Ohio | Department of Taxation

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FINAL VALUES – 2023

2023 CURRENT AGRICULTURAL USE VALUE OF LAND TABLES
EXPLANATION OF THE CALCULATION OF VALUES FOR TAX YEAR 2023

Formula Changes

Am. Sub. H.B. 49, of the 132nd General Assembly, prescribes the factors that must be considered in computing the Current Agricultural Use Value (CAUV). The lower values were phased-in using a two-step process over each county's next two revaluations, beginning with the counties undergoing reappraisal or update in 2017. That phase-in was completed with tax year 2022, and the values for 2023 continue to reflect the full impact of the changes to R.C. 5715.01.

Explanation of the Calculation

The annual current agricultural use values of land are calculated by the capitalization of net income from agricultural products assuming typical management, cropping and land use patterns, and yields for given types of soils. The necessary information is available for approximately 3,500 map units, which are the soils with slopes of 25 percent or less. The information used for a capitalized net income approach is as follows:

YIELD INFORMATION
CROPPING PATTERN
CROP PRICES
NON-LAND PRODUCTION COSTS
CAPITALIZATION RATE

Each of these factors is explained below.

A. YIELD INFORMATION

For each of the soil mapping units, data regarding typical yields of each of the major field crops (corn, soybeans and wheat) were last published in 1984. In order to reflect more accurate yields, those yields of record have been updated annually since 2006. The yields are updated by a factor based on ten years of statewide yield information published by USDA. For 2023, yield data from calendar years 2013-2022 were averaged and divided by the 1984 yield for each crop (Exhibit A). This factor is applied to the 1984 crop yield of record for each soil. The table below shows the average yields used to develop the factor for each of the crops.

		TY 2020	TY 2021	TY 2022	TY 2023
Crop	**1984 Base**	**2010-2019**	**2011-2020**	**2012-2021**	**2013-2022**
Corn	118.0 bu	162.3 bu	163.4 bu	167.4 bu	174.1 bu
Soybeans	36.5 bu	50.2 bu	50.8 bu	51.8 bu	52.9 bu
Wheat	44.0 bu	68.2 bu	69.2 bu	72.0 bu	73.1 bu

B. CROPPING PATTERNS

The cropping pattern for each map unit is assigned a rotation based on the most recent five-year average of crop acres harvested in Ohio: 37.1% corn, 57.4% beans, and 5.5% wheat. This rotation is based on data from 2018-2022 and closely reflects current agricultural production in Ohio. The acres harvested in each year are shown in Exhibit B.

There are two exceptions as follows:

1.) Soil map units with a productivity index of 55 or less are assumed to be most profitably used as pasture; in 2023, a minimum value of $350 is used for these soils. In 2012, the minimum value was increased from $300 to $350 per acre.

2.) A pattern of 50% corn and 50% soybeans is used for organic soils.

C. CROP PRICES

The crop prices used for the field crops are five-year weighted average prices. Crop price data is collected for seven years with the highest and lowest prices eliminated, and the average calculated using the remaining five years' data. The prices are weighted based on the statewide production for each year. For this calculation, the seven-year period is 2016 through 2022. The annual production and price per unit for each of these crops for the period are shown in Exhibit C.

The table shows average weighted prices for this period as well as prices for the three previous years. Each weighted price is reduced by 5% to allow for management.

		TY 2020	TY 2021	TY 2022	TY 2023
Crop	**Unit**	**2013-2019**	**2014-2020**	**2015-2021**	**2016-2022**
Corn	Bushel	$3.63	$3.59	$3.77	$4.21
Soybeans	Bushel	$9.12	$9.10	$9.32	$10.22
Wheat	Bushel	$4.84	$4.76	$4.75	$5.20

D. NON-LAND PRODUCTION COSTS

Data on crop production costs are used to estimate average non-land production costs. The data are taken from the Ohio Crop Production Budgets prepared by The Ohio State University College of Food, Agricultural and Environmental Sciences for 2017-2023, inclusive. Again, data are collected for the seven-year period and the highest and lowest costs for each category are eliminated from the array. Five-year average costs per unit of specific non-land production cost items are computed from the remaining data as shown in Exhibit D.

The budgets are computed for each crop at a base yield equal to the lowest yield reported and for each additional unit above the base yield based on information from the Ohio Crop Budgets (Exhibits D-1 through Exhibit D-3). The five-year average non-land production costs for tax year 2023 are summarized in the following table and compared to the costs used for tax years 2020 and 2022:

NON-LAND PRODUCTION COSTS				
Crop Base Cost	**Base Yld/2023**	**TY 2020**	**TY 2022**	**TY 2023**
Corn	139 bu	$503.44	$491.16	$509.17
Soybeans	43 bu	$331.48	$317.57	$323.41
Wheat	59 bu	$303.88	$269.72	$264.36
Additional Cost per Unit				
Corn	1 bu	$1.38	$1.30	$1.31
Soybeans	1 bu	$0.89	$0.91	$1.03
Wheat	1 bu	$1.33	$1.27	$1.37

E. CAPITALIZATION RATE

Five-year averaging is used to derive the Farm Credit Service interest rate of 5.76% (Exhibit E). Interest rate data is collected for seven years with the highest and lowest rates eliminated, and the average calculated using the remaining five years' data. The interest rate of 7.45% for the 20 percent equity portion is based on the 25-year average of the "total rate of return on farm equity" published by USDA (1997-2021, inclusive). (R.C. 5715.01)

The capitalization rate for typical Ohio farmland is computed by the mortgage-equity method. The statewide average effective tax rate after application of the reduction factors levied on agricultural property is 47.90 mills for tax year 2022 (R.C. 319.301). The 8.6 percent non-business credit rollback authorized by R.C. 319.302 reduces this rate further to 43.78 mills. As a percent of market value, the effective tax rate to be used in this year's capitalization formula is 1.5%, (0.35 x 43.78)/1000.

