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REFERENCE MATERIALS FOR VALUING AGRICULTURAL LAND FOR JANUARY 1, 2019

BASE RATE - $1,560

Index

General Notes for the Agricultural Land Market
Value in Use for January 1, 2019 Rate of $1,560

December, 2018

History:

In compliance with the Town of St. John v. State Board of Tax Commissioners court case, the 2002 Real Property Assessment Guidelines contained a section on valuing agricultural land based on its value in use. A summary of our calculations can be found in Chapter 2, Page 100 of those guidelines, in Table 2-18. For the 2002 reassessment, the base rate for agricultural land calculated to be $1,050 and remained unchanged for 2003 and 2004.

Pursuant to 50 IAC 27-6-1(a), the department issued the annual rate for March 1, 2005 to be $880. In the 2005 legislative session, SEA 327 was passed. This bill contained a non-code provision that set the base rate for agricultural land for both March 1, 2005 and March 1, 2006 at $880. SEA 327 also contained language for March 1, 2007 which instructed the Department of Local Government Finance to adjust our methodology from a four-year rolling average to a six-year rolling average (IC 6-1.1-4-4.5).

- The base rate for March 1, 2007 was calculated to be $1,140 per acre.
- The base rate for March 1, 2008 was updated by removing 1999 data and adding 2005 data to the six year average which resulted in a base rate of $1,200.
- The base rate for March 1, 2009 was updated by removing 2000 data and adding 2006 data to the six year average which resulted in a base rate of $1,250.
- The base rate for March 1, 2010 was updated by removing 2001 data and adding 2007 data to the six year average which resulted in a base rate of $1,400; however in March of 2010, Senate Enrolled Act 396-2010 was signed into law which required the highest year of the six-year average to be excluded in the calculation. This change in the calculation lowered the base rate for March 1, 2010 from $1,400 to $1,290 when the 2007 data was excluded.
- The base rate for March 1, 2011 was updated by removing the 2002 data, adding the 2008 data, and excluding the highest year (2008) of the six-year average to arrive at a base rate of $1,500.
- The base rate for March 1, 2012 was updated by removing the 2003 data, adding the 2009 data, and excluding the highest year (2008) of the six-year average to arrive at a base rate of $1,630.
- The base rate for March 1, 2013 was updated by removing the 2004 data, adding the 2010 data, and excluding the highest year (2010) of the six-year average to arrive at a base rate of $1,760.
- The base rate for March 1, 2014 was updated by removing the 2005 data, adding the 2011 data, and excluding the highest year (2011) of the six-year average to arrive at a base rate of $2,050.
- The base rate for March 1, 2015 was updated by removing the 2006 data, adding the 2012 data, and excluding the highest year (2011) of the six-year average to arrive at a base rate of $2,420; however Senate Enrolled Act 436-2015 was passed which set the March 1, 2015 base rate at $2,050 (unchanged from 2014). SEA 436-2015 also established a new method of calculating the base rate for 2016 which took the preceding year's base rate and multiplied it times an assessed value growth quotient; however, in the 2016 legislative session, Senate Enrolled Act 308 repealed this new method and re-instated the previous method of using a six-year rolling average with the highest year excluded and

added the requirement of using the most current data available and adjusting the capitalization rate after the preliminary base rate was determined.

- The base rate for January 1, 2016 was updated by removing the 2007, 2008, & 2009 data, adding the 2013, 2014, & 2015 data, excluding the highest year (2013) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,960.
- The base rate for January 1, 2017 was updated by removing the 2010 data, adding the 2016 data, excluding the highest year (2013) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,850.
- The base rate for January 1, 2018 was updated by removing the 2011 data, adding the 2017 data, excluding the highest year (2013) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,610.
- The base rate for January 1, 2019 was updated by removing the 2012 data, adding the 2018 data, excluding the highest year (2013) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,560.

SEA 308 – The New Calculation of the Agland Base Rate Beginning January 1, 2016

IC 6-1.1-4-4.5(e) In making the annual determination of the base rate to satisfy the requirement for an annual adjustment under subsection (c) for the January 1, 2016, assessment date and each assessment date thereafter, the department of local government finance shall not later than March 1 of each year determine the base rate using the methodology reflected in Table 2-18 of Book 1, Chapter 2 of the department of local government finance's Real Property Assessment Guidelines (as in effect on January 1, 2005), except that the department shall adjust the methodology as follows:

(1) Use a six (6) year rolling average adjusted under subdivision (3) instead of a four (4) year rolling average.
(2) Use the data from the six (6) most recent years preceding the year in which the assessment date occurs for which data is available, before one (1) of those six (6) years is eliminated under subdivision (3) when determining the rolling average.
(3) Eliminate in the calculation of the rolling average the year among the six (6) years for which the highest market value in use of agricultural land is determined.
(4) After determining a preliminary base rate that would apply for the assessment date without applying the adjustment under this subdivision, the department of local government finance shall adjust the preliminary base rate as follows:
    (A) If the preliminary base rate for the assessment date would be at least ten percent (10%) greater than the final base rate determined for the preceding assessment date, a capitalization rate of eight percent (8%) shall be used to determine the final base rate.
    (B) If the preliminary base rate for the assessment date would be at least ten percent (10%) less than the final base rate determined for the preceding assessment date, a capitalization rate of six percent (6%) shall be used to determine the final base rate.
    (C) If neither clause (A) nor clause (B) applies, a capitalization rate of seven percent (7%) shall be used to determine the final base rate.
    (D) In the case of a market value in use for a year that is used in the calculation of the six (6) year rolling average under subdivision (1) for purposes of determining the base rate for the assessment date:
        (i) that market value in use shall be recalculated by using the capitalization rate determined under clauses (A) through (C) for the calculation of the base rate for the assessment date; and

(ii) the market value in use recalculated under item (i) shall be used in the calculation of the six (6) year rolling average under subdivision (1).

Updates to Table 2-18 for January 1, 2019

Table 2-18 – Years:
For January 1, 2019, the six years of data used in the calculations were: 2013, 2014, 2015, 2016, 2017, and 2018.

Table 2-18 – Net Income from Cash Rents:
Since agricultural land in Indiana is almost evenly divided between cash rent and owner-occupied production, our agency used an average of both types of income in our calculation.

The data for cash rents came from three Purdue Agricultural Economics Reports (PAER). For the 2013 & 2014 rents, go to Table 2 of Page 2 (P-19) of the August of 2014 report. For the 2015 & 2016 rents, go to Table 4 of Page 7 (P-21) of the August of 2016 report. For the 2017 & 2018 rents, go to Table 4 of Page 8 (P-23) of the August of 2018 report. From these tables, we used the statewide averages for average soil.

There is also an adjustment to these amounts to reduce the rents for property taxes paid on the land. This adjustment was based on an annual study conducted by the Department of Local Government Finance.

Table 2-18 – Net Income from Operating:
This income represents the profits from the owner-occupied production of crops on agricultural land.

The foundation for the calculations that our agency adopted comes from Table 1 (P-13) of the June 24, 1999 Doster/Huie report.

Doster/Huie Report – Table 1-Years:
This report used the years of 1996, 1997, 1998, & 1999. The year of 1999 was removed from our 2002 calculations since our calculations were based on January 1, 1999. Information for 1995 was obtained and added to our calculations. (Also note the date of June 24, 1999 for the report which means that six months of data had been estimated.)

Doster/Huie Report – Table 1-Yields:
The yields in this report were obtained from the Indiana Agricultural Statistics Service (IASS) for both corn and soybeans. The IASS publishes these statistics on an annual basis. Yield information for these four years can be found in the 1999-2000 publication for corn on page 31 in the Final Yield per Acre column of the Crop Summary section and on page 32 for soybeans.

Doster/Huie Report – Table 1-Prices:
The prices used in this report were for the month of November. They can found in IASS publications for that time period. Note: Our agency made an adjustment to this part of the calculation because the majority of the grain harvested in Indiana is not sold in November but throughout the year. This adjustment will be discussed later.

Doster/Huie Report – Table 1-Sales:
Yields for each type of crop (corn/soybeans) multiplied by the Price per Bushel for each type of crop equals Sales.

Doster/Huie Report – Table 1-Less Variable Costs:
This information can be found in the Purdue Crop Guide. This guide is an annual publication (ID-166). The dollar amount for each crop type can be found in section titled "Estimated XXXX (year) Per Acre Production Costs in the column for Corn/Soybean Rotation for Average Soil. See the line for "Total direct cost per acre at harvest". The costs include labor, seed, fertilizer, chemicals, machinery repairs, and fuel.

Doster/Huie Report – Table 1-Crop Contribution Margin:
Sales less Variable Costs equal Crop Contribution Margin for each type of crop (corn/soybeans).

Doster/Huie Report – Table 1-Plus Government Payment:
The publication adds government payments as a source of additional revenue for the land. This amount for each year was estimated by the authors of the publication.

Doster/Huie Report – Table 1-Total Contribution Margin:
This number represents the average of the Crop Contribution Margin for corn and soybeans plus one-half (1/2) of the amount for the government payment. (The sum of the three numbers divided by two.)

Doster/Huie Report – Table 1-Less Overhead:
The overhead expense for machinery, drying/handling, & family/hired labor can be found on the Purdue Crop Guide (ID-166). The dollar amount for each crop type can be found in section titled "Estimated 20___ (year) Per Acre Production Costs in the column for Corn/Soybean Rotation for Average Soil. See the lines for "Indirect charges per acre".

Doster/Huie Report – Table 1-Real Estate Tax:
A deduction of $10 for real estate taxes was estimated by the authors.

Doster/Huie Report – Table 1-Income:
Total Contribution Margin less the Overhead Expenses of machinery, drying/handling, labor, & real estate taxes equals Income.

Doster/Huie Report – Table 1-Estimated Land Value:
The authors of the paper then averaged the four years (1996 – 1999) income and divided it by a 1999 interest rate to arrive at an Estimated Land Value of $971.

Table 2-18 – Net Income from Operating:
This income represents the profits from the owner-occupied production of crops on agricultural land. While the foundation for the calculations that our agency adopted comes from Table 1 of the June 24, 1999 Doster/Huie report, we did make some alterations to it.

<u>Adjustments Made To The Doster/Huie Report By Our Department:</u>

Years:
We added the statistics for 1995 which were available and deleted the estimates for 1999 since interest rates and income data were not available.

Price:
We added two averages to the Doster/Huie report since this report used only November prices. Since only a small portion of Indiana's grain is sold in November, the Department of Local Government Finance developed two annual averages for the calculation. The first average was the calendar year average of the grain prices which are published in the IASS book. The second average was the market year average. This average is calculated by the IASS and is a weighted average that is based on the end of the month grain price and the percentage of the total grain harvested that was sold that month.

Interest Rate:
Instead of using the 1999 St. Paul Farm Credit Bank interest rate, we chose to use the quarterly farm loan rates published by the Federal Reserve Bank of Chicago. The FRBC publishes an agricultural newsletter on a quarterly basis called the "AgLetter". This newsletter provides interest rates on farm loans for operating loans, feeder cattle, and real estate. The Department averaged the interest rates for the operating loans and real estate categories. A study was conducted on different sources of interest rates between Purdue Agricultural Economics Reports, the St. Paul Farm Credit Bank, and the Federal Reserve Bank of Chicago. The study found that the rates varied from year to year but when averaged out over the four year period were comparable.

Summary of the January 1, 2019 Base Rate:
The Department first calculated the Table 2-18 Base Rate with the years of 2013, 2014, 2015, 2016, 2017, and 2018. Next, the highest market value in use for one of the years (2013) in the six-year rolling average was eliminated from the calculation. Then the implementation of Senate Enrolled Act 308-2016 determined the capitalization rates of 8% which lowered the Preliminary Table 2-18 Base Rate of $2,520 to a Final Base Rate of $1,560. (Refer to Page 15 of this packet for a detailed comparison.)

Valuing Agricultural Land

The agricultural land assessment formula involves the identification of agricultural tracts using data from detailed soil maps, aerial photography, and local plat maps. Each variable in the land assessment formula is measured using appropriate devices to determine its size and effect on the parcel's assessment. Uniformity is maintained in the assessment of agricultural land through the proper use of soil maps, interpreted data, and unit values.

In order to apply the agricultural land assessment formula, you need to understand the following topics, which are discussed in the sections below:

- agricultural land base rate values
- assessment of agricultural land
- units of measurement for agricultural land
- classification of agricultural land into land use types
- use of soil maps
- calculating the soil productivity index
- valuation of strip mined agricultural land
- valuation of oil and gas interests

The rest of the chapter provides instructions for completing the "Land Data and Computations" section of the agricultural property record card.

Agricultural Land Base Rate Value

The 2002 general reassessment agricultural land value utilizes the land's current market value in use, which is based on the productive capacity of the land, regardless of the land's potential or highest and best use. The most frequently used valuation method for use-value assessment is the income capitalization approach. In this approach, use-value is based on the residual or net income that will accrue to the land from agricultural production.

As illustrated in the following equation, the market value in use of agricultural land is calculated by dividing the net income of each acre by the appropriate capitalization rate.

Market value in use = Net Income ÷ Capitalization Rate

The net income of agricultural land can be based on either the net operating income or the net cash rent. Net operating income is the gross income received from the sale of crops less the variable costs (i.e. seed and fertilizer) and fixed costs (i.e. machinery, labor, property taxes) of producing crops. The net cash rent income is the gross cash rent of an acre of farmland less the property taxes on the acre. Both methods assume the net income will continue to be earned into perpetuity.

The capitalization rate converts the net income into an estimate of value. The capitalization rate reflects, in percentage terms, the annual income relative to the value of an asset; in this case agricultural land. Conceptually, this capitalization

rate incorporates the required returns to various forms of capital, associated risks, and the anticipated changes over time.

Since agricultural land in Indiana is nearly evenly divided between cash rent and owner-occupied production, the State Board of Tax Commissioners utilized a four-year rolling average (1995 to 1998) of both methods in determining the market value in use of agricultural land. The capitalization rate applied to both types of net income was based on the annual average interest rate on agricultural real estate and operating loans in Indiana for this same period. The table below summarizes the data used in developing the average market value in use.

Table 2-18. Agricultural Land market value in use

	NET INCOMES		CAP. RATE	MARKET VALUE IN USE		
YEAR	Cash Rent	Operating		Cash Rent	Operating	Average
1995	$88	$56	9.92%	$887	$565	$ 726
1996	$94	$131	9.29%	$1012	$1410	$1,211
1997	$100	$124	9.31%	$1074	$1332	$1,203
1998	$102	$91	9.10%	$1121	$1000	$1,060
				Average Market Value in Use =		$1,050

The statewide agricultural land base rate value for the 2002 general reassessment will be the average market value in use calculated as shown above or $1,050 per acre.

Assessing Agricultural Land

The agricultural land assessment formula involves identifying agricultural tracts using data from a detailed soil map, aerial photography, and local plat maps. Each variable of the land assessment formula is measured using various devices to determine its size and effect on the parcel's assessment. The proper use of the soil maps, interpreted data, and unit values results in greater uniformity in the assessment process of agricultural lands. Some commercial and industrial zoned acreage tracts devote a portion of the parcel to an agricultural use. The assessor classifies these parcels as either commercial or industrial. However, the portion of land devoted to agricultural use should be valued using the agricultural land assessment formula. Portions not used for agricultural purposes would be valued using the commercial and industrial acreage guidelines described in this chapter.

Converting Units of Measurement for Agricultural Land

Figure 2-23 shows the units of measurement commonly used to measure agricultural land. Table 2-19 describes equivalencies for these units of measurement.

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Certification of Agricultural Land Base Rate Value for Assessment Year 2019

This memorandum hereby serves to notify assessing officials of the agricultural base rate to be used for the January 1, 2019 assessment date: **$1,560 per acre.**

Land used for agricultural purposes shall be adjusted consistent with the guideline methodology developed for the 2012 general reassessment agricultural land value except, in determining the annual base rate, the Department of Local Government Finance ("Department") shall adjust the methodology to use the lowest five years of a six (6) year rolling average. Senate Enrolled Act 308 then requires a comparison of the preliminary Table 2-18 base rate to the prior year's Table 2-18 base rate in order to determine the statutory capitalization rate to be used to calculate the final base rate for this assessment date.

Those portions of agricultural parcels that include land and buildings not used agriculturally, such as homes, home sites, and excess land and commercial or industrial land and buildings, shall be adjusted by the factor or factors developed for other similar property within the geographic stratification. The residence portion of agricultural properties will be adjusted by the factors applied to similar residential properties.
50 IAC 27-6-1 (b)

The 2019 assessment year agricultural land value utilizes the land's current market value in use, which is based on the productive capacity of the land, regardless of the land's potential or highest and best use. The most frequently used valuation method for use-value assessment is the income capitalization approach. In this approach, use-value is based on the residual or net income that will accrue to the land from agricultural production.

As illustrated in the following equation, the market value in use of agricultural land is calculated by dividing the net income of each acre by the appropriate capitalization rate.

Market value in use = Net Income ÷ Capitalization Rate

The net income of agricultural land can be based on either the net operating income or the net cash rent. Net operating income is the gross income received from the sale of crops less the variable costs (i.e. seed and fertilizer) and fixed costs (i.e. machinery, labor, property taxes) of producing crops. The net cash rent income is the gross cash rent of an acre of farmland less the property taxes on the acre. Both methods assume the net income will continue to be earned into perpetuity.

The capitalization rate converts the net income into an estimate of value. The capitalization rate reflects, in percentage terms, the annual income relative to the value of an asset; in this case agricultural land. Conceptually, this capitalization rate incorporates the required returns to various forms of capital, associated risks, and the anticipated changes over time.

Since agricultural land in Indiana is nearly evenly divided between cash rent and owner-occupied production, the Department utilized a six-year rolling average (2013 to 2018) of both methods in determining the market value in use of agricultural land. The capitalization rate applied to both types of net income was based on the language contained in SEA 308. The table below summarizes the data used in developing the average market value in use.

Senate Enrolled Act 308 – Final Agricultural Land Base Rate

	NET INCOMES			MARKET VALUE IN USE		
Year	Cash Rent	Operating	Cap. Rate	Cash Rent	Operating	Average
~~2013~~	~~204~~	~~341~~	~~8.00%~~	~~2,550~~	~~4,263~~	~~3,406~~
2014	205	171	8.00%	2,563	2,138	2,350
2015	198	-39	8.00%	2,475	-488	994
2016	173	75	8.00%	2,163	938	1,550
2017	175	30	8.00%	2,188	375	1,281
2018	181	79	8.00%	2,263	988	1,625
				Average Market Value in Use		**$1,560**

The statewide agricultural land base rate value for the 2019 assessment year will be $1,560 per acre.

Dated this 26th day of December, 2018.

Wesley R. Bennett, Commissioner
Department of Local Government Finance

A Method for Assessing Indiana Cropland
An Income Approach to Value

D. Howard Doster & John M. Huie, Purdue Ag Economists
June 24, 1999

Summary

A method for taxing agricultural cropland based on the income potential of the land can be developed. The method is illustrated below. Data components of this method include detailed soil maps, estimated yields and production costs by soil type, reported average yields by county, reported average Indiana November corn and soybean prices, USDA corn and soybean loan prices by county, and the interest rate on new Farm Credit Bank loans in the St Paul district.

Using this information, a land value can be calculated for each soil type in each county in Indiana. Using detailed soil maps, county staff can then calculate income, land value, and tax due for each ownership parcel.

Using state yields, prices, and costs for 1996, 1997, 1998, and estimates for 1999, income and land values are calculated below for average and high yield soil types. As shown in Table 1, the average land value is calculated to be $971. In Table 2, the high yield land is valued at $1510.

As shown in the tables, incomes for 1996 and 1997 are much higher than incomes for 1998 and projected 1999. Though not shown, income for 1995 was much higher than projected income for 1999.

Detailed soil maps

Maps from The Natural Resource and Conservation Service (NRCS) are now available for all counties indicating the soil type of all land in the state. County staff have used this information in past years. For five counties, this soil type information has been transferred to a GIS data base. In these counties, county staff could identify land ownership units in the GIS data base and with appropriate computer software, calculate the real estate tax on cropland.

In 1998, computer software was developed by Purdue Ag Economists for calculating income for user entered ownership parcels in Tippecanoe County. This program was shown at the July, 1998 Purdue Top Farmer Crop Workshop and the September, 1998 Prairie Farmer Farm Progress Show. The purpose of these demonstrations was to show prospective landowners, prospective tenants, and professional appraisers a way to estimate income potential of an ownership parcel.

Estimated yield and production cost by soil type

Purdue agronomists and NRCS staff have estimated crop yields for each soil type in Indiana. (These yield estimates may need to be updated, and possible differences considered for the same soil type in different counties.) Purdue staff annually estimate crop production costs for low, average, and high yielding soil types. The process could be computerized and budgets could be prepared for all Indiana soils.

Reported average yield by county

The Indiana Agricultural Statistics Service reports average yield for each county in May each year for the preceding year's crops. An expected trend yield could be calculated for each soil in each county. Each year, these trend yields could be adjusted by the same percentage change as the difference between the county expected and reported average yields.

Reported average Indiana November corn and soybean prices

The Indiana Agricultural Statistics Service reports average Indiana crop prices for each month. Prices for November[1/] are used in calculating per acre corn and soybean income.

USDA corn and soybean loan price

USDA has determined corn and soybean loan prices for each Indiana county. These prices reflect crop price differences because of the location of the county. Therefore, the November state average prices for corn and soybeans could be adjusted by the price location differences in loan prices to obtain an estimate of November prices by county.

