Ohio | Department of Taxation

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FINAL VALUES – 2020

2020 CURRENT AGRICULTURAL USE VALUE OF LAND TABLES
EXPLANATION OF THE CALCULATION OF VALUES FOR TAX YEAR 2020

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 2020. 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. The counties scheduled in 2020 will receive the lower values as prescribed by law. The final values are all the new formula values for 2020, 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 2020, yield data from calendar years 2010-2019 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 2017	TY 2018	TY 2019	TY 2020
Crop	**1984 Base**	**2007-2016**	**2008-2017**	**2009-2018**	**2010-2019**
Corn	118.0 bu	156.2 bu	158.9 bu	164.1 bu	162.3 bu
Soybeans	36.5 bu	47.9 bu	48.2 bu	50.4 bu	50.2 bu
Wheat	44.0 bu	67.9 bu	69.2 bu	69.9 bu	68.2 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: 37.2% corn, 57.2% beans, and 5.6% wheat. This rotation is based on data from 2015-2019 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. The minimum cropland value remains at $350 per acre, and the minimum woodland value remains at $230 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 2013 through 2019. The annual production and price per unit for each of these crops for the 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 2017	**TY 2018**	**TY 2019**	**TY 2020**
Crop	**Unit**	**2010-2016**	**2011-2017**	**2012-2018**	**2013-2019**
Corn	Bushel	$4.51	$4.18	**$3.68**	**$3.63**
Soybeans	Bushel	$10.83	$10.43	**$9.78**	**$9.12**
Wheat	Bushel	$5.53	$5.52	**$5.15**	**$4.84**

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 2014-2020, 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 2020 are summarized in the following table and compared to the costs used for tax years 2017 and 2019:

NON-LAND PRODUCTION COSTS				
Crop Base Cost	**Base Yld/2020**	**TY 2017**	**TY 2019**	**TY 2020**
Corn	132 bu	$538.78	$519.04	$503.44
Soybeans	40 bu	$347.10	$338.54	$331.48
Wheat	58 bu	$336.21	$319.08	$303.88
Additional Cost per Unit				
Corn	1 bu	$ 1.45	$ 1.43	$ 1.38
Soybeans	1 bu	$ 1.05	$ 0.90	$ 0.89
Wheat	1 bu	$ 1.62	$ 1.41	$ 1.33

E. CAPITALIZATION RATE

Five-year averaging is used to derive the Farm Credit Service interest rate of 5.69% (Exhibit E, page 14). The interest rate of 7.36% 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 (1994-2018, 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 49.97 mills for tax year 2019 (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 45.54)/1000.

80% loan x annual debt service of 0.75937*		0.0607
20% equity x equity yield rate of .0736	+	0.0147
Subtotal		0.0754
Less: equity buildup for 25 years		
% loan x 100% mortgage paid off x sinking fund factor**		
(0.80) (1.00) (0.015001)		(0.0120)
Subtotal		0.0634
Tax Additur Adjustment	+	0.0160
Capitalization Rate		0.0794 or **7.9%**

*Mortgage constant assumes 25-year loan, 5.69% interest rate.
**Sinking fund factor assumes 25-year term, 7.36% equity rate.

The capitalization rate, including R.E. taxes, is **7.9%** 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, 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

Exhibit A - Average Crop Yields by Year in Ohio

USDA, National Agricultural Statistics Service, Yield Per Acre
Crop Production 2019 Summary, January 2020

Year	Corn	Soybeans	Wheat
1984	**118**	**36.5**	**44**
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
Average 2010-2019	162.3	50.2	68.2
1984 Base	**118**	**36.5**	**44**
Average/1984 Base	1.375424	1.375342	1.550000
% increase	37.54%	37.53%	55.00%

2/21/2020

USDA/National Agricultural Statistics Service
for use in TY 2019 CAUV land values: update the PIDAT on mainframe

Exhibit B - Acres Harvested, 2015-2019
TY 2020 Crop Rotation

Year	Corn	% of Total	Soybeans	% of Total	Wheat	% of Total	Corn, Beans & Wheat Totals
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	**37.6%**	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
Five Year Average	3,116,000	**37.2%**	4,792,000	**57.2%**	467,000	**5.6%**	8,375,000