80% loan x annual debt service of 0.076422*		0.0611
20% equity x equity yield rate of 0.0745	+	0.0149
Subtotal		0.0760
Less: equity buildup for 25 years		
% loan x 100% mortgage paid off x sinking fund factor**		
(0.80) (1.00) (0.014810)		(0.0118)
Subtotal		0.0642
Tax Additur Adjustment	+	0.015323
Capitalization Rate		0.0800 or **8.0%**

*Mortgage constant assumes 25-year loan, 5.76% interest rate.
**Sinking fund factor assumes 25-year term, 7.45% equity rate.

The capitalization rate, including R.E. taxes, is **8.0%** for typical Ohio farmland.

F. CROPLAND VALUES

The current agricultural use cropland value equals the rotational net return per acre of the soil map unit divided by the capitalization rate. However, the minimum value for cropland is $350 per acre for soils with 25 percent slope or less regardless of this calculated amount. In tax year 2012, the minimum value was increased from $300 to $350 per acre.

G. WOODLAND VALUE

1. The woodland value, with slopes of 25% or less, equals the cropland value less the costs to convert the woodland to cropland. The conversion costs used in the formula are as follows:
   a. Clearing - *$1,000 per acre for all soils*

   b. Drainage
      a.) Excessively drained, well drained, moderately well drained, (E, W, MW) - *No Conversion Cost*

      b.) Somewhat poorly drained, poorly drained, very poorly drained, saturated (SWP, P, VP) - *$890* for Tile Drainage*

      c.) For the following soil series, a $440* adjustment for surface drainage was used: Blanchester, Bono, Clermont, Condit, Conneaut, Darien, Fries, Ginat, Ilion, Latty, Lorain, McGuffey, Mill, Miner, Montgomery, Muskego, Paulding, Peoga, Piopolis, Purdy, Roselms, Sheffield, Toledo, Trumbull, Wabash, Wabasha, Warners, and Wayland.

2. The minimum value for woodland with slopes of 25% or less is $230.

* Due to the low number of survey responses for this expense category The Ohio State University did not publish an updated cost for this item. After consultation with the Department of Agricultural, Environmental, and Development Economics it was determined that the best available source for this cost was the last published number, which was from Ohio Farm Custom Rates in 2020, and it has been retained in the 2023 calculation.

H. PASTURELAND VALUE

Where soil map units listed in these tables or comparable soils are used for permanent pasture, the land should be valued as cropland.

I. MINIMUM VALUES

Slopes of 25% or less:

Cropland & pasture	$350
Woodland	$230

Slopes greater than 25%:

Woodland & pasture	$230

J. CONSERVATION LAND

Farmland in a federal land retirement or conservation program is eligible for CAUV. Additionally, land used for conservation practices is eligible if it comprises 25% or less of the landowner's total CAUV land. As defined by R.C. 5713.30(E), conservation practices are farm management practices used to abate soil erosion as required in the management of the farming operation, including the installation, construction, development, planting, or use of grass waterways, terraces, diversions, filter strips, field borders, windbreaks, riparian buffers, wetlands, ponds, and cover crops for those purposes. The lowest CAUV value of all soil types is applied to farmland used for conservation practices or enrolled in a federal land retirement or conservation program under an agreement with an agency of the federal government. The land must be enrolled as of the first day of January of the applicable year as detailed on the initial or renewal application.

Exhibit A - Average Crop Yields by Year in Ohio

Year	Corn	Soybeans	Wheat
1984	**118**	**36.5**	**44**
1985	127	41.5	62
1986	128	40.5	46
1987	120	37	58
1988	85	27	50
1989	117	31.5	51
1990	121	39	60
1991	96	36	49
1992	143	40	53
1993	110	38	52
1994	139	43.5	58
1995	121	38	61
1996	111	35	39
1997	134	44	63
1998	141	44	64
1999	126	36	70
2000	147	42	72
2001	138	41	67
2002	89	32	62
2003	156	38.5	68
2004	158	47	62
2005	143	45	71
2006	159	47	68
2007	150	47	61
2008	131	36	67
2009	171	49	71
2010	160	48	61
2011	153	48	57
2012	120	45	68
2013	174	49.5	70
2014	176	52.5	74
2015	153	50	67
2016	159	54.5	80
2017	177	49.5	74
2018	187	56	75
2019	164	49	56
2020	171	55	71
2021	193	57	85
2022	187	55.5	79
Average 2013-2022	174.1	52.9	73.1
1984 Base	**118**	**36.5**	**44**
Average/1984 base	1.475424	1.449315	1.661364
% Increase	47.54%	44.93%	66.14%

Source: United States Department of Agriculture, National Agricultural Statistics Service, Crop Production 2022 Summary, January 2023. Corn Area Planted for All Purposes and Harvested for Grain, Yield, and Production - States and United States: 2020-2022; Winter Wheat Area Planted and Harvested, Yield, and Production - States and United States: 2020-2022; Soybeans for Beans Area Planted and Harvested, Yield, and Production - States and United States: 2020-2022. 2/27/2022

Exhibit B - Acres Harvested, 2018-2022
TY 2023 Crop Rotation

Year	Corn	% of Total	Soybeans	% of Total	Wheat	% of Total	Corn, Beans & Wheat Totals
2018	3,300,000	**37.6%**	5,020,000	**57.2%**	450,000	**5.1%**	8,770,000
2019	2,570,000	**35.6%**	4,270,000	**59.1%**	385,000	**5.3%**	7,225,000
2020	3,300,000	**37.9%**	4,920,000	**56.5%**	490,000	**5.6%**	8,710,000
2021	3,340,000	**38.2%**	4,880,000	**55.9%**	515,000	**5.9%**	8,735,000
2022	3,180,000	**36.4%**	5,080,000	**58.2%**	465,000	**5.3%**	8,725,000
Five Year Average	3,138,000	37.1%	4,834,000	57.4%	461,000	5.5%	8,433,000

Source: United States Department of Agriculture, National Agricultural Statistics Service, Crop Production 2022 Summary, January 2023. Corn Area Planted for All Purposes and Harvested for Grain, Yield, and Production - States and United States: 2020-2022; Winter Wheat Area Planted and Harvested, Yield, and Production - States and United States: 2020-2022; Soybeans for Beans Area Planted and Harvested, Yield, and Production - States and United States: 2020-2022. 2/27/2023.

