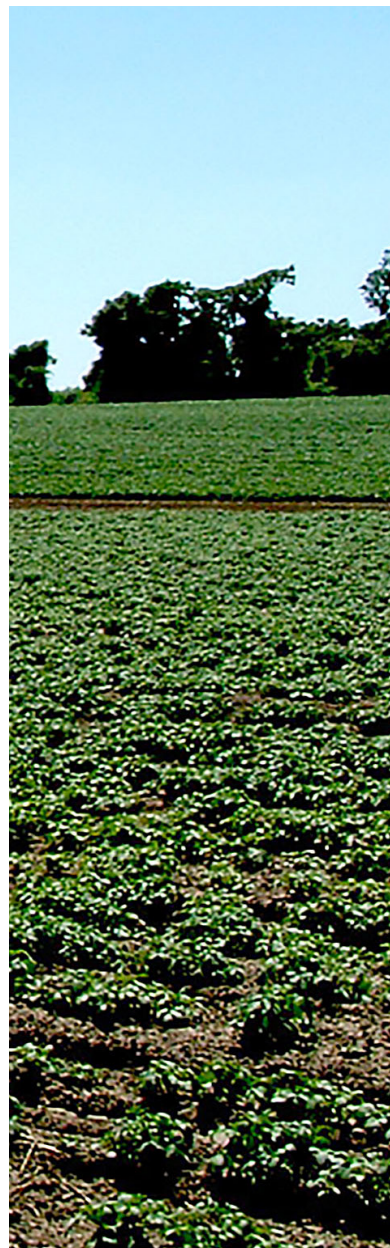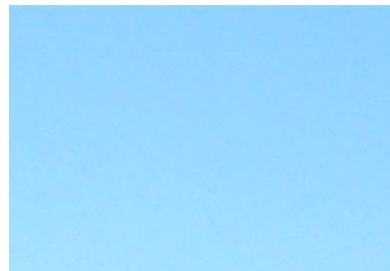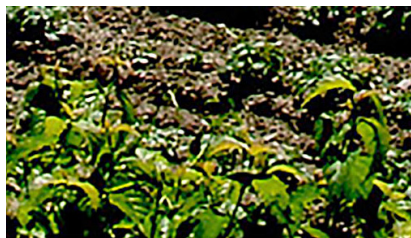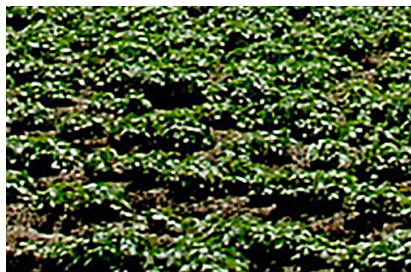# Methods and Procedures:

Determining the Use-Value of Agricultural and Horticultural Land in Virginia

Revised 2020

Virginia Cooperative Extension

Virginia Tech • Virginia State University

Methods and Procedures:
Determining the Use-Value of Agricultural and Horticultural Land In Virginia

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Introduction

Virginia law allows localities that adopt a program of special assessments for agriculture, horticulture, forestry, and/or open space lands to tax landowners based on the value of the land in one of these four uses (use-value) instead of its market value. This document describes methods and procedures used to calculate use-values for agriculture and horticulture land based on income and rental rate approaches.

The use-value of agricultural land is defined as the net income one could expect to receive from crops (e.g., corn, alfalfa, pasture, wheat) grown on the land. The use-value of horticultural land is defined as the net income one could expect to receive from tree fruit (e.g., apple, peach, pear). These special assessments only apply to what is produced on the land and not to such things as livestock, buildings, or other improvements.

Use-value taxation is found in some form in all 50 states, suggesting support for the preservation of this land and for a reduction of the tax burden on owners of land used to produce food, fiber, and timber. In 1974, Virginia passed legislation to enable localities to provide tax relief to landowners in order to preserve agricultural, horticultural, forest, and open space lands with the explicit purpose that the public would benefit from its preservation. An example of how estimates based on the income of agricultural land (income approach) and renting agricultural land (rental rate approach) is provided in a hypothetical farm example in Prince Edward County (appendix A).

The purpose of this document is to explain the underlying assumptions behind the Virginia Use-Value Assessment Program and the processes used in calculating use-value estimates for agricultural and horticultural land in the cities and counties participating in the program. This paper provides step-by-step explanations of the methods used in developing the final use-value estimates. Prince Edward County is used as the example to illustrate the process. All use-value reports (some of which also include rental rate estimates) generated in calculating estimates for Prince Edward County are provided in the appendixes. Use-value estimates and reports for all counties and cities participating in the program are available at the Virginia Use-Value Assessment Program website.[1] Also at the website are frequently asked questions about the use-value program. Questions and answers are organized into seven categories: basic questions, eligibility, standards, application process, rollback taxes, localities, and use-value estimates.

The rationale for the Use-Value Assessment Program is provided in Section 58.1–3229 of the Code of Virginia, which declares that "the preservation of real estate for agricultural, horticultural, forest, and open space use is in the public interest and … the classification, special assessment, and taxation of such property in a manner that promotes its preservation helps foster long-term public benefits." Virginia law allows for eligible land in any of these categories to be taxed based on the land's value in use (use-value) as opposed to the land's market value.

In addition, Section 58.1–3239 of the Code of Virginia establishes the State Land Evaluation Advisory Council and directs SLEAC to estimate the use-value of eligible land for each jurisdiction participating in the land-use program: " The Advisory Council in determining such ranges of values, shall base the determination on productive earning power to be determined by capitalization of warranted cash rents or by the capitalization of incomes of like real estate in the locality or a reasonable area of the locality."

Income and Rental Rate Approaches

As stated, SLEAC is required to base its estimates on the use of agricultural and horticultural lands. An income approach is used to calculate use-value estimates for each county participating in the use-value program by basing estimates on the capitalization of net income.

In 2009, published rental rates[2] became available from the National Agricultural Statistics Service. A rental rate approach is used to calculate use-value estimates for all counties based on the capitalization of rents. Each approach will be described.

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1   http://usevalue.agecon.vt.edu/.

2   Annual jurisdictional capitalized rental rates for cropland and pastureland are available at http://usevalue.agecon.vt.edu/ (see Estimates > Agricultural/Horticultural Rental Rate Estimates).

SLEAC contracts annually with the Department of Agricultural and Applied Economics at Virginia Tech to (1) develop an objective methodology, (2) estimate the use-value of land in agricultural and horticultural use for counties and cities participating in the use-value assessment program, and (3) capitalize cash rents reported annually by NASS. A Technical Advisory Committee, composed of professionals familiar with Virginia agriculture, was established in 1998 to provide guidance on the technical aspects of developing an appropriate methodology.

Individuals from the following organizations are represented on the TAC:

- Department of Agricultural and Applied Economics, Virginia Tech.

- School of Plant and Environmental Sciences, Virginia Tech.

- Virginia Agricultural Statistics Service.

- Virginia Cooperative Extension.

- Virginia Department of Agriculture and Consumer Services.

- Virginia Department of Conservation and Recreation.

- Virginia Department of Forestry.

- Virginia Department of Taxation.

The methodology for determining the use-value of agricultural and horticultural land and the capitalization of cash rents described in this document represents the combined judgment of these individuals and has been officially sanctioned by SLEAC.

Section 1. Estimating the Use-value of Agricultural Land: Income Approach

This section describes the methodology SLEAC uses in estimating the use-value of agricultural land using an income approach.[3]

The Composite Farm

The agricultural sector in Virginia is very heterogeneous. A typical agricultural operation located along Virginia's Eastern Shore is very different from an operation in Southwest Virginia. For this reason, an accurate estimation of agricultural use-values requires the development of a composite (i.e., typical) farm for each jurisdiction.[4] County-level data pertaining to the total number of farms and acreage harvested for each crop is obtained from the most recent USDA Census of Agriculture (Ag Census). To calculate the composite farm acreage for a crop within a county, the total acreage for each crop in the county is divided by the number of farms in the county. If this division results in a value greater than or equal to 1, the particular crop is included in the composite farm. If the value is less than 1, the crop is not included in the composite farm as it is assumed that the crop is not representative of a typical farm in the county. This criterion ensures that the crops included in the composite farm have sufficient data to support the estimates. It is also necessary to calculate a county's double-cropped acreage to counter the assumption that only one crop is grown annually on agricultural land.

Winter annuals (e.g., winter wheat, barley, rye crops) are assumed to always be followed by a summer crop (e.g., corn, grain sorghum, soybeans). Therefore, they are considered double-crop acreage. Summing the total acreage of winter annuals and dividing by the total number of farms in the county results in the double-crop composite farm acres. The double-crop composite acreage is subtracted from the total composite farm acreage, thus reflecting true crop rotation acreage within a jurisdiction. This ensures that the winter annual crops are accurately incorporated.

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[3]   Prince Edward County is used as an example for tax year 2020 (TY2020).
[4]   Each jurisdictions is an individual county or locality. "County" is used interchangeably throughout this manual to mean any jurisdiction.

For example, in tax year 2020, Prince Edward County had 341 farms and 1,803 soybean acres harvested (see appendix C, table C-2[5]). Therefore, Prince Edward County has 5 acres[6] of soybeans in its composite farm for TY2020. This process is continued for single- and double-cropped acreage in Prince Edward County, yielding a composite farm having a mixture of corn, alfalfa, hay, and pasture, with a total of 84 acres for TY2020.[7]

Net Farm Income

The next step in the income approach use-value estimation is determining net returns for each crop included in the composite farm.

Net Returns and Enterprise Budgets

Net returns are calculated by developing an enterprise budget[8] for each crop included in the composite farm that represents the production costs of each. In TY2020, the composite farm crops used in the use-value estimation of agricultural land in Virginia were corn, alfalfa, hay, wheat, barley, grain sorghum, soybeans, potatoes, cotton, pasture, peanuts, tobacco, lima beans, snap beans, cucumbers, cabbage, pumpkins, sweet corn, tomatoes, and watermelons.[9]

Beginning in TY2010, pasture is included as a crop within the use-value estimates.[10] Pasture acreage is calculated from the Ag Census and represents the sum of acreages for other pasture and grazing land that could have been used for crops without additional improvements, permanent pasture, and rangeland other than cropland and woodland pasture. Pasture yield is converted from hay yield[11] using the following formula:

$$\text{Pasture yield} = (\text{hay yield} \div 0.75) \times 0.44$$

Also, pastureland use-values are imputed from net returns on less productive lands in each jurisdiction. Use-values for both cropland and pastureland are reported in appendix B - table B-1A.

