



Department of Taxation

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FINAL VALUES – 2019

2019 CURRENT AGRICULTURAL USE VALUE OF LAND TABLES EXPLANATION OF THE CALCULATION OF VALUES FOR TAX YEAR 2019

Changes to Current Agricultural Use Value Program

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) of land effective for tax year 2019. The lower values are phased-in using a two-step process over each county's next two revaluations, beginning with the counties undergoing reappraisal or update in 2017. The counties scheduled in 2019 will receive the lower values as prescribed by law. The final values are the sum of the new formula values for 2019 and half the positive difference between the new formula values and the values issued for 2018 for each soil type, pursuant to R.C. 5715.01(A)(3).

Conservation Land

Under Am. Sub. H.B. 49 of the 132nd General Assembly, 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 (R.C. 5713.31). The land must be enrolled as of the first day of January of the applicable year as detailed on the initial or renewal application. If the farmland ceases to be used for those purposes sooner than 36 months after the initial certification, the County Auditor must recoup an amount equal to the extra tax savings for the most recent three years that the land was valued at the lowest-valued soil type (R.C. 5713.34).

Under continuing law, 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 that purposes.

The valuation changes became effective September 29, 2017. The Department of Taxation issued separate instructions to implement the conservation changes for 2017 and subsequent tax years.

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 2019, yield data from calendar years 2009-2018 were averaged and divided by the 1984 yield for each crop (Exhibit A, page 6). 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 2016	TY 2017	TY 2018	TY 2019
Crop	1984 Base	2006-2015	2007-2016	2008-2017	2009-2018
Corn	118.0 bu	156.2 bu	156.2 bu	158.9 bu	164.1 bu
Soybeans	36.5 bu	47.2 bu	47.9 bu	48.2 bu	50.4 bu
Wheat	44.0 bu	66.7 bu	67.9 bu	69.2 bu	69.9 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: 38% corn, 56% beans, and 6% wheat. This rotation is based on data from 2014-2018 and closely reflects current agricultural production in Ohio. The acres harvested in each year are shown in Exhibit B (page 7).

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 2019, 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 2012 through 2018. The annual production and price per unit for each of these crops for the 2012 through 2018 period are shown in Exhibit C (page 8).

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.

Crop	Unit	TY 2016	TY 2017	TY 2018	TY 2019
		2009-2015	2010-2016	2011-2017	2012-2018
Corn	Bushel	\$4.49	\$4.51	\$4.18	\$3.68
Soybeans	Bushel	\$10.91	\$10.83	\$10.43	\$9.78
Wheat	Bushel	\$5.53	\$5.53	\$5.52	\$5.15

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 2013-2019, 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 (pages 9-10).

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, pages 11-13). The five-year average non-land production costs for tax year 2019 are summarized in the following table and compared to the costs used for tax years 2016 and 2018:

NON-LAND PRODUCTION COSTS				
Crop Base Cost	Base Yld/2019	TY 2016	TY 2018	TY 2019
Corn	131 bu	\$524.47	\$529.28	\$519.04
Soybeans	39 bu	\$336.33	\$346.26	\$338.54
Wheat	58 bu	\$323.52	\$330.53	\$319.08
Additional Cost per Unit				
Corn	1 bu	\$ 1.38	\$ 1.44	\$ 1.43
Soybeans	1 bu	\$ 1.07	\$ 0.94	\$ 0.90
Wheat	1 bu	\$ 1.64	\$ 1.49	\$ 1.41

E. CAPITALIZATION RATE

Five-year averaging is used to derive the Farm Credit Service interest rate of 5.69% assuming an 80% loan for a 25-year term, payable annually (Exhibit E, page 14). The interest rate of 7.55% 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 (1993-2017, 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 49.94 mills for tax year 2018 (R.C. 319.301). The 9.0 percent non-business credit rollback authorized by R.C. 319.302 reduces this rate further to 45.44 mills. As a percent of market value, the effective tax rate to be used in this year's capitalization formula is 1.6%, (.35 x 45.44)/1000.

80% loan x annual debt service of 0.075937*	0.0607
20% equity x equity yield rate of .0755	+ 0.0151
	Subtotal 0.0758
<u>Less:</u> equity buildup for 25 years	
% loan x 100% mortgage paid off x sinking fund factor**	
(0.80) (1.00) (0.014604)	(0.0117)
	Subtotal 0.0642
Tax Additur Adjustment	+ 0.0160
Capitalization Rate	0.0802 or 8.0%

*Mortgage constant assumes 25-year loan, 5.69% interest rate.

