



June 26, 2018
FINAL VALUES - 2018

**2018 CURRENT AGRICULTURAL USE VALUE OF LAND TABLES
EXPLANATION OF THE CALCULATION OF VALUES FOR TAX YEAR 2018**

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 2018. 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 2018 will receive the lower values as prescribed by law. The final values are the sum of the new formula values for 2018 and half the positive difference between the new formula values and the values issued for 2017 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 2018, yield data from calendar years 2008-2017 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 2015	TY 2016	TY 2017	TY 2018
Crop	1984 Base	2005-2014	2006-2015	2007-2016	2008-2017
Corn	118.0 bu	155.2 bu	156.2 bu	156.2 bu	158.9 bu
Soybeans	36.5 bu	46.7 bu	47.2 bu	47.9 bu	48.2 bu
Wheat	44.0 bu	67.1 bu	66.7 bu	67.9 bu	69.2 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: 39% corn, 55% beans, and 6% wheat. This rotation is based on data from 2013-2017 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 2018, 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 2011 through 2017. The annual production and price per unit for each of these crops for the 2011 through 2017 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.

		TY 2015	TY 2016	TY 2017	TY 2018
Crop	Unit	2008-2014	2009-2015	2010-2016	2011-2017
Corn	Bushel	\$4.55	\$4.49	\$4.51	\$4.18
Soybeans	Bushel	\$11.09	\$10.91	\$10.83	\$10.43
Wheat	Bushel	\$5.67	\$5.53	\$5.53	\$5.52

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 2012-2018, 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 2018 are summarized in the following table and compared to the costs used for tax years 2015 and 2017:

NON-LAND PRODUCTION COSTS				
Crop Base Cost	Base Yld/2018	TY 2015	TY 2017	TY 2018
Corn	129 bu	\$516.99	\$538.78	\$529.28
Soybeans	38 bu	\$325.42	\$347.10	\$346.26
Wheat	58 bu	\$296.98	\$336.21	\$330.53
Additional Cost per Unit				
Corn	1 bu	\$ 1.36	\$ 1.45	\$ 1.44
Soybeans	1 bu	\$ 1.24	\$ 1.05	\$ 0.94
Wheat	1 bu	\$ 1.77	\$ 1.62	\$ 1.49

E. CAPITALIZATION RATE

Five-year averaging is used to derive the Farm Credit Service interest rate of 5.52% assuming an 80% loan for a 25-year term, payable annually (Exhibit E, page 14). The interest rate of 7.73% 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 (1992-2016, 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 49.89 mills for tax year 2017 (R.C. 319.301). The 9.2 percent non-business credit rollback authorized by R.C. 319.302 reduces this rate further to 45.31 mills. As a percent of market value the effective tax rate to be used in this year's capitalization formula is 1.6%, $(.35 \times 45.31)/1000$.

80% loan x annual debt service of 0.074695*	0.0598
20% equity x equity yield rate of .0773	+ 0.0155
Subtotal	0.0752
<u>Less:</u> equity buildup for 25 years	
% loan x 100% mortgage paid off x sinking fund factor**	
(0.80) (1.00) (0.014228)	- (0.0114)
Subtotal	0.0638
Tax Additur Adjustment	+ 0.0160
Capitalization Rate	0.0798 or 8.0%

*Mortgage constant assumes 25-year loan, 5.52% interest rate.

**Sinking fund factor assumes 25-year term, 7.73% 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) - \$800 for Tile Drainage

c.) For the following soil series, a \$400 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.

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 2017 Summary, January 2018

<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
Average 2008-2017	158.9	48.2	69.2
1984 Base	118	36.5	44
Average/1984 Base	1.346610	1.320548	1.572727
% increase	34.66%	32.05%	57.27%

1/12/2018

**Exhibit B - Acres Harvested, 2013-2017
TY 2018 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>	<u>Corn, Beans & Wheat Totals</u>
2013	3,730,000	42.1%	4,490,000	50.7%	640,000	7.2%	8,860,000
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	3,130,000	36.2%	5,090,000	58.8%	435,000	5.0%	8,655,000
Five Year Average	3,378,000	39%	4,770,000	55%	532,000	6%	8,680,000

**USDA, National Agricultural Statistics Service
Crop Production, 2017 Summary, January 2018
1/12/2018**

Exhibit C, FIVE YEAR AVERAGE CROP PRICES, TAX YEAR 2018

**USDA, National Agricultural Statistics Service
Crop Values, 2017 Summary, February 2018
Crop Production, 2017 Summary, January 2018**