St Paul Farm Credit Bank interest rate

For each year, the Internal Revenue Service issues a listing of the average annual effective interest rates charged on new loans under the Farm Credit Bank system. These rates are used in computing the special use value of real property used as a farm for which an election is made under section 2032A of the Internal Revenue Code. Indiana is in the St Paul district. For 1999, the reported interest rate is .0821.

Weighted annual incomes and estimated land values

As shown in Table 1, the 4-year average annual income is $80 and the estimated land value is $971. As shown in Table 2, for the high yield land the average income is $124 and the land value is $1510.

Annual incomes could be weighted with income from the most recent year being weighted the most. One option would be a percentage weight of 40 - 30 - 20 - 10 with the most recent year at 40% and the most distant year at 10%. Using this criteria, the weighted average annual income is $71.10 and the estimated average land value is $866. A weighting of 33 - 27 - 22 - 18 with the most recent year at 33% and the most distant year at 18% produces a weighted average annual income of $75.27 and an estimated average land value of $917.

For high yield soil, the 40 - 30 - 20 - 10 optimal weights give an average income of $113 and a land value of $1379. The 33 - 27 - 22 - 18 weights give an average income of $118 and a land value of $1442.

This approach - discounting the potential agricultural income - to valuing farm land is reasonable so long as the income estimates and the discount rates are defensible. There is also logic to using a four year average with the most recent years being weighted higher, especially if the state were to go to annual assessments. So long as they stay with a four year assessment cycle it becomes more of a judgement call.

[1/]Prices tend to increase throughout the year. November, a month close to the end of the harvest season was chosen. If prices later than November are chosen then a storage cost would also need to be included.

Income and land value estimates

As illustrated in Tables 1 and 2, income from a corn/soybean rotation on average and high yield soils is calculated for 1996-99.

State average yields for each soil are multiplied by November prices to obtain per acre sales.

Variable costs as found in the Purdue Crop Guide for average and high yield soils are subtracted to obtain per acre contribution margin from crops.

Corn contribution margin plus soybean contribution margin plus government payment is added and the sum is divided by 2 to get per acre total contribution margin.

Overhead costs from the Purdue Crop Guide for a corn/soybean farm are subtracted from the contribution margin to get per acre income.

Incomes for the four years are averaged.

The average income is divided by the St Paul interest rate to get estimated land value.

Table 1. Indiana Land Value Calculation
Based on an Income Approach, 1996-99
Average Yield Soil

	1996		1997		1998		1999	
	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans
Yield[1/]	123	38	122	43.5	132	42	134.1	42.9
Price (November)[1/]	$2.69	$6.90	$2.60	$6.88	$2.06	$5.49	$2.04	$5.40
Sales	$331	$262	$317	$299	$282	$231	$274	$232
Less variable costs[2/]	134	94	137	96	148	85	145	86
Crops contribution margin	$197	$168	$180	$203	$134	$146	$129	$146
Plus government payment[3/]	$23		$45		$53		$34	
Total contribution margin	$194		$214		$167		$154	
Less overhead:								
Annual machinery[2/]	48		50		49		49	
Drying/handling	6		6		7		7	
~~Family/hired labor[2/]~~	~~37~~		~~37~~		~~37~~		~~37~~	
Real estate tax[3/]	10		10		10		10	
Equals:								
Income	$93		$111		$64		$51	

4-year average income = $80
1999 St Paul interest rate[4/] = .0821
Estimated land value = $971

[1/] State average yield, state average November price as reported by Indiana Agricultural Statistics Service.
[2/] Costs are taken from annual Purdue Crop Guide, ID-166.
[3/] Government payments and real estate tax are estimated by the author.
[4/] Average annual effective interest rate on new loans under the Farm Credit Bank System, St Paul district.

Table 2. Indiana Land Value Calculation
Based on an Income Approach, 1996-99
High Yield Soil

	1996		1997		1998		1999	
	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans
Yield[1/]	151.3	46.8	49.9	53.6	169	51	165	52.8
Price (November)[1/]	$2.69	$6.90	$2.60	$6.88	$2.06	$5.49	$2.04	$5.40
Sales	$407	$323	$390	$369	$348	$280	$337	$285
Less variable costs[2/]	153	103	157	106	170	91	167	92
Crops contribution margin	$254	$220	$233	$263	$178	$189	$170	$193
Plus government payment[3/]	$29		$56		$64		$42	
Total contribution margin	$252		$276		$216		$202	
Less overhead:								
Annual machinery[2/]	53		55		54		54	
Drying/handling	7		7		8		8	
~~Family/hired labor[2/]~~	~~37~~		~~37~~		~~37~~		~~37~~	
Real estate tax[3/]	14		14		14		14	
Equals:								
Income	$141		$163		$103		$89	

4-year average income = $124
1999 St Paul interest rate[4/] = .0821
Estimated land value = $1510

[1/] State average yield, state average November price as reported by Indiana Agricultural Statistics Service.
[2/] Costs are taken from annual Purdue Crop Guide, ID-166.
[3/] Government payments and real estate tax are estimated by the author.
[4/] Average annual effective interest rate on new loans under the Farm Credit Bank System, St Paul district.

January 1, 2019
Senate Enrolled Act 308 - Assignment of Capitalization Rate To Determine Final Base Rate Per IC 6-1.1-4-4.5 (e)

Department of Local Government Finance's Table 2-18 Calculation of Agricultural Land Base Rate

	NET INCOMES PER ACRE		RATE	MARKET VALUE IN USE PER ACRE		AVERAGE MARKET VALUE IN USE PER ACRE
Year	Cash Rent	Owner-Operated	Cap. Rate	Cash Rent	Owner-Operated	
2013	~~204~~	~~341~~	~~4.84%~~	~~4,215~~	~~7,045~~	~~5,630~~
2014	205	171	4.77%	4,298	3,585	3,941
2015	198	-39	4.74%	4,177	-823	1,677
2016	173	75	4.78%	3,619	1,569	2,594
2017	175	30	5.04%	3,472	595	2,034
2018	181	79	5.54%	3,267	1,426	2,347

Preliminary Table 2-18 Base Rate (Average - 5 Lowest Years): 2,520

Determination of SEA 308 Capitalization Rate:

Prior Year's Final Base Rate	1,610	IC 6-1.1-4-4.5 (e) (4) (See statute for exact language)
Current Year's Preliminary Base Rate	2,520	(A.) If there is an increase of 10% or more, the rate will be 8%.
Percent Difference	56.5%	(B.) If there is a decrease of 10% or more, the rate will be 6%.
		(C.)If neither (A.) or (B.) applies, the rate will be 7%.
SEA 308 Capitalization Rate To Use:	8%	

Department of Local Government Finance's SEA 308 Calculation of Final Agricultural Land Base Rate

	NET INCOMES PER ACRE		RATE	MARKET VALUE IN USE PER ACRE		AVERAGE MARKET VALUE IN USE PER ACRE
Year	Cash Rent	Owner-Operated	Cap. Rate	Cash Rent	Owner-Operated	
2013	~~204~~	~~341~~	~~8.00%~~	~~2,550~~	~~4,263~~	~~3,406~~
2014	205	171	8.00%	2,563	2,138	2,350
2015	198	-39	8.00%	2,475	-488	994
2016	173	75	8.00%	2,163	938	1,550
2017	175	30	8.00%	2,188	375	1,281
2018	181	79	8.00%	2,263	988	1,625

SEA 308 Final Base Rate (Average - 5 Lowest Years): 1,560

Table 2-18 - Updated for January 1, 2019
Source: Real Property Assessment Guidelines

	Column A		Column B		Column C		Column D	Column E	Column F	
	NET INCOMES PER ACRE				RATE		MARKET VALUE IN USE PER ACRE		AVERAGE MARKET VALUE IN USE PER ACRE	
Year	Cash Rent		Owner-Operated		Cap. Rate		Cash Rent	Owner-Operated		
2013	~~204~~	P-17	~~341~~	P-33	~~4.84%~~	P-26	~~4,215~~	~~7,045~~	~~5,630~~	(1)
2014	205	P-17	171	P-33	4.77%	P-26	4,298	3,585	3,941	(1)
2015	198	P-17	-39	P-33	4.74%	P-26	4,177	-823	1,677	(1)
2016	173	P-17	75	P-33	4.78%	P-26	3,619	1,569	2,594	(1)
2017	175	P-17	30	P-33	5.04%	P-26	3,472	595	2,034	(1)
2018	181	P-17	79	P-33	5.54%	P-26	3,267	1,426	2,347	(1)
								Base Rate (Average - 5 Lowest Years)	2,520	(2)
Formula:	Gross Cash Rent Less Property Taxes		Gross Income Less Expenses		Average of Qtly. Farm Loan Rates		Column A divided by Column C	Column B divided by Column C	The average of Columns D and E	(1)
Source:	Purdue Ag. Econ. Reports (PAER)		Indiana Ag. Statistics Service and Purdue Crop Guide		Federal Reserve Bank of Chicago				The base rate is the average of the 5 lowest averages above rounded to the nearest $10. [IC 6-1.1-4-4.5 (e) (2)]	(2)

As illustrated in the following equation, the market value in use of agricultural land is calculated by dividing the net income of each acre by the appropriate capitalization rate.

Market Value In Use = Net Income Divided By The Capitalization Rate

Table 2-18 - Updated for January 1, 2019
Calculation for Net Income-Cash Rent Column

Year	Gross Cash Rent		Less Property Taxes		Net Cash Rent	Cap. Rate		Cash Rent Value
2013	229	P-19	-25	P-25	204	4.84%	P-26	4,215
2014	232	P-19	-27	P-25	205	4.77%	P-26	4,298
2015	229	P-21	-31	P-25	198	4.74%	P-26	4,177
2016	204	P-21	-31	P-25	173	4.78%	P-26	3,619
2017	205	P-23	-30	P-25	175	5.04%	P-26	3,472
2018	210	P-23	-29	P-25	181	5.54%	P-26	3,267

P·A·E·R

Purdue Agricultural Economics Report

Your source for in-depth agricultural news straight from the experts

AUGUST 2014

A Time of Change? Indiana's Farmland Market in 2014

By Craig L. Dobbins, Professor
& Kim Cook, Research Associate

The boom that has characterized crop agriculture for the past several years seems to be waning. Prospects for above normal yields and growing stocks have resulted in a downward trend in grain and soybean prices. The current speculation is about how low prices will go and what will be the new normal? USDA has forecast net farm income to be down about 27% in 2014. But, even with this decline the forecast net farm income will remain $8 billion above the previous 10-year average.

While income prospects associated with crop farming have declined other factors that influence the farmland market remain strong. Interest rates continue to remain favorable, the farmland demand may have softened but there continues to be a limited supply of farmland for sale, farmland continues to be an attractive investment, and buyers still seem to be in a strong cash position.

The June 2014 Purdue Farmland Value Survey[1], indicates the statewide increase in farmland values ranged from 6.4% to 7.1%. This was only half as much as in 2013. For the state as a whole, average and poor quality land increased 7.1% while top quality land increased 6.4% (Table 1). In June of 2014, top, average, and poor quality farmland had a value of $9,765, $7,976, and $6,160 per acre respectively.

Statewide the change in cash rents ranged from a decline of 0.7% to an increase of 2.9% (Table 2). Much less than the 9% to 10% increase reported in 2013. Top, average, and poor quality farmland had a cash rent of $292, $232, and $179 per acre, respectively.

To assess farmland productivity, survey respondents estimated long-term corn yields for poor, average, and top quality land. For the state, the average long-term corn yields for poor, average, and top quality land were 132, 163, and 196 bushels per acre, respectively.

In this issue…

[1] The individuals surveyed include rural appraisers, agricultural loan officers, FSA personnel, farm managers, and farmers. The results of the survey provide information about the general level and trend in farmland values.

Table 1. Average estimated Indiana land value per acre (tillable, bare land), per bushel of corn yield, and percentage change by geographical area and land class, selected time periods, Purdue Land Value Survey, June 2014[1]

			Land Value					Land Value/Bu			Projected Land Value	
			Dollars Per Acre									
			June	Dec	June	% Change		Amount	Amount	% Change	Dec.	% Change
Area	Land Class	Corn bu/A	2013 $/A	2013 $/A	2014 $/A	6/13-6/14 %	12/13-6/14 %	2013 $	2014 $	6/13-6/14 %	2014 $	6/14-12/14 %
North	Top	194	9,336	9,976	9,856	5.6%	-1.2%	46.22	50.80	9.9%	9,718	-1.4%
	Average	162	7,372	8,049	7,919	7.4%	-1.6%	45.23	48.88	8.1%	7,831	-1.1%
	Poor	130	5,424	6,108	5,888	8.6%	-3.6%	43.05	45.29	5.2%	5,660	-3.9%
Northeast	Top	189	8,946	9,280	9,310	4.1%	0.3%	48.62	49.26	1.3%	9,191	-1.3%
	Average	160	7,157	7,832	7,753	8.3%	-1.0%	47.40	48.46	2.2%	7,676	-1.0%
	Poor	132	5,668	5,935	6,013	6.1%	1.3%	46.46	45.55	-2.0%	5,916	-1.6%
W. Central	Top	206	10,948	12,108	11,726	7.1%	-3.2%	54.20	56.92	5.0%	11,714	-0.1%
	Average	175	8,955	10,078	9,616	7.4%	-4.6%	52.37	54.95	4.9%	9,575	-0.4%
	Poor	147	7,206	8,015	7,611	5.6%	-5.0%	51.11	51.78	1.3%	7,582	-0.4%
Central	Top	200	9,633	10,602	10,528	9.3%	-0.7%	49.65	52.64	6.0%	10,239	-2.7%
	Average	170	8,170	8,779	8,640	5.8%	-1.6%	50.43	50.82	0.8%	8,403	-2.7%
	Poor	142	6,459	7,003	6,861	6.2%	-2.0%	48.20	48.32	0.2%	6,672	-2.8%
Southwest	Top	189	9,252	9,119	9,041	-2.3%	-0.9%	49.19	47.84	-2.7%	9,028	-0.1%
	Average	151	7,085	7,088	7,006	-1.1%	-1.2%	46.31	46.40	0.2%	6,756	-3.6%
	Poor	112	4,908	4,593	4,513	-8.0%	-1.7%	42.31	40.29	-4.8%	4,377	-3.0%
Southeast	Top	181	4,873	5,246	5,212	7.0%	-0.6%	27.85	28.80	3.4%	5,217	0.1%
	Average	141	3,904	4,431	4,368	11.9%	-1.4%	27.11	30.98	14.3%	4,369	0.0%
	Poor	100	3,065	3,494	3,350	9.3%	-4.1%	28.38	33.50	18.0%	3,365	0.4%
Indiana	Top	196	9,177	9,855	9,765	6.4%	-0.9%	47.55	49.82	4.8%	9,680	-0.9%
	Average	163	7,446	8,129	7,976	7.1%	-1.9%	46.54	48.93	5.1%	7,884	-1.2%
	Poor	132	5,750	6,303	6,160	7.1%	-2.3%	45.28	46.67	3.1%	6,057	-1.7%
	Transition[2]	XXX	10,581	12,714	12,976	22.6%	2.1%				12,899	-0.6%
	Recreation[3]	XXX	3,788	4,466	4,542	19.9%	1.7%				4,525	-0.4%

[1] The land values contained in this summary represent averages over several different locations and soil types. The value for a specific property requires more information and should include an evaluation by a professional appraiser.
[2] Transition land is land moving out of production agriculture.
[3] Recreation land is land located in rural areas used for hunting and other recreational uses.

The transitional land market that represents farmland moving out of agriculture, continues to move strongly higher. The survey indicated a 22.6% increase in its average value, increasing from $10,581 to 12,976 per acre. This is a specialized market with transitional land value strongly influenced by the planned use and location. The estimated value in this market has a very wide range. In June 2014, transitional land value estimates ranged from $1,600 to $35,000 per acre. Because of the wide variation in transitional land values, the median value[2] may give a more meaningful picture than the arithmetic average. The median value of transitional land in June 2014 was $10,000 per acre, $500 per acre more than in 2013.

The June 2013 state-wide average value of rural recreational land, land used for hunting and other recreational activities, was $4,542 per acre, an increase of 19.9% when compared to June 2013. As with transitional land, there is a wide range of values for rural recreational land, again making the median value a more meaningful indictor than the arithmetic average. The median value for rural recreational land in June 2014 was $3,875 per acre, $725 more than in 2013, a 23% increase.

State-wide Rents

The increases in average state-wide cash rents were also moderate in 2014 when compared to the previous two years. The largest change in 2014 was for poor quality land, $5 per acre, or 2.9%. Rents for average quality land increased $3 (1.3%). Rent on top quality farmland decreased $2 or 0.7% per acre. The estimated cash rent was $292 per acre on top quality land, $232 per acre on average quality land, and $179 per acre on poor quality land (Table 2). These cash rent

Table 2. Average estimated Indiana cash rent per acre, (tillable, bare land) 2013 and 2014, Purdue Land Value Survey, June 2014

			Rent/Acre		Change	Rent/bu. of Corn		Rent as % of June Land Value	
Area	Land Class	Corn bu/A	2013 $/A	2014 $/A	'13-'14 %	2013 $/bu.	2014 $/bu.	2013 %	2014 %
North	Top	194	310	297	-4.2%	1.53	1.53	3.3	3.0
	Average	162	228	228	0.0%	1.40	1.41	3.1	2.9
	Poor	130	165	166	0.6%	1.31	1.28	3.0	2.8
Northeast	Top	189	259	261	0.8%	1.41	1.38	2.9	2.8
	Average	160	204	205	0.5%	1.35	1.28	2.9	2.6
	Poor	132	154	159	3.2%	1.26	1.20	2.7	2.6
W. Central	Top	206	350	352	0.6%	1.73	1.71	3.2	3.0
	Average	175	282	291	3.2%	1.65	1.66	3.1	3.0
	Poor	147	222	233	5.0%	1.57	1.59	3.1	3.1
Central	Top	200	294	305	3.7%	1.52	1.53	3.1	2.9
	Average	170	238	248	4.2%	1.47	1.46	2.9	2.9
	Poor	142	188	197	4.8%	1.40	1.39	2.9	2.9
Southwest	Top	189	294	277	-5.8%	1.53	1.47	3.2	3.1
	Average	151	216	204	-5.6%	1.41	1.35	3.0	2.9
	Poor	112	155	143	-7.7%	1.34	1.28	3.2	3.2
Southeast	Top	181	199	186	-6.5%	1.14	1.03	4.1	3.6
	Average	141	152	141	-7.2%	1.06	1.00	3.9	3.2
	Poor	100	110	98	-10.9%	1.02	0.98	3.6	2.9
Indiana	Top	196	294	292	-0.7%	1.52	1.49	3.2	3.0
	Average	163	229	232	1.3%	1.43	1.42	3.1	2.9
	Poor	132	174	179	2.9%	1.37	1.36	3.0	2.9

[2] The median is the middle observation in data arranged in ascending or descending numerical order

PURDUE AGRICULTURAL ECONOMICS REPORT

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AUGUST 2016

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INDIANA FARMLAND VALUES AND CASH RENTS CONTINUE DOWNWARD ADJUSTMENTS

CRAIG DOBBINS, PROFESSOR OF AGRICULTURAL ECONOMICS
KIM COOK, INSTRUCTOR OF AGRICULTURAL ECONOMICS

The agricultural press is devoting a significant amount of time to the low commodity prices and the corresponding decline in net farm income. The major decline in margins associated with Midwest crop production continues to ripple through the broader agriculture production sector. The effect of these low margins continue to show up in lower farmland values and cash rents. The Iowa farmland value survey reported an 8.9% decline in 2014. A second decline of 3.9% was reported in 2015. The Ag Letter published by the Chicago Federal Reserve Bank reported district declines of 3% in farmland values in both 2014 and 2015. The 2014 Purdue Farmland Value survey indicated Indiana's farmland values were at a peak. In 2015, there was a state-wide decline of farmland values of about 5%. The 2016 Purdue Farmland Value Survey indicates a state wide decline of 8.2% to 8.7% (Table1). Declines of this size have not been seen since the mid-80s[1].

[1] The Purdue Farmland Value Survey was first published in August 1974. Individuals surveyed include rural appraisers, commercial bank and Farm Credit Mid-America agricultural loan officers, FSA personnel, farm managers, and farmers. Survey results provide information about the general level and trend in

Table 3. Projected five-year average corn and soybean prices, mortgage interest, and inflation

	Price $ per bu.		Rate % per year	
Year	Corn	Beans	Interest	Inflation
2012	5.56	12.04	5.2%	3.1%
2013	5.52	12.16	5.1%	2.7%
2014	4.70	12.02	5.0%	2.7%
2015	4.02	9.76	5.0%	2.4%
2016	4.03	10.03	4.8%	2.3%
Average	$4.77	$11.20	5.0%	2.6%

accounted for 40% of the respondents. The remaining 57% of the respondents expect cash rent to be lower in 2017. The average decline for the group was 8.3%. Respondents expectations ranged from a decrease of 1% to 35%. The average across all respondents was for a decline of 4.5%.

As with farmland, these expectations indicate a continued decline in the rental market. If cash rent declines in 2017, it will be the third decline in a row. There has not been a period of three consecutive declines in cash rents since the 1980s.