**Sinking fund factor assumes 25-year term, 7.55% 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) - \$780 for Tile Drainage
 - c.) For the following soil series, a \$390 adjustment for surface drainage was used: Blanchester, Bono, Clermont, Condit, Conneaut, Darien, Fries, Ginat, Ilion, Latty, Lorain, McGuffey, Mill, Miner, Montgomery, Muskego, Paudling, 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.

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
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Exhibit A - Average Crop Yields by Year in Ohio
USDA, National Agricultural Statistics Service
Crop Production 2018 Summary, February 2019

<u>Year</u>	<u>Corn</u>	<u>Soybeans</u>	<u>Wheat</u>
1984	118	36.5	44
1985	127	41.5	62
1986	128	40.5	46
1987	120	37	58
1988	85	27	50
1989	118	31.5	51
1990	121	39	59
1991	96	36	49
1992	143	40	53
1993	110	38	52
1994	139	44	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	135	36	68
2009	174	49	72
2010	163	48	61
2011	158	47.5	58
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	58	75
Average 2009-2018	164.1	50.4	69.9
1984 Base	118	36.5	44
Average/1984 Base	1.390678	1.380822	1.588636
% increase	39.07%	38.08%	58.86%

2/8/2019

Exhibit B - Acres Harvested, 2014-2018
TY 2019 Crop Rotation

<u>Year</u>	<u>Corn</u>	<u>% of Total</u>	<u>Soybeans</u>	<u>% of Total</u>	<u>Wheat</u>	<u>% of Total</u>	Corn, Beans & Wheat <u>Totals</u>
2014	3,470,000	39.9%	4,690,000	53.9%	545,000	6.3%	8,705,000
2015	3,260,000	38.4%	4,740,000	55.9%	480,000	5.7%	8,480,000
2016	3,300,000	37.9%	4,840,000	55.6%	560,000	6.4%	8,700,000
2017	3,150,000	36.2%	5,090,000	58.5%	460,000	5.3%	8,700,000
2018	3,300,000	37.8%	4,980,000	57.0%	450,000	5.2%	8,730,000
Five Year Average	3,296,000	38%	4,868,000	56%	499,000	6%	8,663,000

USDA, National Agricultural Statistics Service
Crop Production, 2018 Summary, February 2019
2/8/2019

Exhibit C, FIVE YEAR AVERAGE CROP PRICES, TAX YEAR 2019

USDA, National Agricultural Statistics Service

Crop Values, 2018 Summary, April 2019

Crop Production, 2018 Summary, February 2019

	<u>Year</u>	<u>Production (1,000 bu)</u>	<u>Price</u>	<u>Value (1,000 dollars)</u>
CORN	2012	438,000	\$ 7.09	3,105,420
	2013	649,020	\$ 4.41	2,862,178
	2014	610,720	\$ 3.78	2,308,522
	2015	498,780	\$ 3.89	1,940,254
	2016	524,700	\$ 3.61	1,894,167
	2017	557,550	\$ 3.61	2,012,756
	2018	617,100	\$ 3.65	2,252,415
Totals		2,933,170	\$	11,376,125
Weighted Avg. Price			\$ 3.88	
After Management Allowance of 5%			\$ 3.68	
 SOYBEANS	2012	206,550	\$ 14.60	3,015,630
	2013	222,255	\$ 13.00	2,889,315
	2014	246,225	\$ 10.30	2,536,118
	2015	237,000	\$ 9.16	2,170,920
	2016	263,780	\$ 9.66	2,548,115
	2017	251,955	\$ 9.62	2,423,807
	2018	288,840	\$ 8.75	2,527,350
Totals		1,221,215	\$	12,568,274
Weighted Avg. Price			\$ 10.29	
After Management Allowance of 5%			\$ 9.78	
 WHEAT	2012	30,600	\$ 7.94	242,964
	2013	44,800	\$ 6.54	292,992
	2014	40,330	\$ 5.60	225,848
	2015	32,160	\$ 4.57	146,971
	2016	44,800	\$ 4.25	190,400
	2017	34,040	\$ 4.90	166,796
	2018	33,750	\$ 5.05	170,438
Totals		185,080	\$	1,003,045
Weighted Avg. Price			\$ 5.42	
After Management Allowance of 5%			\$ 5.15	

Exhibit D, Production Costs, Tax Year 2019
Determination of Five Year Average Costs for the Projected Crop Budgets