	<u>Year</u>	<u>Production (1,000 bu)</u>	<u>Price</u>	<u>Value (1,000 dollars)</u>
CORN	2011	508,760	\$ 6.44	3,276,414
	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	554,010	\$ 3.55	1,966,736
Totals		2,791,980		\$ 12,281,535
Weighted Avg. Price			\$ 4.40	
After Management Allowance of 5%			\$ 4.18	
SOYBEANS	2011	217,920	\$ 13.00	2,832,960
	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	\$ 9.50	2,393,573
Totals		1,202,135		\$ 13,200,080
Weighted Avg. Price			\$ 10.98	
After Management Allowance of 5%			\$ 10.43	
WHEAT	2011	49,300	\$ 6.73	331,789
	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	32,190	\$ 4.90	157,731
Totals		198,780		\$ 1,155,331
Weighted Avg. Price			\$ 5.81	
After Management Allowance of 5%			\$ 5.52	

Exhibit D, Production Costs, Tax Year 2018
Determination of Five Year Average Costs for the Projected Crop Budgets

ITEM		<u>Units</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>5 yr. Avg.</u>
VARIABLE COSTS										
Seed	CORN	1000k	\$3.13	\$3.28	\$3.44	\$3.44	\$3.44	\$3.44	\$3.50	\$3.41
	SOYBEANS	1000s	\$0.36	\$0.41	\$0.41	\$0.43	\$0.43	\$0.37	\$0.43	\$0.41
	WHEAT	1000s	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03	\$0.03
Fertilizer	N Corn		\$0.53	\$0.56	\$0.46	\$0.46	\$0.37	\$0.34	\$0.34	\$0.43
	N Wheat		\$0.74	\$0.71	\$0.64	\$0.57	\$0.52	\$0.36	\$0.41	\$0.57
	P2O5, Corn/Soybeans		\$0.66	\$0.63	\$0.60	\$0.57	\$0.46	\$0.44	\$0.47	\$0.54
	P2O5 Wheat		\$0.66	\$0.63	\$0.43	\$0.53	\$0.53	\$0.43	\$0.44	\$0.51
	K2O, Corn/Soybeans		\$0.53	\$0.48	\$0.38	\$0.40	\$0.28	\$0.26	\$0.28	\$0.36
	K2O Wheat		\$0.53	\$0.48	\$0.35	\$0.34	\$0.33	\$0.24	\$0.26	\$0.35
	LIME		\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Chemicals	CORN		\$44.28	\$50.98	\$55.93	\$56.08	\$56.08	\$60.42	\$43.93	\$52.67
	SOYBEANS		\$33.55	\$31.40	\$32.92	\$33.84	\$33.84	\$45.70	\$39.30	\$34.69
	WHEAT		\$21.34	\$13.00	\$13.00	\$13.00	\$9.50	\$9.50	\$13.25	\$12.35
Fuel, Oil, Grease	CORN	131	\$22.59	\$19.33	\$20.14	\$13.52	\$10.07	\$12.66	\$13.64	\$15.86
		164	\$22.59	\$19.33	\$20.14	\$13.52	\$10.07	\$12.66	\$13.64	\$15.86
		197	\$22.59	\$19.33	\$20.14	\$13.52	\$10.07	\$12.66	\$13.64	\$15.86
	SOYBEANS	40	\$14.02	\$12.27	\$11.42	\$7.67	\$5.74	\$7.18	\$12.57	\$10.22
		50	\$14.02	\$12.27	\$11.42	\$7.67	\$5.74	\$7.18	\$12.57	\$10.22
		60	\$14.02	\$12.27	\$11.42	\$7.67	\$5.74	\$7.18	\$12.57	\$10.22
	WHEAT	60	\$16.64	\$16.64	\$15.76	\$14.63	\$10.13	\$9.90	\$7.62	\$13.41
		75	\$16.64	\$16.64	\$15.76	\$14.63	\$10.13	\$9.90	\$7.62	\$13.41
		90	\$16.64	\$16.64	\$15.76	\$14.63	\$10.13	\$9.90	\$7.62	\$13.41
Repairs	CORN	131	\$21.18	\$22.66	\$26.78	\$26.78	\$26.78	\$26.78	\$19.91	\$24.84
		164	\$21.18	\$22.66	\$26.78	\$26.78	\$26.78	\$26.78	\$19.91	\$24.84
		197	\$21.18	\$22.66	\$26.78	\$26.78	\$26.78	\$26.78	\$19.91	\$24.84
	SOYBEANS	40	\$14.47	\$14.47	\$20.61	\$20.61	\$20.61	\$20.61	\$17.22	\$18.70
		50	\$14.47	\$14.47	\$20.61	\$20.61	\$20.61	\$20.61	\$17.22	\$18.70
		60	\$14.47	\$14.47	\$20.61	\$20.61	\$20.61	\$20.61	\$17.22	\$18.70
	WHEAT	60	\$14.39	\$14.39	\$20.32	\$20.32	\$20.32	\$20.32	\$18.72	\$18.81
		75	\$14.39	\$14.39	\$20.32	\$20.32	\$20.32	\$20.32	\$18.72	\$18.81
		90	\$14.39	\$14.39	\$20.32	\$20.32	\$20.32	\$20.32	\$18.72	\$18.81
Crop Insurance	CORN	131	\$25.00	\$29.35	\$20.00	\$16.30	\$15.00	\$13.00	\$13.00	\$17.86
		164	\$25.00	\$29.35	\$21.00	\$17.00	\$16.00	\$14.00	\$14.00	\$18.60
		197	\$24.00	\$29.35	\$21.00	\$17.80	\$15.00	\$16.00	\$14.50	\$18.76
	SOYBEANS	40	\$16.00	\$24.00	\$14.00	\$9.50	\$9.00	\$12.00	\$9.50	\$12.20
		50	\$19.00	\$24.00	\$15.00	\$8.50	\$8.50	\$12.00	\$10.00	\$12.90
		60	\$19.00	\$24.00	\$15.00	\$10.00	\$8.50	\$13.00	\$10.50	\$13.50
	WHEAT	60	\$14.00	\$14.00	\$14.00	\$14.00	\$10.00	\$10.00	\$6.00	\$12.40
		75	\$14.00	\$14.00	\$14.00	\$14.00	\$10.00	\$10.00	\$6.50	\$12.40
		90	\$14.00	\$14.00	\$14.00	\$14.00	\$10.00	\$10.00	\$7.00	\$12.40