Exhibit C, FIVE YEAR AVERAGE CROP PRICES, TAX YEAR 2023

CORN	Year	Production (1,000 bu)	Price	Value (1,000 dollars)
	2016	~~524,700~~	~~$ 3.61~~	~~1,894,167~~
	2017	557,550	$ 3.61	2,012,756
	2018	617,100	$ 3.74	2,307,954
	2019	421,480	$ 3.91	1,647,987
	2020	564,300	$ 4.69	2,646,567
	2021	644,620	$ 5.92	3,816,150
	2022	~~594,660~~	~~$ 6.45~~	~~3,835,557~~
Totals		2,805,050		12,431,414
Weighted Avg. Price			$ 4.43	
After Management Allowance of 5%			**$ 4.21**	

SOYBEANS	Year	Production (1,000 bu)	Price	Value (1,000 dollars)
	2016	263,780	$ 9.66	2,548,115
	2017	251,955	$ 9.62	2,423,807
	2018	~~281,120~~	~~$ 8.69~~	~~2,442,933~~
	2019	209,230	$ 9.04	1,891,439
	2020	270,600	$ 11.30	3,057,780
	2021	278,160	$ 13.60	3,782,976
	2022	~~281,940~~	~~$ 14.40~~	~~4,059,936~~
Totals		1,273,725		13,704,117
Weighted Avg. Price			$ 10.76	
After Management Allowance of 5%			**$ 10.22**	

(Winter) WHEAT	Year	Production (1,000 bu)	Price	Value (1,000 dollars)
	2016	~~44,800~~	~~$ 4.25~~	~~190,400~~
	2017	34,040	$ 4.90	166,796
	2018	33,750	$ 5.08	171,450
	2019	21,560	$ 5.22	112,543
	2020	34,790	$ 5.27	183,343
	2021	43,775	$ 6.49	284,100
	2022	~~36,735~~	~~$ 7.95~~	~~292,043~~
Totals		167,915		918,232
Weighted Avg. Price			$ 5.47	
After Management Allowance of 5%			**$ 5.20**	

Source: United States Department of Agriculture, National Agricultural Statistics Service, Crop Production 2022 Summary, January 2023. Corn Area Planted for All Purposes and Harvested for Grain, Yield, and Production - States and United States: 2020-2022; Winter Wheat Area Planted and Harvested, Yield, and Production - States and United States: 2020-2022; Soybeans for Beans Area Planted and Harvested, Yield, and Production - States and United States: 2020-2022. United States Department of Agriculture, National Agricultural Statistics Service, Crop Values 2022 Summary, February 2023. Corn for Grain Price per Bushel and Value of Production- States and United States: 2020-2022; Winter Wheat Price per Bushel and Value of Production- States and United States: 2020-2022; Soybeans for Beans Price Per Bushel and Value of Production - States and United States: 2018-2020; United States: 2020-2022. 2/27/2022.

Exhibit D, Production Costs, Tax Year 2023
Determination of Five Year Average Costs for the Projected Crop Budgets

ITEM VARIABLE COSTS		Units	2017	2018	2019	2020	2021	2022	2023	MAXIMUM	MINIMUM	5 Year Avg.
Seed	**CORN**	1000k	$3.44	$3.50	$3.38	~~$3.25~~	$3.25	$3.44	~~$3.60~~	$3.60	$3.25	$3.40
	SOYBEANS	1000s	~~$0.37~~	$0.43	$0.43	$0.39	$0.39	$0.41	~~$0.43~~	$0.43	$0.37	$0.41
	WHEAT	1000s	~~$0.03~~	$0.03	$0.03	$0.03	$0.03	$0.03	~~$0.03~~	$0.03	$0.03	$0.03
Fertilizer	**N Corn**		$0.34	$0.31	$0.37	~~$0.30~~	$0.38	~~$0.91~~	$0.55	$0.91	$0.30	$0.39
	N Wheat		~~$0.36~~	$0.41	$0.45	$0.43	$0.48	~~$1.07~~	$0.71	$1.07	$0.36	$0.50
	P2O5, Corn/Soybeans		$0.44	$0.47	$0.50	~~$0.38~~	$0.59	~~$0.91~~	$0.77	$0.91	$0.38	$0.55
	P2O5 Wheat		$0.43	$0.44	$0.52	~~$0.39~~	$0.43	$0.83	~~$0.96~~	$0.96	$0.39	$0.53
	K2O, Corn/Soybeans		~~$0.26~~	$0.28	$0.32	$0.28	$0.32	~~$0.69~~	$0.48	$0.69	$0.26	$0.34
	K2O Wheat		~~$0.24~~	$0.26	$0.30	$0.28	$0.26	$0.60	~~$0.73~~	$0.73	$0.24	$0.34
	LIME		~~$25.00~~	$25.00	$25.00	$25.00	$25.00	$25.00	~~$25.00~~	$25.00	$25.00	$25.00
Chemicals	**CORN**		~~$60.42~~	~~$43.93~~	$46.22	$46.22	$46.22	$51.03	$50.00	$60.42	$43.93	~~$47.94~~
	SOYBEANS		$45.70	~~$39.30~~	$41.99	$41.99	$47.76	~~$78.07~~	$55.40	$78.07	$39.30	~~$46.57~~
	WHEAT		$13.25	$13.25	~~$14.65~~	$14.65	$14.65	$13.18	~~$13.18~~	$14.65	$13.18	$13.80
Fuel, Oil, Grease	**CORN**	145.4	~~$12.66~~	$13.64	$13.56	$13.75	$13.75	$26.13	~~$26.35~~	$26.35	$12.66	$16.17
		181.8	~~$12.66~~	$13.64	$13.56	$13.75	$13.75	$26.13	~~$26.35~~	$26.35	$12.66	$16.17
		218.2	~~$12.66~~	$13.64	$13.56	$13.75	$13.75	$26.13	~~$26.35~~	$26.35	$12.66	$16.17
	SOYBEANS	45.2	~~$7.18~~	$12.57	$11.58	$11.58	$11.58	~~$22.00~~	$20.84	$22.00	$7.18	$13.63
		56.5	~~$7.18~~	$12.57	$11.58	$11.58	$11.58	~~$22.00~~	$20.84	$22.00	$7.18	$13.63
		67.8	~~$7.18~~	$12.57	$11.58	$11.58	$11.58	~~$22.00~~	$20.84	$22.00	$7.18	$13.63

