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REFERENCE MATERIALS FOR VALUING AGRICULTURAL LAND FOR JANUARY 1, 2024

BASE RATE - $2,280

Index

General Notes for the Agricultural Land Market
Value in Use for January 1, 2024, Rate of $2,280

December 2023

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 the Department's 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 was 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 the Department's 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.
- The base rate for January 1, 2020, was updated by removing the 2013 data, adding the 2019 data, excluding the highest year (2014) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,280.
- The base rate for January 1, 2021, was updated by removing the 2014 data, adding the 2020 data, excluding the highest year (2020) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,290.
- The base rate for January 1, 2022, was updated by removing the 2015 data, adding the 2021 data, revising last year's worksheets with current data, excluding the highest year (2021) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,500.
- The base rate for January 1, 2023, was updated by removing the 2016 data, adding the 2022 data, revising last year's worksheets with current data, excluding the highest year (2021) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $1,900.
- The base rate for January 1, 2024, was updated by removing the 2017 data, adding the 2023 data, revising last year's worksheets with current data, excluding the highest year (2021) of the six-year average, and adjusting the capitalization rates per SEA 308-2016 to arrive at a final base rate of $2,280.

SEA 308 – The New Calculation of the Ag Land 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 the 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, 2024

Table 2-18 – Years:
For January 1, 2024, the six years of data used in the calculations were: 2018, 2019, 2020, 2021, 2022, and 2023.

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

The data for cash rents came from three Purdue Agricultural Economics Reports (PAER). For the 2018 & 2019 rents, go to Table 4 on Page 8 (Page 19 of this packet) of the August 2019 report. For the 2020 & 2021 rents, go to Table 4 on Page 7 (Page 21 of this packet) of the July 2021 report. For the 2022 & 2023 rents, go to Table 3 (Page 23 of this packet) of the August 2023 report. From these tables, the Department 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. (See pages 24 & 25 of this packet)

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 the Department adopted comes from Table 1 (P-13) of the June 24, 1999, Doster/Huie report.

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 be found in IASS publications for that time period. Note: The Department 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 the 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 in the Purdue Crop Guide (ID-166). The dollar amount for each crop type can be found in the 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 the Department adopted comes from Table 1 of the June 24, 1999, Doster/Huie report, the Department did make some alterations to it.

<u>Adjustments Made to the Doster/Huie Report by the Department:</u>

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

Price:
The Department added two averages to the Doster/Huie report since this report used only November prices. Since only a small portion of Indiana's grain was 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, the Department 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, 2024, Base Rate:
The Department first calculated the Table 2-18 Base Rate with data for the years 2018, 2019, 2020, 2021, 2022, and 2023. Current data was used and last year's worksheets were updated for this year's calculation when needed. Next, the highest market value-in-use for one of the years (2021) in the six-year rolling average was eliminated from the calculation. Then the implementation of Senate Enrolled Act 308-2016 determined the capitalization rate of 8% which lowered the Preliminary Table 2-18 Base Rate of $3,100 to a Final Base Rate of $2,280. (Refer to Page 15 of this packet for a detailed comparison.)

Note: A simple explanation for the increase from last year's base rate of $1,900 to this year's rate of $2,280 is that the data for 2017 dropped off of the six-year rolling average this year and the data for 2023 was added. The 2017 data used in last year's calculation was considerably lower than the 2023 data used in this year's calculation. The market value in use per acre for 2017 was $2,034 and was replaced with the 2023 market value in use per acre of $3,308.

- 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

Agricultural Land Base Rate Value

The 2019 general reassessment agricultural land value utilizes the land's current market value, 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 of agricultural land is calculated by dividing the net income of each acre by the appropriate capitalization rate.

Market value = 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 of both methods in determining the market value 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.

Table 2-18 Agricultural Land Value

	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

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.

Indiana Code section 6-1.1-4-13(a) declares, **"In assessing or reassessing land, the land shall be assessed as agricultural land *only when it is devoted to agricultural use*"** [emphasis added]. Indiana Code section 6-1.1-4-13(e) states, "This section does not apply to land purchased for industrial or commercial uses."

Pursuant to Indiana Code section 6-1.1-4-13, land "devoted to agricultural use" shall be assessed as agricultural land. However, land "***purchased for***" an industrial or commercial uses shall not be assessed as agricultural land. Additionally, all land ***utilized*** for agricultural purposes is valued as agricultural land -- using a statewide base rate and a soil productivity index system. Unless provided elsewhere in the law, the Manual, or Guidelines, the parcel's size does not determine the property classification or pricing method for the parcel. Rather, the property classification and pricing method are determined by the property's use or zoning. For example, some commercial and industrial zoned acreage tracts devote a portion of the parcel to an agricultural use. The assessing official must classify these parcels as either commercial or industrial. However, the portions of land devoted to agricultural use are to be valued using the agricultural land assessment formula. Portions not used for agricultural purposes are to be valued using the commercial and industrial acreage guidelines. To illustrate:

(1) A major industrial corporation purchased a 40 acre cornfield to locate a corn processing facility in Indiana. After undergoing the local zoning process, the entire parcel was re-zoned from agricultural zoning to industrial zoning. The corporation has utilized 15 acres of the parcel by constructing a manufacturing and warehouse facility with the idea that the remaining 25 acres would be

available for future expansion, if necessary. The 25 acres in reserve is currently being cash rented to a local agricultural producer, who row-crops the acreage.

Conclusion: The assessor should assign a property classification of 310 - Food and Drink Processing Facility - to the 40 acre parcel. The 15 acre portion of the acreage that is utilized for industrial purposes should be assigned land use codes representing the industrial acreage base rates for that particular area of the jurisdiction. The 25 acre portion of the parcel that is being row-cropped by the local farmer should be priced using the agricultural productivity method of pricing. The 25 acres would have the soil types delineated by soil type, have each type soil analyzed for its land cover class, and have its assessment calculated using the agricultural base rate.

(2) The ACME Development Company purchased a 30 acre parcel of land that was being used for agricultural purposes. ACME appeared before the local zoning officials and received a zoning change for the front 10 acres as to be commercial retail, and the rear 20 acres, which has access from an adjoining state highway, was zoned for a commercial office. ACME immediately began constructing a retail shopping complex on the front 10 acres of the parcel. The 20 acres is being cash rented to a local farmer, but is offered for sale by a local real estate broker.

Conclusion: The 30 acre parcel should have a property class designation of 326 -- Neighborhood Shopping Center assigned to it. The front 10 acre commercial portion of the parcel should be valued using the commercial acreage base rate for this area of the jurisdiction. The rear 20 acres that is being farmed should be priced using the agricultural productivity method of pricing. The 20 acres should have the soil types delineated by soil type, have each type soil analyzed for its land cover class, and have its assessment calculated using the agricultural base rate for that particular year.

(3) The Good Development (GDC) purchased a 20 acre parcel that was being used for agricultural purposes and had a property class code of 100 – Vacant land. The agricultural productivity method of calculating an assessment valued the parcel at $22,800 at the time of the purchase in October 2018. GDC purchased the land for the purpose of platting and developing a 40 lot residential subdivision. Once the local Area Planning Commission granted approval for the subdivision and changed the zoning from agricultural to residential, GDC did all the necessary paperwork and filed the plat with the county recorder’s office in February 2008.

Conclusion: For January 1, 2019, the county auditor follows Indiana Code section 6-1.1-5-3 and assigns parcel numbers to the 40 lots indicated on the plat of the subdivision and notifies the assessing official that the 20 acre parcel has become 40 lots, which need to be assessed for January 1, 2019. The assessing official acknowledges that GDC is the developer by reviewing the plat and, based

on Indiana Code section 6-1.1-4-12(i), knows that the overall assessment cannot be increased because the acreage has become 40 platted lots. However, the agricultural base rate within the agricultural productivity formula has increased from $1,140 to $1,200 for January 1, 2019. Before removing the 20 acre parcel from the computer system, the assessor recalculates an assessment for that parcel using the new 2008 rate of $1,200. The True Tax Value for this particular 20 acre parcel would equal $24,000, if not platted into the 40 lots. Based on the language of Indiana Code section 6-1.1-4-12(i), each of the 40 parcels would have an assessed value of $600 ($24,000 / 40 lots = $600 per lot). The application of this True Tax Value can be achieved in either of two ways:

(a) a flat value amount of $600 can be applied to each of the 40 property record cards; or

(b) the assessing official can calculate the assessment by determining the lots size of each parcel, applying a front foot or acreage base rate that calculates the applicable 2019 value of improved land in the extended value area of the land summary section of the property record card, and granting influence factor adjustments to each parcel that makes the value of each parcel equal to $600 per lot.

Land purchased and used for an agricultural purpose qualifies for all land use types associated with the agricultural classification and agricultural soil productivity method of pricing. This includes cropland or pasture land (i.e., tillable land) as well as woodlands

Indiana Code section 6-1.1-4-12 states that if land assessed on an acreage basis (i.e., agricultural land) is subdivided into lots; or land is rezoned for, or put to, a different use, the land shall be reassessed on the basis of its new classification. If improvements are added to real property, the improvements shall be assessed. Such an assessment or reassessment is effective on the next assessment date. For example, a corporation that purchased farmland, subdivided it into residential lots, and sold all but one lot, retaining ownership and converting that vacant lot into an income-producing shopping center, was not entitled to retain the lot's agricultural classification for property tax purposes. The land was properly re-classified from "agricultural" to "commercial" to reflect the land's change in use. *See Aboite Corp. v. State Bd. of Tax Com'rs*, 762 N.E.2d 254 (Ind. Tax Ct. 2001); *see also Howser Development LLC v. Vienna Twp Assessor*, 833 N.E.2d 1108 (Ind. Tax Ct. 2005).

However, Indiana Code section 6-1.1-4-12(i) and (j), added by Public Law 154-2006, clarifies the "developer's discount" for assessments. The "developer's discount" is designed to encourage developers to buy farmland, subdivide into lots, and resell the lots. A lot, or a tract that has not been subdivided into lots, to which a land developer holds title in the ordinary course of its business, may *not* be reassessed until the next assessment date following the earliest of:

(1) the date on which title to the land is transferred by the land developer (or successor land developer) to a person that is not a land developer; or

(2) the date on which construction of a structure begins on the land; or

(3) the date on which a building permit is issued for construction of a building or structure on the land.

The "developer's discount" applies regardless of whether the lot or tract is rezoned while a land developer holds title to the land. Thus, until one of the aforementioned events occurs, the land developer "reaps the benefit" of the lower agricultural land assessment.

Therefore, the controlling factors that determine whether land is to be assessed as agricultural land are whether the land was purchased for a non-agricultural use, and whether the land is currently used or zoned for an agricultural purpose; however, in some instances, the "developer's discount" may apply and reassessment of the land may not occur until transfer of title to a non-developer, the start of construction of a building, or the issuance of a construction permit.

The definition of "agricultural land" provides ample basis for the vast majority of assessor decisions. These guidelines were adopted as directed in IC 6-1.1-4-13(d) and incorporated by reference into 50 IAC 2.4-1-2.

IC 6-1.1-4-13
Agricultural land; assessment

Sec. 13. (a) In assessing or reassessing land, the land shall be assessed as agricultural land only when it is devoted to agricultural use.

(b) For purposes of this section, and in addition to any other land considered devoted to agricultural use, any:

(1) land enrolled in:

(A) a land conservation or reserve program administered by the United States Department of Agriculture;

(B) a land conservation program administered by the United States Department of Agriculture's Farm Service Agency; or

(C) a conservation reserve program or agricultural easement program administered by the United States Department of Agriculture's National Resources Conservation Service;

(2) land enrolled in the department of natural resources' classified forest and wildlands program (or any similar or successor program);

(3) land classified in the category of other agriculture use, as provided in the department of local government finance's real property assessment guidelines; or

(4) land devoted to the harvesting of hardwood timber;

is considered to be devoted to agricultural use. Agricultural use for purposes of this section includes but is not limited to the uses included in the definition of

"agricultural use" in IC 36-7-4-616(b), such as the production of livestock or livestock products, commercial aquaculture, equine or equine products, land designated as a conservation reserve plan, pastureland, poultry or poultry products, horticultural or nursery stock, fruit, vegetables, forage, grains, timber, trees, bees and apiary products, tobacco, other agricultural crops, general farming operation purposes, native timber lands, or land that lays fallow. Agricultural use may not be determined by the size of a parcel or size of a part of the parcel. This subsection does not affect the assessment of any real property assessed under IC 6-1.1-6 (assessment of certain forest lands), IC 6-1.1-6.2 (assessment of certain windbreaks), or IC 6-1.1-6.7 (assessment of filter strips).

(c) The department of local government finance shall give written notice to each county assessor of:

(1) the availability of the United States Department of Agriculture's soil survey data; and

(2) the appropriate soil productivity factor for each type or classification of soil shown on the United States Department of Agriculture's soil survey map.

All assessing officials and the property tax assessment board of appeals shall use the data in determining the true tax value of agricultural land. However, notwithstanding the availability of new soil productivity factors and the department of local government finance's notice of the appropriate soil productivity factor for each type or classification of soil shown on the United States Department of Agriculture's soil survey map for the March 1, 2012, assessment date, the soil productivity factors used for the March 1, 2011, assessment date shall be used for the January 1, 2016, assessment date and each assessment date thereafter.

(d) The department of local government finance shall by rule provide for the method for determining the true tax value of each parcel of agricultural land.

(e) This section does not apply to land purchased for industrial or commercial uses.

There is a subtle distinction between residential acreage tracts and land valued using the agricultural soil productivity method. The basis for this distinction is the different valuation methods used to determine land value for the two types of land. "Agricultural land" is valued using a statewide base rate and a soil productivity index system. All land utilized for agricultural purposes is valued in this manner. "Residential land" is land that is utilized or zoned for residential purposes.

Other References

a. Assessors are further directed that all acres enrolled in programs of the United States Department of Agriculture (USDA), Farm Services Agency, and Natural Resources Conservation Service and have received a "farm number" are eligible for classification as "agricultural." Those acres have been determined by those administering federal programs to be a part of an "agricultural operation." This applies to non-homestead acreage.

b. As further evidence of the proper classification of woodlands as agricultural land, the Indiana State Department of Agriculture (ISDA) considers the growing of timber as an agricultural activity by identifying the need to "increase Indiana's competitiveness in the hardwood sector" as one of its eight major strategies. The Department's practices and rules support the assertion that the growing of timber is a viable Indiana agricultural crop and should be assessed as such.

c. The Department recognizes that certain circumstances may blur the line between the residential property class designation and the agricultural designation when wooded areas are involved. In the preparation of this memorandum, the Department has consulted with the Department of Natural Resources (DNR). The DNR monitors Indiana's timberland and classified forest programs. In its implementation of the Classified Forest and Wildland Certification Program authorized in IC 6-1.1-6, participating woodland owners with 10 acres or more automatically qualify for the American Tree Farm System's certification benefits, which include marketing the forest's products as "green certified." The Classified Forest and Wildland Program materials also state that timber harvest is not required to qualify for the classification program. The Department believes that the guidelines used for the classified program are applicable when distinguishing agricultural use from non-agricultural use, but other agricultural uses may qualify a parcel for the productivity method of valuation.

