

How it Works: Virginia's Use-value Assessment Program

Gordon Groover, Extension Economist
and

Lex Bruce, Senior Research Associate

Department of Agricultural & Applied Economics Virginia Tech

(540) 231-5850

groover@vt.edu

(540) 231-4441

lbruce@vt.edu

Website: <http://usevalue.agecon.vt.edu/>

March 16, 2016

Outline

- Brief History
- Why Use-value Assessment?
- Approaches to estimating land values
 - Income approach
 - Rental rate approach
- Discussion

Code of VA § 15.2-4312

- Land lying within a district ... shall automatically qualify for an agricultural or forestal use-value assessment ...
- See SLEAC Manual at <http://www.usevalue.agecon>

Use-Value Assessment in Virginia

- Virginia use-value taxation legislation was passed in 1972, effective for the tax year 1974.
- *Code of Virginia*, Title 58.1 §58.1-3229 through §58.1-3244), enacted in 1971, authorized use-value taxation with the stated purposes of:
 - Encouraging the **preservation** and **proper use** of such **real estate** ...source of... **agricultural, horticultural, and forest** products and **open spaces** within the reach of concentrations of population;
 - **Conserving** natural resources,... prevent **erosion**,...**safe water** supplies;

(continued...)

Use-Value Assessment in Virginia

(continued...)

- ***Preserving scenic natural beauty and open spaces;***
- ***Promoting proper land-use planning and the orderly development***
- ***Promoting a balanced economy and ameliorating pressures*** that force conversion of such real estatepreservation for **agricultural, horticultural, forestal, or open space** purposes.
- 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.

Virginia's Use-Value Assessment Program

- Virginia law allows for the preferential taxation of **agricultural, horticultural, forest,** and **open space** land (**no** open space in a district)
- **Eligible land** in any of these categories can be assessed at the land's **value in use** (use-value) as opposed to the land's **market value**

Value in Use?

4.6.5 Agricultural Property - The Standard on Mass Appraisal of Real Property
International Association of Assessing Officers (IAAO 2012)

.... to use the income approach for
agricultural land... Land rents

And the Code of VA allows for income and
rental rate approaches

Value in use, How?

Identify components of farmland value?

Market Value of 1.0 acre of farmland	\$7,000
minus	
Proximity to amenities	\$2,000
minus	
Accessibility/distance to the city center	\$1,000
minus	
Cost of conversion or development to non Ag use	\$2,000
minus	
Growth premium – population increase	\$1,000
leaves	
Capitalized annual stream of net income (rents) from farming	\$1,000

Procedures for Estimating Agricultural and Horticultural Values in Use

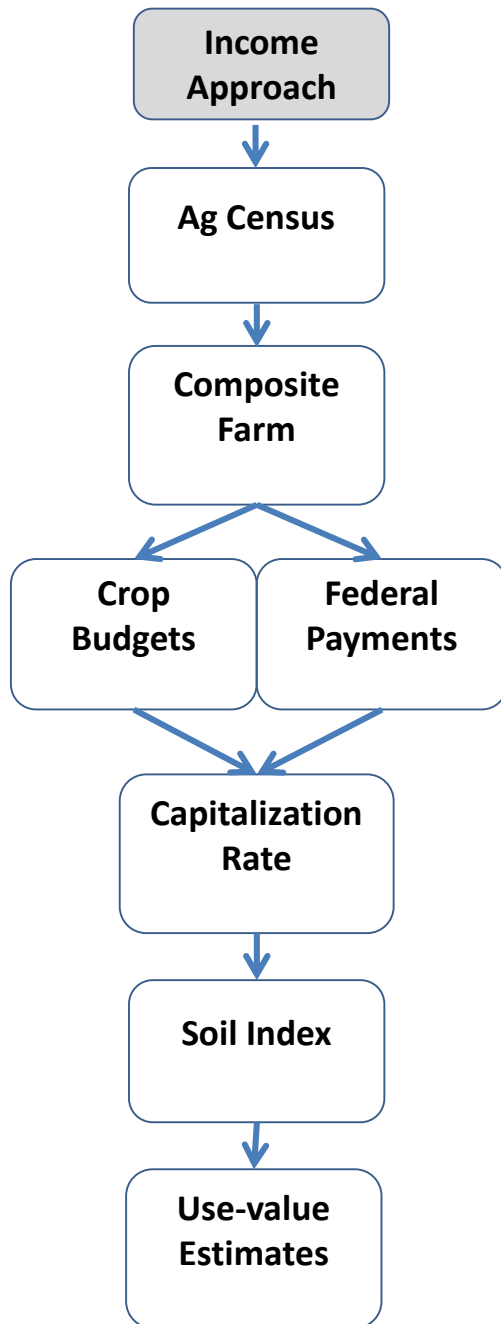
Two Approaches

1. Net income Capitalized (Income Approach)

Original model developed by Marshal (VT), Fraher, (TAX), Seward (VDACS), Poole (VT Grad Student) ~ 1974-1975.

2. Rental rates Capitalized (Rental Rate Approach)

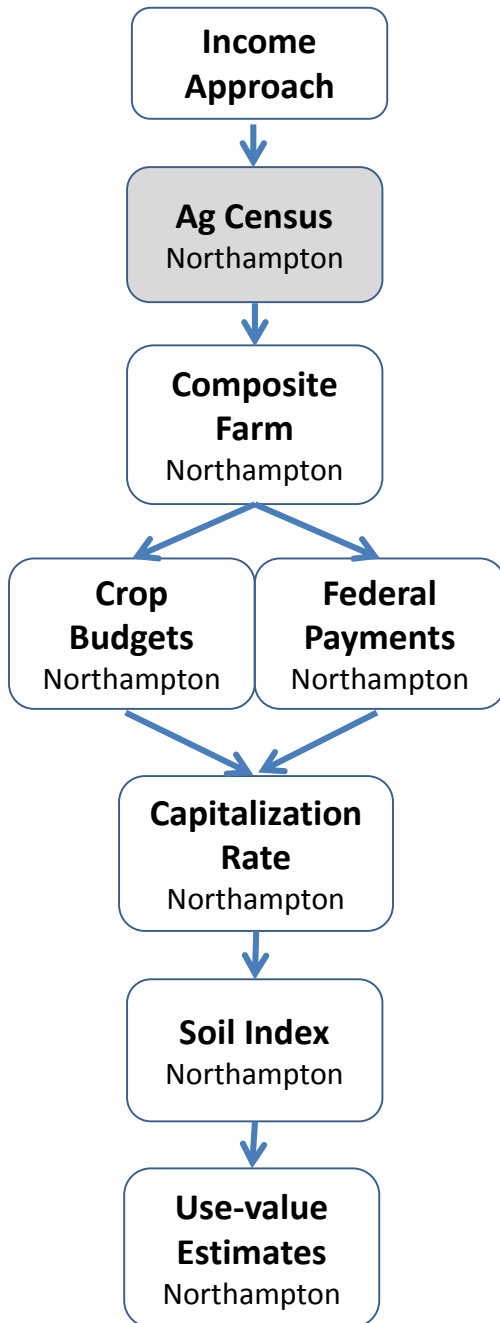
Implemented in 2010 by Groover and Bruce