Exhibit D, Production Costs, Tax Year 2023
Determination of Five Year Average Costs for the Projected Crop Budgets

ITEM VARIABLE COSTS		Units	2017	2018	2019	2020	2021	2022	2023	MAXIMUM	MINIMUM	5 Year Avg.
	WHEAT	60.3	$9.90	$7.62	$12.05	$8.33	~~$7.50~~	~~$15.83~~	$15.00	$15.83	$7.50	$10.58
		75.4	$9.90	$7.62	$12.05	$8.33	~~$7.50~~	~~$15.83~~	$15.00	$15.83	$7.50	$10.58
		90.5	$9.90	$7.62	$12.05	$8.33	~~$7.50~~	~~$15.83~~	$15.00	$15.83	$7.50	$10.58
Repairs	CORN	145.4	$26.78	~~$19.91~~	$20.48	$25.54	$28.12	$28.12	~~$31.32~~	$31.32	$19.91	$25.81
		181.8	$26.78	~~$19.91~~	$20.48	$25.54	$28.12	$28.12	~~$31.32~~	$31.32	$19.91	$25.81
		218.2	$26.78	~~$19.91~~	$20.48	$25.54	$28.12	$28.12	~~$31.32~~	$31.32	$19.91	$25.81
	SOYBEANS	45.2	$20.61	~~$17.22~~	$17.57	$21.60	$23.98	$23.98	~~$26.14~~	$26.14	$17.22	$21.55
		56.5	$20.61	~~$17.22~~	$17.57	$21.60	$23.98	$23.98	~~$26.14~~	$26.14	$17.22	$21.55
		67.8	$20.61	~~$17.22~~	$17.57	$21.60	$23.98	$23.98	~~$26.14~~	$26.14	$17.22	$21.55
	WHEAT	60.3	~~$20.32~~	$16.33	$16.72	~~$13.81~~	$15.47	$15.47	$18.19	$20.32	$13.81	$16.44
		75.4	~~$20.32~~	$16.33	$16.72	~~$13.81~~	$15.47	$15.47	$18.19	$20.32	$13.81	$16.44
		90.5	~~$20.32~~	$16.33	$16.72	~~$13.81~~	$15.47	$15.47	$18.19	$20.32	$13.81	$16.44
Crop Insurance	CORN	145.4	$13.00	$13.00	~~$12.00~~	$14.70	$19.00	~~$27.00~~	$23.00	$27.00	$12.00	$16.54
		181.8	~~$14.00~~	$14.00	$14.00	$16.70	$21.00	$30.00	~~$30.00~~	$30.00	$14.00	$19.14
		218.2	$16.00	~~$14.50~~	$15.00	$18.70	$26.00	~~$40.00~~	$35.00	$40.00	$14.50	$22.14
	SOYBEANS	45.2	$12.00	$9.50	~~$7.00~~	$8.60	$16.00	~~$20.00~~	$16.00	$20.00	$7.00	$12.42
		56.5	$12.00	$10.00	~~$7.50~~	$10.60	$17.00	~~$24.00~~	$19.00	$24.00	$7.50	$13.72
		67.8	$13.00	$10.50	~~$8.00~~	$12.60	$20.00	~~$29.00~~	$22.00	$29.00	$8.00	$15.62
	WHEAT	60.3	~~$13.00~~	~~$6.00~~	$6.00	$6.00	$9.00	$12.00	$10.00	$13.00	$6.00	$8.60
		75.4	$13.00	~~$6.50~~	$6.50	$6.50	$10.00	~~$15.00~~	$11.50	$15.00	$6.50	$9.50
		90.5	$13.00	~~$7.00~~	$7.00	$7.00	$11.00	~~$18.00~~	$13.00	$18.00	$7.00	$10.20

Exhibit D, Production Costs, Tax Year 2023
Determination of Five Year Average Costs for the Projected Crop Budgets