In determining the net return for a crop's enterprise budget,[12] an annual per-acre net return budget is derived for each crop included in the composite farm. Enterprise budgets — largely derived from Virginia Cooperative Extension crop budgets and input costs derived from numerous government and industry sources — are used to determine annual crop net return budgets.

Beginning in TY2020, the net return calculation for crop enterprise budgets is enhanced by adding the personal property tax on farm equipment. Only localities[13] that report having a farm equipment category of tangible personal property tax are affected. For TY2020, 10 counties and two cities were impacted. Farm equipment tax levied annually by the jurisdiction is divided by the total composite farm acreage within a county, and the resulting per-acre tax is included as a cost in all enterprise budgets for the jurisdiction.

Also beginning in TY2010, a process for merging annual per-acre crop enterprise budgets together was initiated. Currently, there is only one crop budget for some crops (e.g., alfalfa, hay, cotton). For others (e.g., potatoes,

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[5]   Crop acreages for a tax year are from the most recent Ag Census. The census is updated every five years and lags the tax year in which it is published by three years (i.e., 2007 Ag Census data were published in TY2010; 2012 Ag Census data were published in TY2015; and 2017 Ag Census data were published in TY2020).

[6]   Composite farm crop acreages are rounded to the nearest whole number (i.e., 1,803 soybean acres ÷ 341 farms = 5.28739 composite soybean acres, which is rounded to 5 acres of soybeans for the composite farm).

[7]   Due to rounding, total composite farm acres might not reflect exact total county acreage. Acreage for some crops may not be listed due to the USDA's disclosure review of the data. For information about the disclosure review, see the 2017 Census of Agriculture, appendix A, at www.nass.usda.gov/Publications/AgCensus/2017/index.php.

[8]   A complete listing of enterprise budgets and data sources is available through the Department of Agricultural and Applied Economics at Virginia Tech.

[9]   These crops are also referred to as the primary crops and are subject to change from year to year depending on the total acreage reported in the corresponding Ag Census.

[10] The land-use-value Technical Advisory Committee approved the inclusion of pasture acreage.

[11] Hay yield = (all hay + all haylage, grass silage, and greenchop) – (alfalfa hay + haylage or greenchop from alfalfa or alfalfa mixtures).

[12] Annual enterprise budgets lag a given tax year by two years (i.e., TY2020's annual enterprise budget data is from data year (DY) 2018) due to the availability of crop yields and prices reported by the Virginia field office of the National Agricultural Statistics Service (NASS).

[13] See table 9.10 in Virginia Local Tax Rates: 2018, 37th ed., by Steven Kulp. Charlottesville, VA: Weldon Cooper's Center for Public Service.

tobacco), there can be two or more crop budgets for various production methods that are then combined. For example, a jurisdiction's potato budget is a merger of its potato-chip and potato-fresh budgets.[14]

Jurisdictional annual per-acre crop enterprise budgets are averaged using a moving seven-year olympic average.[15] The olympic averaging process helps mitigate fluctuations in the annual use-value estimates caused by unusually good or poor production years. In the event a net return is negative, its value is set to zero. For example, the net returns for corn in Prince Edward County for TY2020 are available in table 1.

Table 1. Net returns on corn in Prince Edward County for tax year 2020.

Data year	$/acre	Average $/acre
2012	156.45	Dropped
2013	−52.39*	0.00
2014	−65.55*	0.00
2015	27.09	27.09
2016	38.28	38.28
2017	−112.44*	Dropped
2018	−65.47*	0.00
Straight average	**−$12.00**	
Olympic average		**$13.07**

*Negative values are set to zero.

Dropping the highest ($156.45) and lowest ($0.00) values and averaging the remaining five years provides an estimated per-acre average net return over variable and fixed costs for corn of $13.07.

Federal Direct and Counter-Cyclical Program Payments (Federal Payments)

In the absence of federal payments, the above process for estimating a net return from a crop enterprise is sufficient. However, when federal payments are made to farms in a county, they must be included in net return calculations as a source of farm revenue.[16] Currently, federal program payments exist for corn, wheat, barley, peanuts, grain sorghum, cotton, and soybeans.[17] A federal payment received by a county for a given crop is divided by the total number of acres of that crop grown, resulting in a per-acre payment.[18] Because federal payments can vary from year to year, this calculation is made for each of the previous seven years.[19] The average federal payment for a given crop is added to the olympic average of the crop's preliminary net return to arrive at the crop's final estimated net return for the given tax year.

For example, for TY2020 in Prince Edward County, the olympic average of federal payments for soybeans for the preceding seven years was $19.02 per acre. The olympic average of soybean crop net returns for the preceding seven years was $178.81 per acre. As shown in table 2, adding these two averages together results in the final soybean estimated net return of $197.83 per acre.

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[14] Merging weights for crop enterprise budgets are calculated for some crops from annual acreages reported by NASS. Tobacco and potato budget merging weights are calculated annually.

[15] A moving olympic average is defined as an arithmetic mean calculated after first dropping the highest and lowest values within a data series. The average is "moving" in that the data series used is relative to a given tax year. For example, for TY2018, the use-value enterprise budget data series is from DY2010 to DY2016; for TY2019, the data series is from DY2011 to DY2017.

[16] The rationale for including federal payments is that this stream of revenue is capitalized into the value of the land. It is assumed that the past flow of these payments is an indicator of future payments.

[17] Data on federal program payments are provided by Farm Service Agency via an annual Freedom of Information Act request.

[18] Crop acreages are taken from the latest Ag Census.

[19] Federal payment data also lags the current tax year by two years and are estimated using a moving seven-year olympic average.

Table 2. Estimated net return on soybean in Prince Edward County for tax year 2020.

Data year	Federal payment ($/acre)	Federal payment olympic avg ($/acre)	Soybean budgets ($/acre)	Soybean budgets olympic avg ($/acre)	
2012	1.71	1.71	513.51	Dropped	
2013	0.92	Dropped	298.18	298.18	
2014	1.11	1.11	85.24	Dropped	
2015	140.51	Dropped	85.25	85.24	
2016	39.81	39.81	150.21	150.21	
2017	29.01	29.02	188.71	188.71	
2018	23.43	23.48	171.67	171.67	
Straight average	**33.78**		**213.25**		
Olympic average		**19.02**		**178.81**	
Soybean estimated net return					**$197.83**

Capitalization Rate

A basic capitalization rate is the sum of a property tax component and an interest rate component. In some jurisdictions, the capitalization rate can include a risk-of-flood component. Capitalization rate components are listed in appendix C, table C-3.[20]

Interest Rate Component

The price of borrowing and lending is the interest rate, and it is traditionally used to describe the opportunity costs of time and capital. The interest rate component reflects an alternative investment opportunity to agricultural enterprises (e.g., commercial and residential development, financial markets, etc.).

The interest rate component of the capitalization rate is a weighted average of the long-term interest rates charged by agricultural credit associations (ACA) serving Virginia.[21] To reduce the variability of the annual use-value estimates, SLEAC elected to use a straight moving average of the weighted long-term interest rates over a seven-year period prior to a given tax year.[22] For example, for TY2020 the data used for long-term interest rates are from DY2012 to DY2018. Therefore, the moving straight seven-year average of the long-term rate is 0.0531% (see appendix C, table C-3, line 2a). The same rate is used for all jurisdictions because the rate from the agricultural credit associations applies to all of Virginia. The same long-term interest rate component used for agricultural land is also used for horticultural land.

Property Tax Component

The property tax component, also changed to a moving straight seven-year average in TY2018, is an average of the effective property tax rate provided annually by the Virginia Department of Taxation.[23] Therefore, the estimated property tax component applicable to TY2020 relies on data from 2010 to 2017. The same property tax component used for agricultural land is used for horticultural land.

The sum of the interest rate and property tax rate equals the basic capitalization rate. For example, Prince Edward County's TY2020 property tax component is 0.0047, as provided by Virginia's Department of Taxation. When added to the long-term interest rate component of 0.0531, as provided by the ACA, the result is a capitalization rate of 0.0578 (appendix C, table C-3, line 2c).

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[20] A complete listing of the property tax component applicable in each jurisdiction is available for public inspection at the Virginia Department of Taxation, www.tax.virginia.gov/assessment-sales-ratio-studies.

[21] These data lag the corresponding tax year by two years.

[22] Prior to 2018, a 10-year period average was used.

[23] Property tax data lag the interest rate and net income data by three years.

Risk Component

Agricultural enterprises are subject to numerous risks. However, the risks associated with input costs, crop yields, and prices received are adequately accounted for by the net return component because these risks occur on an across-the-board basis and do not reflect individual land parcel risks. The two primary types of risks explicitly considered in the use-value methodology are related to rainfall — either drought conditions or excessive rainfall. An important difference between the two is that the risk associated with drought is not considered unique to specific parcels of land, while the risk associated with excessive rainfall is considered to affect land less uniformly. The risk of drought, unlike excessive rainfall, is assumed to be distributed uniformly within a jurisdiction and, therefore, is not identified as a unique risk factor.

The risks associated with excessive rainfall can vary within a jurisdiction. The risk is most often that of lower crop yields caused by flooding. This situation mainly occurs in the southeastern part of the state, but it also occurs in other regions, usually to a lesser extent. Because this risk is typically borne by specific areas of land within a jurisdiction, a special use-value estimate based on a capitalization rate reflecting the risk of flooding is calculated.

The size of the risk component will vary depending on the period over which a total crop loss is expected on lands subject to the effects of flooding. Use-value methodology assumes that a total crop loss will occur on land at risk of flooding once every 20 years — a 5% occurrence. Therefore, the land's capitalization rate is increased by 5%. For example, in Prince Edward County, the risk component is calculated to be 0.0029 (see appendix C, table C-3, line 2d). Adding this component to the without-risk capitalization rate results in a **with-risk** capitalization rate of 0.0606 (appendix C, table C-3, line 2e).