Parcel Size

As stated above, the issue of parcel size has no bearing on the appropriate classification or pricing method of agricultural land, whether the parcel is wooded or used for other agricultural activities.

Other Agricultural Uses

a. A 40 acre parcel, which at one time was a small farm, has since become a mixture of small, scattered trees and brush with less than 50% canopy cover. The assessor classified this parcel as residential excess acreage; the effect of which created a higher assessed value and tax burden than the agricultural soil productivity method.

Conclusion: The current owner purchased the parcel as an agricultural property many years ago. The land is currently uncultivated or fallow, but has not changed use nor been re-zoned. This parcel should continue to be classified as agricultural as it was purchased for agricultural use and is used as "non-tillable land" as defined in the *Guidelines*.

b. A five acre parcel has a one acre homesite and cattle grazing on the remaining four acres. The assessor classified the four acres using the residential excess acreage rate and refuses to acknowledge the presence of grazing cattle as an agricultural activity because the parcel is less than 10 acres. The county has an

unofficial policy of denying agricultural classification to parcels of less than 10 acres.

Conclusion: The grazing of cattle is an agricultural activity; thus, the parcel should be assessed using the agricultural productivity method as it meets the definition of "agricultural operation" in IC 32-30-6-1 and in the *Guidelines*, which define agricultural "tillable land" as land used "for cropland or pasture that has no impediments to routine tillage." The size of the parcel has no bearing on the determination of agricultural classification.

c. A five acre parcel has a one acre home site and the remaining four acres is devoted to hay production. The county classified the hay field using the residential excess acre rate. The owner has a signed statement from a neighboring dairy farmer that the neighbor harvests the hay from the field for his cattle.

Conclusion: The acreage meets the criteria of agricultural "tillable land" as defined in the *Guidelines*. The four acres should be priced using the agricultural soil productivity method. The size of the parcel has no bearing on the determination of agricultural classification.

STATE OF INDIANA

DEPARTMENT OF LOCAL GOVERNMENT FINANCE

INDIANA GOVERNMENT CENTER NORTH
100 NORTH SENATE AVENUE N1058(B)
INDIANAPOLIS, IN 46204
PHONE (317) 232-3777
FAX (317) 974-1629

Certification of Agricultural Land Base Rate Value for Assessment Year 2024

This memorandum hereby serves to notify assessing officials of the agricultural base rate to be used for the January 1, 2024, assessment date: **$2,280 per acre**.

Land used for agricultural purposes shall be adjusted consistent with the guideline methodology that was in effect on January 1, 2005, 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, homesites, 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 2024 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 (2018 to 2023) 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
2018	181	51	8.00%	2,263	638	1,450
2019	181	6	8.00%	2,263	75	1,169
2020	192	141	8.00%	2,400	1,763	2,081
~~2021~~	~~206~~	~~343~~	~~8.00%~~	~~2,575~~	~~4,288~~	~~3,431~~
2022	230	319	8.00%	2,875	3,988	3,431
2023	233	289	8.00%	2,913	3,613	3,263
				Average Market Value in Use		**$2,280**

The statewide agricultural land base rate value for the 2024 assessment year will be $2,280 per acre.

Dated December 29, 2023

Daniel Shackle, 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, 2024
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
Year	Cash Rent	Owner-Operated	Cap. Rate	Cash Rent	Owner-Operated	PER ACRE
2018	181	51	5.58%	3,244	914	2,079
2019	181	6	5.53%	3,273	108	1,691
2020	192	141	4.50%	4,267	3,133	3,700
~~2021~~	~~206~~	~~343~~	~~4.21%~~	~~4,893~~	~~8,147~~	~~6,520~~
2022	230	319	5.83%	3,945	5,472	4,708
2023	233	289	7.89%	2,953	3,663	3,308

Preliminary Table 2-18 Base Rate (Average - 5 Lowest Years): 3,100

Determination of SEA 308 Capitalization Rate:

Prior Year's Final Base Rate	1,900	IC 6-1.1-4-4.5 (e) (4) (See statute for exact language)
Current Year's Preliminary Base Rate	3,100	(A.) If there is an increase of 10% or more, the rate will be 8%.
Percent Difference	63.2%	(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
Year	Cash Rent	Owner-Operated	Cap. Rate	Cash Rent	Owner-Operated	PER ACRE
2018	181	51	8.00%	2,263	638	1,450
2019	181	6	8.00%	2,263	75	1,169
2020	192	141	8.00%	2,400	1,763	2,081
~~2021~~	~~206~~	~~343~~	~~8.00%~~	~~2,575~~	~~4,288~~	~~3,431~~
2022	230	319	8.00%	2,875	3,988	3,431
2023	233	289	8.00%	2,913	3,613	3,263

SEA 308 Final Base Rate (Average - 5 Lowest Years): 2,280

Table 2-18 - Updated for January 1, 2024
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	
Year	Cash Rent		Owner-Operated		Cap. Rate		Cash Rent	Owner-Operated	PER ACRE	
2018	181	P-17	51	P-33	5.58%	P-26	3,244	914	2,079	(1)
2019	181	P-17	6	P-33	5.53%	P-26	3,273	108	1,691	(1)
2020	192	P-17	141	P-33	4.50%	P-26	4,267	3,133	3,700	(1)
2021	~~206~~	P-17	~~343~~	P-33	~~4.21%~~	P-26	~~4,893~~	~~8,147~~	~~6,520~~	(1)
2022	230	P-17	319	P-33	5.83%	P-26	3,945	5,472	4,708	(1)
2022	233	P-17	289	P-33	7.89%	P-26	2,953	3,663	3,308	(1)
								Base Rate (Average - 5 Lowest Years)	3,100	(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, 2024
Calculation for Net Income-Cash Rent Column

Year	Gross Cash Rent		Less Property Taxes		Net Cash Rent	Cap. Rate		Cash Rent Value
2018	210	P-19	-29	P-25	181	5.58%	P-26	3,244
2019	207	P-19	-26	P-25	181	5.53%	P-26	3,273
2020	217	P-21	-25	P-25	192	4.50%	P-26	4,267
2021	227	P-21	-21	P-25	206	4.21%	P-26	4,893
2022	252	P-23	-22	P-25	230	5.83%	P-26	3,945
2023	257	P-23	-24	P-25	233	7.89%	P-26	2,953

PURDUE AGRICULTURAL ECONOMICS REPORT

YOUR SOURCE FOR IN-DEPTH AGRICULTURAL
NEWS STRAIGHT FROM THE EXPERTS

AUGUST 2019

CONTENTS

2019 INDIANA FARMLAND VALUES AND CASH RENTS SLIDE LOWER

CRAIG DOBBINS, PROFESSOR OF AGRICULTURAL ECONOMICS

What an adventure 2019 has been. After many unexpected events during the first half of the year, I'm hoping for something more normal during the second half of 2019. Who would have thought corn and soybean planting would extend into late June?

News reports about the farmland market during the first half of the year called attention to the ability of top quality farmland to retain its value, while lower quality land seemed to be weakening But across all farmland qualities the limited supply of farmland for sale was pointed to as the primary reason for relative stability in farmland values. What is the situation and outlook in Indiana now?

Statewide the 2019 Purdue Farmland Value Survey indicates farmland values moved lower. June year-to-year farmland value comparisons indicate top quality farmland declined 5.3%, average quality farmland declined 0.9%, and the poor quality farmland decline was so small it resulted in a 0.0% change (Table 1).

The change in top quality farmland for June 2018 to December 2018 accounted for the largest part of the farmland value change. Average and poor quality farmland values in this period had small increases, a 1.0% increase for average quality farmland and a 3.3% increase for poor quality farmland. During the December 2018 to June 2019 period, top quality farmland continued to decline. Declines in value for average and poor quality land were large enough to offset the gains in the first six months. Average quality farmland declined 1.8% and poor quality farmland declined 3.2%. For the June 2018 to June 2019 period, top quality farmland declined $456 per acre, average quality farmland declined $61 per acre and poor quality farmland declined by $2 per acre.

1.4% decline in average quality farmland and a 1.2% decline in poor quality farmland.

Statewide top quality farmland had a cash rent of $249 per acre, a reduction of $12 per acre. Average quality land had a cash rent of $207 per acre, a decline of $3 per acre. Poor quality land had a cash rent of $166 per acre, a decline of $2 per acre.

Comparing regional cash rent changes, a decline occurred for all land classes in the Northeast, West Central, Central, and Southwest. The Southwest re-

Table 4. Average estimated Indiana cash rent per acre, (tillable, bare land) 2018 and 2019, Purdue Land Value Survey, June 2019

			Rent/Acre		Change	Rent/bu. of Corn		Rent as % of June Land Value	
	Land	Corn	2018	2019	'18-'19	2018	2019	2018	2019
Area	Class	bu./A	$/A	$/A	%	$/bu.	$/bu.	%	%
	Top	201	263	263	0.0%	1.26	1.31	3.1	3.3
North	Average	170	210	214	1.9%	1.21	1.26	2.9	3.1
	Poor	140	167	170	1.8%	1.20	1.21	3.2	3.4
	Top	195	233	226	-3.0%	1.21	1.16	2.8	3.0
Northeast	Average	169	192	189	-1.6%	1.16	1.12	2.8	2.8
	Poor	144	153	152	-0.7%	1.08	1.06	2.8	2.9
	Top	218	297	284	-4.4%	1.40	1.30	3.1	3.1
W. Central	Average	186	245	241	-1.6%	1.32	1.30	3.1	3.1
	Poor	156	199	195	-2.0%	1.29	1.25	3.2	3.1
	Top	204	273	251	-8.1%	1.34	1.23	3.0	2.9
Central	Average	181	228	219	-3.9%	1.30	1.21	3.0	2.9
	Poor	158	188	180	-4.3%	1.29	1.14	3.0	2.9
	Top	220	263	233	-11.4%	1.24	1.06	3.0	2.9
Southwest	Average	179	196	181	-7.7%	1.14	1.01	3.2	2.7
	Poor	144	143	134	-6.3%	1.10	0.93	3.5	3.0
	Top	193	186	189	1.6%	0.97	0.98	2.7	3.2
Southeast	Average	162	139	151	8.6%	0.91	0.93	2.6	3.3
	Poor	126	102	116	13.7%	0.89	0.92	2.7	3.5
	Top	204	261	249	-4.6%	1.28	1.22	3.0	3.0
Indiana	Average	175	210	207	-1.4%	1.21	1.18	3.0	3.0
	Poor	147	168	166	-1.2%	1.19	1.13	3.1	3.1

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.

PURDUE
AGRICULTURAL ECONOMICS
REPORT

Title:	**Indiana Farmland Prices Hit New Record High in 2021**
Author:	Todd H. Kuethe
Issue ID:	*PAER_2021-9*
Date:	July 27, 2021
Tags:	Farmland values, cash rents
Summary:	Indiana farmland prices hit a new record high in 2021. Farmland price growth is driven by a combination of high expected incomes, low interest rates, and limited supply to satisfy demand.

It is safe to say that the last year was unlike any other in recent memory. The COVID-19 pandemic caused significant disruption to our lives and the global economy. Surprisingly, many of the current economic forces put upward pressure on farmland prices. As one respondent noted, "short supply of farms for sale, investors and institutional buyers, farmers flush with money and equity, continued historic low interest rates and fear of increasing rates, an influx of government assistance, higher than anticipated commodity prices, fear of tax policy changes, and a willingness to accept lower required returns on investments… *all equal a new historic land value*." This unique combination of economic forces led to new record high farmland prices in 2021, according to the recent *Purdue Land Values and Cash Rent Survey.*

Statewide, top quality farmland averaged $9,785 per acre, up 14.1% from June 2020 (Table 1). The high growth rate for top quality farmland was closely followed by the growth in average and poor quality farmland prices, which increased by 12.5% (to $8,144) and 12.1% (to $6,441), respectively. Across all land quality classes, 2021 per acre farmland prices exceeded the previous record set in 2014.

Many areas of the state experienced particularly high farmland price appreciation (Figure 1). The highest growth rates were observed in the Southwest region, ranging from 20% for average and poor quality land to nearly 28% for top quality farmland. High appreciation rates were also observed across all land quality classes in the Central and West Central regions. The West Central and Central regions also exhibited the highest value or cost per unit of productivity (per bushel of corn). In 2021, the highest per acre price for high quality farmland was in the Southwest portion of the state, and the highest per acre prices for average and poor quality farmland were in the West Central region.

Cash Rents

Statewide cash rental rates increased across all land quality classes in 2021. Statewide average rental rates increased by 3.9% for top quality land, from $259 to $269 per acre. The cash rental rates for average and poor quality lands both increased by 4.6% to $227 and $183, respectively. At the regional level, the largest rental rate increases for top and average quality land were both in the Southeast region (11.5% and 6.4%), and the largest rental rate increases for poor quality land were in the North region (5.5%). Across all three land quality classes, the highest per acre cash rent was observed in the West Central region.

Rent as a share of June land value decreased slightly in 2021, suggesting that cash rental rates appreciated slower than farmland prices. Some portion of the difference in appreciation rates may reflect changes in expectations between fall 2020, when 2021 rents were negotiated, and the 2021 growing season. However, at least one respondent suggests that "fear of input prices for 2022 is going to restrict cash rents going up sharply" in the coming year.