ITEM		Units							5 yr. Avg.	
			2013	2014	2015	2016	2017	2018		
VARIABLE COSTS										
Seed	CORN	1000k	\$3.28	\$3.44	\$3.44	\$3.44	\$3.44	\$3.50	\$3.38	\$3.43
	SOYBEANS	1000s	\$0.41	\$0.41	\$0.43	\$0.43	\$0.37	\$0.43	\$0.43	\$0.42
	WHEAT	1000s	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03
Fertilizer	N Corn		\$0.56	\$0.46	\$0.46	\$0.37	\$0.34	\$0.31	\$0.37	\$0.40
	N Wheat		\$0.71	\$0.64	\$0.57	\$0.52	\$0.36	\$0.41	\$0.45	\$0.52
	P2O5, Corn/Soybeans		\$0.63	\$0.60	\$0.57	\$0.46	\$0.44	\$0.47	\$0.50	\$0.52
	P2O5 Wheat		\$0.63	\$0.43	\$0.53	\$0.53	\$0.43	\$0.44	\$0.52	\$0.49
	K2O, Corn/Soybeans		\$0.48	\$0.38	\$0.40	\$0.28	\$0.26	\$0.28	\$0.32	\$0.33
	K2O Wheat		\$0.48	\$0.35	\$0.34	\$0.33	\$0.24	\$0.26	\$0.30	\$0.32
	LIME		\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Chemicals	CORN		\$50.98	\$55.93	\$56.08	\$56.08	\$60.42	\$43.93	\$46.22	\$53.06
	SOYBEANS		\$31.40	\$32.92	\$33.84	\$33.84	\$45.70	\$39.30	\$41.99	\$36.38
	WHEAT		\$13.00	\$13.00	\$13.00	\$9.50	\$9.50	\$13.25	\$14.65	\$12.35
Fuel, Oil, Grease	CORN	136	\$19.33	\$20.14	\$13.52	\$10.07	\$12.66	\$13.64	\$13.56	\$14.54
		170	\$19.33	\$20.14	\$13.52	\$10.07	\$12.66	\$13.64	\$13.56	\$14.54
		204	\$19.33	\$20.14	\$13.52	\$10.07	\$12.66	\$13.64	\$13.56	\$14.54
	SOYBEANS	41	\$12.27	\$11.42	\$7.67	\$5.71	\$7.18	\$12.57	\$11.58	\$10.02
		52	\$12.27	\$11.42	\$7.67	\$5.71	\$7.18	\$12.57	\$11.58	\$10.02
		62	\$12.27	\$11.42	\$7.67	\$5.71	\$7.18	\$12.57	\$11.58	\$10.02
	WHEAT	60	\$16.64	\$15.76	\$14.63	\$10.13	\$9.90	\$7.62	\$12.05	\$12.49
		75	\$16.64	\$15.76	\$14.63	\$10.13	\$9.90	\$7.62	\$12.05	\$12.49
		90	\$16.64	\$15.76	\$14.63	\$10.13	\$9.90	\$7.62	\$12.05	\$12.49
Repairs	CORN	136	\$22.66	\$26.78	\$26.78	\$26.78	\$26.78	\$19.91	\$20.48	\$24.70
		170	\$22.66	\$26.78	\$26.78	\$26.78	\$26.78	\$19.91	\$20.48	\$24.70
		204	\$22.66	\$26.78	\$26.78	\$26.78	\$26.78	\$19.91	\$20.48	\$24.70
	SOYBEANS	41	\$14.47	\$20.61	\$20.61	\$20.61	\$20.61	\$17.22	\$17.57	\$19.32
		52	\$14.47	\$20.61	\$20.61	\$20.61	\$20.61	\$17.22	\$17.57	\$19.32
		62	\$14.47	\$20.61	\$20.61	\$20.61	\$20.61	\$17.22	\$17.57	\$19.32
	WHEAT	60	\$14.39	\$20.32	\$20.32	\$20.32	\$20.32	\$18.72	\$16.72	\$19.28
		75	\$14.39	\$20.32	\$20.32	\$20.32	\$20.32	\$18.72	\$16.72	\$19.28
		90	\$14.39	\$20.32	\$20.32	\$20.32	\$20.32	\$18.72	\$16.72	\$19.28
Crop Insurance	CORN	136	\$29.35	\$20.00	\$16.30	\$15.00	\$13.00	\$13.00	\$12.00	\$15.46
		170	\$29.35	\$21.00	\$17.00	\$16.00	\$14.00	\$14.00	\$14.00	\$16.40
		204	\$29.35	\$21.00	\$17.80	\$15.00	\$16.00	\$14.50	\$15.00	\$16.96
	SOYBEANS	41	\$24.00	\$14.00	\$9.50	\$9.00	\$12.00	\$9.50	\$7.00	\$10.80
		52	\$24.00	\$15.00	\$8.50	\$8.50	\$12.00	\$10.00	\$7.50	\$10.80
		62	\$24.00	\$15.00	\$10.00	\$8.50	\$13.00	\$10.50	\$8.00	\$11.40
	WHEAT	60	\$14.00	\$14.00	\$14.00	\$10.00	\$10.00	\$6.00	\$6.00	\$10.80
		75	\$14.00	\$14.00	\$14.00	\$10.00	\$10.00	\$6.50	\$6.50	\$10.90
		90	\$14.00	\$14.00	\$14.00	\$10.00	\$10.00	\$7.00	\$7.00	\$11.00

