Crop Insurance and Risk Management in the Current Price Environment

Bruce Sherrick, Scott Irwin, and Gary Schnitkey
Department of Agricultural and Consumer Economics
University of Illinois at Urbana-Champaign

Executive Summary

After attending this session, farmers will be able to more appropriately select the crop insurance products and coverage levels for their farm.

- The session will begin with a description of crop insurance products. The following products will be described Actual Production History (APH), Revenue Assurance (RA), Crop Revenue Coverage (CRC), Group Risk Plan (GRP), and Group Risk Income Plan (GRIP) insurance. Descriptions will include example calculations of indemnity's payments from each product.

- Use of crop insurance products over time will be compared. In Illinois, use of Group Risk Income Plan insurance products has increased dramatically in the past several years.

- This session will compare the strengths and weaknesses of alternative crop insurance products. In particular, group insurance plans will be compared to individual farm plans.

- Tools available on *farmdoc* for making crop insurance decisions will be described. These tools include *Premium Calculator, Historical Payout Estimator, What-if Tool,* and an *Insurance Evaluator.*

- Guidelines for crop insurance choice will be given. Revenue products without guarantee increases (IP, RA-BP) should be used by farmers that do not aggressively hedge crops prior to harvest. Revenue products with guarantee increases (CRC, RA-HP) should be used by farmers who hedge aggressively prior to harvest. County level products (GRP, GRIP) are excellent choices for farmstead in strong financial position and whose yields tracked the county yield.

farm.doc
decision • outreach • central

Crop Insurance and Risk Management in the Current Price Environment

Bruce Sherrick,
Scott Irwin, and
Gary Schnitkey



http://www.farmdoc.uiuc.edu/

Overview of Workshop

- Current trends in crop insurance usage in Illinois
  - *market shares through time, by product*
  - *expected impacts of current price environment*
- Understanding alternatives and options
  - *available products*
  - *payout calculations*
- Tools for evaluating crop insurance for your farm
  - **Premium Calculator** on *farmdoc website*
  - **Marketing and Crop Insurance Model** (*FAST* tool)
  - **Insurance Evaluator** on *farmdoc website*
  - **What if** (Scenario analysis) on *farmdoc* website

Acres Insured, Illinois, Corn

	APH	CRC, IP and RA	GRP	GRIP	Total
1995	8,726,950				8,726,950
1996	7,370,151				7,370,151
1997	5,589,413	748,708	16,458		6,354,579
1998	5,169,749	1,123,761	24,859		6,318,369
1999	3,452,345	3,402,876	75,530	3,113	6,933,864
2000	2,664,724	4,669,285	187,534	4,053	7,525,596
2001	2,221,650	4,934,268	141,079	46,460	7,343,457
2002	1,989,412	5,205,338	203,908	140,218	7,538,876
2003	1,774,562	5,618,709	277,063	151,717	7,822,051
2004	1,738,369	5,657,972	289,561	433,577	8,119,479
2005	1,641,601	5,734,852	308,223	930,760	8,615,436
2006	939,612	4,646,035	93,347	3,264,478	8,943,472

Acres Insured, Illinois, Soybeans

	APH	CRC IP andRA	GRP	GRIP	Total
1995	8,080,484				8,080,484
1996	6,464,765				6,464,765
1997	5,077,072	507,785	4,569		5,589,426
1998	5,121,161	711,759	12,939		5,845,859
1999	3,971,186	2,332,958	13,478	1,463	6,319,085
2000	3,485,274	3,149,381	77,899	2,383	6,714,937
2001	3,348,905	3,253,661	77,304	27,149	6,707,019
2002	3,306,036	3,116,289	134,740	54,923	6,611,988
2003	2,861,448	3,377,863	208,924	74,341	6,522,576
2004	2,024,255	3,781,486	235,197	407,243	6,448,181
2005	1,439,777	4,174,738	315,099	866,285	6,795,899
2006	1,274,730	4,277,688	339,001	1,614,980	7,506,399

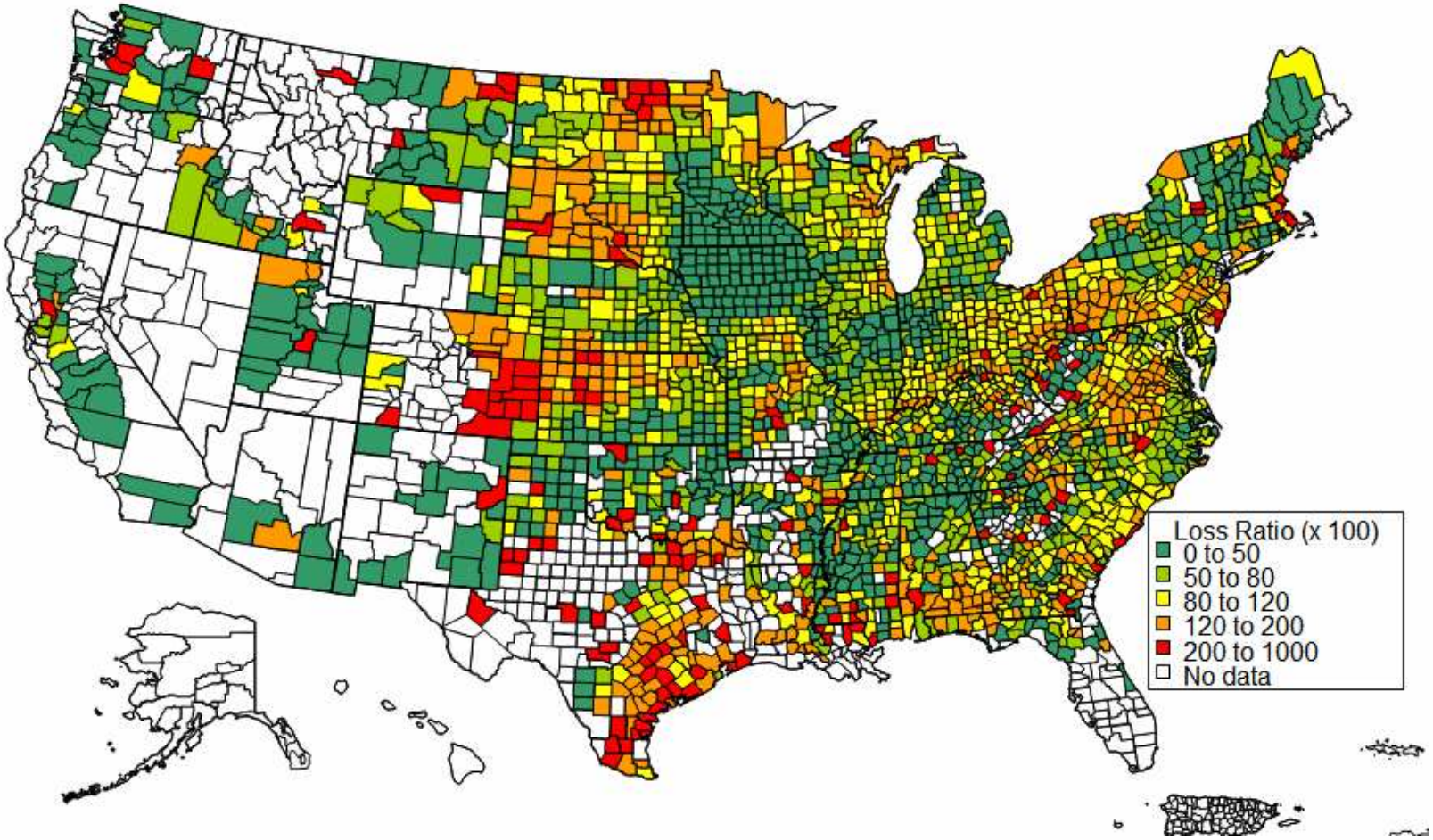
Premiums, Payments, Loss Ratios by Crop, 1995 to 2005 by Crop

Crop	Total Premium	Payments Minus Farmer-Paid Premium	Loss Ratio
Corn	$8,663,068,283	$1,868,752,682	0.68
Soybeans	5,346,885,430	1,574,312,770	0.74
Fruits and vegetables	2,363,727,988	1,260,696,951	0.85
Potatoes	579,603,620	298,487,944	0.90
Nursery	397,721,162	296,313,435	0.90
Other	623,116,677	422,581,615	1.02
Sugar Beets	327,746,499	183,133,449	1.02
Wheat	4,332,281,302	2,862,620,024	1.10
Cotton	3,615,786,256	2,606,177,757	1.11
Other grains	1,169,217,061	847,677,316	1.14
AGR	51,628,184	42,224,905	1.25
Peanuts	440,911,913	373,437,276	1.32
Grain sorghum	709,136,368	678,471,495	1.38
Tobacco	397,367,562	660,806,811	2.14

