

# PURDUE AGRICULTURAL ECONOMICS REPORT

AUGUST 2004

## Indiana Farmland Values & Cash Rents Continue to Climb

*Craig L. Dobbins and Kim Cook*

**T**he June 2004 Purdue Land Values Survey found that on a state-wide basis bare Indiana cropland ranged in value from \$2,131 per acre for poor land, to \$3,278 per acre for top land (Table 1). Average bare Indiana cropland had an estimated value of \$2,693 per acre. For the 12-month period ending in June 2004, this was an increase of 8.4%, 7.3% and 8.0%, respectively for poor, average, and top land. Increases this large have not been experienced since 1996-1997 when the Purdue Land Values Survey reported a state wide increase of 12% to 15%.

Part the difference in land values reflects productivity differences. As a measure of productivity, survey respondents provide an estimate of long-term corn yields. The average reported yield was 105, 135, and 165 bushels per acre, respectively for poor, average, and top land. The value per bushel for different land qualities was very similar, ranging from \$19.88 to \$20.34 per bushel.

The average value of transitional land, land moving out of agriculture, increased 9.0% this year. The average value of transitional land in June 2004 was \$7,561 per acre. Due to the

wide variation in estimates for transitional land, the median value\* may give a more meaningful picture than the arithmetic average. The median value of transitional land in June 2004 was \$6,000 per acre.

### Statewide Rents

Cash rents increased statewide \$2 to \$3 per acre (Table 2), continuing the steady increase of the past several years.



The estimated cash rent was \$150 per acre on top land, \$122 per acre on average land, and \$96 per acre on poor land. This was an increase in rental rates of 3.2% for poor land, 1.7% for average land, and 2.0% for top land. State wide, rent per bushel of estimated corn yield ranged from \$0.90 to \$0.92 per bushel.

Cash rent as a percentage of value continued to decline. For top farmland, cash rent as a percentage of farmland value was 4.6%. For poor and average farmland, cash rent as a percentage of farmland was 4.5%. These values are the lowest reported in the 28 year history of the Purdue Land Value Survey.

### Area Land Values

Survey responses were organized into six geographic areas of Indiana (Figure 1). While all regions of the state reported increases in farmland

values for the year, these increases varied across the state (Table 1). The North and Northeast regions exhibited the strongest increases, ranging from 10.7% to 12.9%. The West Central region also reported strong price increases, ranging from 8.8% to 9.8%. Increases in the Central region ranged from 6.4% to 6.9%. With the exception of the poor land in the Southwest region, the increases in the Southwest, and Southeast regions were more modest.

The highest valued land continues to be the top-quality land in the Central region, \$3,551 per acre. This region was followed by North (\$3,382), West Central (\$3,351), Northeast (\$3,192), Southwest (\$2,909), and Southeast (\$2,874).

Land value per bushel of estimated long-term corn yield (land value divided by bushels) is the

\* The median value is the value of the data item which divides data arranged in ascending or descending numerical order in half.

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**Table 1. Average estimated Indiana land value per acre (tillable, bare land) and per bushel of corn yield, percentage change by geographical area and land class, selected time periods, Purdue Land Values Survey, June 2004<sup>1</sup>**

Area	Land Class	Corn bu/A	Land Value					Land Value/Bu			Projected Land Value	
			Dollars Per Acre			% Change		\$ Amount	\$ Amount	% Change	Dec. 2004	% Change
			June 2003	Dec 2003	June 2004	6/03-6/04	12/03-6/04					
			\$/A	\$/A	\$/A	%	%	\$	\$	%	\$	%
North	Top	167	3,037	3,177	3,382	11.4%	6.5%	18.79	20.22	7.6%	3,421	1.2%
	Average	137	2,419	2,512	2,686	11.0%	6.9%	18.59	19.66	5.8%	2,724	1.4%
	Poor	106	1,873	1,956	2,074	10.7%	6.0%	18.71	19.62	4.9%	2,092	0.9%
Northeast	Top	164	2,888	3,046	3,192	10.5%	4.8%	18.04	19.49	8.0%	3,235	1.3%
	Average	131	2,343	2,491	2,616	11.7%	5.0%	18.27	19.91	9.0%	2,646	1.1%
	Poor	100	1,830	1,974	2,066	12.9%	4.7%	18.81	20.65	9.8%	2,117	2.5%
W. Central	Top	165	3,053	3,214	3,351	9.8%	4.3%	18.44	20.25	9.8%	3,415	1.9%
	Average	139	2,589	2,711	2,816	8.8%	3.9%	18.75	20.29	8.2%	2,865	1.7%
	Poor	107	2,025	2,147	2,217	9.5%	3.3%	18.80	20.65	9.8%	2,256	1.8%
Central	Top	170	3,336	3,419	3,551	6.4%	3.9%	20.01	20.91	4.5%	3,618	1.9%
	Average	141	2,828	2,905	3,007	6.3%	3.5%	20.42	21.27	4.2%	3,076	2.3%
	Poor	111	2,355	2,427	2,517	6.9%	3.7%	21.64	22.59	4.4%	2,607	3.6%
Southwest	Top	162	2,811	2,806	2,909	3.5%	3.7%	16.87	17.98	6.6%	2,923	0.5%
	Average	130	2,108	2,168	2,220	5.3%	2.4%	15.97	17.07	6.9%	2,246	1.2%
	Poor	100	1,306	1,512	1,585	21.4%	4.8%	13.55	15.91	17.4%	1,624	2.5%
Southeast	Top	154	2,710	2,774	2,874	6.1%	3.6%	17.75	18.64	5.0%	2,843	-1.1%
	Average	124	2,354	2,341	2,426	3.1%	3.6%	18.94	19.51	3.0%	2,439	0.5%
	Poor	97	1,894	1,875	1,948	2.9%	3.9%	19.67	20.12	2.3%	1,968	1.0%
Indiana	Top	165	3,035	3,134	3,278	8.0%	4.6%	18.59	19.88	6.9%	3,322	1.3%
	Average	135	2,509	2,579	2,693	7.3%	4.4%	18.79	19.91	6.0%	2,736	1.6%
	Poor	105	1,966	2,043	2,131	8.4%	4.3%	19.07	20.34	6.7%	2,175	2.1%
	Transition <sup>2</sup>		6,936	7,114	7,561	9.0%	6.3%				7,790	3.0%

1 The land values contained in this summary represent averages over several different locations and soil types. If a precise value is needed for a specific property, this value can be determined by a professional appraiser.

