

# PURDUE AGRICULTURAL ECONOMICS REPORT

AUGUST 2002

## Indiana Farmland Values & Cash Rents Move Higher

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**T**he 2002 Purdue Land Values Survey indicates that the value of average bare Indiana cropland was \$2,382 per acre in June 2002. This was \$118 more than the value reported in June 2001, a 5.2% increase. Cash rents increased from 2001 to 2002 on average land by 2.7% to \$116 per acre.

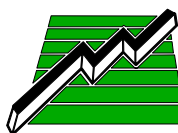
### Statewide Land Values

For the *six months* ending in June 2002, the value of bare tillable land was reported to have increased 2.0% on top land, 2.1 percent on average land, and 2.5 percent on poor land (Table 1). Forty-six percent of the survey respondents indicated that all classes of land (top, average, and poor) were the same or higher during the December 1, 2000 to June 1, 2001 period. Only 4% of the respondents indicated that some or all classes of land fell in value. Forty-two percent of the respondents indicated that land values remained unchanged during the December 1, 2001 to June 1, 2002 period.

The statewide *12-month* increase in average land from June 2001 to June 2002 was 5.2% (Table 1). Top-quality land (162 bushel corn yield rating) was estimated to have increased by \$90 per acre to \$2,892 (Table 1). Average land (132 bushel

corn yield rating) was valued at \$2,382, an increase of \$118, while poor land (102 bushel corn yield rating) was estimated to be worth \$1,869 per acre, an increase of \$136.

The land value per bushel of corn yield rating also increased this year. For top-quality land, the value per bushel of yield was



\$17.85, up by 1.0%. Average quality land value was \$18.06 per bushel, while the poor quality value was \$18.25 per bushel (Table 1). The percentage increases were 3.0% on average land and 4.8% on poor land. These per-bushel figures are \$0.18 higher than last year on top land, \$0.53 higher on average land, and \$0.83 higher on poor land.

The average value of transition land\* declined this year. This decline came after two years of increasing values. The average value of transitional land in June 2002 was \$6,447, a decrease of 2.7% from June 2001. For the six-month period from June 2001 to December 2001 transitional land values declined even more. However, in the latter half of the year, December 2001 to June 2002, transitional land increased by 4.9% (Table 1). 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 2002 was

\$5,500 per acre, \$250 more than reported in June 2001.

### Statewide Rents

Cash rents increased statewide from 2001 to 2002 by \$2 to \$4 per acre (Table 2). The estimated cash rent was \$143 per acre on top land, \$116 per acre on average land, and \$91 per acre on poor land. Rent per bushel of estimated corn yield was \$0.88 on top and average land and \$0.89 on poor land. This was an increase for poor land, decrease for top land, and no change for average land. For 2002, cash rent as a percentage of value was 4.9% for all land classes. (Table 2).

### Area Land Values

Changes in the value of farmland in the six different geographic areas of Indiana (Figure 1) for December 2001 to June 2002 ranged from a 0.1% increase for top land in South-west region to a 3.1% increase for top

\* *Transitional land is land that is moving out of agriculture.*

### In This Issue

Indiana Farmland Values & Cash Rents Move Higher . . . . .	1
Ag Lawyers will Visit Indianapolis . . . . .	7
Indiana Weed Control Boards . . . . .	7
Employment and Investment Trends in Indiana Manufacturing . . . . .	8
Educational Opportunities . . . . .	12

**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 2002<sup>1</sup>**

Area	Land Class	Corn bu/A	Land Value						Land Value/Bu			Projected Land Value		
			Dollars Per Acre			% Change			\$ Amount		% Change		Dec.	
			June 2001	Dec 2001	June 2002	6/01-6/02	12/01-6/02		2001	2002	6/01-6/02	2002	6/02-12/02	
			\$/A	\$/A	\$/A	%	%	\$	\$	%	\$	%		
North	Top	160	2,704	2,724	2,784	3.0%	2.2%	17.15	17.44	1.7%	2,820	1.3%		
	Average	128	2,121	2,204	2,243	5.8%	1.8%	16.96	17.51	3.2%	2,267	1.1%		
	Poor	98	1,552	1,664	1,707	10.0%	2.6%	16.82	17.40	3.4%	1,731	1.4%		
Northeast	Top	162	2,711	2,703	2,766	2.0%	2.3%	17.41	17.13	-1.6%	2,756	-0.4%		
	Average	129	2,133	2,162	2,211	3.7%	2.3%	16.64	17.14	3.0%	2,215	0.2%		
	Poor	99	1,635	1,729	1,769	8.2%	2.3%	16.48	17.85	8.3%	1,765	-0.2%		
W. Central	Top	161	2,823	2,923	2,964	5.0%	1.4%	17.96	18.46	2.8%	2,989	0.8%		
	Average	134	2,329	2,455	2,500	7.3%	1.8%	17.73	18.65	5.2%	2,526	1.0%		
	Poor	106	1,742	1,888	1,929	10.7%	2.2%	16.87	18.16	7.6%	1,943	0.7%		
Central	Top	166	3,135	3,080	3,174	1.2%	3.1%	19.06	19.10	0.2%	3,206	1.0%		
	Average	139	2,631	2,619	2,683	2.0%	2.4%	19.35	19.35	0.0%	2,712	1.1%		
	Poor	110	2,154	2,164	2,226	3.3%	2.9%	20.05	20.30	1.2%	2,240	0.6%		
Southwest	Top	168	2,801	2,858	2,860	2.1%	0.1%	16.92	16.98	0.4%	2,906	1.6%		
	Average	132	2,146	2,171	2,206	2.8%	1.6%	16.64	16.74	0.6%	2,238	1.5%		
	Poor	99	1,472	1,402	1,425	-3.2%	1.6%	15.55	14.46	-7.0%	1,434	0.6%		
Southeast	Top	153	2,426	2,482	2,518	3.8%	1.5%	16.29	16.48	1.2%	2,562	1.7%		
	Average	120	2,000	2,067	2,107	5.4%	1.9%	16.96	17.50	3.2%	2,125	0.9%		
	Poor	91	1,585	1,665	1,702	7.4%	2.2%	17.34	18.79	8.4%	1,733	1.8%		
Indiana	Top	162	2,802	2,834	2,892	3.2%	2.0%	17.67	17.85	1.0%	2,915	0.8%		
	Average	132	2,264	2,333	2,382	5.2%	2.1%	17.53	18.06	3.0%	2,402	0.8%		
	Poor	102	1,733	1,824	1,869	7.8%	2.5%	17.42	18.25	4.8%	1,880	0.6%		
	Trans. <sup>2</sup>		6,627	6,147	6,447	-2.7%	4.9%				6,597	2.3%		

<sup>1</sup> 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.