Premiums, Payments, Loss Ratios for **Corn**, 1995 to 2005 by State

State	Total Premium	Payments Minus Farmer-Paid Premium	Loss Ratio
Iowa	$1,448,224,763	-$237,339,250	0.35
Illinois	1,112,582,499	39,438,013	0.54
Nebraska	1,041,003,003	251,353,058	0.72
Minnesota	956,678,670	-156,600,667	0.30
South Dakota	647,838,398	310,133,430	0.93
Indiana	571,216,269	98,977,828	0.69
Kansas	376,994,307	234,847,588	1.08
Missouri	355,437,717	123,974,556	0.75
Wisconsin	322,198,732	115,862,611	0.78
Ohio	280,030,309	160,756,829	1.05
Texas	258,957,963	224,916,098	1.27
North Dakota	205,455,384	140,497,352	1.09
Other States	1,086,450,269	561,935,236	0.77

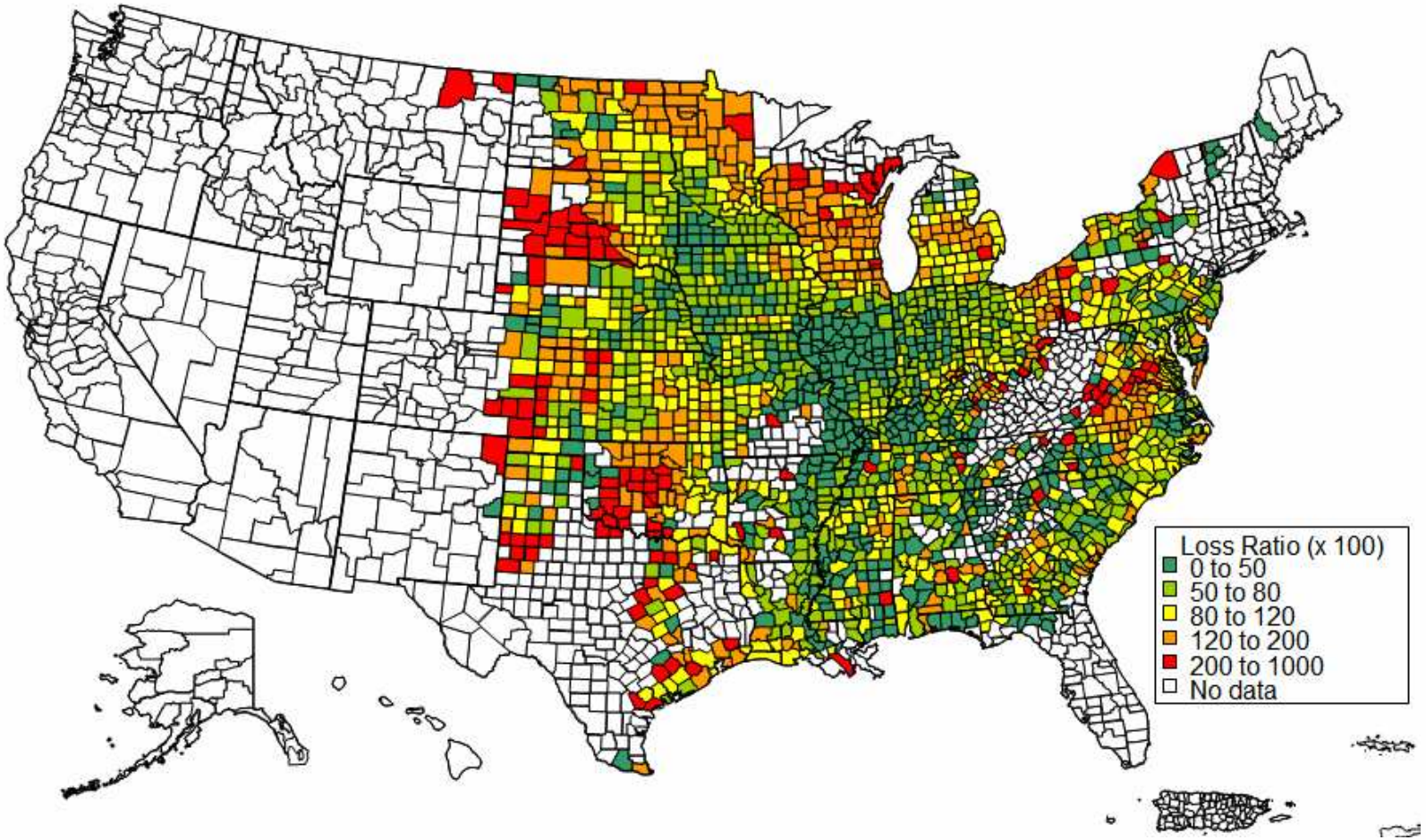
Loss Ratios, Corn, 1995 to 2005



Premiums, Payments, Loss Ratios for Soybeans, 1995 to 2005 by State

State	Total Premium	Payments Minus Farmer-Paid Premium	Loss Ratio
Iowa	$734,129,900	$90,818,490	0.63
Minnesota	692,727,222	173,977,222	0.75
Illinois	544,945,252	13,107,933	0.48
South Dakota	425,908,028	173,291,222	0.59
Nebraska	398,055,628	64,627,926	0.65
Missouri	360,987,432	88,904,932	0.62
Indiana	342,122,391	28,819,289	0.58
North Dakota	252,966,927	152,304,945	1.04
Ohio	251,105,969	80,294,133	0.79
Kansas	238,957,882	137,042,756	1.02
Arkansas	197,656,695	66,884,917	0.57
Other States	907,322,104	504,239,005	1.05

Loss Ratios, Soybeans, 1995 to 2005



Understanding Alternatives/Options:

Multi-Peril Insurance:

1. Farm-based products
   - *Actual Production History (**APH**)*
   - *Income Protection (**IP**)*
   - *Revenue Assurance (**RA**)*
   - *Crop Revenue Coverage (**CRC**)*
2. County-level or Group products
   - *Group Risk Plan (**GRP**)*
   - *Group Risk Income Plan (**GRIP**)*
   - *Group Risk Income Plan, Harvest Price option (**GRIP-HP**)*

Farm Insurance Products

1. Yield insurance
   -- Actual Production History (APH)
2. Revenue without guarantee increase
   -- Income Protection (IP)
   -- Revenue Assurance -- Base Price (RA-BP)
3. Revenue with guarantee increase
   -- Crop Revenue Coverage (CRC)
   -- Revenue Assurance -- Harvest Price (RA-HP)

County-Level Products

1. Yield insurance
   -- Group Risk Plan (GRP)
2. Revenue without guarantee increase
   -- Group Risk Income Plan (GRIP)
3. Revenue with guarantee increase
   -- GRIP-HR

APH Yield Guarantee

APH yield	140 bu.
Yield election	75%
Price	$2.50
Yield guarantee (140 bu. X .75)	105 bu.

APH Indemnity Payment

Yield guarantee	105 bu.
Indemnity price	$2.50
Actual yield	100 bu.
Payment	$12.50 **

**$12.50 = (105 guarantee–100 bu yield)x2.50

IP (RA-BP) Revenue Guarantee

APH yield	140 bu.
Base price	$2.32
Coverage level	75 %

Revenue guarantee $243

(140 bu. x $2.32 x .75)

Prices for Revenue Insurance Products

"Base" Prices:

Corn -- CBOT Dec. contract avg. in February

Soybeans -- CBOT Nov. contract avg. in Feb.

"Harvest" Prices:

Corn -- CBOT Dec. avg in October (CRC, GRIP) and November (RA)

Soybeans -- CBOT Nov. contract avg. in October

IP (RA-BP) Gross Revenue

Harvest price	$2.05
Actual yield	100 bu.
Gross revenue	$205 **

** $205 = $2.05 x 100 bu.

IP (RA-BP) Indemnity Payment

Revenue guarantee	$243
Gross revenue	$205
Indemnity payment	$38 **

** (revenue guarantee – gross revenue)

Crop Revenue Coverage Revenue Assurance – Harvest Price

- Revenue insurance (pays when below a revenue guarantee)
- Increase in revenue guarantee
- Increase in guarantee good for "aggressive" users of forward contracts or futures contracts

CRC (RA-HP) Revenue Guarantee

APH yield	140 bu.
Base price	$2.32
Coverage level	75 percent

Revenue guarantee (harvest price < $2.32)

$243 = 140 bu. x $2.32 x .75

Revenue guarantee (harvest price > $2.32)

Harvest price = $2.80

$294 = 140 bu. x $2.80 x .75

CRC (RA-HP) Gross Revenue and Payment

Harvest price	$2.00
Actual yield	100 bu.
Gross revenue	$200
Revenue guarantee	$243
Payment (243 –200)	$43

CRC (RA-HP) Gross Revenue and Payment

Harvest price	$2.80
Actual yield	100 bu.
Gross revenue	$280
Revenue guarantee	$294
Payment (294 –280)	$14

Group Plans

- **Group Risk Plan (GRP) – yield insurance**
- **Group Risk Income Plan without revenue option (GRIP-NoHR) – revenue insurance**
- **Group Risk Income Plan with revenue option (GRIP-HR) – revenue insurance (*New)***

Pay based on county yields, not farm yields

See crop insurance section of *farmdoc* for county info (www.farmdoc.uiuc.edu)

Logan County Example

County	Logan
Crop	Corn
Expected yield	161.4
GRP max protection level	$533
GRIP max protection level	$709 *

* Estimated (1.5 x expected yield x expected price)

Group Choices

- **Coverage level (70 to 90 %)**
- **Protection level (60 to 100% of maximum)**

Suggest buying 90% coverage level, vary protection level depending on how much you want to pay in premium

Guarantees

GRP – Yield guarantee

Expected yield x coverage level

161.4 x .90 = 145 bu.