ITEM VARIABLE COSTS		Units	2017	2018	2019	2020	2021	2022	2023	MAXIMUM	MINIMUM	5 Year Avg.
Variable Miscellaneous	CORN	145.4	$5.00	~~$4.80~~	$5.10	$5.10	$5.50	$5.69	~~$5.81~~	$5.81	$4.80	$5.28
		181.8	$5.00	~~$4.80~~	$5.10	$5.10	$5.50	$5.69	~~$5.81~~	$5.81	$4.80	$5.28
		218.2	$5.00	~~$4.80~~	$5.10	$5.10	$5.50	$5.69	~~$5.81~~	$5.81	$4.80	$5.28
	SOYBEANS	45.2	$3.50	~~$3.25~~	$3.40	$3.40	$3.75	$3.87	~~$4.10~~	$4.10	$3.25	$3.58
		56.5	$3.50	~~$3.25~~	$3.40	$3.40	$3.75	$3.87	~~$4.10~~	$4.10	$3.25	$3.58
		67.8	$3.50	~~$3.25~~	$3.40	$3.40	$3.75	$3.87	~~$4.10~~	$4.10	$3.25	$3.58
	WHEAT	60.3	~~$13.00~~	~~$3.00~~	$3.00	$3.00	$3.50	$4.46	$5.58	$13.00	$3.00	$3.91
		75.4	~~$13.00~~	~~$3.00~~	$3.00	$3.00	$3.50	$4.46	$5.58	$13.00	$3.00	$3.91
		90.5	~~$13.00~~	~~$3.00~~	$3.00	$3.00	$3.50	$4.46	$5.58	$13.00	$3.00	$3.91
Drying: Fuel & Electric	CORN		~~$0.11~~	$0.06	$0.04	$0.04	$0.04	$0.05	~~$0.04~~	$0.11	$0.04	$0.05
Hauling Farm to Market	CORN	181.8	~~$0.02~~	$0.18	$0.17	$0.17	$0.16	$0.19	~~$0.29~~	$0.29	$0.02	$0.17
	SOYBEANS	56.5	~~$0.02~~	$0.18	$0.17	$0.17	$0.16	$0.19	~~$0.29~~	$0.29	$0.02	$0.17
	WHEAT	75.4	~~$0.02~~	$0.18	$0.17	$0.17	$0.16	$0.19	~~$0.29~~	$0.29	$0.02	$0.17
Interest - variable costs			5.00%	5.00%	5.50%	5.00%	~~4.00%~~	5.00%	~~7.50%~~	7.50%	4.00%	5.10%
FIXED COSTS												
Labor Charge	CORN		~~$45.00~~	~~$37.50~~	$37.50	$37.50	$38.25	$40.50	$42.75	$45.00	$37.50	$39.30
	SOYBEANS		~~$30.00~~	$22.50	$22.50	$22.50	~~$18.70~~	$19.80	$20.90	$30.00	$18.70	$21.64
	WHEAT		~~$22.50~~	$22.50	$22.50	$22.50	$22.95	$24.30	~~$25.65~~	$25.65	$22.50	$22.95
Machinery & Equipment	CORN		~~$130.45~~	~~$84.61~~	$86.07	$95.22	$99.87	$99.87	$110.12	$130.45	$84.61	$98.23
	SOYBEANS		~~$107.89~~	~~$56.43~~	$57.90	$65.50	$69.16	$62.16	$75.87	$107.89	$56.43	$66.12
	WHEAT		~~$125.86~~	$64.49	$65.28	~~$47.29~~	$50.57	$50.57	$57.86	$125.86	$47.29	$57.75

Exhibit D, Production Costs, Tax Year 2023
Determination of Five Year Average Costs for the Projected Crop Budgets

ITEM VARIABLE COSTS		Units	2017	2018	2019	2020	2021	2022	2023	MAXIMUM	MINIMUM	5 Year Avg.
Fixed Miscellaneous	**CORN**	145.4	$22.00	$23.10	$22.80	~~$20.50~~	$20.50	$21.17	~~$23.49~~	$23.49	$20.50	$21.91
		181.8	$22.00	$23.10	$22.80	~~$20.50~~	$20.50	$21.17	~~$23.49~~	$23.49	$20.50	$21.91
		218.2	$22.00	$23.10	$22.80	~~$20.50~~	$20.50	$21.17	~~$23.49~~	$23.49	$20.50	$21.91
	SOYBEANS	45.2	$14.50	$14.90	$14.70	~~$13.40~~	$13.70	$14.06	~~$15.21~~	$15.21	$13.40	$14.37
		56.5	$14.50	$14.90	$14.70	~~$13.40~~	$13.70	$14.06	~~$15.21~~	$15.21	$13.40	$14.37
		67.8	$14.50	$14.90	$14.70	~~$13.40~~	$13.70	$14.06	~~$15.21~~	$15.21	$13.40	$14.37
	WHEAT	60.3	$13.00	$12.75	$12.10	~~$10.70~~	$12.70	$12.99	~~$15.19~~	$15.19	$10.70	$12.71
		75.4	$13.00	$12.75	$12.10	~~$10.70~~	$12.70	$12.99	~~$15.19~~	$15.19	$10.70	$12.71
		90.5	$13.00	$12.75	$12.10	~~$10.70~~	$12.70	$12.99	~~$15.19~~	$15.19	$10.70	$12.71

Source: The Ohio State University; College of Food, Agricultural, and Environmental Sciences; Crop production budgets. Updated with 2023 data as of 5/15/2023. *https://farmoffice.osu.edu/farm-management/enterprise-budgets#2022*

2023 CORN BUDGET (Final)

Conservation Tillage

VARIABLE COSTS	Inputs - 5 Yr. Olympic Average				5 YR. AVG.	Costs per Acre	
	UNITS		BASE 139 BUSHEL	@ ADD. BUSHEL	COST Exhibit D	BASE 139 BUSHEL	@ ADD. BUSHEL
SEED	**Kernels (1000s)**		28	0.12	$3.40	$95.20	$0.41
FERTILIZER							
	N	LB.	147.41	0.99	$0.39	$57.49	$0.39
	P2O5	LB.	49.23	0.35	$0.55	$27.08	$0.19
	K2O	LB.	29.79	0.21	$0.34	$10.13	$0.07
	LIME	TON	0.25	0.00	$25.00	$6.25	$0.00
CHEMICALS					$47.94	$47.94	$0.00
FUEL, OIL, GREASE					$16.17	$16.17	$0.00
REPAIRS					$25.81	$25.81	$0.00
CROP INSURANCE					$19.14	$19.14	$0.00
VARIABLE MISCELLANEOUS					$5.28	$5.28	$0.00
DRYING: FUEL & ELECTRIC ONLY					$0.05	$6.95	$0.05
HAULING/TRUCKING					$0.17	$23.63	$0.17
	Rate	Months	(Rate/12)*Months				
INTEREST on OPER. CAP. *	5.10%	7	3.0%			$8.67	$0.03
TOTAL VARIABLE COSTS						***$349.73***	***$1.31***
FIXED COSTS							
LABOR CHARGE					$39.30	$39.30	$0.00
MACHINERY & EQUIPMENT CHARGE					$98.23	$98.23	$0.00
MISCELLANEOUS					$21.91	$21.91	$0.00
TOTAL FIXED COSTS						***$159.44***	***$0.00***
TOTAL COSTS						***$509.17***	***$1.31***

*Interest on all variable costs except hauling and crop insurance.