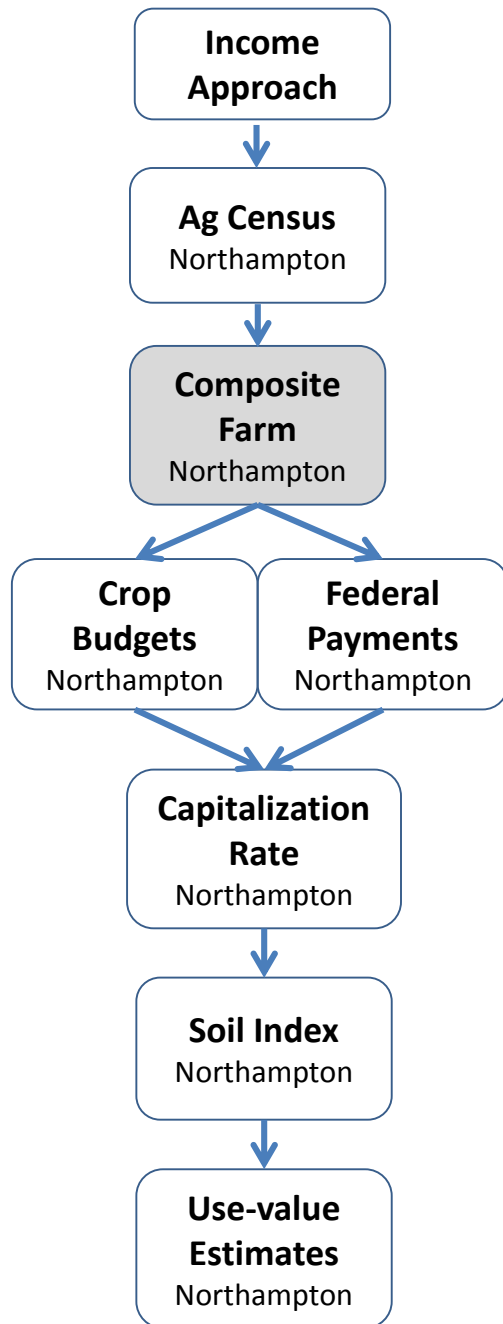
Income approach for each County

- Task: How to create an annual stream of net income that will be capitalized?
- How?
 - **Build** on secondary/published data
 - Use **Net Returns = Income - Costs**
 - **How?** Define a representative farm (composite farm) – based on current Ag Census for each county
 - **Create** an enterprise budget for each crop to yield **Net Returns (NR)**
 - **Identify** crop-based federal payments
 - **Define** Capitalization Rate
 - **Apply** soil index
 - Final Estimates

Baseline Data - Ag Census



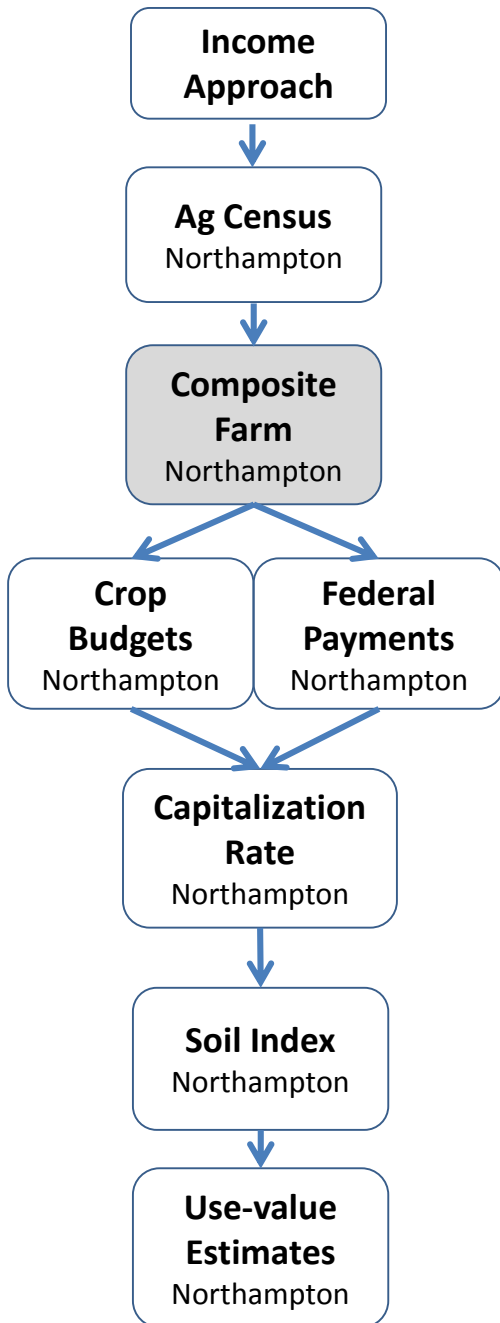
- Conducted and published by National Agricultural Statistics Service (USDA/NASS)
 - Published every 5 years
 - Current Ag Census 2012 (released in 2014)
- Use the following for each county
 - Number of **farms reported**
 - Individual crops grown e.g., corn, wheat, pasture...
 - **Acres** reported for each crop grown



Composite Farm

- **Define - Composite Farm (CF) A.K.A. Average Farm**
 - For each reported crop: Divide acres by number of farms (Acres ÷ Farms)
 - If the values is **>0.50** ac, included in the CF
 - If **≤ 0.50** ac, excluded from CF
 - Statewide there are **16 crops** that are included in at least one county
- **Northampton - 2012**
 - **147** reported farms => more land owners
 - **Seven** CF crops, e.g., barley, corn+silage, hay+haylage, pasture, potatoes, soybeans, and wheat.

Composite Farm - Northampton

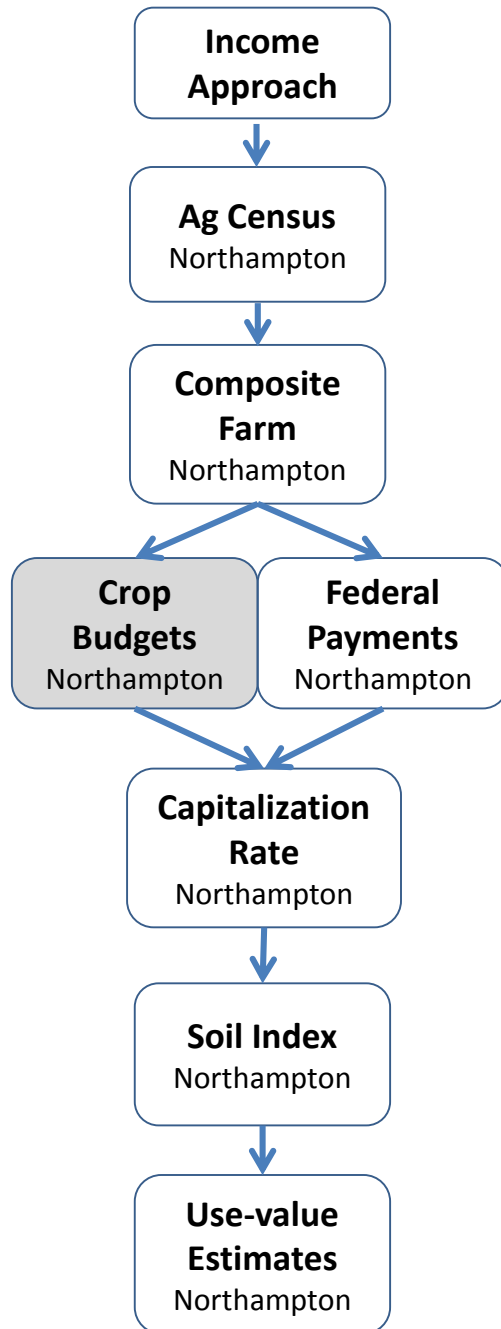


2012 Ag Census Northampton		Based on 147 farms
Crop	Reported Acres	Composite Farm Acres
Alfalfa	0	
Barley	971	7
Corn	8,239	56
Cotton	(D)	
Hay	105	1
Pasture	158	1
Peanuts	0	