<sup>2</sup> Transition land is land moving out of production agriculture.

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land in the Central region (Table 1). The Central region reported the strongest increases for this six-month period, ranging from 2.4 to 3.1%. The Northeast region also had increases larger than 2% for all land qualities.

For the year ending June 2002, the change in land values ranged from a decline of 3.2% for poor land in the Southwest region to an increase of 10.7% for poor land in the West Central region. The decline in the poor land value for the Southwest region was the only decline in farmland value reported for the year. The strongest increases for the year were in the West Central region, ranging from 5.0 to 10.7%. This was followed by the North region with increases ranging from 3.0 to 10.0%.

The highest valued top-quality land was in the Central area, \$3,174 per acre. This region was followed by West Central (\$2,964), Southwest

(\$2,860), North (\$2,784), Northeast (\$2,766), and Southeast (\$2,518).

Land value per bushel of estimated average corn yield (land value divided by bushels) for top land in the Central region was \$19.10. For the West Central, North, and Northeast regions, land value per bushel of corn yield on top land ranged from \$17.13 to \$18.46. In the Southeast and Southwest, land value per bushel of corn yield on top land ranged from \$16.48 to \$16.98 (Table 1). In the Northeast Central, and Southwest regions, per bushel value increased as land quality declined. For the North and West Central regions, the value per bushel increased when moving from top to average land, but then decreased in moving from average to poor land.



In the Southwest region, the value per bushel declined as land quality decline.

Respondents were asked to estimate values 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 \$7,000 per acre (Table 3). Estimated per acre median values of the larger tracts (10 acres) ranged from \$4,500 to \$5,750 per acre.

### Area Cash Rents

For the year, the West Central, Central, and Southwest reported increases in cash rent for all land classes. (Table 2). The strongest increases in cash rents occurred in the Southwest region, increasing 7.9% on poor land, 4.7% on average land, and 3.6% on top land. The West Central region reported the next strongest increases, ranging from a 2.0% increase on top land to a 5.1% increase on poor land. The Northeast and Southeast regions each had a mixture of increases and no change in cash rents. The only decrease in cash rent value was reported for top quality land in the North region.

Cash rents were again highest in the Central and West Central areas at \$156 and \$154 per acre, respectively, for top land. Cash rents per bushel for the West Central and Central regions ranged from \$0.92 to \$0.98. These were also the highest in the state. The next highest per-bushel rent was in the North, ranging from \$0.88 to \$0.90 per bushel. Per bushel rents in the Northeast and Southwest ranged from \$0.82 to \$0.86. The lowest per bushel cash rents were \$0.73 reported for the Southeast.

### Land Market Activity

Several factors influence farmland prices. The supply of land on the market, the eagerness of buyers to make purchases, and expectations about grain prices, interest rates, and the rate of inflation are just a few examples. To assess the supply of land on the market, respondents were asked to indicate the amount of farmland on the market compared to

**Table 2. Average estimated Indiana cash rent per acre, (tillable, bare land) 2001 and 2002, Purdue Land Value Survey, June 2002**

Area	Land Class	Corn bu/A	Rent/Acre		Change '01-'02 %	Rent/bu. of Corn		Rent as % of June Land Value	
			2001 \$/A	2002 \$/A		2001 \$/bu.	2002 \$/bu.	2001 %	2002 %
North	Top	160	142	141	-0.7%	0.90	0.88	5.3	5.1
	Average	128	110	113	2.7%	0.88	0.88	5.2	5.0
	Poor	98	82	88	7.3%	0.89	0.90	5.3	5.2
Northeast	Top	162	132	132	0.0%	0.85	0.82	4.9	4.8
	Average	129	104	104	0.0%	0.81	0.81	4.9	4.7
	Poor	99	80	81	1.3%	0.81	0.82	4.9	4.6
W. Central	Top	161	151	154	2.0%	0.96	0.96	5.3	5.2
	Average	134	128	131	2.3%	0.97	0.98	5.5	5.2
	Poor	106	98	103	5.1%	0.95	0.97	5.6	5.3
Central	Top	166	154	156	1.3%	0.94	0.94	4.9	4.9
	Average	139	126	128	1.6%	0.93	0.92	4.8	4.8
	Poor	110	101	103	2.0%	0.94	0.94	4.7	4.6
Southwest	Top	168	140	145	3.6%	0.85	0.86	5.0	5.1
	Average	132	107	112	4.7%	0.83	0.85	5.0	5.1
	Poor	99	76	82	7.9%	0.80	0.83	5.2	5.8
Southeast	Top	153	109	111	1.8%	0.73	0.73	4.5	4.4
	Average	120	86	88	2.3%	0.73	0.73	4.3	4.2
	Poor	91	66	66	0.0%	0.72	0.73	4.2	3.9
Indiana	Top	162	141	143	1.4%	0.89	0.88	5.0	4.9
	Average	132	113	116	2.7%	0.88	0.88	5.0	4.9
	Poor	102	87	91	4.6%	0.87	0.89	5.0	4.9

a year earlier. The respondents indicated there was more, less, or the same amount of land compared to a year earlier. For the last three years the majority of the respondents have indicated that the amount of land on the market was the same as the previous year (Figure 2). Nearly 40% indicated there was less land on the market. Just over 10% indicate an increase. These observations indicate the supply of land for sale is limited. There are a few areas in which the

quantity of land for sale increased, but there are more than three times as many areas where the quantity of land available for sale decreased.