Source: The Ohio State University; College of Food, Agricultural, and Environmental Sciences; Crop production budgets. Updated with 2023 data as of 5/15/2023. https://farmoffice.osu.edu/farm-management/enterprise-budgets#2022

DTE 2023

2023 SOYBEAN BUDGET (Final)

No-Tillage Practices

VARIABLE COSTS		Inputs - 5 Yr. Olympic Average UNITS	BASE 43 BUSHEL	@ ADD. BUSHEL	5 YR. AVG. COST Exhibit D	Costs per Acre BASE 43 BUSHEL	@ ADD. BUSHEL
SEED		**Seeds (1000s)**	164.0	0	$0.41	$67.24	$0.00
FERTILIZER							
	N	LB.	0.00	0.00	$0.00	$0.00	$0.00
	P2O5	LB.	34.27	0.80	$0.55	$18.99	$0.44
	K2O	LB.	51.48	1.18	$0.34	$17.30	$0.40
	LIME	TON	0.25	0.00	$25.00	$6.25	$0.00
CHEMICALS					$46.57	$46.57	$0.00
FUEL, OIL, GREASE					$13.63	$13.63	$0.00
REPAIRS					$21.55	$21.55	$0.00
CROP INSURANCE (Middle yield)					$13.72	$13.72	$0.00
VARIABLE MISCELLANEOUS					$3.58	$3.58	$0.00
HAULING/TRUCKING					$0.17	$7.48	$0.17
		Rate	Months	(Rate/12)*Months			
INTEREST on OPER. CAP. *		5.10%	6	2.6%		$4.98	$0.02
TOTAL VARIABLE COSTS						***$221.28***	***$1.03***
FIXED COSTS							
LABOR CHARGE					$21.64	$21.64	$0.00
MACHINERY & EQUIPMENT CHARGE					$66.12	$66.12	$0.00
MISCELLANEOUS					$14.37	$14.37	$0.00
TOTAL FIXED COSTS						***$102.13***	***$0.00***
TOTAL COSTS						***$323.41***	***$1.03***

*Interest on all variable costs except hauling and crop insurance.

Source: The Ohio State University; College of Food, Agricultural, and Environmental Sciences; Crop production budgets. Updated with 2023 data as of 5/15/2023. https://farmoffice.osu.edu/farm-management/enterprise-budgets#2022

DTE 2023

2023 WHEAT BUDGET (Final)

Conservation Tillage

VARIABLE COSTS		Inputs - 5 Yr. Olympic Average			5 YR. AVG. COST Exhibit D	Costs per Acre	
		UNITS	BASE 59 BUSHEL	@ ADD. BUSHEL		BASE 59 BUSHEL	@ ADD. BUSHEL
SEED		**Seeds (1000s)**	1,400	0	$0.03	$42.00	$0.00
FERTILIZER							
	N	LB.	59.44	1.57	$0.50	$29.48	$0.78
	P2O5	LB.	30.86	0.52	$0.53	$16.36	$0.28
	K2O	LB.	20.01	0.27	$0.34	$6.80	$0.09
	LIME	TON	0.25	0	$25.00	$6.25	$0.00
CHEMICALS					$13.80	$13.80	$0.00
FUEL, OIL, GREASE					$10.58	$10.58	$0.00
REPAIRS					$16.44	$16.44	$0.00
CROP INSURANCE (MIDDLE YIELD)					$9.50	$9.50	$0.00
VARIABLE MISCELLANEOUS					$3.91	$3.91	$0.00
HAULING/TRUCKING					$0.17	$10.27	$0.17
		Rate	Months	(Rate/12)*Months			
INTEREST on OPER. CAP.*		5.10%	9	3.8%		$5.57	$0.04
TOTAL VARIABLE COSTS						***$170.95***	***$1.37***
FIXED COSTS							
LABOR CHARGE					$22.95	$22.95	$0.00
MACHINERY & EQUIPMENT CHARGE					$57.75	$57.75	$0.00
MISCELLANEOUS					$12.71	$12.71	$0.00
TOTAL FIXED COSTS						***$93.41***	***$0.00***
TOTAL COSTS						***$264.36***	***$1.37***

*Interest on all variable costs except hauling and crop insurance.

Source: The Ohio State University; College of Food, Agricultural, and Environmental Sciences; Crop production budgets. Updated with 2023 data as of 5/15/2023. https://farmoffice.osu.edu/farm-management/enterprise-budgets#2022

DTE 2023

Exhibit E: INTEREST RATES - CAPITALIZATION RATE

INTEREST RATE*	
Year	
2017	5.65
2018	6.04
2019	6.00
2020	4.90
2021	~~4.27~~
2022	6.19
2023	~~7.86~~
Average	**5.76**

USED IN CALCULATION 2017-2023	
TAX YEAR	**CAP RATE**
2017	8.0%
2018	8.0%
2019	8.0%
2020	7.9%
2021	7.8%
2022	7.8%
2023	8.0%

EQUITY RATE**	
Year	
2021	13.87
2020	4.72
2019	2.54
2018	1.76
2017	4.47
2016	1.71
2015	-0.78
2014	8.08
2013	8.37
2012	17.04
2011	11.04
2010	12.46
2009	-0.71
2008	4.30
2007	4.60
2006	13.30
2005	18.18
2004	17.32
2003	8.17
2002	-0.57
2001	6.13
2000	8.74
1999	8.12
1998	6.12
1997	7.36
Average	**7.45**

* Fixed multi-flex rate for a 25-year term on a loan $75,000 and over, Farm Credit Services.