2 Transition land is land moving out of production agriculture.

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highest in the Central region, ranging from \$20.91 to \$22.59 per bushel.

This was followed by the West Central, North, and Northeast with values ranging from \$19.62 to \$20.65. The Southwest had the lowest land value per bushel, ranging from \$15.91 to \$17.98 per bushel.

Respondents were asked to estimate the value of rural home sites with no accessible gas line or city utilities and located on a black top or well-maintained gravel road. The median\*\* value for five-acre home sites ranged from \$5,000 to \$8,000 per acre (Table 3). Estimated per acre median values of the larger tracts (10 acres) ranged from \$5,000 to \$7,900 per acre.

\*\* The median value is the value of the data item which divides data arranged in ascending or descending numerical order in half.

#### Area Cash Rents

All areas of the state reported increases in cash rent (Table 2). The only reduction in cash rent was for top land in the Southwest region. The strongest increase in cash rent occurred in the North region.

Cash rents are the highest in the Central and West Central regions. The cash rents in these two regions were very similar for all three land qualities. There was no difference in top land and only \$1 difference in poor land. There was \$4 difference in average land. Cash rents per bushel for the West Central and Central regions ranged from \$0.94 to \$1.02 per bushel. These per bushel rents are the highest in the state. The next highest per-bushel rent was in the North and Southwest, ranging from \$0.88 to \$0.90. Per bushel rents in the Northeast ranged from \$0.81 to \$0.85. The lowest per bushel cash rents were \$0.74 to \$0.77, reported for the Southeast.

### Farmland Supply & Demand

The supply of land on the market and the number of interested buyers and their expectations are important influences in the farmland market. To assess the supply of land on the market, respondents were asked to provide their opinion about the amount of farmland on the market now compared to a year earlier. The respondents were asked to indicate if the amount of land on the market now compared to a year earlier was more, the same or less. At 17%, the 2004 results had a few more respondents indicating more land on the market than last year (Figure 2). However, 83% of the respondents indicated that the amount of land on the market at the current time was the same or less than a year ago. These results continue to indicate the quantity of land for sale remains limited.

Respondents were also asked to provide their perceptions of changes in who was interested in buying farmland. Compared to a year earlier, respondents were asked to indicate if interest by farmers, rural residents, or nonfarm investors in making a farmland purchase had increased, decreased, or remained the same. Interest from farmers showed the largest change. This year, just over 61% of the respondents indicated that when compared to the previous year there was increased interest from farmers (Figure 3). This continues an upward trend in the number of respondents indicating increased farmer interest in farmland purchases.

The demand for rural residents continues to be strong, 73% of the respondents indicated an increase in demand for rural residences. Twenty-four percent indicated that demand for rural residences remained the same. Three percent of the respondents indicated a decline in the demand for rural residents. These responses are similar to those of past years and indicate that demand for rural residences remains strong.

The stock market has shown some recovery from its steep decline, but interest rates continue to be low. Interest from nonfarm investors in acquiring farmland for their

**Table 2. Average estimated Indiana cash rent per acre, (tillable, bare land) 2003 and 2004, Purdue Land Value Survey, June 2004**

Area	Land Class	Corn bu/A	Rent/Acre		Change 03-04 %	Rent/bu. of Corn		Rent as % of June Land Value	
			2003 \$/A	2004 \$/A		2003 \$/bu.	2004 \$/bu.	2003 %	2004 %
North	Top	167	143	149	4.2%	0.88	0.89	4.7	4.4
	Average	137	115	122	6.1%	0.88	0.89	4.8	4.5
	Poor	106	91	93	2.2%	0.91	0.88	4.9	4.5
Northeast	Top	164	138	138	0.0%	0.86	0.84	4.8	4.3
	Average	131	106	107	0.9%	0.83	0.81	4.5	4.1
	Poor	100	82	85	3.7%	0.84	0.85	4.5	4.1
W. Central	Top	165	158	162	2.5%	0.95	0.98	5.2	4.8
	Average	139	134	137	2.2%	0.97	0.99	5.2	4.9
	Poor	107	106	109	2.8%	0.98	1.02	5.2	4.9
Central	Top	170	158	162	2.5%	0.95	0.95	4.7	4.6
	Average	141	129	133	3.1%	0.93	0.94	4.6	4.4
	Poor	111	102	108	5.9%	0.94	0.97	4.3	4.3
Southwest	Top	162	147	146	-0.7%	0.88	0.90	5.2	5.0
	Average	130	115	116	0.9%	0.87	0.89	5.5	5.2
	Poor	100	79	89	12.7%	0.82	0.89	6.0	5.6
Southeast	Top	154	114	118	3.5%	0.75	0.77	4.2	4.1
	Average	124	93	94	1.1%	0.75	0.76	4.0	3.9
	Poor	97	71	72	1.4%	0.74	0.74	3.7	3.7
Indiana	Top	165	147	150	2.0%	0.90	0.91	4.8	4.6
	Average	135	120	122	1.7%	0.90	0.90	4.8	4.5
	Poor	105	93	96	3.2%	0.90	0.92	4.7	4.5

portfolios appears to be strong with 51% of the respondents indicating increased interest compared to last year (Figure 4). While still strong, it is not as strong as reported last year. Only 9% of the respondents indicated a decline in the number of interested nonfarm investors.