USDA, National Agricultural Statistics Service, Area Harvested
Crop Production, 2019 Summary, January 2020
2/21/2020

Exhibit C, FIVE YEAR AVERAGE CROP PRICES, TAX YEAR 2020

USDA, National Agricultural Statistics Service
Crop Values, 2019 Summary, February 2020
Crop Production, 2019 Summary, January 2020

	Year	Production (1,000 bu)	Price	Value (1,000 dollars)
CORN	2013	~~650,760~~	~~$ 4.41~~	~~2,869,852~~
	2014	612,480	$ 3.78	2,315,174
	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	$ 3.74	2,307,954
	2019	421,480	$ 4.20	1,770,216
Totals		2,707,390		$ 10,346,354
Weighted Avg. Price			$ 3.82	
After Management Allowance of 5%			**$ 3.63**	
SOYBEAN	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	~~281,120~~	~~$ 8.69~~	~~2,442,933~~
	2019	209,230	$ 9.15	1,914,455
Totals		1,208,190		$ 11,593,414
Weighted Avg. Price			$ 9.60	
After Management Allowance of 5%			**$ 9.12**	
WHEAT	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	$ 5.08	171,450
	2019	21,560	$ 5.25	113,190
Totals		161,840		$ 824,255
Weighted Avg. Price			$ 5.09	
After Management Allowance of 5%			**$ 4.84**	

Updated 3/2/2020

Exhibit D, Production Costs, Tax Year 2020
Determination of Five Year Average Costs for the Projected Crop Budgets