The estimated use-values of agricultural land are provided in appendix B, table B-1a. The with-risk estimates should only be used when an individual land tract is known to have poor drainage that cannot be remedied by tiling or drainage ditches. Land devoted to horticultural use will rarely be subject to these conditions. For this reason, SLEAC elected not to consider the risk of flooding in the use-value estimates for horticultural crops.

Calculating Use-values

Once a per-acre net return and capitalization rate for a jurisdiction have been estimated, calculating the use-value is straightforward. The basic formula is:

$$\text{Use-value} = \text{net return} \div \text{capitalization rate}$$

From this formula, an increase in a jurisdiction's use-value is caused either by an increase in net return and/or a decrease in the capitalization rate. A decrease in use-value is caused either by a decrease in the net return and/or an increase in the capitalization rate.

For example, in Prince Edward County the without-risk capitalization rate is 0.0578 (appendix C, table C-3, line 2c). Therefore, the initial use-value for **without-risk** cropland harvested is:

$$\text{Unadjusted (without-risk) use-value} = \$17.69 \div 0.0578 = \$306.06[24]$$

This calculation is referred to as an unadjusted without-risk value because it has not yet been adjusted for variations in soil capability (appendix C, table C-3, line 3).

The unadjusted, **with-risk** value is simply a jurisdiction's crop net return divided by its with-risk capitalization rate:

$$\text{Unadjusted (with-risk) use-value} = \$17.69 \div 0.0606 = \$291.91[25]$$

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[24] For readability, input values are rounded to the hundredth decimal place. $306.29 is used for the use-value estimate. See Appendix C, Table C-3, Line 3.

[25] For readability, input values are rounded to the hundredth decimal place. $291.70 is used for the use-value estimate. See Appendix C, Table C-3, Line 3.

Adjusting for Variations in Land Capability Classification

The initial unadjusted use-value estimate does not reflect different land characteristics within a jurisdiction. Section 58.1–3239 of the Code of Virginia directs SLEAC to annually publish use-value estimates for each of the eight Natural Resources Conservation Service classifications.

Table 3. Statewide land capability classifications.

Class	Description
I	Soils have few limitations that restrict use.
II	Soils have some limitations that reduce the choice of plants or require moderate conservation practices.
III	Soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
IV	Soils have very severe limitations that restrict the choice of plants, require very careful management, or both.
V	Soils are subject to little or no erosion but have other limitations that are impractical to remove that limit their use largely to pasture, range, woodland, or wildlife food and cover.
VI	Soils have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover.
VII	Soils have very severe limitations that make them unsuited to cultivation and restrict their use largely to grazing, woodland, or wildlife.
VIII	Soils and landforms have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply, or aesthetic purposes.

Agricultural professionals generally agree that land capability classes I through III are most capable of producing cultivated annual crops. Class IV is also capable of producing cultivated annual crops; however, intensive conservation treatment is required. Classes V through VII are more suited for pasture, and in some instances, orchards. It is generally agreed that Class VIII has practically no agricultural value. Therefore, classes I through IV are designated as suitable for harvested crops. Classes V through VII are designated as suitable for other agricultural uses, primarily pasture.

The most direct way to adjust for differences in land capability would be to develop a set of enterprise budgets for each land capability class. Unfortunately, much of the data that would allow such calculations is not reported at this level. Therefore, SLEAC approved the use of an index to adjust use-values for the various land capability classifications.

Class III land is used as the base capability class and is assigned an index value of 1. The use-value of agricultural land in other land capability classes is adjusted based on its income-generating potential relative to the base capability class, Class III. SLEAC approved the indexes for each land capability class to adjust use-value estimates relative to the base class (table 4).

Table 4. Virginia land capability class index (agricultural land).

Class	Scale
I	1.50
II	1.35
III	1.00
IV	0.80
V	0.60
VI	0.50
VII	0.30
VIII	0.10

The scale implies that the expected net income from land capability Class I is 150% of Class III; the expected net income from Class II is 135% of Class III land; the expected net income from Class IV is 80% of Class III land; the expected net income from Class V is 60% of Class III land, and so on.

Soil Index Factor

Because the mix of land capability classes differs among jurisdictions, it is not appropriate to simply use a single unadjusted without-risk (or with-risk) use-value estimate as the use-value estimate for Class III land. Rather, an adjustment is made by calculating a soil index factor into the use-value estimate. In TY2018, the acreage in each land capability class was updated using data from the Web Soil Survey.[26] The soil index factor is created by using the acreage from the WSS for each land capability class and calculating a weighted average for each jurisdiction.

In Prince Edward County, the soil index factor is calculated as 1.0275 and rounded to 1.03[27] (see appendix C, table C-3, section 4). This value means that a typical acre of land in Prince Edward County is between Class II (1.35) and Class III (1.00). Since the unadjusted without-risk use-value of cropland harvested for Prince Edward County was $306.29 (appendix C, table C-3, line 3), that value is divided by the soil index factor of 1.03. This yields a without-risk use-value estimate for Class III land of $300.00 per acre.[28]

$$\text{Adjusted (without-risk) use-value (Class III)} = \$306.29 \div 1.0275 = \$298.08^{[29]}$$

Multiplying this value by each of the other land class indexes provides the remaining without-risk use-value estimates (appendix C, table C-3, section 5).

The same process is used in calculating a jurisdiction's with-risk use-value estimate.

$$\text{Adjusted (with-risk) use-value (Class III)} = \$291.70 \div 1.0275 = \$283.89^{[30]}$$

Using Average Use-Value Estimates

When the land capability classes of an individual real estate tract are known, using the adjusted use-value estimates could improve accuracy. However, in many jurisdictions, it is not practical to use this data.[31] Therefore, appendix B, table B-1a lists the weighted average use-value estimates for cropland harvested (land capability classes I through IV), pastureland (land capability classes V through VII), and total agricultural land (land capability

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[26] Data on land acreage in each land capability class are available from the Web Soil Survey (NRCS 2019), http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

[27] Soil index factors are rounded to the nearest hundredth decimal point.

[28] Final estimated use values are rounded to the nearest $10 (e.g., the use-value estimate for Class III of $298.08 is reported as $300; appendix B, table 1a).

[29] This total reflects unrounded formula input values.

[30] Reported as $280.00; appendix B, table 1a.

[31] This data can be generated by using soil surveys and tax map overlays or through self-reporting, but the process is costly and difficult to verify.

classes I through VII). At the discretion of the assessing officer, the pastureland use-value may be applied to land in any land capability class that is strictly used for grazing.

Transfer-In Data

The data used for estimating the use-value of agricultural land are not published for all jurisdictions. When data does not exist for a jurisdiction participating in the use-value taxation program, data from an adjacent county is used. The process is referred to as "transferring in data." For example, Chesterfield County uses transfer-in data from Amelia County (appendix B, table B-1a) because necessary data are not available for Chesterfield County.

Transfer-in Jurisdictions: Effective Tax Rates

When a jurisdiction is not split and uses transfer-in data, the parent county's composite farm and average net returns are identical to the receiving jurisdiction. However, the final use-value estimates for a receiving county and its parent county will differ because the receiving county's property tax rate (the seven-year average) is used as the component for its capitalization rate.

For example, Buena Vista transfers in data from Rockbridge County. Therefore, both Buena Vista and Rockbridge County have identical census data, composite farm acreages, crop net returns, and final average net returns. However, Buena Vista's unadjusted use-value estimates will differ from Rockbridge County only because the moving straight seven-year average property tax rates are different.[32]

Transfer-In Jurisdictions: Soil Index

When a county uses transfer-in data, its unadjusted use-value estimates are divided by the parent county's soil index factor to calculate its adjusted use-value estimates. For example, Buena Vista transfers in data from Rockbridge County and uses Rockbridge County's soil index factor in calculating its adjusted use-value estimates.

Split Counties: Census and Net Returns

Transfer-in data are also used for jurisdictions that are spilt by the Fall Line[33] that separates the Coastal Plain of Eastern Virginia from the hard bedrock of the Piedmont. Split counties are unique because their western side is composed of Piedmont soils and crops and their eastern side is composed of Coastal Plain soils and crops. Currently, Dinwiddie, Hanover, and Henrico counties are split-counties, and data are transferred in from adjacent counties with similar soils.[34] For example, Dinwiddie County's Coastal Plain region uses transfer-in data from Sussex County, while its Piedmont region uses transfer-in data from Brunswick County.

In a split county, the parent county's census data (e.g., Dinwiddie) is used in calculating composite farm acreage. As a result, there are identical composite farm acreages for both regions within a split county.

As with other transfer-in counties, a split county's crop enterprise budgets are transferred in from an adjacent county.[35] However, a split county does not transfer in federal payments. Rather, federal payments paid to the split county are used for both the Piedmont and Coastal Plain regions. For example, both Dinwiddie's Coastal Plain and Piedmont regions use federal payments paid to Dinwiddie County rather than federal payments made to Sussex County and Brunswick County.

Summary

This section describes the first of the two SLEAC approved methods to estimate the use-value of agricultural land, using an income-based approach. To account for the heterogeneous agricultural sector in Virginia, a composite farm is generated for each jurisdiction. The jurisdictions' annualized stream of income from agricultural activity (net return) is estimated from federal payments and crop enterprise budgets. Next, the jurisdiction's net return is

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[32] An explanation of these rates is provided under the Capitalization Rate heading in this section.

[33] Virginia's Fall Line is further discussed here: www.virginiaplaces.org/regions/fallshape.html.

[34] The county from which data is transferred in is referred to as the parent county.

[35] A transfer-in jurisdiction's parent county may change as data availability mandates. In such cases, adjustments are made in the averaging of net returns to ensure use-value estimates reflect current parent county data.

capitalized. Virginia's capitalization rate is the sum of a property tax component and interest rate component. Finally, the estimated use-value is adjusted to account for the soil productivity in the jurisdiction. This method also provides a downward adjustment for land that is at risk of flooding. The final agricultural land use-value estimates from the income approach are reported annually and include with- and without-risk use-values for each of the eight land capability classifications.