### Future grain prices, interest rates, inflation, changes in farmland values

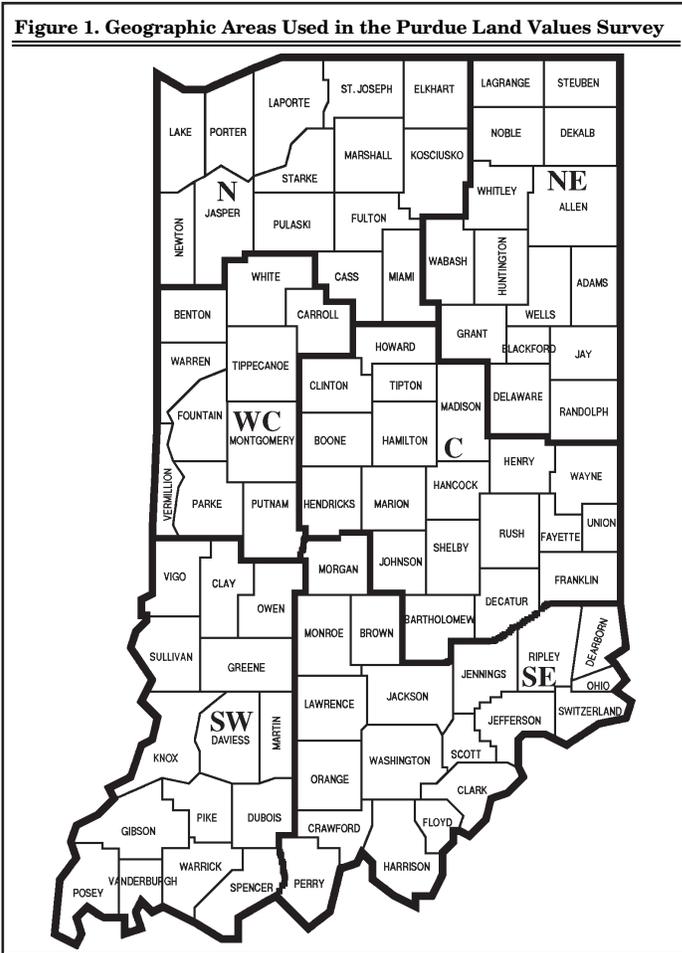
Making a farmland purchase is a long term commitment. An important component of the current price is the expected future earnings. As a result, expectations regarding crop prices

over the next few years have a strong influence on farmland values. In order to gain insight into price expectations, respondents were asked to estimate the annual average on-farm price of corn and soybeans for the period 2004 to 2008.

This year saw a significant increase in the expected five-year average price of corn and soybeans (Table 4). Average corn price expectations for the next five years increased \$0.27 per bushel to \$2.54. The average price for soybeans increased nearly a dollar to \$6.40. It has been six years since respondents have been this optimistic about corn

**Table 3. Median value of five-acre and ten-acre home sites**

Area	Median value, \$ per acre							
	5 Acres or less for home site				10 Acres & over for subdivision			
	2001 \$/A	2002 \$/A	2003 \$/A	2004 \$/A	2001 \$/A	2002 \$/A	2003 \$/A	2004 \$/A
North	5,250	6,000	6,000	6,000	5,000	5,000	5,000	5,000
Northeast	5,000	5,000	6,000	6,000	4,500	4,500	5,000	5,000
West Central	5,000	5,800	6,000	6,000	5,000	5,000	5,000	5,000
Central	6,250	7,000	8,500	8,000	5,000	5,750	7,500	7,900
Southwest	6,000	5,000	5,000	5,000	6,000	5,000	5,000	5,000
Southeast	5,000	5,500	6,000	6,000	4,000	5,000	4,750	5,000



Survey respondents are also expecting the inflation rate over the next five years to be a little higher. The increase in the expected rate of inflation to 2.8% ended the steady decline of the last several years.

Another important expectation that influences current farmland price is the expected future change in farmland values. Table 1 indicates that for the six-month period from June to December 2004, survey respondents expect values to continue to increase. On a state wide basis this increase is expected to range from 1.3% to 2.1%. As with current values, there are regional differences. The strongest changes are expected in the Central region. The only expected decline is for top land in the Southeast region.

Respondents were also asked to project farmland values five years from now. Eighty percent of the respondents expect farmland values to be higher, 12% of the respondents expect farmland values to be the same, and 8% expect farmland values to be lower. For those expecting land values to increase, the average expected increase was 9.5%. For those expecting land values to decline over the next five years, the average decline was 9.2%. Combining all estimated increase, decrease, and no change responses provided in an expected increase in farmland values over five years of 6.8%.

**Summary**

Over the past year, Indiana farmland values have moved strongly higher. The limited supply of land for sale combined with strong demand for farm expansion, country residences and nonfarm development, and continued interest from nonfarm investors in farmland purchases continues to provide strength to Indiana's farmland market.

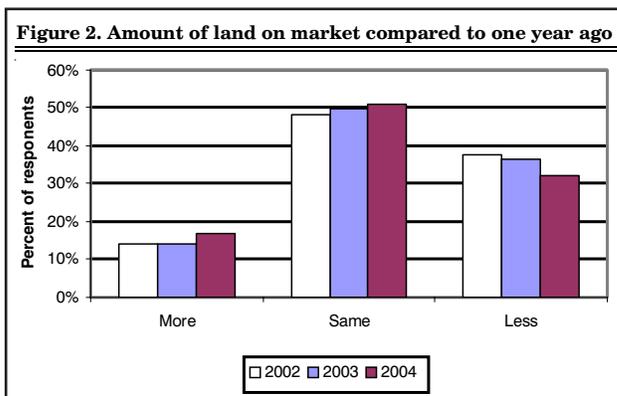
To obtain a more comprehensive assessment of the relative strength that various influences exert on farmland values, survey respondents were asked to assess the influence of 11 different items on farmland values. These items included:

1. Current net farm income,

and soybean prices. These price expectations indicate a more positive revenue outlook. Only the passage of time will determine if this optimism is well founded.

At this time, changes in interest rates are a hot topic in the business news. Unlike past discussions, the current discussion is about increases rather than decreases. In late June,

the Federal Reserve raised the federal funds rate by 0.25%. Not surprising, the expected five-year average interest rate increased this year. While this ended the downward trend of the past several years, the increase was only 0.4%. At 6.9% the expected farm mortgage interest rate is still well below the series average of 9.5%.



2. Expected growth in returns,
3. Crop prices & outlook,
4. Livestock prices & outlook,
5. Current & expected interest rates,
6. Returns on competing investments,
7. U.S. agricultural export sales,
8. U.S. inflation/deflation rate,
9. Current inventory of land for sale,
10. Current cash liquidity of buyers, and
11. Current U.S. agricultural policy.

Respondents were asked to use a scale from -5 to +5 to indicate the effect each item has on current farmland values. If the item had a major negative influence, it would be given a -5. If the item had a small negative influence, it would be given a -1. Positive influences were assessed in the same way, except positive weights were used. An average for each item was calculated.