GRP Payment

- **Protection level x yield shortfall**

- **Example (127 bu actual yield, 145 bu. trigger yield)**

  Yield shortfall = .124

  = (145 bu – 127 bu) / 145

  Payment = protection l. x yield short.

  Payment = $533 x .124 = $66

GRIP Guarantees

GRIP-NoHR – guarantee

exp. yield x expected price x coverage level

161.4 x 2.93 x .90 = $426

GRIP-HR – guarantee

exp. yield x higher of expected price or harvest price x coverage level

GRIP-NoHR Payment

- Protection level x revenue shortfall
- Example ($1.99 price, 200 bu yield, $398 county revenue)
- Trigger revenue = 161.4 x 2.93 x .90 = $426

  Shortfall = .066 = ($426 - $398) / $426

  Payment = $46 = $709 x .066

GRIP-HR Payment

- **Protection level x revenue shortfall x factor**

  factor = higher of 1 or

  harvest price / expected price

GRIP-HR Payment

- **Protection level x revenue shortfall x factor**
- **Example ($3.25 price, 125 yield, $406 county revenue)**

  Trigger revenue = $472 = 161.4 x 3.25 x .9

  Shortfall = .140 = ($472 - $406) / $472

  Factor = ($3.25 / $2.93) = 1.11

  Payment = $110 = $709 x .139 x 1.11

GRIP-HR Payment

- **Protection level x revenue shortfall x factor**
- **Example ($2.25 price, 170 yield, $383 county revenue)**

  Trigger revenue = $426 = 161.4 x 2.93 x .90

  Shortfall = .101 = ($426 - $383) / $426

  Factor = 1 (har. price less than exp. Price)

  Payment = $72 = $709 x .101 x 1

Payment Examples (90% coverage level)

Drought year in Logan County (2.93 expected price, 161.4 expected yield, $709 protection level for GRIP)

Harvest price = $3.20

Logan county yield = 130

Payments:

GRP = $37

GRIP-NoHR = $0

GRIP-HR = $54

Location Specific Workshop packets distributed at each Meeting Location….

(a few examples from Sangamon County included in proceedings)

Premium Calculator

- **Available in crop insurance section of *farmdoc* (www.farmdoc.uiuc.edu)**

- **Calculates premiums for:**
  - **All available multi-peril products**
  - **All available coverage levels**
  - **Basic, optional, enterprise units**

Premium Calculator: *http://www.farmdoc.uiuc.edu/cropins/index.asp*

Online Tools

2006 *iFARM* Crop Insurance Premium Calculator: North Central Region Crops

iFARM Credits

Describe insurance policy:

Illinois

Sangamon

Corn

APH Yield

167

(Actual Production History Yield) in bu./acre

Submit

The above selections will give farmer-paid premiums for basic units. Premiums also are available for other units. These selections are made on the next web page.

Making the following selections and clicking on "SUBMIT" will provide estimated insurance premiums per acre. These are not quotes. A number of assumptions had to be made to estimate the following per acre premiums. These assumptions will not be applicable to all farms. Actual quotes must be obtained from qualified insurance agents.

Farmer-Paid Premiums Per Acre for Sangamon County, Illinois, 2006

(Crop = Corn, APH Yield = 167 bu., Unit = Basic, Protection Level = 100%, Practice = non-irrigated, APH Price = 2, RA Price = 2.59, and CRC Price = 2.59)

iFARM

Print Preview

Coverage Level	APH ($/acre)	RA-BP ($/acre)	RA-HP ($/acre)	CRC ($/acre)	GRP ($/acre)	GRIP ($/acre)	GRIP-HP ($/acre)
50%	0.66			1.58			
55%	0.95			2.22			
60%	1.30			3.00			
65%	1.96	2.27	3.76	4.51			
70%	2.66	4.05	6.23	6.13	1.18	1.48	2.51
75%	3.86	7.02	10.35	9.00	1.37	2.43	4.18
80%	5.79	11.93	17.08	13.74	2.40	6.04	8.31
85%	8.80	19.94	27.95	21.50	3.39	10.91	13.83
90%					6.12	18.03	22.67

To generate a new table, select the variables below and click here Recalculate

If you want to change the price, click here Change Click here to cancel Cancel

County	Crop	APH Yield	Unit	Protection Level	Practice
Select County	Select Crop	167	Basic	100	Select Practice

Disclaimer:
The above are estimated insurance premiums per acre. These are not quotes. A number of assumptions had to be made to estimate the per acre premiums. These assumptions will not be applicable to all farms. Actual quotes must be obtained from qualified insurance agents.

Farmer-Paid Premiums Per Acre for Sangamon County, Illinois, 2006

(Crop = Corn, APH Yield = 167 bu., Unit = Enterprise, Protection Level = 100%, Practice = non-irrigated, APH Price = 2, RA Price = 2.59, and CRC Price = 2.59)

iFARM

Print Preview

Coverage Level	APH ($/acre)	RA-BP ($/acre)	RA-HP ($/acre)	CRC ($/acre)	GRP ($/acre)	GRIP ($/acre)	GRIP-HP ($/acre)
50%				1.34			
55%				1.88			
60%				2.53			
65%		1.78	3.14	3.80			
70%		3.39	5.40	5.17			
75%		6.01	9.02	7.60			
80%		10.24	14.86	11.61			
85%		17.08	24.11	18.15			
90%							

To generate a new table, select the variables below and click here Recalculate

If you want to change the price, click here Change Click here to cancel Cancel

County	Crop	APH Yield	Unit	Protection Level	Practice
SANGAMON	Corn	167	Enterprise	100	Select Practice

Acre: 550.0 & Above ac Section: 5

Insurance Evaluator

- Available on *farmdoc* in the crop insurance section
- Shows an evaluation of farm level products for one example farm in the county
- Compares risks and returns of the products.

Individual Locations covered at each Meeting Location….

(Sangamon County examples included in proceedings)

Farm-level Analysis (simulation)

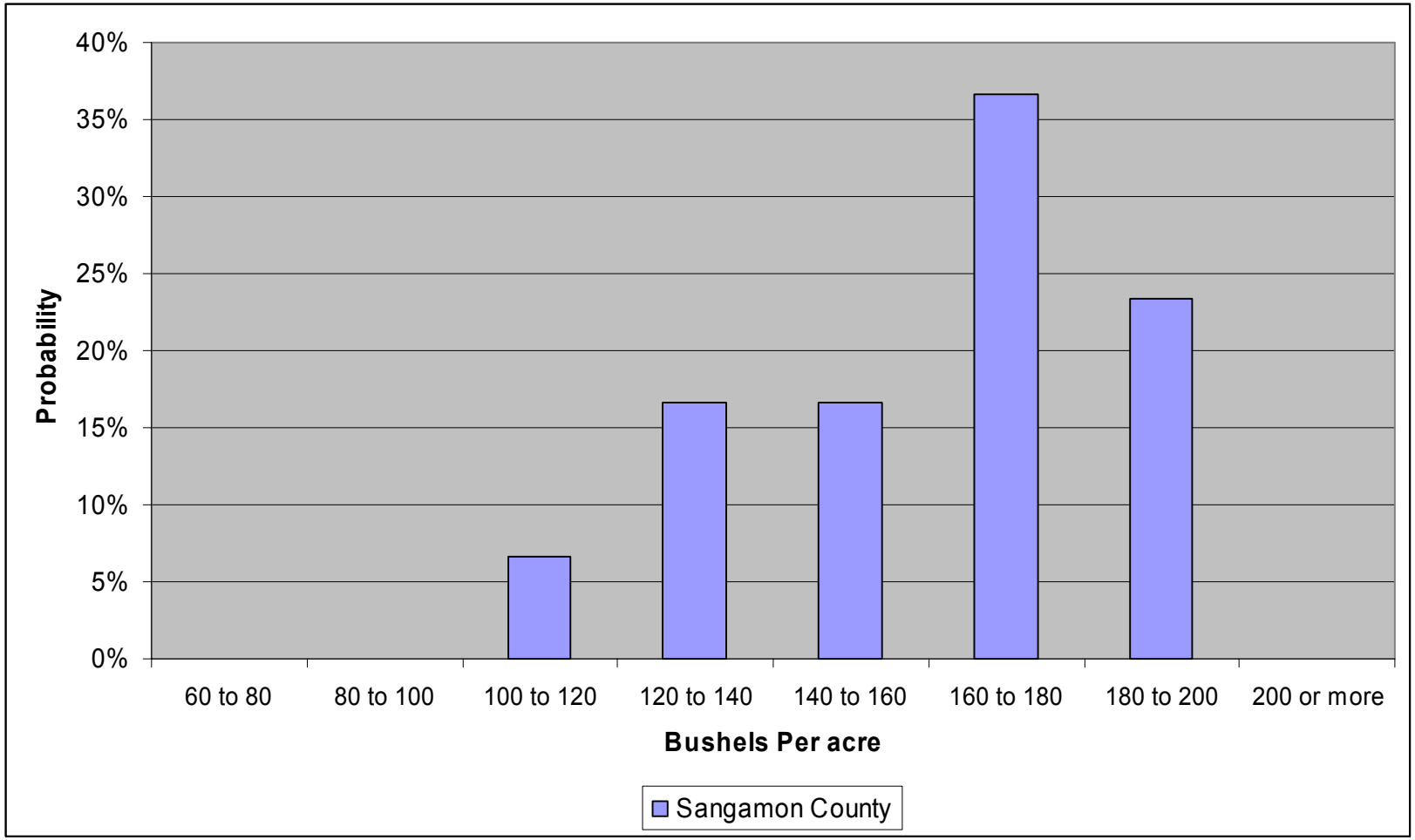
Needed items:

- Yield distribution for farm/county
- Price distribution for harvest
- Yield-Price Relationships
- Insurance elections, local conditions (e.g., basis)

"It's tough to make predictions, especially about the future."

-- Yogi Berra

Historic Yields – Sangamon County Illinois



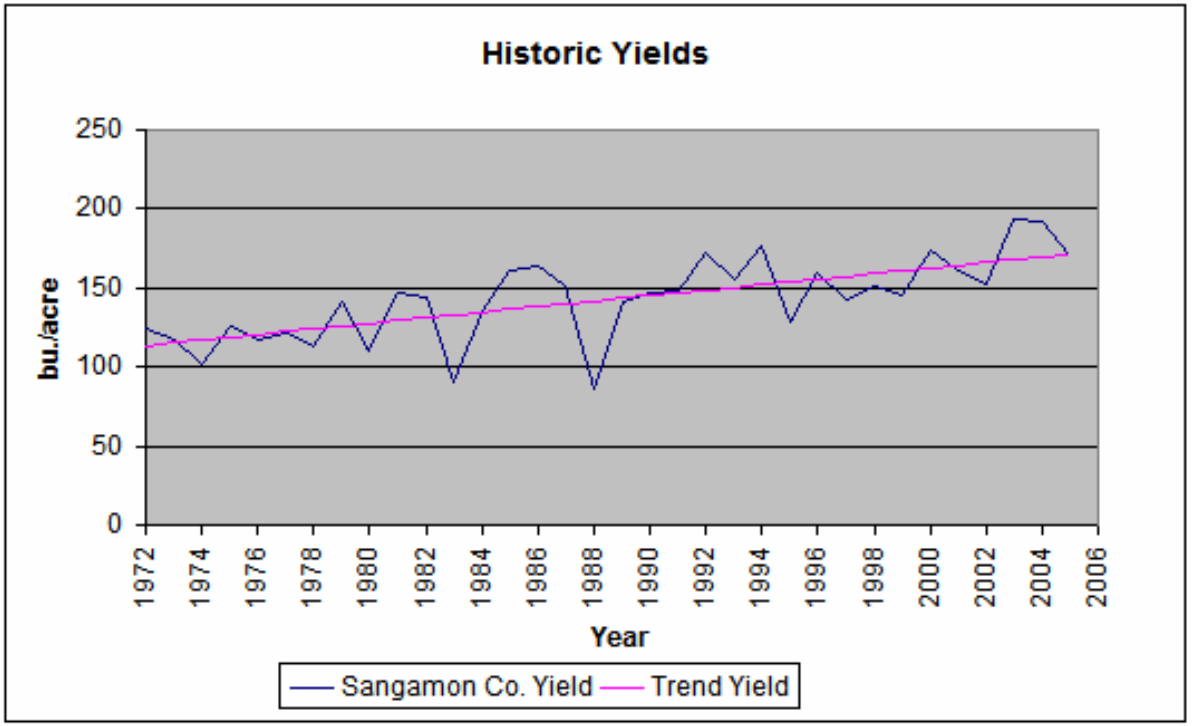
Sangamon County farm *(see FAST tool)*

FAST
Farm.Analysis.Solution.Tools

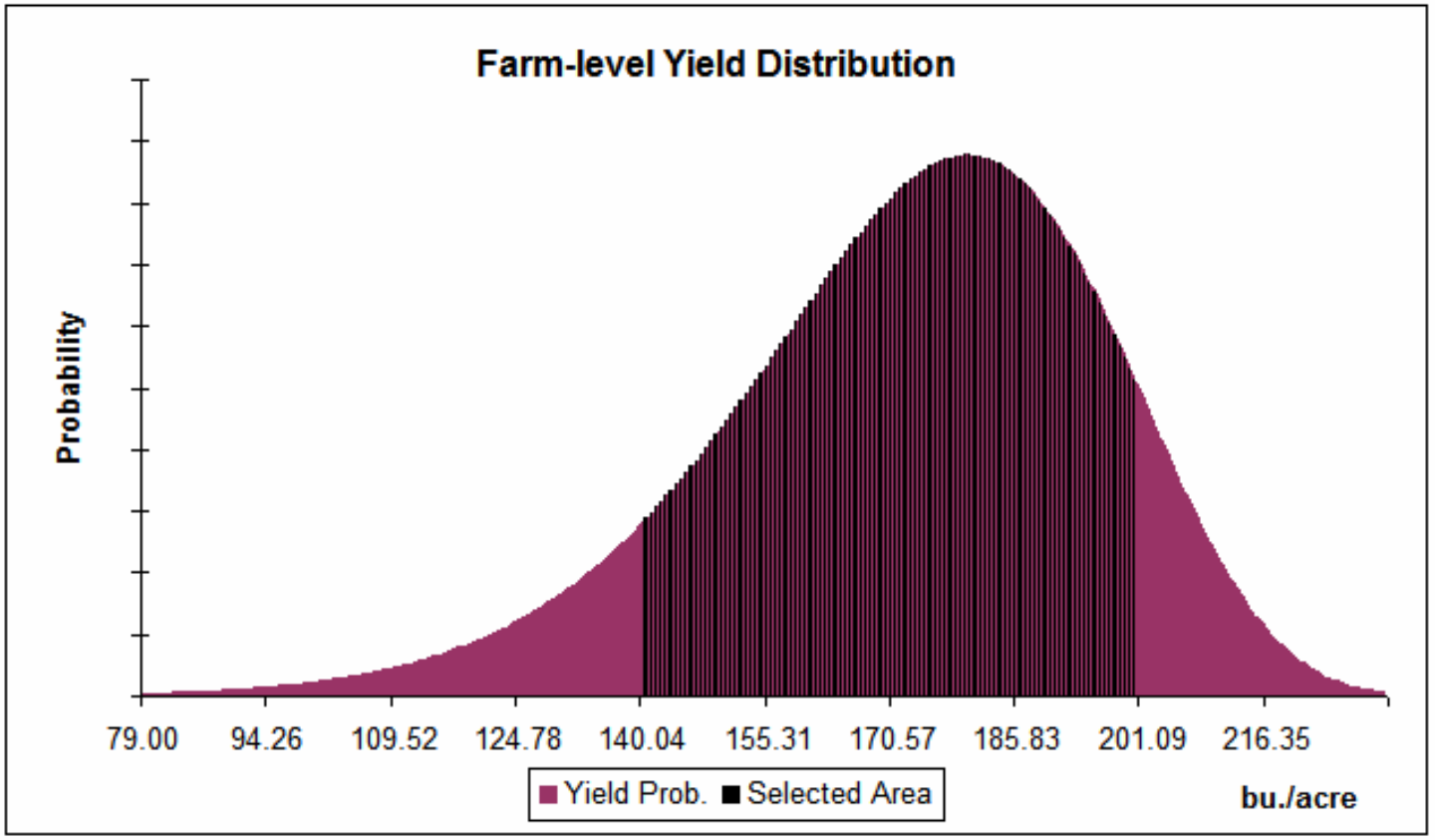
Yield and Yield Risk Information for Illinois Farmers