Table 4: Average estimated Indiana cash rent per acre, (tillable, bare land) 2020 and 2021, Purdue Land Value Survey, June 2021

			Rent/Acre		Change	Rent/bu. of corn		Rent as % of June Land Value	
Area	Land Class	Corn bu/A	2020 $/A	2021 $/A	20-21 %	2020 $/bu.	2021 $/bu.	2020 %	2021 %
North	Top	214	272	273	0.4%	1.31	1.28	3.2%	3.0%
	Average	178	219	222	1.4%	1.22	1.25	3.3%	3.1%
	Poor	146	165	174	5.5%	1.10	1.19	3.4%	3.1%
Northeast	Top	205	242	242	0.0%	1.20	1.18	2.8%	2.6%
	Average	178	205	211	2.9%	1.16	1.19	2.7%	2.6%
	Poor	152	174	181	4.0%	1.14	1.19	2.7%	2.7%
W. Central	Top	217	293	302	3.1%	1.35	1.39	3.1%	2.8%
	Average	193	252	262	4.0%	1.33	1.36	3.1%	2.8%
	Poor	165	212	222	4.7%	1.30	1.35	3.2%	2.8%
Central	Top	212	261	272	4.2%	1.24	1.28	3.0%	2.7%
	Average	186	222	235	5.9%	1.21	1.26	2.9%	2.6%
	Poor	160	185	192	3.8%	1.18	1.20	3.0%	2.6%
Southwest	Top	219	269	288	7.1%	1.27	1.32	2.9%	2.5%
	Average	180	216	225	4.2%	1.21	1.25	3.0%	2.6%
	Poor	145	161	164	1.9%	1.09	1.13	3.2%	2.7%
Southeast	Top	198	200	223	11.5%	1.06	1.13	3.3%	3.3%
	Average	167	171	182	6.4%	1.06	1.09	3.5%	3.6%
	Poor	133	131	133	1.5%	0.99	1.00	3.6%	3.6%
Indiana	Top	212	259	269	3.9%	1.27	1.27	3.0%	2.7%
	Average	182	217	227	4.6%	1.24	1.25	3.0%	2.8%
	Poor	153	175	183	4.6%	1.19	1.20	3.0%	2.8%

Looking Ahead

Statewide farmland prices established a new record high in 2021, expanding on the growth from 2019 to 2020. The growth in farmland prices is driven by complex combination of economic

AUGUST 2023

PURDUE AGRICULTURAL ECONOMICS REPORT

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

Indiana Farmland Values & Cash Rents Issue

Contents:

Indiana Farmland Prices Continue to Rise in 2023

Todd H. Kuethe, Schrader Endowed Chair in Farmland Economics

Indiana farmland prices once again hit a new record high in 2023, according to the recent Purdue Farmland Value and Cash Rent Survey. Statewide, the average price of top quality farmland is $13,739 per acre, up 7.3% from June 2022 (Table 1). Average and poor quality farmland also hit new highs at $11,210 and $8,689 per acre, with an annual increase of 5.8% and 0.7%, respectively. While farmland prices reached a new peak in 2023, the appreciation rate from 2022 to 2023 was much lower than the record high price growth observed between 2021 and 2022.

State-level averages, however, mask the variability in farmland price changes across Indiana (Figure 1). In the Southeast region, for example, farmland prices grew by exceptionally high levels across all three quality grades (36.8%, 45.4%, and 55.8% for top, average, and poor quality lands), but, in the Southwest region, farmland prices fell across all three quality grades (–7.0%, –7.6%, and –10.5%). The highest land values were once again found in the Central region, with an average per acre price of $14,852 for top, $12,576 for average, and $9,657 for poor quality land.

Respondent expectations for the second half of 2023 also vary across regions and land qualities. Respondents expect modest increase in the Southwest region across all quality grades and for top and average quality land in the Southeast region. However, in the remaining classes in regions the respondents expect modest declines in values through December 2023.

The changes in values for farmland transitioning out of agricultural production and those of farmland used for recreational purposes also diverged in 2023. Statewide, the per acre value of farmland transitioning out of agricultural production increased by 4.1% between June 2022 and June 2023 to $25,228. However, the value of recreational land declined by –10.4% to $8,170 per acre.

Table 2: Projected five-year average corn and soybean prices, mortgage interest, and inflation

	Price ($/bu)		Rate (%)	
Year	Corn	Soybeans	Interest	Inflation
2019	4.15	9.01	5.5	2.4
2020	3.77	9.07	3.9	2.1
2021	4.66	11.15	4.9	3.4
2022	5.65	12.84	6.4	5.8
2023	5.55	12.81	6.8	4.5
Average	4.76	10.98	5.5	3.6

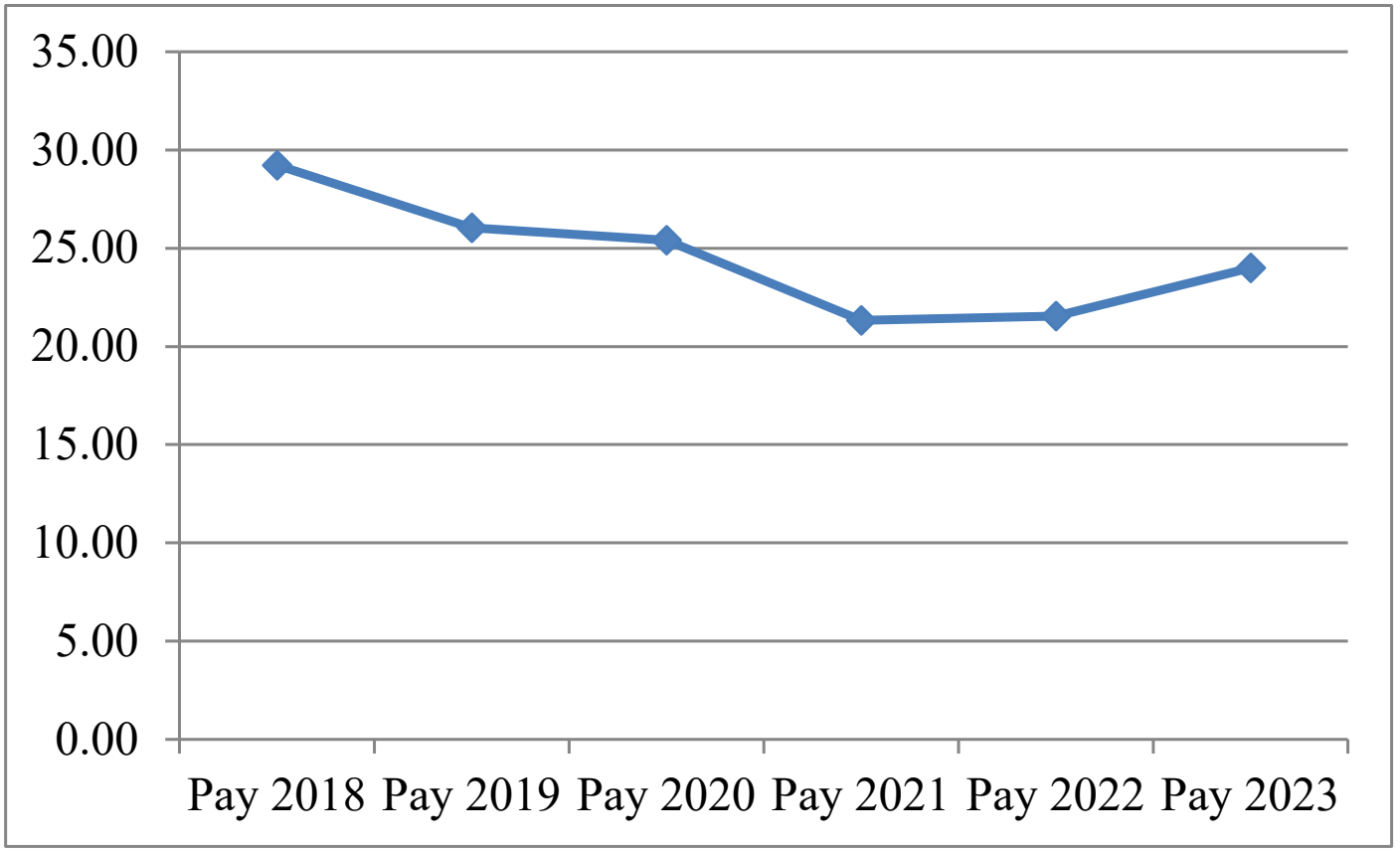
Table 3: Average estimated Indiana cash rent per acre, (tillable, bare land) 2022 and 2023, Purdue Land Value Survey, June 2023

			Rent/Acre		Change	Rent/bu. of corn		Rent as % of June Land Value	
Area	Land Class	Corn Bu/A	2022 $/A	2023 $/A	22-23 %	2022 $/bu	2023 $/bu	2022 %	2023 %
North	Top	219	280	289	3.13	1.24	1.32	2.2	2.2
	Average	185	225	233	3.70	1.22	1.26	2.3	2.3
	Poor	154	179	185	3.10	1.18	1.20	2.4	2.5
Northeast	Top	220	293	291	-0.66	1.36	1.32	2.3	2.1
	Average	191	239	239	-0.13	1.27	1.25	2.1	2.1
	Poor	164	190	191	0.69	1.21	1.17	2.0	2.2
W. Central	Top	227	329	327	-0.56	1.44	1.44	2.5	2.3
	Average	198	289	278	-3.67	1.44	1.41	2.6	2.4
	Poor	171	247	243	-1.74	1.45	1.42	2.7	2.6
Central	Top	219	295	310	5.01	1.39	1.42	2.2	2.1
	Average	195	249	275	10.35	1.34	1.41	2.2	2.2
	Poor	170	211	238	12.95	1.30	1.40	2.3	2.5
Southwest	Top	227	309	296	-4.07	1.31	1.31	2.2	2.3
	Average	193	244	239	-2.22	1.23	1.24	2.4	2.5
	Poor	160	194	173	-10.71	1.19	1.08	2.4	2.4
Southeast	Top	207	225	299	32.78	1.10	1.44	2.5	2.4
	Average	184	179	246	37.22	1.00	1.34	2.6	2.4
	Poor	159	141	208	47.16	1.03	1.31	2.7	2.6
Indiana	Top	221	300	306	1.99	1.36	1.38	2.3	2.2
	Average	193	252	257	2.09	1.32	1.33	2.4	2.3
	Poor	165	207	212	2.50	1.29	1.28	2.4	2.4

Cash Rent

Statewide, cash rents increased by a modest amount between 2022 and 2023. However, in nominal terms, statewide cash rents for all three quality grades are at an all time high. Per acre cash rental rates for top, average, and poor quality land exceed the previous highs set in 2013, 2014, and 2021,

Average Net Tax Bill/Acre of Farmland



January 1, 2024
Average Net Tax Bill/Acre of Farmland

Pay 2018	29.23
Pay 2019	26.05
Pay 2020	25.40
Pay 2021	21.33
Pay 2022	21.55
Pay 2023	24.00

January 1, 2024			Real Estate Loans	Operating Loans	Avg.	Source:
2018	Jan-Mar		5.14	5.53		P-28
	Apr-June		5.28	5.69		P-28
	July-Sept		5.46	5.86		P-28
	Oct-Dec		5.61	6.07		P-28
	Average		5.37	5.79	5.58	
2019	Jan-Mar		5.53	6.04		P-28
	Apr-June		5.39	5.98		P-28
	July-Sept		5.08	5.71		P-28
	Oct-Dec		4.97	5.49		P-28
	Average		5.24	5.81	5.53	
2020	Jan-Mar		4.51	4.83		P-30
	Apr-June		4.40	4.77		P-30
	July-Sept		4.24	4.65		P-30
	Oct-Dec		4.10	4.49		P-30
	Average		4.31	4.69	4.50	
2021	Jan-Mar		4.08	4.42		P-30
	Apr-June		4.02	4.40		P-30
	July-Sept		4.01	4.34		P-30
	Oct-Dec		4.03	4.34		P-30
	Average		4.04	4.38	4.21	
2022	Jan-Mar		4.44	4.64		P-32
	Apr-June		5.17	5.42		P-32
	July-Sept		6.13	6.52		P-32
	Oct-Dec		6.80	7.50		P-32
	Average		5.64	6.02	5.83	
2023	Jan-Mar		7.14	7.97		P-32
	Apr-June		7.33	8.24		P-32
	July-Sept		7.70	8.50		P-32
	Oct-Dec	(1)	7.70	8.50		P-32
	Average		7.47	8.30	7.89	

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

(1) - The information for the 4th quarter of 2023 was not available at the time of this publication so the 3rd quarter of 2023 was used.

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from the Federal Reserve Bank of Chicago
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AgLetter

FARMLAND VALUES AND CREDIT CONDITIONS

Summary
Respondents to the Chicago Fed's agricultural survey covering the fourth quarter of 2019 sounded more optimistic than a year ago, even though the results for farmland values mirrored those from the fourth quarter of 2018. On balance, the Seventh Federal Reserve District saw no annual change in its agricultural land values in 2019. Yet, values for "good" farmland in the fourth quarter of 2019 were up 1 percent from the third quarter, according to 142 survey respondents representing agricultural banks across the District. Eighty-two percent of the survey respondents expected farmland values to be stable during the January through March period of 2020, but 7 percent expected them to rise during the first quarter of 2020—a little less than the 11 percent who expected them to decline.

The District's agricultural credit conditions showed some signs of improvement in the fourth quarter of 2019. A slightly smaller percentage (2.2 percent) of current agricultural borrowers were not likely to qualify for operating credit at the survey respondents' banks in 2020 than in 2019. Also, the index of repayment rates on non-real-estate farm loans for the October through December period of 2019 reached its highest level since the third quarter of 2014. Non-real-estate loan demand in the fourth quarter of 2019 was above the previous year's level, as were funds available for lending by survey respondents' banks. The average loan-to-deposit ratio for the District was 78.9 percent in the fourth quarter of 2019—almost identical to the average of a year ago. Average interest rates on farm operating, feeder cattle, and farm real estate loans had moved down by the end of 2019 to levels not seen since the end of 2017.

Farmland values

On the whole, there was no annual change in "good" agricultural land values in the District for 2019; that is, the District's farmland values in the fourth quarter of 2019 were essentially the same as a year ago (see table and map below). In the fourth quarter of 2019, Indiana and Iowa experienced year-over-year increases in agricultural land values of 2 percent, whereas Illinois and Wisconsin experienced decreases of 1 percent and 2 percent, respectively. (Compared with a year ago, Michigan farmland values seemed to be flat, yet not enough Michigan bankers responded to provide a conclusive result.) The District's farmland values increased 1 percent in the fourth quarter of 2019 relative to the third quarter.