In order to provide a perspective on the changes in these influences, both 2003 and 2004 data are presented in Figure 5. The numbers on the horizontal axis of the chart indicate the number of the influence in the above list.

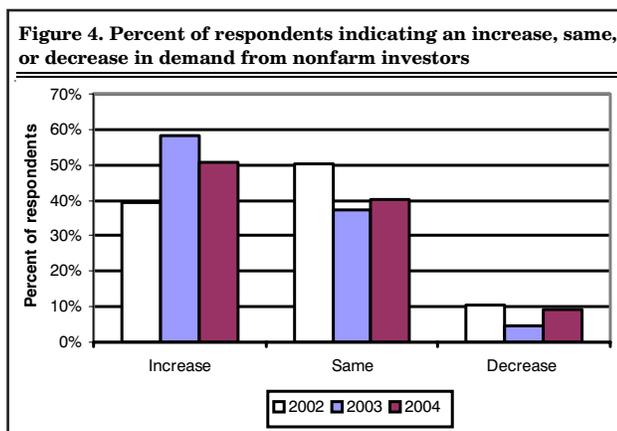
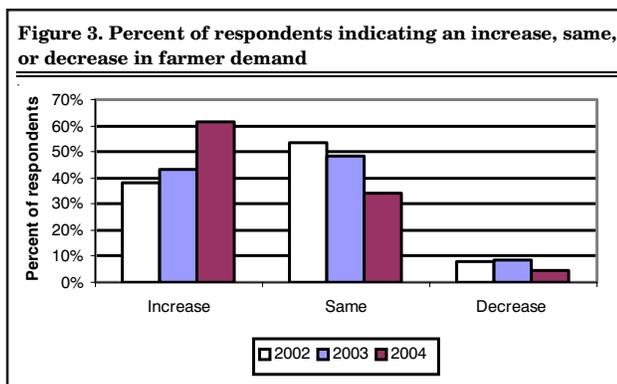
In 2004, all factors were positive. In contrast to 2003, the item with the highest average influence was the crop price level and outlook (3). This was followed by current net farm income (1), the current inventory of land for sale (9), and the current cash liquidity of buyers (10). Current and expected interest rates (5) and returns on competing investments (6) continue to have positive influences, but they are less important than in 2003.

At the current time, there are a number of positive influences in Indiana's farmland market pointing to increased values. What could derail a continued increase in farmland

<b>Pasture rent</b>			
Occasionally we include extra questions in our survey to obtain information about a particular topic. This year, we asked about pasture rent. We received 119 responses to this question. The number of responses, the average annual cash rent for the pasture, and the average acres required per cow are presented below.			
Region	Number of responses	Annual rent (\$ per acre)	Carrying Capacity (acres per cow)
North	22	\$49	1.3
Northeast	15	53	1.5
West Central	17	44	1.8
Central	30	48	1.9
Southwest	11	45	1.9
Southeast	24	35	2.0
State	119	45	1.8

values? One possibility is a sharp decline in grain prices. In June 2003 the market was hoping for some price improvement. That hope was more than realized, not only for grains but livestock. Prices have also quickly declined. Another possibility is a sharp rise in inflation and interest rates. A sharp rise in long-term interest rates would slow development demand, provide more attractive alternative investments, as well

as increase the cost of borrowed money. Still another possibility is a sharp rise in production costs. The tight supply of natural gas has resulted in higher nitrogen prices. There are also higher fuel prices. Interest rates on operating loans are also likely to increase. If these and other input costs rise, margins from crop production are likely to narrow, reducing the income capitalized into farmland values.



**Table 4. Projected five-year average corn and soybean prices, mortgage interest and inflation**

Year	Prices, \$ per bu.		Rate, % per year	
	Corn	Beans	Interest	Inflation
1984	\$3.13	\$7.35	13.3%	6.5%
1985	2.70	6.13	12.3%	5.1%
1986	2.32	5.43	11.0%	4.2%
1987	2.16	5.62	10.7%	4.5%
1988	2.50	6.82	10.9%	4.6%
1989	2.48	6.55	11.0%	4.7%
1990	2.61	6.22	11.0%	4.6%
1991	2.47	6.07	10.4%	4.2%
1992	2.52	6.04	9.5%	3.8%
1993	2.35	5.96	8.7%	3.8%
1994	2.48	6.18	8.9%	3.8%
1995	2.50	6.02	9.2%	3.9%
1996	3.01	6.63	9.1%	3.7%
1997	2.72	6.81	9.0%	3.4%
1998	2.54	6.34	8.6%	3.1%
1999	2.31	5.57	8.4%	2.9%
2000	2.28	5.56	9.1%	3.2%
2001	2.12	5.07	8.1%	2.9%
2002	2.10	4.97	7.6%	2.7%
2003	2.27	5.42	6.5%	2.3%
2004	2.54	6.40	6.9%	2.8%
Average	\$2.48	\$6.06	9.5%	3.8%

While the likelihood of these events or their impact may seem low, it is important to remember that a farmland investment is a long-term investment. The wisdom of a farmland investment will be determined not by the income of next year but the next several years. Prudent planning requires investigating if there is a sufficient cushion to allow the business to withstand unexpected events that reduce net revenue. It is also important to remember that farmland is an illiquid investment. Selling a tract that should not have been purchased can often take longer

than anticipated. If a farmland purchase or sale is planned, the data reported here provides general guidelines regarding farmland values. Before a purchase or sale is made, you will want to carefully research the alternative to obtain a more precise value.

#### Purdue Land Value and Cash Rent Survey

The Purdue Land Value and Cash Rent Survey is conducted each June. The survey was made possible through the cooperation of numerous professionals that are knowledgeable

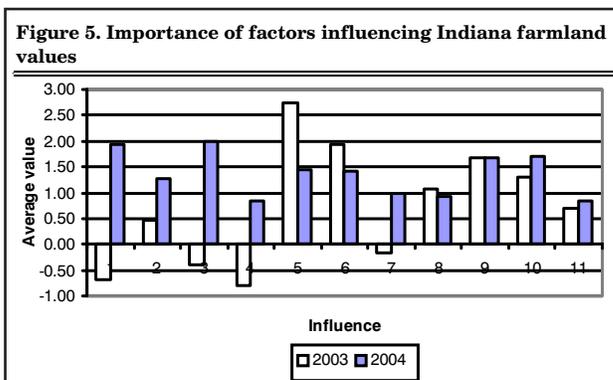
of Indiana's farmland market. These professionals include farm managers, appraisers, land brokers, bankers, Purdue Extension educators, farmers, and persons representing the Farm Credit System, the Farm Service Agency (FSA) county offices, and insurance companies. Their daily work requires that they stay well informed about land values and cash rents in Indiana.