Respondents were also asked to provide their assessment regarding the number of farmland transfers during the previous six months compared to a year ago by indicating if the number of transfers had increased, decreased, or remained the same. Twenty-four percent of the respondents indicated an increase in

**Table 3. Median value of five-acre home sites and home sites of 10 acres or more**

Area	Median value, \$ per acre							
	5 Acres or less for home site				10 Acres & over for subdivision			
	1999 \$/A	2000 \$/A	2001 \$/A	2002 \$/A	1999 \$/A	2000 \$/A	2001 \$/A	2002 \$/A
North	5,000	5,000	5,250	6,000	5,000	5,000	5,000	5,000
Northeast	5,000	5,000	5,000	5,000	4,000	4,500	4,500	4,500
West Central	5,000	5,000	5,000	5,800	4,000	5,000	5,000	5,000
Central	5,000	6,000	6,250	7,000	5,000	5,500	5,000	5,750
Southwest	5,000	5,000	6,000	5,000	5,000	5,000	6,000	5,000
Southeast	5,000	5,000	5,000	5,500	3,750	4,000	4,000	5,000

**Figure 1. Geographic Areas Used in the Purdue Land Values Survey**



Nonfarm investors appear to be showing renewed interest in farmland investments. Thirty-nine percent of the respondents indicated that demand from individual nonfarm investors had increased, while 10% indicated that this source of demand had decreased. In 2001, 27% of the respondents indicated an increase from individual nonfarm investors, while 17% indicated a decrease in demand from individual nonfarm investors.

Pension funds continue to have interest in farmland purchases. Fifteen percent of the respondent indicated an increase demand and 24% indicated a decreased demand. In 2001, 10% indicated an increase in demand and 30% indicated a decrease in demand.

**Expected Corn and Soybean Prices, Interest Rate, and Inflation**

Expectations regarding crop prices over the next few years have a strong influence on farmland values because of their effect on the revenues derived from the purchase or rental of farmland. In order to gain some insight into price expectations, respondents were asked to estimate the annual average on-farm price of corn and soybeans for the period 2002 to 2006. Respondents have been asked to make these five-year projections since 1984.

Another decrease occurred in the expected five-year average price of corn and soybeans (Table 4). The price of \$2.10 for corn and the \$4.97 are the lowest expected five-year prices in the 19-year series. To the extent that land market participants have similar expectations, these price expectations will continue to exert downward pressure on land values and cash rents.

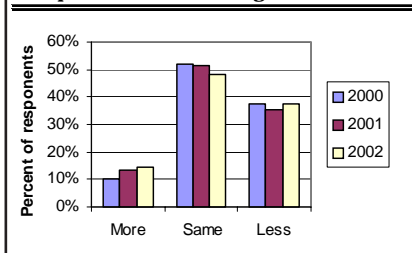
Other important expectations associated with a land purchase include the expected farm mortgage interest rate and the rate of inflation for next 5 years. The estimated interest rate declined again this year. This is the lowest expected interest rate in the series. The expected rate of inflation also continues to drift lower.

the number of transfers, 27% indicated that the number of transfers declined, and 49% indicated that the number of transfers were the same. Respondents were asked to provide their perceptions of changes in purchasers of farmland by indicating

if purchases by farmers, rural residents, nonfarm investors, or pension funds had increased, decreased, for remained the same when compared to last year. Demand from farmers was said to have increased by 38% of the respondents, while 8% of the respondents indicated that farmer demand had declined. This was a change from 2001, when 22% of the respondents indicated an increase in farmer demand, while 19% indicated a decline.

The demand for rural residents continued to be strong, 78% of the respondents indicated an increase in demand for rural residences. This is about the same as last year. Two percent of the respondents indicated a decrease in demand for rural residences, while 20% indicated no change.

**Figure 2. Amount of Land on Market Compared to One Year Ago**



### Factors Influencing Current Farmland Values

To obtain a more comprehensive assessment of the relative strength that various influences are currently exerting 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,
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. A weighted average for each item was calculated, and the results are presented in Figure 3. The numbers on the horizontal axis of the chart indicate the number of the influence in the above list.

Those items with the largest negative influences included the crop price level and outlook (3), current livestock price level and outlook (4), and current net farm income (1). Those with the largest positive

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

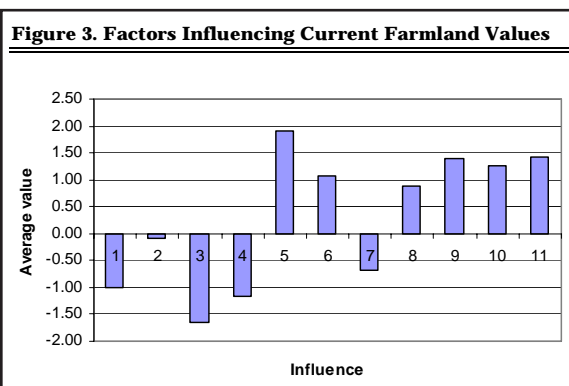
Year	Prices, \$ per bu.		Rate, % per year	
	Corn	Beans	Interest	Inflation
1984	\$3.13	\$7.35	13.3%	6.5%
1985	2.70	6.13	12.3%	5.1%
1986	2.32	5.43	11.0%	4.2%
1987	2.16	5.62	10.7%	4.5%
1988	2.50	6.82	10.9%	4.6%
1989	2.48	6.55	11.0%	4.7%
1990	2.61	6.22	11.0%	4.6%
1991	2.47	6.07	10.4%	4.2%
1992	2.52	6.04	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%
Average	\$2.49	\$6.07	9.8%	4.0%

influences included current and expected interest rates (5), current U.S. agricultural policy (11), the current inventory of land for sale (9), the current cash liquidity of buyers (10), and returns on competing investments (6).

#### Land Value/Cash Rent Multiples

Figure 3 indicates that the current annual return to a land investment has an important influence on

farmland values. The relationship between current returns from a farmland investment and the value of farmland is always changing. The 2002 survey indicates a value/rent multiple of 20.5 ( $\$2,382 \div \$116 = 20.5$ ) for average land. Farmland values are generally 14 to 19 times current earnings (Figure 4). Since 1998, the multiple has been 19 or higher.