Table 4. Average estimated Indiana cash rent per acre, (tillable, bare land) 2015 and 2016, Purdue Land Value Survey, June 2016

			Rent/Acre		Change	Rent/bu. of Corn		Rent as % of June Land Value	
Area	Land Class	Corn Bu./A	2015 $/A	2016 $/A	'15-'16 %	2015 $/bu.	2016 $/bu.	2015 %	2016 %
North	Top	202	284	260	-8.5%	1.41	1.29	3.1	3.2
	Average	166	227	202	-11.0%	1.35	1.22	3.0	3.0
	Poor	128	167	148	-11.4%	1.23	1.16	3.0	2.9
Northeast	Top	188	262	236	-9.9%	1.37	1.26	2.9	2.7
	Average	162	203	192	-5.4%	1.26	1.19	2.7	2.7
	Poor	132	156	150	-3.8%	1.20	1.14	2.6	2.6
W. Central	Top	211	334	296	-11.4%	1.57	1.40	3.4	3.0
	Average	182	281	241	-14.2%	1.54	1.32	3.3	2.9
	Poor	155	224	193	-13.8%	1.44	1.25	3.4	3.0
Central	Top	198	296	271	-8.4%	1.47	1.37	3.2	3.0
	Average	170	241	221	-8.3%	1.39	1.30	3.0	2.9
	Poor	143	188	177	-5.9%	1.31	1.24	3.0	3.0
Southwest	Top	201	278	273	-1.8%	1.36	1.36	2.7	3.0
	Average	163	216	210	-2.8%	1.29	1.29	2.7	3.0
	Poor	124	149	149	0.0%	1.20	1.20	2.9	3.2
Southeast	Top	191	202	199	-1.5%	1.10	1.04	3.6	3.5
	Average	153	152	147	-3.3%	1.01	0.96	3.2	3.3
	Poor	111	118	111	-5.9%	1.04	1.00	2.8	3.3
Indiana	Top	198	285	257	-9.8%	1.43	1.30	3.1	3.0
	Average	166	229	204	-10.9%	1.36	1.23	3.0	2.9
	Poor	134	175	157	-10.3%	1.28	1.17	3.0	2.9

[1] The cash rent reported in this summary represents averages over several different locations and soil types. Determining an appropriate cash rent for a specific property requires more information than is contained in this report. You may also want to obtain advice from a professional that manages agricultural properties.

COMBINING FARMLAND VALUES AND CASH RENT

One of the principles of economics and finance is that capital assets derive their value from the net cash return generated by the asset. The simplest form of this relationship can be expressed as $V = E \div C$, E represents the net annual earnings from the asset, C represents the capitalization rate. The capitalization rate is influenced by interest rates, risk premiums associated with being a landowner, expected rates of inflation, and expected growth rates in the net return. V is the expected value of the asset.

Doing a few algebraic manipulations, the

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AUGUST 2018

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2018 INDIANA FARMLAND VALUES - UP, DOWN, & SIDEWAYS

CRAIG DOBBINS, PROFESSOR OF AGRICULTURAL ECONOMICS

The direction of change in Midwest farmland value has been a challenge to discern. In Iowa, the December 2017 report indicated the average value of farmland had stopped declining and increased 2% from 2016. The March 2018 Nebraska report indicated the average market value of farmland declined by 3% compared to the year earlier value. The February 2018 Minnesota report showed a statewide farmland sales prices declined by 8%. The quarterly report by the Chicago Federal Reserve Bank issued May 2018 indicated a 1% decline in Illinois for the period of April 1, 2017 to April 1, 2018. This survey reported a 3% increase for this period in Indiana, a 2% increase in Iowa, and a 3% increase in Wisconsin. For the entire district, farmland values were stable.

These reports illustrate your experience with changes in farmland values is likely to depend on where you are located. The 2018 Purdue Farmland Value Survey[1] also indicates a mixture of increases and decreases in Indiana farmland values and cash rents.

On a statewide basis, June year-to-year farmland value comparisons indicate an uptick for top, average, and poor quality farmland. For the state as a whole, the strongest percent increase was for poor land, increasing 2.4%. Top and average quality farmland rose by 1.6% and 2.1%, respectively (Table 1). Rounding these changes to the nearest percent indicates a 2% statewide increase for each land quality. If one is willing to associate the word modest with these increases, these results indicate the downward adjustment in farmland values may be over.

The 2018 changes in farmland values across regions of the state and quality of farmland was a mixture of increases and decreases. Statewide top quality land had a value of $8,668 per acre, average quality land

[1]This information is a summary of data collected June 2018 as part of the Purdue Farmland Value Survey.

Northeast, Central, Southwest, and Southeast regions were a combination of increases and decreases.

The difference in cash rent per bushel across land quality continues to be small. For the state as a whole, the difference across farmland quality is only $0.09 per bushel.

The largest regional difference in cash rent per bushel across land quality was $0.14 in the Southwest region and $0.13 in the Northeast. The smallest was $0.05 and $0.06 in the Central and North region, respectively.

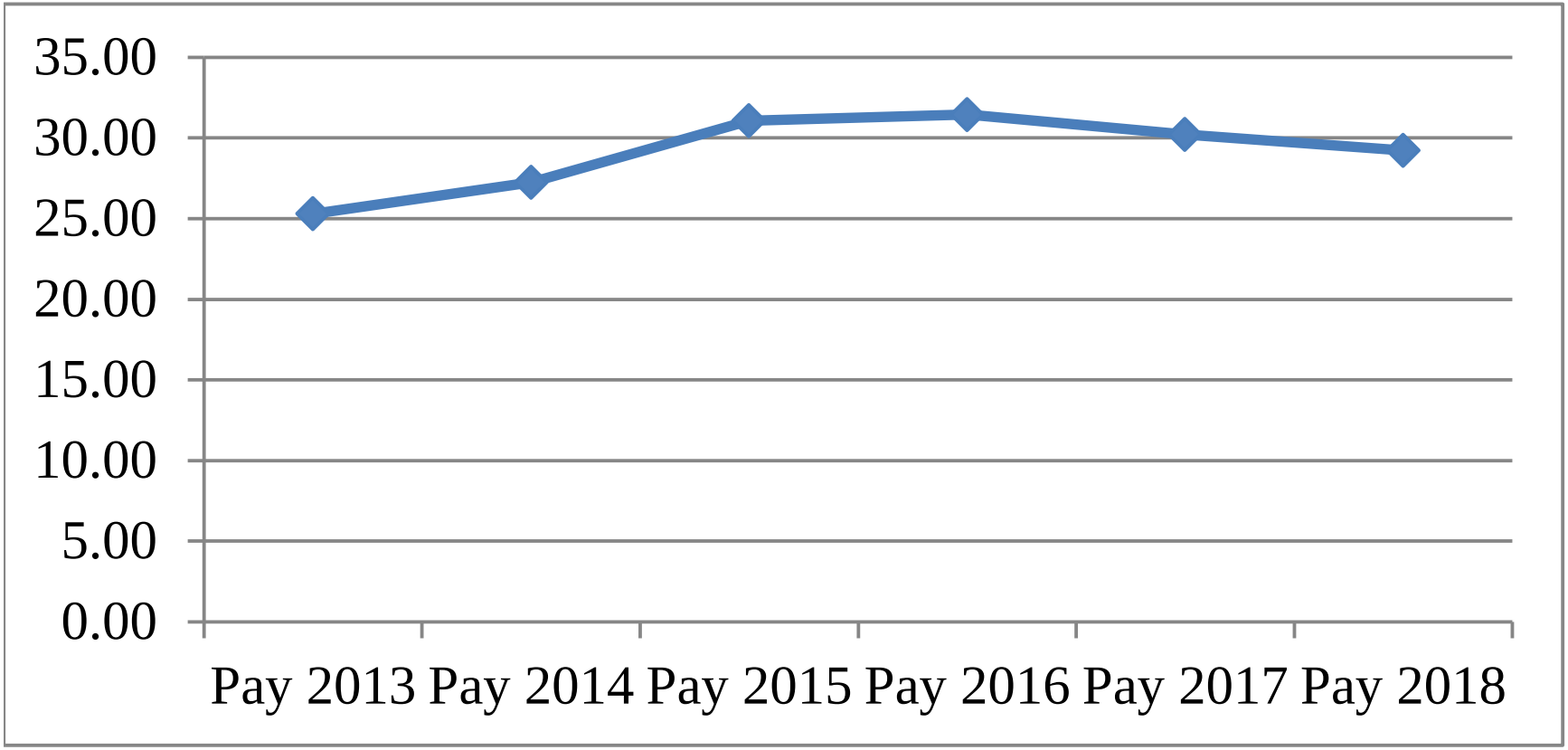
On a statewide basis, rent as a percent of land value remains around 3% (Table 4 and Figure 4). This is

Table 4. Average estimated Indiana cash rent per acre, (tillable, bare land) 2017 and 2018, Purdue Land Value Survey, June 2018

			Rent/Acre		Change	Rent/bu. of Corn		Rent as % of June Land Value	
	Land	Corn	2017	2018	'17-'18	2017	2018	2017	2018
Area	Class	bu./A	$/A	$/A	%	$/bu.	$/bu.	%	%
	Top	208	249	263	5.6%	1.23	1.26	3.0	3.1
North	Average	174	205	210	2.4%	1.20	1.21	3.0	2.9
	Poor	139	159	167	5.0%	1.14	1.20	3.2	3.2
	Top	192	228	233	2.2%	1.16	1.21	2.7	2.8
Northeast	Average	166	187	192	2.7%	1.11	1.16	2.6	2.8
	Poor	142	150	153	2.0%	1.12	1.08	2.6	2.8
	Top	212	279	297	6.5%	1.35	1.40	2.8	3.1
W. Central	Average	185	235	245	4.3%	1.30	1.32	2.9	3.1
	Poor	154	193	199	3.1%	1.25	1.29	3.0	3.2
	Top	204	273	273	0.0%	1.39	1.34	3.1	3.0
Central	Average	175	220	228	3.6%	1.32	1.30	2.9	3.0
	Poor	146	179	188	5.0%	1.28	1.29	3.1	3.0
	Top	212	257	263	2.3%	1.24	1.24	2.8	3.0
Southwest	Average	172	194	196	1.0%	1.18	1.14	2.8	3.2
	Poor	130	140	143	2.1%	1.11	1.10	3.0	3.5
	Top	192	178	186	4.5%	0.97	0.97	3.1	2.7
Southeast	Average	153	142	139	-2.1%	0.93	0.91	3.2	2.6
	Poor	115	106	102	-3.8%	0.85	0.89	3.2	2.7
	Top	204	253	261	3.2%	1.27	1.28	3.0	3.0
Indiana	Average	173	205	210	2.4%	1.21	1.21	2.9	3.0
	Poor	141	163	168	3.1%	1.17	1.19	3.0	3.1

[1] The cash rent reported in this summary represents averages over several different locations and soil types. Determining an appropriate cash rent for a specific property requires more than is contained in this report. You may also want to obtain advice from a professional that manages agricultural properties.

Average Net Tax Bill/Acre of Farmland



January 1, 2019
Average Net Tax Bill/Acre of Farmland

Pay 2013	25.30
Pay 2014	27.24
Pay 2015	31.07
Pay 2016	31.46
Pay 2017	30.22
Pay 2018	29.23

January 1, 2019		Real Estate Loans	Operating Loans	Avg.	Source:
2013	Jan.	4.60	4.91		P-28
	April	4.65	4.94		P-28
	July	4.68	4.94		P-28
	Oct.	4.94	4.99		P-28
	Average	4.72	4.95	4.84	
2014	Jan.	4.66	4.93		P-28
	April	4.67	4.86		P-28
	July	4.62	4.89		P-28
	Oct.	4.61	4.87		P-28
	Average	4.64	4.89	4.77	
2015	Jan.	4.57	4.80		P-30
	April	4.64	4.81		P-30
	July	4.58	4.82		P-30
	Oct.	4.67	4.96		P-30
	Average	4.62	4.85	4.74	
2016	Jan.	4.65	4.91		P-30
	April	4.57	4.89		P-30
	July	4.57	4.87		P-30
	Oct.	4.71	5.03		P-30
	Average	4.63	4.93	4.78	
2017	Jan.	4.80	5.13		P-32
	April	4.86	5.20		P-32
	July	4.84	5.16		P-32
	Oct.	4.93	5.34		P-32
	Average	4.86	5.21	5.04	
2018	Jan.	5.14	5.53		P-32
	April	5.28	5.69		P-32
	July	5.46	5.86		P-32
	Oct. (1)	5.46	5.86		P-32
	Average	5.34	5.74	5.54	

Source: Federal Reserve Bank of Chicago.
AgLetter (a quarterly newsletter)

(1) - The information for the 4th quarter of 2018 was not available at the time of this publication so the 3rd quarter of 2018 was used.

The Agricultural Newsletter
from the Federal Reserve Bank of Chicago
Number 1967 *February 2015*

AgLetter

FARMLAND VALUES AND CREDIT CONDITIONS

Summary
The Seventh Federal Reserve District had an annual decrease of 3 percent in "good" farmland values for 2014, marking the first yearly decline since 1986. However, farmland values in the fourth quarter of 2014 remained largely the same as in the third quarter, according to survey respondents from 224 agricultural banks across the District. Half of the respondents expected farmland values to fall during the January through March period of 2015, while only 1 percent remained hopeful that farmland values would rise in the areas surrounding their respective banks.

Recent trends in agricultural credit conditions extended into the fourth quarter of 2014. Non-real-estate loan demand relative to a year ago was again higher. Funds available for lending remained above the level of a year earlier. The average loan-to-deposit ratio for the District climbed for the third quarter in a row, to 70.6 percent—the highest level of the past four years. Repayment rates on non-real-estate farm loans were markedly lower in the October through December period of 2014 versus the same period of 2013, and rates of loan renewals and extensions were higher. Average interest rates on farm operating and real estate loans had eased to near-historic lows by the end of the fourth quarter of 2014.

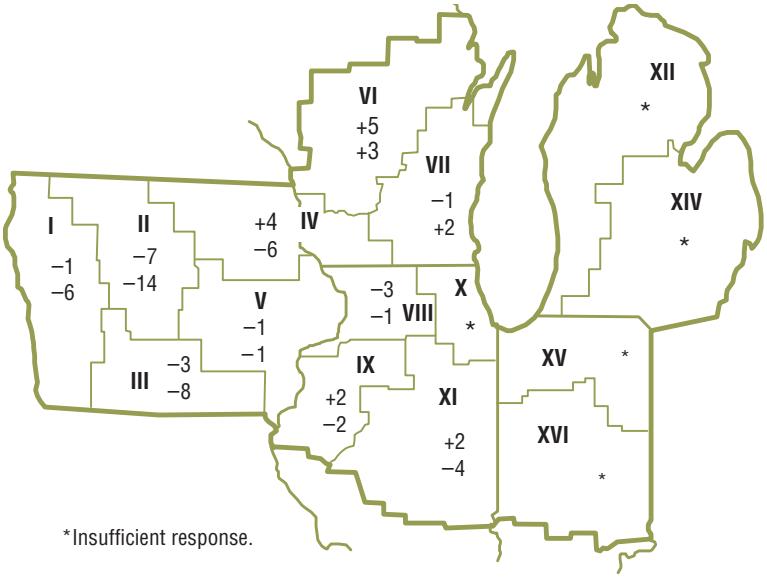
Farmland values
The District's annual decrease of 3 percent in "good" farmland values for 2014 was the first loss for a year since 1986 (see chart 1 on next page). Moreover, the fourth quarter of 2014 was the first time since the third quarter of 2009 that the District suffered a year-over-year drop in farmland values. When adjusted for inflation, the District's annual decrease in agricultural land values for 2014 was the first one since 1992; the streak of annual increases in District farmland values in real terms had reached 21 years before being broken in 2014. Still, at the end of 2014 the index of inflation-adjusted agricultural land values for the District was 68 percent higher than at its 1979 peak from the 1970s boom (see chart 2 on next page). In the fourth quarter of 2014, Illinois, Indiana, and Iowa experienced declines in agricultural land values on a year-over-year basis; in contrast, Wisconsin experienced a modest increase, and Michigan had no change (see table and map below).

Farmland values were down in 2014, even though the District as a whole set records for both corn and soybean production. According to U.S. Department of Agriculture (USDA) data, the District's 2014 production increased 10 percent for corn and 17 percent for soybeans from 2013. The District's corn yield increased 9.1 percent in 2014 from 2013, to a record-setting 184 bushels per acre. The District's soybean yield was up 10.5 percent in 2014 from 2013, to

Percent change in dollar value of "good" farmland

Top: October 1, 2014 to January 1, 2015
Bottom: January 1, 2014 to January 1, 2015

	October 1, 2014 to January 1, 2015	January 1, 2014 to January 1, 2015
Illinois	+1	−3
Indiana	−3	−2
Iowa	−1	−7
Michigan	−1	0
Wisconsin	+2	+2
Seventh District	0	−3



*Insufficient response.

Credit conditions at Seventh District agricultural banks

	Loan demand	Funds availability	Loan repayment rates	Average loan-to-deposit ratio	Interest rates on farm loans: Operating loans[a]	Feeder cattle[a]	Real estate[a]
	(index)[b]	*(index)*[b]	*(index)*[b]	*(percent)*	*(percent)*	*(percent)*	*(percent)*
2013							
Jan–Mar	67	161	143	63.7	4.91	5.12	4.60
Apr–June	87	142	129	64.6	4.94	5.16	4.65
July–Sept	91	128	115	66.9	4.94	5.14	4.68
Oct–Dec	120	121	91	67.3	4.99	5.10	4.94
2014							
Jan–Mar	114	128	96	67.0	4.93	5.07	4.66
Apr–June	110	123	93	67.3	4.86	4.98	4.67
July–Sept	123	106	85	69.5	4.89	5.01	4.62
Oct–Dec	137	109	69	70.6	4.87	5.03	4.61

[a]At end of period.
[b]Bankers responded to each item by indicating whether conditions during the current quarter were higher, lower, or the same as in the year-earlier period. The index numbers are computed by subtracting the percentage of bankers who responded "lower" from the percentage who responded "higher" and adding 100.
Note: Historical data on Seventh District agricultural credit conditions are available for download from the *AgLetter* webpage, https://www.chicagofed.org/publications/agletter/index.

quarter of 2014—which was half of a percentage point higher than a year ago.

Given the changes to credit quality, there were tighter credit standards too. Thirty-one percent of the survey respondents reported their banks had tightened credit standards for agricultural loans in the fourth quarter of 2014 relative to the fourth quarter of 2013, and 69 percent reported their banks had left credit standards essentially unchanged. Thus, credit availability in the final quarter of 2014 was more restricted than a year earlier. Credit tightening was also illustrated by 9 percent of survey respondents reporting that their banks required larger amounts of collateral for customers to qualify for non-real-estate farm loans during the October through December period of 2014 relative to the same period of a year ago and none of them reporting that their banks required smaller amounts. Funds availability during the fourth quarter of 2014 was above the level of a year ago: The index of funds availability moved up slightly to 109, as funds availability was higher at 17 percent of respondents' banks and lower at 8 percent. As of January 1, 2015, the average interest rates for farm operating loans (4.87 percent) and agricultural real estate loans (4.61 percent) were close to their all-time lows for the survey. Ticking up from the previous quarter, the average interest rate on feeder cattle loans stood at 5.03 percent at that time.

Looking forward

Even with tighter credit standards, survey respondents noted only 1.4 percent of their farm customers with operating credit in 2014 were not likely to qualify for new operating credit in 2015. This percentage was only slightly higher than the level reported a year ago (for farm customers with operating credit in 2013). Responding bankers projected non-real-estate agricultural loan volumes (in particular, operating loans, feeder cattle loans, and loans guaranteed by the Farm Service Agency) to be higher in the first quarter of 2015 than in the same quarter of 2014. In contrast, they anticipated volumes for grain storage loans, farm machinery loans, and farm real estate loans to be lower in the first quarter of 2015 relative to the same quarter of a year earlier.

Agricultural capital expenditures for land or improvements, buildings and facilities, machinery and equipment, and trucks and autos were all anticipated by survey respondents to be lower in the year ahead than in 2014. With 50 percent of the responding bankers expecting farmland values to decrease in the first quarter of 2015 and only 1 percent expecting them to increase, District farmland values seem to be headed lower. Nevertheless, agricultural credit conditions indicated only modest stress in the sector, and the vast majority of farm operations are expected to have no trouble qualifying for operating credit in 2015. Thus, large numbers of forced sales of farmland are unlikely to occur in 2015. By avoiding such a scenario, farmland values should simply drift lower over the coming months.

David B. Oppedahl, *senior business economist*

AgLetter (ISSN 1080-8639) is published quarterly by the Economic Research Department of the Federal Reserve Bank of Chicago. It is prepared by David B. Oppedahl, senior business economist, and members of the Bank's Economic Research Department. The information used in the preparation of this publication is obtained from sources considered reliable, but its use does not constitute an endorsement of its accuracy or intent by the Federal Reserve Bank of Chicago or the Federal Reserve System.

The Agricultural Newsletter
from the Federal Reserve Bank of Chicago
Number 1975 *February 2017*

AgLetter

FARMLAND VALUES AND CREDIT CONDITIONS

Summary
Agricultural land values in the Seventh Federal Reserve District suffered a third consecutive annual decrease, yet the 1 percent decrease for 2016 was smaller than the 3 percent declines for the previous two years. "Good" farmland values in the fourth quarter of 2016 were down 1 percent from the third quarter, according to 192 survey respondents from District banks. Nearly 60 percent of the survey respondents expected farmland values to be stable during the January through March period of 2017, while 40 percent expected farmland values to decrease in their local areas.

Farm credit conditions deteriorated further in the fourth quarter of 2016. Lower repayment rates on non-real-estate farm loans in the October through December period of 2016 versus the same period of 2015, combined with higher rates of loan renewals and extensions, suggested a worsening credit climate. Additionally, for 2017, 3 percent of farm loan customers were not expected to qualify for operating credit at the banks of the survey respondents. With non-real-estate loan demand up more than funds available for lending compared to their respective levels of a year ago, the average loan-to-deposit ratio for the District (75.0 percent) was higher than a year ago. Finally, average interest rates on agricultural loans jumped up at the end of 2016 to their highest levels since the end of 2013.