Section 2. Estimating the Use-value of Agricultural Land: Rental Rate Approach

The rental rate approach is an alternative valuation method available to jurisdictions utilizing use-value assessment.

Rental Rate Approach

In 2009, the USDA National Agricultural Statistical Service began publishing cropland and pastureland cash rental rates for irrigated and non-irrigated cropland and pastureland for Virginia counties and some localities.[36] NASS rental rates are annual values presented in $/acre and are summarized from NASS surveys for a given crop year.

Values are derived from the existing methods for determining capitalization rates (see Capitalization Rate in section 1 of this document). Rental rates reported by NASS are divided by the capitalization rate for each jurisdiction to arrive at a per-acre rental value for crop and/or pastureland. The following example illustrates the TY2020 estimate for non-irrigated cropland in Prince Edward County:

Rental rate use-value = $24 (rental rate/acre) ÷ 0.0578 (capitalization rate) = $415.22

For a sample rental rate report, see appendix B, table B-1c (selected jurisdictions).[37]

This rental rate data can be found at http://quickstats.nass.usda.gov. If there are sufficient numbers of responses to meet NASS disclosure requirements for a jurisdiction, the corresponding rental rate value is published. For example, in TY2020 the county-specific rental rate used for cropland in Prince Edward County was $24 per acre. However, if there are not enough responses in a jurisdiction to meet NASS disclosure requirements, all of the unpublished jurisdictions within a crop reporting district are summarized and published as a "combined counties" value.[38] An example of this in TY2020 is the rental rate of $27.50 per acre for cropland in Alleghany County, which was the combined value for all Western District jurisdictions.[39]

When a jurisdictional value or a combined county value is not available, a jurisdiction's district average is used for capitalization. Agricultural statistics districts are defined groupings of counties in each state by geography, climate, and cropping practices. A note of caution: Values based on combined county or district averages cut across jurisdictional lines and might not fully reflect local market conditions.

Summary

Capitalized cash rental rates and the capitalized net income approaches are methods approved by the State Land Evaluation Advisory Council for jurisdictions to consider when setting annual property values for eligible agricultural land. The income approach is discussed in section 1 of this manuscript.

The rental rate approach capitalizes average annual cash rents (cost per acre) on agricultural properties in a jurisdiction or in the region (combined county value or district average) if the sample for a jurisdiction does not meet NASS disclosure requirements.

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[36] In 2016, NASS began publishing county-level cash rents survey estimates in the second week of September every other year. As a result, there is a two-year lag in rental rate data for odd tax years and a three-year lag for even tax years (i.e., TY2019 and TY2020's rental rate data is from data year (DY) 2017. TY2021 and TY2022 will use rental rate data from the DY2019 cash rents survey).

[37] Beginning in 2018, reported estimates are no longer rounded to the nearest $10.

[38] Combined county value includes rental rate data from localities such as cities and towns.

[39] Western District jurisdictions include Highland, Bath, Craig, Roanoke, and Botetourt counties, as well as Lexington and Staunton.

Section 3. Estimating the Use-value of Horticultural Land[40]

Unlike the annual investments made in traditional agricultural enterprises, most horticultural investments extend over many years.[41] SLEAC provides use-value estimates of horticultural land devoted to orchard use. Unlike agricultural land, the data required for the estimation of orchard use-values are largely unavailable from published secondary sources. Therefore, these estimates are based largely on the professional opinions of personnel from Virginia Cooperative Extension and the Virginia Tech Department of Horticulture who are knowledgeable in the area of apple and peach production.[42]

For land devoted to vineyards and nurseries where data availability limits the estimation of use-values, SLEAC does not provide explicit use-value estimates. Instead, SLEAC recommends that each jurisdiction generate vineyard and nursery use-values from the use-value estimates published for agricultural land.[43] The use-value of the vineyard or miscellaneous ornamental and nursery crops can be appraised by a jurisdiction's assessing officer and then added to the agricultural use-value of the land.

The Composite Orchard

The composite orchard is based on a typical Virginia apple operation. The use-values of other types of orchards (e.g., peach, cherry, pear, plum) are generated from the apple orchard values. SLEAC assumes a productive life of 20 years for apple trees and 20 years for peach, cherry, pear, and plum trees. The profitability of apple orchards can vary substantially depending on the type of operation (fresh or processed fruit), rootstock, planting density, age of the trees, and management practices. To further complicate matters, the data required to objectively establish a typical apple orchard are not commonly available from secondary sources. Therefore, SLEAC subjectively defines a typical apple orchard using the following assumptions.

1   The orchard is planted on a 20-year cycle with a planting density of 300+ trees per acre using dwarf rootstock.

2. The percentage of fruit sold to the processed market and the fresh market is calculated annually as a 10-year moving average (three-year lag due to data availability).[44]

3. The percentage of trees in pre-production (one to three years), early production (four to seven years), full production (eight to 15 years), and late production age (16 to 20 years) is calculated annually from yields/cycle provided by Virginia Cooperative Extension.

Local adjustments to the use-value estimates applicable to orchards (appendix B, table B-1b) may be necessary depending on the specific characteristics of the orchard being assessed.

Net Orchard Income

Unlike annual agricultural operations, perennial orchard enterprises require several years of capital investments prior to realizing any positive income flow. These initial investments greatly complicate the estimation of net returns. Capital investments made during the pre-production years are assumed to be borrowed through regular financial channels at the same long-term interest rate used in the agricultural enterprise budgets.

The initial establishment costs are assumed to be the same for both processed and fresh market apple production and are averaged into the pre-production costs. Table C-4 in appendix C shows the annual input costs incurred in the production of both processed and fresh market apples for the four production stages. Annual total revenue is calculated for each year within a cycle by multiplying the market price by yield (pounds per acre). Annual production costs (total fixed and variable costs) are subtracted from annual total revenues to arrive at annual net loss/income. Based on use-value assumptions, in TY2020 a typical apple orchard in Virginia

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[40]   Based on an income approach. Rental rates are not estimated for horticultural land due to unavailability of reliable data.

[41]   Time is a relevant input, and cash flows that occur in different periods may be weighted differently. To find an equivalence of varying revenues and costs at a common reference point, a net present value analysis with discounting is used for horticultural estimates. Discounting is the process of carrying a revenue or cost backward in time at a defined interest rate.

[42]   In 2020, a Technical Advisory Committee is being formed to consult and provide further analysis on this method.

[43]   Manual of the State Land Evaluation Advisory Council, (Attorney General's Opinions: Forest, Dec. 12, 1977, Virginia).

[44]   Utilizing the sales poundage (million pounds) published in the Virginia Agricultural Statistics Bulletin and Resource Directory.

with a pre-production orchard (one to three years) devoted to processed market apple production realized an annual net loss of $3,303.34 per acre. The same orchard in full production (seven to 15 years) realized an annual net loss of $1,211.45 per acre (appendix C, table C-4).

Finally, the annual net loss/income values are discounted each year using the following equation:

$$\text{Income} \div [(1 + \text{interest rate})^{\text{years}}]$$

Summing all the discounted values for 20 years[45] gives a final annual per-acre net return for processed and fresh market apples. A 10-year average of the proportion of processed versus fresh market apples in Virginia is used in weighting the two processed and fresh apple net returns, resulting in a final annual weighted net return average for apples.

A summary of the per-acre net returns for each of the four production stages as well as the discounting and weighting process is provided in appendix C, table C-5, section 1.

Capitalization Rate

The capitalization rate used for determining the use-value of orchards consists of the capitalization rate used for agricultural land[46] plus a depreciation component. The depreciation component provides for declining productivity with the age of the trees. This results in lower use-value estimates for orchards composed of trees with a shorter productive life. The depreciation components are applicable only to trees because land value does not generally depreciate over time.

Calculating Use-values

Once per-acre net returns and capitalization rates have been determined, the process is different than that used for agricultural land because the orchard net return is for both trees and land.[47] A few additional steps are required.

First, the depreciation components are only applied to the net return of trees. Because the orchard net return (appendix C, table C-5, line 3a) is a combination of trees and land, the net return from equivalent agricultural land must be subtracted. This is calculated by dividing a jurisdiction's net return for agricultural land by its soil index factor. That value is then subtracted from the net return assigned to trees and land and results in the net return attributable to trees only (appendix C, table C-5, line 3c).

Second, a separate land class index scale for orchards is applied. Orchard production is most successfully accomplished on land with specific attributes, in particular, land with workable landscape and a certain soil quality.

As with the use-value estimates for agricultural land, SLEAC elected to use an index to adjust the use-value of land devoted to orchards for the various land capability classes. SLEAC approved the following index to adjust orchard use-value estimates for the various land capability classes relative to the base classes (classes II-IV).

Table 5. Virginia land capability class Index (orchards).

Class	Scale
I	0.80
II-IV	1.00
V	0.75
VI	0.60
VII	0.40
VIII	0.00

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45 Assumes a 20-year productive life for all trees.

46 See Capitalization Rates in section 1.

47 Agricultural land use-values take into consideration only land net returns.

The general agreement among experts in the orchard industry is that soil classes II through IV lands are best-suited for commercial fruit production. Class I land often lacks adequate air drainage (gravity-induced air flow), while the poor soil and steep slope of classes V through VIII lands often make production prohibitive due to costs.

These indexes can be interpreted in the same fashion as the indexes for agricultural land. Class II, III, and IV lands are considered the base classes; therefore, they receive the index value of 1. Net returns to orchards on Class I land are estimated at 80% of the base; net returns to Class V land are estimated at 75% of the base, and so on.

After depreciation and land class have been evaluated, calculating a jurisdiction's use-value of orchard land is possible through application of the following four steps. Calculations are shown in appendix C, table C-5.

Step 1. Calculate net returns for orchard land.

The first step in estimating the use-value of orchard land is to determine the average net return per acre after variable, fixed, and establishment costs for the previous seven years. Annual net returns are reflected in the net present value analysis and are averaged using a moving seven-year olympic average. For TY2020, Prince Edward County's net return average for orchard land was $0.00 (appendix C, table C-5, line 3a).