**Equity rate is the USDA rate of return on farm equity averaged for most recent 25 years.

USDA Farm sector financial ratios, March 6, 2023

2023 CAUV SAMPLE CALCULATION

SOIL:	**Millgrove, Silt Loam**
SLOPE:	**0-2**
EROSION:	**Slight**
DRAINAGE:	**Very poorly**
PROD. INDEX:	**100**

	CORN	BEANS	WHEAT
PI DAT yield/acre (1984)	144	52	64
% increased yield	1.48	1.45	1.66
adjusted yield/acre	212	75	106
X Crop Price/Unit	$4.21	$10.22	$5.20
= GROSS INCOME / ACRE	$892.52	$766.50	$551.20
YIELD / ACRE	212	75	106
BASE YIELD	139	43	59
= YIELD ABOVE BASE	73	32	47
X ADDED UNIT COST	$1.31	$1.03	$1.37
ADDED UNIT COST / ACRE	$95.63	$32.96	$64.39
BASE YIELD COST	$509.17	$323.41	$264.36
= TOTAL NON-LAND PROD. COSTS	$604.80	$356.37	$328.75
NET RETURN / ACRE	$287.72	$410.13	$222.45
X CROPPING PATTERN	37.10%	57.40%	5.50%
= ROTATIONAL NET RETURN / ACRE	$106.74	$235.41	$12.23
TOTAL ROTATIONAL NET RETURN	$354.39		
BASE CAP RATE	8.00%		
VALUE	$4,429.92	*Rounded*	**$4,430**

5/24/2023

2020 CAUV SAMPLE CALCULATION

SOIL:	**Millgrove, Silt Loam**
SLOPE:	**0-2**
EROSION:	**Slight**
DRAINAGE:	**Very poorly**
PROD. INDEX:	**100**

	CORN	BEANS	WHEAT
PI DAT yield/acre (1984)	144	52	64
% increased yield	1.375424	1.375342	1.55
adjusted yield/acre	198	72	99
X Crop Price/Unit	$3.63	$9.12	$4.84
= GROSS INCOME / ACRE	$718.74	$656.64	$479.16
YIELD / ACRE	198	72	99
BASE YIELD	132	40	58
= YIELD ABOVE BASE	66	32	41
X ADDED UNIT COST	$1.38	$0.89	$1.33
ADDED UNIT COST / ACRE	$91.08	$28.48	$54.53
BASE YIELD COST	$503.44	$331.48	$303.88
= TOTAL NON-LAND PROD. COSTS	$594.52	$359.96	$358.41
NET RETURN / ACRE	$124.22	$296.68	$120.75
X CROPPING PATTERN	0.372	0.572	0.056
= ROTATIONAL NET RETURN / ACRE	$46.21	$169.70	$6.76
TOTAL ROTATIONAL NET RETURN	$222.67		
BASE CAP RATE	0.079		
UNADJUSTED VALUE	$2,818.64	SAY	**$2,820**

6/8/2020

2023 CAUV SAMPLE CALCULATION

SOIL:	**Miami Silt Loam**
SLOPE:	**2-6**
EROSION:	**Slight**
DRAINAGE:	**Well**
PROD. INDEX:	**76**

	CORN	BEANS	WHEAT
PI DAT yield/acre (1984)	108	38	50
% increased yield	1.48	1.45	1.66
adjusted yield/acre	159	55	83
X Crop Price/Unit	$4.21	$10.22	$5.20
= GROSS INCOME / ACRE	$669.39	$562.10	$431.60
YIELD / ACRE	159	55	83
BASE YIELD	139	43	59
= YIELD ABOVE BASE	20	12	24
X ADDED UNIT COST	$1.31	$1.03	$1.37
ADDED UNIT COST / ACRE	$26.20	$12.36	$32.88
BASE YIELD COST	$509.17	$323.41	$264.36
= TOTAL NON-LAND PROD. COSTS	$535.37	$335.77	$297.24
NET RETURN / ACRE	$134.02	$226.33	$134.36
X CROPPING PATTERN	37.1%	57.4%	5.5%
= ROTATIONAL NET RETURN / ACRE	$49.72	$129.91	$7.39
TOTAL ROTATIONAL NET RETURN	$187.02		
BASE CAP RATE	8.00%		
VALUE	$2,337.81	*Rounded*	**$2,340**

5/24/2023

2020 CAUV SAMPLE CALCULATION

SOIL:	**Miami Silt Loam**
SLOPE:	**2-6**
EROSION:	**Slight**
DRAINAGE:	**Well**
PROD. INDEX:	**76**

	CORN	BEANS	WHEAT
PI DAT yield/acre (1984)	108	38	50
% increased yield	1.375424	1.375342	1.55
adjusted yield/acre	149	52	78
X Crop Price/Unit	$3.63	$9.12	$4.84
= GROSS INCOME / ACRE	$540.87	$474.24	$377.52
YIELD / ACRE	149	52	78
BASE YIELD	132	40	58
= YIELD ABOVE BASE	17	12	20
X ADDED UNIT COST	$1.38	$0.89	$1.33
ADDED UNIT COST / ACRE	$23.46	$10.68	$26.60
BASE YIELD COST	$503.44	$331.48	$303.88
= TOTAL NON-LAND PROD. COSTS	$526.90	$342.16	$330.48
NET RETURN / ACRE	$13.97	$132.08	$47.04
X CROPPING PATTERN	0.372	0.572	0.056
= ROTATIONAL NET RETURN / ACRE	$5.20	$75.55	$2.63
TOTAL ROTATIONAL NET RETURN	$83.38		
BASE CAP RATE	0.079		
UNADJUSTED VALUE	$1,055.45	SAY	**$1,060**