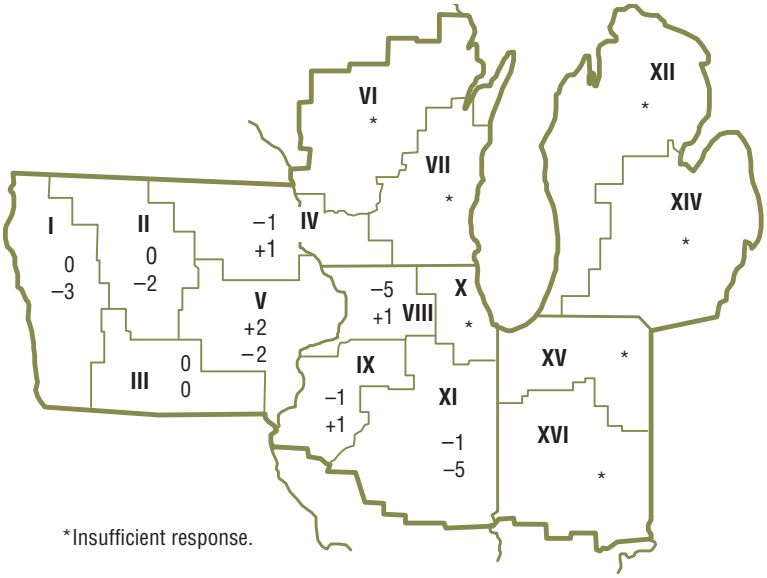
Farmland values
The District experienced an annual decrease of 1 percent in "good" farmland values for 2016, marking the third year in a row of declines. However, this stretch of decreases has been much more moderate than the previous such stretch during the 1980s (see chart 1 on next page). Also, the final quarter of 2016 was the tenth straight quarter without the District as a whole seeing a year-over-year increase in agricultural land values. In the fourth quarter of 2016, Illinois, Iowa, and Michigan saw year-over-year decreases in agricultural land values, while Indiana and Wisconsin saw modest increases (see table and map below). The District's farmland values were down 1 percent in the fourth quarter of 2016 relative to the third quarter.

The District's decrease in farmland values for 2016 was 2 percent after adjusting for inflation. In real terms, the decrease in the District's agricultural land values from their peak in 2013 through the end of 2016 was 9.5 percent (see chart 2 on next page). Since their 2013 peaks, Illinois, Indiana, and Michigan farmland values have experienced real declines of 11 percent, 7 percent, and 12 percent, respectively. Additionally, since their 2012 peak, Iowa farmland values have experienced a real decline of 15 percent. In contrast, Wisconsin agricultural land values have risen 4 percent in real terms since 2013. (Changes in farmland values are based on index values adjusted for inflation.) Even after

Percent change in dollar value of "good" farmland

Top: October 1, 2016 to January 1, 2017
Bottom: January 1, 2016 to January 1, 2017

	October 1, 2016 to January 1, 2017	January 1, 2016 to January 1, 2017
Illinois	−1	−2
Indiana	−2	+2
Iowa	0	−2
Michigan	−1	−8
Wisconsin	−2	+3
Seventh District	−1	−1



*Insufficient response.

Credit conditions at Seventh District agricultural banks

	Loan demand	Funds availability	Loan repayment rates	Average loan-to-deposit ratio	Interest rates on farm loans: Operating loans[a]	Feeder cattle[a]	Real estate[a]
	(index)[b]	*(index)*[b]	*(index)*[b]	*(percent)*	*(percent)*	*(percent)*	*(percent)*
2015							
Jan–Mar	141	105	57	69.0	4.80	4.95	4.57
Apr–June	140	102	64	72.1	4.81	4.97	4.64
July–Sept	125	105	60	72.3	4.82	4.96	4.58
Oct–Dec	134	104	43	72.9	4.96	5.07	4.67
2016							
Jan–Mar	156	105	32	73.3	4.91	5.01	4.65
Apr–June	126	108	48	72.6	4.89	5.05	4.57
July–Sept	132	103	48	75.3	4.87	4.95	4.57
Oct–Dec	114	105	65	75.0	5.03	5.10	4.71

[a]At end of period.
[b]Bankers responded to each item by indicating whether conditions in the current quarter were higher or lower than (or the same as) in the year-earlier quarter. The index numbers are computed by subtracting the percentage of bankers who responded "lower" from the percentage who responded "higher" and adding 100.
Note: Historical data on Seventh District agricultural credit conditions are available for download from the *AgLetter* webpage, https://www.chicagofed.org/publications/agletter/index.

had tighter credit standards for agricultural loans in the fourth quarter of 2016 relative to the fourth quarter of 2015 and 60 percent reported no change. In addition, 24 percent of responding bankers noted that their banks required larger amounts of collateral for customers to qualify for non-real-estate farm loans during the October through December period of 2016 relative to the same period of a year ago, and only 1 percent required smaller amounts. Another notable development was an upward shift in agricultural interest rates. As of January 1, 2017, the average interest rates for farm operating loans (5.03 percent), feeder cattle loans (5.10 percent), and agricultural real estate loans (4.71 percent) were all at their highest levels since the end of 2013.

During the October through December period of 2016 there was more interest among agricultural producers in taking out non-real-estate loans than during the same period of 2015. With 34 percent of survey respondents seeing an increase in the demand for non-real-estate loans and 20 percent seeing a decrease, the index of loan demand stood at 114 in the fourth quarter of 2016. Funds availability during the fourth quarter of 2016 was also above the level of a year ago, as it had been in the final quarter of every year since 2000. The index of funds availability was up a bit at 105, with funds availability higher at 12 percent of the survey respondents' banks and lower at 7 percent. The District's average loan-to-deposit ratio was higher than a year ago, at 75.0 percent—5.8 percentage points below the average level desired by the responding bankers.

Looking forward

Survey respondents indicated 3 percent of their farm customers with operating credit in 2016 were not likely to qualify for new operating credit in 2017 (up a full percentage point from their year-ago projections for 2016). Responding bankers anticipated non-real-estate agricultural loan volumes (primarily operating loans and loans guaranteed by the USDA's Farm Service Agency) to be higher during the first quarter of 2017 relative to the same quarter of a year earlier. Volumes for grain storage loans, farm machinery loans, feeder cattle loans, and farm real estate loans were forecasted to be lower in the January through March period of 2017 relative to the same period of 2016.

At the end of 2016, survey respondents still expected capital spending by farmers to be lower in the year ahead compared with the year just ending. The outlook for capital spending on land or improvements, buildings and facilities, machinery and equipment, and trucks and autos hasn't been positive since the end of 2012. Also, 40 percent of the responding bankers envisaged agricultural land values to decline in the first quarter of 2016, while almost 60 percent envisaged them to be steady. According to a survey respondent, "2016 ended much better than expected," assisted by strong crop yields and some increases in product prices from a year ago. Yet, survey respondents forecasted the downward trends for farmland values and agricultural credit conditions to continue into 2017.

David B. Oppedahl, *senior business economist*

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The Agricultural Newsletter
from the Federal Reserve Bank of Chicago
Number 1982 *November 2018*

AgLetter

FARMLAND VALUES AND CREDIT CONDITIONS

Summary
In the third quarter of 2018, farmland values for the Seventh Federal Reserve District were up 1 percent from a year ago. However, according to the 188 agricultural bankers who responded to the October 1 survey, District farmland values were 1 percent lower in the third quarter of 2018 than in the second quarter. This was the first quarterly decline for District agricultural land values since the fourth quarter of 2016 (nearly two years ago). Almost two-thirds of survey respondents expected the District's farmland values to be stable during the fourth quarter of 2018, but 32 percent of them expected a decrease in farmland values in the final quarter of this year and only 2 percent expected an increase.

Agricultural credit conditions for the District deteriorated again in the third quarter of 2018. For the fifth quarter in a row, the availability of funds for lending by agricultural banks was down relative to a year ago. Yet, for the third quarter of 2018, the demand for non-real-estate farm loans was higher than a year earlier. These results helped explain how the average loan-to-deposit ratio for the District established a new record of 79.4 percent. Moreover, repayment rates for non-real-estate farm loans were lower in the third quarter of 2018 relative to the same quarter last year, and loan renewals and extensions were higher. Average interest rates on agricultural loans moved up some during the third quarter of 2018.

CONFERENCE REMINDER
Agricultural Technology's Impacts on Farming and the Rural Midwest

On November 27, 2018, a Chicago Fed conference will be held to explore the prospects and challenges for implementing new agricultural technologies in the rural Midwest. To register, go to https://www.chicagofed.org/events/2018/ag-conference.

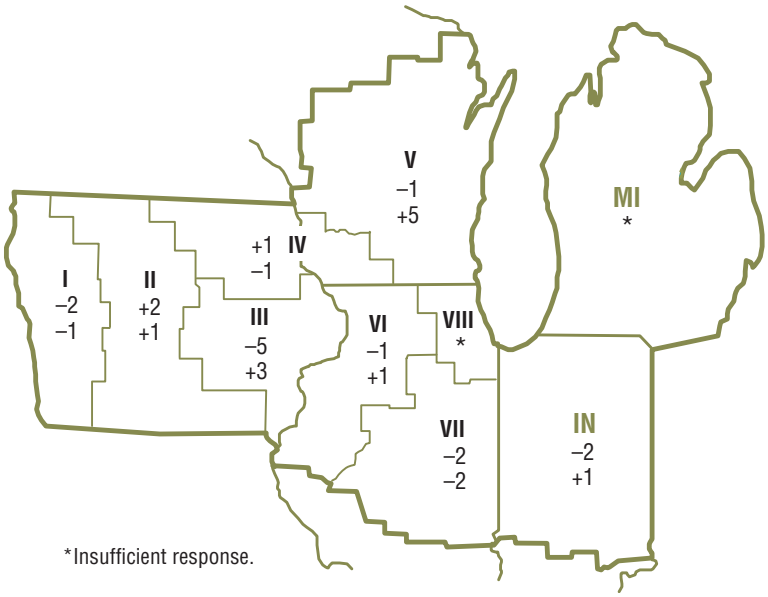
Farmland values

District farmland values saw a year-over-year increase of 1 percent in the third quarter of 2018 (see map and table below). The District did not experience a year-over-year decrease or increase in its agricultural land values greater than 1 percent for the eighth consecutive quarter. Furthermore, after being adjusted for inflation with the Personal Consumption Expenditures Price Index (PCEPI), District farmland values were down 1 percent in the third quarter of 2018 relative to the third quarter of 2017. The latest results were in line with recent trends: While nominal farmland values had remained fairly stable during the past few years, real farmland values had been eroding since the third quarter of 2014 (see chart 1 on next page).

Percent change in dollar value of "good" farmland

Top: July 1, 2018 to October 1, 2018
Bottom: October 1, 2017 to October 1, 2018

	July 1, 2018 to October 1, 2018	October 1, 2017 to October 1, 2018
Illinois	–1	–1
Indiana	–2	+1
Iowa	–1	+1
Michigan	*	*
Wisconsin	–1	+4
Seventh District	–1	+1



*Insufficient response.

Credit conditions at Seventh District agricultural banks

	Loan demand	Funds availability	Loan repayment rates	Average loan-to-deposit ratio	Interest rates on farm loans: Operating loans[a]	Feeder cattle[a]	Real estate[a]
	(index)[b]	*(index)*[b]	*(index)*[b]	*(percent)*	*(percent)*	*(percent)*	*(percent)*
2017							
Jan–Mar	129	101	57	74.4	5.13	5.27	4.80
Apr–June	119	104	68	74.4	5.20	5.25	4.86
July–Sept	120	95	60	77.4	5.16	5.25	4.84
Oct–Dec	128	99	53	76.6	5.34	5.44	4.93
2018							
Jan–Mar	130	97	53	75.6	5.53	5.62	5.14
Apr–June	123	91	64	77.4	5.69	5.75	5.28
July–Sept	128	82	63	79.4	5.86	5.93	5.46

[a]At end of period.
[b]Bankers responded to each item by indicating whether conditions in the current quarter were higher or lower than (or the same as) in the year-earlier quarter. The index numbers are computed by subtracting the percentage of bankers who responded "lower" from the percentage who responded "higher" and adding 100.
Note: Historical data on Seventh District agricultural credit conditions are available for download from the *AgLetter* webpage, https://www.chicagofed.org/publications/agletter/index.

reported that their banks required less. As of October 1, 2018, the District's average interest rates on new operating loans, feeder cattle loans, and farm real estate loans had risen to 5.86 percent, 5.93 percent, and 5.46 percent, respectively.

Looking forward

Nearly two-thirds of survey respondents predicted farmland values to be stable in the fourth quarter of 2018, while 32 percent of responding bankers expected farmland values to decrease in the October through December period of 2018 and just 2 percent expected farmland values to increase. Also, more respondents anticipated weaker rather than stronger demand by farmers and nonfarm investors to acquire farmland this fall and winter compared with a year earlier. Still, on the whole, respondents expected an uptick in transfers of available properties for sale. Twenty-six percent of the responding bankers forecasted an increase in the volume of farmland transfers relative to the fall and winter of a year ago, and 21 percent forecasted a decrease.

For the sixth year in a row, crop net cash earnings were expected to contract over the fall and winter from their levels of a year earlier, based on the predictions of survey respondents. Only 5 percent of survey respondents anticipated crop net cash earnings to rise over the next three to six months relative to a year ago, while 82 percent anticipated these earnings to fall. According to the responding bankers, hog, cattle, and dairy farmers were yet again expected to encounter diminished net cash earnings over the fall and winter relative to a year ago. Just 3 percent of the survey respondents predicted higher net earnings for hog and cattle operations over the next three to six months relative to a year earlier, while 65 percent predicted lower net earnings. Similarly, 1 percent of survey respondents anticipated higher net earnings for dairy operations this fall and winter compared with a year ago, while 66 percent anticipated lower net earnings.

Additionally, survey respondents expected loan repayment rates to decline this fall and winter from a year ago; only 2 percent of the responding bankers forecasted a higher volume of farm loan repayments over the next three to six months compared with a year earlier, while 57 percent forecasted a lower volume. Moreover, forced sales or liquidations of farm assets owned by financially distressed farmers were anticipated to increase in the next three to six months relative to a year ago, according to 61 percent of the responding bankers (only 1 percent anticipated a decrease). District non-real-estate farm loan volume in the October through December period of 2018 was expected to be higher compared with the same period of 2017, mainly because of increases in the volumes of operating loans and loans guaranteed by the Farm Service Agency of the USDA.

An Iowa respondent emphasized the "concern from row crop farmers regarding interest rate increases next year and low commodity prices." This concern was echoed by livestock operators. So, there was a decidedly downcast outlook for agriculture based on the latest survey responses.

David B. Oppedahl, *senior business economist*

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Income Approach: November, Annual Average, & Marketing Year Average Prices January 1, 2019

Line #	Column	A	B	C	D	E	F	G	H	I	J	K	L	Source or Formula:
		2013		2014		2015		2016		2017		2018		
		Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	
1	Yield	177	51.5	188	55.5	150	50	173	57.5	180	54	194	60	IASS - Crop Summary
2	Price - November	4.17	12.70	3.54	10.20	3.97	8.84	3.44	9.64	3.32	9.41	3.44	8.64	IASS - Crop Prices
3	Price - Annual Avg.	6.22	14.36	4.20	12.74	3.87	9.70	3.78	9.71	3.63	9.63	3.61	9.41	DLGF Calculation
4	Price - Market Avg.	7.23	14.70	4.47	13.20	3.75	10.20	3.92	9.16	3.63	9.69	3.45	9.55	IASS - Crop Prices
5	GI - November	738.09	654.05	665.52	566.10	595.50	442.00	595.12	554.30	597.60	508.14	667.36	518.40	Line 1 times Line 2
6	GI -Annual Avg.	1100.94	739.54	789.60	707.07	580.50	485.00	653.94	558.33	653.40	520.02	700.34	564.60	Line 1 times Line 3
7	GI - Market Avg.	1279.71	757.05	840.36	732.60	562.50	510.00	678.16	526.70	653.40	523.26	669.30	573.00	Line 1 times Line 4
8	AA v Nov	362.85	85.49	124.08	140.97	-15.00	43.00	58.82	4.02	55.80	11.88	32.98	46.20	Line 6 minus Line 5
9	MA v Nov	541.62	103.00	174.84	166.50	-33.00	68.00	83.04	-27.60	55.80	15.12	1.94	54.60	Line 7 minus Line 5
10	NRTL - November	159		70		-49		55		7		56		DLGF Calculation
11	NRTL - Annual Avg	383		203		-35		86		41		96		Line 10 + or - Avg. Line 8
12	NRTL - Market Avg	481		241		-32		83		42		84		Line 10 + or - Avg. Line 9
13	NRTL Average	341		171		-39		75		30		79		Average Lines 10, 11, & 12
14	FRBC RE Rate	0.0472		0.0464		0.0462		0.0463		0.0486		0.0534		Fed. Res. Bank of Chicago
15	FRBC OP Rate	0.0495		0.0489		0.0485		0.0493		0.0521		0.0574		Fed. Res. Bank of Chicago
16	Avg. FRBC Rate	0.0484		0.0477		0.0474		0.0478		0.0504		0.0554		Average Lines 14 & 15
17	Operating Market Value In Use	7,045		3,585		-823		1,569		595		1,426		Line 13 / Line 16

NRTL = Net Return To Land
FRBC = Federal Reserve Bank of Chicago

Sources: (pages references within this packet)

		2013	2014	2015	2016	2017	2018
1	Yield	P-35	P-35	P-35	P-35	P-35	P-35
2	Price - November	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41
3	Price - Annual Avg.	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41
4	Price - Market Avg.	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41	P-40 & 41
10	NRTL - November	P-34 Line 12	P-34 Line 12	P-34 Line 12	P-34 Line 12	P-34 Line 12	P-34 Line 12
14	FRBC RE Rate	P-26	P-26	P-26	P-26	P-26	P-26
15	FRBC OP Rate	P-26	P-26	P-26	P-26	P-26	P-26
16	Avg. FRBC Rate	P-26	P-26	P-26	P-26	P-26	P-26

	Doster/Huie -Table 1	A	B	C	D	E	F	G	H	I	J	K	L	Source of
	Updated - December, 2018	2013		2014		2015		2016		2017		2018		Information
Line #		Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	
1	Yield per Acre	177	51.5	188	55.5	150	50	173	57.5	180	54	194	60	IN Ag. Stats. Service
2	Price per Bu. - November	4.17	12.70	3.54	10.20	3.97	8.84	3.44	9.64	3.32	9.41	3.44	8.64	IN Ag. Stats. Service
3	Sales	738	654	666	566	596	442	595	554	598	508	667	518	Line 1 X Line 2
4	Less Variable Costs	462	239	432	227	446	222	399	203	422	232	411	250	Purdue Crop Guide
5	Contribution Margin	276	415	234	339	150	220	196	351	176	276	256	268	Line 3 - Line 4
6	Plus Government Pymt.	26		8		18		50		30		26		IN Ag. Stats. Service
7	Total Contribution Margin	359		290		194		299		241		275		Lines 5 + 6 / 2
	Less Overhead:													
8	Annual Machinery	111		115		119		122		123		125		Purdue Crop Guide
9	Drying/Handling													Purdue Crop Guide
10	Family/Hired Labor	64		78		93		91		81		65		Purdue Crop Guide
11	Real Estate Tax	25		27		31		31		30		29		DLGF Study
12	Net ReturnTo Land - Nov.	159		70		-49		55		7		56		Line 7 - 8,9,10, 11

Sources: (pages references within this packet)

		2013	2014	2015	2016	2017	2018	
1	Yield per Acre	P-35	P-35	P-35	P-35	P-35	P-35	IN Ag. Stats. Service
2	Price per Bu. - November	P- 40 & 41	P- 40 & 41	P- 40 & 41	P- 40 & 41	P- 40 & 41	P- 40 & 41	IN Ag. Stats. Service
4	Less Variable Costs	P-45	P-48	P-51	P-54	P-57	P-60	Purdue Crop Guide
6	Plus Government Pymt.	P-63	P-63	P-63	P-63	P-63	P-63	IN Ag. Stats. Service
8	Annual Machinery	P-47	P-50	P-53	P-56	P-59	P-62	Purdue Crop Guide
9	Drying/Handling	N/A	N/A	N/A	N/A	N/A	N/A	Purdue Crop Guide
10	Family/Hired Labor	P-47	P-50	P-53	P-56	P-59	P-62	Purdue Crop Guide
11	Real Estate Tax	P-25	P-25	P-25	P-25	P-25	P-25	DLGF Study

Foundation for Calculation: Doster/Huie Publication titled "A Method for Assessing Indiana Cropland-An Income Approach to Value" dated June 24, 1999
(See P-10 thru P-14 with emphasis on Table 1 found on P-13)

Indiana Corn Yields:

1985	123	
1986	122	
1987	135	
1988	83	
1989	133	
1990	129	
1991	92	
1992	147	
1993	132	
1994	144	
1995	113	
1996	123	
1997	122	
1998	137	
1999	132	
2000	146	
2001	156	
2002	121	
2003	146	
2004	168	
2005	154	
2006	157	
2007	154	
2008	160	
2009	171	
2010	157	
2011	146	
2012	99	
2013	177	P-36
2014	188	P-36
2015	150	P-36
2016	173	P-36
2017	180	P-36
2018	194	P-37

Indiana Soybean Yields:

1985	41.5	
1986	37	
1987	40	
1988	27.5	
1989	36.5	
1990	41	
1991	39	
1992	43	
1993	46	
1994	47	
1995	39.5	
1996	38	
1997	43.5	
1998	42	
1999	39	
2000	46	
2001	49	
2002	41.5	
2003	38	
2004	51.5	
2005	49	
2006	50	
2007	46	
2008	45	
2009	49	
2010	48.5	
2011	45.5	
2012	44	
2013	51.5	P-38
2014	55.5	P-38
2015	50	P-38
2016	57.5	P-38
2017	54	P-38
2018	60	P-39

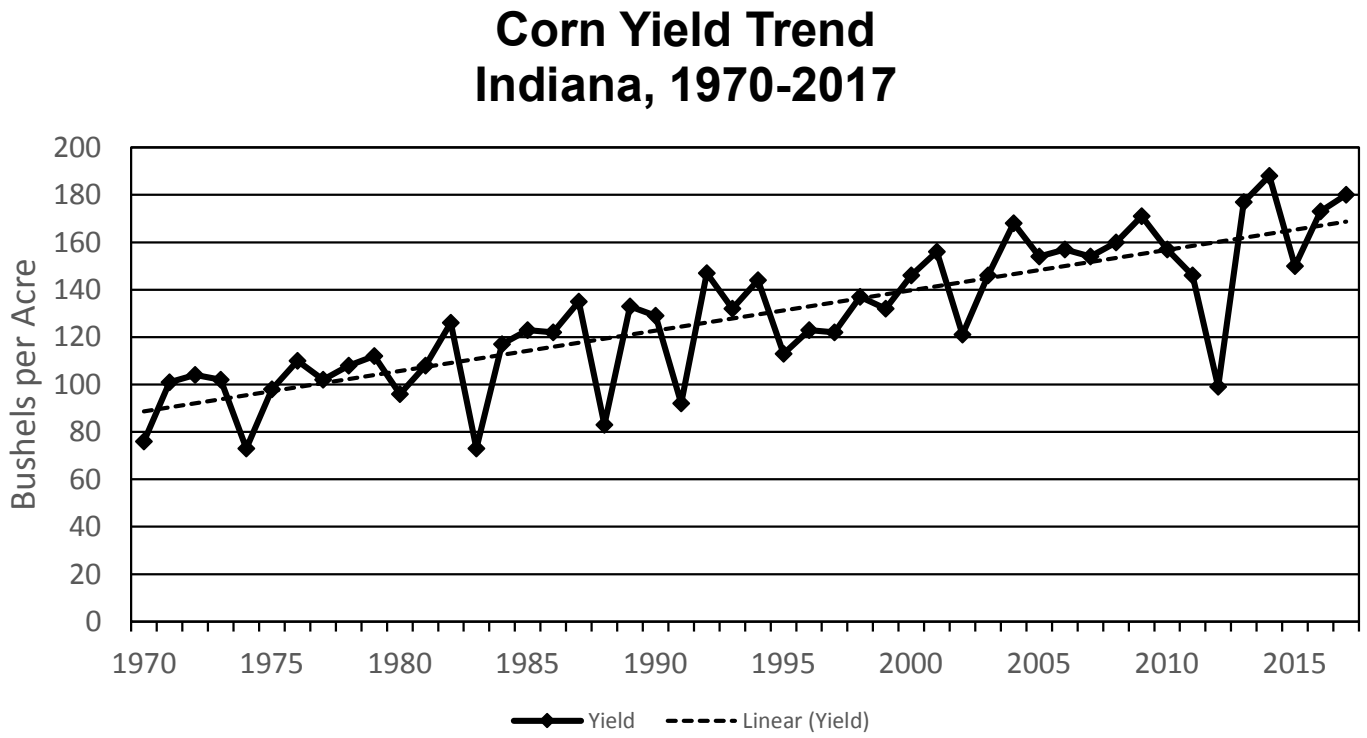
Source: Indiana Agricultural Statistics Service

CROP SUMMARY

CORN FORECAST AND FINAL YIELD
INDIANA, 1995-2017

Year	August Forecast	September Forecast	October Forecast	November Forecast	Final Yield Per Acre
	Yield (Bu)	Yield (Bu)	Yield (Bu)	Yield (Bu)	(Bushels)
1995	135	125	119	116	113
1996	118	118	120	124	123
1997	127	122	120	120	122
1998	136	139	137	137	137
1999	130	128	128	130	132
2000	155	155	151	147	146
2001	147	152	160	160	156
2002	124	119	117	117	121
2003	144	145	148	150	146
2004	156	157	167	169	168
2005	145	149	149	151	154
2006	167	167	165	159	157
2007	157	160	158	158	154
2008	164	162	160	160	160
2009	163	163	166	166	171
2010	176	170	160	160	157
2011	150	145	145	145	146
2012	100	100	100	100	99
2013	166	166	(1)	174	177
2014	179	184	186	186	188
2015	158	156	156	156	150
2016	187	185	177	177	173
2017	**173**	**171**	**173**	**181**	**180**

[1] Data not available due to sequestration.



Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2018	YEAR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	194	
SURVEY	2018	YEAR - AUG FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	186	
SURVEY	2018	YEAR - NOV FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	194	
SURVEY	2018	YEAR - OCT FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	194	
SURVEY	2018	YEAR - SEP FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	192	

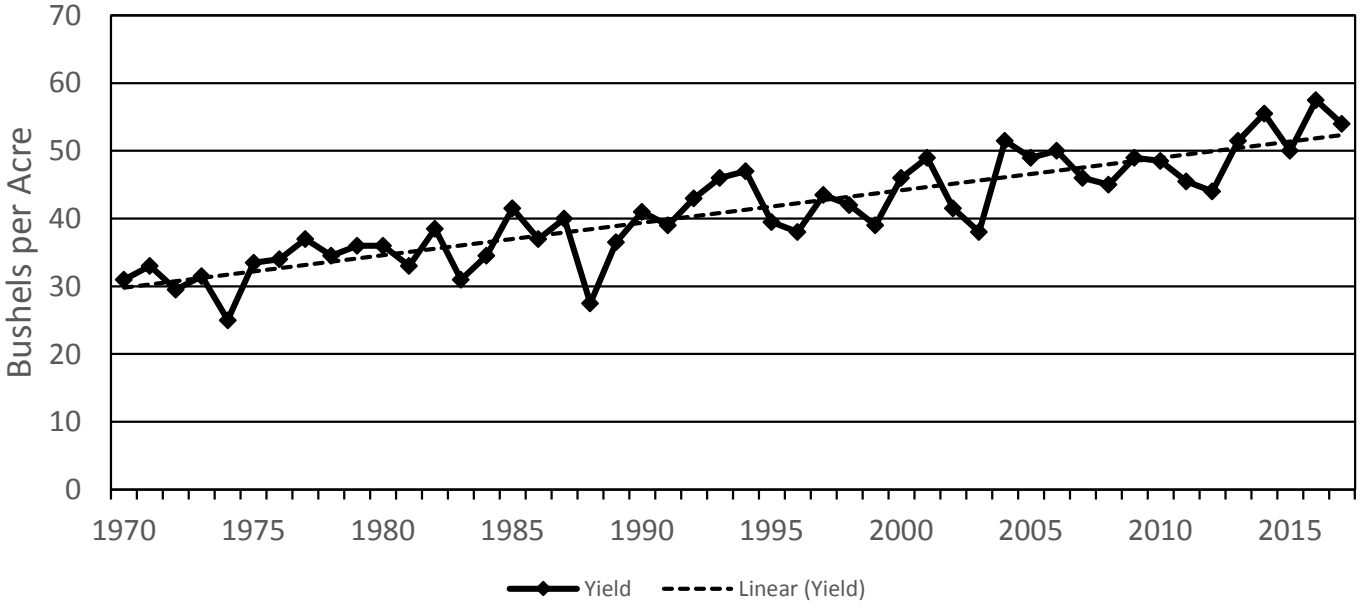
CROP SUMMARY

SOYBEAN FORECAST AND FINAL YIELD
INDIANA, 1995-2017

Year	August Forecast	September Forecast	October Forecast	November Forecast	Final Yield Per Acre
	Yield (Bu)	Yield (Bu)	Yield (Bu)	Yield (Bu)	(Bushels)
1995	43.0	44.0	40.0	39.0	39.5
1996	35.0	35.0	38.0	39.0	38.0
1997	44.0	42.0	42.0	44.0	43.5
1998	45.0	45.0	42.0	42.0	42.0
1999	41.0	40.0	39.0	38.0	39.0
2000	46.0	46.0	46.0	46.0	46.0
2001	46.0	48.0	49.0	49.0	49.0
2002	41.0	41.0	40.0	41.0	41.5
2003	43.0	43.0	40.0	38.0	38.0
2004	45.0	45.0	51.0	53.0	51.5
2005	46.0	45.0	46.0	48.0	49.0
2006	49.0	50.0	51.0	51.0	50.0
2007	47.0	43.0	43.0	44.0	46.0
2008	46.0	43.0	42.0	44.0	45.0
2009	45.0	43.0	43.0	46.0	49.0
2010	49.0	50.0	50.0	50.0	48.5
2011	43.0	42.0	42.0	42.0	45.5
2012	37.0	37.0	41.0	44.0	44.0
2013	50.0	48.0	(1)	50.0	51.5
2014	51.0	52.0	54.0	54.0	55.5
2015	49.0	50.0	51.0	51.0	50.0
2016	55.0	58.0	59.0	59.0	57.5
2017	**55.0**	**56.0**	**55.0**	**55.0**	**54.0**

Data not available due to sequestration.

Soybean Yield Trend
Indiana, 1970-2017



Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2018	YEAR		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	60	
SURVEY	2018	YEAR - AUG FORECAST		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	58	
SURVEY	2018	YEAR - NOV FORECAST		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	60	
SURVEY	2018	YEAR - OCT FORECAST		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	60	
SURVEY	2018	YEAR - SEP FORECAST		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	60	

Corn Prices
Source: Indiana Agricultural Statistics

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Average	Marketing Average *
2000	1.97	2.06	2.08	2.15	2.15	1.95	1.65	1.63	1.67	1.75	1.83	2.06	1.91	1.88
2001	2.03	2.01	2.02	1.98	1.95	1.84	1.97	2.01	1.93	1.83	1.83	1.92	1.94	1.90
2002	1.98	1.99	1.91	1.91	2.05	2.07	2.25	2.58	2.55	2.38	2.41	2.43	2.21	1.98
2003	2.42	2.44	2.44	2.47	2.49	2.44	2.28	2.25	2.27	2.15	2.25	2.46	2.36	2.41
2004	2.50	2.75	2.96	3.07	3.08	2.80	2.57	2.44	2.07	1.88	1.81	1.95	2.49	2.53
2005	2.09	2.01	2.01	1.96	2.02	2.07	2.20	1.97	1.80	1.72	1.71	2.04	1.97	1.99
2006	2.09	2.07	2.15	2.20	2.26	2.21	2.31	2.08	2.32	2.70	3.03	3.23	2.39	2.00
2007	3.16	3.53	3.64	3.54	3.65	3.73	3.36	3.27	3.32	3.34	3.68	4.07	3.52	3.17
2008	4.23	4.67	4.96	5.49	5.82	5.89	5.92	5.67	4.73	4.15	4.04	4.14	4.98	4.39
2009	4.46	4.06	3.92	4.11	4.12	4.14	3.64	3.45	3.31	3.70	3.66	3.62	3.85	4.10
2010	3.79	3.69	3.62	3.51	3.65	3.55	3.69	3.80	4.24	4.50	4.82	4.94	3.98	3.66
2011	4.95	5.78	5.80	6.71	6.62	6.82	7.04	7.18	6.14	5.89	5.94	6.02	6.24	5.38
2012	6.21	6.46	6.59	6.56	6.52	6.55	7.43	7.92	7.37	7.22	7.43	7.27	6.96	6.31
2013	7.26	7.38	7.48	7.12	7.16	7.15	6.71	6.38	5.11	4.34	4.17	4.37	6.22	7.23
2014	4.49	4.48	4.68	4.86	4.91	4.63	4.07	3.88	3.59	3.48	3.54	3.80	4.20	4.47
2015	3.86	3.93	3.94	3.84	3.74	3.67	4.03	3.90	3.85	3.87	3.97	3.88	3.87	3.75
2016	3.97	3.92	3.93	3.97	4.09	4.26	3.89	3.54	3.41	3.40	3.44	3.57	3.78	3.92
2017	3.64	3.73	3.77	3.77	3.79	3.84	3.86	3.64	3.42	3.38	3.32	3.42	3.63	3.63
2018	3.54	3.59	3.72	3.80	3.92	3.81	3.60	3.54	3.45	3.44	3.44	3.44	3.61	3.45

*Marketing average is Sept. of the previous year to Aug. in the current year.

Source: Pages 42 & 43 of this packet
Note: November & December 2018 Prices were not available at the time this calculation was made so the October 2018 price was used.

Soybean Prices
Source: Indiana Agricultural Statistics

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Average	Marketing Average *
2000	4.65	4.90	5.06	5.18	5.27	5.11	4.62	4.63	4.71	4.51	4.57	4.93	4.85	4.71
2001	4.74	4.53	4.52	4.25	4.43	4.62	4.98	5.15	4.60	4.17	4.18	4.25	4.54	4.61
2002	4.29	4.34	4.56	4.63	4.79	5.05	5.51	5.67	5.53	5.24	5.53	5.61	5.06	4.42
2003	5.62	5.69	5.70	5.92	6.28	6.15	5.87	5.84	6.49	6.90	7.25	7.44	6.26	5.55
2004	7.38	8.38	9.43	9.76	9.62	9.45	8.89	7.18	5.51	5.24	5.22	5.47	7.63	7.67
2005	5.57	5.46	6.02	5.99	6.32	6.76	6.93	6.29	5.76	5.60	5.58	6.01	6.02	5.66
2006	6.06	5.83	5.76	5.69	5.83	5.80	5.85	5.53	5.40	5.63	6.13	6.38	5.82	5.78
2007	6.44	6.95	7.17	7.13	7.36	7.83	7.97	8.03	8.49	8.81	9.65	10.30	8.01	6.53
2008	10.10	12.30	11.70	12.30	12.80	14.50	14.50	13.50	11.00	9.78	9.47	9.70	11.80	10.20
2009	10.30	9.88	9.49	10.10	11.10	11.90	11.10	11.00	9.97	9.49	9.63	10.20	10.35	10.20
2010	10.00	9.82	9.70	9.79	9.77	9.79	10.10	10.50	10.10	10.60	11.50	12.20	10.32	9.80
2011	11.70	13.00	12.80	13.30	13.70	13.40	13.70	13.70	12.90	11.80	11.80	11.90	12.81	11.50
2012	12.20	12.50	13.10	14.00	14.10	14.10	15.90	16.40	14.80	14.50	14.60	14.50	14.23	12.70
2013	14.60	14.80	15.00	14.70	15.10	15.60	15.80	14.90	13.40	12.60	12.70	13.10	14.36	14.70
2014	13.20	13.40	13.90	14.60	14.80	14.70	13.70	12.90	11.00	10.00	10.20	10.50	12.74	13.20
2015	10.50	10.20	10.10	9.94	9.91	9.91	10.30	10.00	9.00	8.80	8.84	8.94	9.70	10.20
2016	8.93	8.80	8.90	9.29	10.10	10.90	10.70	10.30	9.62	9.45	9.64	9.91	9.71	9.16
2017	9.96	10.10	9.97	9.51	9.58	9.27	9.77	9.47	9.51	9.42	9.41	9.56	9.63	9.69
2018	9.61	9.79	10.10	10.30	10.50	10.20	8.94	8.85	8.75	8.64	8.64	8.64	9.41	9.55

*Marketing average is Sept. of the previous year to Aug. in the current year.

Source: Page 42 & 44 of this packet
Note: November & December 2018 Prices were not available at the time this calculation was made so the October 2018 price was used.

CROP PRICES

MONTHLY PRICES RECEIVED BY FARMERS CROPS, INDIANA, 2011-2018 [1]

Year	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Marketing Year Avg.
Corn (Dollars per Bushel)													
2011-12	6.14	5.89	5.94	6.02	6.21	6.46	6.59	6.56	6.52	6.55	7.43	7.92	6.31
2012-13	7.37	7.22	7.43	7.27	7.26	7.38	7.48	7.12	7.16	7.15	6.71	6.38	7.23
2013-14	5.11	4.34	4.17	4.37	4.49	4.48	4.68	4.86	4.91	4.63	4.07	3.88	4.47
2014-15	3.59	3.48	3.54	3.80	3.86	3.93	3.94	3.84	3.74	3.67	4.03	3.90	3.75
2015-16	3.85	3.87	3.97	3.88	3.97	3.92	3.93	3.97	4.09	4.26	3.89	3.54	3.92
2016-17	3.41	3.40	3.44	3.57	3.64	3.73	3.77	3.77	3.79	3.84	3.86	3.64	3.63
2017-18	**3.42**	**3.38**	**3.32**	**3.42**	**3.54**	**3.60**	**3.72**	**3.80**	**3.92**	**3.81**	**3.60**	(2)	**3.45**
Soybeans (Dollars per Bushel)													
2011-12	12.90	11.80	11.80	11.90	12.20	12.50	13.10	14.00	14.10	14.10	15.90	16.40	12.70
2012-13	14.80	14.50	14.60	14.50	14.60	14.80	15.00	14.70	15.10	15.60	15.80	14.90	14.70
2013-14	13.40	12.60	12.70	13.10	13.20	13.40	13.90	14.60	14.80	14.70	13.70	12.90	13.20
2014-15	11.00	10.00	10.20	10.50	10.50	10.20	10.10	9.94	9.91	9.91	10.30	10.00	10.20
2015-16	9.00	8.80	8.84	8.94	8.93	8.80	8.90	9.29	10.10	10.90	10.70	10.30	9.16
2016-17	9.62	9.45	9.64	9.91	9.96	10.10	9.97	9.51	9.58	9.27	9.77	9.47	9.69
2017-18	**9.51**	**9.42**	**9.41**	**9.56**	**9.61**	**9.77**	**10.10**	**10.30**	**10.50**	**10.20**	**9.18**	(2)	**9.55**

Year	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Marketing Year Avg.
Wheat (Dollars per Bushel)													
2011-12	6.03	6.51	7.05	6.71	6.08	5.69	6.72	7.38	7.04	7.06	6.52	6.60	6.53
2012-13	6.62	8.25	8.56	8.88	8.97	8.63	8.56	8.12	7.80	7.27	7.23	7.08	7.28
2013-14	6.75	6.54	6.15	6.29	6.05	6.44	6.22	6.11	6.09	6.07	6.33	6.24	6.42
2014-15	5.64	5.20	4.88	4.54	4.83	4.19	5.42	5.42	5.48	5.47	4.83	4.72	5.22
2015-16	5.28	4.91	4.61	4.37	4.98	4.44	5.05	4.59	5.14	4.48	4.20	4.41	4.88
2016-17	4.45	4.12	3.98	3.48	3.64	3.67	3.98	3.92	4.17	4.60	4.15	4.22	4.04
2017-18	**4.62**	**5.01**	**4.56**	**4.34**	**4.25**	**4.48**	(2)	**4.62**	**4.79**	**4.97**	**4.66**	**4.97**	**4.78**

[1] Weighted monthly average for market year. 2017 and 2018 are preliminary.
[2] Data not available.

United States Department of Agriculture
National Agricultural Statistics Service

Quick Stats

Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2018	JAN		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.54	
SURVEY	2018	FEB		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.59	
SURVEY	2018	MAR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.72	
SURVEY	2018	APR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.8	
SURVEY	2018	MAY		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.92	
SURVEY	2018	JUN		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.81	
SURVEY	2018	JUL		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.6	
SURVEY	2018	AUG		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.54	
SURVEY	2018	SEP		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.45	
SURVEY	2018	OCT		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	3.44	

United States Department of Agriculture
National Agricultural Statistics Service

Quick Stats

Home Recent Statistics Developers Help

Program	Year	Period	Week Ending	Geo Level	State	State ANSI	Ag District	Ag District Code	County	County ANSI	Zip Code	Region	watershed_code	Watershed	Commodity	Data Item	Domain	Domain Category	Value	CV (%)
SURVEY	2018	JAN		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	9.61	
SURVEY	2018	FEB		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	9.79	
SURVEY	2018	MAR		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	10.1	
SURVEY	2018	APR		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	10.3	
SURVEY	2018	MAY		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	10.5	
SURVEY	2018	JUN		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	10.2	
SURVEY	2018	JUL		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	8.94	
SURVEY	2018	AUG		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	8.85	
SURVEY	2018	SEP		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	8.75	
SURVEY	2018	OCT		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	8.64	

2013 Purdue Crop Cost & Return Guide

November 2012 Estimates

Both product prices and input prices may have significantly changed since these estimates were prepared.

Table 1. Estimated per Acre Crop Budgets for Low, Average, and High Productivity Indiana Soils

	Crop Budgets for Three Yield Levels[1]														
	Low Productivity Soil					Average Productivity Soil					High Productivity Soil				
	Cont. Corn	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**
Expected yield per acre[2]	122	130	43	56	30	153	163	54	70	38	184	196	65	84	46
Harvest price[3]	$5.80	$5.80	$12.40	$8.20	$12.40	$5.80	$5.80	$12.40	$8.20	$12.40	$5.80	$5.80	$12.40	$8.20	$12.40
Market revenue	$708	$754	$533	$459	$372	$887	$945	$670	$574	$471	$1,067	$1,137	$806	$689	$570
Less variable costs[4]															
Fertilizer[5]	$184	$164	$64	$78	$48	$195	$176	$77	$103	$58	$207	$188	$91	$127	$68
Seed[6]	94	94	69	41	80	115	115	69	41	80	115	115	69	41	80
Pesticides[7]	38	38	24	10	23	38	38	24	10	23	38	38	24	10	23
Dryer fuel[8]	23	19	N/A	N/A	3	29	23	N/A	N/A	4	35	28	N/A	N/A	5
Machinery fuel @ $3.45	26	26	16	16	11	26	26	16	16	11	26	26	16	16	11
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	12	13	4	6	3	15	16	5	7	4	18	20	7	8	5
Interest[11]	13	12	6	5	6	14	13	7	6	6	7	7	8	7	7
Insurance/misc.[12]	32	33	23	3	4	32	33	23	3	4	32	33	23	3	4
Total variable cost	$444	$421	$224	$177	$193	$486	$462	$239	$204	$205	$500	$477	$256	$230	$218
Contribution margin[13] (Revenue - variable costs) per acre	$264	$333	$309	$282	$179	$401	$483	$431	$370	$266	$567	$660	$550	$459	$352

[1]Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. The high productivity soils represent soils capable of producing corn and soybeans with yields about 20% higher than average soils. Low productivity soils represent soils capable of producing corn and soybeans with yields about 20% lower than the average soils.