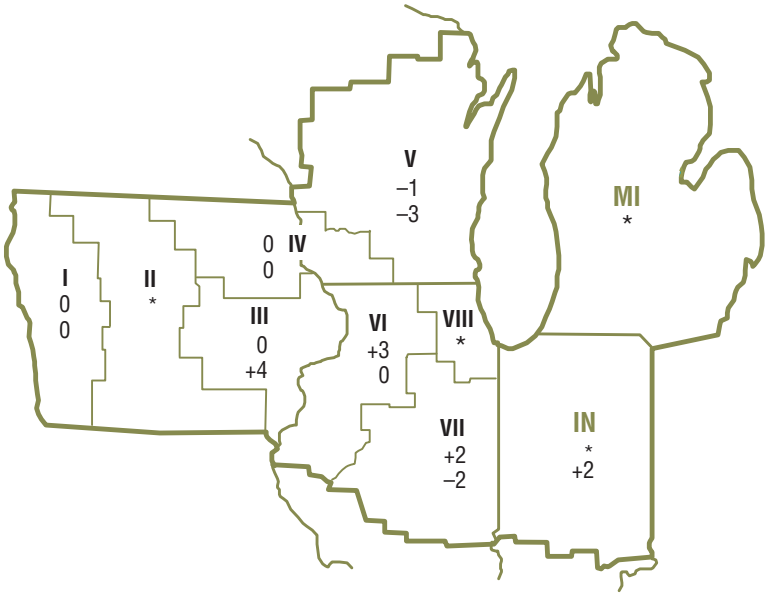
With inflation taken into account, District farmland values had a yearly decrease of a little over 1 percent in 2019; in real terms, the decrease in 2019 was smaller than the one in 2018 because of a dip in inflation (see chart 1 on next page). This was the sixth straight annual real decline.

Percent change in dollar value of "good" farmland

Top: October 1, 2019 to January 1, 2020
Bottom: January 1, 2019 to January 1, 2020

	October 1, 2019 to January 1, 2020	January 1, 2019 to January 1, 2020
Illinois	+2	–1
Indiana	*	+2
Iowa	–1	+2
Michigan	*	*
Wisconsin	0	–2
Seventh District	+1	0

*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]	Interest rates on farm loans: Feeder cattle[a]	Interest rates on farm loans: Real estate[a]
	(index)[b]	*(index)*[b]	*(index)*[b]	*(percent)*	*(percent)*	*(percent)*	*(percent)*
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
Oct–Dec	135	88	59	79.0	6.07	6.13	5.61
2019							
Jan–Mar	141	86	52	78.6	6.04	6.11	5.53
Apr–June	119	93	74	80.2	5.98	6.14	5.39
July–Sept	115	103	70	78.8	5.71	5.77	5.08
Oct–Dec	117	107	79	78.9	5.49	5.61	4.97

[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 online, https://www.chicagofed.org/publications/agletter/index.

Funds availability was above the level of a year ago for the second quarter in a row. The index of funds availability edged up to 107 (its highest value since the second quarter of 2016) in the final quarter of 2019, with funds availability higher than a year ago at 15 percent of the survey respondents' banks and lower at 8 percent. The District's average loan-to-deposit ratio was almost the same as a year earlier; but at 78.9 percent, this ratio was still 3.9 percentage points below the average level desired by the responding bankers.

As of January 1, 2020, the average interest rates for farm operating loans (5.49 percent), feeder cattle loans (5.61 percent), and agricultural real estate loans (4.97 percent) were at their lowest levels since the end of the fourth quarter of 2017. While interest rates moved down, 34 percent of the survey respondents reported their banks tightened credit standards for agricultural loans in the fourth quarter of 2019 relative to the fourth quarter of 2018, and 66 percent reported the credit standards at their banks remained essentially unchanged. Similarly, 17 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 2019 relative to the same period of a year ago, and none required smaller amounts.

Looking forward

The survey results reflected some cautious optimism about agriculture's prospects in 2020. Survey respondents indicated that at the beginning of 2020, only 2.2 percent of their farm customers with operating credit in the year just past were not likely to qualify for new operating credit in the year ahead—this was a slight improvement from what was reported at the start of 2019. Farm real estate loans were predicted to have greater volumes in the first three months of 2020 compared with the same three months of a year ago. Likewise, responding bankers expected non-real-estate agricultural loan volumes to be higher in the first quarter of 2020 relative to the same quarter of a year earlier, as volumes for operating loans and loans guaranteed by the FSA were forecasted to grow. At the start of 2020, survey respondents who anticipated capital expenditures by farmers would be lower in the year ahead compared with the year just ended still outnumbered survey respondents who anticipated higher capital expenditures; yet those projecting lower capital expenditures no longer made up a majority (there was a sizable share expecting no change in capital spending by farmers). As one Wisconsin banker stated, "Due to a recent increase in milk prices, I expect to see an uptick in capital investment that was put on hold over the last five years."

The vast majority of responding bankers (82 percent) expected farmland values to be stable in the first quarter of 2020. Notably, the share of respondents expecting farmland values to drop (11 percent) was not much larger than the share of respondents expecting them to climb (7 percent)—in contrast with the pattern seen over the past six years or so. Hence, District agricultural land values will probably be steady in the first quarter of 2020.

David B. Oppedahl, *senior business economist*

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from the Federal Reserve Bank of Chicago
Number 1995 February 2022

AgLetter

FARMLAND VALUES AND CREDIT CONDITIONS

Summary
There was an annual increase of 22 percent in the Seventh Federal Reserve District's agricultural land values in 2021—the largest such rise over the past decade. In addition, values for "good" farmland in the District gained 7 percent in the fourth quarter of 2021 from the third quarter, according to 147 agricultural bankers who responded to the January survey. Fifty-six percent of the survey respondents expected farmland values to go up during the January through March period of 2022, 1 percent expected them to go down, and 43 percent expected them to remain the same.

District agricultural credit conditions during the fourth quarter of 2021 continued to show signs of improvement. Only 0.8 percent of agricultural borrowers were not likely to qualify for operating credit at the survey respondents' banks in 2022 after qualifying in the previous year (matching the survey's record low, reached in 2012). In the final quarter of 2021, repayment rates for non-real-estate farm loans were again higher than a year ago, plus loan renewals and extensions were lower than a year ago. Both of these indicators of farm credit conditions were better than a year earlier in each of the five most recent quarters. That said, non-real-estate farm loan demand relative to a year ago was lower for a sixth consecutive quarter. For ten quarters in a row, there have been more funds available for lending than in the same quarter the prior year at survey respondents' banks. In line with these trends, the average loan-to-deposit ratio for the District retreated to 67.2 percent in the fourth quarter of 2021—its lowest reading since the first quarter of 2014. At the end of 2021, the District's average nominal interest rates on farm operating, feeder cattle, and farm real estate loans were still very close to their respective all-time lows; yet real interest rates on them had dropped noticeably into negative territory.

Farmland values

On the whole, the District experienced a very steep annual increase of 22 percent in its farmland values in 2021 (see table and map below). In nominal terms, 2011's annual increase was the last gain as large as 2021's. In the fourth quarter of 2021, all District states saw double-digit year-over-year increases in their agricultural land values. The District's farmland values were up 7 percent in the fourth quarter of 2021 from the third quarter.

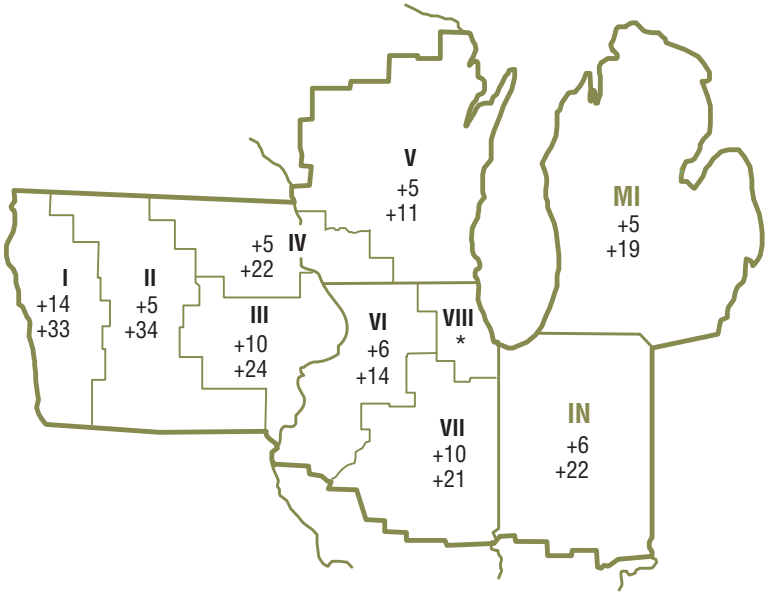
Adjusted for inflation by the Personal Consumption Expenditures Price Index, District farmland values still had an annual increase of 17 percent in 2021, the largest real increase since 2011 (see chart 1 on next page). More than making up for their real declines from 2014 through 2019, District farmland values reached a new peak in 2021.

Percent change in dollar value of "good" farmland

Top: October 1, 2021 to January 1, 2022
Bottom: January 1, 2021 to January 1, 2022

	October 1, 2021 to January 1, 2022	January 1, 2021 to January 1, 2022
Illinois	+8	+18
Indiana	+6	+22
Iowa	+10	+30
Michigan	+5	+19
Wisconsin	+4	+12
Seventh District	+7	+22

*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]	Interest rates on farm loans: Feeder cattle[a]	Interest rates on farm loans: Real estate[a]
	(index)[b]	*(index)*[b]	*(index)*[b]	*(percent)*	*(percent)*	*(percent)*	*(percent)*
2020							
Jan–Mar	117	107	59	78.9	4.83	5.01	4.51
Apr–June	103	119	64	77.6	4.77	4.94	4.40
July–Sept	85	131	93	75.0	4.65	4.79	4.24
Oct–Dec	91	148	133	73.6	4.49	4.66	4.10
2021							
Jan–Mar	79	162	146	69.7	4.42	4.58	4.08
Apr–June	63	160	146	67.5	4.40	4.55	4.02
July–Sept	78	161	143	68.8	4.34	4.51	4.01
Oct–Dec	76	152	153	67.2	4.34	4.53	4.03

[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 online, https://www.chicagofed.org/publications/agletter/index.

non-real-estate farm loan renewals and extensions in the final quarter of 2021 were lower than in the final quarter of 2020, as just 3 percent of survey respondents reported more of them and 30 percent reported fewer.

Even though loan problems receded, 90 percent of survey respondents' banks kept their credit standards for farm loans essentially the same in the fourth quarter of 2021 as a year ago—with roughly an even split of the rest between tightening and easing credit standards. Likewise, 99 percent of responding bankers noted their banks did not change the amounts of collateral required for customers to qualify for non-real-estate farm loans during the final quarter of 2021 relative to a year ago, though 1 percent noted their banks required smaller amounts.

During the October through December period of 2021, demand for non-real-estate farm borrowing was once again lower relative to the same period of a year ago: With 22 percent of survey respondents reporting an increase in the demand for non-real-estate farm loans from a year earlier and 46 percent reporting a decrease, the index of loan demand was 76 in the fourth quarter of 2021. At 152 in the final quarter of 2021, the index of funds availability indicated once more a higher level of funds available for lending than a year ago; funds availability was higher than a year earlier at 54 percent of the survey respondents' banks and lower at 2 percent. The District's average loan-to-deposit ratio dipped to 67.2 percent in the fourth quarter of 2021; this ratio was 14 percentage points below the average level desired by the responding bankers. An Indiana banker remarked: "Lack of operating loan demand is a bigger concern to our bank than credit quality at this point."

Looking forward

According to survey respondents at the beginning of 2022, only 0.8 percent of their farm customers with operating credit in the year just past were not likely to qualify for new operating credit in the year ahead. Farm real estate loan volumes were projected to be larger in the first three months of 2022 compared with the same three months of a year ago, while non-real-estate loan volumes were projected to be smaller (except for farm machinery loan volumes). At the start of 2022, survey respondents once again forecasted capital expenditures by farmers would be higher in the year ahead than in the year just ended (similar to their prediction in early 2021).

For the fifth quarter in a row, a majority of responding bankers (56 percent) predicted farmland values to go up in the next quarter (in this case, the first quarter of 2022). Just 1 percent of the survey respondents predicted farmland values to go down; 43 percent of the respondents predicted them to be stable. One Illinois banker cautioned: "Farmers were able to realize nice profits in 2021; 2022 could be much more difficult to do so with the rise in the costs of all inputs."

David B. Oppedahl, *senior business economist*

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AgLetter
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Number 2002, November 2023

FARMLAND VALUES AND CREDIT CONDITIONS

Summary

Rising 5 percent in the third quarter of 2023 from a year ago, agricultural land values for the Seventh Federal Reserve District slowed their year-over-year increases (this was the smallest such gain in three years). Also, values for "good" farmland in the District overall were 1 percent higher in the third quarter of 2023 than in the second quarter, according to the respondents from 137 banks who completed the October 1 survey. While 72 percent of the survey respondents anticipated District farmland values to be stable during the fourth quarter of 2023, 13 percent anticipated them to move up again in the final quarter of this year and 15 percent anticipated them to move down.

The District's agricultural credit conditions were weaker in the third quarter of 2023 than a year earlier, as repayment rates for non-real-estate farm loans were no longer higher relative to the same quarter of the previous year. Moreover, renewals and extensions of such loans were slightly higher than a year ago. In the third quarter of this year, demand for non-real-estate farm loans was down relative to a year ago for the 13th quarter in a row. Plus, the availability of funds for lending by agricultural banks was dramatically lower than in the third quarter of 2022. For the second quarter in a row, the average loan-to-deposit ratio for the District moved up, reaching 74.3 percent in the third quarter of 2023. Finally, average interest rates on agricultural loans kept increasing.

Who Owns Midwest Farmland? And Why?

On November 28, 2023, the Federal Reserve Bank of Chicago will hold a hybrid event to explore aspects of Midwest farmland ownership and investments in agricultural ground. Registration is available online, https://www.chicagofed.org/events/2023/ag-conference.

