
Coverage Level	80%	Chosen by farmer
Production Guarantee	120	APH x Coverage Level
Projected Price	$5.68	Determined prior to planting
Harvest Price	$7.50	Determined prior to harvest
Price used in Revenue Guarantee	$7.50	Larger of Projected/Harvest price
Revenue Guarantee	$900.00	120 x $7.50
Farm Yield	65	Actual farm yield
Actual Farm Revenue	$487.50	65 x $7.50
Gross Indemnity per Acre	$412.50	$900 - $487.50 = $412.50
Producer paid Premium	$28.25	Less subsidy. Varies by crop, policy, state
Net Indemnity per Acre	$384.25	and coverage level.

Note: Prices from 2012 (Massive Drought)

RP Insurance Example – Triggered by Lower Prices

	Soybeans	Comment
APH Yield	50	Farm's APH Yield
Coverage Level	85%	Chosen by farmer
Production Guarantee	42.5	APH x Coverage Level
Projected Price	$13.36	Determined prior to planting
Harvest Price	$10.36	Determined prior to harvest
Price used in Revenue Guarantee	$13.36	Larger of Projected/Harvest price
Revenue Guarantee	$567.80	42.5 x $13.36
Farm Yield	45	Actual farm yield
Actual Farm Revenue	$466.20	45 x $10.36
Gross Indemnity per Acre	$101.60	$567.80 - $466.20 = $101.60
Producer paid Premium	$22.25	Less subsidy. Varies by crop,
Net Indemnity per Acre	$79.35	policy, state and coverage level.

Note: Prices from 2008 (part of economic melt-down)

RP Insurance Example – Triggered by Lower Yields and Prices

	Corn	Comment
APH Yield	150	Farm's APH Yield
Coverage Level	85%	Chosen by farmer
Production Guarantee	127.5	APH x Coverage Level
Projected Price	$4.62	Determined prior to planting
Harvest Price	$3.49	Determined prior to harvest
Price used in Revenue Guar	$4.62	Larger of Projected/Harvest price
Revenue Guarantee	$589.05	127.5 x $4.62
Farm Yield	115	Actual farm yield
Actual Farm Revenue	$401.35	115 x $3.49
Gross Indemnity per Acre	$187.70	$589.05 - $401.35 = $187.70
Producer paid Premium	$28.25	Less subsidy. Varies by crop,
Net Indemnity per Acre	$159.45	policy, state and coverage level.
Note: Prices from 2014 (Record US corn crop)		

Using RP Insurance to Protect Forward Contracted Sales Prior to Harvest

- Many farmers are reluctant to sell production prior to harvest even at profitable prices
- RP Insurance could be used to forward contract and limit risk from lower production / higher harvest time prices
- 2012 Example: 150 bushel APH @ 80% Coverage Level protect 120 bushels
  - RP allows for conservative forward contracting. If have massive production loss, RP Indemnity could be used to buy bushels to fulfill contract.

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Important Crop Insurance Dates

- Varies by state (sometimes county) and crop
  - Sales closing date – have purchase deadline (March 15 Midwest corn/soybeans. Feb 28 most of South)
  - Earliest Planting date and Latest Planting date
    - minimize farmers ability to manipulate yields to trigger indemnities
  - Coverage declines if crop planted after latest date
- Talk with an insurance agent to understand deadlines and how products would work with your state

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Crop Insurance Parting Thoughts

- Consult your state's Farm Management Specialist for state/crop specific advice
  - Those with detailed data could get prescriptive guidance from their Ag Econ department. Good M.S. thesis
- Work with a crop insurance agent to understand cost / risk protection provided by varying policies, coverage levels, units
- Don't buy insurance expecting indemnities each year. Objective should be risk management.

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Thank you! Any questions?