Exhibit D, Production Costs, Tax Year 2018

ITEM		<u>Units</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>5 yr. Avg.</u>
Variable Miscellaneous	CORN	131	\$8.00	\$12.00	\$12.00	\$5.00	\$5.00	\$5.00	\$4.80	\$7.00
		164	\$9.00	\$12.00	\$12.00	\$5.00	\$5.00	\$5.00	\$4.80	\$7.20
		197	\$10.00	\$12.00	\$12.00	\$12.00	\$5.00	\$5.00	\$4.80	\$8.80
	SOYBEANS	40	\$9.00	\$10.00	\$10.00	\$4.50	\$3.50	\$3.50	\$3.25	\$6.10
		50	\$9.00	\$10.00	\$10.00	\$4.50	\$3.50	\$3.50	\$3.25	\$6.10
		60	\$9.00	\$10.00	\$10.00	\$4.50	\$3.50	\$3.50	\$3.25	\$6.10
	WHEAT	60	\$6.00	\$6.00	\$6.00	\$6.00	\$4.50	\$3.20	\$3.00	\$4.84
		75	\$6.00	\$6.00	\$6.00	\$6.00	\$4.50	\$3.20	\$3.00	\$4.84
		90	\$6.00	\$6.00	\$6.00	\$6.00	\$4.50	\$3.20	\$3.00	\$4.84
Drying:										
Fuel & Electric	CORN		\$0.11	\$0.24	\$0.21	\$0.16	\$0.11	\$0.11	\$0.06	\$0.14
Trucking:										
Fuel Only	CORN		\$0.03	\$0.02	\$0.02	\$0.02	\$0.04	\$0.02	\$0.18	\$0.02
	SOYBEANS		\$0.03	\$0.02	\$0.02	\$0.02	\$0.04	\$0.02	\$0.18	\$0.02
	WHEAT		\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.18	\$0.02
Interest - variable costs			6.00%	4.00%	4.00%	5.00%	4.50%	5.00%	5.00%	4.70%
FIXED COSTS										
Labor Charge	CORN		\$40.50	\$45.00	\$45.00	\$45.00	\$45.00	\$45.00	\$37.50	\$44.10
	SOYBEANS		\$27.00	\$30.00	\$30.00	\$30.00	\$30.00	\$30.00	\$22.50	\$29.40
	WHEAT		\$27.00	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50	\$22.50
Machinery & Equipment	CORN		\$107.46	\$115.92	\$123.57	\$130.45	\$130.45	\$130.45	\$84.64	\$121.57
	SOYBEANS		\$85.10	\$85.10	\$107.89	\$107.89	\$107.89	\$107.89	\$56.44	\$98.77
	WHEAT		\$99.08	\$99.08	\$125.86	\$125.86	\$125.86	\$125.86	\$68.65	\$115.15
Fixed Miscellaneous*	CORN	131	\$0.00	\$0.00	\$0.00	\$24.00	\$24.00	\$22.00	\$23.10	\$23.28
		164	\$0.00	\$0.00	\$0.00	\$24.00	\$24.00	\$22.00	\$23.10	\$23.28
		197	\$0.00	\$0.00	\$0.00	\$24.00	\$24.00	\$22.00	\$23.10	\$23.28
	SOYBEANS	40	\$0.00	\$0.00	\$0.00	\$16.50	\$15.60	\$14.50	\$14.90	\$15.38
		50	\$0.00	\$0.00	\$0.00	\$16.50	\$15.60	\$14.50	\$14.90	\$15.38
		60	\$0.00	\$0.00	\$0.00	\$16.50	\$15.60	\$14.50	\$14.90	\$15.38
	WHEAT	60	\$0.00	\$0.00	\$0.00	\$0.00	\$14.00	\$12.60	\$12.75	\$13.12
		75	\$0.00	\$0.00	\$0.00	\$0.00	\$14.00	\$12.60	\$12.75	\$13.12
		90	\$0.00	\$0.00	\$0.00	\$0.00	\$14.00	\$12.60	\$12.75	\$13.12