Farmland values

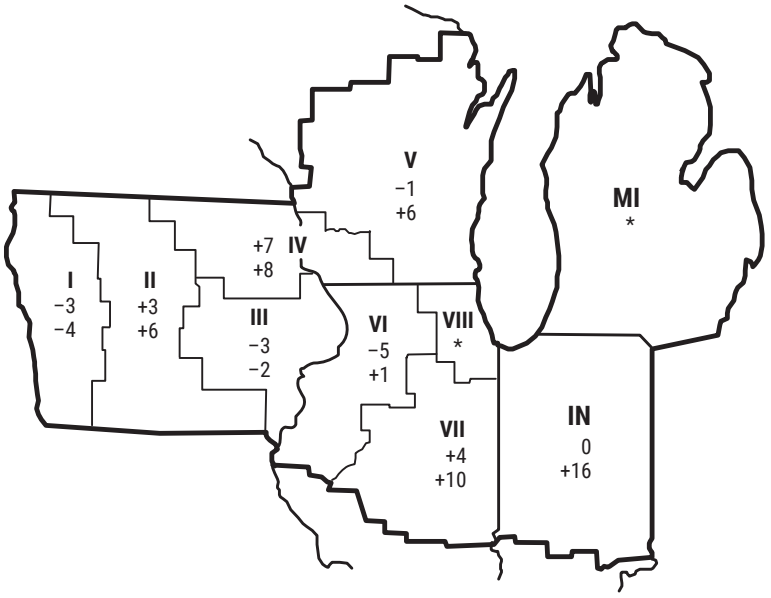
The District had a year-over-year gain of only 5 percent in its agricultural land values in the third quarter of 2023. This was the lowest year-over-year increase for District farmland values since the third quarter of 2020. Indiana led the way with a year-over-year gain in farmland values of 16 percent; Illinois and Wisconsin had year-over-year growth in farmland values of 6 percent and 9 percent, respectively (see map and table below). Growth in Iowa's farmland values was stagnant in nominal terms. An Iowa banker expressed surprise that "farmland has not retreated in value." In contrast, one Wisconsin banker cited "competition among large dairy operations" as the impetus for pushing farmland values higher there, and another noted that "nonfarm investors continue to push land prices higher." After being adjusted for inflation with the Personal Consumption Expenditures Price Index (PCEPI), District farmland values were up less than 2 percent in the third quarter of 2023 relative to a year ago (see chart 1 on next page). In nominal terms, the District's agricultural land values in the third quarter of 2023 were 1 percent higher than in the second quarter.

Percent change in dollar value of "good" farmland

Top: July 1, 2023 to October 1, 2023
Bottom: October 1, 2022 to October 1, 2023

	July 1, 2023 to October 1, 2023	October 1, 2022 to October 1, 2023
Illinois	+1	+6
Indiana	0	+16
Iowa	+1	0
Michigan	*	*
Wisconsin	+1	+9
Seventh District	+1	+5

*Insufficient response.



Credit conditions at Seventh District agricultural banks

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	(index)[b]	*(index)*[b]	*(index)*[b]	*(percent)*	*(percent)*	*(percent)*	*(percent)*
2022							
Jan–Mar	83	148	159	65.0	4.64	4.74	4.44
Apr–June	82	129	133	67.0	5.42	5.53	5.17
July–Sept	91	96	121	68.2	6.52	6.58	6.13
Oct–Dec	82	102	131	70.6	7.50	7.54	6.80
2023							
Jan–Mar	78	102	123	70.3	7.97	7.93	7.14
Apr–June	77	83	105	72.8	8.24	8.19	7.33
July–Sept	81	72	100	74.3	8.50	8.47	7.70

[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 online, https://www.chicagofed.org/publications/agletter/index.

demand. The index of loan demand was 81 in the third quarter of 2023, as 14 percent of survey respondents noted higher demand for non-real-estate farm loans than a year earlier and 33 percent noted lower demand. The availability of funds for lending by agricultural banks was much lower than a year ago for the second consecutive quarter. The index of funds availability dropped to 72 in the third quarter of 2023 (its lowest level since the first quarter of 1980), as just 7 percent of the survey respondents indicated their banks had more funds available to lend than a year earlier and 35 percent indicated their banks had less. The District's average loan-to-deposit ratio rose to 74.3 percent in the third quarter of 2023. The gap between the average loan-to-deposit ratio and the average level desired by the responding bankers narrowed to around 6 percentage points, with 58 percent of the survey respondents stating that their respective banks were below their targeted levels.

Looking forward

An Iowa banker shared that he thought "the land market would be softening, but we still haven't seen that yet." On net, little change was expected regarding District farmland values in the final quarter of 2023 (13 percent of survey respondents anticipated them to rise, 72 percent anticipated them to be stable, and 15 percent anticipated them to fall). However, some softening in demand for agricultural land and, therefore, lower farmland values may be ahead in 2024: There were more survey respondents who expected farmers and nonfarm investors to have weaker demand to acquire farmland this fall and winter compared with a year earlier than those who expected these groups to have stronger demand. On the whole, respondents anticipated a dip in the volume of farmland transfers during this fall and winter relative to a year ago.

Net cash earnings (which include government payments) for crop and dairy farmers were expected to be down during the fall and winter from their levels of a year earlier, according to the responding bankers. For crop farmers, 12 percent of survey respondents forecasted net cash earnings to rise over the next three to six months relative to a year ago, while 79 percent forecasted these earnings to fall. For dairy farmers, 2 percent of survey respondents expected net cash earnings to increase over the next three to six months relative to a year ago, while 45 percent expected these earnings to decrease. The District's cattle and hog operations were expected to do better, with 38 percent of responding bankers forecasting higher net cash earnings for cattle and hog farmers over the next three to six months relative to a year earlier and 32 percent forecasting lower such earnings. However, this positive news was primarily for the beef sector given higher cattle prices and lower hog prices.

Twelve percent of the responding bankers predicted a lower volume of farm loan repayments over the next three to six months compared with a year earlier, while 6 percent predicted a higher volume. Still, forced sales or liquidations of farm assets owned by financially distressed farmers were expected to be nearly flat in the next three to six months relative to a year ago, as 8 percent of the responding bankers expected them to increase and 10 percent expected them to decrease. Non-real-estate and real estate farm loan volumes of the survey respondents' banks were generally anticipated to be lower in the October through December period of 2023 than in the same period of 2022. The lone exception was the volume of operating loans, which was expected to be higher. With regard to this last survey result, an Illinois banker offered one possible explanation: "We will have producers storing '23 crop for better prices next spring, but needing funds for '24 inputs." In sum, agricultural credit conditions seemed poised for tougher sledding ahead.

David B. Oppedahl, *policy advisor*

Income Approach: November, Annual Average, & Marketing Year Average Prices

January 1, 2024

	Column	A	B	C	D	E	F	G	H	I	J	K	L	
		2018		2019		2020		2021		2022		2023		Source or Formula:
Line #		Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	
1	Yield	189	57.5	169	51	187	59	195	60	190	57.5	200	61	IASS - Crop Summary
2	Price - November	3.49	8.60	3.92	8.94	3.82	10.30	5.37	12.20	6.41	14.10	4.85	12.80	IASS - Crop Prices
3	Price - Annual Avg.	3.63	9.44	3.98	8.78	3.75	9.27	5.45	13.08	6.74	15.02	5.94	14.18	DLGF Calculation
4	Price - Market Avg.	3.56	9.61	3.78	8.73	3.84	8.92	4.65	11.10	6.07	13.30	6.65	14.50	IASS - Crop Prices
5	GI - November	659.61	494.50	662.48	455.94	714.34	607.70	1047.15	732.00	1217.90	810.75	970.00	780.80	Line 1 times Line 2
6	GI -Annual Avg.	686.07	542.80	672.62	447.78	701.25	546.93	1062.75	784.80	1280.60	863.65	1188.00	864.98	Line 1 times Line 3
7	GI - Market Avg.	672.84	552.58	638.82	445.23	718.08	526.28	906.75	666.00	1153.30	764.75	1330.00	884.50	Line 1 times Line 4
8	AA v Nov	26.46	48.30	10.14	-8.16	-13.09	-60.77	15.60	52.80	62.70	52.90	218.00	84.18	Line 6 minus Line 5
9	MA v Nov	13.23	58.07	-23.66	-10.71	3.74	-81.42	-140.40	-66.00	-64.60	-46.00	360.00	103.70	Line 7 minus Line 5
10	NRTL - November	27		11		166		366		318		161		DLGF Calculation
11	NRTL - Annual Avg	64		12		129		400		376		312		Line 10 + or - Avg. Line 8
12	NRTL - Market Avg	63		-6		127		263		263		393		Line 10 + or - Avg. Line 9
13	NRTL Average	51		6		141		343		319		289		Average Lines 10, 11, & 12
14	FRBC RE Rate	0.0537		0.0524		0.0431		0.0404		0.0564		0.0747		Fed. Res. Bank of Chicago
15	FRBC OP Rate	0.0579		0.0581		0.0469		0.0438		0.0602		0.0830		Fed. Res. Bank of Chicago
16	Avg. FRBC Rate	0.0558		0.0553		0.0450		0.0421		0.0583		0.0789		Average Lines 14 & 15
17	Operating Market Value In Use	914		108		3,133		8,147		5,472		3,663		Line 13 / Line 16

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

Sources: (pages references within this packet)

		2018	2019	2020	2021	2022	2023
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, 2023		2018		2019		2020		2021		2022		2023		Information
Line #		Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	Corn	Beans	
1	Yield per Acre	189	57.5	169	51	187	59	195	60	190	57.5	200	61	IN Ag. Stats. Service
2	Price per Bu. - November	3.49	8.60	3.92	8.94	3.82	10.30	5.37	12.20	6.41	14.10	4.85	12.80	IN Ag. Stats. Service
3	Sales	660	495	662	456	714	608	1047	732	1218	811	970	781	Line 1 X Line 2
4	Less Variable Costs	435	255	447	245	418	235	424	243	660	329	683	345	Purdue Crop Guide
5	Contribution Margin	225	240	215	211	296	373	623	489	558	482	287	436	Line 3 - Line 4
6	Plus Government Pymt.	40		68		102		49		13		54		IN Ag. Stats. Service
7	Total Contribution Margin	252		247		386		581		526		388		Lines 5 + 6 / 2
	Less Overhead:													
8	Annual Machinery	130		130		130		130		130		139		Purdue Crop Guide
9	Drying/Handling													Purdue Crop Guide
10	Family/Hired Labor	66		80		65		64		56		64		Purdue Crop Guide
11	Real Estate Tax	29		26		25		21		22		24		DLGF Study
12	Net ReturnTo Land - Nov.	27		11		166		366		318		161		Line 7 - 8,9,10, 11

Sources: (pages references within this packet)

		2018	2019	2020	2021	2022	2023	
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	
2014	188	
2015	150	
2016	173	
2017	180	
2018	189	P-36
2019	169	P-36
2020	187	P-36
2021	195	P-36
2022	190	P-36
2023	200	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	
2014	55.5	
2015	50	
2016	57.5	
2017	54	
2018	57.5	P-38
2019	51	P-38
2020	59	P-38
2021	60	P-38
2022	57.5	P-38
2023	61	P-39

Source: Indiana Agricultural Statistics Service

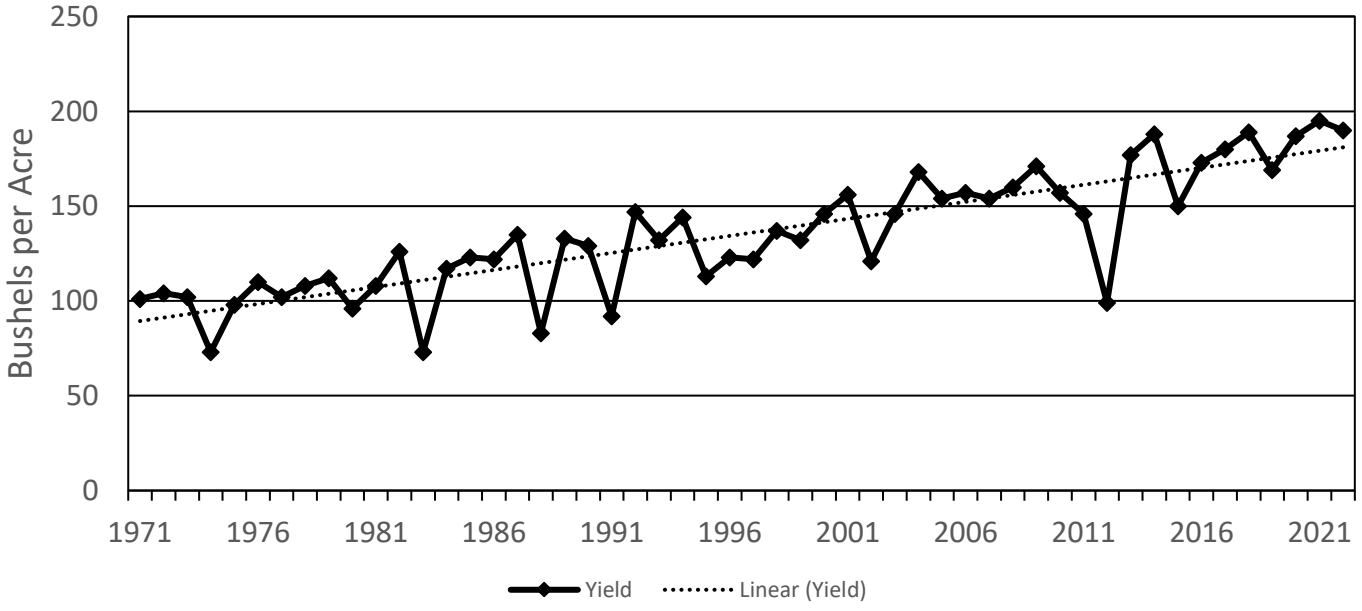
CROP SUMMARY

CORN FORECAST AND FINAL YIELD
INDIANA, 1999-2022

Year	August Forecast	September Forecast	October Forecast	November Forecast	Final Yield Per Acre
	Yield (Bu)	Yield (Bu)	Yield (Bu)	Yield (Bu)	(Bushels)
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
2018	186	192	194	194	189
2019	166	161	162	165	169
2020	188	186	189	189	187
2021	194	197	194	189	195
2022	**189**	**186**	**187**	**191**	**190**

[1] Data not available due to sequestration.