Example for Corn = 8,239 ac / 147 farms = 56 acres of corn in the Composite Farm (CF)

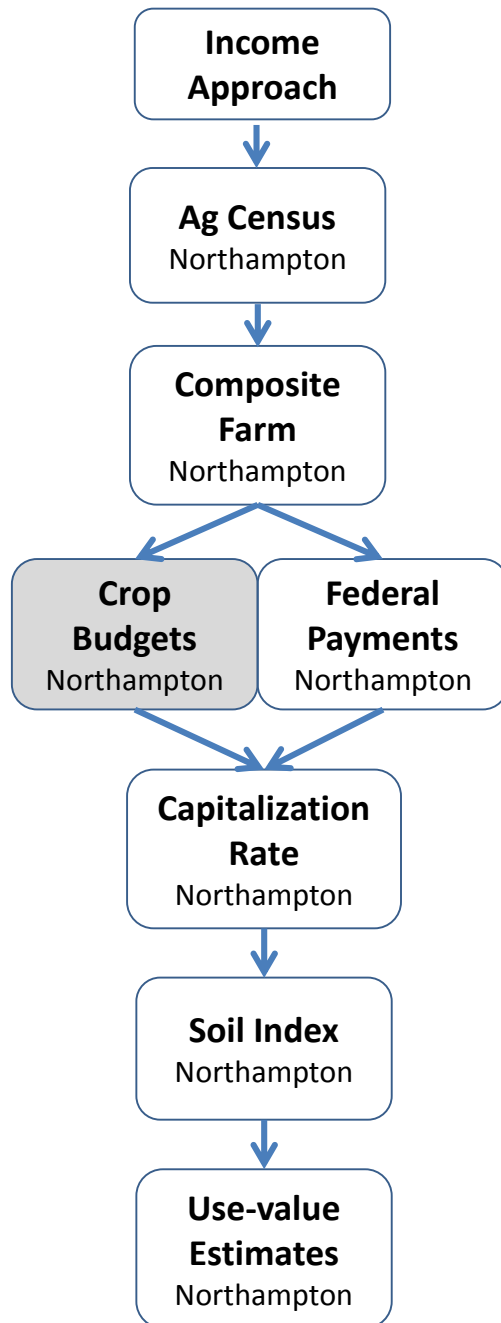
Sweet Corn	(D)	
Tobacco	0	
Tomatoes	(D)	
Watermelons	8	
Wheat	16,649	113
Double-cropped	(-) 17,620	(-) 120
Total Cropland Harvested	35,334	240

Crop Budgets



- Created for all CF crops
- Based on VCE enterprise budget format
- Yields and Prices -> NASS
- Seeding and lime rates → VCE recommendation
- N,P, & K inputs are based on yield-driven nutrient removal rates (International Plant Nutrition Institute)
- AgFrist -> short-term interest

Crop Budgets



- Pesticides -> Pest Management Guidelines (PMG)
- Application costs → custom rates
- Machinery usage and costs -> A. Society of Ag and Biological Engineers' equations
- Fuel prices -> U.S. Dept of Energy
- Crop insurance -> USDA-RMA
- Labor hours function of machinery hours
- Labor rate -> NASS
- **Note:** Budgeted Net Returns **lag 2 years**, e.g., Tax Year 2016 reflects 2014 data

Abbreviated Example Budget

Northampton Corn Grain no-till

TY2016

Income Approach



Ag Census
Northampton



Composite Farm
Northampton

Crop Budgets
Northampton

Federal Payments
Northampton

Capitalization Rate
Northampton

Soil Index
Northampton

Use-value Estimates
Northampton

Corn: Yield = 164 bu/ac * Price = \$3.90/bu = \$639.60
Net Crop Insurance = \$22.45
Total Income = \$662.05

Net Returns = Income - Costs

$$\text{NR} = \$662 - \$586 = \mathbf{\$76/ac}$$

Pre-Harvest Costs: N 160 Lb
Price = \$0.59/lbs = \$94/ac

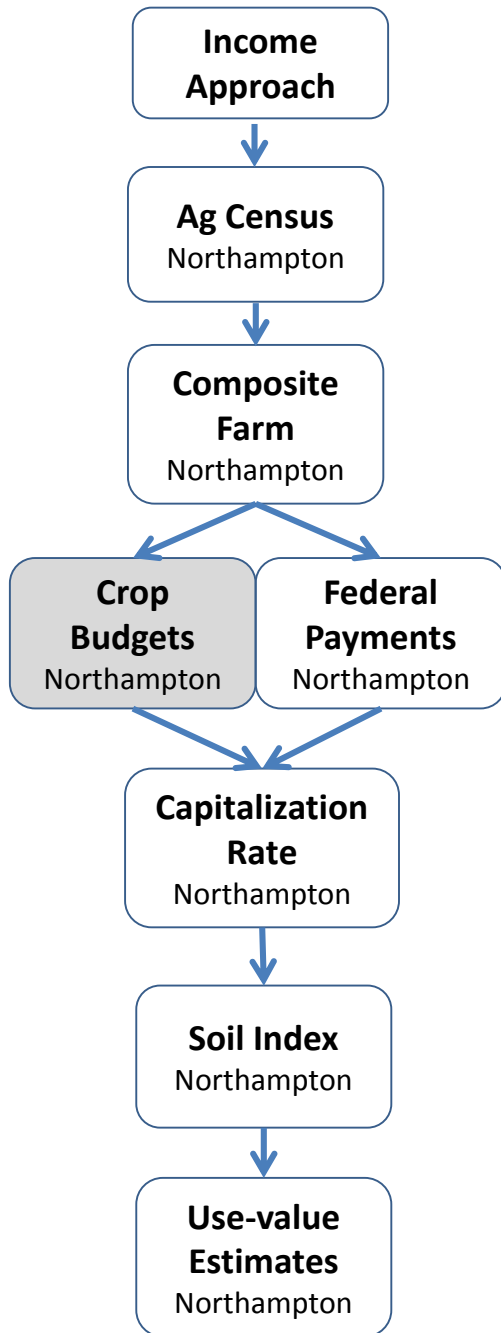
Harvest Costs: Labor, fuel & oil, drying, hauling = \$103/ac