Exhibit D, Production Costs, Tax Year 2019

ITEM	Units	2013	2014	2015	2016	2017	2018	2019	5 yr. Avg.	
Variable Miscellaneous										
CORN	136	\$12.00	\$12.00	\$5.00	\$5.00	\$5.00	\$4.80	\$5.10	\$6.42	
	170	\$12.00	\$12.00	\$5.00	\$5.00	\$5.00	\$4.80	\$5.10	\$6.42	
SOYBEANS	41	\$10.00	\$10.00	\$4.50	\$3.50	\$3.50	\$3.25	\$3.40	\$4.98	
	52	\$10.00	\$10.00	\$4.50	\$3.50	\$3.50	\$3.25	\$3.40	\$4.98	
WHEAT	60	\$6.00	\$6.00	\$6.00	\$1.50	\$3.20	\$3.00	\$3.00	\$4.24	
	75	\$6.00	\$6.00	\$6.00	\$1.50	\$3.20	\$3.00	\$3.00	\$4.24	
Drying:										
Fuel & Electric	CORN	\$0.21	\$0.21	\$0.16	\$0.11	\$0.11	\$0.06	\$0.04	\$0.13	
Hauling Farm to Market:										
	CORN	\$0.02	\$0.02	\$0.02	\$0.01	\$0.02	\$0.18	\$0.17	\$0.05	
	SOYBEANS	\$0.02	\$0.02	\$0.02	\$0.01	\$0.02	\$0.18	\$0.17	\$0.05	
	WHEAT	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.18	\$0.17	\$0.05	
Interest - variable costs		4.00%	4.00%	5.00%	4.50%	5.00%	5.00%	5.50%	4.70%	
FIXED COSTS										
Labor Charge	CORN	\$45.00	\$45.00	\$45.00	\$45.00	\$45.00	\$37.50	\$37.50	\$43.50	
	SOYBEANS	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$22.50	\$22.50	\$28.50	
	WHEAT	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50	
Machinery & Equipment	CORN	\$115.92	\$123.57	\$130.45	\$130.45	\$130.45	\$84.61	\$86.07	\$117.29	
	SOYBEANS	\$85.10	\$107.89	\$107.89	\$107.89	\$107.89	\$56.44	\$57.90	\$93.33	
	WHEAT	\$99.08	\$125.86	\$125.86	\$125.86	\$125.86	\$68.65	\$65.28	\$109.06	
Fixed Miscellaneous*	CORN	136	\$0.00	\$0.00	\$24.00	\$24.00	\$22.00	\$23.10	\$22.80	\$23.18
		170	\$0.00	\$0.00	\$24.00	\$24.00	\$22.00	\$23.10	\$22.80	\$23.18
		204	\$0.00	\$0.00	\$24.00	\$24.00	\$22.00	\$23.10	\$22.80	\$23.18
	SOYBEANS	41	\$0.00	\$0.00	\$16.50	\$15.60	\$14.50	\$14.90	\$14.70	\$15.24
		52	\$0.00	\$0.00	\$16.50	\$15.60	\$14.50	\$14.90	\$14.70	\$15.24
		62	\$0.00	\$0.00	\$16.50	\$15.60	\$14.50	\$14.90	\$14.70	\$15.24
	WHEAT	60	\$0.00	\$0.00	\$0.00	\$14.00	\$12.60	\$12.75	\$12.10	\$12.86
		75	\$0.00	\$0.00	\$0.00	\$14.00	\$12.60	\$12.75	\$12.10	\$12.86
		90	\$0.00	\$0.00	\$0.00	\$14.00	\$12.60	\$12.75	\$12.10	\$12.86

*In 2015, Ohio State University revised budgets to show fixed and variable miscellaneous costs.
A straight average is used for this budget item.