1. Select Location	Sangamon
2. Select Crop	corn

Historical Data:	bu./acre
Average Yield, 1972-2005	140.7
Detrended Ave. (base 2006)	168.1
Ave increase/year - county	1.757
Ave increase/year - state	1.684



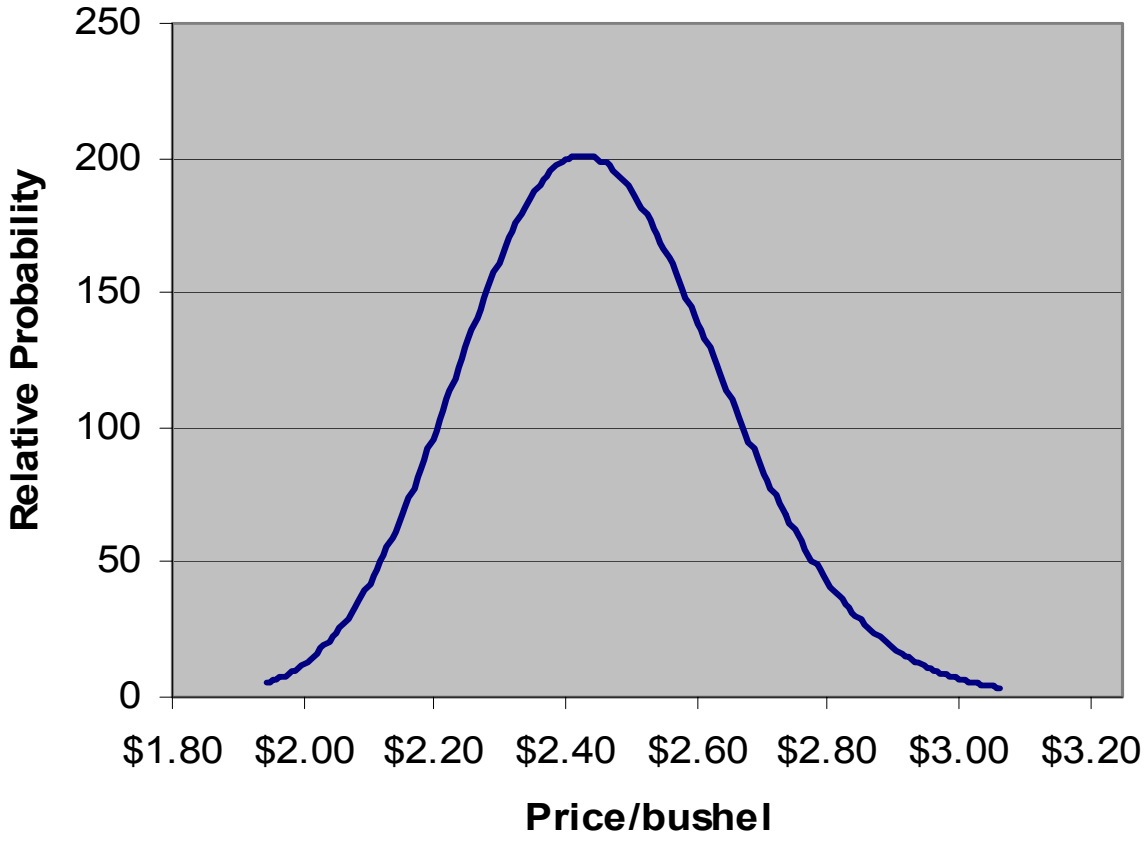
Sangamon County farm *(see FAST tool)*



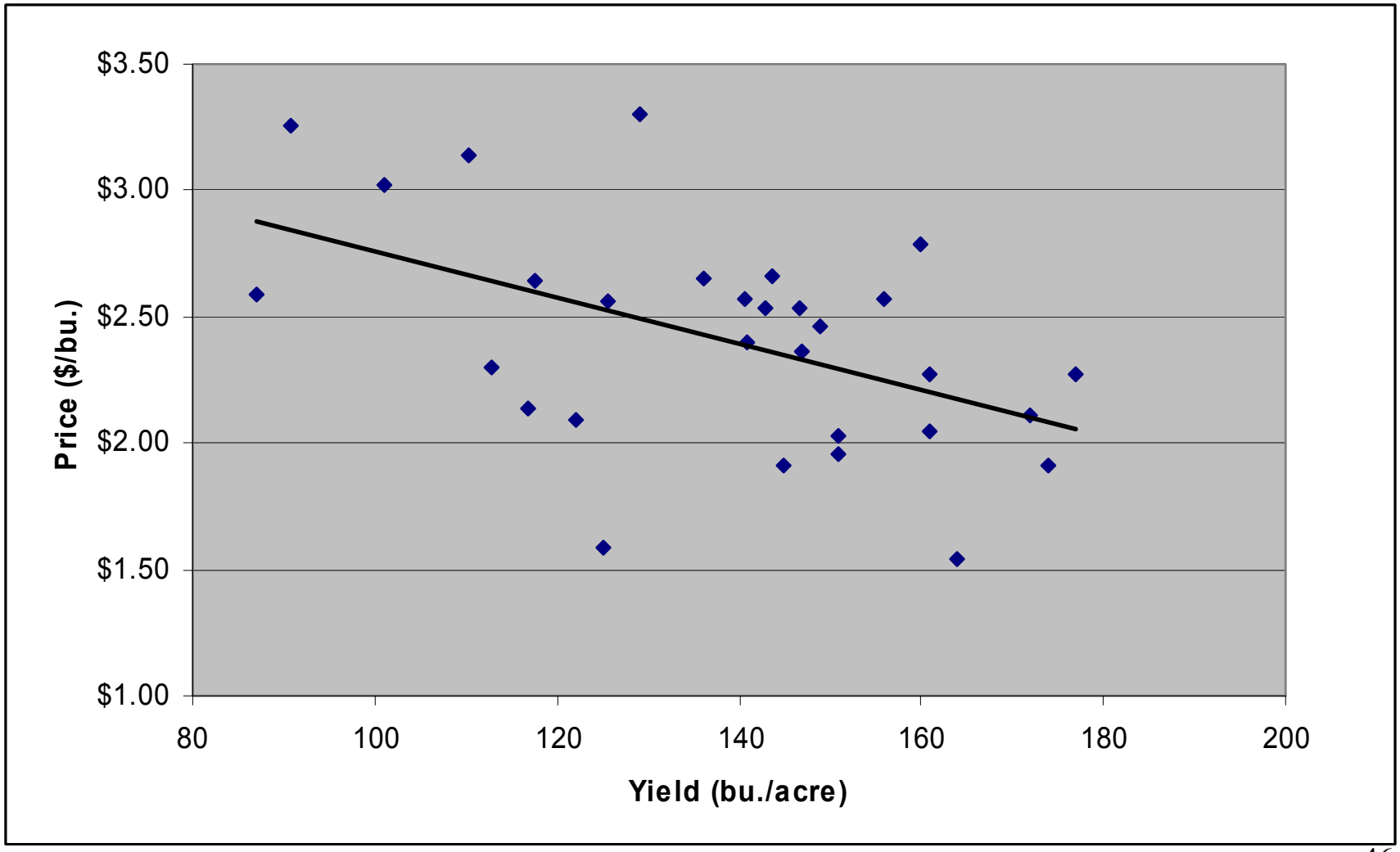
(choose upper and lower limits of interest by moving slide bars)

Farm yields in Sangamon will be between 140.63 and 200.55 bu. acre 79.54% of the time

Prices from futures/options markets, adjusted for local basis



Historic Price vs. Yields – Sangamon County



Historical Evaluator – *(live version presented at workshops)*

Return

Defaults

Per Acre Insurance Payments By Year, Corn
Sangamon County, Illinois

Year	APH 75%	APH 85%	RA-BP 75%	RA-BP 85%	RA-HP 75%	RA-HP 85%	CRC 85%	GRP 90%	GRIP-BP 90%	GRIP-HP 90%	GRIP-HP 85%
1980								20.47		26.40	
1981			33.69	79.10	33.69	79.10	79.10		48.87	48.87	11.75
1982				32.62		32.62	32.62		33.31	33.31	
1983								126.69	54.02	163.43	133.05
1984											
1985											
1986											
1987											
1988	82.00	118.00	58.46	103.87	127.10	181.66	181.66	174.11	115.50	224.62	197.83
1989									29.95	29.95	
1990											
1991											
1992				7.97		7.97	7.97				
1993											
1994											
1995								40.88		52.73	15.84
1996									14.38	14.38	
1997		30.00		33.62		38.11	38.11	4.23		5.46	
1998				30.77		30.77	30.77		135.65	135.65	103.62
1999				37.15		37.15	37.15	17.21	151.60	151.60	120.52
2000				2.29		2.29	2.29		31.74	31.74	
2001				1.88		1.88	1.88				
2002											
2003											
2004			0.36	45.77	0.36	45.77	45.77		87.77	87.77	52.94
2005									74.87	74.87	39.27
Avg Payment	2.41	4.35	2.72	11.40	4.74	13.82	13.82	11.77	25.52	35.07	20.70
Premium	3.92	8.93	6.59	18.78	9.60	25.95	19.60	6.12	15.70	20.14	11.96
Net Position	-1.51	-4.58	-3.87	-7.38	-4.86	-12.13	-5.78	5.65	9.82	14.93	8.74

Insurance payments are adjusted to 2006 conditions. Because of these adjustments, the above simulated payments will not exactly match historical payments.