Fixed Costs: Machinery and Overhead = \$124/ac

Total Costs = \$586/ac

Olympic Averaging

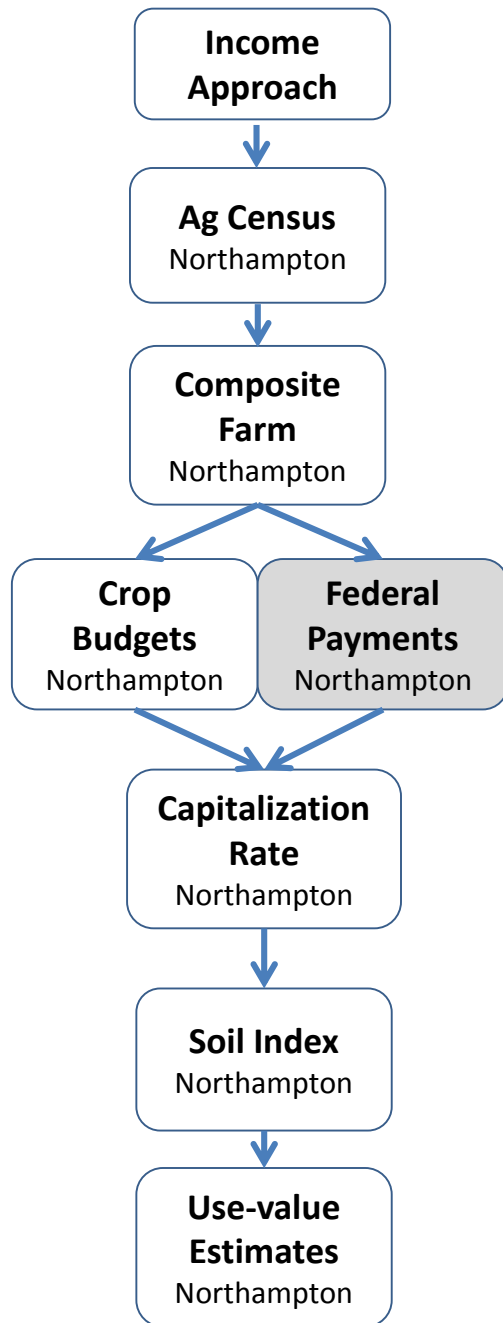
- The Net Return for each CF crop requires 7 - years of crop budgets
- 7-year Olympic Averaging drops the highest and lowest values and then straight averages the remaining 5 values
- Northampton Corn Grain example 2010-2016



Northampton: Corn	Crop Budget
TY2010	\$23.85
TY2011	\$48.65
TY2012	\$76.58
TY2013	\$336.84
TY2014	\$343.73
TY2015	\$155.32
TY2016	\$76.30
Olympic AVG	\$138.74

Lowest

Highest



Federal Payments

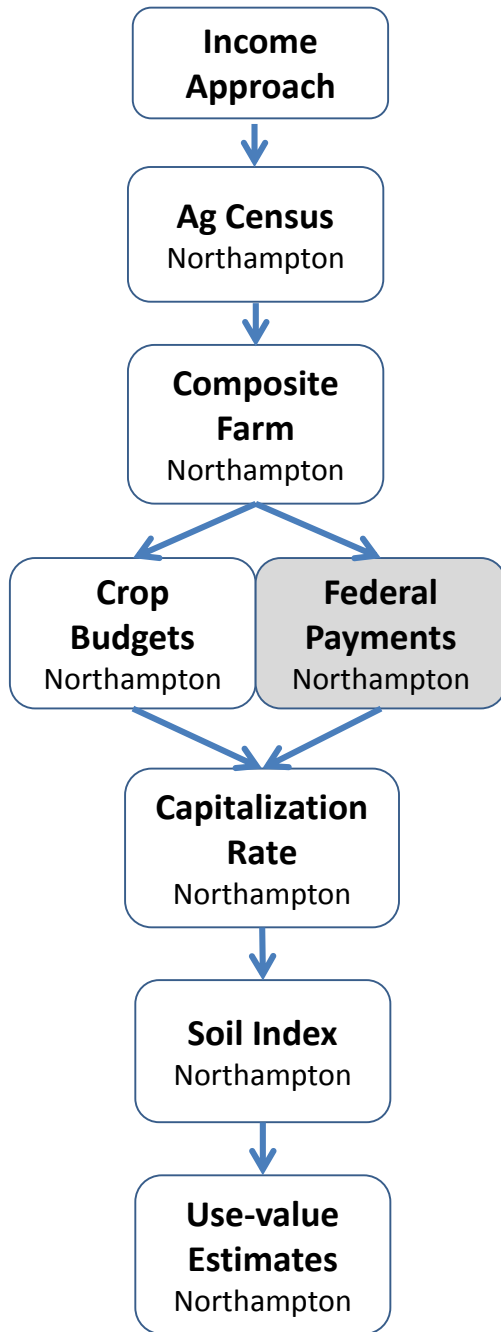
- **USDA-FSA** provides data for program crops by county
- Northampton receives payments for **corn, wheat, and soybeans**
- Annual payments = Payment/crop acreage
- For example in TY2015, Northampton received **\$98,410 in federal payments for corn.**

$$\text{TY2015 } \$98,410 / 8,239 \text{ ac} = \mathbf{\$11.94/\text{ac}}$$

$$\text{TY2016 } \$47.23 / 8,239 \text{ ac} = \mathbf{\$0.01/\text{ac}}$$

Olympic Averaging

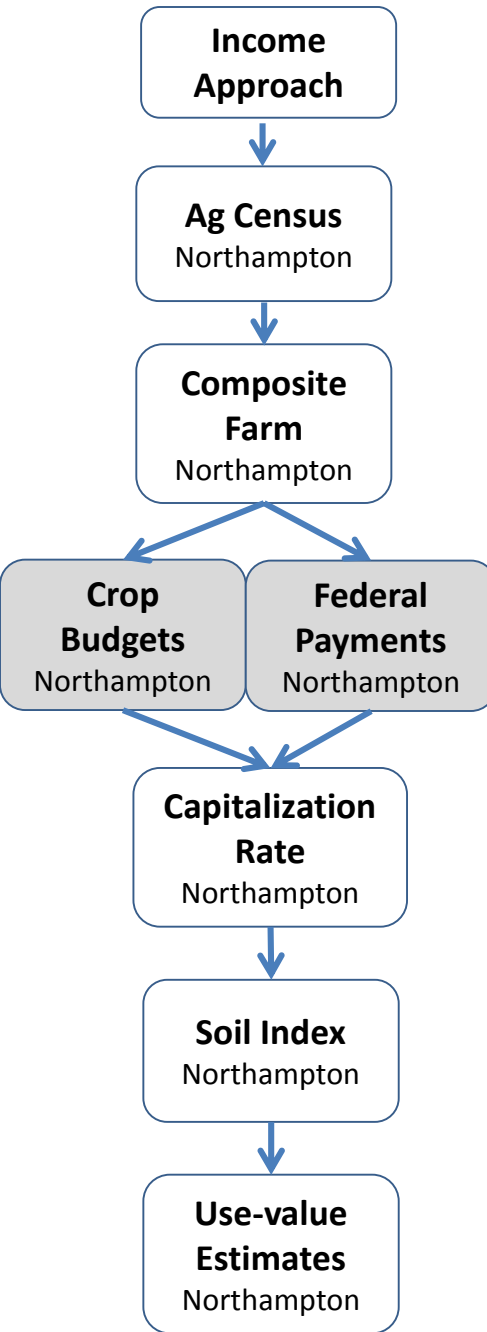
- Northampton Corn Grain example 2010-2016