Source: Updated with Crop Production Budgets 2019, OSU Extension, College of Food, Agricultural & Environmental Sciences,

5/16/2019

2019 CORN BUDGET
Conservation Tillage

VARIABLE COSTS	Inputs - 5 Yr. Average			5 YR. AVG. COST Exhibit D	Costs per Acre	
	UNITS	BASE 131 <u>BUSHEL</u>	@ ADD. <u>BUSHEL</u>		BASE 131 <u>BUSHEL</u>	@ ADD. <u>BUSHEL</u>
SEED	KERNELS (1000's)	28	0.13	\$3.43	\$96.04	\$0.43
FERTILIZER	N	LB.	124.8	\$0.40	\$49.92	\$0.51
	P2O5	LB.	47.7	\$0.52	\$24.80	\$0.19
	K2O	LB.	34.8	\$0.33	\$11.48	\$0.09
	LIME	TON	0.25	\$25.00	\$6.25	\$0.00
CHEMICALS				\$53.06	\$53.06	\$0.00
FUEL, OIL, GREASE				\$14.54	\$14.54	\$0.00
REPAIRS				\$24.70	\$24.70	\$0.00
CROP INSURANCE				\$16.40	\$16.40	\$0.00
VARIABLE MISCELLANEOUS				\$6.42	\$6.42	\$0.00
DRYING: FUEL & ELECTRIC ONLY				\$0.13	\$17.03	\$0.13
HAULING/TRUCKING				\$0.05	\$6.55	\$0.05
INTEREST on OPER. CAP.*	4.7%/12 X 7 MOS =	2.7%			\$7.87	\$0.03
TOTAL VARIABLE COSTS					\$335.07	\$1.43
FIXED COSTS						
LABOR CHARGE				\$43.50	\$43.50	\$0.00
MACHINERY & EQUIPMENT CHARGE				\$117.29	\$117.29	\$0.00
MISCELLANEOUS				\$23.18	\$23.18	\$0.00
TOTAL FIXED COSTS					\$183.97	\$0.00
TOTAL COSTS					\$519.04	\$1.43

*Interest rate of 2.7% on all variable costs except drying, hauling and crop insurance.

Source: The Ohio State University College of Food, Agricultural & Environmental Sciences,
Corn Production Budget 2019, 5/02/2019

DTE, 5/22/2019

2019 SOYBEAN BUDGET
No-Tillage Practices

VARIABLE COSTS	Inputs - 5 Yr. Average			5 YR. AVG. COST Exhibit D	Costs per Acre	
	UNITS	BASE 39	@ ADD.		BASE 39	@ ADD.
		BUSHEL	BUSHEL		BUSHEL	BUSHEL
SEED	seeds (1000s)	175.0	0	\$0.42	\$73.50	\$0.00
FERTILIZER	N	LB.	0	\$0.00	\$0.00	\$0.00
	P2O5	LB.	31	\$0.52	\$16.12	\$0.40
	K2O	LB.	54	\$0.33	\$17.82	\$0.44
	LIME	TON	0.25	\$25.00	\$6.25	\$0.00
CHEMICALS				\$36.38	\$36.38	\$0.00
FUEL, OIL, GREASE				\$10.02	\$10.02	\$0.00
REPAIRS				\$19.32	\$19.32	\$0.00
CROP INSURANCE				\$10.80	\$10.80	\$0.00
VARIABLE MISCELLANEOUS				\$4.98	\$4.98	\$0.00
HAULING/TRUCKING				\$0.05	\$1.95	\$0.05
INTEREST on OPER. CAP.*		4.7%/12 X 6 MOS =	2.4%		\$4.33	\$0.02
TOTAL VARIABLE COSTS					\$201.47	\$0.90
FIXED COSTS						
LABOR CHARGE				\$28.50	\$28.50	\$0.00
MACHINERY & EQUIPMENT CHARGE				\$93.33	\$93.33	\$0.00
MISCELLANEOUS				\$15.24	\$15.24	\$0.00
TOTAL FIXED COSTS					\$137.07	\$0.00
TOTAL COSTS					\$338.54	\$0.90

*Interest rate of 2.4% on all variable costs except hauling and crop insurance.