For the period 1975 to 2001, the value to rent multiple has ranged from a low of 12.4 in 1986 to a high of 20.6 in 1979 (Figure 4). Over the 1975 to 2002 period, the value to rent multiple averaged 16.5, with a standard deviation of 2.7. Two-thirds of the time the value to rent multiple has been within one standard deviation of the mean or within the range of 13.8 to 19.2. Ninety-five percent of the time the value to rent multiple has been within two standard deviations of the mean or in a range from 11.1 to 21.9. If the future is similar to the history represented in our data series, a decline in the value to rent multiple seems more likely than an increase.

#### What About the Future?

In spite of continued low grain prices, land values and cash rents continued to rise between June 2001 and June 2002. This increase has been aided by many factors. There continues to be strong demand for country residences and nonfarm development. The short recession in the U.S. economy did little to reduce this demand for Indiana farmland. Long-term interest rates remain low, adding additional strength to farmland values. Uncertainty about the characteristics of a new Farm Bill has been removed. The new Farm Bill appears to provide more support than provided under Freedom to Farm and the annual emergency appropriations made by Congress. The survey also indicates some renewed interest on the part

of farmers and nonfarm investors in owning farmland, likely a reflection of reduced expectations regarding stock market returns. With these forces in play and the limited supply of farmland for sale, a continued increase in Indiana farmland values is expected.



When asked to project farmland values for December 2002, respondents expected farmland values in all areas except the Northeast to show a modest increase (Table 1). In the Northeast, respondents expected a small decline in top quality and poor quality land and a slight increase in average quality land. For the state as a whole, a 0.8% increase was expected for each land category.

Respondents were also asked to project farmland values five years from now. Nearly 79% expected farmland values to be higher, 17% of the respondents expected farmland values to be the same, and 6% expected farmland values to be lower. Overall, respondents expect land values to be 7.6% higher in five years.

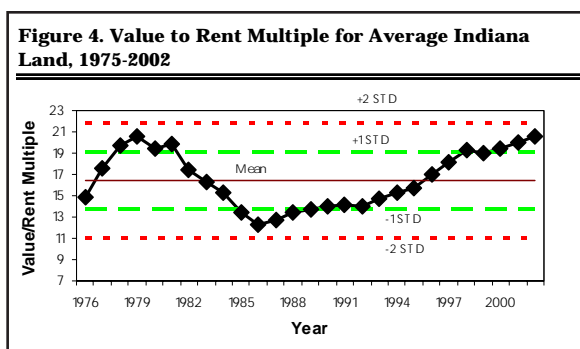
While there are several signs pointing to higher farmland values and many expect a continued increase, remember that a farmland purchase is a long-term commitment and economic circumstances can quickly change.

Factors in the rental market indicate continued strength as well. Expanding the size of the farm to

spread fixed machinery and labor costs over more units of production is strategy that is being aggressively pursued by many farmers. This has helped create a strong demand for rental land. The new Farm Bill removes the uncertainty that support for commodity programs might be reduced, at least until the next revision. While Congress does not intend for this income support to go to nonfarming landowners, the competitive nature of this market has resulted in at least part of this support being bid into cash rents. At least some of the increased support payments in the 2002 Farm Bill will be bid into cash rents. In addition, at this time there appears to be some positive news regarding corn and soybean prices. Indiana producers have also been blessed with above-average and in some cases record corn and soybean yields for the past several years. With delayed planting this Spring, yield expectations for this year's crop are not as strong as previous years. With a moderate reduction in yields it seems likely that cash rents will be steady to higher rather than decline. However, if yields for this crop are down sharply, some softening of cash rents is expected.

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*The land values survey was made possible by the cooperation of professional farm managers, appraisers, brokers, bankers, Purdue Extension educators, 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. The authors express sincere thanks to these friends of Purdue and Indiana agriculture. They provided 325 responses representing nearly all Indiana counties. We also express appreciation to Carolyn Hunst of the Department of Agricultural Economics for her help in conducting the survey.*



## Ag Lawyers will Visit Indianapolis

**T**he American Agricultural Law Association (AALA) will present its 23rd Annual Meeting and Educational Symposium October 25-26, 2002 at the downtown Adam's Mark Hotel and Suites in Indianapolis.

This two-day program is filled with exceptional opportunities for professional enhancement. Session topics include environmental regulation of agriculture, genetically modified organisms, bio-security and CAFO regulations. Practitioners' workshops are a valuable venue for learning and discussion with others. This year's workshops focus on the topics of representing farmers and ranchers who are in disputes with the USDA, as well as topics on estate and business planning. Presentations are by lawyers and scholars in subject matter areas. Continuing Legal Education (CLE) accreditation will

be requested for the 2002 AALA Annual Meeting and Educational Symposium in all mandatory CLE states.

In addition to formal sessions, the AALA Annual Meeting and Educational Symposium is your chance to interact and discuss current topics with fellow agricultural law professionals at several evening receptions, luncheons and breakfasts. Prior to the conference, on Thursday, October 24, attendees will have the special opportunity to catch a glimpse of the future of agricultural technology by touring the headquarter facilities of Dow AgroSciences LLC.

AALA is the only organization dedicated to the interest and issues of agriculture and the legal profession. Its mission is to serve as a national professional organization focusing on the broad range of legal issues concerning agriculture. It

serves as an informational, educational and resource link among practitioners, educators, government, researchers, producers, industry and the general public. While comprised primarily of attorneys, AALA membership is open to any person with an interest in agricultural law.

The AALA Annual Meeting and Educational Symposium is a valuable opportunity to invest in your agricultural law education and practice that you will not want to miss.

Find current information on program details and how to register on the AALA Web site at [www.aglaw-assn.org/pagefile/aalaevents.html](http://www.aglaw-assn.org/pagefile/aalaevents.html). Current AALA members will receive a registration brochure in the mail.

To find out more about AALA Membership, contact the AALA Office at (515) 956-4255 or [aglaw@aaea.org](mailto:aglaw@aaea.org).

## Indiana Weed Control Boards

*Gerald A. Harrison, Extension Economist*

**S**everal Indiana statutes provide for weed control. If necessary, a township trustee may take action to control weeds, bill the owner, and, if the bill is not paid, collect the bill like real estate taxes. Since 1981, the law provides for a county weed control board (WCB) are permitted to deal with several problem weeds. Weeds under the WCB law include: Canada thistle, Johnson grass, bur cucumber, and shatter cane. WCBs are active in a few Indiana counties.