*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 2018, OSU Extension, College of Food, Agricultural & Environmental Sciences,

5/8/2018

2018 CORN BUDGET
Conservation Tillage

VARIABLE COSTS	Inputs - 5 Yr. Average			5 YR. AVG. COST Exhibit D	Costs per Acre	
	UNITS	BASE 129 BUSHEL	@ ADD. BUSHEL		BASE 129 BUSHEL	@ ADD. BUSHEL
SEED	KERNELS (1000's)	28	0.13	\$3.41	\$94.12	\$0.43
FERTILIZER						
	N LB.	125.2	1.19	\$0.43	\$53.84	\$0.51
	P2O5 LB.	47.7	0.37	\$0.54	\$25.76	\$0.20
	K2O LB.	34.8	0.27	\$0.36	\$12.53	\$0.10
	LIME TON	0.25	0	\$25.00	\$6.25	\$0.00
CHEMICALS				\$52.67	\$52.67	\$0.00
FUEL, OIL, GREASE				\$15.86	\$15.86	\$0.00
REPAIRS				\$24.84	\$24.84	\$0.00
CROP INSURANCE				\$18.60	\$18.60	\$0.00
VARIABLE MISCELLANEOUS				\$7.20	\$7.20	\$0.01
DRYING: FUEL & ELECTRIC ONLY				\$0.14	\$18.06	\$0.14
HAULING/TRUCKING				\$0.02	\$2.58	\$0.02
INTEREST on OPER. CAP. *	4.7%/12 X 7 MOS =	2.7%			\$8.03	\$0.03
TOTAL VARIABLE COSTS					\$340.33	\$1.44
FIXED COSTS						
LABOR CHARGE				\$44.10	\$44.10	\$0.00
MACHINERY & EQUIPMENT CHARGE				\$121.57	\$121.57	\$0.00
MISCELLANEOUS				\$23.28	\$23.28	\$0.00
TOTAL FIXED COSTS					\$188.95	\$0.00
TOTAL COSTS					\$529.28	\$1.44