Source: The Ohio State University College of Food, Agricultural & Environmental Sciences,
Soybean Production Budget 2018, Updated 5/02/2019

DTE, 5/14/2019

2019 WHEAT BUDGET
Conservation Tillage

VARIABLE COSTS		Inputs - 5 Yr. Average		5 YR. AVG. COST Exhibit D	Costs per Acre	
ITEM	UNITS	BASE 58 <u>BUSHELS</u>	@ ADD: <u>BUSHEL</u>		BASE 58 <u>BUSHELS</u>	@ ADD. BUSHEL
SEED	seeds (1000s)	1,400	0	\$0.03	\$42.00	\$0.00
FERTILIZER	N	LB.	55	1.73	\$28.60	\$0.90
	P2O5	LB.	36	0.62	\$17.64	\$0.30
	K2O	LB.	41	0.36	\$13.12	\$0.12
	LIME	TON	0.25	0	\$6.25	\$0.00
CHEMICALS				\$12.35	\$12.35	\$0.00
FUEL, OIL, GREASE				\$12.49	\$12.49	\$0.00
REPAIRS				\$19.28	\$19.28	\$0.00
CROP INSURANCE				\$10.90	\$10.90	\$0.00
VARIABLE MISCELLANEOUS				\$4.24	\$4.24	\$0.00
HAULING/TRUCKING				\$0.05	\$2.90	\$0.05
INTEREST on OPER. CAP.*		4.7%/12 X 8 MOS = 3.1%			\$4.89	\$0.04
TOTAL VARIABLE COSTS					\$174.66	\$1.41
FIXED COSTS						
LABOR CHARGE				\$22.50	\$22.50	\$0.00
MACHINERY & EQUIPMENT CHARGE				\$109.06	\$109.06	\$0.00
MISCELLANEOUS				\$12.86	\$12.86	\$0.00
TOTAL FIXED COSTS					\$144.42	\$0.00
TOTAL COSTS					\$319.08	\$1.41

*Interest rate of 3.1% on all variable costs except hauling and crop insurance.

Source: The Ohio State University College of Food, Agricultural & Environmental Sciences,
Wheat Production Budget 2019, Updated 10/31/2018

DTE, 5/10/2019

Exhibit E: INTEREST RATES - CAPITALIZATION RATE

	INTEREST RATE*		EQUITY RATE**
Year		Year	
2013	4.95	2017	2.29
2014	6.20	2016	2.13
2015	5.60	2015	-0.37
2016	5.15	2014	8.43
2017	5.65	2013	8.69
2018	6.04	2012	17.04
2019	6.00	2011	11.04
		2010	12.47
Average	5.69	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
		1996	7.59
		1995	4.73
		1994	6.08
		1993	7.68
		Average	7.55

* 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.

For 2018, the equity rate was 7.73%

CAPITALIZATION RATES USED IN CALCULATION

2013-2019

TAX YEAR	CAP RATE
2013	6.7%
2014	6.2%
2015	6.6%
2016	6.3%
2017	8.0%
2018	8.0%
2019	8.0%

2016 CAUV SAMPLE CALCULATION

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

	<u>CORN</u>	<u>BEANS</u>	<u>WHEAT</u>
PI DAT yield/acre (1984)	144	52	64
% increased yield	1.323729	1.293151	1.515909
adjusted yield/acre	191	67	97
X Crop Price/Unit	\$4.49	\$10.91	\$5.53
= GROSS INCOME / ACRE	\$857.59	\$730.97	\$536.41
YIELD / ACRE	191	67	97
BASE YIELD	125	37	55
= YIELD ABOVE BASE	66	30	42
X ADDED UNIT COST	\$1.38	\$1.07	\$1.64
ADDED UNIT COST / ACRE	\$91.08	\$32.10	\$68.88
BASE YIELD COST	\$524.47	\$336.33	\$323.52
= TOTAL NON-LAND PROD. COSTS	\$615.55	\$368.43	\$392.40
NET RETURN / ACRE	\$242.04	\$362.54	\$144.01
X CROPPING PATTERN	0.402	0.53	0.068
= ROTATIONAL NET RETURN / ACRE	\$97.30	\$192.15	\$9.79
TOTAL ROTATIONAL NET RETURN	\$299.24		
BASE CAP RATE	0.063		
CAUV LAND VALUE	\$4,749.82	SAY	\$4,750