ITEM		Units	2014	2015	2016	2017	2018	2019	2020	MAXIMUM	MINIMUM	5 yr. Avg.
VARIABLE COSTS												
Seed	**CORN**	1000k	$3.44	$3.44	$3.44	$3.44	~~$3.50~~	$3.38	~~$3.25~~	$3.50	$3.25	$3.43
	SOYBEANS	1000s	$0.41	~~$0.43~~	$0.43	~~$0.37~~	$0.43	$0.43	$0.39	$0.43	$0.37	$0.42
	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**		$0.46	~~$0.46~~	$0.37	$0.34	$0.31	$0.37	~~$0.30~~	$0.46	$0.30	$0.37
	N Wheat		~~$0.64~~	$0.57	$0.52	~~$0.36~~	$0.41	$0.45	$0.43	$0.64	$0.36	$0.48
	P2O5, Corn/Soybeans		~~$0.60~~	$0.57	$0.46	$0.44	$0.47	$0.50	~~$0.38~~	$0.60	$0.38	$0.49
	P2O5 Wheat		$0.43	$0.53	~~$0.53~~	$0.43	$0.44	$0.52	~~$0.39~~	$0.53	$0.39	$0.47
	K2O, Corn/Soybeans		$0.38	~~$0.40~~	$0.28	~~$0.26~~	$0.28	$0.32	$0.28	$0.40	$0.26	$0.31
	K2O Wheat		~~$0.35~~	$0.34	$0.33	~~$0.24~~	$0.26	$0.30	$0.28	$0.35	$0.24	$0.30
	LIME		$25.00	$25.00	$25.00	$25.00	~~$25.00~~	~~$25.00~~	$25.00	$25.00	$25.00	$25.00
Chemicals	**CORN**		$55.93	$56.08	$56.08	~~$60.42~~	~~$43.93~~	$46.22	$46.22	$60.42	$43.93	$52.11
	SOYBEANS		~~$32.92~~	$33.84	$33.84	~~$45.70~~	$39.30	$41.99	$41.99	$45.70	$32.92	$38.19
	WHEAT		$13.00	$13.00	~~$9.50~~	$9.50	$13.25	~~$14.65~~	$14.65	$14.65	$9.50	$12.68
Fuel, Oil, Grease	**CORN**	140	~~$20.14~~	$13.52	~~$10.07~~	$12.66	$13.64	$13.56	$13.75	$20.14	$10.07	$13.43
		175	~~$20.14~~	$13.52	~~$10.07~~	$12.66	$13.64	$13.56	$13.75	$20.14	$10.07	$13.43
		210	~~$20.14~~	$13.52	~~$10.07~~	$12.66	$13.64	$13.56	$13.75	$20.14	$10.07	$13.43
	SOYBEANS	43	$11.42	$7.67	~~$5.71~~	$7.18	~~$12.57~~	$11.58	$11.58	$12.57	$5.71	$9.89
		54	$11.42	$7.67	~~$5.71~~	$7.18	~~$12.57~~	$11.58	$11.58	$12.57	$5.71	$9.89
		65	$11.42	$7.67	~~$5.71~~	$7.18	~~$12.57~~	$11.58	$11.58	$12.57	$5.71	$9.89
	WHEAT	58	~~$15.76~~	$14.63	$10.13	$9.90	~~$7.62~~	$12.05	$8.33	$15.76	$7.62	$11.01
		72	~~$15.76~~	$14.63	$10.13	$9.90	~~$7.62~~	$12.05	$8.33	$15.76	$7.62	$11.01
		86	~~$15.76~~	$14.63	$10.13	$9.90	~~$7.62~~	$12.05	$8.33	$15.76	$7.62	$11.01
Repairs	**CORN**	140	~~$26.78~~	$26.78	$26.78	$26.78	~~$19.91~~	$20.48	$25.54	$26.78	$19.91	$25.27
		175	~~$26.78~~	$26.78	$26.78	$26.78	~~$19.91~~	$20.48	$25.54	$26.78	$19.91	$25.27
		210	~~$26.78~~	$26.78	$26.78	$26.78	~~$19.91~~	$20.48	$25.54	$26.78	$19.91	$25.27
	SOYBEANS	43	$20.61	$20.61	$20.61	$20.61	~~$17.22~~	$17.57	~~$21.60~~	$21.60	$17.22	$20.00
		54	$20.61	$20.61	$20.61	$20.61	~~$17.22~~	$17.57	~~$21.60~~	$21.60	$17.22	$20.00
		65	$20.61	$20.61	$20.61	$20.61	~~$17.22~~	$17.57	~~$21.60~~	$21.60	$17.22	$20.00
	WHEAT	58	$20.32	$20.32	$20.32	~~$20.32~~	$18.72	$16.72	~~$13.81~~	$20.32	$13.81	$19.28
		72	$20.32	$20.32	$20.32	~~$20.32~~	$18.72	$16.72	~~$13.81~~	$20.32	$13.81	$19.28
		86	$20.32	$20.32	$20.32	~~$20.32~~	$18.72	$16.72	~~$13.81~~	$20.32	$13.81	$19.28
Crop Insurance	**CORN**	140	~~$20.00~~	$16.30	$15.00	$13.00	$13.00	~~$12.00~~	$14.70	$20.00	$12.00	$14.40
		175	~~$21.00~~	$17.00	$16.00	$14.00	$14.00	~~$14.00~~	$16.70	$21.00	$14.00	$15.54
		210	~~$21.00~~	$17.80	$15.00	$16.00	~~$14.50~~	$15.00	$18.70	$21.00	$14.50	$16.50
	SOYBEANS	43	~~$14.00~~	$9.50	$9.00	$12.00	$9.50	~~$7.00~~	$8.60	$14.00	$7.00	$9.72
		54	~~$15.00~~	$8.50	$8.50	$12.00	$10.00	~~$7.50~~	$10.60	$15.00	$7.50	$9.92
		65	~~$15.00~~	$10.00	$8.50	$13.00	$10.50	~~$8.00~~	$12.60	$15.00	$8.00	$10.92
	WHEAT	58	$14.00	~~$14.00~~	$10.00	$10.00	~~$6.00~~	$6.00	$6.00	$14.00	$6.00	$9.20
		72	$14.00	~~$14.00~~	$10.00	$10.00	~~$6.50~~	$6.50	$6.50	$14.00	$6.50	$9.40
		86	$14.00	~~$14.00~~	$10.00	$10.00	~~$7.00~~	$7.00	$7.00	$14.00	$7.00	$9.60