*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 2018, 5/01/2018

DTE, 5/09/2018

2018 SOYBEAN BUDGET
No-Tillage Practices

VARIABLE COSTS	Inputs - 5 Yr. Average			5 YR. AVG. COST Exhibit D	Costs per Acre	
	UNITS	BASE 38 BUSHEL	@ ADD. BUSHEL		BASE 38 BUSHEL	@ ADD. BUSHEL
SEED	seeds (1000s)	177.0	0	\$0.41	\$72.57	\$0.00
FERTILIZER						
	N LB.	0	0	\$0.00	\$0.00	\$0.00
	P2O5 LB.	31	0.77	\$0.54	\$16.74	\$0.42
	K2O LB.	54	1.35	\$0.36	\$19.44	\$0.49
	LIME TON	0.25	0	\$25.00	\$6.25	\$0.00
CHEMICALS				\$34.69	\$34.69	\$0.00
FUEL, OIL, GREASE				\$10.22	\$10.22	\$0.00
REPAIRS				\$18.70	\$18.70	\$0.00
CROP INSURANCE				\$12.90	\$12.90	\$0.00
VARIABLE MISCELLANEOUS				\$6.10	\$6.10	\$0.00
HAULING/TRUCKING				\$0.02	\$0.76	\$0.02
INTEREST on OPER. CAP.*		4.7%/12 X 6 MOS =	2.4%		\$4.34	\$0.02
TOTAL VARIABLE COSTS					\$202.71	\$0.94
FIXED COSTS						
LABOR CHARGE				\$29.40	\$29.40	\$0.00
MACHINERY & EQUIPMENT CHARGE				\$98.77	\$98.77	\$0.00
MISCELLANEOUS				\$15.38	\$15.38	\$0.00
TOTAL FIXED COSTS					\$143.55	\$0.00
TOTAL COSTS					\$346.26	\$0.94

*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 5/01/2018

DTE, 5/09/2018

2018 WHEAT BUDGET
Conservation Till

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 BUSHELS	@ ADD. BUSHEL
SEED	seeds (1000s)		1,400	0	\$0.03	\$42.00	\$0.00
FERTILIZER							
	N	LB.	54	1.73	\$0.57	\$30.78	\$0.99
	P2O5	LB.	36	0.62	\$0.51	\$18.36	\$0.32
	K2O	LB.	41	0.36	\$0.35	\$14.35	\$0.13
	LIME	TON	0.25	0	\$25.00	\$6.25	\$0.00
CHEMICALS					\$12.35	\$12.35	\$0.00
FUEL, OIL, GREASE					\$13.41	\$13.41	\$0.00
REPAIRS					\$18.81	\$18.81	\$0.00
CROP INSURANCE					\$12.40	\$12.40	\$0.00
VARIABLE MISCELLANEOUS					\$4.84	\$4.84	\$0.00
HAULING/TRUCKING					\$0.02	\$1.16	\$0.02
INTEREST on OPER. CAP.*			4.7%/12 X 8 MOS = 3.1%			\$5.05	\$0.04
TOTAL VARIABLE COSTS						\$179.76	\$1.49
FIXED COSTS							
LABOR CHARGE					\$22.50	\$22.50	\$0.00
MACHINERY & EQUIPMENT CHARGE					\$115.15	\$115.15	\$0.00
MISCELLANEOUS					\$13.12	\$13.12	\$0.00
TOTAL FIXED COSTS						\$150.77	\$0.00
TOTAL COSTS						\$330.53	\$1.49

*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 2018, Updated 10/31/2017**

DTE, 5/09/2018

Exhibit E: INTEREST RATES - CAPITALIZATION RATE

INTEREST RATE*		EQUITY RATE**	
Year		Year	
2012	5.15	2016	2.13
2013	4.95	2015	-0.36
2014	6.20	2014	8.45
2015	5.60	2013	8.7
2016	5.15	2012	17.04
2017	5.65	2011	11.04
2018	6.04	2010	12.46
		2009	-0.71
Average	5.52	2008	4.3
		2007	4.6
		2006	13.3
		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
		1992	6.55
		Average	7.73

* 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 2017, the equity rate was 7.73%

CAPITALIZATION RATES USED IN CALCULATION 2012-2018

TAX YEAR	CAPITALIZATION RATE
2012	7.5%
2013	6.7%
2014	6.2%
2015	6.6%
2016	6.3%
2017	8.0%
2018	8.0%

2015 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	1.315254	1.279452	1.525
adjusted yield/acre	189	67	98
X Crop Price/Unit	\$4.55	\$11.09	\$5.67
= GROSS INCOME / ACRE	\$859.95	\$743.03	\$555.66
YIELD / ACRE	189	67	98
BASE YIELD	124	36	54
= YIELD ABOVE BASE	65	31	44
X ADDED UNIT COST	\$1.36	\$1.24	\$1.77
ADDED UNIT COST / ACRE	\$88.40	\$38.44	\$77.88
BASE YIELD COST	\$516.99	\$325.42	\$296.98
= TOTAL NON-LAND PROD. COSTS	\$605.39	\$363.86	\$374.86
NET RETURN / ACRE	\$254.56	\$379.17	\$180.80
X CROPPING PATTERN	0.4	0.526	0.074
= ROTATIONAL NET RETURN / ACRE	\$101.82	\$199.44	\$13.38
TOTAL ROTATIONAL NET RETURN	\$314.65		
BASE CAP RATE	0.066		
CAUV LAND VALUE	\$4,767.37	SAY	\$4,770