WCB law permits the county commissioners to provide for a WCB by ordinance, on their own initiative, or after receiving a petition for a WCB signed by at least five percent of the registered voters of the county.

A WCB must consist of (1) one township trustee, (2) one SWCD supervisor, (3) a representative of the agricultural community of the county, (4) a representative from the county highway department, and

(5) a Purdue University County Extension Educator who serves in a non-voting, advisory capacity.

When a WCB does exist, it has broad powers of enforcement for the control of specified noxious weeds. WCB may give notice to the landowner or to a person in possession of the real estate if there is a failure to control the appropriate weeds. A WCB has the authority to: employ staff to assist with WCB enforcement activities, enter upon land after a 48-hour notice to inspect, hire custom operators to control weeds, if necessary, and to bill the appropriate party for costs.

A township trustee may defer to a WCB to take action where a trustee has identified real estate containing detrimental plants. Thus, there is a mechanism provided to allow a WCB to expand its activities. However, a WCB is not obliged to perform a task that is already a duty of a township trustee and may decline jurisdiction

and refer a weed control problem back to a township trustee. The Indiana Weed Board law is in the Indiana Code at 15-3-4.6 and may be accessed on the Internet at <http://www.ai.org/legislative/ic/code/>.

The Purdue Cooperative Extension Service conducts weed control education on a regular basis. But from an enforcement point of view, the choice in most counties is to ask the township trustee to enforce existing weed control laws due to the lack of active WCBs in many counties. There are provisions in the Indiana law for other local authorities to control weeds.

More information on weed laws and various other legal topics are available from Gerald A. Harrison, Extension Economist, Ag. Econ. Dept., Purdue University, phone: 765-494-4216; toll free: 1-888-398-4636; E-mail: [harrisog@purdue.edu](mailto:harrisog@purdue.edu).

# Employment and Investment Trends in Indiana Manufacturing

David L. Brown, Research Associate and Kevin T. McNamara, Professor

**T**he economy is emerging from a recession in which Indiana was listed as one of the two states most greatly affected (Alabama is the other). This determination was based on wage change, unemployment increase, and other factors\* The impact has been large enough that the Indiana legislature has encountered difficulty balancing the state budget, and Indiana has experienced an increase of foreclosures and credit delinquency rates above U.S. rates\*\* As jobs return to the state, Hoosiers are asking themselves what has changed. Will they be able to regain lost wages and employment, and what industries are likely to provide new opportunities?

## Manufacturing Employment Changes

If past economic cyclical trends are an accurate guide, the manufacturing sector will most likely provide the opportunities that Hoosiers are looking for, because manufacturing has traditionally been an important source of employment and income in the Indiana economy. In accordance with a long-term trend, Indiana holds the distinction of having the highest percentage of manufacturing employment\*\*\* Furthermore, Indiana's share of U.S. manufacturing employment was rising before the recession (Figure 1). In an increasingly global marketplace for inputs, manufacturers have greater site selection flexibility, and since 1982 Indiana has

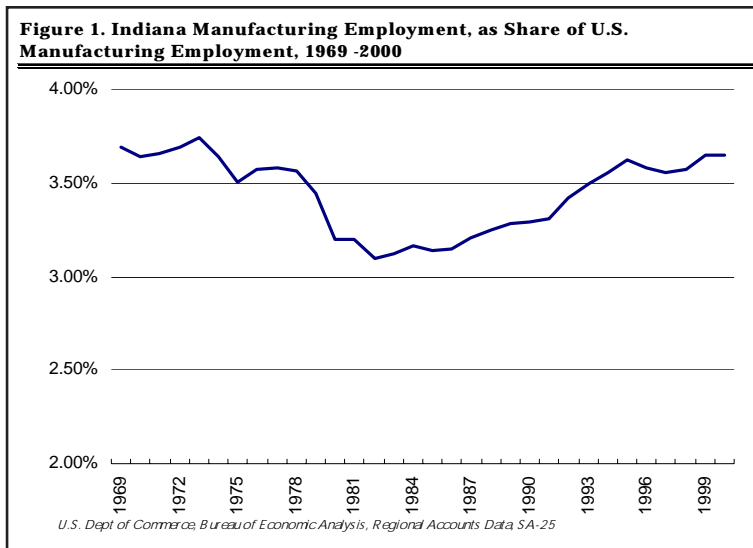
been regaining its share of U.S. manufacturing employment.

Figure 2 shows employment trends for the largest seven employment sectors in manufacturing. Chemical manufacturing (includes pharmaceuticals) is also shown, because it paid the highest average wage in 2000.

In the last few years, motor vehicles and equipment manufacturing gained the most new employment, making up for losses in the electrical and other electric equipment sector. Because of the growing importance of available support services from computer and data processing

services, they are included in Table 1, which shows manufacturing employment change. Furniture, fabricated metal products, and chemicals manufacturing experienced growth in excess of 5% in these last three years of the decade. Printing and publishing was the only sector, aside from electrical, to show a decline in excess of 5%.

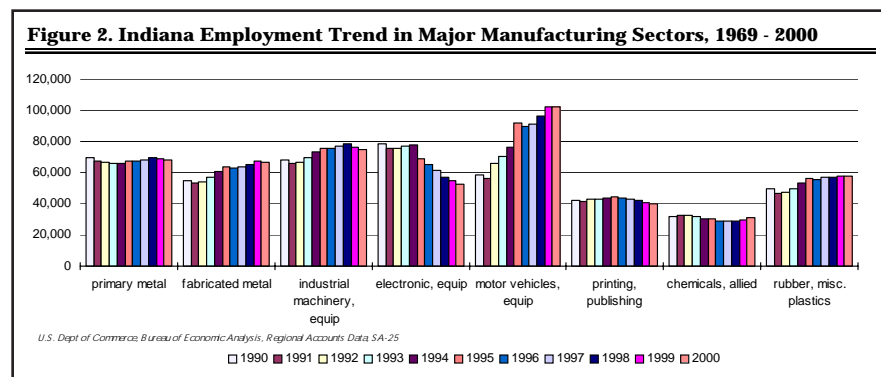
The overall employment growth in all economic sectors of the Midwest region did not exceed the national average. Indiana, Illinois, Michigan, and Ohio experienced employment growth of 5%, compared to the national growth rate of 7% during



\* Economic Policy Institute: Briefing Paper 9/2/2001

\*\* Federal Deposit Insurance Corporation, Regional Economic Conditions

\*\*\* U.S. Dept of Commerce, Bureau of Economic Analysis Data shows that Indiana has the highest percentage of employment and highest percentage of gross state product in manufacturing, of any state in the country.





