



FEFO 10-06
April 5, 2010

ILLINOIS CORN AND SOYBEAN YIELDS AND GRIP PAYMENTS IN 2009

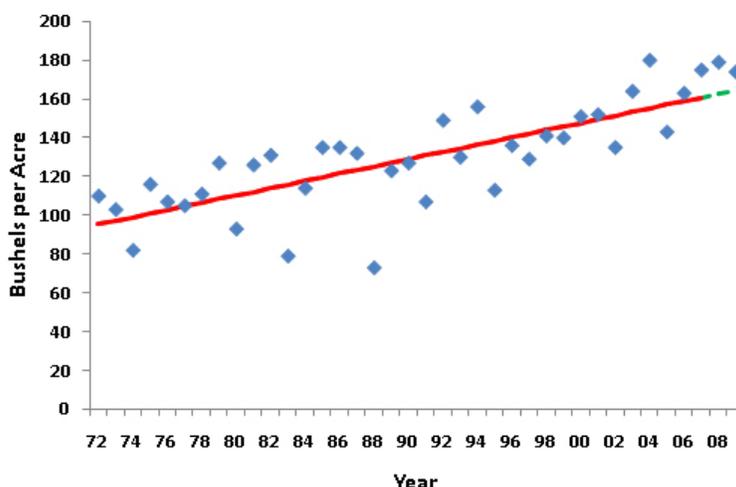
The National Agricultural Statistical Service (NASS) recently released 2009 county yield estimates for corn and soybeans. In this article, actual 2009 trend yields are compared to 2009 trend yields. For corn, most counties had actual yields above trend yields; however, there were several counties in northern Illinois that had yields below trend. For soybeans, 42 percent of the counties had yields above trend while the remainder has yields below trend yields. Also estimated are Group Risk Income Plan (GRIP) payments for 2009. Six counties will receive corn payments and one county will receive a soybean payment.

Comparison to Trend Yields

Actual 2009 yields were compared to 2009 trend yields to assess whether yields were above or below expectations. A trend yield represents an expectation of yield for the given year. If 2009 could be repeated ten times, the average of those ten yields would equal the 2009 trend yield. Actual yields above trend yields are above expectations. Yields below trend yields are below expectations.

The 2009 trend yields were calculated by fitting a linear line through yields from 1972 to 2008 using ordinary least squares. The linear line fitted to the 1972 through 2008 data then was extended to 2009 to forecast 2009 trend yields. Figure 1 illustrates this process by showing corn yields for the state of Illinois. The solid line shows the line fit through the data from 1972 through 2008 while dots show actual state yields. The dashed portion shows the projection of the linear line to determine the 2009 trend yield. This process of estimating trend yields was repeated for each county in Illinois.

Figure 1. State Yields in Illinois, 1972 -- 2009.



Two caveats about the above procedure. First, fitting a linear trend assumes that the yearly trend in per bushel increases have not changed between 1972 through 2009. Many believe that yields are increasing faster in recent years, particularly for corn. If yield are increasing at a faster rate, the linear trend may underestimate true expectations. Second, yield models that include weather variables explain much more of the yield variability (see

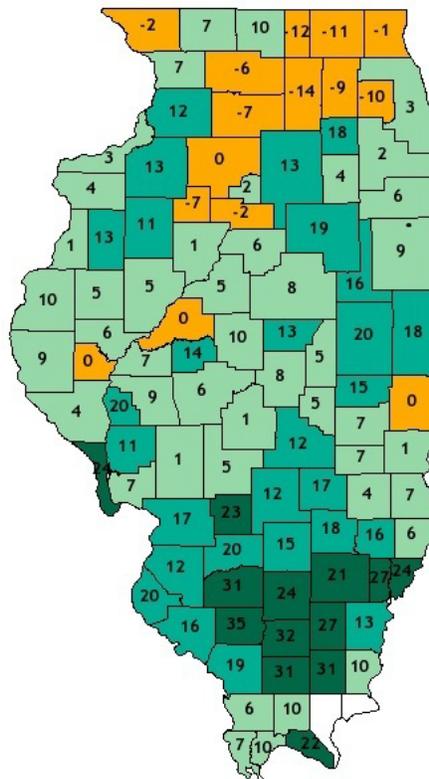
http://www.farmdoc.illinois.edu/marketing/mobr/mobr_09-01/mobr_09-01.html). Including weather observations in regression models could influence yield trends estimates; however, yield trend made without weather are unbiased.