Step 2. Calculate the net return attributable to trees only.

The average annual net return from step 1 represents the average net return per acre of both trees and agricultural land. The depreciation component of the capitalization rate applies only to trees; thus, the net returns to agricultural land must be subtracted prior to applying the capitalization rate.

For TY2020, Prince Edward County's estimated net return for agricultural land is $17.69 per acre, and its soil index factor is 1.0275 (see appendix C, tables C-2 and C-3). Dividing the county's estimated net return for agricultural lands by its soil index factor results in the net return for agricultural land only. Thus, for Prince Edward County in TY2020, the adjusted net return for only agricultural land is $17.22 per acre (appendix C, table C-5). Subtracting the adjusted agricultural land net return of $17.22 from the orchard net return of $0.00 yields the net return attributable to trees only, which is a net loss of −$17.22 per acre (appendix C, table C-5, line 3c).

The capitalization rate is the sum of the state's annual moving straight seven-year average of the long-term interest rates and the jurisdiction's moving straight seven-year average of its effective property tax rate (published annually by the Virginia Department of Taxation) plus the aforementioned depreciation rate.

For TY2020, Prince Edward County's average long-term interest rate was 0.0531, and its average effective property tax rate was 0.0047 (appendix C, table C-5, lines 4a-b). Summing the two rates results in a capitalization rate of 0.0578. Then a depreciation rate is added. For Prince Edward County in TY2020, a depreciation rate of 0.05 is added for apple trees and for all other trees, resulting in a final capitalization rate of 0.1078 for apple orchards and 0.1078 for other orchards (appendix C, table C-5, lines 4e-f).

Step 3. Multiply by the appropriate soil index factor.

Dividing the net return calculated for trees only by the apple orchard and other orchard capitalization rates results in apple trees and other trees estimates for land classes II, III, and IV. The remaining estimates (classes I and V-VIII) are calculated by multiplying the class II-IV estimates (which are the same) by the corresponding orchard land capability class index factor.

For TY2020, in Prince Edward County the net return attributable to trees only is a net loss of $17.22 per acre (appendix C, table C-5, line 3c). Dividing this net return value by the capitalization rate for apple orchards and other orchards (0.1078) results in the reported use-values for apple trees and other trees (appendix C, table C-5, section 5). The estimated net return for apple trees and other trees in Prince Edward County for TY2020 for land capability classes II, III, and IV is −$159.77 per acre. Multiplying these net return values by the corresponding orchard land capability class index values for each remaining land capability class results in the county's estimated use-values for apple trees and other trees for the remaining land capability classes (appendix C, table C-5, section 5).

Step 4. Add the appropriate agricultural land use-value estimate.

The total use-value of apple orchard real estate for a jurisdiction is calculated by combining the jurisdiction's use-value estimates for apple trees and agricultural land.

For TY2020 in Prince Edward County, the apple tree estimates for land classes II, III, and IV each result in a **net loss** of $159.77 per acre (appendix C, table C-5, section 5). This value is multiplied by the corresponding orchard land capability class index value to calculate the remaining land capability class estimates for apple trees.

Each apple tree value for classes I through VIII (appendix C, table C-5, section 5) is added to the corresponding land capability class use-value estimate for agricultural land (without risk) (appendix C, table C-5, section 5). The sum of use-value estimates for apples trees and agricultural land provides the use-value for each land capability class, estimated at $319.31 (Class I), $242.64 (Class II), $138.31 (Class III), and so on (appendix C, table C-5, section 5).

Finally, each use-value estimate for apple trees and agricultural land is rounded to the nearest $10, resulting in the use-value estimates in Prince Edward County for TY2020 of $320 (Class I), $240 (Class II), $140 (Class III), and so on, which is the reported use-value (see appendix B, table B-1b). The same process is used to generate use-value estimates for each of the remaining land capability classes.

The total use-value of other orchard real estate for a jurisdiction is calculated the same way as apple orchards, except that use-value estimates attributable to other trees are used in place of apple tree values.

Summary

Use-value of horticultural land is based on an income approach. A composite or typical orchard is used to determine a net present value. A capitalization rate with a depreciation component is used for capitalizing the net return. Lastly, a jurisdiction's use-value for orchard land is determined by netting out returns to agricultural land and applying a soil index value, thereby isolating the return attributable to trees only and adding the use-value estimates for trees and agricultural land.

Resources

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Moore, L. A. 1962. "Grass-Legume Silage." In *Forages: The Science of Grassland Agriculture*, 2nd ed. Edited by H. D. Hughes, M. E. Heath, and D. S. Metcalfe. Ames: Iowa State University Press.

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NRCS (Natural Resources Conservation Service). U.S. Department of Agriculture. 2019. "Web Soil Survey." https://websoilsurvey.sc.egov.usda.gov/.

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Smith, D. 1981. *Forage Management in the North*. Dubuque, IA: Kendal Hunt.

Appendix A. Farm Example

Consider a 349-acre farm in **Prince Edward County** in **tax year 2020**. Assume the farm is composed of 113 acres of Class I land; 130 acres of Class II land, of which 82 acres have poor drainage; 5 acres of Class III land; and 1 acre of Class IV land with good drainage. It also has 100 acres of Class VI land with good drainage.

To understand all the details of this example requires knowledge of the procedures and methods employed in developing a county's use-value estimates. Some of the terms, for example, "Class I land" and "with risk" are explained in other sections of this document.

- **Option 1 – Income approach using separate land class estimates**

  Using the abbreviated table B-1a (appendix B) as a reference to determine the per-acre use-value of the land with good drainage (without risk) and with poor drainage (with risk), the assessed value of the farm would be:

  Class I land:................................. 113 acres × $450/acre = $50,850

  Class II land

       Good drainage: .... 48 acres   × $400/acre = $19,200

       Poor drainage: .... 82 acres   × $380/acre = $31,160

  Class III land:.............................. 5 acres   × $300/acre = $1,500

  Class IV land: .... 1 acre   × $240/acre = $240

  Class VI land: .... 100 acres × $150/acre = $15,000

  Total use-value assessment:..$117,950

- **Option 2 – Income approach using average land class estimates**

  If the data on land class composition and drainage were not available, the average use-value estimates (average agricultural land, soil classes I-VII) could be used. For this farm, the assessed value would be:

  Class I-VII land: .... 349 acres × $310/acre = $108,190

  Total use-value assessment:..$108,190

- **Option 3 – Rental rate approach**

  Using the abbreviated table B-1a (appendix B) for rental rates as a reference to determine the per-acre use-value of the land, the assessed value of the farm would be:

  Land (cropland): .... 249 acres × $416/acre = $103,584

  Land (pastureland): .... 100 acres × $320/acre = $32,000

  Total use-value assessment:..$135,584

The tax paid by the owner (assuming that the owner meets all eligibility requirements for use-value assessment) of the 349 acres would be based on Prince Edward County's real property tax rate times the total use-value assessment (option 1, 2, or 3). If the land contained farm structures (e.g., a poultry house or grain bins), they would be taxed at their fair market value. Use-value assessment only applies to land.

In **Prince Edward County**, if the property tax rate for 2020 is $0.51 per $100 of assessed valuation of real estate, the assessed tax for each option would be:

- Option 1 – Income approach $117,950   ×   0.0051   = $601.55
- Option 2 – Income approach $108,190   ×   0.0051   = $551.77
- Option 3 – Rental rate approach $135,584   ×   0.0051   = $691.48

Appendix B. What Is Reported?

Each year, final use-value income approach[1] and rental rate approach estimates are provided to the Virginia Department of Taxation. Using an **income approach**, use-value estimates are provided for agricultural and horticultural lands for jurisdictions participating in the Land Use-Value Assessment Program. Using a rental rate approach, use-value estimates are provided for all counties and three cities (Chesapeake, Suffolk, and Virginia Beach).

All jurisdictions that participate in the Land Use-Value Assessment Program receive a brochure with their income-based and rental-rate-based estimated use-values. Included in the brochure are contacts with addresses and phone numbers, as well as the URL for the Land Use-Value Assessment Program website.

Table B-1a lists the estimated use-values of agricultural land for jurisdictions participating in the Land Use-Value Assessment Program. Use-value estimates are shown for each of eight Soil Conservation Service land capability classifications[2], as well as averages for classes I-IV (average cropland), V-VII (average pastureland), and I-VII (average agricultural land). Class VIII land is not included in any of the averages because it is considered to have practically no agricultural value. As an example, table B-1a (selected jurisdictions) is provided in this section.

Using estimates by soil classification can help improve equity in the tax system when data are available on land composition of individual land tracts within a jurisdiction. However, when capability classification acreage data are not available, the average estimates for cropland, pastureland, or total land should be used. At the discretion of the assessing officer, the pastureland use-value may be applied to land in any class that is strictly used for grazing.

Separate use-value estimates are reported for land not at risk of flooding (without risk) and land at risk of flooding (with risk). The with-risk values should only be employed when an individual land tract is known to have poor drainage that cannot be corrected by tiling or drainage ditches.

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[1] In tables B-1a and B-1b, the use-value income approach estimates are dollars per acre and have been rounded to the nearest $10.

[2] See Calculating Use-values in section 1 of this document for an explanation of capability classifications.