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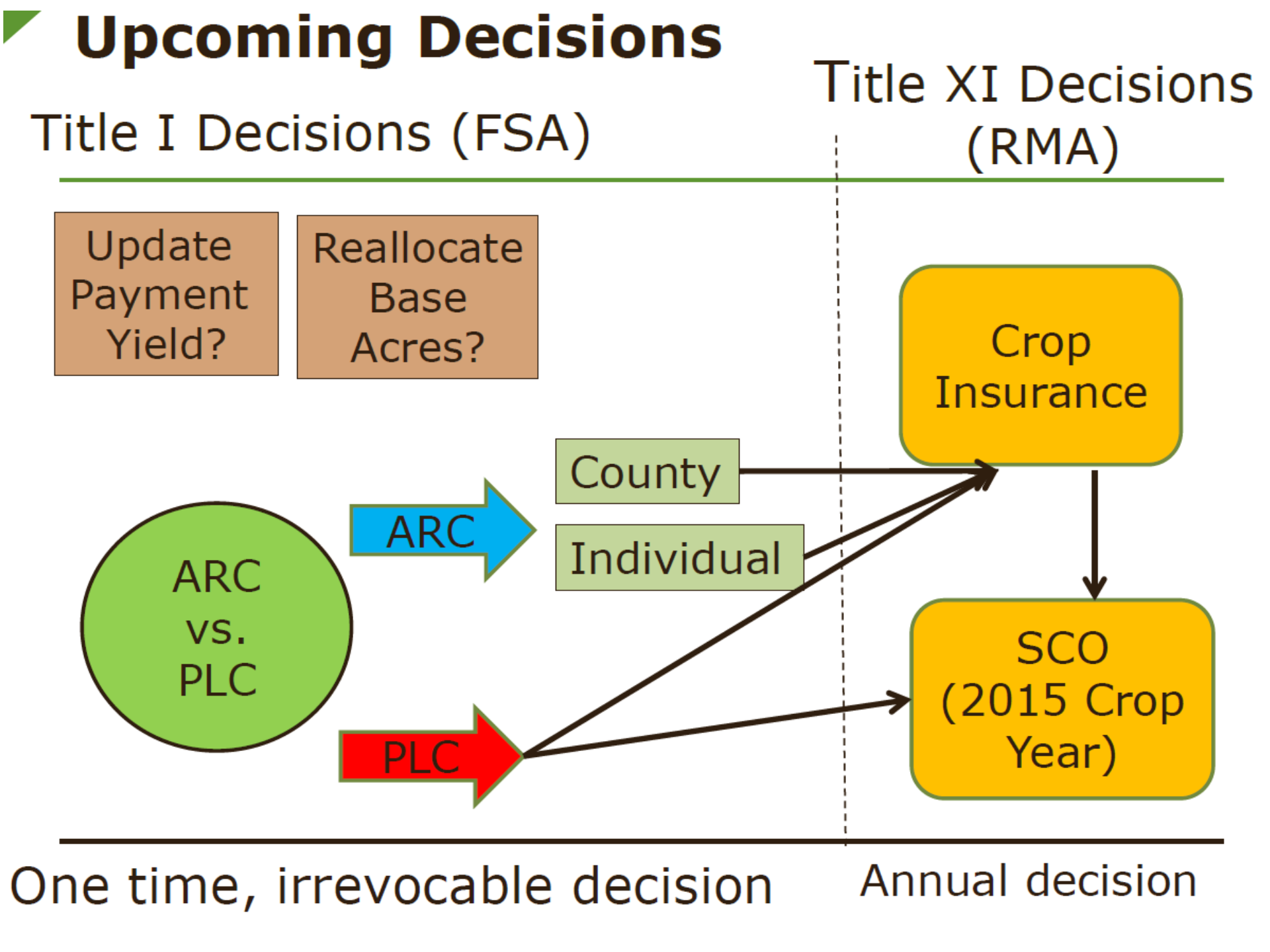
Upcoming Decisions



ARC vs. PLC Decision

- Producers on each farm can choose
  - Only available to farms with BASE acres
    - Established in the 1980's
    - If you don't have base acres, you can not create base in the 2014 farm bill.
  - PLC is a price protection program based on US Marketing-Year Average prices and historical farm yields
  - ARC-CO is a revenue protection program based on historical county yields and U.S. Marketing-Year Average Prices
  - Both programs pay on 85% of base acres

Fayette County, Kentucky ARC vs. PLC

These Slides are for Educational Purposes Only

- Purpose is to illustrate how prices and yields affect ARC-CO and PLC payments

- Compare how programs pay under Most Likely scenarios and Extreme Loss scenarios

- Strongly encouraged to use a decision tool to analyze your farm before making a decision.

Source: USDA-NASS, 2014 Agriculture Act

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2014 ARC-CO: Fayette County	Corn	Soybeans	Wheat
2014 Oly. Avg. County Yield	148	46	48
2014 Oly. Avg. US MYA Price	$5.29	$12.27	$6.60
2014 Benchmark Revenue	$782	$568	$317
2014 Revenue Guarantee (86%)	$673	$489	$273
2014 76% Revenue Guarantee	$595	$432	$241
2014 County Yield	170	50	50
2014 US MYA Price	$3.63	$10.02	$6.13
2014 Actual Revenue	$617	$501	$307
2014 ARC-CO Payments (85% Base)	$47	$0	$0

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Average ARC-CO & PLC Corn Payments for Varying MYA Prices and County Yields for Fayette County ($/Base Acre)

2014 US MYA Price	2014 County Yield			PLC ** Payment
	170			
$3.63	$47			$6
2015-18 US MYA Price	2015-18 Average County Yield			PLC ** Payment
	160	150	140	
$4.00	$14	$28	$33	$0
$3.50	$33	$33	$35	$18
$3.00	$54	$55	$56	$62
$2.50	$59	$58	$56	$107

** Assumes PLC Yield of 105 bushels

Average ARC-CO & PLC Soybean Payments for Varying MYA Prices and County Yields for Fayette County ($/Base Acre)

2014 US MYA Price	2014 County Yield			PLC ** Payment
	50			
$10.02	$0			$0
2015-18 US MYA Price	**2015-18 Average County Yield**			**PLC ** Payment**
	50	**45**	**40**	
$9.00	$16	$28	$33	$0
$8.00	$35	$34	$36	$13
$7.00	$42	$43	$41	$44
$6.00	$45	$43	$41	$75

** Assumes PLC Yield of 37 bushels

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Average ARC-CO & PLC Wheat Payments for Varying MYA Prices and County Yields for Fayette County ($/Base Acre)

2014 US MYA Price	2014 County Yield			PLC **
	50			Payment
$6.13	$0			$0
2015-18 US MYA Price	**2015-18 Average County Yield**			**PLC ** Payment**
	55	50	45	
$5.50	$0	$4	$14	$0
$5.00	$6	$17	$20	$19
$4.50	$25	$25	$26	$38
$4.00	$28	$27	$26	$57

** Assumes PLC Yield of 45 bushels

Program Payment Summary for County

Fayette County	
558	Corn Base Acres
706	Soybean Base Acres
0	Wheat Base Acres
1,264	Total Base

	ARC-CO	PLC	SCO	ARC-IC
Corn	$38	$20	$5	
Soybeans	$28	$6	$6	
Wheat				
ARC-IC				$23

Univ. of Illinois Decision Tool – fsa.usapas.com
Sample farm for Fayette County, KY

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