Illinois Corn Yields

The state corn yields for 2009 was 174 bushels per acre, 9 bushels above the 2009 trend yield of 165 bushels. An above average yield seems remarkable given the late planting of corn due to a wet spring and delayed harvesting due to a wet fall. Countering poor spring and fall weather was a generally favorable growing season during the summer.

Judging by bushels above trend, southern Illinois had a very good yielding year (see Figure 2). Thirteen counties had yields 20 bushels above trend yields. Ten of these counties were adjacent to one another in southern Illinois: Perry (35 bushels above trend), Franklin (32 bushels above trend), Saline (31 bushels above trend), Washington (31 bushels above trend), Williamson (31 bushels above trend), Edwards (28 bushels above trend), Hamilton (27 bushels above trend), Calhoun (23 bushels above trend), Jefferson (24 bushels above trend), Wabash (24 bushels above trend), Bond (23 bushels above trend), Massac (22 bushels above trend), and Wayne (21 bushels above trend) counties.

Figure 2. 2009 County Corn Yield Minus 2009 Trend Yield.



Not all areas in Illinois had actual yields above trend yields. Judging by yields below trend, DeKalb County had the poorest yields of any county. DeKalb County had an actual yield of 161 bushels, 14 bushels below trend yield. Other counties with yields below trend yields were Boone (12 bushels below trend), McHenry (11 bushels below trend), Edgar (10 bushels below trend), Kane (9 bushels below trend), Lee (7 bushels below trend), Stark (7 bushels below trend), Ogle (6 bushels below trend), Marshal (2 bushels below trend), Jo Daviess (2 bushels below trend), and Lake (1 bushels below trend) counties.

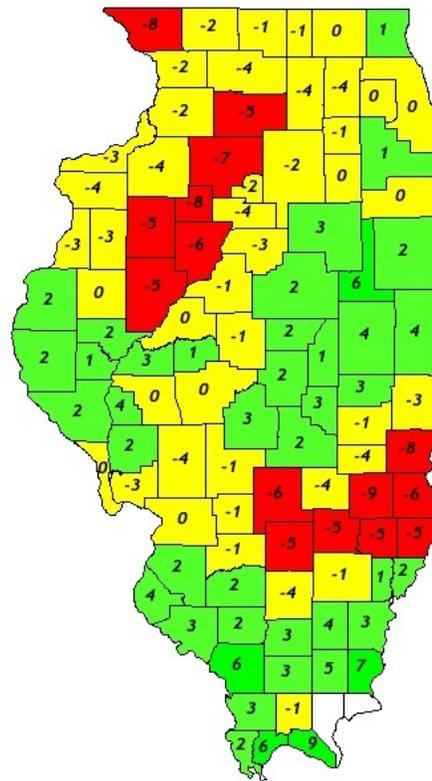
Actual and trend yields for all counties are shown in Appendix Table 1.

Soybean Yields

Illinois' state soybean yield was 46 bushels per acre, 1 bushel below the 2009 trend yield of 47 bushels per acre. From a trend yield perspective, soybeans had a worse yielding year than corn.

Many counties had above average tend yields (see Figure 3). Forty-two counties, of 43 percent of the Illinois counties that had reported county yields, had yields above trend yields. Five counties had 2009 yields that were 5 bushels above trend. These included Ford (5 bushels above trend), Jackson (6 above trend), Pulaski (6 bushels above trend), Gallatin (7 bushels above trend), and Massac (9 bushels above trend) counties. Overall, actual yields above tend yields occurred in east-central Illinois, west-central Illinois, and southern Illinois.

Figure 3. 2009 County Soybean Yield Minus 2009 Trend Yield.



Many counties had soybean yields below trend yields. Three areas of counties had yields 5 bushels below trend yields. Jo Daviess County in the northwest corner of Illinois had an actual yield of 46 bushels, 8 bushel below trend yield. A line in northwest Illinois also had yields five bushels below trend line. This line began in the northeast corner with Lee County, having a 2009 yield of 45 bushels, 4 bushels below trend line yield. Below Lee County then were Bureau (7 bushels below tend), Stark (8 bushels below trend), Knox (5 bushels below trend), Peoria (6 bushels below trend), and Fulton (5 bushels below trend) counties. In southern Illinois, a pocket of counties in the eastern part also had yields 5 bushels below trend. These included Jasper (9 bushels below trend), Clark County (8 bushels below trend), Crawford (76 bushels below trend), Fayette (6 bushels below trend), Clay County (5 bushels below trend), and Lawrence (5 bushels below trend) counties.