Exhibit D, Production Costs, Tax Year 2020

ITEM		Units	2014	2015	2016	2017	2018	2019	2020	MAXIMUM	MINIMUM	5 yr. Avg.
Variable Miscellaneous	**CORN**	140	~~$12.00~~	$5.00	$5.00	$5.00	~~$4.80~~	$5.10	$5.10	$12.00	$4.80	$5.04
		175	~~$12.00~~	$5.00	$5.00	$5.00	~~$4.80~~	$5.10	$5.10	$12.00	$4.80	$5.04
		210	~~$12.00~~	$12.00	$5.00	$5.00	~~$4.80~~	$5.10	$5.10	$12.00	$4.80	$6.44
	SOYBEANS	43	~~$10.00~~	$4.50	$3.50	$3.50	~~$3.25~~	$3.40	$3.40	$10.00	$3.25	$3.66
		54	~~$10.00~~	$4.50	$3.50	$3.50	~~$3.25~~	$3.40	$3.40	$10.00	$3.25	$3.66
		65	~~$10.00~~	$4.50	$3.50	$3.50	~~$3.25~~	$3.40	$3.40	$10.00	$3.25	$3.66
	WHEAT	58	~~$6.00~~	$6.00	~~$1.50~~	$3.20	$3.00	$3.00	$3.00	$6.00	$1.50	$3.64
		72	~~$6.00~~	$6.00	~~$1.50~~	$3.20	$3.00	$3.00	$3.00	$6.00	$1.50	$3.64
		86	~~$6.00~~	$6.00	~~$1.50~~	$3.20	$3.00	$3.00	$3.00	$6.00	$1.50	$3.64
Drying:												
Fuel & Electric	**CORN**		~~$0.21~~	$0.16	$0.11	$0.11	$0.06	~~$0.04~~	$0.04	$0.21	$0.04	$0.10
Hauling Farm to Market:												
	CORN		$0.02	$0.02	~~$0.01~~	$0.02	~~$0.18~~	$0.17	$0.17	$0.18	$0.01	$0.08
	SOYBEANS		$0.02	$0.02	~~$0.01~~	$0.02	~~$0.18~~	$0.17	$0.17	$0.18	$0.01	$0.08
	WHEAT		$0.02	$0.02	$0.02	~~$0.02~~	~~$0.18~~	$0.17	$0.17	$0.18	$0.02	$0.08
Interest - variable costs			~~4.00%~~	5.00%	4.50%	5.00%	5.00%	~~5.50%~~	5.00%	5.50%	4.00%	4.90%
FIXED COSTS												
Labor Charge	**CORN**		$45.00	$45.00	$45.00	~~$45.00~~	~~$37.50~~	$37.50	$37.50	$45.00	$37.50	$42.00
	SOYBEANS		$30.00	$30.00	$30.00	~~$30.00~~	~~$22.50~~	$22.50	$22.50	$30.00	$22.50	$27.00
	WHEAT		~~$22.50~~	$22.50	$22.50	$22.50	$22.50	~~$22.50~~	$22.50	$22.50	$22.50	$22.50
Machinery & Equipment	**CORN**		$123.57	~~$130.45~~	$130.45	$130.45	~~$84.61~~	$86.07	$95.22	$130.45	$84.61	$113.15
	SOYBEANS		~~$107.89~~	$107.89	$107.89	$107.89	~~$56.44~~	$57.90	$65.50	$107.89	$56.44	$89.41
	WHEAT		~~$125.86~~	$125.86	$125.86	$125.86	$64.49	$65.28	~~$47.29~~	$125.86	$47.29	$101.47
Fixed Miscellaneous*	**CORN**	140	$0.00	$24.00	$24.00	$22.00	$23.10	$22.80	$20.50	$24.00	$0.00	$22.73
		175	$0.00	$24.00	$24.00	$22.00	$23.10	$22.80	$20.50	$24.00	$0.00	$22.73
		210	$0.00	$24.00	$24.00	$22.00	$23.10	$22.80	$20.50	$24.00	$0.00	$22.73
	SOYBEANS	43	$0.00	$16.50	$15.60	$14.50	$14.90	$14.70	$13.40	$16.50	$0.00	$14.93
		54	$0.00	$16.50	$15.60	$14.50	$14.90	$14.70	$13.40	$16.50	$0.00	$14.93
		65	$0.00	$16.50	$15.60	$14.50	$14.90	$14.70	$13.40	$16.50	$0.00	$14.93
	WHEAT	58	$0.00	$0.00	$14.00	$12.60	$12.75	$12.10	$10.70	$14.00	$0.00	$12.43
		72	$0.00	$0.00	$14.00	$12.60	$12.75	$12.10	$10.70	$14.00	$0.00	$12.43
		86	$0.00	$0.00	$14.00	$12.60	$12.75	$12.10	$10.70	$14.00	$0.00	$12.43