1997 to 2000 (Table 2). Manufacturing activity in the United States decreased by 1%, whereas Indiana, Kentucky, and Michigan each gained 1% in manufacturing employment. Illinois and Ohio experienced slower growth and followed the U.S. decline in manufacturing employment (Table 2).

Kentucky showed the highest percentage growth in steel and automotive-related employment in the region but lost the greatest percentage of tobacco, textile, apparel, and energy products manufacturing employment. Indiana lost the highest percentage of electrical manufacturing employment and shared a slow [relative] growth rate in computer services employment with Michigan and Ohio.

#### Employment Shift-Share Analysis

To assess the sources of employment change in Indiana manufacturing, it

**The National Growth Component** represents the change in employment that would have occurred if a local industry had grown at the same rate as overall U.S. employment grew.

The **Industrial Mix Component** indicates whether an industry is a rapid growth or slow growth industry. If an industry has grown at a higher rate than the national economy, it is a rapid-growth industry; if it grew at a slower rate, it is a slow-growth industry.

The **Competitive Share Component** indicates whether the local economy is increasing or decreasing its share of national employment in an industry. A positive number indicates that a sector grew faster in the local economy than it grew in the national economy. A negative number indicates the sector grew slower in the local economy than in the national economy.

This analysis used employment data. Shift-share analysis can use income, establishment, or other data that measures the local economy.

**Table 1. Indiana Employment by Manufacturing Sector, 1997 - 2000**

Industry Sector	1997	2000	Change	% Change
Total Indiana Employment	3,511,402	3,691,768	180,366	5%
Computer and Data Process Svcs.	14,182	18,266	4,084	29%
Manufacturing	690,120	697,610	7,490	1%
Lumber and wood products	31,865	32,874	1,009	3%
Furniture and fixtures	25,990	27,653	1,663	6%
Stone, clay, and glass products	19,218	18,982	(236)	-1%
Primary metal industries	68,110	68,343	233	0%
Fabricated metal products	63,690	66,689	2,999	5%
Industrial machinery and equip.	76,842	74,802	(2,040)	-3%
Electronic and other elec equip.	61,572	52,871	(8,701)	-14%
Motor vehicles and equip.	91,363	102,300	10,937	12%
Other transportation equip.	23,345	25,616	2,271	10%
Instruments and related prod	21,874	22,173	299	1%
Miscellaneous manufacturing	12,672	12,309	(363)	-3%
Food and kindred products	34,580	34,630	50	0%
Tobacco products	n/a	n/a	n/a	n/a
Textile mill products	n/a	n/a	n/a	n/a
Apparel and other textile prod.	8,167	8,588	421	5%
Paper and allied products	15,504	15,816	312	2%
Printing and publishing	42,823	39,677	(3,146)	-7%
Chemicals and allied products	28,819	30,848	2,029	7%
Petroleum and coal products	3,769	3,445	(324)	-9%
Rubber and misc. plastics	57,177	57,973	796	1%
Leather and leather products	n/a	n/a	n/a	n/a

*U.S. Dept of Commerce, Bureau of Economic Analysis, Regional Accounts Data, SA-25*

**Table 2. Comparison of States Employment Growth 1997 - 2000**

1997 - 2000 Employment Change	Indiana	U.S.	Illinois	Kentucky	Michigan	Ohio
Total employment	5%	7%	5%	6%	5%	5%
Computer and Data Process Svcs.	29%	52%	48%	42%	25%	32%
Manufacturing	1%	-1%	-3%	1%	1%	-1%
Lumber and wood products	3%	0%	-3%	4%	0%	9%
Furniture and fixtures	6%	8%	14%	22%	17%	16%
Stone, clay, and glass products	-1%	4%	0%	0%	7%	3%
Primary metal industries	0%	-1%	-2%	10%	4%	-7%
Fabricated metal products	5%	4%	1%	17%	2%	3%
Industrial machinery and equip.	-3%	-3%	-6%	1%	-2%	-8%
Electronic and other elec equip.	-14%	1%	-7%	-4%	5%	-1%
Motor vehicles and equip.	12%	4%	-3%	21%	4%	-1%
Other transportation equip.	10%	-2%	-9%	-3%	14%	-6%
Instruments and related prod	1%	-2%	-9%	-5%	-6%	6%
Miscellaneous manufacturing	-3%	0%	-8%	-7%	-5%	0%
Food and kindred products	0%	1%	-2%	10%	-10%	1%
Tobacco products	n/a	-15%	n/a	-45%	n/a	-9%
Textile mill products	n/a	-13%	n/a	-45%	32%	-4%
Apparel and other textile prod.	5%	-21%	-5%	-25%	6%	-11%
Paper and allied products	2%	-4%	-4%	6%	-12%	-7%
Printing and publishing	-7%	-3%	-4%	-1%	-5%	-5%
Chemicals and allied products	7%	1%	-1%	1%	-1%	3%
Petroleum and coal products	-9%	-8%	-5%	-50%	-12%	-18%
Rubber and misc. plastics	1%	1%	2%	6%	-8%	5%
Leather and leather products	n/a	-22%	n/a	-27%	-18%	-38%

*U.S. Dept of Commerce, Bureau of Economic Analysis, Regional Accounts Data, SA-25*