These professionals are asked to provide an estimate of the market value for poor, average, and top quality farmland in December 2003, June 2004, and the expected value for December 2004. They are also asked to provide an estimate of the current cash rent for each land quality. To assess the productivity of the land, respondents provide an estimate of long term corn yields. Respondent are also asked to provide a market value estimate for land transitioning out of agriculture.

Responses from 321 professionals are contained in this year's survey represent all but one Indiana county. There were 64 responses from North region, 53 responses from the North-east region, 72 responses from the W. Central region, 64 responses from the Central region, 35 responses from the southwest region, and 31 responses from the Southeast region. Figure 1 illustrates the counties in each region.

The data reported here provides general guidelines regarding farmland values and cash rent. To obtain a more precise value for an individual tract, contact professionals in your area that have a good understand of the local situation.

We express appreciation to Carolyn Hunst of the Department of Agricultural Economics for her help in conducting the survey.



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# The Use of New Generation Grain Marketing Contracts

Corinne Alexander, Chris Hurt and George Patrick

New generation grain marketing contracts (NGC), which automatically execute a pre-harvest marketing plan that the producer has established, were introduced in 2000 and are used at elevators throughout the Midwest (Smith). NGC are specifically designed to address some of the problems that producers face in executing their marketing plans. Some of these marketing challenges include: 1). Trouble “pulling the trigger” which means the reluctance or inability to establish both upside price objectives, as well as downside pricing exit points; 2). Letting emotion guide pricing decisions where up trending prices may cause excessive optimism and thus tendencies to buy near the high, while down trending prices breeds pessimism and willingness to sell nearer the lows; 3). The complexities and wide variety of pricing alternatives may add confusion and indecision; and 4). Lack of discipline as producers may change their minds frequently and not stick to their marketing plans.

NGC which have become widely offered, especially by larger elevators, help producers avoid some of these challenges by establishing prescribed rules for pricing grain that will be automatically executed. The producer establishes the number of bushels to price in these programs and the particular pricing program to use. Then the actual pricing is executed by the elevator’s program. Once producers have established the bushels to be marketed and the specific program, they generally become a passive participant in the pricing decisions.

NGC have been classified into three categories. First, there are *automated pricing contracts* that follow predetermined and nondiscretionary pricing rules over a specific time window. These are also called average pricing contracts because they are designed to give the producer an average price. For example, a producer might have chosen to

price 10,000 bushels of corn based on the average price of December 2004 corn futures over the March 1, 2004 to May 7, 2004 time window. On each of the 50 business days between March 1 and May 7, the elevator’s program would price an equal amount of corn (200 bushels per day) at the closing price of the December corn futures. For 2004, these December futures prices averaged \$3.09 per bushel. After taking into account the \$0.05 per bushel service fee and the basis of say -\$0.25, the producer will receive a final price of \$2.79 per bushel on the 10,000 bushels sold when delivery occurs during the 2004 harvest.

A more complex set of automated pricing contracts are also being utilized that allow the producer to establish more parameters in the pricing criteria. One type uses technical price indicators to determine on which days pricing will occur. Common technical systems that can be selected include: moving averages, the relative strength index, and stochastics. Producers also have the opportunity to determine other parameters such as the minimum price and the number of days to be used in a moving average system. Some of these contracts allow the producer to change these parameters during the pricing window. Thus the producer can decide to forego passive management of the pricing criteria and return to more active management.

The second category of contracts is called *managed hedging contracts* where pricing decisions are made by an individual analyst chosen by the producer. Again the producer pre-determines the number of bushels to be priced and chooses the specific analyst. Analysts include nationally known marketing services as well as experts within the grain company itself. Once these decisions are made, the producer takes a passive role in pricing the designated bushels.

The third type of NGC are called *combination contracts* where the producer still utilizes automated pricing rules but is allowed to share in gains (if any) from pricing decisions made by the pricing analyst. The AgMAS report by Hagedorn et. al. (2003) provides a detailed description of some of these contracts.

## Learning More About NGC

To better understand the potential reasons NGC are or are not being used, Midwest producers and Indiana elevator managers were surveyed in July 2003. The first group included producers who attended the Purdue Top Farmer Crop Workshop and the second group was composed of Indiana elevator managers.

The Purdue Top Farmer Crop Workshop participants tend to operate very large farms; the average farm size of the 46 respondents is 2,888 acres. In addition, these producers are technological innovators. Thus, they are ideal group to survey about their use of NGC.

About 30 percent of the 49 elevator managers who responded offer NGC. Notably, larger elevators are much more likely to offer these contracts. All of the elevators that handle 20 million bushels or more annually offer NGC. Over half (54%) of the midsized elevators, those that handle between 5 and 20 million bushels, offer NGC. Of the smallest elevators, those that handle 5 million bushels or less, only 13 percent offer NGC.

The elevator managers who offered NGC were asked to list the contracts they offer and to rank the types by volume of grain marketed (Table 1). The price averaging contracts are the most widely used; they are offered by all the elevators and account for the largest volume of grain. The next most popular NGC is use of an analyst, which is offered by 85 percent of the elevators and ranked second by volume. The NGC ranked third by volume is the moving average technical system, which is

**Table 1. Percent of elevators that offer each new generation contract and rank by volume.**

New Generation Contract pricing criteria	Percent of Elevators that offer contract	Rank by volume
Price averaging	100%	1
Individual analyst	85%	2
Moving average technical system	46%	3
Selling on first down day above a price floor	46%	4
Combination of pricing criteria	46%	4
Relative strength index or other oscillator	31%	4

offered by 46 percent of the elevators. The rest of the pricing criteria are tied for fourth based on grain volume and these were: 1). Selling on the first down day above a price floor; 2). Combinations of all the pricing criteria; and 3). The relative strength index or another oscillator system such as stochastics.