Historical Evaluator – *(live version presented at workshops)*

Return

Defaults

Per Acre Gross Revenue By Year, Corn
Sangamon County, Illinois

Year	APH 75%	APH 85%	RA-BP 75%	RA-BP 85%	RA-HP 75%	RA-HP 85%	CRC 85%	GRP 90%	GRIP-BP 90%	GRIP-HP 90%	GRIP-HP 85%
1980	501	496	498	486	495	479	485	519	489	511	493
1981	378	373	409	442	406	435	442	376	415	411	382
1982	362	357	360	380	357	373	379	360	384	379	354
1983	432	427	430	418	427	410	417	557	475	580	557
1984	366	361	363	351	360	344	350	364	354	350	358
1985	374	369	371	359	368	352	358	372	362	358	366
1986	372	367	370	357	367	350	357	370	361	356	364
1987	434	429	431	419	428	412	418	432	422	418	426
1988	333	364	307	340	372	411	417	423	355	459	441
1989	372	367	370	357	367	350	357	370	390	386	364
1990	375	370	372	360	369	353	359	373	363	359	367
1991	397	392	394	382	391	375	381	395	385	381	389
1992	370	365	368	363	365	356	363	368	359	354	362
1993	462	457	460	448	457	440	447	460	451	446	454
1994	398	393	395	383	392	376	382	396	386	382	390
1995	480	475	478	466	475	458	465	519	469	517	488
1996	370	365	368	355	365	348	355	368	373	368	362
1997	308	333	305	327	302	324	330	310	296	297	300
1998	362	357	360	378	357	371	377	360	486	482	458
1999	319	314	316	341	313	334	340	334	459	454	431
2000	345	340	342	332	339	325	331	342	365	360	337
2001	347	342	344	334	341	326	333	344	335	330	339
2002	408	403	405	393	402	386	392	406	396	392	400
2003	416	411	413	401	410	394	400	414	404	400	408
2004	370	365	368	401	365	394	400	368	446	442	415
2005	337	332	334	322	331	315	321	334	400	395	368
Average	$397	$394	$394	$391	$393	$386	$393	$404	$408	$413	$407
% of time revenue below:											
$300	0%	0%	0%	0%	0%	0%	0%	0%	3%	3%	3%
$325	9%	6%	12%	6%	9%	12%	6%	6%	3%	3%	6%
$350	21%	18%	21%	21%	18%	24%	18%	18%	9%	12%	12%
Low revenue	$308	$314	$305	$318	$302	$311	$317	$310	$296	$297	$300

FAST

Comparison of Yearly Gross Revenues, Corn

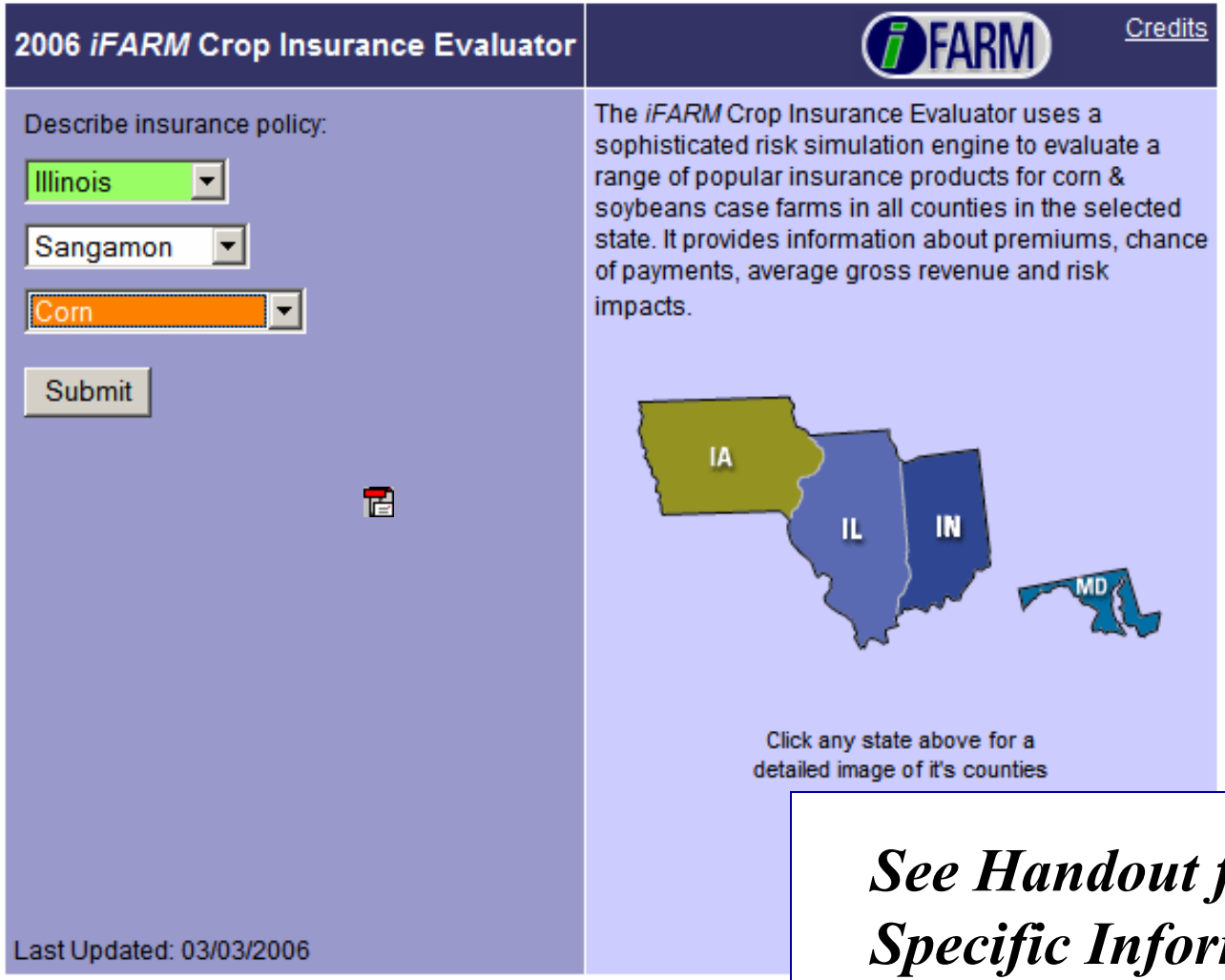
Return

Historical Evaluator

-in combination with Marketing options, allows you to investigate the interaction between insurance, crop revenue, and marketing alternatives

Insurance contract	None	APH 85%	CRC 85%	GRIP-BP 90%	GRIP-HP 90%
Amt. forward contracted	0	100	50	0	150
Amt with put options	0	160	0	100	0
Amt with call options	0	0	150	0	80
1984	370	363	328	347	354
1985	378	386	343	355	384
1986	376	412	348	364	401
1987	438	404	403	415	393
1988	255	301	440	348	407
1989	376	394	344	386	420
1990	379	380	341	356	375
1991	401	397	360	378	389
1992	374	457	362	380	426
1993	466	412	452	444	407
1994	402	469	379	401	444
1995	484	393	507	462	452
1996	374	410	346	376	413
1997	312	319	304	289	280
1998	366	470	381	515	565
1999	323	369	333	466	505
2000	348	384	322	368	405
2001	350	389	324	339	376
2002	412	372	383	389	362
2003	420	416	379	397	408
2004	374	509	410	487	543
2005	341	350	307	393	425
Average revenue	$393	$406	$394	$409	$422
Lowest revenue	$255	$301	$303	$289	$280
Chance of revenue below:					
$250	0%	0%	0%	0%	0%
$300	3%	0%	0%	3%	3%
$350	16%	10%	35%	16%	3%

Putting it all together…



See Handout for Location-Specific Information

Case Farm Description, Sangamon

1. Select County	**Sangamon**
2. Select Crop	**Corn**

Case Farm Information

County: Sangamon	**Crop: Corn**
Farm Average Yield	173.5 *bu./acre*
Farm St. Dev. of yield	23.75 *bu./acre*
County Average Yield	173.5 *bu./acre*
County St. Dev. of yield	19.08 *bu./acre*
Average Futures Price	$2.65 */bu*
St. Dev. of Price	$0.63 */bu*
Local Cash Basis	$0.27 */bu*