Corn Yield Trend
Indiana, 1970-2022



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	2023	APR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.63	
SURVEY	2023	AUG		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	5.79	
SURVEY	2023	FEB		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.69	
SURVEY	2023	JAN		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.5	
SURVEY	2023	JUL		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.14	
SURVEY	2023	JUN		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.54	
SURVEY	2023	MAR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.57	
SURVEY	2023	MAY		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.49	
SURVEY	2023	OCT		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	4.85	
SURVEY	2023	SEP		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	5.36	

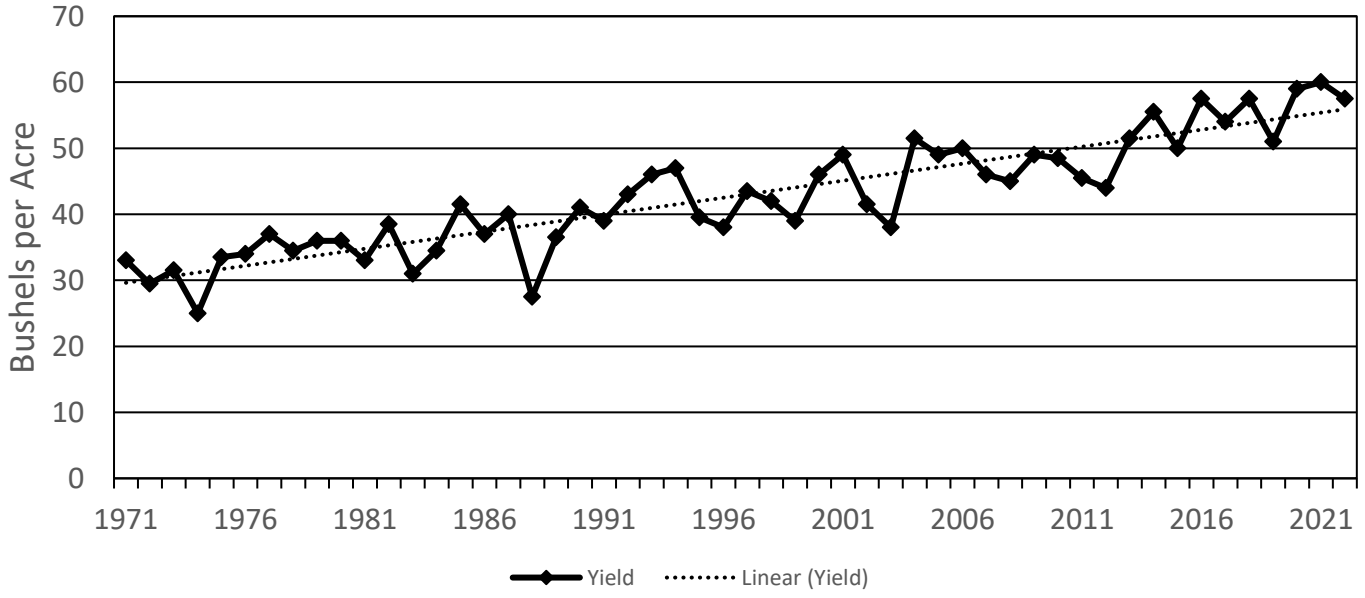
CROP SUMMARY

SOYBEAN FORECAST AND FINAL YIELD
INDIANA, 1999-2022

Year	August Forecast	September Forecast	October Forecast	November Forecast	Final Yield Per Acre
	Yield (Bu)	Yield (Bu)	Yield (Bu)	Yield (Bu)	(Bushels)
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
2018	58.0	60.0	60.0	60.0	57.5
2019	50.0	49.0	48.0	49.0	51.0
2020	61.0	60.0	60.0	58.0	59.0
2021	60.0	60.0	60.0	57.0	60.0
2022	**60.0**	**60.0**	**59.0**	**59.0**	**57.5**

[1] Data not available due to sequestration.

Soybean Yield Trend
Indiana, 1970-2022



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	2023	YEAR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	200	
SURVEY	2023	YEAR - AUG FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	195	
SURVEY	2023	YEAR - NOV FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	200	
SURVEY	2023	YEAR - OCT FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	197	
SURVEY	2023	YEAR - SEP FORECAST		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	194	

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	2023	YEAR		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	61	
SURVEY	2023	YEAR - AUG FORECAST		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	60	
SURVEY	2023	YEAR - NOV FORECAST		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	61	
SURVEY	2023	YEAR - OCT FORECAST		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - YIELD, MEASURED IN BU / ACRE	TOTAL	NOT SPECIFIED	61	
SURVEY	2023	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 *
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	3.49	3.70	3.63	3.56
2019	3.76	3.79	3.75	3.68	3.81	4.28	4.55	4.27	3.96	4.01	3.92	4.00	3.98	3.78
2020	4.10	4.04	4.03	3.61	3.43	3.41	3.51	3.48	3.77	3.73	3.82	4.06	3.75	3.84
2021	4.32	4.74	4.95	5.39	5.87	6.32	6.22	6.39	5.32	4.97	5.37	5.58	5.45	4.65
2022	5.59	6.14	6.59	7.07	7.03	7.47	7.14	7.30	7.05	6.46	6.41	6.57	6.74	6.07
2023	6.50	6.69	6.57	6.63	6.49	6.54	6.14	5.79	5.36	4.85	4.85	4.85	5.94	6.65

*Marketing average is September of the previous year to August in the current year.

Source: Pages 42 & 43 of this packet
Note: November & December 2023 prices were not available at the time this calculation was made so the October 2023 price was carried over.

Soybean Prices
Source: Indiana Agricultural Statistics

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Average	Marketing Average *
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	9.50	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	8.60	8.94	9.44	9.61
2019	8.94	8.91	8.83	8.57	8.39	8.71	8.80	8.60	8.60	8.93	8.94	9.17	8.78	8.73
2020	9.22	9.04	9.01	8.64	8.62	8.70	8.87	8.80	9.44	9.81	10.30	10.80	9.27	8.92
2021	10.90	12.60	13.00	14.00	15.00	14.40	14.30	13.60	12.40	11.90	12.20	12.70	13.08	11.10
2022	12.90	14.60	15.50	15.90	16.00	17.00	16.00	15.40	14.50	13.60	14.10	14.70	15.02	13.30
2023	14.40	15.10	15.10	15.10	14.80	14.50	15.10	14.50	13.20	12.80	12.80	12.80	14.18	14.50

*Marketing average is September of the previous year to August in the current year.

Source: Page 42 & 44 of this packet
Note: November & December 2023 prices were not available at the time this calculation was made so the October 2023 price was carried over.

CROP PRICES

MONTHLY PRICES RECEIVED BY FARMERS
CROPS, INDIANA, 2016-2023 [1]

Year	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Marketing Year Avg.
Corn (Dollars per Bushel)													
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	3.59	3.72	3.80	3.92	3.81	3.60	3.54	3.56
2018-19	3.45	3.44	3.49	3.70	3.76	3.79	3.75	3.68	3.81	4.28	4.55	4.27	3.78
2019-20	3.96	4.01	3.92	4.00	4.10	4.04	4.03	3.61	3.43	3.41	3.51	3.48	3.84
2020-21	3.77	3.73	3.82	4.06	4.32	4.74	4.95	5.39	5.87	6.32	6.22	6.39	4.65
2021-22	5.32	4.97	5.37	5.58	5.59	6.14	6.59	7.07	7.03	7.47	7.14	7.30	6.07
2022-23	**7.05**	**6.46**	**6.41**	**6.57**	**6.60**	**6.69**	**6.57**	**6.63**	**6.49**	**6.53**	**6.14**	(2)	**6.65**
Soybeans (Dollars per Bushel)													
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	9.50	9.42	9.41	9.56	9.61	9.79	10.10	10.30	10.50	10.20	8.94	8.85	9.61
2018-19	8.75	8.64	8.60	8.94	8.94	8.91	8.83	8.57	8.39	8.71	8.80	8.60	8.73
2019-20	8.60	8.93	8.94	9.17	9.22	9.04	9.01	8.64	8.62	8.70	8.87	8.80	8.92
2020-21	9.44	9.81	10.30	10.80	10.90	12.60	13.00	14.00	15.00	14.40	14.30	13.60	11.10
2021-22	12.40	11.90	12.20	12.70	12.90	14.60	15.50	15.90	16.00	17.00	16.00	15.40	13.30
2022-23	**14.50**	**13.60**	**14.10**	**14.70**	**14.30**	**15.10**	**15.10**	**15.10**	**14.80**	**14.50**	**15.10**	(2)	**14.50**

Year	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Marketing Year Avg.
Wheat (Dollars per Bushel)													
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
2018-19	4.83	4.83	5.25	4.95	4.40	5.19	5.37	5.46	5.56	5.21	4.14	5.01	4.90
2019-20	5.08	4.91	4.62	5.00	5.28	5.27	5.26	5.48	5.32	5.43	5.47	5.44	4.95
2020-21	5.23	5.18	5.34	5.62	5.78	5.95	6.15	5.75	5.93	(2)	(2)	(2)	5.28
2021-22	(2)	6.18	6.63	6.51	6.42	7.45	6.84	6.83	7.89	8.92	7.63	6.88	6.42
2022-23	**8.50**	**7.99**	**7.71**	**8.13**	**8.84**	**7.64**	**8.28**	**7.90**	**7.73**	**7.55**	**7.31**	**7.00**	**8.01**

[1] Weighted monthly average for market year. 2022 and 2023 are preliminary.
[2] Data not available.

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	2023	APR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.63	
SURVEY	2023	AUG		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	5.79	
SURVEY	2023	FEB		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.69	
SURVEY	2023	JAN		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.5	
SURVEY	2023	JUL		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.14	
SURVEY	2023	JUN		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.54	
SURVEY	2023	MAR		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.57	
SURVEY	2023	MAY		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	6.49	
SURVEY	2023	OCT		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	4.85	
SURVEY	2023	SEP		STATE	INDIANA	18							00000000		CORN	CORN, GRAIN - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	5.36	

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	2023	APR		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	15.1	
SURVEY	2023	AUG		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	14.5	
SURVEY	2023	FEB		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	15.1	
SURVEY	2023	JAN		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	14.4	
SURVEY	2023	JUL		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	15.1	
SURVEY	2023	JUN		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	14.5	
SURVEY	2023	MAR		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	15.1	
SURVEY	2023	MAY		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	14.8	
SURVEY	2023	OCT		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	12.8	
SURVEY	2023	SEP		STATE	INDIANA	18							00000000		SOYBEANS	SOYBEANS - PRICE RECEIVED, MEASURED IN $ / BU	TOTAL	NOT SPECIFIED	13.2	

2018 Purdue Crop Cost & Return Guide

March 2018 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]	$3.70	$3.70	$9.90	$4.30	$9.90	$3.70	$3.70	$9.90	$4.30	$9.90	$3.70	$3.70	$9.90	$4.30	$9.90
Market revenue	$481	$511	$426	$262	$297	$599	$636	$525	$327	$366	$718	$762	$624	$391	$436
Less variable costs[4]															
Fertilizer[5]	$124	$112	$39	$55	$29	$132	$121	$47	$73	$34	$140	$129	$55	$90	$40
Seed[6]	91	91	67	44	78	111	111	67	44	78	111	111	67	44	78
Pesticides[7]	61	61	65	25	55	61	61	65	25	55	61	61	65	25	55
Dryer fuel[8]	35	28	N/A	N/A	4	44	35	N/A	N/A	5	52	42	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	11	7	5	7	12	12	8	6	7	13	12	8	7	7
Insurance/misc.[12]	36	36	31	9	9	38	38	34	9	9	40	40	34	9	9
Total variable cost	$411	$393	$242	$173	$208	$454	$435	$255	$194	$215	$476	$456	$264	$213	$221
Contribution margin[13] (Revenue - variable costs) per acre	$70	$118	$184	$89	$89	$145	$201	$270	$133	$151	$242	$306	$360	$178	$215

[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 March 28, 2018. 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 @ $0.32; urea @ $0.40; P_20_5 @ $0.46; K_20 @ $0.29; 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]	$70	$151	$70	$151	$145	$236	$145	$236	$242	$333	$242	$333
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$70	$151	$70	$151	$145	$236	$145	$236	$242	$333	$242	$333
Annual overhead costs:												
Machinery ownership[4]	$138	$130	$91	$86	$138	$130	$91	$86	$138	$130	$91	$86
Family and hired labor[5]	$73	$66	$41	$37	$73	$66	$41	$37	$73	$66	$41	$37
Land[6]	$151	$151	$151	$151	$195	$195	$195	$195	$246	$246	$246	$246
Earnings or (losses)	-$292	-$196	-$213	-$123	-$261	-$155	-$182	-$82	-$215	-$109	-$136	-$36

[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 $65,520 ($85,186 of family living expenses less $46,085 in net nonfarm income plus $26,419 in income and self-employment taxes); a full-time employee with total compensation of $42,084; and a part-time employee with compensation of $3,630. 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.

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Date: 3/28/18

2019 Purdue Crop Cost & Return Guide

March 2019 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]	131	139	43	61	30	164	174	54	77	38	196	209	65	92	46
Harvest price[3]	$3.70	$3.70	$8.90	$4.40	$8.90	$3.70	$3.70	$8.90	$4.40	$8.90	$3.70	$3.70	$8.90	$4.40	$8.90
Market revenue	$485	$514	$383	$268	$267	$607	$644	$481	$339	$338	$725	$773	$579	$405	$409
Less variable costs[4]															
Fertilizer[5]	$143	$128	$43	$60	$32	$152	$138	$53	$80	$39	$160	$147	$62	$98	$46
Seed[6]	91	91	67	44	78	111	111	67	44	78	111	111	67	44	78
Pesticides[7]	58	58	50	30	45	58	58	50	30	45	58	58	50	30	45
Dryer fuel[8]	32	26	N/A	N/A	4	40	32	N/A	N/A	5	48	39	N/A	N/A	6
Machinery fuel @ $2.52	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]	13	14	4	6	3	16	17	5	8	4	20	21	7	9	5
Interest[11]	12	11	7	6	6	13	12	7	6	7	13	13	8	7	7
Insurance/misc.[12]	36	36	31	9	9	38	38	34	9	9	40	40	34	9	9
Total variable cost	$426	$405	$231	$184	$200	$469	$447	$245	$206	$210	$491	$470	$257	$226	$219
Contribution margin[13] (Revenue - variable costs) per acre	$59	$109	$152	$84	$67	$138	$197	$236	$133	$128	$234	$303	$322	$179	$190

[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 2019 CME Group futures price less $0.25 basis. Harvest soybean price is November 2019 CME Group futures price less $0.35 basis. Harvest wheat price is July 2019 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on March 28, 2019. 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 @ $0.38; urea @ $0.43; P_20_5 @ $0.49; K_20 @ $0.33; 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]	$59	$131	$59	$131	$138	$217	$138	$217	$234	$313	$234	$313
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$59	$131	$59	$131	$138	$217	$138	$217	$234	$313	$234	$313
Annual overhead costs:												
Machinery ownership[4]	$138	$130	$85	$80	$138	$130	$85	$80	$138	$130	$85	$80
Family and hired labor[5]	$89	$80	$48	$43	$89	$80	$48	$43	$89	$80	$48	$43
Land[6]	$164	$164	$164	$164	$208	$208	$208	$208	$264	$264	$264	$264
Earnings or (losses)	-$333	-$243	-$238	-$156	-$297	-$201	-$203	-$114	-$257	-$161	-$163	-$74

[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 or PLC payments in 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 $78,106 ($90,356 of family living expenses less $42,285 in net nonfarm income plus $30,035 in income and self-employment taxes); a full-time employee with total compensation of $44,071; and a part-time employee with compensation of $3,802. 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 2018 cash rent per bushel of corn yield reported in the article entitled "Indiana Farmland Values - Up, Down, and Sideways," Purdue Agricultural Economics Report, August, 2018. The relatively tight margins expected in 2019 will likely dampen increases in cash rents, thus 2019 cash rents are assumed to be the same as 2018 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: 3/28/19