Over two-thirds of the producers (68%) said that the grain handlers to whom they deliver offer NGC, but only a little over a third of these producers (37%) said they have used NGC. Of those who have used NGC, 60 percent plan to increase their use, 20 percent plan to remain at their current level of use, and 20 percent plan to decrease their use. Of the producers who have not used NGC, 60 percent plan to start using them, while the other 40 percent do not plan to use them.

### Why Producers Use NGC

In both surveys, producers and elevator managers were asked their opinion regarding the advantages and disadvantages of NGC for producers. They were asked to agree or disagree with a series of statements based on a 5-point scale where 1 is strongly disagree, 3 is neutral, and 5 is strongly agree. An average response of greater than 3 means that the respondents on average agree with the statement and an average response of less than 3 means that the respondents on average disagree with the statement. Responses are reported separately in Table 2 for those who use NGC and those who don't use them because an individual's experience with NGC would be expected to affect their opinions. Each group's responses were tested for statistical differences.

All producers and managers at elevators who offer NGC believe that their biggest advantage is to provide producers with discipline in their pricing strategy. All producers and elevator managers agree that NGC provide the producer with pricing diversification, and help the producer get emotion out of pricing. Those who have experience with NGC agree more strongly with these statements. However, the only statistically significant difference is that managers at elevators who offer NGC are significantly more likely to agree that NGC provide discipline for the producer than managers at elevators who don't offer NGC.

All producers and elevator managers agree that not having margin calls is an advantage to producers. Producers who use NGC are significantly more likely to agree that no margin calls is an advantage than producers who don't use NGC. This is the only statistically significant difference of opinion between the two groups of producers and may indicate that producers who dislike margin calls are more likely to use NGC.

Producers agree that an advantage of NGC is to provide more pricing alternatives and disagree that a disadvantage of NGC is that they offer too many pricing alternatives, thus indicating they appreciate the expanded marketing alternatives. Elevator managers who offer NGC are significantly more likely to strongly agree that an advantage is to increase pricing alternatives and significantly more likely to disagree that a disadvantage is they offer too many pricing alternatives, compared to elevator managers who don't offer NGC's. This may indicate that one reason elevator managers offer NGC

is to increase the pricing alternatives available to their customers, while the elevator managers that do not offer NGC are concerned about overwhelming their customers with excessive choices.

Producers who use NGC and all elevator managers weakly agree that NGC may increase net price. However, they also weakly agree that NGC may lower net price. This inconsistency may imply they don't believe NGC will have a major impact on net price in either direction.

Elevator managers who offer NGC disagree that service fees are a disadvantage to their customers, while elevator managers who don't offer them think service fees are a disadvantage. This statistically significant divergent opinion about service fees may indicate that some elevators have decided not to offer NGC because they believe their customers will not be willing to pay the service fees. Producers who use NGC agree the service fees are a disadvantage, while producers who don't use NGC tend to disagree but the difference is not statistically significant.

Producers who use NGC strongly disagree that they are too complex to understand while those producers who aren't using them weakly agree that they are too complex to understand. Elevator managers that offer NGC's very weakly disagreed that they are too complex, while in contrast elevator managers that don't offer NGC's agree that they are too complex.

### Reasons Grain Elevator Managers Offer NGC

Elevator managers who have experience with NGC tend to have stronger opinions regarding their advantages than managers who do not offer them (Table 3). In contrast, managers who do not offer NGC tend to view NGC as having many disadvantages for their business. Those managers not offering NCG tended to believe they introduced too many pricing alternatives that could create producer confusion, that the added costs of offering NGC could exceed potential fees, and that NGC would increase the elevator's price risk exposure.

From the perspective of managers who have experience with NGC, the largest advantages are that NGC could increase grain volumes and could create customer loyalty, both of which would help them originate grain. These managers also disagreed that NGC would cause producers to be concerned that the elevator could take advantage of them.

Overall, managers do not believe NCG will increase an elevator's price risk exposure. All elevator managers were generally neutral on whether NGC could add income from service fees. While managers who have experience with NGC say that they do not increase merchandizing costs above the fees, managers who don't have experience are concerned that the merchandizing costs would be above the fees.

Managers who offer NGC disagree that these contracts will decrease their time spent giving marketing advice, and disagree that they will increase their time spent merchandising. This suggests that NGC will not substantially change the amount of time managers spend on merchandising and giving marketing advice. In contrast, managers who do not offer NGC are neutral as to whether they can decrease their time giving marketing advice and agree that it could increase their time spent merchandising.

### Summary and Further Research

New generation marketing contracts (NGC) offer producers new tools for pricing grain that can help reduce problems associated with inability to "pull the pricing trigger," excessive emotion in pricing decisions, and lack of discipline in following a marketing plan. Of elevators responding, all large-volume elevators in Indiana offer NGC, while 54 percent of midsized elevators and 13 percent of smaller sized elevators offer them. The most popular NGC were a simple pricing average, use of an individual analyst to do the pricing and moving average technical pricing systems. Sixty percent of surveyed producers who have used NGC plan to increase their use. Of those who have not used them, 60 percent also plan to initiate their use.

**Table 2. Producers' advantages and disadvantages of using new generation contracts.<sup>1</sup>**

Advantages	Producers who use NGC	Producers who don't use NGC	Elevators that offer NGC	Elevators that don't offer NGC
Provides discipline in pricing	4.55	4.22	4.36 <sup>4</sup>	3.60 <sup>4</sup>
Provides pricing diversification	4.33	3.88	4.14	3.68
Helps get the emotion out of pricing	4.33	3.77	4.07	3.21
No margin calls	4.25 <sup>2</sup>	3.77 <sup>2</sup>	4.28	3.56
Provides more pricing alternatives	4.00	3.77	4.14 <sup>2</sup>	3.50 <sup>2</sup>
Reduces time spent marketing	3.66	3.25	--	--
May increase net price	3.44	2.88	3.78	3.17
<b>Disadvantages</b>				
Service fees	3.55	2.75	2.53 <sup>3</sup>	3.38 <sup>2</sup>
May lower net price	3.44	2.88	3.21	3.31
Too many pricing alternatives	2.22	2.12	2.43 <sup>3</sup>	3.60 <sup>3</sup>
Too complex to understand	2.00	3.37	2.92	3.60

1 1= strongly disagree, 3= neutral, and 5= strongly agree.