5/12/2016

2019 CAUV SAMPLE CALCULATION

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

	<u>CORN</u>	<u>BEANS</u>	<u>WHEAT</u>
PI DAT yield/acre (1984)	144	52	64
% increased yield	1.390678	1.380822	1.588636
adjusted yield/acre	200	72	102
X Crop Price/Unit	\$3.68	\$9.78	\$5.15
= GROSS INCOME / ACRE	\$736.00	\$704.16	\$525.30
 YIELD / ACRE	 200	 72	 102
BASE YIELD	131	39	58
= YIELD ABOVE BASE	69	33	44
X ADDED UNIT COST	\$1.43	\$0.90	\$1.41
ADDED UNIT COST / ACRE	\$98.67	\$29.70	\$62.04
BASE YIELD COST	\$519.04	\$338.54	\$319.08
= TOTAL NON-LAND PROD. COSTS	\$617.71	\$368.24	\$381.12
 NET RETURN / ACRE	 \$118.29	 \$335.92	 \$144.18
X CROPPING PATTERN	0.38	0.56	0.06
= ROTATIONAL NET RETURN / ACRE	\$44.95	\$188.12	\$8.65
 TOTAL ROTATIONAL NET RETURN	 \$241.72		
 BASE CAP RATE	 0.08		
 UNADJUSTED VALUE	 \$3,021.45	 SAY	 \$3,020
2018 Value			 \$3,810
ADJUSTED CAUV VALUE			 \$3,420

5/23/2019

2016 CAUV SAMPLE CALCULATION

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

	<u>CORN</u>	<u>BEANS</u>	<u>WHEAT</u>
PI DAT yield/acre (1984)	108	38	50
% increased yield	1.323729	1.293151	1.515909
adjusted yield/acre	143	49	76
X Crop Price/Unit	\$4.49	\$10.91	\$5.53
= GROSS INCOME / ACRE	\$642.07	\$534.59	\$420.28
YIELD / ACRE	143	49	76
BASE YIELD	125	37	55
= YIELD ABOVE BASE	18	12	21
X ADDED UNIT COST	\$1.38	\$1.07	\$1.64
ADDED UNIT COST / ACRE	\$24.84	\$12.84	\$34.44
BASE YIELD COST	\$524.47	\$336.33	\$323.52
= TOTAL NON-LAND PROD. COSTS	\$549.31	\$349.17	\$357.96
NET RETURN / ACRE	\$92.76	\$185.42	\$62.32
X CROPPING PATTERN	0.402	0.53	0.068
= ROTATIONAL NET RETURN / ACRE	\$37.29	\$98.27	\$4.24
TOTAL ROTATIONAL NET RETURN	\$139.80		
BASE CAP RATE	0.063		
CAUV LAND VALUE	\$2,219.05	SAY	\$2,220

5/12/2016

2019 CAUV SAMPLE CALCULATION

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

	<u>CORN</u>	<u>BEANS</u>	<u>WHEAT</u>
PI DAT yield/acre (1984)	108	38	50
% increased yield	1.390678	1.380822	1.588636
adjusted yield/acre	150	52	79
X Crop Price/Unit	\$3.68	\$9.78	\$5.15
= GROSS INCOME / ACRE	\$552.00	\$508.56	\$406.85
YIELD / ACRE	150	52	79
BASE YIELD	131	39	58
= YIELD ABOVE BASE	19	13	21
X ADDED UNIT COST	\$1.43	\$0.90	\$1.41
ADDED UNIT COST / ACRE	\$27.17	\$11.70	\$29.61
BASE YIELD COST	\$519.04	\$338.54	\$319.08
= TOTAL NON-LAND PROD. COSTS	\$546.21	\$350.24	\$348.69
NET RETURN / ACRE	\$5.79	\$158.32	\$58.16
X CROPPING PATTERN	0.38	0.56	0.06
= ROTATIONAL NET RETURN / ACRE	\$2.20	\$88.66	\$3.49
TOTAL ROTATIONAL NET RETURN	\$94.35		
BASE CAP RATE	0.08		
UNADJUSTED VALUE	\$1,179.36	SAY	\$1,180
2018 Value			\$1,700
ADJUSTED CAUV VALUE			\$1,440

5/23/2019

CAUV Summary Values

5/23/2019

TY 2019 Final Values (Adjusted)

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	54	3	350	870	378
60-69	1,114	0	112	39	350	1,670	731
70-79	798	27	171	96	560	2,460	1,469
80-89	211	95	215	156	1,480	3,040	2,270
90-99	35	179	241	199	2,600	3,400	2,863
100+	6	242	242	242	3,420	3,420	3,420
All Regions	3,514	\$0	\$242	\$47	\$350	\$3,420	\$876

TY 2016 Final - 6/02/2016

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	601	0	45	0	350	350	350
50-59	749	0	93	19	350	1,480	466
60-69	1,114	0	159	77	350	2,530	1,235
70-79	798	70	223	142	1,110	3,540	2,255
80-89	211	146	268	208	2,320	4,250	3,302
90-99	35	237	298	256	3,760	4,730	4,074
100+	6	299	299	299	4,750	4,750	4,750
All Regions	3,514	\$0	\$299	\$76	\$350	\$4,750	\$1,310