2020 Purdue Crop Cost & Return Guide

March 2020 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]	133	141	44	62	31	165	176	54	77	38	198	211	65	93	46
Harvest price[3]	$3.40	$3.40	$8.35	$5.20	$8.35	$3.40	$3.40	$8.35	$5.20	$8.35	$3.40	$3.40	$8.35	$5.20	$8.35
Market revenue	$452	$479	$367	$322	$259	$561	$598	$451	$400	$317	$673	$717	$543	$484	$384
Less variable costs[4]															
Fertilizer[5]	$119	$107	$38	$53	$28	$126	$115	$45	$70	$34	$133	$123	$53	$87	$39
Seed[6]	91	91	67	44	78	111	111	67	44	78	111	111	67	44	78
Pesticides[7]	58	58	50	30	45	58	58	50	30	45	58	58	50	30	45
Dryer fuel[8]	29	23	N/A	N/A	4	36	29	N/A	N/A	5	43	34	N/A	N/A	6
Machinery fuel @ $2.07	15	15	9	9	7	15	15	9	9	7	15	15	9	9	7
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	17	18	5	8	4	20	21	7	9	5
Interest[11]	11	11	7	5	6	12	12	7	6	6	12	12	7	7	7
Insurance/misc.[12]	36	36	31	9	9	38	38	34	9	9	40	40	34	9	9
Total variable cost	$394	$377	$224	$174	$195	$435	$418	$235	$194	$203	$454	$436	$245	$213	$211
Contribution margin[13] (Revenue - variable costs) per acre	$58	$102	$143	$148	$64	$126	$180	$216	$206	$114	$219	$281	$298	$271	$173

[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 2020 CME Group futures price less $0.25 basis. Harvest soybean price is November 2020 CME Group futures price less $0.35 basis. Harvest wheat price is July 2020 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on March 24, 2020. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2020. 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: Purdue Extension Bulletin, AY-9-32, 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, $P_2 0_5$, $K_2 0$, 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 @ $0.31; urea @ $0.39; $P_2 0_5$ @ $0.38; $K_2 0$ @ $0.30; 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 ownership, 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]	$58	$123	$58	$123	$126	$198	$126	$198	$219	$290	$219	$290
Government payment[3]	$23	$23	$23	$23	$23	$23	$23	$23	$23	$23	$23	$23
Total contribution margin	$81	$146	$81	$146	$149	$221	$149	$221	$242	$313	$242	$313
Annual overhead costs:												
Machinery ownership[4]	$138	$130	$85	$80	$138	$130	$85	$80	$138	$130	$85	$80
Family and hired labor[5]	$72	$65	$43	$39	$72	$65	$43	$39	$72	$65	$43	$39
Land[6]	$159	$159	$159	$159	$208	$208	$208	$208	$257	$257	$257	$257
Earnings or (losses)	-$288	-$208	-$206	-$132	-$269	-$182	-$187	-$106	-$225	-$139	-$143	-$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 current farm bill will provide PLC payments for corn base acres in 2020.

[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 $78,106 ($90,356 of family living expenses less $42,285 in net nonfarm income plus $30,035 in income and self-employment taxes); a full-time employee with total compensation of $44,071; and a part-time employee with compensation of $3,802. 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 2019 cash rent per bushel of corn yield reported in the article entitled "2019 Indiana Farmland Values and Cash Rents Slide Lower," Purdue Agricultural Economics Report, August, 2019. The relatively tight margins expected in 2020 will likely dampen increases in cash rents, thus 2020 cash rents are assumed to be the same as 2019 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: 3/24/20

2021 Purdue Crop Cost & Return Guide

February 2021 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]	135	144	44	62	31	169	180	55	77	39	203	216	66	93	46
Harvest price[3]	$4.30	$4.30	$11.50	$6.10	$11.50	$4.30	$4.30	$11.50	$6.10	$11.50	$4.30	$4.30	$11.50	$6.10	$11.50
Market revenue	$581	$619	$506	$378	$357	$727	$774	$633	$470	$449	$873	$929	$759	$567	$529
Less variable costs[4]															
Fertilizer[5]	$123	$111	$43	$59	$32	$132	$121	$52	$76	$38	$141	$131	$61	$95	$44
Seed[6]	91	91	67	44	78	111	111	67	44	78	111	111	67	44	78
Pesticides[7]	58	58	50	30	45	58	58	50	30	45	58	58	50	30	45
Dryer fuel[8]	29	23	N/A	N/A	4	36	29	N/A	N/A	5	44	35	N/A	N/A	6
Machinery fuel @ $2.09	15	15	9	9	7	15	15	9	9	7	15	15	9	9	7
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	14	14	4	6	3	17	18	6	8	4	20	22	7	9	5
Interest[11]	11	11	7	6	6	12	12	7	6	7	13	12	7	7	7
Insurance/misc.[12]	36	36	31	9	9	38	38	34	9	9	40	40	34	9	9
Total variable cost	$399	$381	$229	$181	$199	$441	$424	$243	$200	$208	$464	$446	$253	$221	$216
Contribution margin[13] (Revenue - variable costs) per acre	$182	$238	$277	$197	$158	$286	$350	$390	$270	$241	$409	$483	$506	$346	$313

[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 2021 CME Group futures price less $0.25 basis. Harvest soybean price is November 2021 CME Group futures price less $0.35 basis. Harvest wheat price is July 2021 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on February 9, 2021. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2021. 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: Purdue Extension Bulletin, AY-9-32, 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 @ $0.31; urea @ $0.40; P_20_5 @ $0.49; K_20 @ $0.31; 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 ownership, 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]	$182	$258	$182	$258	$286	$370	$286	$370	$409	$495	$409	$495
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$182	$258	$182	$258	$286	$370	$286	$370	$409	$495	$409	$495
Annual overhead costs:												
Machinery ownership[4]	$138	$130	$85	$80	$138	$130	$85	$80	$138	$130	$85	$80
Family and hired labor[5]	$72	$64	$43	$39	$72	$64	$43	$39	$72	$64	$43	$39
Land[6]	$171	$171	$171	$171	$223	$223	$223	$223	$274	$274	$274	$274
Earnings or (losses)	-$199	-$107	-$117	-$32	-$147	-$47	-$65	$28	-$75	$27	$7	$102

[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-CO or PLC payments for base acres in 2021.

[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 $64,488 ($84,991 of family living expenses less $45,217 in net nonfarm income plus $24,714 in income and self-employment taxes); a full-time employee with total compensation of $47,141; and a part-time employee with compensation of $4,066. 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 2020 cash rent per bushel of corn yield reported in the article entitled "Indiana Farmland Values Increase but Signal Concern of Potential COVID-19 Slump," Purdue Agricultural Economics Report, July, 2020. The relatively tight margins expected in 2020 will likely dampen increases in cash rents, thus 2021 cash rents are assumed to be the same as 2020 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: 2/9/21

2022 Purdue Crop Cost & Return Guide

March 2022 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]	141	150	45	65	32	171	182	55	78	39	201	214	65	92	46
Harvest price[3]	$6.25	$6.25	$14.35	$10.50	$14.35	$6.25	$6.25	$14.35	$10.50	$14.35	$6.25	$6.25	$14.35	$10.50	$14.35
Market revenue	$881	$938	$646	$683	$459	$1,069	$1,138	$789	$819	$560	$1,256	$1,338	$933	$966	$660
Less variable costs[4]															
Fertilizer[5]	$305	$271	$85	$128	$64	$319	$286	$100	$160	$75	$333	$301	$116	$195	$86
Seed[6]	97	97	71	44	82	118	118	71	44	82	118	118	71	44	82
Pesticides[7]	73	73	63	38	56	73	73	63	38	56	73	73	63	38	56
Dryer fuel[8]	45	36	N/A	N/A	4	54	43	N/A	N/A	5	64	51	N/A	N/A	6
Machinery fuel @ $4.40	33	33	20	20	14	33	33	20	20	14	33	33	20	20	14
Machinery repairs[9]	22	22	18	18	15	22	22	18	18	15	22	22	18	18	15
Hauling[10]	14	15	5	7	3	17	18	6	8	4	20	21	7	9	5
Interest[11]	19	18	9	9	8	20	19	10	10	9	21	20	10	11	9
Insurance/misc.[12]	43	43	38	9	9	48	48	41	9	9	53	53	43	9	9
Total variable cost	$651	$608	$309	$273	$255	$704	$660	$329	$307	$269	$737	$692	$348	$344	$282
Contribution margin[13] (Revenue - variable costs) per acre	$230	$330	$337	$410	$204	$365	$478	$460	$512	$291	$519	$646	$585	$622	$378

[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 2022 CME Group futures price less $0.25 basis. Harvest soybean price is November 2022 CME Group futures price less $0.35 basis. Harvest wheat price is July 2022 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on March 21, 2022. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2022. 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: Purdue Extension Bulletin, AY-9-32, 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 @ $0.92; urea @ $0.97; P_20_5 @ $0.76; K_20 @ $0.69; 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 ownership, 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]	$230	$334	$230	$334	$365	$469	$365	$469	$519	$616	$519	$616
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$230	$334	$230	$334	$365	$469	$365	$469	$519	$616	$519	$616
Annual overhead costs:												
Machinery ownership[4]	$138	$130	$92	$86	$138	$130	$92	$86	$138	$130	$92	$86
Family and hired labor[5]	$63	$56	$39	$35	$63	$56	$39	$35	$63	$56	$39	$35
Land[6]	$189	$189	$189	$189	$239	$239	$239	$239	$285	$285	$285	$285
Earnings or (losses)	-$159	-$41	-$90	$23	-$74	$44	-$5	$108	$34	$145	$103	$209

[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-CO or PLC payments for base acres in 2022.

[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, operator labor expense incoroporates information pertaining to total family living, net nonfarm income, and income and self-employment taxes obtained from FINBIN, Center for Farm Financial Management, University of Minnesota. The larger acreages also included hired labor. FINBIN data was used to compute hourly hired labor wages. 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 2021 cash rent per bushel of corn yield reported in the article entitled "Indiana Farmland Prices Hit New Record High in 2021," Purdue Agricultural Economics Report, July, 2021. The relatively strong crop prices in 2021 will likely create upward pressure on cash rents, thus 2022 cash rents are assumed to be 5% higher than 2021 cash rents.

Prepared by: Michael R. Langemeier, 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: 3/21/22

2023 Purdue Crop Cost & Return Guide

March 2023 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]	143	152	46	65	32	173	184	56	79	39	203	216	66	93	46
Harvest price[3]	$5.25	$5.25	$12.40	$6.40	$12.40	$5.25	$5.25	$12.40	$6.40	$12.40	$5.25	$5.25	$12.40	$6.40	$12.40
Market revenue	$751	$798	$570	$416	$397	$908	$966	$694	$506	$484	$1,066	$1,134	$818	$595	$570
Less variable costs[4]															
Fertilizer[5]	$247	$221	$73	$105	$54	$260	$235	$86	$133	$63	$272	$248	$100	$161	$73
Seed[6]	102	102	74	44	86	124	124	74	44	86	124	124	74	44	86
Pesticides[7]	126	119	75	45	65	126	119	75	45	65	126	119	75	45	65
Dryer fuel[8]	45	36	N/A	N/A	4	54	43	N/A	N/A	5	63	51	N/A	N/A	6
Machinery fuel @ $3.61	27	27	16	16	12	27	27	16	16	12	27	27	16	16	12
Machinery repairs[9]	34	34	29	29	24	34	34	29	29	24	34	34	29	29	24
Hauling[10]	15	16	5	7	3	18	19	6	8	4	21	23	7	10	5
Interest[11]	34	32	17	15	15	37	34	18	16	16	37	35	19	18	16
Insurance/misc.[12]	43	43	38	9	9	48	48	41	9	9	53	53	43	9	9
Total variable cost	$673	$630	$327	$270	$272	$728	$683	$345	$300	$284	$757	$714	$363	$332	$296
Contribution margin[13] (Revenue - variable costs) per acre	$78	$168	$243	$146	$125	$180	$283	$349	$206	$200	$309	$420	$455	$263	$274

[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 2023 CME Group futures price less $0.25 basis. Harvest soybean price is November 2023 CME Group futures price less $0.35 basis. Harvest wheat price is July 2023 CME Group futures price less $.35 basis. Harvest prices were based on opening prices on March 23, 2023. These prices will change.

Table 1 (Continued)

[4]Input prices for variable costs reflect expected prices for 2023. 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: Purdue Extension Bulletin, AY-9-32, 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 @ $0.73; urea @ $0.71; P_20_5 @ $0.76; K_20 @ $0.53; lime @ $19.95/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. Cost projections include the application of fungicide to corn every other year. Fungicide applications are assumed to cost $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 9.0% 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 ownership, 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]	$78	$206	$78	$206	$180	$316	$180	$316	$309	$438	$309	$438
Government payment[3]	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total contribution margin	$78	$206	$78	$206	$180	$316	$180	$316	$309	$438	$309	$438
Annual overhead costs:												
Machinery ownership[4]	$147	$139	$98	$92	$147	$139	$98	$92	$147	$139	$98	$92
Family and hired labor[5]	$71	$64	$44	$40	$71	$64	$44	$40	$71	$64	$44	$40
Land[6]	$206	$206	$206	$206	$255	$255	$255	$255	$308	$308	$308	$308
Earnings or (losses)	-$346	-$202	-$271	-$132	-$293	-$141	-$218	-$71	-$217	-$72	-$142	-$2

[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-CO or PLC payments for base acres in 2023.

[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, operator labor expense incoroporates information pertaining to total family living, net nonfarm income, and income and self-employment taxes obtained from FINBIN, Center for Farm Financial Management, University of Minnesota. The larger acreages also included hired labor. FINBIN data was used to compute hourly hired labor wages. 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 2022 cash rent per bushel of corn yield reported in the article entitled "Indiana Farmland Prices Grow at Record Pace in 2022," Purdue Agricultural Economics Report, August, 2022. The relatively strong crop prices in 2021 and 2022 will likely create upward pressure on cash rents, thus 2023 cash rents are assumed to be 5% higher than 2022 cash rents.

Prepared by: Michael R. Langemeier, Department of Agricultural Economics; Shaun Casteel, Dan Quinn, and Tony Vyn, Department of Agronomy; and Bill Johnson, Department of Botany and Plant Pathology, Purdue University.