2 Statistically significant at the 90% level of confidence.

3 statistically significant at the 95% level of confidence.

4 statistically significant at the 99% level of confidence.

Survey respondents felt that the biggest advantages for producers to use NGC included increased discipline in marketing, greater diversification of pricing alternatives, reduction of the negative components of emotion in pricing decisions, and not having to worry about margin calls. Alternatively, the primary disadvantages for producers were felt to be the costs or service fees, the possibility their use could actually lower net prices received after the service fee, and elevators managers that were not currently using them felt the use of NGC would provide too many pricing alternatives.

The elevator managers' opinions about the advantages of NGC use

varied between those managers who currently use them and those who are not. Those who are currently using them felt they helped increase the elevator's volume and helped increase customer loyalty to their facility. These managers also did not think the NGC would add income for the elevator, but tended to view them more as a service that could be helpful to some of their customers.

Those managers who did not currently use the contracts felt they could help increase volume, but had limited other advantages. They also expressed concerns that these contracts could create confusion for the producer with too many complex pricing alternatives, that they would

**Table 3. Advantages and disadvantages for elevator managers who offer NGC.<sup>5</sup>**

Advantages	Elevators that offer NGC	Elevators that don't offer NGC
Can increase grain volumes	3.42	3.17
Creates customer loyalty	3.28	2.78
Adds income from service fees	3.0	3.09
Decreases elevator price risk exposure	2.54	3.22
Decreases my time giving marketing advice	2.28	2.95
<b>Disadvantages</b>		
Increases time spent merchandising	2.64	3.56
Producer concerns that you could take advantage of them	2.78	3.30
Too many pricing alternatives create confusion	2.78 <sup>6</sup>	3.61 <sup>6</sup>
Increases merchandising costs greater than fees	2.15 <sup>7</sup>	3.27 <sup>7</sup>
Increases elevator price risk exposure	2.07 <sup>7</sup>	2.83 <sup>7</sup>

5 1= strongly disagree, 3= neutral, and 5= strongly agree.

6 Statistically significant at the 90% level of confidence.

7 statistically significant at the 95% level of confidence.

8 statistically significant at the 99% level of confidence.

increase the manager's time explaining and merchandising grain, that they would result in added costs that would not be recovered in fees, and that producers might feel the elevator manager was using these contracts to make money or take advantage of them in some way.

This research has helped to develop a better understanding of the opinions of Midwestern producers and Indiana elevator managers regarding the use of NGC. Now there is a need to more closely examine their performance. Specifically, how does NGC use affect the net prices

received by producers? How are the costs versus revenues for the elevator affected by NGC.? Research on their performance when utilized by producers is underway at Purdue and will be reported soon.

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## The Impact of Health Information and Women in the Work Force on Aggregate Meat Demand

*Christiane Schroeter and Ken Foster\**

Over the past few decades, U.S. meat consumption patterns have changed. Changes in food consumption patterns can be the result of changing demographic characteristics, changing lifestyles, increasing health awareness, and nutritional concerns. Prior research suggests that these factors have significant influence on the demand for meat (Capps and Schmitz; Kinnucan, Hsia, and Jackson). The recent interest in low carbohydrate diets and the association with increased red meat consumption is an anecdotal example of this phenomenon.

By incorporating measures of demographic and health information into meat demand analysis, this study aims to quantify and interpret important non-price determinants of meat demand in an aggregate demand setting. Demographic and health information act as demand shifters in this model that could either increase or decrease demand and the share of meat expenditures going to different types of meat (i.e., pork, beef, and poultry). Evaluating the effects of changes on meat demand delivers information on the potential existence of structural change in the underlying consumer

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consumption decisions and lends direction to further research and marketing strategies of producers and purveyors of meat products.

To explore these effects, we statistically estimate the impact of health and demographic information on the aggregate U.S. demand for beef, pork, poultry and fish over the period of 1970 to 1999. To estimate these demands, this study employed both the quantity dependent Almost Ideal Demand System by Deaton and Muellbauer and the price dependent Inverse Almost Ideal Demand System by Eales and Unnevehr. The inverse demand system is used in this study, because of the focus on perishable meat products. That is, it seems appropriate to have quantities as exogenous permitting prices to adjust in order to allow short-run market clearance rather than the reverse, because in the short run the quantities of meat on the market are largely fixed by the breeding and production decisions undertaken by producers in the past that cannot be completely reversed in the short run.

#### Measuring Health Awareness and Demographic Shifts

The health index in the model is represented by the cumulative sum of the net number of medical journal articles published, that support

a linkage between cholesterol consumption and heart disease. The study uses the original Brown and Schrader index as base data, subsequently weighted by a factor representing the relative proportion of all journal articles providing negative cholesterol information (Kinnucan, Hsia, and Jackson). Demographic information is represented by female participation in the labor force. Results from this study indicate that the index of the percentage of women in the work force is a determining factor in estimating meat demand. This variable represents several demographic changes that have occurred over the past two decades. More women are now working outside the home which leads to an increase in households without a stay-at-home adult. With more time spent outside the household, less time can be devoted to preparing meals for the family. The demand for easy-to-prepare meal solutions is hypothesized to have risen as a result leading to a modification in consumption behavior.

#### Results and Implications

Results between the two demand models indicate that the shares of meat expenditure for poultry and fish consumption has responded positively to the increased female workforce,

while in general, the shares of meat expenditure on beef and pork has responded negatively. Fish and chicken are both more microwavable and thus more suited for preparation by “latch-key” children. In addition, poultry and fish have undoubtedly gained in consumption from greater access via fast food and other away from home food consumption options. Away from home food consumption has likely increased as a result of more women in the workforce.

In contrast to previous research (Kinnucan, Hsia, and Jackson; Capps and Schmitz), this study shows that the cholesterol index does not have a significant effect on aggregate meat demand in any category of meat. While this may be true in aggregate, it is probably not true uniformly for all households. Thus, a next step is to determine what types of households have adjusted their meat consumption patterns as a result of health awareness.