6/8/2020

5/23/2023

TY 2023 Proposed Final Values

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	602	$0	$82	$1	$350	$350	$350
50-59	749	$0	$140	$47	$350	$1,750	$607
60-69	1,114	$0	$206	$119	$350	$2,580	$1,502
70-79	800	$108	$275	$189	$1,350	$3,440	$2,364
80-89	211	$189	$325	$259	$2,370	$4,060	$3,244
90-99	35	$288	$354	$309	$3,600	$4,430	$3,871
100+	6	$354	$354	$354	$4,430	$4,430	$4,430
ALL	3,517	$0	$354	$110	$350	$4,430	**$1,443**

6/11/2020

TY 2020 Final Values

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	601	$0	$0	$0	$350	$350	$350
50-59	749	$0	$45	$2	$350	$570	$351
60-69	1,114	$0	$99	$31	$350	$1,260	$488
70-79	798	$19	$156	$84	$350	$1,970	$1,073
80-89	211	$84	$193	$140	$1,060	$2,440	$1,783
90-99	35	$164	$222	$182	$2,070	$2,810	$2,303
100+	6	$223	$223	$223	$2,820	$2,820	$2,820
All Regions	3514	$0	$223	$40	$350	$2,820	**$668**

5/23/2023

TY 2023 Proposed Final Values

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	602	$0	$82	$1	$350	$350	$350
50-59	749	$0	$140	$47	$350	$1,750	$607
60-69	1,114	$0	$206	$119	$350	$2,580	$1,502
70-79	800	$108	$275	$189	$1,350	$3,440	$2,364
80-89	211	$189	$325	$259	$2,370	$4,060	$3,244
90-99	35	$288	$354	$309	$3,600	$4,430	$3,871
100+	6	$354	$354	$354	$4,430	$4,430	$4,430
ALL	3,517	$0	$354	$110	$350	$4,430	**$1,443**

6/20/2022

TY 2022 Final Values

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	602	$0	$31	$0	$350	$350	$350
50-59	749	$0	$89	$17	$350	$1,140	$409
60-69	1,114	$0	$147	$70	$350	$1,880	$915
70-79	800	$63	$206	$130	$810	$2,640	$1,672
80-89	211	$127	$251	$190	$1,630	$3,210	$2,439
90-99	35	$211	$277	$234	$2,710	$3,550	$3,007
100+	6	$277	$277	$277	$3,550	$3,550	$3,550
ALL	3,517	$0	$277	$70	$350	$3,550	**$999**

Average CAUV Values by Year, 2005-2023																			
Productivity Index	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Proposed Final 2023**
0-49	100	108	100	100	176	200	300	350	350	350	350	350	350	350	350	350	350	350	350
50-59	106	134	100	100	200	214	328	362	516	700	518	466	430	400	378	351	358	409	607
60-69	101	125	123	188	435	436	632	610	1218	1778	1371	1235	1061	896	731	488	598	915	1502
70-79	124	241	283	431	746	845	1126	1147	1958	2728	2347	2255	1969	1723	1469	1073	1253	1672	2364
80-89	293	465	521	708	1059	1278	1641	1717	2743	3718	3354	3302	2909	2586	2270	1783	1969	2439	3244
90-99	492	675	747	973	1368	1601	2017	2128	3310	4428	4104	4074	3602	3226	2863	2303	2512	3007	3871
100+	650	880	970	1200	1620	1900	2380	2490	3780	5030	4770	4750	4205	3810	3420	2820	2990	3550	4430
Average	123	177	181	249	459	505	700	719	1205	1668	1388	1310	1153	1015	876	668	759	999	1443
No. of Soils	3358	3482	3510	3511	3511	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514	3517	3517	3517

Average CAUV Values by Reappraisal/UpdateYear																			
Productivity Index			**2008**			**2011**			**2014**			**2017**			**2020**				**Proposed Final 2023**
0-49			100			300			350			350			350				350
50-59			100			328			700			430			351				607
60-69			188			632			1778			1061			488				1502
70-79			431			1126			2728			1969			1073				2364
80-89			708			1641			3718			2909			1783				3244
90-99			973			2017			4428			3602			2303				3871
100+			1200			2380			5030			4205			2820				4430
Average			249			700			1668			1153			668				1443
No. of Soils			3511			3514			3514			3514			3514				3517

5/23/2023

Comparison of Inputs, Tax Years 2020-2023

Crop Prices

					Difference	
	2020	**2021**	**2022**	**2023**	**2020-2023**	**2022-2023**
Corn	$3.63	$3.59	$3.77	$ 4.21	**$0.58**	$0.44
Soybeans	$9.12	$9.10	$9.32	$ 10.22	**$1.10**	$0.90
Wheat	$4.84	$4.76	$4.75	$ 5.20	**$0.36**	$0.45

Non-land Production Costs

Base Cost	**2020**	**2021**	**2022**	**2023**	**2020-2023**	**2022-2023**
Corn	$503.44	$491.35	491.16	$509.17	**$5.73**	$18.01
Soybeans	$331.48	$323.17	317.57	$323.41	**($8.07)**	$5.84
Wheat	$303.88	$284.91	269.72	$264.36	**($39.52)**	($5.36)

Additional Unit Cost	**2020**	**2021**	**2022**	**2023**	**2020-2023**	**2022-2023**
Corn	$1.38	$1.34	$1.30	$1.31	**($0.07)**	$0.01
Soybeans	$0.89	$0.89	$0.91	$1.03	**$0.14**	$0.12
Wheat	$1.33	$1.29	$1.27	$1.37	**$0.04**	$0.09

Capitalization Rate

	2020	**2021**	**2022**	**2023**	**2020-2023**	**2022-2023**
Mortgage/Equity Ratio	80/20	80/20	80/20	80/20		
Years	25	25	25	25		
Interest Rate	5.69%	5.46%	5.55%	5.76%		
Equity Rate	7.36%	7.21%	7.20%	7.45%		
Tax Additur	1.6%	1.6%	1.6%	1.5%		
Capitalization Rate	7.9%	7.8%	7.8%	8.0%	**0.1%**	**0.2%**

5/16/2023