	Farm Yield *bu./acre*	**County Yield** *bu./acre*
30% of years yields below:	162.98	165.36
20% of years yields below:	154.44	158.46
10% of years yields below:	141.69	148.00
5% of years yields below:	130.46	138.62
Farm APH	*173*	*bu./acre*
Average Gross Crop Rev.	$423.51	*/acre*

VARs

							Enter custom
% above =	*90%*	*85%*	*80%*	*75%*	*70%*	*50%*	***95.00%***
% below =	*10%*	*15%*	*20%*	*25%*	*30%*	*50%*	*5.00%*
Farm Yield	141.69	148.92	154.44	159.00	162.98	175.89	***130.46***
County Yield	148.00	153.95	158.46	162.16	165.36	175.66	***138.62***
Price	$1.90	$2.01	$2.11	$2.19	$2.27	$2.57	***$1.74***
Crop Rev./acre	$329.84	$345.24	$356.05	$365.28	$373.54	$407.55	***$305.96***

iFARM Description, Sangamon - 2006

Case Farm Selected

County:	SANGAMON
Crop:	Corn

The *iFARM* Crop Insurance Evaluator provides an evaluation of alternative crop insurance choices for a case farm in the county and for the crop you selected. The case farm is intended to mimic conditions of a typical farm in each county and is based on data from NASS, farm recordkeeping associations, and research at the University of Illinois relating farm to county yields. Farm yields vary due to weather and other factors. The following table contains average yields and information to helpunderstand the variability of yields for the farm and the county in which it is contained.

Case Information:	Farm	County
Average Yield	173 bu./acre	173 bu./acre
30% of the years yields will be below	163 bu./acre	165 bu./acre
20% of the years yields will be below	154 bu./acre	158 bu./acre
10% of the years yields will be below	142 bu./acre	148 bu./acre
5% of the years yields will be below	130 bu./acre	139 bu./acre

Other information used in the analysis:

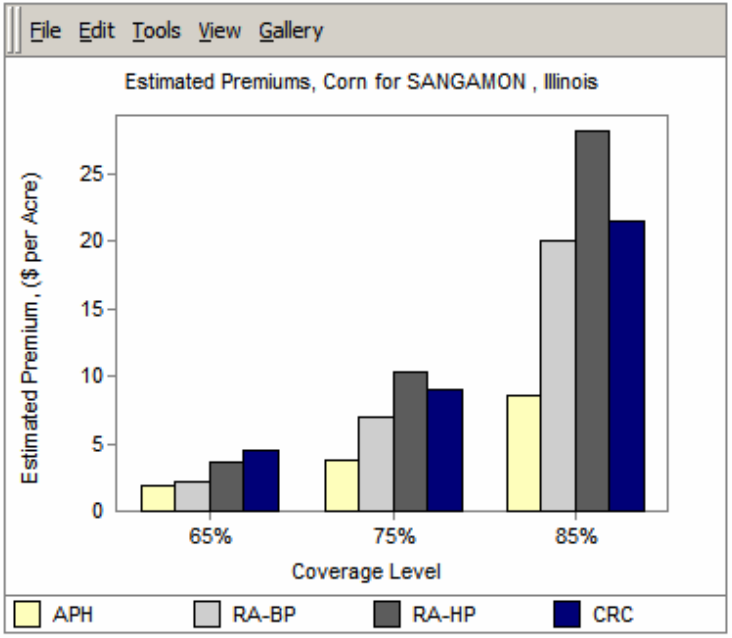
APH Indemnity Price	$2.00
GRP Price	$2.00
CRC, RA Base Price	$2.59
GRIP Base Price	$2.59
Futures Price ($/bu.)	$2.65
Cash Basis ($/bu.)	$0.27
Farm APH	173 bu./acre

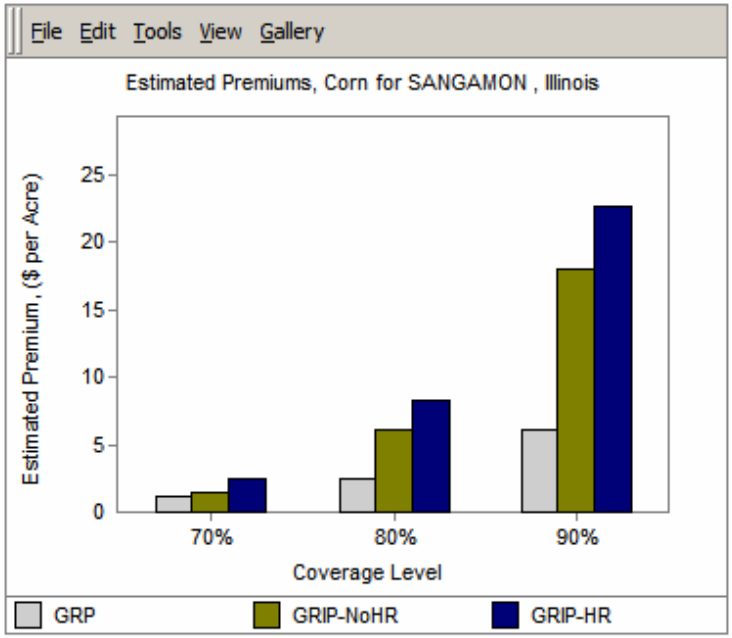
Comparison of crop insurance premiums - Sangamon

Estimated Premiums, $ per Acre, Corn							
Coverage Level	APH	RA-BP	RA-HP	CRC	GRP	GRIP-NoHR	GRIP-HR
55%	0.94			2.22			
60%	1.28			3.00			
65%	1.93	2.22	3.70	4.50			
70%	2.61	4.01	6.22	6.12	1.18	1.48	2.51
75%	3.79	7.02	10.39	8.99	1.37	2.43	4.18
80%	5.69	11.99	17.22	13.72	2.40	6.05	8.31
85%	8.65	20.14	28.23	21.46	3.39	10.92	13.83
90%					6.12	18.04	22.67

This table contains estimates of the farmer paid per acre premium costs of various crop insurance products by coverage election level to help provide a sense of the differences in costs among insurance alternatives. Actual premiums may vary slightly, and other unit and practice options may exist. A qualified insurance agent should be consulted for actual crop insurance quotes.

Comparison of crop insurance premiums - Sangamon





This table contains estimates of the farmer paid per acre premium costs of various crop insurance products by coverage election level to help provide a sense of the differences in costs among insurance alternatives. Actual premiums may vary slightly, and other unit and practice options may exist. A qualified insurance agent should be consulted for actual crop insurance quotes.

Comparison of crop insurance payments - Sangamon

Average Payments from Insurance, $ per Acre, Corn							
Coverage Level	APH	RA-BP	RA-HP	CRC	GRP	GRIP-NoHR	GRIP-HR
55%	0.05			0.17			
60%	0.13			0.49			
65%	0.27	0.91	1.45	1.21			
70%	0.57	2.07	3.12	2.67	0.60	3.05	4.06
75%	1.14	4.13	6.02	5.30	1.28	6.25	8.33
80%	2.19	7.42	10.63	9.60	2.58	11.53	15.42
85%	4.02	12.20	17.39	16.00	4.96	19.35	26.22
90%					9.07	29.81	41.42

This table shows the average per acre indemnity payments by product and election level under the assumptions of the case farm described above. Payments can vary significantly from year to year depending on prices and yields, with many years generating no payments, and some years generating much higher payments. The averages shown are the long run values that would be expected to occur when averaged over a large number of years.

Comparison of crop insurance payment likelihoods Sangamon

Frequency of Indemnity Payments , % of years, Corn							
Coverage Level	APH	RA-BP	RA-HP	CRC	GRP	GRIP-NoHR	GRIP-HR
55%	0.30			0.82			
60%	0.54			2.00			
65%	1.22	3.66	5.04	4.34			
70%	2.32	7.02	9.44	8.34	1.36	5.50	6.72
75%	4.44	11.48	15.24	13.98	2.90	9.80	12.20
80%	8.08	17.78	22.96	22.00	5.80	17.00	21.30
85%	13.60	25.12	33.04	31.88	10.98	25.58	33.22
90%					19.60	35.12	47.64

This table indicates the frequency, or percentage of years that each crop insurance option would make an indemnity payment. An entry of 15%, for example, indicates that the crop insurance product would have a payment triggered in 15 out of 100 years. A higher percentage indicates that the product generates a payment to the producer more often than one with a lower percentage.