Further investigation is needed of the effects of health information and

demographic changes on meat demand. The availability of this information will help producers develop products more suited to consumer tastes, preferences, and demographics. Retailers will also benefit by developing more effective marketing strategies and take advantage of an opportunity to expand market share. Consumers would benefit from improved availability of products and information that meet their needs and circumstances. The results in this paper specifically suggest that the pork and beef industries should improve the convenience characteristics of their products. They need to enhance their products appeal to busy families and individuals with less time for meal preparation and a higher demand for consumption away from home.

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## Landlord Knowledge of Farmland Leasing: Do you need a Farm Manager?

Gerry Harrison, Alan Miller and Craig Dobbins\*

**R**enting land can be a challenge. Utilizing a professional farm manager and other professional expertise may help the landowner get the most out of his or her land. A variety of economic, outlook, production, and legal information about farm leases is available online. Those with Internet service may do a search for “farmland rent” or “farmland leases” and discover many useful articles and tools for making rent and lease decisions.

A landlord needs to know the details related to his or her land, e.g., legal description, tillable acreage, average crop yields under the “best management practices,” and government payments for your land — your local Farm Service Administration

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Office will have some of this information. Often tenants have land pooled for government payment purposes, but landowners can get this information for his or her land. A landlord may need help assembling and interpreting this information depending on his or her experience, familiarity with the land and farming practices.

It is also important to stay abreast of changes in farming technology. A retiring farmer may be in a better position to make a rent decision than a landlord who did not farm the land or have recent experience in farming. However, even though the farmer may have retired, this does not mean that you can stop learning about the changes to production technologies and business practices if you want to get the most out of you farmland investment.

When farmers decide to retire and rent the farmland they own it is important to recognize the legal and

federal tax implications that the type of lease or rental arrangement selected can have. Both landlords and tenants should be aware of the statutory advance date for lease terminations. Legal and tax issues involved in renting Indiana farmland are discussed in EC-713, “Legal Aspects of Indiana Farmland Leases and Federal Tax Considerations” online at: <http://www.ces.purdue.edu/extmedia/menu.htm>. At this site, go to “Agricultural Economics” and select “legal affairs” to obtain EC-713. Lease forms, other lease considerations, and management information are available by selecting “farm management” from the list of choices under Agricultural Economics.

Information from the Purdue Land Value and Cash Rent Survey is available at: <http://www.agecon.purdue.edu/extension/pubs/paer/>. At this site, for the Purdue Ag Econ Report, click on the “PAER Archive” if the current PAER issue does not

include the “Land Value and Cash Rent” survey. This information is usually reported in the August issue of PAER. Rents in recent years have been trending higher. But the level of rent per acre varies with the quality (yield potential) and location of the land though the rent per bushel of corn yield varies little from area to area.

### **Bid Solicitations: Going public to find a Tenant.**

Choosing a tenant to farm the land is probably the most important decision a landlord makes. In many cases, these decisions are made with little public notice, using the network that the landowner has developed.

However, in some cases the landlord decides to “go public.” Information needed for soliciting farmland rent bids may be brief if the solicitation is to run in a local newspaper. In this situation, the landlord must prepare bid specifications that outlines the information that must be contained in any bid that is submitted.

Solicitations focus on the closing date for receiving bids, the payment terms, whether the successful bidder will be required to sign a written lease and the type and duration of the lease, the number and type of references required, and any specific duties and restrictions that may be imposed upon the successful tenant. Bid solicitations should let a landowner reserve the right to reject any and all bids.

A landlord, or farm manager, with several neighboring farmers that have shown an interest in renting, may want to select these farmers to bid first, and forgo a public solicitation for bids.

While a bid solicitation may include few specifics we highly recommend that all leases be in writing covering details that may avoid a future dispute on matters such as: general farm maintenance, measuring and maintaining fertility, various insurance coverages, specific farming practices, lease termination provisions, and compensation for work performed at the time of termination.

Bid solicitations may invite bidders to obtain additional

information about the property, and review a copy of the desired lease, though some of the terms may ultimately be negotiable. An interested farmer may want to inspect the property. However, if an existing tenant is in possession of the land under consideration, going on to the property may not be advisable, unless the landlord has reserved that right in an existing lease.

A farm manager or farm land appraiser may have a role to play in some leasing situations by pulling together all the necessary information a farmer who is not familiar with the land up for lease, would need to know. In other words, an unbiased, professional opinion in writing may be something the landlord would be well advised to provide along with his or her lease terms.

Accurate information about existing fertility levels, yield history, and government program payments for the farm can greatly increase the willingness of a prospective tenant to bid at the market or to meet the expectations of the landlord. Competitive and experienced farmers may gain an advantage by offering something not in the bid solicitation—other than a higher cash price—such as more favorable payment terms than requested or non-cash services such as general farmland and farm building improvements or maintenance.

Calling references and talking to knowledgeable individuals, may increase a landlord’s level of comfort with a prospective tenant. Landlords or their farm managers often do not select the highest bidder, when other factors such as farming record and reputation (e.g., crop yields, personal skills, care of farmed property, and community involvement) are considered.

### **Professional Help**

Both landowners and tenants may find cash rent a comfortable alternative for a number of reasons. Cash rent relieves the landlord from marketing a share of the crop, a challenging task for which many landlords need professional assistance. Marketing assistance

is readily available and various crop marketing tools are well developed. Cash rent also relieves that landlord from tracking the purchase of inputs. For tenants, it saves them the time of dividing expenses and crops at harvest.

A landlord may find he or she can increase farmland income with a crop share lease. A landlord may be in a better position than a tenant (especially a beginning farmer) to take the risk of crop and price variations that accompanies the share lease or custom farming arrangement. Taking on these risks can provide a better average return if the lease terms have been properly specified and tenants carefully selected.

A landlord attempting to maximize return may choose the custom farming alternative. This choice leaves the landlord as the owner of the entire crop and entitled to the government program payments as the actual “producer.” A professional farm manager may be needed to assist a landlord with a custom farming operation.

Leasing and farm management choices may be up to an individual landlord, but a landlord often has a responsibility to other family members that can be neglected by the choices made with the annual farm lease arrangements. These considerations not only suggest the landlord may benefit from professional management and marketing assistance but may need tax planning advice and legal counsel.



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