Northampton: Corn	Federal Payment	Corn Budget
TY2010	\$4.72	\$23.85
TY2011	\$7.98	\$48.65.
TY2012	\$4.63	\$76.58
TY2013	\$9.23	\$336.84
TY2014	\$7.50	\$343.73
TY2015	\$11.94	\$155.32
TY2016	\$0.01	\$76.30
Olympic AVG	\$6.81	\$138.74

- Corn Net Return for TY2016
 - Oly AVG Fed Pay + Oly AVG Budget
 - $\$6.81 + \$138.74 = \mathbf{\$145.55}$

Northampton Crop Budgets and Federal Payments Tax Years 2010-2016

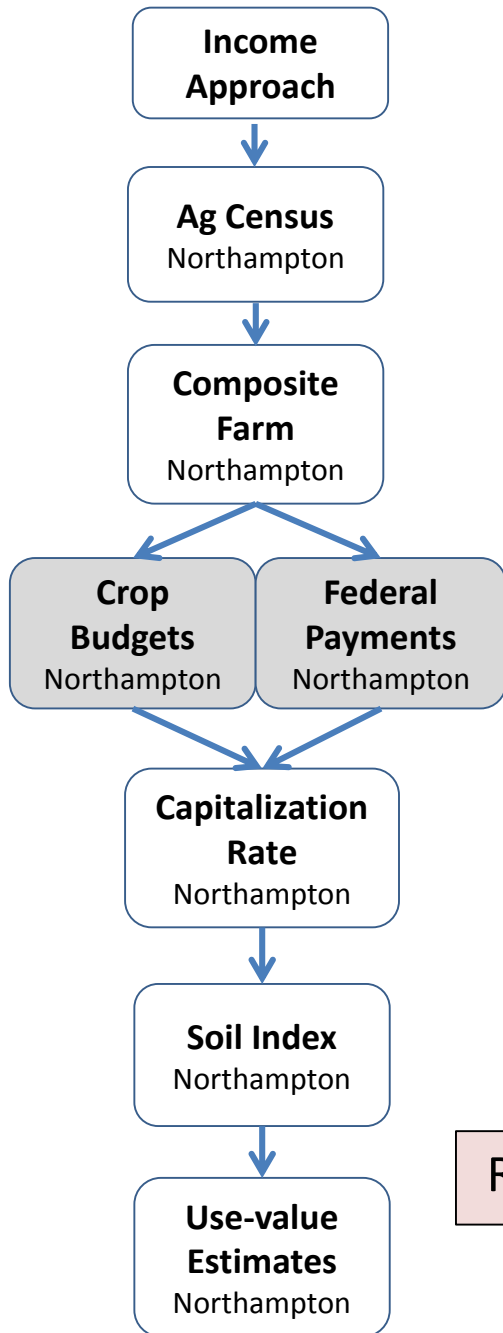


	2010	2011	2012	2013	2014	2015	2016	OLY AVG
Corn	\$23.85 L	\$48.65	\$76.58	\$336.84	\$343.73 H	\$155.32	\$76.30	\$138.74
Fed Pay	\$4.72	\$7.98	\$4.63	\$9.23	\$7.50	\$11.94 H	\$0.01 L	\$6.81
							Total	\$145.55
Hay	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00 H	\$0.00 L	\$0.00
Wheat	\$132.65	\$0.00 L	\$59.01	\$137.94	\$147.41 H	\$46.37	\$45.44	\$84.28
Fed Pay	\$11.41	\$7.98	\$11.23	\$18.65 H	\$16.76	\$18.26	\$0.01 L	\$13.13
							Total	\$97.41
Barley	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Fed Pay	\$0.00	\$7.98	\$0.00	\$0.00	\$0.00 L	\$28.06 H	\$0.01	\$1.60
Potatoes	\$1,362.08 H	\$1,110.61	\$205.00 L	\$1,358.31	\$546.59	\$491.02	\$1,146.78	\$930.66
Soybean	\$40.55 L	\$69.18	\$144.83	\$79.80	\$310.89 H	\$186.38	\$136.07	\$123.25
Fed Pay	\$4.80	\$7.98	\$4.76	\$7.75	\$7.09	\$8.23 H	\$0.01 L	\$6.48
							Total	\$129.73
Pasture	\$42.86 H	\$0.00 L	\$8.88	\$0.00	\$0.00	\$0.00	\$0.00	\$1.78
Final Net Return (Weighted AVG)								\$224.90

Final Net Returns

Northampton County TY2016

- Composite Farm weighted NR by crop acreage



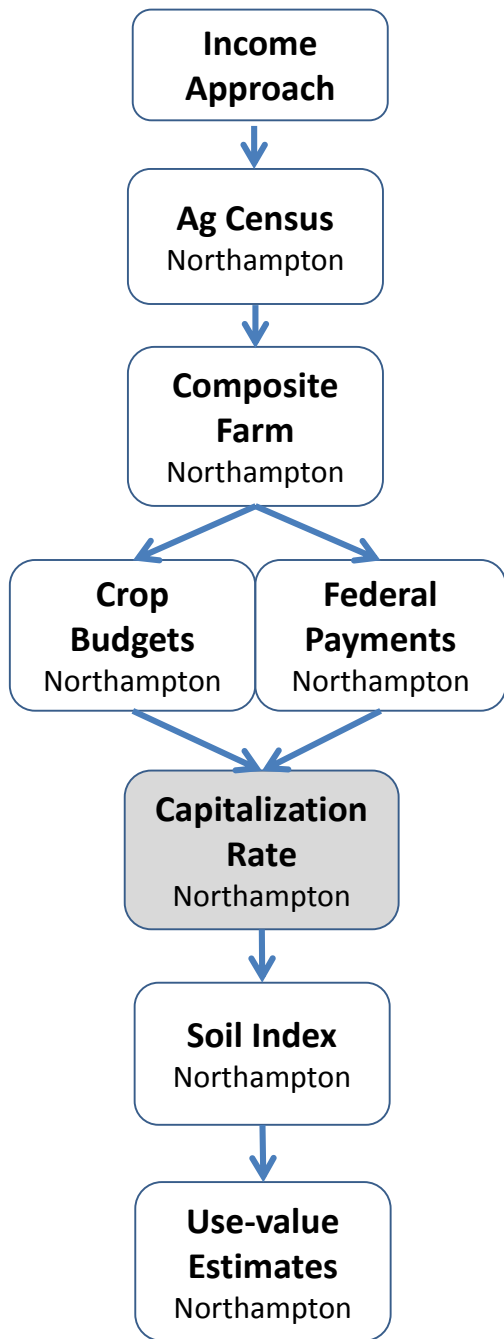
Crop	Estimated Net Return	CF acres	% weight (e.g. corn 56/240=0.23)	Final\$
Corn	\$145.55	56	0.23	\$33.94
Hay	\$0.00	1	0.003	\$0.00
Wheat	\$81.72	113	0.47	\$45.90
Barley	\$1.60	7	0.03	\$0.04
Soybeans	\$171.18	168	0.70	\$90.85
Potatoes	\$930.66	14	0.06	\$54.15
Pasture	\$15.60	1	0.005	\$0.01
Final Net Return (per acre)		240		\$224.90

Reflects double-cropped wheat & barley (120 ac)

Capitalization Rate

Why use Capitalization Rate?