Actual and trend yields for all counties are shown in Appendix Table 2.

GRIP Payments

Table 1 shows counties that are estimated to receive GRIP payments given that a 90% coverage level was selected. Note that actual yields for GRIP payment calculations differ from those typically reported by NASS. NASS typically reports yield per acre as the total production in a county divided by harvested acres. RMA calculate yield per acre as total production divided by planted acres. Since planted acres can never be less than harvested acres, yields used to calculate GRIP payments will be less than NASS yields.

Table 1. Yields and Estimated Payments for GRIP at the 90% Coverage Level, Illinois, 2009.

County	Expected Yield	Actual Yield	Insurance Payment Given a Protection Level of	
			100%	60%
Panel A. Corn.				
	Bushels per Acre		\$ per Acre	
Boone	155.4	140.5	71	42
DeKalb	170.4	157.8	54	33
Jo Daviess	157.2	152.7	6	4
Lee	171.7	166.5	8	5
McHenry	145.5	140.1	13	8
Stark	178	170.7	20	12
Panel B. Soybeans.				
Jasper	43.5	34.9	12	7

Six counties are projected to receive GRIP payments for corn at a 90% coverage level (see Table 1): Boone (\$71 per acre given a 100% protection level), DeKalb (\$54), Jo Daviess (\$6), Lee (\$8), McHenry (\$13), and Stark (\$20) counties. These counties are located in the northern portion of the state. GRIP payments will vary depending on the protection level chosen. The maximum payment occurs at a 100% protection level. The lowest protection level is 60%. Insurance payments at the 60% coverage level will be 60% of the maximum payment.

Soybean GRIP payments are projected for only one county. At a 100% protection level, Jasper County is projected to have a \$12 payment per acre.

Summary

Overall, corn yields were above trend yields over much of the state. Southern Illinois had an exceptional production year. Some northern Illinois counties had yields below trend yields.

Most counties had 2009 soybean yields within 5 bushels of trend yields. Three counties had 2009 yields 5 bushels above trend. Fifteen counties had 2009 yields that were 5 bushels below trend.

Six counties in the northern portion of Illinois will receive GRIP payments for corn. Jasper County will receive a soybean GRIP payment

Submitted by: Gary Schnitkey, Department of Agricultural and Consumer Economics, University of Illinois

Appendix Table 1. County Corn Yields and Trend Yields, Illinois, 2009.

County	2009 Yield 2009 Trend Minus			County	2009 Yield 2009 Trend Minus			County	2009 Yield 2009 Trend Minus		
	Yield ¹	Yield ²	Trend		Yield ¹	Yield ²	Trend		Yield ¹	Yield ²	Trend
	Bushels per acre				Bushels per acre				Bushels per acre		
Adams	172	163	9	Hancock	179	169	10	Montgomery	168	163	5
Alexander	161	154	7	Henderson	174	173	1	Morgan	187	178	9
Bond	160	137	23	Henry	182	169	13	Moultrie	179	174	5
Boone	148	160	-12	Iroquois	178	169	9	Ogle	167	173	-6
Brown	157	157	0	Jackson	152	133	19	Peoria	176	175	1
Bureau	176	176	0	Jasper	149	145	4	Perry	142	107	35
Calhoun	177	153	24	Jefferson	139	115	24	Platt	183	178	5
Carroll	189	182	7	Jersey	167	160	7	Pike	169	165	4
Cass	182	175	7	Jo Daviess	166	168	-2	Pulaski	156	146	10
Champaign	190	170	20	Johnson	137	127	10	Putnam	180	178	2
Christian	183	182	1	Kane	160	169	-9	Randolph	140	124	16
Clark	162	161	1	Kankakee	166	160	6	Richland	141	125	16
Clay	144	126	18	Kendall	179	161	18	Rock Island	175	172	3
Clinton	163	143	20	Knox	186	175	11	Saline	163	132	31
Coles	177	170	7	La Salle	183	170	13	Sangamon	189	183	6
Cook	138	135	3	Lake	121	122	-1	Schuyler	175	169	6
Crawford	150	143	7	Lawrence	146	140	6	Scott	185	165	20
Cumberland	164	157	7	Lee	168	175	-7	Shelby	171	159	12
De Kalb	161	175	-14	Livingston	184	165	19	St. Clair	158	146	12
De Witt	188	175	13	Logan	188	178	10	Stark	172	179	-7
Douglas	179	164	15	Macon	192	184	8	Stephenson	175	168	7
Du Page	134	144	-10	Macoupin	166	165	1	Tazewell	182	177	5
Edgar	168	168	0	Madison	166	149	17	Union	148	142	6
Edwards	159	132	27	Marion	147	132	15	Vermilion	183	165	18
Effingham	164	147	17	Marshall	172	174	-2	Wabash	165	141	24
Fayette	152	140	12	Mason	165	165	0	Warren	193	180	13
Ford	182	166	16	Massac	153	131	22	Washington	161	130	31
Franklin	149	117	32	McDonough	188	183	5	Wayne	153	132	21
Fulton	175	170	5	McHenry	143	154	-11	White	158	145	13
Gallatin	160	150	10	McLean	186	178	8	Whiteside	179	167	12
Greene	171	160	11	Menard	190	176	14	Will	158	156	2
Grundy	169	165	4	Mercer	176	172	4	Williamson	151	120	31
Hamilton	160	133	27	Monroe	160	140	20	Winnebago	166	156	10
								Woodford	187	181	6