5/19/2015

2018 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	1.34661	1.320548	1.572727
adjusted yield/acre	194	69	101
X Crop Price/Unit	\$4.18	\$10.43	\$5.52
= GROSS INCOME / ACRE	\$810.92	\$719.67	\$557.52
YIELD / ACRE	194	69	101
BASE YIELD	129	38	58
= YIELD ABOVE BASE	65	31	43
X ADDED UNIT COST	\$1.44	\$0.94	\$1.49
ADDED UNIT COST / ACRE	\$93.60	\$29.14	\$64.07
BASE YIELD COST	\$529.28	\$346.26	\$330.53
= TOTAL NON-LAND PROD. COSTS	\$622.88	\$375.40	\$394.60
NET RETURN / ACRE	\$188.04	\$344.27	\$162.92
X CROPPING PATTERN	0.39	0.55	0.06
= ROTATIONAL NET RETURN / ACRE	\$73.34	\$189.35	\$9.78
TOTAL ROTATIONAL NET RETURN	\$272.46		
BASE CAP RATE	0.08		
UNADJUSTED VALUE	\$3,405.74	SAY	\$3,410
2017 Value			\$4,205
ADJUSTED CAUV VALUE			\$3,810

5/11/2018

2015 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	1.315254	1.279452	1.525
adjusted yield/acre	142	49	76
X Crop Price/Unit	\$4.55	\$11.09	\$5.67
= GROSS INCOME / ACRE	\$646.10	\$543.41	\$430.92
YIELD / ACRE	142	49	76
BASE YIELD	124	36	54
= YIELD ABOVE BASE	18	13	22
X ADDED UNIT COST	\$1.36	\$1.24	\$1.77
ADDED UNIT COST / ACRE	\$24.48	\$16.12	\$38.94
BASE YIELD COST	\$516.99	\$325.42	\$296.98
= TOTAL NON-LAND PROD. COSTS	\$541.47	\$341.54	\$335.92
NET RETURN / ACRE	\$104.63	\$201.87	\$95.00
X CROPPING PATTERN	0.4	0.526	0.074
= ROTATIONAL NET RETURN / ACRE	\$41.85	\$106.18	\$7.03
TOTAL ROTATIONAL NET RETURN	\$155.07		
BASE CAP RATE	0.066		
CAUV LAND VALUE	\$2,349.48	SAY	\$2,350

5/19/2015

2018 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	1.34661	1.320548	1.572727
adjusted yield/acre	145	50	79
X Crop Price/Unit	\$4.18	\$10.43	\$5.52
= GROSS INCOME / ACRE	\$606.10	\$521.50	\$436.08
YIELD / ACRE	145	50	79
BASE YIELD	129	38	58
= YIELD ABOVE BASE	16	12	21
X ADDED UNIT COST	\$1.44	\$0.94	\$1.49
ADDED UNIT COST / ACRE	\$23.04	\$11.28	\$31.29
BASE YIELD COST	\$529.28	\$346.26	\$330.53
= TOTAL NON-LAND PROD. COSTS	\$552.32	\$357.54	\$361.82
NET RETURN / ACRE	\$53.78	\$163.96	\$74.26
X CROPPING PATTERN	0.39	0.55	0.06
= ROTATIONAL NET RETURN / ACRE	\$20.97	\$90.18	\$4.46
TOTAL ROTATIONAL NET RETURN	\$115.61		
BASE CAP RATE	0.08		
UNADJUSTED VALUE	\$1,445.10	SAY	\$1,440
2017 Value			\$1,950
ADJUSTED CAUV VALUE			\$1,700