[2]These yields assume average weather conditions and timely plant/harvest date, except soybean double-crop yield, which is based on a July 1 planting date. Continuous corn, full-season soybean, and wheat yields are a percent of rotation corn yield: continuous corn 94%; rotation soybeans 31%; and wheat 43%. Double-crop soybean yields are 70% of full-season soybean yields. Continuous corn yields assume a chisel plow tillage system. Double-crop soybean yields apply to central and southern Indiana. Rotation corn yields for average soils are based on the long-run trends in state average yields reported by the Indiana office of the National Agricultural Statistics Service.

[3]Harvest corn price is December 2013 CME Group futures price less $0.25 basis. Harvest soybean price is November 2013 CME Group futures price less $0.35 basis. Harvest wheat price is July 2013 CME Group futures price less $.35 basis. Harvest prices were based on closing prices on November 15, 2012. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2013. These prices will vary by location and time of the year. Users need to adjust these prices to reflect their own expectations and price situation.

[5]Phosphate, potash, and lime applications are based on Tri-State Fertilizer Recommendations (Source: Michigan Extension Bulletin E-2567, July 1995). Lime amounts represent the pounds of standard ag lime needed to neutralize the acidity from the nitrogen supplied from sources other than ammonium sulfate. Nitrogen application rate for corn is based on research from the Department of Agronomy, Purdue University. Anhydrous ammonia is used as the nitrogen source for corn. Urea is used as the nitrogen source for wheat. Pounds of N, P_20_5, K_20, and lime by crop and soil were as follows: continuous corn, 220-45-53-660, 220-56-61-660, 220-67-69-660; rotation corn, 180-48-55-540, 180-60-63-540, 180-71-72-540; rotation beans, 0-34-80-0, 0-43-96-0, 0-52-111-0; wheat, 58-38-42-172, 84-47-48-251, 110-57-53-330; double crop beans, 0-24-62-0, 0-30-73-0, 0-37-84-0. Fertilizer prices per lb.: NH_3 @ $0.55; urea @ $0.65; P_20_5 @ $0.62; K_20 @ $0.53; lime @ $19.00/ton spread on the field. 5-10% more nitrogen might be needed on poorly drained soils. All soil tests for phosphorus and potassium are assumed to be in the maintenance range, and the pH is in the recommended range.

[6]Corn seed prices assume a biotech variety with multiple traits. A 20%-refuge is planted with varieties that do not contain insect resistant traits, but do include herbicide tolerance. Seeding rates for corn are 27,000 seeds per acre on low productivity soils and 33,000 seeds per acre on average and high productivity soils. Soybean seed prices include Round-Up Ready® varieties. Rotation soybeans are drilled with a seeding rate of 169,000 seeds per acre with a 90% germination rate. Double-crop soybeans are drilled with a seeding rate of 195,000 seeds per acre. The seeding rate for wheat is two bushels per acre.

[7]Includes insecticides and herbicides. For corn, rootworm insecticide is applied to the refuge acres. In some areas of Indiana, this may not be required. These costs do not include the application of fungicide to corn. If fungicide is applied, this will add an additional $28 to $32 per acre for material and application. Pesticide costs can vary widely based on herbicides selected, required rate of application, and product pricing.

[8]Fuel used to dry crop to a safe moisture level for storage. For double-crop soybeans, the drying charge represents the drying of wheat in order to allow an earlier planting of soybeans.

[9]Repairs are based on approximately 5-year-old machinery. For older machinery, per acre repairs and downtime cost will be higher.

[10]Hauling charge represents moving grain from field to storage.

[11]Interest is based on 5% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs, and all miscellaneous expenses.

[12]The cost of crop insurance represents the premium estimated for a Revenue Coverage (RP) policy at the 75% level. Estimates were based on rates in 2012. Crop insurance is included in budgets for corn and full-season soybeans, but is not included for wheat and double-crop soybeans.

[13]Contribution margin is the return to labor and management, machinery services, land resources, and risk.

Table 2. Estimated per Acre Government Payments, Overhead Costs, & Earnings for Low, Average, and High Productivity Indiana Soils

	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
Farm Acres	900	1000	2700	3000	900	1000	2700	3000	900	1000	2700	3000
Rotation[1]	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b
Crop contribution margin[2]	$264	$321	$264	$321	$401	$457	$401	$457	$567	$605	$567	$605
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$264	$321	$264	$321	$401	$457	$401	$457	$567	$605	$567	$605
Annual overhead costs:												
Machinery ownership[4]	$123	$111	$99	$89	$123	$111	$99	$89	$123	$111	$99	$89
Family and hired labor[5]	$71	$64	$38	$34	$71	$64	$38	$34	$71	$64	$38	$34
Land[6]	$164	$164	$164	$164	$214	$214	$214	$214	$270	$270	$270	$270
Earnings or (losses)	-$95	-$18	-$37	$34	-$7	$68	$50	$120	$103	$160	$160	$212

[1]Rotations are as follows: c-c = all of the farm acres in continuous corn; c-b = one-half of the farm acres in rotation corn and one-half in rotation soybeans.

[2]Crop's contribution margin is the per acre contribution margin from Table 1.

[3]It is assumed that the upcoming farm bill will not contain a provision for direct payments or ACRE payments.

[4]The same basic machinery set, which is timely for each rotation, is used for both the c-c and c-b rotation. The larger farm size requires larger, more expensive machinery. Corn production utilizes a chisel plow tillage system, and soybeans utilize no-till. Average annual replacement costs for the larger farm size were calculated using the Purdue Machinery Cost Calculator for a timely machinery set. Seven-year trading policy is assumed for combine and planter, 10-year policy for other field machinery. On livestock farms where fewer hours each day are available for crops, or on small farms, machinery costs and/or labor costs will be higher. On well-drained soils where more days are suitable for spring field work, machinery costs could be lower. A 10-year trading policy was assumed for all machinery on the smaller acreages. Machinery ownership costs are likely to vary widely from farm to farm.

[5]For the larger acreages, labor expense includes a family living withdrawal of $63,930 ($79,658 of family living expenses less $35,454 in net nonfarm income plus $19,726 in income and self-employment taxes); a full-time employee with total compensation of $35,762; and a part-time employee with compensation of $3,085. Family living withdrawal information is obtained from Illinois FBFM summary information. Employee compensation is based on Employee Wage Rates and Compensation Packages on Kansas Farms, Kansas State University, August 2012. For the smaller acreages, labor expense includes the same family living withdrawal and no hired labor. Labor costs are likely to vary widely from farm to farm.

[6]Based on 2012 cash rent per bushel of corn yield reported in the artcile entitled "Indiana's Farmland Market Continues Moving Higher," Purdue Agricultural Economics Report, August, 2012. The relatively large estimated contribution margins for 2013 will likely place upward pressure on 2013 cash rents.

Prepared by: Craig L. Dobbins, Michael R. Langemeier, and W. Alan Miller, Department of Agricultural Economics; Bob Nielsen, Tony J. Vyn, and Shaun Casteel, Department of Agronomy; and Bill Johnson and Kiersten Wise, Department of Botany and Plant Pathology, Purdue University.

Date: 11/30/2012

2014 Purdue Crop Cost & Return Guide

March 2014 Estimates

Both product prices and input prices may have significantly changed since these estimates were prepared.

Table 1. Estimated per Acre Crop Budgets for Low, Average, and High Productivity Indiana Soils

	Crop Budgets for Three Yield Levels[1]														
	Low Productivity Soil					Average Productivity Soil					High Productivity Soil				
	Cont. Corn	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**
Expected yield per acre[2]	122	130	43	56	30	153	163	54	70	38	184	196	65	84	46
Harvest price[3]	$4.60	$4.60	$11.40	$6.50	$11.40	$4.60	$4.60	$11.40	$6.50	$11.40	$4.60	$4.60	$11.40	$6.50	$11.40
Market revenue	$561	$598	$490	$364	$342	$704	$750	$616	$455	$433	$846	$902	$741	$546	$524
Less variable costs[4]															
Fertilizer[5]	$141	$127	$48	$64	$36	$151	$136	$58	$85	$43	$160	$146	$69	$106	$51
Seed[6]	96	96	71	44	81	118	118	71	44	81	118	118	71	44	81
Pesticides[7]	44	44	29	12	27	44	44	29	12	27	44	44	29	12	27
Dryer fuel[8]	24	19	N/A	N/A	3	30	24	N/A	N/A	4	36	29	N/A	N/A	5
Machinery fuel @ $3.66	27	27	16	17	12	27	27	16	17	12	27	27	16	17	12
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	12	13	4	6	3	15	16	5	7	4	18	20	7	8	5
Interest[11]	11	11	6	5	6	12	12	7	6	6	7	6	7	7	6
Insurance/misc.[12]	32	33	23	3	4	32	33	23	3	4	32	33	23	3	4
Total variable cost	$409	$392	$215	$169	$187	$451	$432	$227	$192	$196	$464	$445	$240	$215	$206
Contribution margin[13] (Revenue - variable costs) per acre	$152	$206	$275	$195	$155	$253	$318	$389	$263	$237	$382	$457	$501	$331	$318

[1]Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. The high productivity soils represent soils capable of producing corn and soybeans with yields about 20% higher than average soils. Low productivity soils represent soils capable of producing corn and soybeans with yields about 20% lower than the average soils.

[2]These yields assume average weather conditions and timely plant/harvest date, except soybean double-crop yield, which is based on a July 1 planting date. Continuous corn, full-season soybean, and wheat yields are a percent of rotation corn yield: continuous corn 94%; rotation soybeans 31%; and wheat 43%. Double-crop soybean yields are 70% of full-season soybean yields. Continuous corn yields assume a chisel plow tillage system. Double-crop soybean yields apply to central and southern Indiana. Rotation corn yields for average soils are based on the long-run trends in state average yields reported by the Indiana office of the National Agricultural Statistics Service.

[3]Harvest corn price is December 2014 CME Group futures price less $0.25 basis. Harvest soybean price is November 2014 CME Group futures price less $0.35 basis. Harvest wheat price is July 2014 CME Group futures price less $.35 basis. Harvest prices were based on closing prices on March 12, 2014. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2014. These prices will vary by location and time of the year. Users need to adjust these prices to reflect their own expectations and price situation.

[5]Phosphate, potash, and lime applications are based on Tri-State Fertilizer Recommendations (Source: Michigan Extension Bulletin E-2567, July 1995). Lime amounts represent the pounds of standard ag lime needed to neutralize the acidity from the nitrogen supplied from sources other than ammonium sulfate. Nitrogen application rate for corn is based on research from the Department of Agronomy, Purdue University. Anhydrous ammonia is used as the nitrogen source for corn. Urea is used as the nitrogen source for wheat. Pounds of N, P_20_5, K_20, and lime by crop and soil were as follows: continuous corn, 220-45-53-660, 220-56-61-660, 220-67-69-660; rotation corn, 180-48-55-540, 180-60-63-540, 180-71-72-540; rotation beans, 0-34-80-0, 0-43-96-0, 0-52-111-0; wheat, 58-38-42-172, 84-47-48-251, 110-57-53-330; double crop beans, 0-24-62-0, 0-30-73-0, 0-37-84-0. Fertilizer prices per lb.: NH_3 @ $0.42; urea @ $0.46; P_20_5 @ $0.47; K_20 @ $0.40; lime @ $19.00/ton spread on the field. 5-10% more nitrogen might be needed on poorly drained soils. All soil tests for phosphorus and potassium are assumed to be in the maintenance range, and the pH is in the recommended range.

[6]Corn seed prices assume a biotech variety with multiple traits. A 20%-refuge is planted with varieties that do not contain insect resistant traits, but do include herbicide tolerance. Seeding rates for corn are 27,000 seeds per acre on low productivity soils and 33,000 seeds per acre on average and high productivity soils. Soybean seed prices include Round-Up Ready® varieties. Rotation soybeans are drilled with a seeding rate of 169,000 seeds per acre with a 90% germination rate. Double-crop soybeans are drilled with a seeding rate of 195,000 seeds per acre. The seeding rate for wheat is two bushels per acre.

[7]Includes insecticides and herbicides. For corn, rootworm insecticide is applied to the refuge acres. In some areas of Indiana, this may not be required. These costs do not include the application of fungicide to corn. If fungicide is applied, this will add an additional $28 to $32 per acre for material and application. Pesticide costs can vary widely based on herbicides selected, required rate of application, and product pricing.

[8]Fuel used to dry crop to a safe moisture level for storage. For double-crop soybeans, the drying charge represents the drying of wheat in order to allow an earlier planting of soybeans.

[9]Repairs are based on approximately 5-year-old machinery. For older machinery, per acre repairs and downtime cost will be higher.

[10]Hauling charge represents moving grain from field to storage.

[11]Interest is based on 5% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs, and all miscellaneous expenses.

[12]The cost of crop insurance represents the premium estimated for a Revenue Coverage (RP) policy at the 75% level. Estimates were based on rates in 2013. Crop insurance is included in budgets for corn and full-season soybeans, but is not included for wheat and double-crop soybeans.

[13]Contribution margin is the return to labor and management, machinery services, land resources, and risk.

Table 2. Estimated per Acre Government Payments, Overhead Costs & Earnings for Low, Average, and High Productivity Indiana Soils

	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
Farm Acres	900	1000	2700	3000	900	1000	2700	3000	900	1000	2700	3000
Rotation[1]	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b
Crop contribution margin[2]	$152	$241	$152	$241	$253	$354	$253	$354	$382	$479	$382	$479
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$152	$241	$152	$241	$253	$354	$253	$354	$382	$479	$382	$479
Annual overhead costs:												
Machinery ownership[4]	$128	$115	$102	$92	$128	$115	$102	$92	$128	$115	$102	$92
Family and hired labor[5]	$86	$78	$44	$39	$86	$78	$44	$39	$86	$78	$44	$39
Land[6]	$178	$178	$178	$178	$233	$233	$233	$233	$298	$298	$298	$298
Earnings or (losses)	-$240	-$130	-$172	-$68	-$194	-$72	-$126	-$10	-$130	-$12	-$62	$50

[1]Rotations are as follows: c-c = all of the farm acres in continuous corn; c-b = one-half of the farm acres in rotation corn and one-half in rotation soybeans.

[2]Crop's contribution margin is the per acre contribution margin from Table 1.

[3]It is assumed that the upcoming farm bill will not contain a provision for direct payments or ACRE payments.

[4]The same basic machinery set, which is timely for each rotation, is used for both the c-c and c-b rotation. The larger farm size requires larger, more expensive machinery. Corn production utilizes a chisel plow tillage system, and soybeans utilize no-till. Average annual replacement costs for the larger farm size were calculated using the Purdue Machinery Cost Calculator for a timely machinery set. Seven-year trading policy is assumed for combine and planter, 10-year policy for other field machinery. On livestock farms where fewer hours each day are available for crops, or on small farms, machinery costs and/or labor costs will be higher. On well-drained soils where more days are suitable for spring field work, machinery costs could be lower. A 10-year trading policy was assumed for all machinery on the smaller acreages. Machinery ownership costs are likely to vary widely from farm to farm.

[5]For the larger acreages, labor expense includes a family living withdrawal of $77,965 ($88,430 of family living expenses less $38,257 in net nonfarm income plus $27,792 in income and self-employment taxes); a full-time employee with total compensation of $37,388; and a part-time employee with compensation of $3,225. Family living withdrawal information is based on Illinois FBFM summary information. Employee compensation is based on Employee Wage Rates and Compensation Packages on Kansas Farms, Kansas State University, August 2012. For the smaller acreages, labor expense includes the same family living withdrawal and no hired labor. Labor costs are likely to vary widely from farm to farm.

[6]Based on 2013 cash rent per bushel of corn yield reported in the artcile entitled "Up Again: Indiana's Farmland Market in 2013," Purdue Agricultural Economics Report, August, 2013. The relatively large estimated contribution margins for 2014 will likely place upward pressure on 2014 cash rents.

Prepared by: Craig L. Dobbins, Michael R. Langemeier, and W. Alan Miller, Department of Agricultural Economics; Bob Nielsen, Tony J. Vyn, and Shaun Casteel, Department of Agronomy; and Bill Johnson and Kiersten Wise, Department of Botany and Plant Pathology, Purdue University.

Date: 3/12/14

2015 Purdue Crop Cost & Return Guide

March 2015 Estimates

Both product prices and input prices may have significantly changed since these estimates were prepared.

Table 1. Estimated per Acre Crop Budgets for Low, Average, and High Productivity Indiana Soils

	Crop Budgets for Three Yield Levels[1]														
	Low Productivity Soil					Average Productivity Soil					High Productivity Soil				
	Cont. Corn	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**
Expected yield per acre[2]	124	132	40	57	28	155	165	50	71	35	186	198	60	85	42
Harvest price[3]	$3.90	$3.90	$9.40	$4.70	$9.40	$3.90	$3.90	$9.40	$4.70	$9.40	$3.90	$3.90	$9.40	$4.70	$9.40
Market revenue	$484	$515	$376	$268	$263	$605	$644	$470	$334	$329	$725	$772	$564	$400	$395
Less variable costs[4]															
Fertilizer[5]	$153	$137	$47	$63	$35	$163	$147	$57	$82	$42	$172	$156	$67	$102	$49
Seed[6]	100	100	74	44	85	123	123	74	44	85	123	123	74	44	85
Pesticides[7]	43	43	28	12	26	43	43	28	12	26	43	43	28	12	26
Dryer fuel[8]	31	24	N/A	N/A	3	38	30	N/A	N/A	4	46	37	N/A	N/A	5
Machinery fuel @ $2.50	19	19	11	11	8	19	19	11	11	8	19	19	11	11	8
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	12	13	4	6	3	16	17	5	7	4	19	20	6	9	4
Interest[11]	12	11	6	5	6	13	12	6	6	6	6	6	7	6	6
Insurance/misc.[12]	32	33	23	3	4	32	33	23	3	4	32	33	23	3	4
Total variable cost	$424	$402	$211	$162	$185	$469	$446	$222	$183	$194	$482	$459	$234	$205	$202
Contribution margin[13] (Revenue - variable costs) per acre	$60	$113	$165	$106	$78	$136	$198	$248	$151	$135	$243	$313	$330	$195	$193

[1]Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. The high productivity soils represent soils capable of producing corn and soybeans with yields about 20% higher than average soils. Low productivity soils represent soils capable of producing corn and soybeans with yields about 20% lower than the average soils.

[2]These yields assume average weather conditions and timely plant/harvest date, except soybean double-crop yield, which is based on a July 1 planting date. Continuous corn, full-season soybean, and wheat yields are a percent of rotation corn yield: continuous corn 94%; rotation soybeans 30%; and wheat 43%. Double-crop soybean yields are 70% of full-season soybean yields. Continuous corn yields assume a chisel plow tillage system. Double-crop soybean yields apply to central and southern Indiana. Rotation corn yields for average soils are based on the long-run trends in state average yields reported by the Indiana office of the National Agricultural Statistics Service.

[3]Harvest corn price is December 2015 CME Group futures price less $0.25 basis. Harvest soybean price is November 2015 CME Group futures price less $0.35 basis. Harvest wheat price is July 2015 CME Group futures price less $.35 basis. Harvest prices were based on closing prices on March 11, 2015. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2015. These prices will vary by location and time of the year. Users need to adjust these prices to reflect their own expectations and price situation.

[5]Phosphate, potash, and lime applications are based on Tri-State Fertilizer Recommendations (Source: Michigan Extension Bulletin E-2567, July 1995). Lime amounts represent the pounds of standard ag lime needed to neutralize the acidity from the nitrogen supplied from sources other than ammonium sulfate. Nitrogen application rate for corn is based on research from the Department of Agronomy, Purdue University. Anhydrous ammonia is used as the nitrogen source for corn. Urea is used as the nitrogen source for wheat. Pounds of N, P_20_5, K_20, and lime by crop and soil were as follows: continuous corn, 220-45-53-660, 220-56-61-660, 220-67-69-660; rotation corn, 180-48-55-540, 180-60-63-540, 180-71-72-540; rotation beans, 0-34-80-0, 0-43-96-0, 0-52-111-0; wheat, 58-38-42-172, 84-47-48-251, 110-57-53-330; double crop beans, 0-24-62-0, 0-30-73-0, 0-37-84-0. Fertilizer prices per lb.: NH_3 @ $0.43; urea @ $0.52; P_20_5 @ $0.53; K_20 @ $0.40; lime @ $19.00/ton spread on the field. 5-10% more nitrogen might be needed on poorly drained soils. All soil tests for phosphorus and potassium are assumed to be in the maintenance range, and the pH is in the recommended range.