Table B-1a. Estimated use-values of agricultural land by jurisdiction (selected jurisdictions) for tax year 2020.

| Jurisdiction | Risk Factor | Cropland | | | | |
		I	II	III	IV	Avg cropland[1] I-IV
County of						
Chesterfield <[2] Amelia	w/out risk[3]	$1,080	$970	$720	$570	$870
	w/risk[4]	$1,030	$920	$680	$550	$830
Dinwiddie, Coastal <[2] Sussex	w/out risk	$1,840	$1,650	$1,230	$980	$1,450
	w/risk	$1,750	$1,580	$1,170	$930	$1,390
Dinwiddie, Piedmont <[2] Brunswick	w/out risk	$1,890	$1,700	$1,260	$1,010	$1,530
	w/risk	$1,180	$1,620	$1,200	$960	$1,460
Prince Edward	w/out risk	$450	$400	$300	$240	$350
	w/risk	$430	$380	$280	$230	$330
City of						
Buena Vista <[2]	w/out risk	$410	$370	$270	$220	$280
Rockbridge	w/risk	$390	$350	$260	$210	$270

| Jurisdiction | Risk Factor | Pastureland | | | | | |
		V	VI	VII	Avg pastureland[1] V-VII	Avg agricultural land[1] I-VII	VIII
County of							
Chesterfield <[2] Amelia	w/out risk[3]	$430	$360	$220	$360	$860	$70
	w/risk[4]	4$10	$340	$210	$340	$820	$70
Dinwiddie, Coastal <[2]	w/out risk	$740	$610	$370	$390	$1,430	$120
Sussex	w/risk	$700	$580	$350	$370	$1,360	$120
Dinwiddie, Piedmont <[2]	w/out risk	$750	$630	$380	$480	$1,510	$130
Brunswick	w/risk	$720	$600	$360	$460	$1,440	$120
Prince Edward	w/out risk	$180	$150	$90	$120	$310	$30
	w/risk	$170	$140	$90	$120	$290	$30
City of							
Buena Vista <[2]	w/out risk	$160	$140	$80	$130	$240	$30
Rockbridge	w/risk	$160	$130	$80	$120	$230	$30

Note: Use-values are estimated for each of the eight Soil Conservation Service land capability classifications. Average values are reported for cropland (classes I-IV), pastureland (classes V-VII), and agricultural land (classes I-VII). Class VIII land is not included in the average use-value of agricultural land because Class VIII land is not considered suitable for agricultural purposes. The with-risk values refer to land that is at risk of flooding. These values should only be used when the soil has poor drainage that is not remedied by tiling or drainage ditches or when the land lies in a floodplain.

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[1] Average land values: The use-value of each land class is weighted by the total acreage of agricultural land in that class prior to averaging.

[2] Transfers (<): The data used for estimating the use-value of agricultural land are not published for all towns and are published for only a few of Virginia's independent cities. When data does not exist for a town or city participating in the use-value taxation program, the estimated use-values from an adjacent or surrounding county are used. This process is referred to as transferring in. Transferring in is also used for jurisdictions with large areas of land lying in more than one physiographic region — for example, the Coastal Plain and Piedmont. When a transfer-in jurisdiction has been used, it appears after an arrow (<).

[3] Without risk: These estimates apply to land that is not at risk of flooding.

[4] With risk: These estimates apply to land with poor drainage that is at risk of flooding. Calculations are based on the assumption that a crop loss occurs once every 20 years due to flooding.

Orchard Use-Values

Table B lists the estimated use-values for orchard land in all jurisdictions participating in the use-value assessment program. Separate use-value estimates are made for apple orchards and other orchards. "Other" refers to orchards dedicated to peach, cherry, plum, and pear production. Differences in these estimates are the result of the lower depreciation rate used for apple orchards than are used for other types of orchard. Use-value estimates are reported for each of eight Soil Conservation Service land capability classifications. This level of information can help improve the equity of the tax system when data are available on the land class composition of each individual land tract in a jurisdiction. When no such data exist, it is recommended that the use-value of Class III orchard land be applied to all orchard operations within the jurisdiction.

Land devoted to horticultural use will rarely be at risk of flooding. For this reason, the SLEAC elected not to consider the risk of excess rainfall in the use-value estimates for horticultural crops.

Table B-1b. Estimated use-values of land in orchard by jurisdiction (selected jurisdictions) for tax year 2020 (income approach).

Jurisdiction	Crop	Land Class							
		I	II	III	IV	V	VI	VII	VIII
County of									
Accomack	Apple	$2,530	$1,920	$1,090	$620	$460	$420	$200	$240
	Other	$2,530	$1,920	$1,090	$620	$460	$420	$200	$240
Chesterfield <[1] Amelia	Apple	$760	$570	$320	$180	$130	$120	$60	$70
	Other	$760	$570	$320	$180	$130	$120	$60	$70
Dinwiddie, Coastal<[1] Sussex	Apple	$1,300	$980	$550	$310	$230	$210	$100	$120
	Other	1,300	$980	$550	$310	$230	$210	$100	$120
Prince Edward	Apple	$320	$240	$140	$80	$60	$50	$30	$30
	Other	$320	$240	$140	$80	$60	$50	$30	$30
City of									
Buena Vista <[1]	Apple	$290	$210	$120	$60	$50	4$0	$20	$30
Rockbridge	Other	$290	$210	$120	$60	$50	$40	$20	$30

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[1] Transfers (<): The data used for estimating the use-value of agricultural land are not published for all towns and for only a few of Virginia's independent cities. When data does not exist for a town or city participating in the use-value taxation program, the estimated use-values from an adjacent or surrounding county are used. This process is referred to as transferring in. Transferring in is also used for jurisdictions with large areas of land lying in more than one physiographic region — for example, the Coastal Plain and Piedmont. When a transfer-in jurisdiction has been used, it appears after an arrow (<).

Rental Rate Approach

Table 1c shows the estimated use-values of cropland and pastureland based on capitalized rental rates from the National Agricultural Statistics Service. Rental rates are not provided by NASS for every county. When a rate is not provided, the combined county rate for the NASS district where the county is located is used. Any county where a combined county rental rate is used is identified. Also included in this section is a listing of the counties located within a given NASS reporting district.

Appendix B, Table B-1c. Cropland and pastureland values based on NASS-capitalized rental rates (selected jurisdictions) for tax year 2020 (rental rate approach).

Jurisdictions (counties)	Capitalization rate[1]	Cropland		Irrigated cropland		Pastureland	
		Rental rate ($/acre[2])	Value ($/acre)	Rental rate ($/acre[3])	Value ($/acre[3])	Rental rate ($/acre[1])	Value ($/acre[3])
Chesterfield	0.0623	49.00[cc]	798	—	—	17.50[cp]	281
Dinwiddie	0.0609	38.50[sec]	632	—	—	17.00	279
Prince Edward	0.0592	24.00	416	—	—	18.50	320

[cc] Central District cropland
[sec] Southeastern District cropland
[cp] Central District pasture

Appendix B, Table B-1d.

NASS districts	Average cropland ($/acre)		Average irrigated cropland ($/acre)		Average pastureland ($/acre)	
	Combined counties	District	Combined counties	District	Combined counties	District
Central	49.00	48.00	106.00	106.00	17.50	19.00
Eastern	64.50	72.50	97.00	127.00	37.50	37.50
Northern	40.50	49.00	98.00	116.00	32.50	22.00
Southeastern	38.50	70.00	81.00	79.00	20.00	19.50
Southern	—	33.50	59.00	59.00	16.50	17.00
Southwestern	37.50	38.50	—	—	22.00	21.00
Western	27.50	39.50	100.00	100.00	14.00	17.50

[1] National Agricultural Statistics Service county-level cash rent data (http://quickstats.nass.usda.gov/; accessed 7/20/2019).

[2] Capitalization rate (without risk) is a sum of the average interest rate component (interest rate component is the seven-year state average [two-year lag; from AgFirst]) and average property tax rate (property tax component is the seven-year jurisdiction average [three-year lag; Department of Taxation]).

[3] Values ($/acre) = land rental rate ($/ac) ÷ capitalization rate.

Jurisdictions Within NASS Crop Reporting Districts

Central	Albemarle	Buckingham	Fluvanna	Louisa
	Amelia	Campbell	Goochland	Nelson
	Amherst	Caroline	Greene	Orange
	Appomattox	Chesterfield	Hanover	Powhatan
	Bedford	Cumberland	Henrico	Prince Edward
				Spotsylvania
Eastern	Accomack	James City	Lancaster	Northampton
	Charles City	King and Queen	Mathews	Northumberland
	Essex	King George	Middlesex	Richmond
	Gloucester	King William	New Kent	Westmoreland
				York
Northern	Arlington	Fauquier	Page	Shenandoah
	Brunswick	Frederick	Prince William	Stafford
	Clarke	Isle of Wight	Rappahannock	Warren
	Culpeper	Loudoun	Rockingham	
	Fairfax	Madison	Southampton	
Southeastern	Chesapeake City	Southeastern	Suffolk City	Virginia Beach City
	Dinwiddie	Mecklenburg	Surry	
	Greensville	Prince George	Sussex	
Sothern	Charlotte	Halifax	Lunenburg	Patrick
	Franklin	Henry	Nottoway	Pittsylvania
Southwestern	Bland	Floyd	Montgomery	Smyth
	Buchanan	Giles	Pulaski	Tazewell
	Carroll	Grayson	Russell	Washington
	Dickenson	Lee	Scott	Wise
				Wythe
Western	Alleghany	Western	Botetourt	Highland
	Augusta	Bath	Craig	Roanoke
				Rockbridge

Appendix C. Prince Edward County Use-values

Questions regarding any *statutorily* related issues surrounding use-value assessment should be directed to Theresa Born at the Property Tax Unit, Virginia Department of Taxation. Questions regarding the *technical* aspects of the methodology for the agricultural or horticultural use-value estimates should be directed to Jennifer Friedel at the Department of Agricultural and Applied Economics, Virginia Tech. Questions about forest use-value estimates should be directed to Dean Cumbia at the Department of Forestry in Charlottesville. Questions about open space use-value estimates should be directed to Lisa McGee at the Department of Conservation and Recreation in Richmond.