- *Cap Rate = Net Return ÷ Value Farmland*
- *Farmland Value = NR ÷ Cap Rate*
- *\$100 per year ÷ 10% = \$1,000*
- **Cap Rate = Interest Rate+Property Tax**



Federal Land Bank long term interest rate - AgFirst (10 year average)

Effective Tax Rates for all counties - VA Department of Taxation (10 year average)

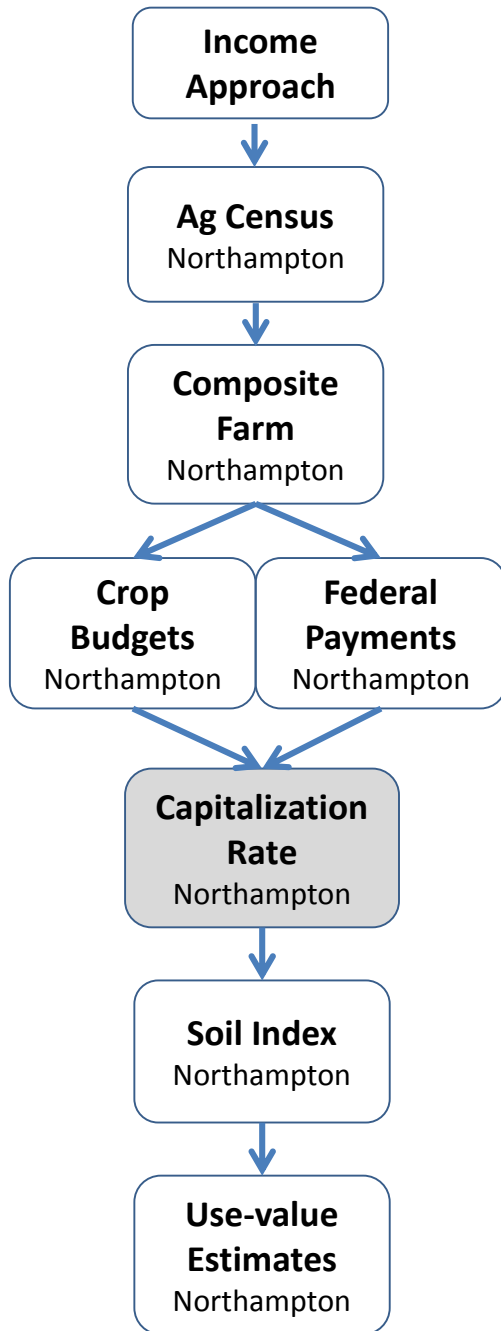
Northampton TY2016

Cap Rate Components

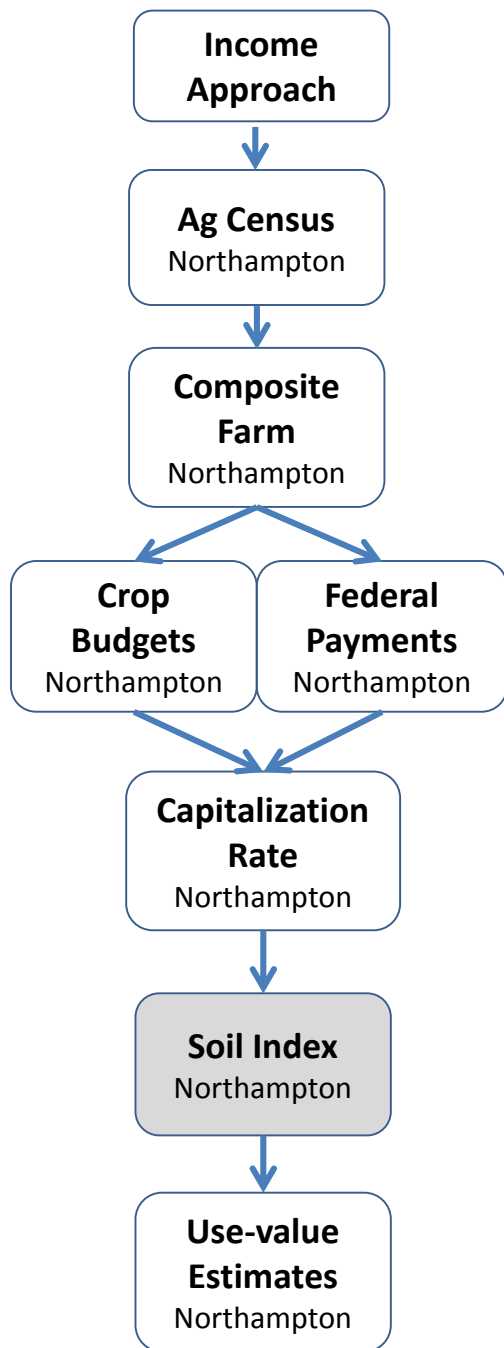
Interest Rate – statewide (10yr Avg)	0.0626
Property Tax – Northampton (10yr Avg)	0.0053
Total without risk	0.0679
Crop loss due to Flooding 5%	0.0034
Total With risk	0.0713

Use Value Northampton TY2016

	Use Value =	Net Returns	÷	Cap Rate
Use Value without risk =	\$224.90	÷	0.0679	
Use Value without risk =	\$3,313.16			
Use Value with risk =	\$224.90	÷	0.0713	
Use Value with risk =	\$3,155.39			