Source: Yields are from U.S.D.A. National Agricultural

¹ Based on a linear trend using data from 1972 through 2008. The 2009 trend yield is a linear projection of the trend regression.

Appendix Table 2. County Soybean Yields and Trend Yields, Illinois, 2009.

County	2009 Yield 2009 Trend Minus Yield Yield ³ Trend			County	2009 Yield 2009 Trend Minus Yield Yield ³ Trend			County	2009 Yield 2009 Trend Minus Yield Yield ³ Trend		
	Bushels per acre				Bushels per acre				Bushels per acre		
Adams	47	45	2	Henry	47	51	-4	Moultrie	55	52	3
Alexander	41	39	2	Iroquois	51	49	2	Ogle	45	49	-4
Bond	37	38	-1	Jackson	44	38	6	Peoria	45	51	-6
Boone	45	46	-1	Jasper	35	44	-9	Perry	36	34	2
Brown	46	45	1	Jefferson	32	36	-4	Piatt	56	55	1
Bureau	44	51	-7	Jersey	43	46	-3	Pike	48	46	2
Calhoun	44	44	0	Jo Daviess	46	54	-8	Pulaski	45	39	6
Carroll	55	57	-2	Johnson	38	39	-1	Putnam	49	51	-2
Cass	51	48	3	Kane	44	48	-4	Randolph	39	36	3
Champaign	56	52	4	Kankakee	46	46	0	Richland	34	39	-5
Christian	55	52	3	Kendall	47	48	-1	Rock Island	48	51	-3
Clark	39	47	-8	Knox	47	52	-5	Saline	45	40	5
Clay	33	38	-5	La Salle	46	48	-2	Sangamon	53	53	0
Clinton	39	40	-1	Lake	35	34	1	Schuyler	48	46	2
Coles	50	51	-1	Lawrence	38	43	-5	Scott	51	47	4
Crawford	38	44	-6	Lee	45	50	-5	Shelby	48	46	2
Cumberland	41	45	-4	Livingston	51	48	3	St. Clair	42	40	2
De Kalb	47	51	-4	Logan	51	52	-1	Stark	46	54	-8
De Witt	55	53	2	Macon	55	53	2	State Total	46	47	-1
Douglas	55	52	3	Macoupin	42	46	-4	Stephenson	49	51	-2
Edgar	48	51	-3	Madison	41	41	0	Tazewell	53	54	-1
Edwards	41	40	1	Marion	34	39	-5	Union	42	39	3
Effingham	39	43	-4	Marshall	46	50	-4	Vermilion	55	51	4
Fayette	34	40	-6	Mason	46	46	0	Wabash	45	43	2
Ford	54	48	6	Massac	44	35	9	Warren	51	54	-3
Franklin	39	36	3	McDonough	52	52	0	Washington	38	36	2
Fulton	43	48	-5	McHenry	43	43	0	Wayne	37	38	-1
Gallatin	48	41	7	McLean	54	52	2	White	43	40	3
Greene	49	47	2	Menard	50	49	1	Whiteside	49	51	-2
Grundy	48	48	0	Mercer	47	51	-4	Will	47	46	1
Hamilton	43	39	4	Monroe	42	38	4	Williamson	39	36	3
Hancock	50	48	2	Montgomery	44	45	-1	Winnebago	45	46	-1
Henderson	48	51	-3	Morgan	52	52	0	Woodford	50	53	-3

Source: Yields are from U.S.D.A. National Agricultural Statistical

³ Based on a linear trend using data from 1972 through 2008. The 2009 trend yield is a linear projection of the trend regression.