Table 1: Income Approach – *Estimated use value of agricultural land in* **Prince Edward** *($ / Acre).*

Land Classs	Use Value Without Risk	Use Value With Risk
I	450	430
II	400	380
III	300	280
IV	240	230
Avg. I-IV	350	330
V	180	170
VI	150	140
VII	90	90
Avg. V-VII	120	120
Avg. I-VII	310	290
VIII	30	30

Table 2: Income Approach – *Estimated use value of orchards in* **Prince Edward** *($ / Acre).*

Land Classs	Use Value of Apple Orchard	Use Value of Other Orchard
I	320	320
II	240	240
III	140	140
IV	80	80
V	60	60
VI	50	50
VII	30	30
VIII	30	30

Table 3: Rental Rate Approach [5] – *Cropland and pastureland values based on NASS capitalized rental rates in* **Prince Edward or district value**. *($ /Acre).*

Cropland	416
Irrigated Cropland	N/A
Pastureland	320

[5]*For details see Estimates at* http://usevalue.agecon.vt.edu/

Table 4: Forest Values ($/Acre) - Prince Edward

	Site Productivity($/acre)			
	Fair	Good	Excellent	Non-Productive Land
N/A	N/A	N/A	N/A	N/A

Table 5: Open Space Recommended Values ($/Acre) - Prince Edward

Golf Course	Swim and Racket Clubs
N/A	N/A

N/A = not applicable to the county/city

Transfers <: Data used to estimate agricultural use values for a jurisdiction (counties/cities) may not be published or is insufficient. When this occurs, data from a nearby county is used. This process is referred to as transferring-in. Transferring-in is also used for jurisdictions with large areas of land lying in more than one physiographic region, for example coastal plain and piedmont. A transfer-in jurisdiction is noted by use of an arrow < after the name.

Estimated Use Values For Prince Edward

Estimates apply to 2020

State Land Evaluation and Advisory Council (SLEAC)

Contacts

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Open Space Estimates
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Lisa.mcgee@dcr.virginia.gov

Use Value Taxation in Virginia[1]

Virginia law allows for *eligible* land in agricultural, horticultural, forest, or open space use to be taxed at the value in *use* (use value) as opposed to its *market* value.[2] The State Land Evaluation and Advisory Council (SLEAC) was created in 1973 with the mandate to estimate the use value of eligible land for each jurisdiction participating in the use-value taxation program. SLEAC provides for the development of an objective methodology for estimating the use value of land in *agricultural, horticultural, forest, and open space* use. The members of SLEAC have officially sanctioned the use value estimates reported in this brochure.

Role of the SLEAC Estimates

Section 58.1–3229 (et seq.) of the *Code of Virginia* requires each participating jurisdiction's assessment office to *consider* SLEAC estimates when assessing the use value of eligible land. However, the local assessing office is not required to use SLEAC estimates verbatim.

Agricultural/Horticultural Estimates

Tables 1 & 2 list the estimated use values of agricultural and horticultural land using an **income approach**. These estimates are based on capitalized net income - from agricultural or horticultural enterprises in each participating county. These values are updated annually. Note, the local assessing office can only make changes to assessed property values during a reassessment year.

Table 1 lists the estimated use value of land in *agricultural* use for each of the eight USDA Natural Resources Conservation Service (NRCS) land capability classifications.

For explanation of soil classifications see Procedures Manual on the use value website http://usevalue.agecon.vt.edu/. Because data on the land class composition of individual parcels is often unavailable, average use values have also been provided.[3] The average of land in classes I – IV represents the average use value of *cropland*. The average of land in classes V – VII represents the average use value of *pastureland.* The average of land in classes I –VII represents the average use value of *all agricultural land.*[4]

The *without risk* estimates apply to land that is not at risk of flooding. *The with risk estimates should only be applied to land parcels that are at risk of flooding due to poor drainage that cannot be remedied by tilling or drainage ditches.*
Table 2 lists the estimated use value of land in orchard use. Values are reported for both apple orchards and "other" orchards for each of the eight NRCS land capability classifications. "Other" orchard refers to peach, pear, cherry, or plum production. Table 3 lists the estimated use values of cropland and pastureland using a **rental rate approach**. These use-values are based on capitalized rental rates obtained annually from the USDA National Agricultural Statistical Service (NASS). If there are sufficient numbers of responses to meet the NASS nondisclosure requirements for a jurisdiction then the value is published. However, if there are not enough responses in a jurisdiction to meet non-disclosure

requirements, then all the non-disclosed jurisdictions within a crop reporting district are summarized and published as a *Combined Counties (District) value.*

Forest Estimates

Table 4 lists, when appropriate, the estimated use values for forest land. For information pertaining to Forest land use taxation see

http://www.dof.virginia.gov/land/usetax/introduction.htm

Open Space Estimates

Table 5 lists, when appropriate, the estimated use values recommended for open space land. A locality may have values for golf courses or swim and racket clubs.

Participating agencies:
• Virginia Department of Taxation
  http://www.tax.virginia.gov/
• Virginia Department of Agricultural and Applied Economics
  http://www.aaec.vt.edu/
• Virginia Department of Conservation and Recreation
  http://www.dcr.virginia.gov/
• Virginia Department of Forestry
  http://www.dof.virginia.gov

Virginia Cooperative Extension
Virginia Tech • Virginia State University
www.ext.vt.edu

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1 Information about Virginia's Use Value Assessment Program can be found at http://usevalue.agecon.vt.edu/
2 A locality may adopt any combination of the four types of use-value taxation.

3 Data limitations prohibited the computation of average use values in a few counties and in most independent cities and townships.
4 Note, Class VIII land is not considered suitable for agricultural production and is therefore not included in this average.

Annual net returns are determined through enterprise budgeting for crops that contributed one or more acres to the composite farm. The estimated net returns shown in the table below are olympic averages (see footnote 3) for each crop in the composite farm for the proceeding seven budget years. A budget year lags a given tax year by two years (e.g., tax year 2014 corresponds to the budget year 2012). Additional information about these estimates can be found on Virginia's Land Use-Value Assessment Program website at http://usevalue.agecon.vt.edu.

Appendix C, Table C-2. Composite farm and average net returns in Prince Edward County.[1]

Commodity	Total Acreage[2]	Composite Farm (Acres)[3]	Estimated Net Return ($/acre)
Alfalfa	581	2	$98.73
Barley	(D)	—	—
Cabbage	(D)	—	—
Corn[4]	467	1	$76.27
Cotton	—	—	—
Cucumbers	(Z)	—	—
Hay[5]	11,436	34	$0.32
Lima Beans	—	—	—
Pasture	14,314	42	$3.69
Peanuts	—	—	---
Potatoes	3	—	—
Pumpkins	(D)	—	—
Snap Beans	(Z)	—	—
Sorghum	---	—	—
Soybeans	1,803	5	$197.83
Sweet Corn	(D)	—	—
Tobacco	(D)	—	—
Tomatoes	1	—	—
Watermelons	1	—	—
Wheat	165	—	—
Double-Cropped[6]	165	—	—
Total Cropland Harvested	**28,606**	**84**	
Net Return			**$17.69[7]**

(D) = Withheld to avoid disclosing data of individual farms.

(Z) = Less than half of the unit shown.

— = Represents 0 or not reported/calculated.

Transfers (<): Data used to estimate agricultural use-values for jurisdictions (counties/cities) may not be published or is insufficient. When this occurs, data from a nearby county is used. This process is referred to as transferring in. Transferring in is also used for jurisdictions with large areas of land lying in more than one physiographic region, for example, the Coastal Plain and Piedmont regions. A transfer-in jurisdiction is noted by use of an arrow (<) after the name.

[1] Number of farms = 341. Data taken from the 2017 Census of Agriculture.

[2] Some data do not add exactly due to rounding, and some categories are not listed due to disclosure rules.

[3] In an olympic average, the highest and lowest are dropped prior to calculating the arithmetic mean.

[4] Corn acreage is corn-grain plus corn-silage acreages.

[5] Hay acreage is (all hay + [all haylage, grass silage, and greenchop]) – (alfalfa hay + [haylage or greenchop from alfalfa or alfalfa mixtures]).

[6] Double-cropped acreage is subtracted out to arrive at the total cropland harvest acreage.

[7] Weighted average of crop estimated net returns by the composite farm acreage.

Appendix C, Table C-3. Worksheet for estimating the use-value of agricultural land in Prince Edward County for tax year 2020.

1. **Estimated net Return:**   **$17.69**

2. **Capitalization Rates**

    a. Interest Rate Component[1]   **0.0531**

    b. Property Tax Component[2]   **0.0047**

    c. Rate Without Risk   **0.0578**

    d. Risk Component   **0.0029**

    e. Rate With Risk[3]   **0.0606**

	Without Risk[4]	**With Risk[5]**
3. Unadjusted Use Value	$306.29	$291.70

4. Soil index

Land Class	Crop Acreage (No Pasture)[6]	Productivity Index	Weighted Acreage
I	1	1.50	1.00
II	19,016	1.35	25,671.69
III	9,082	1.00	9,081.70
IV	5,477	0.8	4,381.88
V	41	0.60	24.69
VI	3,872	0.50	1,936.17
VII	3,541	0.30	1,062.42
Total	**41,031**		**42,159.42**
Soil Index Factor:[7]	**1.03**		

5. Agricultural use-values adjusted by land class

Class	Index	Without Risk	Reported[8]	With Risk	Reported[8]
I	1.50	$447.13	$450	$425.84	$430
II	1.35	$402.41	$400	$383.25	$380
III	1.00	$298.08	$300	$283.89	$280
IV	0.80	$238.47	$240	$227.11	$230
V	0.60	$178.85	$180	$170.33	$170
VI	0.50	$149.04	$150	$ 141.95	$140
VII	0.30	$89.43	$90	$85.17	$90
VIII	0.10	$29.81	$30	$28.39	$30

Note: Additional information about these estimates can be found at Virginia's Land Use-Value Assessment Program website, http://usevalue.agecon.vt.edu.

Transfers <: Data used to estimate agricultural use-values for a jurisdiction (counties/cities) may not be published or is insufficient. When this occurs, data from a nearby county is used. This process is referred to as transferring-in. Transferring-in is also used for jurisdictions with large areas of land lying in more than one physiographic region, for example coastal plain and piedmont regions. A transfer-in jurisdiction is noted by use of an arrow < after the name.

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[1]   The 7-year average of the long-term interest rates charged by the various agricultural credit associations serving the state.

[2]   The 7-year average of the effective true tax rates reported by the Virginia Department of Taxation.

[3]   Rate should only be used when the soil has poor drainage that is not remedied by tilling or drainage ditches or when the land lies in a floodplain.

[4]   Estimated net return (line 1) divided by rate without risk (line 2c).

[5]   Estimated net return (line 1) divided by rate with risk (line 2e).

[6]   Data provided by National Resources Conservation Service, USDA. https://websoilsurvey.nrcs.usda.gov/.