Adjustments for Soil Capabilities

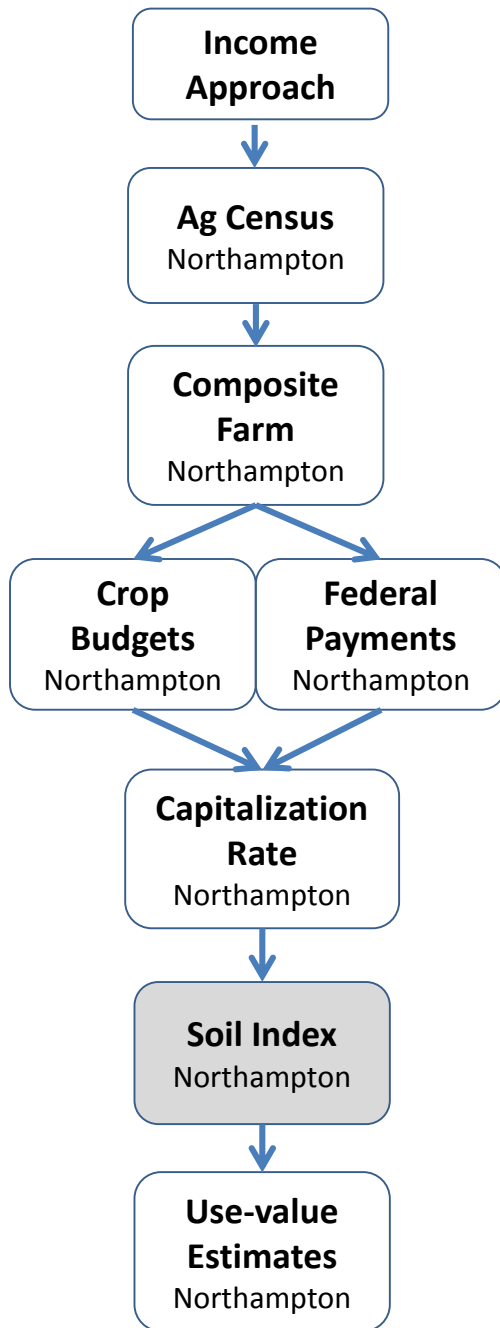


USDA Land Classes for Ag use

Land Capability Classes	Productivity Index
Class I - Excellent cropland	1.50
Class II - Good cropland	1.35
Class III - Average cropland	1.00
Class IV - Below average cropland – strip cropping only, hay	0.80
Class V – Good Pasture, hay	0.60
Class VI – Pasture	0.50
Class VII – Very limiting - Pasture only	0.30
Class VIII – Not suitable to agriculture – steep or wet	0.10

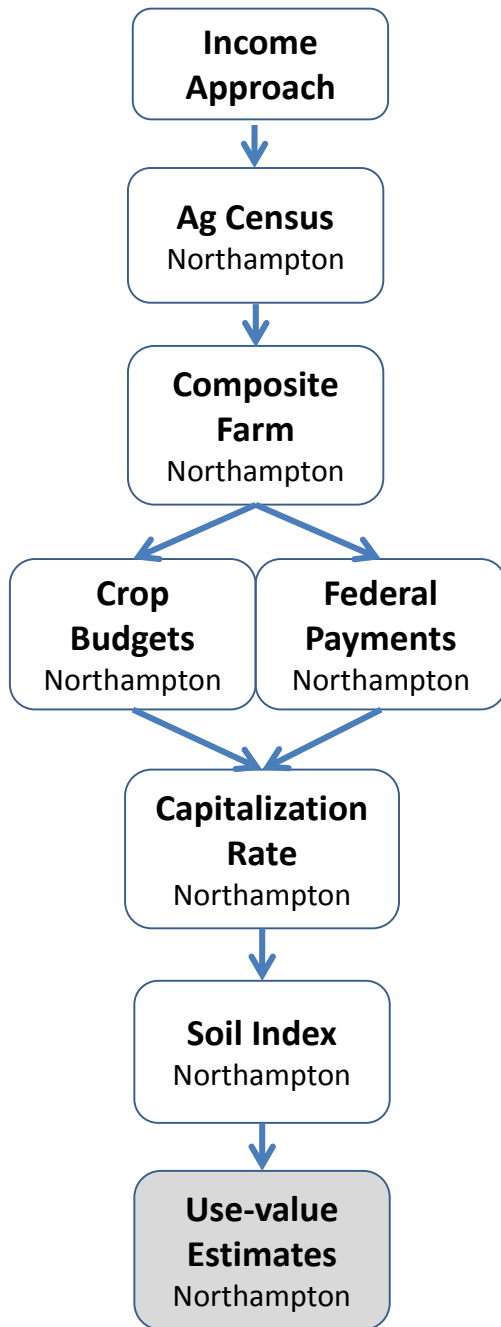
Indexing for Soil Productivity

Northampton



Land Class	Reported Acreage	Productivity Index	Weighted Acreage
I	22,602	1.50	33,903.00
II	26,121	1.35	35,263.35
III	1,069	1.00	1,069.00
IV	0	0.80	0.00
Total	49,792		70,235.35
Soil Index Factor $70,235.35 \div 49,792 = 1.411$			

Accomack = 1.31



Adjusting to Class III land

Why?

- Data reflects average soil productivity for each county
- Values are adjusted to reflect Class III productivity

Use Value Northampton TY2016

	Use Value =	Use Value	÷	Soil index
	Without risk =	\$3,313.16	÷	1.411
	Without Risk Class III =			\$2,348.80
	With risk	\$3,155.39	÷	1.411
	With Risk Class III =			\$2,236.95

Final Estimates Northampton TY2016

	Cropland				Weighted Cropland AVG	Pastureland			Weighted Pasture land AVG	Weighted Ag. Land AVG	VIII
	I	II	III	IV	<i>I-IV</i>	V	VI	VII	<i>V-VII</i>	<i>I-VII</i>	
w/out Risk	3,520	3,170	2,350	1,880	3,310	1,410	1,170	700	700	3,300	230
w/ Risk	3,360	3,020	2,240	1,790	3,160	1,340	1,120	670	670	3,150	220

- Note: Final estimated values are rounded to the nearest \$10
- The Class III w/out risk estimate of \$2,348.80 is reported as \$2,350

Rental Rate Approach Northampton TY2016

- Starting 2009 NASS published rental rate data annually* for
 - Cropland
 - Irrigated cropland
 - Pasture land
- Northampton County rental rates for 2014 TY2016 (NASS)
 - Cropland = \$75
 - Pastureland = \$34 NASS Eastern District Pasture Combined County

*Sometimes biennially based on NASS funding

Rental Rate Use Value Northampton TY2016

	Rental Rate	÷	Cap Rate	=	Value
Cropland	\$75	÷	0.0679	=	\$1,100
Pasture	\$34*	÷	0.0679	=	\$500