Date: 3/23/23

Calculation of Average Government Payments per Acre January 1, 2024

Line #		2018	2019	2020	2021	2022
1	Total Government Payment	516,224,000	878,992,000	1,321,623,000	653,426,000	166,825,000
2	Less Milk Income Loss Payment	0	0	0	0	0
3	Less Dairy Margin Protection	-3,638,000	-3,787,000	-2,648,000	-15,761,000	-1,645,000
4	Net Government Payment	512,586,000	875,205,000	1,318,975,000	637,665,000	165,180,000
5	Cropland Acres	12,909,673	12,909,673	12,909,673	12,909,673	12,909,673
6	Pymt Per Acre	39.71	67.79	102.17	49.39	12.80

Source: USDA-Indiana Ag Statistics Service

		2018	2019	2020	2021	2022
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 2023 is not currently available. The Department has estimated the Government Payment per Acre for 2023 in the following way.

Average Total Government Payment (2018-2022)	707,418,000
Average Milk Income Loss Payment (2018-2022)	0
Average Dairy Margin Protection Pymt (2018-2022)	-5,495,800
Estimated Net Government Payment for 2023	701,922,200
Cropland Acres (P-66)	12,909,673
Estimated Payment Per Acre for 2023	54.37

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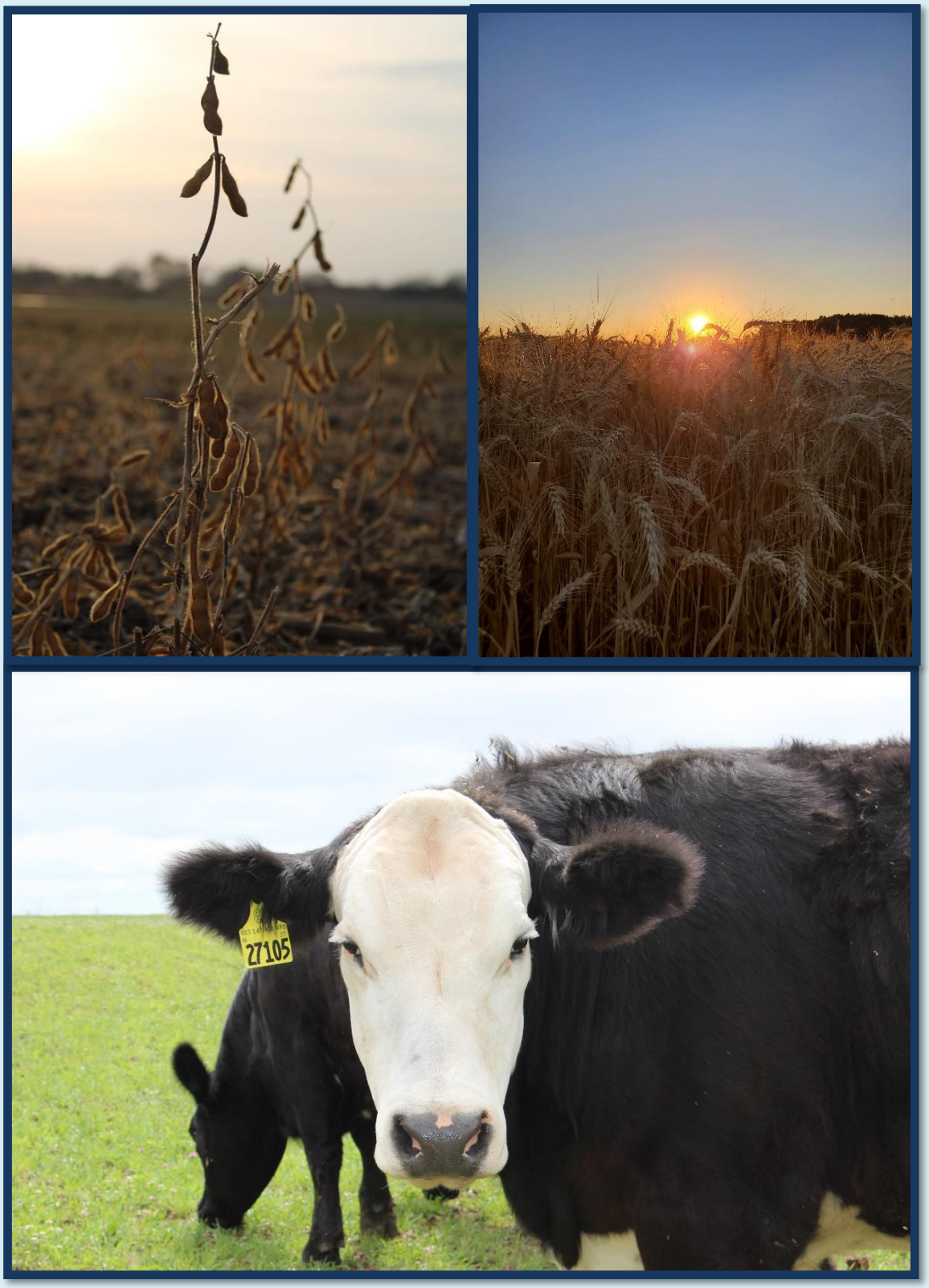


AGRICULTURAL STATISTICS 2022-2023

FARM INCOME

FARM PRODUCTION EXPENSES, BY CATEGORY, INDIANA, 2018-2022 [1]

Item	2018	2019	2020	2021	**2022**
			Thousand Dollars		
Total Production Expenses	10,054,519	10,122,177	10,240,976	10,254,324	**12,419,530**
Intermediate Product Expenses					
Farm-origin Expenses	2,462,639	2,734,996	2,658,709	2,294,920	**3,033,180**
Feed Purchases	1,130,000	1,380,000	1,350,000	910,000	**1,550,000**
Livestock and Poultry	392,639	394,996	328,709	384,920	**443,180**
Seed Purchases	940,000	960,000	980,000	1,000,000	**1,040,000**
Manufactured Inputs	2,150,280	1,994,537	2,069,321	2,700,149	**3,457,841**
Pesticide Expenditures	560,000	560,000	580,000	780,000	**970,000**
Fertilizer, Lime, and Soil Conditioner	1,080,000	950,000	1,050,000	1,420,000	**1,810,000**
Fuels and Oils	394,785	381,843	339,497	387,716	**550,180**
Electricity	115,495	102,694	99,824	112,433	**127,661**
Other Intermediate Inputs	1,705,825	1,649,710	1,730,422	1,690,065	**2,185,659**
Labor Expenses					
Cash Expenses	502,668	431,996	464,448	356,877	**566,673**
Contract Labor	16,363	11,094	16,314	32,296	**35,658**
Hired Labor and Employee Compensation	486,304	420,902	448,134	324,581	**531,015**
Non-cash Employee Compensation	17,332	3,004	5,552	8,123	**23,327**
Interest Expenses	687,006	688,094	644,954	650,935	**804,760**
Net Rent, Including Landlord Capital Consumption	979,155	1,121,825	1,156,304	1,188,250	**1,063,330**
Property Taxes and Fees	536,821	506,316	490,948	534,853	**513,955**
Personal Property Taxes	33,351	34,510	33,148	32,607	**25,045**
Motor Vehicle Registration and Licensing Fees	26,821	26,316	25,948	24,853	**28,955**
Real Estate	476,649	445,490	431,852	477,393	**459,955**
Capital Consumption	1,012,793	991,699	1,020,319	830,153	**770,805**

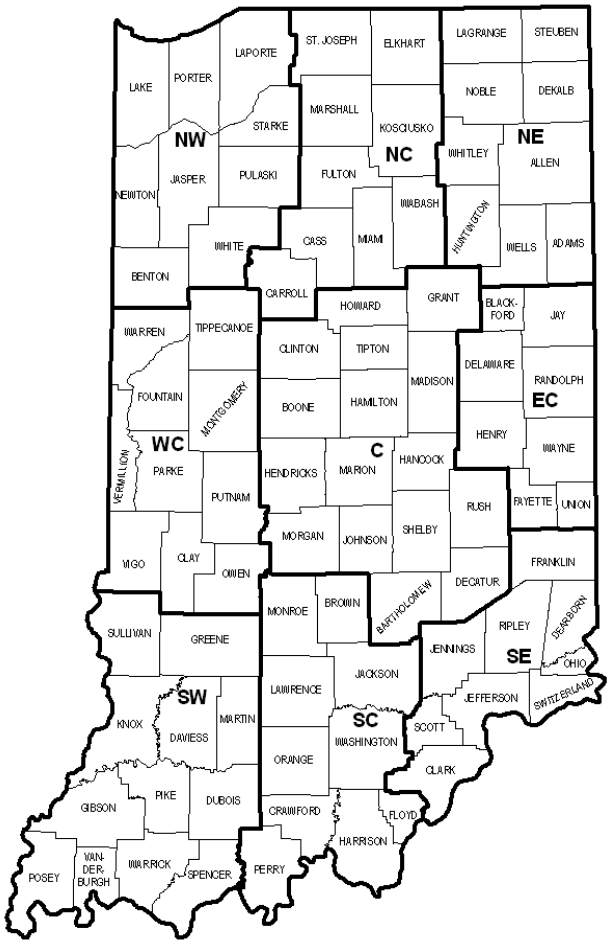
Data as of August 31, 2023
[1] All data includes Operator Dwellings
Source: Economic Research Service

U.S. GOVERNMENT DIRECT FARM PROGRAM PAYMENTS BY PROGRAM, INDIANA, 2018-2022 [1 2 3]

Program	2018	2019	2020	2021	**2022**
			Thousand Dollars		
Fixed Direct Payments	(13)	(19)	(142)	(295)	**0**
Cotton Ginning Cost-Share (CGCS) Program	8	0	0	0	**0**
Average Crop Revenue Election Program (ACRE)	0	0	0	(3)	**0**
Price Loss Coverage (PLC)	7,764	2,453	91,778	7,153	**64**
Agricultural Risk Coverage (ARC)	50,301	4,453	117,924	2,516	**305**
Loan Deficiency Payments	0	(1)	2	(75)	**7**
Dairy Margin Protection Program	3,638	3,787	2,648	15,761	**1,645**
Conservation	87,747	78,290	83,342	76,202	**77,020**
Supplemental and ad hoc disaster assistance	847	37,201	841,103	551,524	**87,585**
USDA pandemic assistance	0	0	666,697	253,818	**6,685**
Non-USDA pandemic assistance	0	0	112,489	210,149	**0**
Other disaster assistance	0	0	61,917	87,558	**80,901**
Market Facilitation Program	365,754	752,586	184,776	455	**13**
Miscellaneous Programs	177	241	192	188	**185**
Total	516,224	878,992	1,321,623	653,426	**166,825**

Data as of August 31, 2023
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 2022 harvest season. In addition to these data are selected items of interest from the U.S. Population Census, 2017 Census of Agriculture, and 2021 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 2017 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

2022 Census Population	6,833,037
2017 Total Land Area (acres)	22,928,355
2017 Number of Farms	56,649
2017 Land in Farms (acres)	14,969,996
2017 Average Size of Farm (acres)	264
2017 Value of Land & Bldgs (avg/acre)	$6,576
2017 Cropland (acres)	12,909,673
2017 Harvested Cropland (acres)	12,345,774
2017 Pastureland, all types (acres)	716,911
2017 Woodland (acres)	1,034,784

2021 Cash Receipts	$14,634,975,000
Crop Receipts	$9,844,958,000
Livestock Receipts	$4,790,017,000
2021 Other Income	$1,231,381,000
Government Payments	$643,600,000
Imputed Income/Rent Received	$587,781,000
2021 Total Income	$15,866,356,000
Less: Production Expenses	$10,937,297,000
Realized Net Income	$4,929,059,000

2022 CROPS	PLTD	HARV	YLD	UNIT	PROD
Corn	5,250,000	5,130,000	190.0	Bu	974,700,000
Soybeans	5,850,000	5,830,000	57.5	Bu	335,225,000
Wheat	290,000	240,000	81.0	Bu	19,440,000
Alfalfa Hay	---	260,000	3.50	Ton	910,000
Other Hay	---	260,000	2.60	Ton	676,000
2017 Popcorn	---	79,222	---	Lbs	352,386,717

LIVESTOCK	NUMBER HEAD
Jan 2023 All Cattle	790,000
Beef Cows	173,000
Milk Cows	187,000
2017 All Hogs	4,004,388
2017 All Sheep	62,085
2017 Chickens	26,354,377
2017 Turkeys	7,350,556

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

SPRING, 2022	SUMMER, 2022	FALL, 2022	WINTER, 2022	SPRING, 2023	SUMMER, 2023
Planting 2022 crops	Care for 2022 crops	Harvest 2022 crops	Prep equipment for storage	Planting 2023 crops	Care for 2023 crops
Sell a portion of the 2021 crops	Sell remainder of the 2021 crops	Sell a portion of the 2022 crops	Sell a portion of the 2022 crops	Sell a portion of the 2022 crops	Sell remainder of the 2022 crops
Paying 1/1/21 Property Taxes		Paying 1/1/21 Property Taxes		Paying 1/1/22 Property Taxes	
Collect all or a portion of 2022 Cash Rent		Collect remainder of 2022 Cash Rent, if any due		Collect all or a portion of 2023 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

STATE OF INDIANA

DEPARTMENT OF LOCAL GOVERNMENT FINANCE

INDIANA GOVERNMENT CENTER NORTH
100 NORTH SENATE AVENUE N1058(B)
INDIANAPOLIS, IN 46204
PHONE (317) 232-3777
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Agricultural Land Base Rates For The Assessment Dates: January 1, 2020 – 2024

Data Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Tax Year										
24 Pay 25									$2,280	
23 Pay 24							$1,900			
22 Pay 23					$1,500					
21 Pay 22			$1,290							
20 Pay 21	$1,280									

The Agricultural Land Base Rate calculation was first established for the 2002 general reassessment and was developed in compliance with the St. John's court case. The statute related to the base rate calculation can be found at Indiana Code 6-1.1-4-4.5(e).

The base rates shown above are made for the January 1 assessment dates of 2020 payable in 2021 through 2024 payable in 2025. They are based on a rolling six-year average of the market value in use. Once each of the market values is determined, the highest value for that six-year period is eliminated and the remaining five years are averaged. The statute then provides instructions to determine the capitalization rate used to calculate the final base rate.

Indiana Code 6-1.1-4-13(a) provides that "land shall be assessed as agricultural land only when it is devoted to agricultural use". This means that a parcel or a portion of the parcel is eligible for this base rate when it qualifies for it. Once the base rate is applied to land classified as agricultural land, the assessor then applies soil productivity factors and influence factors when appropriate.

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 change in market value in use from year to year is based on changes in cash rent, yields, production costs, market prices and interest rates for each of the six years involved.

For example, the change for 2024 pay 2025 was the result of the removal of the 2017 data and the addition of the 2023 data.