[6]Corn seed prices assume a biotech variety with multiple traits. A 20%-refuge is planted with varieties that do not contain insect resistant traits, but do include herbicide tolerance. Seeding rates for corn are 27,000 seeds per acre on low productivity soils and 33,000 seeds per acre on average and high productivity soils. Soybean seed prices include Round-Up Ready® varieties. Rotation soybeans are drilled with a seeding rate of 169,000 seeds per acre with a 90% germination rate. Double-crop soybeans are drilled with a seeding rate of 195,000 seeds per acre. The seeding rate for wheat is two bushels per acre.

[7]Includes insecticides and herbicides. For corn, rootworm insecticide is applied to the refuge acres. In some areas of Indiana, this may not be required. These costs do not include the application of fungicide to corn. If fungicide is applied, this will add an additional $28 to $32 per acre for material and application. Pesticide costs can vary widely based on herbicides selected, required rate of application, and product pricing.

[8]Fuel used to dry crop to a safe moisture level for storage. For double-crop soybeans, the drying charge represents the drying of wheat in order to allow an earlier planting of soybeans.

[9]Repairs are based on approximately 5-year-old machinery. For older machinery, per acre repairs and downtime cost will be higher.

[10]Hauling charge represents moving grain from field to storage.

[11]Interest is based on 5% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs, and all miscellaneous expenses.

[12]The cost of crop insurance represents the premium estimated for a Revenue Coverage (RP) policy at the 75% level. Estimates were based on rates in 2014. Crop insurance is included in budgets for corn and full-season soybeans, but is not included for wheat and double-crop soybeans.

[13]Contribution margin is the return to labor and management, machinery services, land resources, and risk.

Table 2. Estimated per Acre Government Payments, Overhead Costs & Earnings for Low, Average, and High Productivity Indiana Soils

	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
Farm Acres	900	1000	2700	3000	900	1000	2700	3000	900	1000	2700	3000
Rotation[1]	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b
Crop contribution margin[2]	$60	$139	$60	$139	$136	$223	$136	$223	$243	$322	$243	$322
Government payment[3]	$60	$50	$60	$50	$60	$50	$60	$50	$60	$50	$60	$50
Total contribution margin	$120	$189	$120	$189	$196	$273	$196	$273	$303	$372	$303	$372
Annual overhead costs:												
Machinery ownership[4]	$133	$119	$106	$96	$133	$119	$106	$96	$133	$119	$106	$96
Family and hired labor[5]	$104	$93	$50	$45	$104	$93	$50	$45	$104	$93	$50	$45
Land[6]	$180	$180	$180	$180	$234	$234	$234	$234	$295	$295	$295	$295
Earnings or (losses)	-$297	-$204	-$216	-$131	-$274	-$174	-$194	-$101	-$228	-$136	-$148	-$63

[1]Rotations are as follows: c-c = all of the farm acres in continuous corn; c-b = one-half of the farm acres in rotation corn and one-half in rotation soybeans.

[2]Crop's contribution margin is the per acre contribution margin from Table 1.

[3]It is assumed that the upcoming farm bill will provide ARC-County payments in 2015.

[4]The same basic machinery set, which is timely for each rotation, is used for both the c-c and c-b rotation. The larger farm size requires larger, more expensive machinery. Corn production utilizes a chisel plow tillage system, and soybeans utilize no-till. Average annual replacement costs for the larger farm size were calculated using the Purdue Machinery Cost Calculator for a timely machinery set. Seven-year trading policy is assumed for combine and planter, 10-year policy for other field machinery. On livestock farms where fewer hours each day are available for crops, or on small farms, machinery costs and/or labor costs will be higher. On well-drained soils where more days are suitable for spring field work, machinery costs could be lower. A 10-year trading policy was assumed for all machinery on the smaller acreages. Machinery ownership costs are likely to vary widely from farm to farm.

[5]For the larger acreages, labor expense includes a family living withdrawal of $79,095 ($89,711 of family living expenses less $38,811 in net nonfarm income plus $28,195 in income and self-employment taxes); a full-time employee with total compensation of $37,930; and a part-time employee with compensation of $3,272. Family living withdrawal information is based on Illinois FBFM summary information. Employee compensation is based on Employee Wage Rates and Compensation Packages on Kansas Farms, Kansas State University, August 2012. For the smaller acreages, labor expense includes the same family living withdrawal and no hired labor. Labor costs are likely to vary widely from farm to farm.

[6]Based on 2014 cash rent per bushel of corn yield reported in the artcile entitled "A Time of Change: Indiana's Farmland Market in 2014," Purdue Agricultural Economics Report, August, 2014. The relatively low estimated contribution margins for 2015 will likely place downward pressure on 2015 cash rents.

Prepared by: Craig L. Dobbins, Michael R. Langemeier, and W. Alan Miller, Department of Agricultural Economics; Bob Nielsen, Tony J. Vyn, and Shaun Casteel, Department of Agronomy; and Bill Johnson and Kiersten Wise, Department of Botany and Plant Pathology, Purdue University.

Date: 3/12/15

2016 Purdue Crop Cost & Return Guide

March 2016 Estimates

Both product prices and input prices may have significantly changed since these estimates were prepared.

Table 1. Estimated per Acre Crop Budgets for Low, Average, and High Productivity Indiana Soils

	Crop Budgets for Three Yield Levels[1]														
	Low Productivity Soil					Average Productivity Soil					High Productivity Soil				
	Cont. Corn	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**
Expected yield per acre[2]	124	132	40	57	28	155	165	50	71	35	186	198	60	85	42
Harvest price[3]	$3.60	$3.60	$8.90	$4.40	$8.90	$3.60	$3.60	$8.90	$4.40	$8.90	$3.60	$3.60	$8.90	$4.40	$8.90
Market revenue	$446	$475	$356	$251	$249	$558	$594	$445	$312	$312	$670	$713	$534	$374	$374
Less variable costs[4]															
Fertilizer[5]	$121	$108	$36	$49	$27	$128	$115	$43	$65	$32	$135	$123	$51	$80	$37
Seed[6]	100	100	74	44	85	123	123	74	44	85	123	123	74	44	85
Pesticides[7]	42	42	26	12	25	42	42	26	12	25	42	42	26	12	25
Dryer fuel[8]	23	19	N/A	N/A	3	29	23	N/A	N/A	4	35	28	N/A	N/A	5
Machinery fuel @ $1.73	13	13	8	8	6	13	13	8	8	6	13	13	8	8	6
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	12	13	4	6	3	16	17	5	7	4	19	20	6	9	4
Interest[11]	10	10	6	4	5	12	11	6	5	6	12	11	6	5	6
Insurance/misc.[12]	32	33	23	3	4	32	33	23	3	4	32	33	23	3	4
Total variable cost	$375	$360	$195	$144	$173	$417	$399	$203	$162	$181	$433	$415	$212	$179	$187
Contribution margin[13] (Revenue - variable costs) per acre	$71	$115	$161	$107	$76	$141	$195	$242	$150	$131	$237	$298	$322	$195	$187

[1]Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. The high productivity soils represent soils capable of producing corn and soybeans with yields about 20% higher than average soils. Low productivity soils represent soils capable of producing corn and soybeans with yields about 20% lower than the average soils.

[2]These yields assume average weather conditions and timely plant/harvest date, except soybean double-crop yield, which is based on a July 1 planting date. Continuous corn, full-season soybean, and wheat yields are a percent of rotation corn yield: continuous corn 94%; rotation soybeans 30%; and wheat 43%. Double-crop soybean yields are 70% of full-season soybean yields. Continuous corn yields assume a chisel plow tillage system. Double-crop soybean yields apply to central and southern Indiana. Rotation corn yields for average soils are based on the long-run trends in state average yields reported by the Indiana office of the National Agricultural Statistics Service.

[3]Harvest corn price is December 2016 CME Group futures price less $0.25 basis. Harvest soybean price is November 2016 CME Group futures price less $0.35 basis. Harvest wheat price is July 2016 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on March 30, 2016. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2016. These prices will vary by location and time of the year. Users need to adjust these prices to reflect their own expectations and price situation.

[5]Phosphate, potash, and lime applications are based on Tri-State Fertilizer Recommendations (Source: Michigan Extension Bulletin E-2567, July 1995). Lime amounts represent the pounds of standard ag lime needed to neutralize the acidity from the nitrogen supplied from sources other than ammonium sulfate. Nitrogen application rate for corn is based on research from the Department of Agronomy, Purdue University. Anhydrous ammonia is used as the nitrogen source for corn. Urea is used as the nitrogen source for wheat. Pounds of N, P_20_5, K_20, and lime by crop and soil were as follows: continuous corn, 220-45-53-660, 220-56-61-660, 220-67-69-660; rotation corn, 180-48-55-540, 180-60-63-540, 180-71-72-540; rotation beans, 0-34-80-0, 0-43-96-0, 0-52-111-0; wheat, 58-38-42-172, 84-47-48-251, 110-57-53-330; double crop beans, 0-24-62-0, 0-30-73-0, 0-37-84-0. Fertilizer prices per lb.: NH_3 @ $0.35; urea @ $0.39; P_20_5 @ $0.43; K_20 @ $0.29; lime @ $19.00/ton spread on the field. 5-10% more nitrogen might be needed on poorly drained soils. All soil tests for phosphorus and potassium are assumed to be in the maintenance range, and the pH is in the recommended range.

[6]Corn seed prices assume a biotech variety with multiple traits. A 20%-refuge is planted with varieties that do not contain insect resistant traits, but do include herbicide tolerance. Seeding rates for corn are 27,000 seeds per acre on low productivity soils and 33,000 seeds per acre on average and high productivity soils. Soybean seed prices include Round-Up Ready® varieties. Rotation soybeans are drilled with a seeding rate of 169,000 seeds per acre with a 90% germination rate. Double-crop soybeans are drilled with a seeding rate of 195,000 seeds per acre. The seeding rate for wheat is two bushels per acre.

[7]Includes insecticides and herbicides. For corn, rootworm insecticide is applied to the refuge acres. In some areas of Indiana, this may not be required. These costs do not include the application of fungicide to corn. If fungicide is applied, this will add an additional $28 to $32 per acre for material and application. Pesticide costs can vary widely based on herbicides selected, required rate of application, and product pricing.

[8]Fuel used to dry crop to a safe moisture level for storage. For double-crop soybeans, the drying charge represents the drying of wheat in order to allow an earlier planting of soybeans.

[9]Repairs are based on approximately 5-year-old machinery. For older machinery, per acre repairs and downtime cost will be higher.

[10]Hauling charge represents moving grain from field to storage.

[11]Interest is based on 5% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs, and all miscellaneous expenses.

[12]The cost of crop insurance represents the premium estimated for a Revenue Coverage (RP) policy at the 75% level. Estimates were based on 2016 rates. Crop insurance is included in budgets for corn and full-season soybeans, but is not included for wheat and double-crop soybeans.

[13]Contribution margin is the return to labor and management, machinery services, land resources, and risk.

Table 2. Estimated per Acre Government Payments, Overhead Costs & Earnings for Low, Average, and High Productivity Indiana Soils

	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
Farm Acres	900	1000	2700	3000	900	1000	2700	3000	900	1000	2700	3000
Rotation[1]	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b
Crop contribution margin[2]	$71	$138	$71	$138	$141	$219	$141	$219	$237	$310	$237	$310
Government payment[3]	$25	$25	$25	$25	$25	$25	$25	$25	$25	$25	$25	$25
Total contribution margin	$96	$163	$96	$163	$166	$244	$166	$244	$262	$335	$262	$335
Annual overhead costs:												
Machinery ownership[4]	$136	$122	$109	$98	$136	$122	$109	$98	$136	$122	$109	$98
Family and hired labor[5]	$101	$91	$49	$44	$101	$91	$49	$44	$101	$91	$49	$44
Land[6]	$161	$161	$161	$161	$213	$213	$213	$213	$269	$269	$269	$269
Earnings or (losses)	-$301	-$211	-$223	-$140	-$284	-$182	-$205	-$111	-$244	-$147	-$165	-$76

[1]Rotations are as follows: c-c = all of the farm acres in continuous corn; c-b = one-half of the farm acres in rotation corn and one-half in rotation soybeans.

[2]Crop's contribution margin is the per acre contribution margin from Table 1.

[3]It is assumed that the upcoming farm bill will provide ARC-County payments in 2016. The 2016 payments will not be received until October 2017.

[4]The same basic machinery set, which is timely for each rotation, is used for both the c-c and c-b rotation. The larger farm size requires larger, more expensive machinery. Corn production utilizes a chisel plow tillage system, and soybeans utilize no-till. Average annual replacement costs for the larger farm size were calculated using the Purdue Machinery Cost Calculator for a timely machinery set. Seven-year trading policy is assumed for combine and planter, 10-year policy for other field machinery. On livestock farms where fewer hours each day are available for crops, or on small farms, machinery costs and/or labor costs will be higher. On well-drained soils where more days are suitable for spring field work, machinery costs could be lower. A 10-year trading policy was assumed for all machinery on the smaller acreages. Machinery ownership costs are likely to vary widely from farm to farm.

[5]For the larger acreages, labor expense includes a family living withdrawal of $90,577 ($91,477 of family living expenses less $40,810 in net nonfarm income plus $39,910 in income and self-employment taxes); a full-time employee with total compensation of $39,013; and a part-time employee with compensation of $3,365. Family living withdrawal information is based on Illinois FBFM summary information. Employee compensation is based on Employee Wage Rates and Compensation Packages on Kansas Farms, Kansas State University, August 2012. For the smaller acreages, labor expense includes the same family living withdrawal and no hired labor. Labor costs are likely to vary widely from farm to farm.

[6]Based on 2015 cash rent per bushel of corn yield reported in the artcile entitled "The Bears Control the 2015 Indiana Farmland Market," Purdue Agricultural Economics Report, August, 2015. The relatively low estimated contribution margins for 2016 will likely place downward pressure on cash rents, thus 2016 cash rents are assumed to be 5 percent below 2015 cash rents.

Prepared by: Craig L. Dobbins and Michael R. Langemeier, Department of Agricultural Economics; Bob Nielsen, Tony J. Vyn, and Shaun Casteel, Department of Agronomy; and Bill Johnson and Kiersten Wise, Department of Botany and Plant Pathology, Purdue University.

Date: 3/30/16

2017 Purdue Crop Cost & Return Guide

March 2017 Estimates

Both product prices and input prices may have significantly changed since these estimates were prepared.

Table 1. Estimated per Acre Crop Budgets for Low, Average, and High Productivity Indiana Soils

	Crop Budgets for Three Yield Levels[1]														
	Low Productivity Soil					Average Productivity Soil					High Productivity Soil				
	Cont. Corn	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**
Expected yield per acre[2]	128	136	42	60	29	160	170	52	75	36	192	204	62	90	43
Harvest price[3]	$3.70	$3.70	$9.60	$4.20	$9.60	$3.70	$3.70	$9.60	$4.20	$9.60	$3.70	$3.70	$9.60	$4.20	$9.60
Market revenue	$474	$503	$403	$252	$278	$592	$629	$499	$315	$346	$710	$755	$595	$378	$413
Less variable costs[4]															
Fertilizer[5]	$120	$107	$35	$51	$26	$127	$115	$42	$67	$31	$134	$122	$49	$83	$35
Seed[6]	98	98	71	44	82	119	119	71	44	82	119	119	71	44	82
Pesticides[7]	54	54	46	15	43	54	54	46	15	43	54	54	46	15	43
Dryer fuel[8]	30	24	N/A	N/A	4	38	30	N/A	N/A	5	45	36	N/A	N/A	5
Machinery fuel @ $2.02	15	15	9	9	6	15	15	9	9	6	15	15	9	9	6
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	13	14	4	6	3	16	17	5	8	4	19	20	6	9	4
Interest[11]	11	11	7	5	6	12	12	7	5	6	12	12	7	6	7
Insurance/misc.[12]	36	36	31	9	9	38	38	34	9	9	40	40	34	9	9
Total variable cost	$399	$381	$221	$157	$194	$441	$422	$232	$175	$201	$460	$440	$240	$193	$206
Contribution margin[13] (Revenue - variable costs) per acre	$75	$122	$182	$95	$84	$151	$207	$267	$140	$145	$250	$315	$355	$185	$207

[1]Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. The high productivity soils represent soils capable of producing corn and soybeans with yields about 20% higher than average soils. Low productivity soils represent soils capable of producing corn and soybeans with yields about 20% lower than the average soils.

[2]These yields assume average weather conditions and timely plant/harvest date, except soybean double-crop yield, which is based on a July 1 planting date. Continuous corn, full-season soybean, and wheat yields are a percent of rotation corn yield: continuous corn 94%; rotation soybeans 30%; and wheat 43%. Double-crop soybean yields are 70% of full-season soybean yields. Continuous corn yields assume a chisel plow tillage system. Double-crop soybean yields apply to central and southern Indiana. Rotation corn yields for average soils are based on the long-run trends in state average yields reported by the Indiana office of the National Agricultural Statistics Service.

[3]Harvest corn price is December 2017 CME Group futures price less $0.25 basis. Harvest soybean price is November 2017 CME Group futures price less $0.35 basis. Harvest wheat price is July 2017 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on March 17, 2017. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2017. These prices will vary by location and time of the year. Users need to adjust these prices to reflect their own expectations and price situation.

[5]Phosphate, potash, and lime applications are based on Tri-State Fertilizer Recommendations (Source: Michigan Extension Bulletin E-2567, July 1995). Lime amounts represent the pounds of standard ag lime needed to neutralize the acidity from the nitrogen supplied from sources other than ammonium sulfate. Nitrogen application rate for corn is based on research from the Department of Agronomy, Purdue University. Anhydrous ammonia is used as the nitrogen source for corn. Urea is used as the nitrogen source for wheat. Pounds of N, P_20_5, K_20, and lime by crop and soil were as follows: continuous corn, 240-47-55-720, 240-59-63-720, 240-71-72-720; rotation corn, 200-50-57-600, 200-63-66-600, 200-75-75-600; rotation beans, 0-34-79-0, 0-42-93-0, 0-50-107-0; wheat, 58-38-42-172, 84-47-48-251, 110-57-53-330; double crop beans, 0-23-61-0, 0-29-70-0, 0-34-80-0. Fertilizer prices per lb.: NH_3 @ $0.32; urea @ $0.39; P_20_5 @ $0.40; K_20 @ $0.27; lime @ $19.00/ton spread on the field. For very poorly drained soils, consider increasing N rates by 5-10%. For well-drained soils, consider reducing N rates by 5-10%. All soil tests for phosphorus and potassium are assumed to be in the maintenance range, and the pH is in the recommended range.

[6]Corn seed prices assume a biotech variety with multiple traits. A 20%-refuge is planted with varieties that do not contain insect resistant traits, but do include herbicide tolerance. Seeding rates for corn are 27,000 seeds per acre on low productivity soils and 33,000 seeds per acre on average and high productivity soils. Soybean seed prices include Round-Up Ready® varieties. Rotation soybeans are drilled with a seeding rate of 169,000 seeds per acre with a 90% germination rate. Double-crop soybeans are drilled with a seeding rate of 195,000 seeds per acre. The seeding rate for wheat is two bushels per acre.

[7]Includes insecticides and herbicides. For corn, rootworm insecticide is applied to the refuge acres. In some areas of Indiana, this may not be required. These costs do not include the application of fungicide to corn. If fungicide is applied, this will add an additional $28 to $32 per acre for material and application. Pesticide costs can vary widely based on herbicides selected, required rate of application, and product pricing.

[8]Fuel used to dry crop to a safe moisture level for storage. For double-crop soybeans, the drying charge represents the drying of wheat in order to allow an earlier planting of soybeans.

[9]Repairs are based on approximately 5-year-old machinery. For older machinery, per acre repairs and downtime cost will be higher.

[10]Hauling charge represents moving grain from field to storage.

[11]Interest is based on 5% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs, and all miscellaneous expenses.

[12]Includes crop insurance, general farm insurance, and miscellaneous cost. The cost of crop insurance represents the premium projected for a Revenue Protection (RP) policy at the 80% coverage level. Crop insurance is included in budgets for corn and full-season soybeans, but is not included for wheat and double-crop soybeans.

[13]Contribution margin is the return to labor and management, machinery services, land resources, and risk.

Table 2. Estimated per Acre Government Payments, Overhead Costs & Earnings for Low, Average, and High Productivity Indiana Soils

	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
Farm Acres	900	1000	2700	3000	900	1000	2700	3000	900	1000	2700	3000
Rotation[1]	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b
Crop contribution margin[2]	$75	$152	$75	$152	$151	$237	$151	$237	$250	$335	$250	$335
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$75	$152	$75	$152	$151	$237	$151	$237	$250	$335	$250	$335
Annual overhead costs:												
Machinery ownership[4]	$137	$123	$109	$98	$137	$123	$109	$98	$137	$123	$109	$98
Family and hired labor[5]	$90	$81	$47	$42	$90	$81	$47	$42	$90	$81	$47	$42
Land[6]	$149	$149	$149	$149	$194	$194	$194	$194	$244	$244	$244	$244
Earnings or (losses)	-$301	-$201	-$230	-$137	-$270	-$161	-$199	-$97	-$221	-$113	-$150	-$49

[1]Rotations are as follows: c-c = all of the farm acres in continuous corn; c-b = one-half of the farm acres in rotation corn and one-half in rotation soybeans.

[2]Crop's contribution margin is the per acre contribution margin from Table 1.

[3]It is assumed that the current farm bill will not provide ARC-County payments in 2017. Any 2017 payments will not be received until October 2018.