Comparison of crop insurance net costs - Sangamon

Net Cost of Insurance, $ per Acre, Corn							
Coverage Level	APH	RA-BP	RA-HP	CRC	GRP	GRIP-NoHR	GRIP-HR
55%	0.89			2.05			
60%	1.15			2.51			
65%	1.66	1.31	2.25	3.29			
70%	2.04	1.94	3.10	3.45	0.58	-1.57	-1.55
75%	2.65	2.89	4.37	3.69	0.09	-3.82	-4.15
80%	3.50	4.57	6.59	4.12	-0.18	-5.48	-7.11
85%	4.63	7.94	10.84	5.46	-1.57	-8.43	-12.39
90%					-2.95	-11.77	-18.75

Over many years, payments from crop insurance will offset part or all of their premium costs. This table shows the net cost of insurance products found by combining the premium costs with information about frequency and amount of payments (previous tables). Negative entries indicate that the insurance costs more on average than it pays back. Positive entries indicate that the insurance actually pays back more over the long run than it costs. Note that in this case, higher coverage (lower subsidy rates) result in higher net costs for individual products and lower net costs (positive payments) for group products.

Comparison of revenue - Sangamon

Average Gross Revenue/Acre

Coverage Election	APH	RA-BP	RA-HP	CRC	GRP	GRIP	*hp grip-hpo*
50%	$422.88			$422.02			
55%	$422.62			$421.46			
60%	$422.35			$420.99			
65%	$421.84	$422.19	$421.26	$420.21			
70%	$421.47	$421.57	$420.41	$420.06	$422.93	$425.08	$425.06
75%	$420.85	$420.62	$419.14	$419.82	$423.42	$427.33	$427.65
80%	$420.01	$418.93	$416.91	$419.38	$423.69	$428.98	$430.62
85%	$418.88	$415.56	$412.67	$418.05	$425.08	$431.93	$435.89
90%					$426.45	$435.28	$442.25

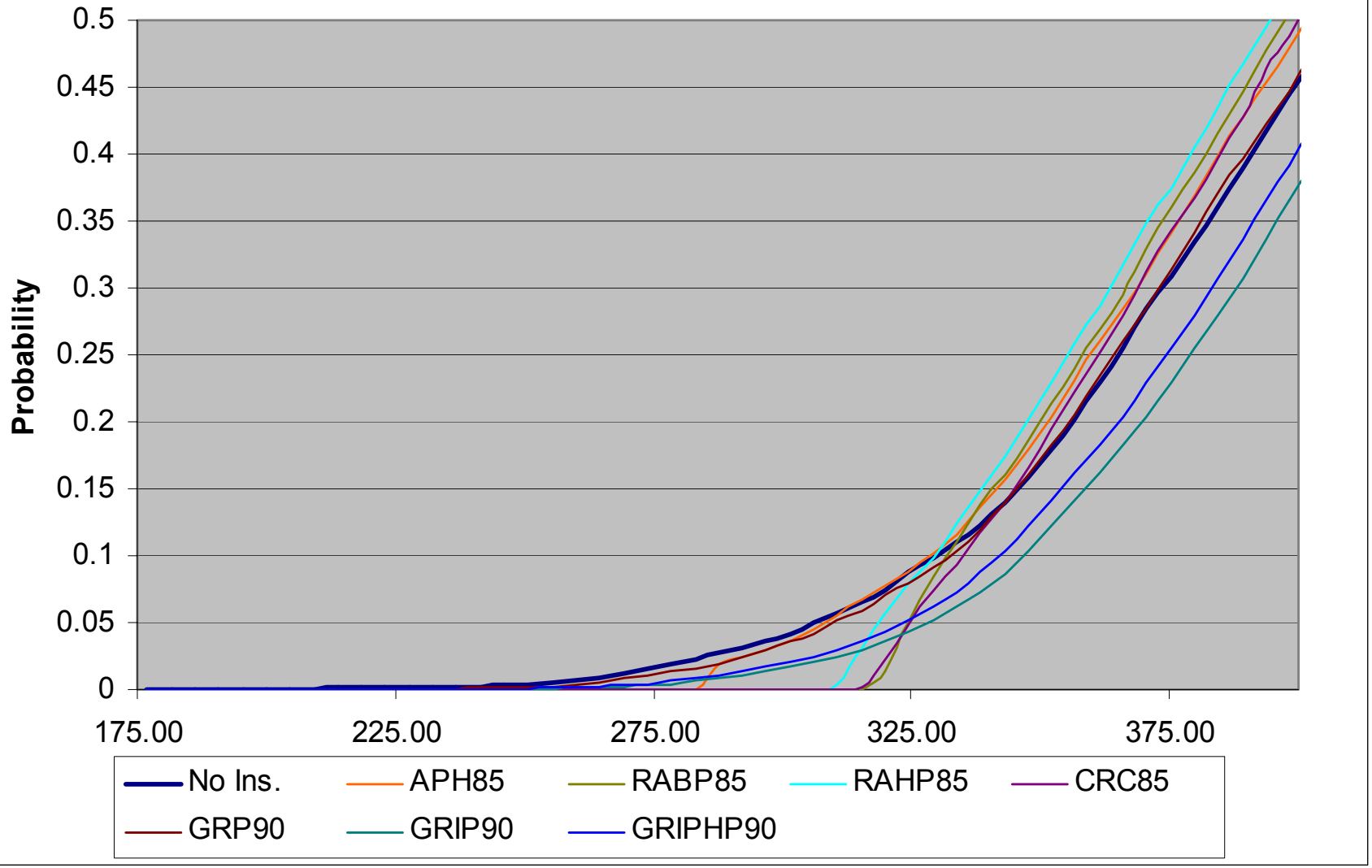
Average Gross Rev/Acre without insurance	***$423.51***

Average Gross Revenues are estimated assuming all the crop is sold at harvest. Gross Revenue equals crop sales plus any LDP payments, plus insurance proceeds, less insurance premium costs.

Comparison of value-at-risk - Sangamon

5 Percent Value-At-Risk, $ per Acre, Corn							
Coverage Level	APH	RA-BP	RA-HP	CRC	GRP	GRIP-NoHR	GRIP-HR
55%	305			304			
60%	305			305			
65%	306	307	308	307			
70%	306	309	310	310	306	309	309
75%	307	311	313	314	307	312	311
80%	307	317	316	319	308	316	315
85%	308	324	318	325	309	322	322
90%					310	328	328
5% Value-At-Risk Without Insurance =$306							

This table contains a measure that helps evaluate the risk reduction associated with each product. The entries in the table are the 5% values at risk which indicate the level of revenue with outcomes at or below in 5% of the years (e.g., a one in twenty risk). Higher VARs are preferred as they indicate more of the low revenues have been eliminated by the insurance product.


Probabilities of Revenue With Insurance
Probability
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
175.00
225.00
275.00
325.00
375.00
No Ins.
APH85
RABP85
RAHP85
CRC85
GRP90
GRIP90
GRIPHP90

What if….? (*Scenario Analysis)*

2006 *iFARM* Crop Insurance "What-If?" Analyzer: North Central Region Crops

iFARM Credits

Describe insurance policy:

Illinois

Saline

Corn

100

APH Yield

167

(Actual Production History Yield) in bu./acre

Describe harvest prices and yields (can be changed on next page)

Actual farm yield 132

Actual county yield 147

Harvest futures price 3.10

Harvest basis .35

Submit

Last Updated: 01/27/2006

The tool estimates insurance payments, premium, and gross revenues for alternative products. Two types of inputs are required. The first describe harvest prices and yields. The second describes yields and harvest prices. These can be changed.

Click any state above for a detailed image of it's counties.

What if….? (*Scenario Analysis)*

Payment for Sangamon County, Illinois, 2006

(Crop = Corn, APH Yield = 167 bu., APH Price = 2, Protection Level= 100%, Base Price = 2.59, Expected County Yield = 175.7)

iFARM

Print Preview

The *iFarm What-IF Analyzer* calculates estimated payments from 2006 crop insurance products. Payments are estimated based on the actual farm yield, actual county yield, and harvest price shown below. The basis (futures price minus cash price) is used to calculate gross revenue. These entries can be changed to show alternative estimated payments for 2006 insurance products.

Actual farm yield	Actual county yield	Harvest price	Basis
132	147	3.10	.35

Estimated insurance payments, $ per acre**

Coverage Level	APH ($/acre)	RA-BP ($/acre)	RA-HP ($/acre)	CRC ($/acre)	GRP ($/acre)	GRIP-NoHR ($/acre)	GRIP-HR ($/acre)
50%	0			0			
55%	0			0			
60%	0			0			
65%	0	0	0	0			
70%	0	0	0	0	0	0	0
75%	0	0	0	0	0	0	0
80%	3	0	5	5	0	0	0
85%	20	0	31	31	8	0	13
90%					37	0	58

Summary Comments:

- Movement toward Group Products – some impact of recent payment patterns and prices.
- Impact of higher prices yet to be seen. Average of Feb Prices often differs from APH indemnity prices.
- Marketing decisions affect insurance choices.
- Choices often involve tradeoff between average return and protection against lowest possible outcomes.