CAUV Summary Values

5/23/2019
TY 2019 Final Values (Adjusted)

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	54	3	350	870	378
60-69	1,114	0	112	39	350	1,670	731
70-79	798	27	171	96	560	2,460	1,469
80-89	211	95	215	156	1,480	3,040	2,270
90-99	35	179	241	199	2,600	3,400	2,863
100+	6	242	242	242	3,420	3,420	3,420
All Regions	3,514	\$0	\$242	\$47	\$350	\$3,420	\$876

6/26/2018
TY 2018 Final Values (Adjusted)

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	601	0	15	0	350	350	350
50-59	749	0	71	9	350	1,070	400
60-69	1,114	0	134	56	350	1,940	896
70-79	798	49	195	118	770	2,780	1,723
80-89	211	120	243	180	1,780	3,400	2,586
90-99	35	206	271	227	2,950	3,790	3,226
100+	6	272	272	272	3,810	3,810	3,810
All Regions	3,514	\$0	\$272	\$60	\$350	\$3,810	\$1,015

Average CAUV Values by Year, 2003-2019

Productivity		Index	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
0-49		100	100	100	108	100	100	176	200	300	350-	350	350	350	350	350	350	350	
50-59		101	114	106	134	100	100	200	214	328	362	516	700	518	466	430	400	378	
60-69		113	104	101	125	123	188	435	436	632	610	1218	1778	1371	1235	1061	896	731	
70-79		244	157	124	241	283	431	746	845	1126	1147	1958	2728	2347	2255	1969	1723	1469	
80-89		467	342	293	465	521	708	1059	1278	1641	1717	2743	3718	3354	3302	2909	2586	2270	
90-99		663	533	492	675	747	973	1368	1601	2017	2128	3310	4428	4104	4074	3602	3226	2863	
100+		820	690	650	880	970	1200	1620	1900	2380	2490	3780	5030	4770	4750	4205	3810	3420	
Total	No. of Soils	163	135	123	177	181	249	459	505	700	719	1205	1668	1388	1310	1153	1015	876	
		3313	3313	3358	3482	3510	3511	3511	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514	

Average CAUV Values by Reappraisal/Update Year

Productivity		Index	2004	2007	2010	2013	2016	2019
0-49		100		100	200	350	350	350
50-59		114		100	214	516	466	378
60-69		104		123	436	1218	1235	731
70-79		157		283	845	1958	2255	1469
80-89		342		521	1278	2743	3302	2270
90-99		533		747	1601	3310	4074	2863
100+		690		970	1900	3780	4750	3420
Total	No. of Soils	135		181	505	1205	1310	876
		3313		3510	3514	3514	3514	3514

Comparison of Inputs, Tax Years 2016-2019

<u>Crop Prices</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	Difference	
					<u>2016-19</u>	<u>2018-19</u>
Corn	\$4.49	\$4.51	\$4.18	\$3.68	(\$0.81)	(\$0.50)
Soybeans	\$10.91	\$10.83	\$10.43	\$9.78	(\$1.13)	(\$0.65)
Wheat	\$5.53	\$5.53	\$5.52	\$5.15	(\$0.38)	(\$0.37)
<u>Non-land Production Costs</u>						
Base Cost						
Corn	\$524.47	\$538.78	\$529.28	\$519.04	(\$5.43)	(\$10.24)
Soybeans	\$336.33	\$347.10	\$346.26	\$338.54	\$2.21	(\$7.72)
Wheat	\$323.52	\$336.21	\$330.53	\$319.08	(\$4.44)	(\$11.45)
<u>Additional Unit Cost</u>						
Corn	\$1.38	\$1.45	\$1.44	\$1.43	\$0.05	(\$0.01)
Soybeans	\$1.07	\$1.05	\$0.94	\$0.90	(\$0.17)	(\$0.04)
Wheat	\$1.64	\$1.62	\$1.49	\$1.41	(\$0.23)	(\$0.08)
<u>Capitalization Rate</u>						
Mortgage/Equity Ratio	80/20	80/20	80/20	80/20		
Years	25	25	25	25		
Interest Rate	5.76	5.55	5.55	5.69		
Equity Rate	5.25	7.73	7.73	7.55		
Tax Additur	1.6	1.6	1.6	1.6		
Capitalization Rate	6.3	8.0	8.0	8.0	1.70	0.00

DTE, 5/23/2019