***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 2020, OSU Extension, College of Food, Agricultural & Environmental Sciences,

Updated 6/2/20

2020 CORN BUDGET
Conservation Tillage

VARIABLE COSTS	Inputs - 5 Yr. Average	UNITS	BASE 132 BUSHEL	@ ADD. BUSHEL	5 YR. AVG. COST Exhibit D	Costs per Acre BASE 132 BUSHEL	Costs per Acre @ ADD. BUSHEL
SEED	**KERNELS (1000's)**		28	0.12	$3.43	$96.04	$0.41
FERTILIZER							
	N	**LB.**	124.8	1.36	$0.37	$46.18	$0.50
	P2O5	**LB.**	48.0	0.36	$0.49	$23.52	$0.18
	K2O	**LB.**	33.4	0.25	$0.31	$10.35	$0.08
	LIME	**TON**	0.25	0	$25.00	$6.25	$0.00
CHEMICALS					$52.11	$52.11	$0.00
FUEL, OIL, GREASE					$13.43	$13.43	$0.00
REPAIRS					$25.27	$25.27	$0.00
CROP INSURANCE					$15.54	$15.54	$0.00
VARIABLE MISCELLANEOUS					$5.04	$5.04	**$0.00**
DRYING: FUEL & ELECTRIC ONLY					$0.10	$13.20	$0.10
HAULING/TRUCKING					$0.08	$10.56	$0.08
INTEREST on OPER. CAP.*	4.9%/12 X 7 MOS =		2.9%			$8.07	$0.03
TOTAL VARIABLE COSTS						**$325.56**	**$1.38**
FIXED COSTS							
LABOR CHARGE					$42.00	$42.00	$0.00
MACHINERY & EQUIPMENT CHARGE					$113.15	$113.15	$0.00
MISCELLANEOUS					$22.73	$22.73	$0.00
TOTAL FIXED COSTS						**$177.88**	**$0.00**
TOTAL COSTS						**$503.44**	**$1.38**

*Interest rate of 2.9% on all variable costs except drying, hauling and crop insurance.

Source: The Ohio State University College of Food, Agricultural & Environmental Sciences, Corn Production Budget 2020, 5/10/2020

DTE, 6/2/20

2020 SOYBEAN BUDGET

No-Tillage Practices

VARIABLE COSTS Inputs - 5 Yr. Average				5 YR. AVG. COST Exhibit D	Costs per Acre	
	UNITS	BASE 40 BUSHEL	@ ADD. BUSHEL		BASE 40 BUSHEL	@ ADD. BUSHEL
SEED seeds (1000s)		173.0	0	$0.42	$72.66	$0.00
FERTILIZER						
N	**LB.**	0	0	$0.00	$0.00	$0.00
P2O5	**LB.**	31.7	0.8	$0.49	$15.53	$0.39
K2O	**LB.**	52.5	1.3	$0.31	$16.28	$0.40
LIME	**TON**	0.25	0	$25.00	$6.25	$0.00
CHEMICALS				$38.19	$38.19	$0.00
FUEL, OIL, GREASE				$9.89	$9.89	$0.00
REPAIRS				$20.00	$20.00	$0.00
CROP INSURANCE				$9.92	$9.92	$0.00
VARIABLE MISCELLANEOUS				$3.66	$3.66	$0.00
HAULING/TRUCKING				$0.08	$3.20	$0.08
INTEREST on OPER. CAP.*		4.9%/12 X 6 MOS =	2.5%		$4.56	$0.02
TOTAL VARIABLE COSTS					**$200.14**	**$0.89**
FIXED COSTS						
LABOR CHARGE				$27.00	$27.00	$0.00
MACHINERY & EQUIPMENT CHARGE				$89.41	$89.41	$0.00
MISCELLANEOUS				$14.93	$14.93	$0.00
TOTAL FIXED COSTS					**$131.34**	**$0.00**
TOTAL COSTS					**$331.48**	**$0.89**

*Interest rate of 2.5% on all variable costs except hauling and crop insurance.