5/11/2018

CAUV Summary Values

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

TY 2015 Final Values - 5/28/2015

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	601	0	54	0	350	350	350
50-59	749	0	106	27	350	1,610	518
60-69	1,114	0	169	90	350	2,560	1,371
70-79	798	81	239	154	1,230	3,620	2,347
80-89	211	157	284	221	2,370	4,300	3,354
90-99	35	247	314	270	3,740	4,760	4,104
100+	6	315	315	315	4,770	4,770	4,770
All Regions	3,514	\$0	\$315	\$86	\$350	\$4,770	\$1,388

CAUV Summary Values

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

TY 2017 Final Values - 8/03/2017

Productivity Index	No. of Units	Net Return/Acre			Cropland Value/Acre		
		Low	High	Average	Low	High	Average
0-49	601	0	40	0	350	350	350
50-59	749	0	90	17	350	1,280	430
60-69	1,114	0	154	74	350	2,190	1,061
70-79	798	65	220	138	925	3,125	1,969
80-89	211	143	265	205	2,035	3,760	2,909
90-99	35	234	295	253	3,320	4,190	3,602
100+	6	296	296	296	4,205	4,205	4,205
All Regions	3,514	\$0	\$296	\$74	\$350	\$4,205	\$1,153

Average CAUV Values by Year, 2002-2018

Productivity Index	Average CAUV Values by Year, 2002-2018																	
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
0-49	100	100	100	100	108	100	100	176	200	300	350	350	350	350	350	350	350	
50-59	102	101	114	106	134	100	100	200	214	328	362	516	700	518	466	430	400	
60-69	125	113	104	101	125	123	188	435	436	632	610	1218	1778	1371	1235	1061	896	
70-79	285	244	157	124	241	283	431	746	845	1126	1147	1958	2728	2347	2255	1969	1723	
80-89	516	467	342	293	465	521	708	1059	1278	1641	1717	2743	3718	3354	3302	2909	2586	
90-99	713	663	533	492	675	747	973	1368	1601	2017	2128	3310	4428	4104	4074	3602	3226	
100+	870	820	690	650	880	970	1200	1620	1900	2380	2490	3780	5030	4770	4750	4205	3810	
Total	180	163	135	123	177	181	249	459	505	700	719	1205	1668	1388	1310	1153	1015	
No. of Soils	3307	3313	3313	3358	3482	3510	3511	3511	3514	3514	3514	3514	3514	3514	3514	3514	3514	

Average CAUV Values by Reappraisal/Update Year

Productivity Index	Average CAUV Values by Reappraisal/Update Year			
	2003	2006	2009	2012
0-49	100	108	176	350
50-59	101	134	200	362
60-69	113	125	435	610
70-79	244	241	746	1147
80-89	467	465	1059	1717
90-99	663	675	1368	2128
100+	820	880	1620	2490
Total	163	177	459	719
No. of Soils	3313	3482	3511	3514

Comparison of Inputs, Tax Years 2015-2018

<u>Crop Prices</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>Difference</u>	
					<u>2015-18</u>	<u>2017-18</u>
Corn	\$4.55	\$4.49	\$4.51	\$4.18	(\$0.37)	(\$0.33)
Soybeans	\$11.09	\$10.91	\$10.83	\$10.43	(\$0.66)	(\$0.40)
Wheat	\$5.67	\$5.53	\$5.53	\$5.52	(\$0.15)	(\$0.01)
 <u>Non-land Production Costs</u>						
Base Cost						
Corn	\$516.99	\$524.47	\$538.78	\$529.28	\$12.29	(\$9.50)
Soybeans	\$325.42	\$336.33	\$347.10	\$346.26	\$20.84	(\$0.84)
Wheat	\$296.98	\$323.52	\$336.21	\$330.53	\$33.55	(\$5.68)
 <u>Additional Unit Cost</u>						
Corn	\$1.36	\$1.38	\$1.45	\$1.44	\$0.08	(\$0.01)
Soybeans	\$1.24	\$1.07	\$1.05	\$0.94	(\$0.30)	(\$0.11)
Wheat	\$1.77	\$1.64	\$1.62	\$1.49	(\$0.28)	(\$0.13)
 <u>Capitalization Rate</u>						
Mortgage/Equity Ratio	80/20	80/20	80/20	80/20		
Years	25	25	25	25		
Interest Rate	6.15	5.76	7.73	7.73		
Equity Rate	5.25	5.25	5.55	5.55		
Tax Additur	1.6	1.6	1.6	1.6		
Capitalization Rate	6.6	6.3	8.0	8.0	1.40	0.00