[4]The same basic machinery set, which is timely for each rotation, is used for both the c-c and c-b rotation. The larger farm size requires larger, more expensive machinery. Corn production utilizes a chisel plow tillage system, and soybeans utilize no-till. Average annual replacement costs for the larger farm size were calculated using the Purdue Machinery Cost Calculator for a timely machinery set. Seven-year trading policy is assumed for combine and planter, 10-year policy for other field machinery. On livestock farms where fewer hours each day are available for crops, or on small farms, machinery costs and/or labor costs will be higher. On well-drained soils where more days are suitable for spring field work, machinery costs could be lower. A 10-year trading policy was assumed for all machinery on the smaller acreages. Machinery ownership costs are likely to vary widely from farm to farm.

[5]For the larger acreages, labor expense includes a family living withdrawal of $81,141 ($89,858 of family living expenses less $43,098 in net nonfarm income plus $34,381 in income and self-employment taxes); a full-time employee with total compensation of $41,542; and a part-time employee with compensation of $3,583. Family living withdrawal information is based on Illinois FBFM summary information. Employee compensation is based on Employee Wage Rates and Compensation Packages on Kansas Farms, Kansas State University, August 2012. For the smaller acreages, labor expense includes the same family living withdrawal and no hired labor. Labor costs are likely to vary widely from farm to farm.

[6]Based on 2016 cash rent per bushel of corn yield reported in the article entitled "Adjustment to Indiana Farmland Value and Cash Rent Continues," Purdue Agricultural Economics Report, August, 2016. The relatively low estimated contribution margins for 2017 will likely place downward pressure on cash rents, thus 2017 cash rents are assumed to be 5 percent below 2016 cash rents.

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Date: 3/17/17

2018 Purdue Crop Cost & Return Guide

November 2017 Estimates

Both product prices and input prices may have significantly changed since these estimates were prepared.

Table 1. Estimated per Acre Crop Budgets for Low, Average, and High Productivity Indiana Soils

	Crop Budgets for Three Yield Levels[1]														
	Low Productivity Soil					Average Productivity Soil					High Productivity Soil				
	Cont. Corn	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**	**Cont. Corn**	**Rot. Corn**	**Rot. Beans**	**Wheat**	**DC Beans**
Expected yield per acre[2]	130	138	43	61	30	162	172	53	76	37	194	206	63	91	44
Harvest price[3]	$3.60	$3.60	$9.70	$4.30	$9.70	$3.60	$3.60	$9.70	$4.30	$9.70	$3.60	$3.60	$9.70	$4.30	$9.70
Market revenue	$468	$497	$417	$262	$291	$583	$619	$514	$327	$359	$698	$742	$611	$391	$427
Less variable costs[4]															
Fertilizer[5]	$105	$95	$36	$51	$27	$112	$103	$43	$67	$32	$119	$111	$50	$83	$37
Seed[6]	91	91	67	44	78	111	111	67	44	78	111	111	67	44	78
Pesticides[7]	60	60	65	25	55	60	60	65	25	55	60	60	65	25	55
Dryer fuel[8]	31	25	N/A	N/A	4	38	31	N/A	N/A	5	46	37	N/A	N/A	5
Machinery fuel @ $2.46	18	18	11	11	8	18	18	11	11	8	18	18	11	11	8
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	13	14	4	6	3	16	17	5	8	4	19	21	6	9	4
Interest[11]	11	10	7	5	6	12	11	7	6	7	12	12	8	6	7
Insurance/misc.[12]	36	36	31	9	9	38	38	34	9	9	40	40	34	9	9
Total variable cost	$387	$371	$239	$169	$205	$427	$411	$250	$188	$213	$447	$432	$259	$205	$218
Contribution margin[13] (Revenue - variable costs) per acre	$81	$126	$178	$93	$86	$156	$208	$264	$139	$146	$251	$310	$352	$186	$209

[1]Estimated yields and costs are for yields with average management for three different soils representing low, average, and high productivity. The high productivity soils represent soils capable of producing corn and soybeans with yields about 20% higher than average soils. Low productivity soils represent soils capable of producing corn and soybeans with yields about 20% lower than the average soils.

[2]These yields assume average weather conditions and timely plant/harvest dates, except soybean double-crop yield, which is based on a July 1 planting date. Rotation corn, rotation soybean, and wheat yields for average soils are based on the long-run trends in state average yields reported by the Indiana office of the National Agricultural Statistics Service. Continuous corn yields are 94% of rotation corn yields. Double-crop soybean yields are 70% of full-season soybean yields. Continuous corn yields assume a chisel plow tillage system. Double-crop soybean yields apply to central and southern Indiana.

[3]Harvest corn price is December 2018 CME Group futures price less $0.25 basis. Harvest soybean price is November 2018 CME Group futures price less $0.35 basis. Harvest wheat price is July 2018 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on November 27, 2017. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2018. These prices will vary by location and time of the year. Users need to adjust these prices to reflect their own expectations and price situation.

[5]Phosphate, potash, and lime applications are based on Tri-State Fertilizer Recommendations (Source: Michigan Extension Bulletin E-2567, July 1995). Lime amounts represent the pounds of standard ag lime needed to neutralize the acidity from the nitrogen supplied from sources other than ammonium sulfate. Nitrogen application rate for corn is based on research from the Department of Agronomy, Purdue University. Anhydrous ammonia is used as the nitrogen source for corn. Urea is used as the nitrogen source for wheat. Pounds of N, P_20_5, K_20, and lime by crop and soil were as follows: continuous corn, 240-47-55-720, 240-59-63-720, 240-71-72-720; rotation corn, 200-50-57-600, 200-63-66-600, 200-75-75-600; rotation beans, 0-34-79-0, 0-42-93-0, 0-50-107-0; wheat, 58-38-42-172, 84-47-48-251, 110-57-53-330; double crop beans, 0-23-61-0, 0-29-70-0, 0-34-80-0. Fertilizer prices per lb.: NH_3 @ $0.25; urea @ $0.37; P_20_5 @ $0.42; K_20 @ $0.27; lime @ $19.00/ton spread on the field. For very poorly drained soils, consider increasing N rates by 5-10%. For well-drained soils, consider reducing N rates by 5-10%. All soil tests for phosphorus and potassium are assumed to be in the maintenance range, and the pH is in the recommended range.

[6]Corn seed prices assume a biotech variety with multiple traits. A 20%-refuge is planted with varieties that do not contain insect resistant traits, but do include herbicide tolerance. Seeding rates for corn are 27,000 seeds per acre on low productivity soils and 33,000 seeds per acre on average and high productivity soils. Soybean seed prices include Round-Up Ready® varieties. Rotation soybeans are drilled with a seeding rate of 169,000 seeds per acre with a 90% germination rate. Double-crop soybeans are drilled with a seeding rate of 195,000 seeds per acre. The seeding rate for wheat is two bushels per acre.

[7]Includes insecticides and herbicides. For corn, rootworm insecticide is applied to the refuge acres. In some areas of Indiana, this may not be required. These costs do not include the application of fungicide to corn. If fungicide is applied, this will add an additional $28 to $32 per acre for material and application. Pesticide costs can vary widely based on herbicides selected, required rate of application, and product pricing.

[8]Fuel used to dry crop to a safe moisture level for storage. For double-crop soybeans, the drying charge represents the drying of wheat in order to allow an earlier planting of soybeans.

[9]Repairs are based on approximately 5-year-old machinery. For older machinery, per acre repairs and downtime cost will be higher.

[10]Hauling charge represents moving grain from field to storage.

[11]Interest is based on 5% annual rate for 9 months for seed, fertilizer, and chemicals, and for 6 months for half the machinery fuel and repairs, and all miscellaneous expenses.

[12]Includes crop insurance, general farm insurance, and miscellaneous cost. The cost of crop insurance represents the premium projected for a Revenue Protection (RP) policy at the 80% coverage level. Crop insurance is included in budgets for corn and full-season soybeans, but is not included for wheat and double-crop soybeans.

[13]Contribution margin is the return to labor and management, machinery services, land resources, and risk.

Table 2. Estimated per Acre Government Payments, Overhead Costs & Earnings for Low, Average, and High Productivity Indiana Soils

	Low Productivity Soil				Average Productivity Soil				High Productivity Soil			
Farm Acres	900	1000	2700	3000	900	1000	2700	3000	900	1000	2700	3000
Rotation[1]	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b	c-c	c-b
Crop contribution margin[2]	$81	$152	$81	$152	$156	$236	$156	$236	$251	$331	$251	$331
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$81	$152	$81	$152	$156	$236	$156	$236	$251	$331	$251	$331
Annual overhead costs:												
Machinery ownership[4]	$139	$125	$111	$100	$139	$125	$111	$100	$139	$125	$111	$100
Family and hired labor[5]	$72	$65	$41	$37	$72	$65	$41	$37	$72	$65	$41	$37
Land[6]	$151	$151	$151	$151	$195	$195	$195	$195	$246	$246	$246	$246
Earnings or (losses)	-$281	-$189	-$222	-$136	-$250	-$149	-$191	-$96	-$206	-$105	-$147	-$52

[1]Rotations are as follows: c-c = all of the farm acres in continuous corn; c-b = one-half of the farm acres in rotation corn and one-half in rotation soybeans.

[2]Crop's contribution margin is the per acre contribution margin from Table 1.

[3]It is assumed that the current farm bill will not provide ARC-County payments in 2018. Any 2018 payments will not be received until October 2019.

[4]The same basic machinery set, which is timely for each rotation, is used for both the c-c and c-b rotation. The larger farm size requires larger, more expensive machinery. Corn production utilizes a chisel plow tillage system, and soybeans utilize no-till. Average annual replacement costs for the larger farm size were calculated using the Purdue Machinery Cost Calculator for a timely machinery set. Seven-year trading policy is assumed for combine and planter, 10-year policy for other field machinery. On livestock farms where fewer hours each day are available for crops, or on small farms, machinery costs and/or labor costs will be higher. On well-drained soils where more days are suitable for spring field work, machinery costs could be lower. A 10-year trading policy was assumed for all machinery on the smaller acreages. Machinery ownership costs are likely to vary widely from farm to farm.

[5]For the larger acreages, labor expense includes a family living withdrawal of $64,957 ($84,455 of family living expenses less $45,290 in net nonfarm income plus $26,192 in income and self-employment taxes); a full-time employee with total compensation of $41,723; and a part-time employee with compensation of $3,599. Family living withdrawal information is based on Illinois FBFM summary information. Employee compensation is based on Employee Wage Rates and Compensation Packages on Kansas Farms, Kansas State University, August 2012. For the smaller acreages, labor expense includes the same family living withdrawal and no hired labor. Labor costs are likely to vary widely from farm to farm.

[6]Based on 2017 cash rent per bushel of corn yield reported in the article entitled "Indiana Farmland Values and Cash Rents Continue to Adjust," Purdue Agricultural Economics Report, August, 2017. The relatively tight margins expected in 2018 result will likely dampen cash rents, thus 2018 cash rents are assumed to be 5% lower than 2017 cash rents.

Prepared by: Michael R. Langemeier and Craig L. Dobbins, Department of Agricultural Economics; Bob Nielsen, Tony J. Vyn, and Shaun Casteel, Department of Agronomy; and Bill Johnson, Department of Botany and Plant Pathology, Purdue University.

Date: 11/27/17

Calculation of Average Government Payments per Acre January 1, 2019

Line #		2013	2014	2015	2016	2017
1	Total Government Payment	329,792,000	106,856,000	220,742,000	624,674,000	373,228,000
2	Less Milk Income Loss Payment	-3,373,000	0	-1,000	0	0
3	Less Dairy Margin Protection	0	0	-9,000	-202,000	0
4	Net Government Payment	326,419,000	106,856,000	220,732,000	624,472,000	373,228,000
5	Cropland Acres	12,590,633	12,590,633	12,590,633	12,590,633	12,590,633
6	Pymt Per Acre	25.93	8.49	17.53	49.60	29.64

Source: USDA-Indiana Ag Statistics Service

		2013	2014	2015	2016	2017
1	Total Government Payment	P-65	P-65	P-65	P-65	P-65
2	Milk Income Loss Payment	P-65	P-65	P-65	P-65	P-65
3	Dairy Margin Protection Program	P-65	P-65	P-65	P-65	P-65
5	Cropland Acres	P-66	P-66	P-66	P-66	P-66

Data for 2018 in not currently available. The Department has estimated the Government Payment per Acre for 2018 in the following way.

Average Total Government Payment (2013-2017)	331,058,400
Average Milk Income Loss Payment (2013-2017)	-674,800
Average Dairy Margin Protection Pymt (2013-17)	-42,200
Estimated Net Government Payment for 2018	330,341,400
Cropland Acres	12,590,633
Estimated Payment Per Acre for 2018	26.24

INDIANA

AGRICULTURAL STATISTICS
2017-2018

FARM INCOME

FARM PRODUCTION EXPENSES, BY CATEGORY, INDIANA, 2013-2017 [1]

Item	2013	2014	2015	2016	**2017**
			Thousand Dollars		
Total Production Expenses	10,891,819	10,980,273	10,536,322	10,724,110	**10,265,106**
Intermediate Product Expenses					
Farm-origin Expenses	2,520,067	2,420,968	2,742,772	2,666,782	**2,567,392**
Feed Purchases	1,220,000	1,110,000	1,410,000	1,450,000	**1,180,000**
Livestock and Poultry	240,067	300,968	382,772	256,782	**387,392**
Seed Purchases	1,060,000	1,010,000	950,000	960,000	**1,000,000**
Manufactured Inputs	2,635,916	2,454,416	2,153,720	2,062,254	**2,010,168**
Pesticide Expenditures	560,000	550,000	500,000	560,000	**550,000**
Fertilizer, Lime, and Soil Conditioner	1,460,000	1,290,000	1,200,000	1,060,000	**970,000**
Fuels and Oils	513,419	507,548	353,712	315,587	**377,450**
Electricity	102,497	106,868	100,008	126,667	**112,717**
Labor Expenses					
Cash Expenses	438,390	492,368	398,011	441,254	**422,699**
Contract Labor	14,384	27,809	23,181	36,237	**23,995**
Hired Labor and Employee Compensation	424,006	464,559	374,830	405,017	**398,704**
Non-cash Employee Compensation	11,610	17,632	11,989	8,746	**17,301**
Interest Expenses	456,309	482,527	502,099	532,285	**574,126**
Net Rent, Including Landlord Capital Consumption	1,338,581	1,157,194	1,080,980	1,249,433	**1,122,945**
Property Taxes and Fees	428,195	547,627	506,088	435,711	**468,295**
Personal Property Taxes	36,908	50,154	39,505	32,386	**50,626**
Motor Vehicle Registration and Licensing Fees	28,195	27,627	26,088	25,711	**28,295**
Real Estate	363,092	469,846	440,495	377,614	**389,374**
Capital Consumption	1,300,486	1,703,983	1,403,131	1,542,918	**1,274,858**

Data as of August 30, 2018
[1] All data includes Operator Dwellings

Source: Economic Research Service

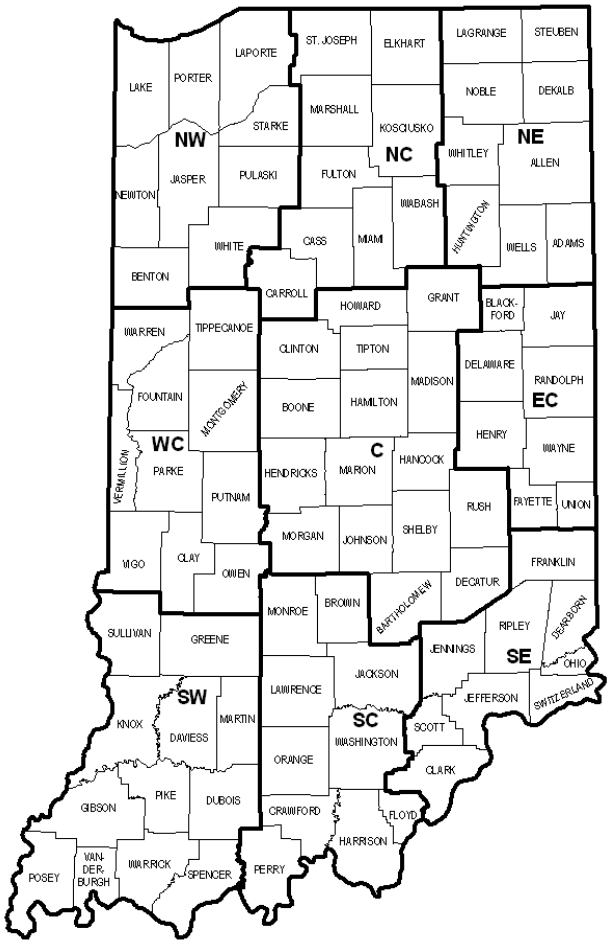
U.S. GOVERNMENT DIRECT FARM PROGRAM PAYMENTS BY PROGRAM, INDIANA, 2013-2017 [1 2 3]

Program	2013	2014	2015	2016	**2017**
			Thousand Dollars		
Fixed Direct Payments	197,342	526	(239)	42	**0**
Cotton Ginning Cost-Share (CGCS) Program	NA	NA	NA	9	**0**
Average Crop Revenue Election Program (ACRE)	(22)	(4)	(3)	6	**0**
Price Loss Coverage (PLC)	NA	NA	0	2,498	**8,700**
Agricultural Risk Coverage (ARC)	NA	NA	148,676	539,282	**285,888**
Counter-cyclical Program Payments	(3)	0	0	0	**0**
Loan Deficiency Payments	(5)	0	0	0	**0**
Milk Income Loss Payments	3,373	0	1	0	**0**
Dairy Margin Protection Program	NA	NA	9	202	**0**
Tobacco Transition Payments	5,417	5,402	11	0	**0**
Conservation	75,644	70,838	69,826	73,219	**77,745**
Supplemental and ad hoc disaster assistance	48,047	30,093	2,461	9,416	**790**
Total	329,792	106,856	220,742	624,674	**373,228**

Data as of August 30, 2018
NA = Data are not available/applicable.
Values are rounded to the nearest hundred.
[1] Gross payments from the U.S. government to the farm sector
[2] Payments returned to the U.S. government by the farm sector
[3] Accounting adjustments. A negative value indicates payments returned exceeded gross payments during the calendar year.

Source: Economic Research Service

COUNTY HIGHLIGHTS



COUNTY HIGHLIGHTS

The following pages of county statistics represent the results of a survey of over 15,000 farm operators following the 2017 harvest season. In addition to these data are selected items of interest from the U.S. Population Census, 2012 Census of Agriculture, and 2016 Cash Receipts information from the Bureau of Economic Analysis. The County Highlights section summarizes the importance of agriculture to each and every Indiana County while comparing the magnitude of importance across counties.

Planted acreage for hay is represented by three dashes because this category is not estimated, planted acreage and yield for popcorn are represented by three dashes because these categories are not surveyed; in all other places the three dashes represent zero for that county. An asterisk signifies that the county has data for this item, but it cannot be disclosed for confidentiality purposes. The 2012 Chicken data from Census includes only layers twenty weeks old and older.

Below is a list of comparable items at the state level.

STATE DATA

2016 Census Population	6,619,680
2012 Total Land Area (acres)	22,928,756
2012 Number of Farms	58,695
2012 Land in Farms (acres)	14,720,396
2012 Average Size of Farm (acres)	251
2012 Value of Land & Bldgs (avg/acre)	$5,354
2012 Cropland (acres)	12,590,633
2012 Harvested Cropland (acres)	12,146,538
2012 Pastureland, all types (acres)	762,619
2012 Woodland (acres)	1,048,632

2016 Cash Receipts	$10,122,960,000
Crop Receipts	$6,536,930,000
Livestock Receipts	$3,586,030,000
2016 Other Income	$1,540,497,000
Government Payments	$648,105,000
Imputed Income/Rent Received	$892,392,000
2016 Total Income	$11,663,457,000
Less: Production Expenses	$10,320,505,000
Realized Net Income	$1,342,952,000

2017 CROPS	PLTD	HARV	YLD	UNIT	PROD
Corn	5,350,000	5,190,000	180.0	Bu	934,200,000
Soybeans	5,950,000	5,940,000	54.0	Bu	320,760,000
Wheat	290,000	240,000	74.0	Bu	17,760,000
Alfalfa Hay	---	270,000	3.30	Ton	891,000
Other Hay	---	310,000	2.40	Ton	744,000
2012 Popcorn	---	61,092	---	Lbs	151,728,996

LIVESTOCK	NUMBER HEAD
Jan 2018 All Cattle	870,000
Beef Cows	208,000
Milk Cows	187,000
2012 All Hogs	3,747,352
2012 All Sheep	52,169
2012 Chickens	25,587,222
2012 Turkeys	5,084,794

AN OVERVIEW OF HOW THE CALENDAR IS USED IN CALCULATING THE AG LAND BASE RATE

SPRING, 2017	SUMMER, 2017	FALL, 2017	WINTER, 2017	SPRING, 2018	SUMMER, 2018
Planting 2017 crops	Care for 2017 crops	Harvest 2017 crops	Prep equipment for storage	Planting 2018 crops	Care for 2018 crops
Sell a portion of the 2016 crops	Sell remainder of the 2016 crops	Sell a portion of the 2017 crops	Sell a portion of the 2017 crops	Sell a portion of the 2017 crops	Sell remainder of the 2017 crops
Paying 1/1/16 Property Taxes		Paying 1/1/16 Property Taxes		Paying 1/1/17 Property Taxes	
Collect all or a portion of 2017 Cash Rent		Collect remainder of 2017 Cash Rent, if any due		Collect all or a portion of 2018 Cash Rent	

CASH RENT INCOME - CALENDAR YEAR

OPER. INCOME - 1/3 NOVEMBER GRAIN PRICES

OPERATING INCOME - 1/3 MARKET YEAR AVERAGE OF GRAIN PRICES

OPERATING INCOME - 1/3 CALENDAR YEAR AVERAGE OF GRAIN PRICES