Source: The Ohio State University College of Food, Agricultural & Environmental Sciences Soybean Production Budget 2020, Updated 5/10/2020

DTE, 6/2/20

2020 WHEAT BUDGET

Conservation Tillage

VARIABLE COSTS		Inputs - 5 Yr. Average		5 YR. AVG.	Costs per Acre	
ITEM	UNITS	BASE 58 BUSHELS	@ ADD. BUSHEL	COST Exhibit D	BASE 58 BUSHELS	@ ADD. BUSHEL
SEED	**seeds (1000s)**	1,400	0	$0.03	$42.00	$0.00
FERTILIZER						
N	**LB.**	54.8	1.73	$0.48	$26.30	$0.83
P2O5	**LB.**	35.2	0.59	$0.47	$16.54	$0.28
K2O	**LB.**	36.1	0.34	$0.30	$10.83	$0.10
LIME	**TON**	0.25	0	$25.00	$6.25	$0.00
CHEMICALS				$12.68	$12.68	$0.00
FUEL, OIL, GREASE				$11.01	$11.01	$0.00
REPAIRS				$19.28	$19.28	$0.00
CROP INSURANCE				$9.40	$9.40	$0.00
VARIABLE MISCELLANEOUS				$3.64	$3.64	$0.00
HAULING/TRUCKING				$0.08	$4.64	$0.08
INTEREST on OPER. CAP.*		4.9%/12 X 8 MOS =	3.3%		$4.90	$0.04
TOTAL VARIABLE COSTS					**$167.48**	**$1.33**
FIXED COSTS						
LABOR CHARGE				$22.50	$22.50	$0.00
MACHINERY & EQUIPMENT CHARGE				$101.47	$101.47	$0.00
MISCELLANEOUS				$12.43	$12.43	$0.00
TOTAL FIXED COSTS					**$136.40**	**$0.00**
TOTAL COSTS					**$303.88**	**$1.33**

*Interest rate of 3.3% on all variable costs except hauling and crop insurance.

Source: The Ohio State University College of Food, Agricultural & Environmental Sciences, Wheat Production Budget 2020, Updated 11/1/19

DTE, 6/2/20

Exhibit E: INTEREST RATES - CAPITALIZATION RATE

INTEREST RATE*		EQUITY RATE**	
Year		**Year**	
2014	~~6.20~~	2018	2.05
2015	5.60	2017	4.48
2016	5.15	2016	1.72
2017	5.65	2015	-0.83
2018	6.04	2014	8.08
2019	6.00	2013	8.37
2020	~~4.90~~	2012	17.04
		2011	11.04
Average	**5.69**	2010	12.47
		2009	-0.71
		2008	4.30
		2007	4.60
		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
		Average	**7.36**

*** 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, February 5, 2020

CAPITALIZATION RATES USED IN CALCULATION
2014 - 2020

TAX YEAR	CAP RATE
2014	6.2%
2015	6.6%
2016	6.3%
2017	8.0%
2018	8.0%
2019	8.0%
2020	**7.9%**

6/2/2020

2017 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	1.323729	1.312329	1.543182
adjusted yield/acre	191	68	99
X Crop Price/Unit	$4.51	$10.83	$5.53
= GROSS INCOME / ACRE	$861.41	$736.44	$547.47
YIELD / ACRE	191	68	99
BASE YIELD	127	37	56
= YIELD ABOVE BASE	64	31	43
X ADDED UNIT COST	$1.45	$1.05	$1.62
ADDED UNIT COST / ACRE	$92.80	$32.55	$69.66
BASE YIELD COST	$538.78	$347.10	$336.21
= TOTAL NON-LAND PROD. COSTS	$631.58	$379.65	$405.87
NET RETURN / ACRE	$229.83	$356.79	$141.60
X CROPPING PATTERN	0.4	0.54	0.06
= ROTATIONAL NET RETURN / ACRE	$91.93	$192.67	$8.50
TOTAL ROTATIONAL NET RETURN	$293.09		
BASE CAP RATE	0.062		
CAUV LAND VALUE	$4,727.33	SAY	**$4,730**