**Table 3. Indiana Shift-Share Analysis of Employment Growth**

Indiana Shift-Share 1997 to 2000	Indiana Employment Change 1997 to 2000	National Growth Component	Industrial Mix Component	Competitive Share Component
Total Employment	180,366	253,552	n/a	(73,186)
Computer and Data Process Svcs.	4,084	1,024	6,401	(3341)
Manufacturing	7,490	49,832	(59,703)	17,360
Lumber and wood products	1,009	2,301	(2,458)	1,166
Furniture and fixtures	1,663	1,877	275	(489)
Stone, clay, and glass products	(236)	1,388	(637)	(987)
Primary metal industries	233	4,918	(5,670)	985
Fabricated metal products	2,999	4,599	(2,138)	538
Industrial machinery and equip.	(2,040)	5,549	(8,008)	420
Electronic and other elec equip.	(8,701)	4,446	(3,623)	(9,524)
Motor vehicles and equip.	10,937	6,597	(3,161)	7,501
Other transportation equip.	2,271	1,686	(2,265)	2,851
Instruments and related prod	299	1,579	(2,085)	804
Miscellaneous manufacturing	(363)	915	(868)	(410)
Food and kindred products	50	2,497	(2,101)	(346)
Tobacco products	n/a	n/a	n/a	n/a
Textile mill products	n/a	n/a	n/a	n/a
Apparel and other textile prod.	421	590	(2,337)	2,168
Paper and allied products	312	1,120	(1,749)	942
Printing and publishing	(3,146)	3,092	(4,381)	(1,857)
Chemicals and allied products	2,029	2,081	(1,930)	1,878
Petroleum and coal products	(324)	272	(573)	(23)
Rubber and misc. plastics	796	4,129	(3,272)	(61)
Leather and leather products	n/a	n/a	n/a	n/a

U.S. Dept of Commerce, Bureau of Economic Analysis, Regional Accounts Data, SA-25

is useful to look at the shift-share changes that occurred through a recent time period. Shift-share analysis divides the number of jobs lost or gained during a time period into three parts. The total change in the number of jobs during the time

period is equal to three components:  
**Total Change in Employment =  
 National Growth Component +  
 Industrial Mix Component +  
 Competitive Share Component.**

Table 3 shows Indiana added 180,366 jobs from 1997 to 2000.

At first glance this seems positive; however, the state would have created 73,186 more jobs, if statewide employment growth had matched the national rate of employment growth from 1997 to 2000. Had Indiana matched U.S. job growth through the period, instead of 180,366 new jobs, Indiana would have created 253,552 new jobs (Table 3).

In manufacturing the situation was better. The Indiana growth rate in manufacturing (1%) exceeded the national growth rate (-1%), thus, Indiana added 17,360 more jobs in manufacturing during 1997-2000 than it would have if the state had followed the national trend of losing manufacturing employment.

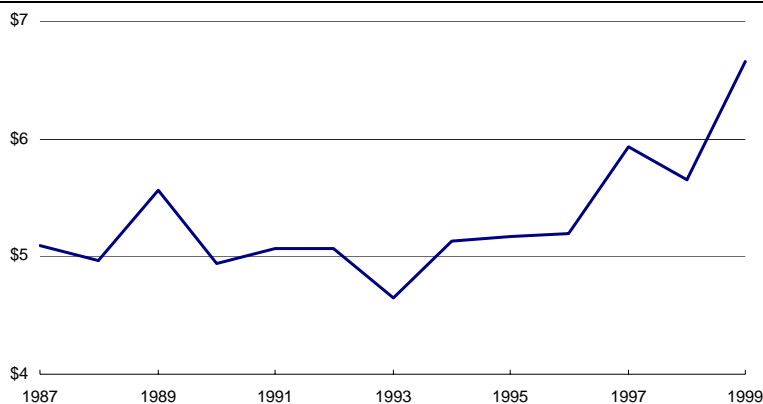
Local factors (competitive share component) resulted in 7,501 additional new jobs in motor vehicles and equipment, and 9,524 fewer new jobs in electrical and other electrical equipment.

Shift-share analysis indicates that manufacturing employment in the state restructured during 1997 to 2000, essentially from electrical-related to transportation-related manufacturing. The net growth of Indiana manufacturing employment was positive, affirming the ongoing importance of manufacturing to Indiana's employment.

#### New Capital Investment Trend

Long-term capital investment activity can indicate the direction of future manufacturing activity, assuming neutral inventory levels. The purchase of new equipment is based on expectations of future financial returns from the use of the capital item(s). New expenditures for machinery, tools, and equipment can be a positive sign for future output and employment.

Investment in Indiana manufacturing remains strong. The Corporation for Enterprise Development's 2001 Development Report Card ranks Indiana's manufacturing capital investment as 15th in the nation. In Indiana, manufacturers have continued a trend of increasing capital investments. After adjusting for inflation, the indication of a positive long-term trend of increasing

**Figure 3. Indiana New Capital Expenditures adjusted for inflation, in billions, 1987 - 1999**

Source: U.S. Dept of Commerce Census Bureau, Annual Survey of Manufacturers; U.S. Dept of Labor, Bureau of Labor Statistics, Consumer Price Index, Year 2000 = 100

**Table 4. Indiana Manufacturing Sectors New Capital Investment / Value Added**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Food and kindred products	6%	6%	8%	7%	7%	10%	9%	7%	9%	15%
Textile mill products	n/a	n/a	n/a	n/a	4%	10%	n/a	5%	7%	4%
Apparel and other textile products	n/a	n/a	3%	3%	4%	6%	3%	4%	3%	6%
Lumber and wood products	4%	5%	5%	3%	4%	4%	5%	6%	5%	6%
Furniture and fixtures	4%	4%	5%	4%	4%	8%	5%	5%	7%	5%
Paper and allied products	n/a	n/a	9%	10%	8%	7%	10%	8%	8%	6%
Printing and publishing	7%	7%	7%	7%	8%	5%	3%	8%	4%	7%
Chemicals and allied products	8%	10%	13%	11%	7%	6%	8%	7%	5%	5%
Petroleum and coal products	n/a	n/a	25%	22%	11%	11%	12%	10%	10%	8%
Rubber and miscellaneous plastics products	11%	10%	7%	7%	8%	7%	8%	12%	9%	10%
Leather and leather products	n/a	n/a	n/a	n/a	2%	0%	n/a	n/a	n/a	n/a
Stone, clay, and glass products	n/a	n/a	7%	11%	8%	8%	8%	9%	9%	11%
Primary metal industries	12%	19%	11%	10%	13%	10%	12%	12%	9%	8%
Fabricated metal products	7%	8%	7%	5%	6%	6%	6%	7%	6%	6%
Industrial machinery and equipment	9%	6%	6%	5%	7%	6%	6%	6%	6%	8%
Electronic and other electric equipment	8%	6%	7%	7%	6%	5%	6%	6%	6%	9%
Transportation equipment	9%	9%	7%	7%	8%	10%	8%	10%	9%	10%
Instruments and related products	3%	5%	5%	5%	4%	4%	4%	n/a	n/a	n/a
Miscellaneous manufacturing industries	n/a	n/a	5%	7%	4%	5%	5%	4%	4%	4%

*U.S. Census, Annual Survey of Manufacturers*

investment activity in Indiana is apparent (Figure 3).