[7]   Index factor = (total weighted acreage) / (total cropland acreage).

[8]   Rounded to the nearest $10 and reported in Appendix B, Table 1a.

Appendix C, Table C-4. Net present value analysis for apples.

Input costs, revenues, and net income (loss) for processed and fresh market apple production.

Per acre costs, revenues, and net income assuming a planting density of 300+ trees per acre using dwarf rootstock.

Establishment Costs (applicable to both processed market and fresh market orchards) — Estimates apply to tax-year 2020

	Amount
Land Clearing	$451.86
Land Preparation (labor, machinery, material)	$874.00
Planting (labor, machinery, trees)	$5,200.00
Total Establishment Cost	**$6,525.86**

	Processed Market Apple Production				Fresh Market Apple Production			
	Pre-	Early	Full	Late	Pre-	Early	Full	Late
	1-3 Yrs	4-6 Yrs	7-15 Yrs	16-20 Yrs	1-3 Yrs	4-6 Yrs	7-15 Yrs	16-20 Yrs
Pre-Harvest Var Costs								
Fertilizer	$76.30	$69.18	$50.75	$53.95	$76.30	$69.18	$75.52	$65.81
Lime	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Pesticides	$204.16	$456.20	$912.77	$912.77	$206.19	$772.35	$1,146.78	$1,146.78
Bee Rental	$0.00	$16.00	$16.00	$16.00	$16.00	$16.00	$16.00	$16.00
Pest Control	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00	$15.00
Mulch	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Pruning	$11.83	$142.76	$237.93	$237.93	$199.18	$398.48	$664.12	$531.29
Hand Thinning	$0.00	$0.00	$0.00	$0.00	$0.00	$257.91	$515.82	$386.87
Supplies (replace lost wrenches, etc.)	$10.20	$9.06	$7.94	$6.81	$10.20	$9.06	$7.94	$6.81
Miscelaneous	$56.66	$12.36	$12.36	$12.36	$56.68	$12.36	$12.36	$12.36
Variable Machinery Cost (fuel, oil, & maintenance)	$56.72	$534.50	$534.50	$534.50	$141.80	$534.50	$534.50	$534.50
Permanent Labor	$128.21	$415.17	$778.96	$778.96	$256.41	$518.96	$778.96	$778.96
Insurance	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Total Var Costs (AVG/Cycle)	**$3,173.17**	**$2,106.95**	**$3,888.00**	**$3,890.07**	**$3,550.70**	**$3,740.31**	**$9,323.33**	**$8,097.30**
Harvest Var Costs								
Harvest Labor	$30.28	$197.33	$970.31	$970.31	$69.56	$455.35	$1,117.51	$1,117.51
Variable Machinery Cost (fuel, oil, & maintenance)	$52.07	$179.33	$179.33	$179.33	$52.07	$179.33	$179.33	$179.33
Storage, Packing, Transportaion, & Brokerage Fee	$0.00	$0.00	$0.00	$0.00	$215.14	$1,843.47	$4,259.49	$3,306.08
Fixed Machinery Costs	$66.68	$58.65	$58.65	$58.65	$66.68	$66.68	$66.68	$66.68
General Overhead (8%) (AVG/Cycle)	$253.85	$168.56	$311.04	$311.21	$284.06	$299.22	$745.87	$647.78
Total Fixed & Variable Costs	**$3,493.71**	**$2,334.16**	**$4,257.69**	**$4,259.93**	**$3,901.44**	**$4,106.21**	**$10,135.88**	**$8,811.76**
Gross Receipts								
Yield (LBS/Acre)	1,541	18,486	24,648	24,648	1,541	18,486	24,648	24,648
Price Received ($/LB)	$0.12	$0.12	$0.12	$0.12	$0.34	$0.34	$0.34	$0.34
Total Revenue	**$190.39**	**$2,284.68**	**$3,046.24**	**$3,046.24**	**$525.41**	**$6,304.94**	**$8,406.59**	**$8,406.59**
Annual Net Loss/Income (AVG/Cycle)	($3,303.34)	($668.73)	($1,211.45)	($1,213.69)	($3,376.09)	$574.61	($1,729.29)	($405.17)
Discounted (Loss/Income)				($18,694.76)				($17,191.66)

Appendix C, Table C-5. Worksheet for estimating the use-value of orchard land in Prince Edward County.

1. Estimated net returns (loss) per acre

Age of trees	Processed fruit	Fresh fruit
1-3 years	−$3,303.34	−$3,376.09
4-6 years	−$668.73	$574.61
7-15 years	−$1,211.45	−$1,729.29
16-20 years	−$1,213.69	$405.17
Discounted (20-year cycle)	−$18,694.76	−$17,191.66
Use of sales (10-year avg %)	66%	34%
Apple insurance (annual avg/acre)	$775.95	

2. Weighted average net return values

TY2020[1]	TY2019	TY2018	TY2017	TY2016	TY2015	TY2014
−$17,402.52	−$18,617.27	−$19,377.40	−$18,616.25	−$19,677.43	−$3,403.09	−$7,533.62

3. Net returns

    a. Net return to "trees and land" (olympic average of lines 2a through 2g)[2] $0.00
    b. Net return attributable to "land only" (Class III)[3] $17.22
    c. Net return attributable to "trees only"   −$17.22

4. Capitalization rate

    a. Interest rate[4]   0.0531
    b. Property tax[5]   0.0047
    c. Depreciation of apple trees[6]   0.0500
    d. Depreciation of "other" trees[7]   0.0500
    e. Apple orchard capitalization rate   0.1078
    f. "Other" orchard capitalization rate   0.1078

5. Use-value of apple orchard and "other" orchard

Class	Orchard Index[8]	Apple Trees	Apple Trees and Land[9]	Other Trees[9]	Other trees and Land[9]
I	0.8	-$127.82	$319.31	-$127.82	$319.31
II	1.0	-$159.77	$242.64	-$159.77	$242.64
III	1.0	-$159.77	$138.31	-$159.77	$138.31
IV	1.0	-$159.77	$78.69	-$159.77	$78.69
V	0.8	-$119.83	$59.02	-$119.83	$59.02
VI	0.6	-$95.86	$53.18	-$95.86	$53.18
VII	0.4	-$63.91	$25.52	-$63.91	$25.52
VIII	0.0	$0.00	$29.81	$0.00	$29.61

Note: The estimated net returns assume a planting density of 135 trees per acre. Additional information about these estimates can be found at Virginia's Land Use-Value Assessment Program website, http://usevalue.agecon.vt.edu/. Estimates are applicable to tax year 2020.

Transfers (<): Data used to estimate agricultural use-values for a jurisdiction (counties/cities) may not be published or is insufficient. When this occurs, data from a nearby county is used. This process is referred to as transferring in. Transferring in is also used for jurisdictions with large areas of land lying in more than one physiographic region, for example, the Coastal Plain and Piedmont regions. A transfer-in jurisdiction is noted by use of an arrow (<) after the name.

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[1] Average net return of the eight orchard categories listed in section 1 of this table. The weights are provided by the percentage of total trees represented by each category.

[2] In an olympic average, the highest and lowest values are dropped prior to calculating the arithmetic mean.

[3] This is determined by dividing the unadjusted net return value (Table C-3, line 3) by the soil index factor (Table C-3, section 4).

[4] The 7-year average of long-term interest rates charged by the various agricultural credit associations serving the state.

[5] The 7-year average of the effective true tax rates charged by the Virginia Department of Taxation.

[6] The depreciation rate applicable to apple trees assumes that trees are replaced on a 20-year rotation.

[7] "Other" trees refers to peach, cherry, pear, and plum trees. The depreciation rate applicable to other trees assumes that trees are replaced on a 20-year rotation.

[8] The orchard index is applicable only in determining the value of the trees. The land index (Appendix C, Table C-3) is applied to land.

[9] The use-value of trees and land is determined by adding the appropriate without-risk land use-value (Appendix C, Table C-3) to the use-value of the trees.

Appendix D. Data Sources

To ensure the integrity of the use-value estimates, the SLEAC estimates use published, secondary data sources whenever possible. These secondary data have generally been collected in accordance with procedures uniformly applicable throughout Virginia. In a few instances, when published data are not available, the opinions of agricultural or horticultural professionals are solicited. The following data sources are consulted in the development of use-value estimates.

2017 Census of Agriculture
- Total number of farms in each jurisdiction.

- Total number of acres devoted to the various crop enterprises in each jurisdiction.

AgFirst
- Long-term interest rates used for the interest rate component of the capitalization rate.

- Short-term interest rates used for calculating interest on production capital.

Conservation Technology Information Center
- Percentage of land in conventional and reduced till for each crop in each jurisdiction.

Farm Service Agency
- Federal payments made in each jurisdiction.

Federal Crop Insurance Corporation
- Insurance premiums, subsidies, and indemnities made in each jurisdiction to each crop.

Market News
- Regional prices received for barley, corn, wheat, and soybeans.

USDA Natural Resources Conservation Service
- Total acreage of each land class in each jurisdiction.

Virginia Agricultural Statistics
- Average farm wages.

- Prices received for crop enterprises.

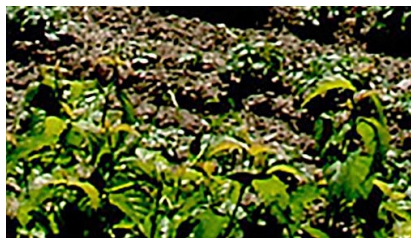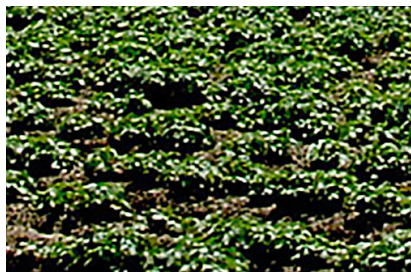### Virginia Cooperative Extension Service
- Recommended amounts of fertilizer and seed for each crop.

- Recommended number of custom applications.

- Seed, fertilizer, and chemical prices.

- Machinery costs.

Virginia Crop Reporting Service
- Crop yields.

Virginia Department of Taxation
- Property tax component of the capitalization rate.

www.ext.vt.edu
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