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

2017 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	1.323729	1.312329	1.543182
adjusted yield/acre	143	50	77
X Crop Price/Unit	$4.51	$10.83	$5.53
= GROSS INCOME / ACRE	$644.93	$541.50	$425.81
YIELD / ACRE	143	50	77
BASE YIELD	127	37	56
= YIELD ABOVE BASE	16	13	21
X ADDED UNIT COST	$1.45	$1.05	$1.62
ADDED UNIT COST / ACRE	$23.20	$13.65	$34.02
BASE YIELD COST	$538.78	$347.10	$336.21
= TOTAL NON-LAND PROD. COSTS	$561.98	$360.75	$370.23
NET RETURN / ACRE	$82.95	$180.75	$55.58
X CROPPING PATTERN	0.4	0.54	0.06
= ROTATIONAL NET RETURN / ACRE	$33.18	$97.61	$3.33
TOTAL ROTATIONAL NET RETURN	$134.12		
BASE CAP RATE	0.062		
CAUV LAND VALUE	$2,163.22	SAY	**$2,160**

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

CAUV Summary Values

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	3,514	$0	$223	$40	$350	$2,820	**$668**

8/3/2017

TY 2017 Final Values (Adjusted)

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**

6/12/2020

CAUV Summary Values

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	3,514	$0	$223	$40	$350	$2,820	**$668**

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**

6/12/2020

Average CAUV Values by Year, 2004-2020

Productivity Index	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
0-49	100	100	108	100	100	176	200	300	350	350	350	350	350	350	350	350	350
50-59	114	106	134	100	100	200	214	328	362	516	700	518	466	430	400	378	351
60-69	104	101	125	123	188	435	436	632	610	1218	1778	1371	1235	1061	896	731	488
70-79	157	124	241	283	431	746	845	1126	1147	1958	2728	2347	2255	1969	1723	1469	1073
80-89	342	293	465	521	708	1059	1278	1641	1717	2743	3718	3354	3302	2909	2586	2270	1783
90-99	533	492	675	747	973	1368	1601	2017	2128	3310	4428	4104	4074	3602	3226	2863	2303
100+	690	650	880	970	1200	1620	1900	2380	2490	3780	5030	4770	4750	4205	3810	3420	2820
Total	135	123	177	181	249	459	505	700	719	1205	1668	1388	1310	1153	1015	876	668
No. of Soils	3313	3358	3482	3510	3511	3511	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514	3514

Average CAUV Values by Reappraisal/UpdateYear

Productivity Index	2005	2008	2011	2014	2017	2020
0-49	100	100	300	350	350	350
50-59	106	100	328	700	430	351
60-69	101	188	632	1778	1061	488
70-79	124	431	1126	2728	1969	1073
80-89	293	708	1641	3718	2909	1783
90-99	492	973	2017	4428	3602	2303
100+	650	1200	2380	5030	4205	2820
Total	123	249	700	1668	1153	668
No. of Soils	3358	3511	3514	3514	3514	3514

6/12/2020

Comparison of Inputs, Tax Years 2017-2020

					Difference	
Crop Prices	**2017**	**2018**	**2019**	**2020**	**2017-20**	**2019-20**
Corn	$4.51	$4.18	$3.68	$3.63	**($0.88)**	($0.05)
Soybeans	$10.83	$10.43	$9.78	$9.12	**($1.71)**	($0.66)
Wheat	$5.53	$5.52	$5.15	$4.84	**($0.69)**	($0.31)
Non-land Production Costs						
Base Cost						
Corn	$538.78	$529.28	$519.04	$503.44	**($35.34)**	($15.60)
Soybeans	$347.10	$346.26	$338.54	$331.48	**($15.62)**	($7.06)
Wheat	$336.21	$330.53	$319.08	$303.88	**($32.33)**	($15.20)
Additional Unit Cost						
Corn	$1.45	$1.44	$1.43	$1.38	**($0.07)**	($0.05)
Soybeans	$1.05	$0.94	$0.90	$0.89	**($0.16)**	($0.01)
Wheat	$1.62	$1.49	$1.41	$1.33	**($0.29)**	($0.08)
Capitalization Rate						
Mortgage/Equity Ratio	80/20	80/20	80/20	80/20		
Years	25	25	25	25		
Interest Rate	5.55	5.55	5.69	5.69		
Equity Rate	7.73	7.73	7.55	7.36		
Tax Additur	1.6	1.6	1.6	1.6		
Capitalization Rate	8.0	8.0	8.0	7.9	(0.10)	(0.10)

DTE, 6/2/20