Different manufacturing sectors experienced varying levels of new capital investment. Table 4 shows the new capital investment as a percent of value added, by manufacturing sector. A strong ongoing level of new investment throughout the 1980s and 1990s characterized the primary metals sector. Note that part of this new investment may reflect a trend toward new investment in (mini) mills that recycle metal.

Considering that Indiana is the most concentrated manufacturing state in the nation and that the level of reinvestment in manufacturing capital exceeds the national average, it appears that the state is in a good position to participate in the economic recovery.

Computer and data processing services is a key support sector for all industries, but the future is clouded

\*\*\*\* *Nurturing Central Indiana's Pillar Industries for 21st Century Midwestern Pre-Eminence, 2000*

\*\*\*\*\* *Blueprint for Economic Growth in Indiana, 1996*

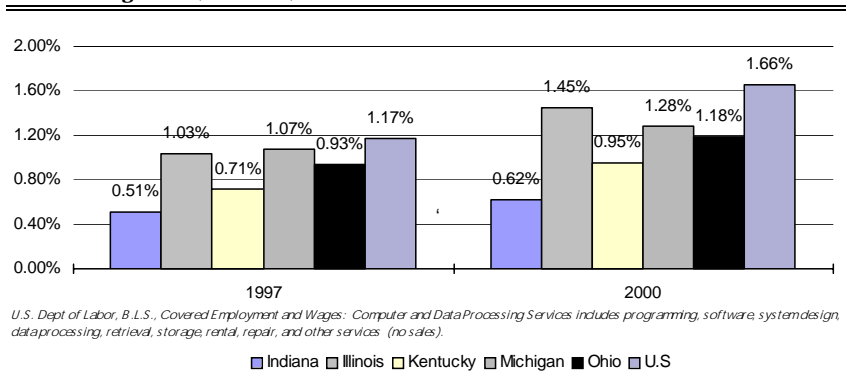
\*\*\*\*\* *Assessing the Midwest Economy, 1997*

by a deficiency in computer and data processing services employment. The Bureau of Labor Statistics category for computer and data processing services includes computer programming services, prepackaged software, computer integrated systems design, data processing and preparation, information retrieval services, computer facilities management, computer rental and leasing, computer maintenance and repair, and other computer related services, but it does not computer sales. Computer and data processing services are critical support services for all industries, including manufacturing, but Indiana has less than half of the national average of IT employment

and is the lowest in the region, as seen in Figure 4.

Addressing this deficiency in computer services was one of the important recommendations from Batelle's 2000 report on pillar industries\*\*\*\* DRI's 1996 report\*\*\*\*\* explained how clusters of industry in an area benefit from economies of scale and how Indiana would benefit from a consortium of technology providers and services, with the innovations and technical expertise of the university system available to nearby industries. A Chicago Federal Reserve study\*\*\*\*\* shadowed this understanding by attributing the 1990s turnaround in manufacturing to advances in

**Figure 4. Computer and Data Processing Services Workforce Percent Indiana, Surrounding States, and U.S., 1997 - 2000**



technology, which created substantial productivity gains. That report also recognized as a problem the fact that due to economies of scale, smaller manufacturing establishments need help in implementing technological advances and were less able to do so than their large-sized counterparts.

Increased implementation of flexible manufacturing in the automotive sector will mean that employment will increasingly be displaced from larger plants into small supplier firms and that Indiana could fall out of favor with manufacturing companies for failure to

technologically advance. Without a sufficient mass of support services in computer and data processing, small firms' ability to implement new technologies will be impaired. Indiana needs to find ways to provide technical assistance, grow the IT service sector, and provide a technically skilled workforce that is ready for the future, as larger numbers of small manufacturing firms in need of technological assistance emerge.

Indiana's increasing share of national manufacturing employment and positive capital investment trends suggest that the sector will

again perform well in the immediate future, as the national economy emerges from the recession. The long-term outlook is tempered by the state's lagging share of information technology professionals, and will be affected by its ability to sustain and/or increase capital investment. Future growth in manufacturing may depend in part on the degree to which manufacturing is able integrate new technologies into their operations. Firms ability to do this is linked the viability and availability of information technology support services.

## Educational Opportunities\*

**F**arming on the Fringe: This is a presentation and discussion of the rural/urban conflict, liability limiting laws, property rights; transfer tax; real estate sale, trade, and death, land trusts and conservation

*\* For these and other program offerings, contact your local Purdue University County Cooperative Extension Service Office or Gerry Harrison, Ag. Econ. Dept., 1145 Krannert, Purdue University, West Lafayette, IN 47907-1145, Phone: 765-494-4216, toll free 1-888-398-4636; E-mail: gah104@insightbb.com or <harrisog@purdue.edu>.*

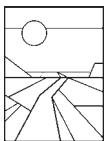
easements, right to farm laws. Scheduled seminar is November. 23, 2002 at Richmond, IN.

**E**state Transfer Planning: Topics include estate planning basics: property ownership law, wills, no wills (law of descent), prenuptial agreements, and trusts – including “probate” versus using a living trust as a will substitute, and the probate “short cuts.” Indiana inheritance tax and federal gift and estate tax law will be explained including special valuation

of farmland, and the family-owned business interest deduction for avoiding the federal estate tax.

**F**armland Rents under the New Farm Bill: Craig Dobbins, a farm management professor, presents economic aspects of lease choices including program payment features. Gerry Harrison, an attorney, will present the Indiana laws for farmland leases including termination requirements and selected income and estate tax issues.

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