*Eastern District Pasture combined county

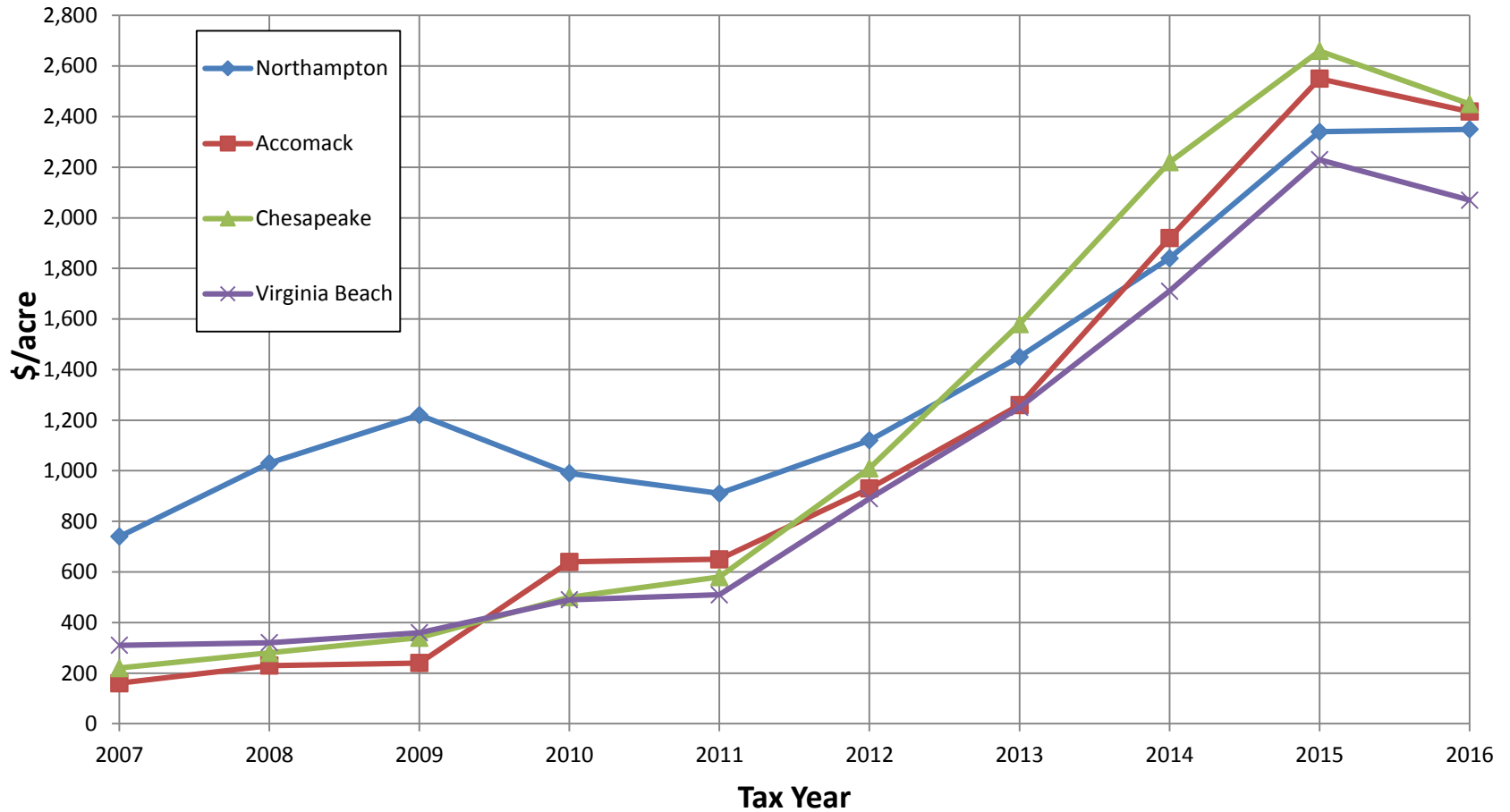
Rental Rate Estimates are published annually
– **not averaged over time**

Income Approach and Rental Rate Approach: Compared

Northampton	Income Approach (w/out risk)		Rental Rate Approach	
TY2016	Cropland (I-IV AVG)	\$3,310	Cropland	\$1,100
	Pastureland (V-VII AVG)	\$700	Pastureland	\$500

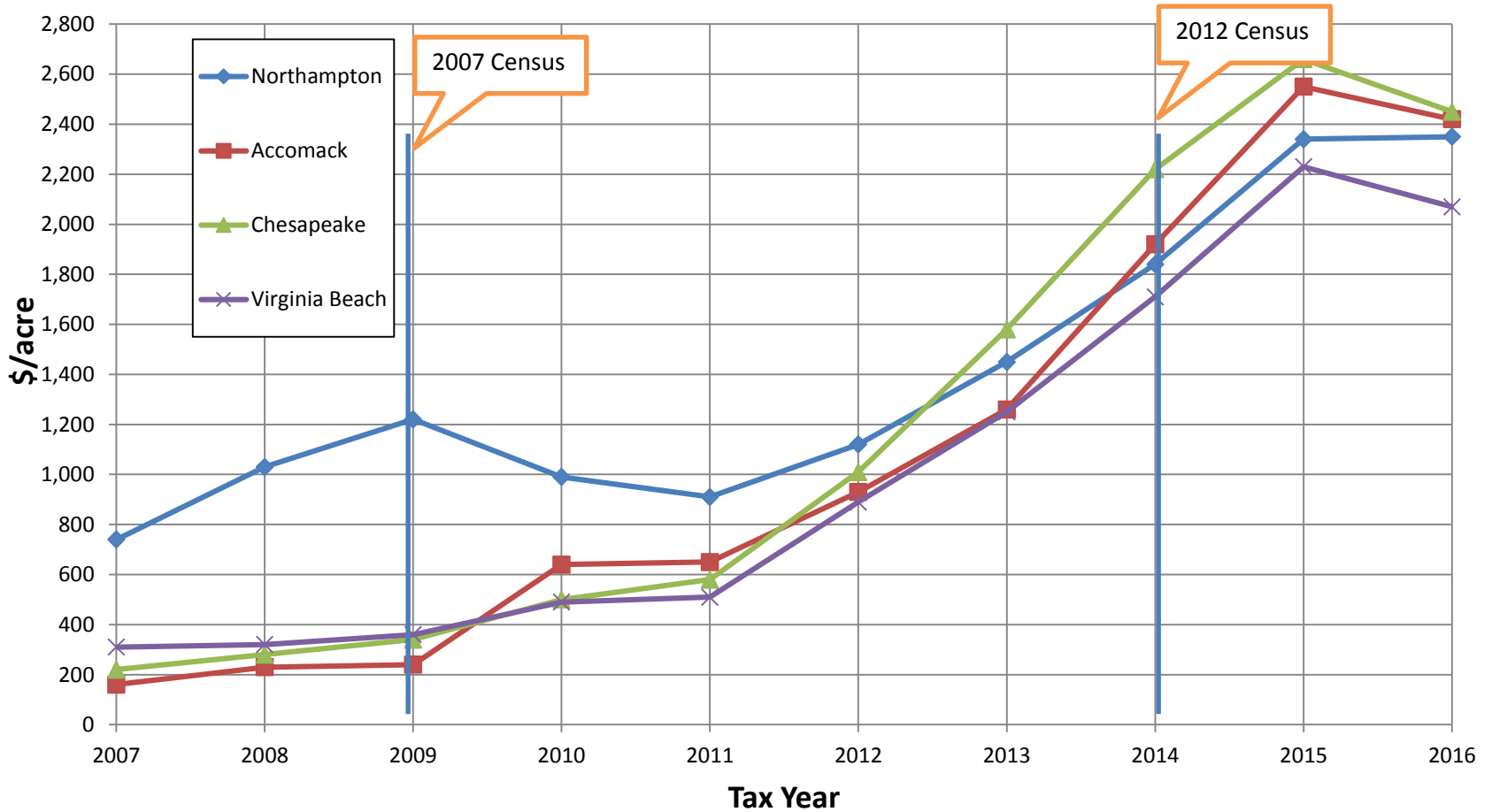
Use-value Estimates: Type III Land (w/out risk)

Selected Jurisdiction Comparison (Tax Years 2007 to 2016)

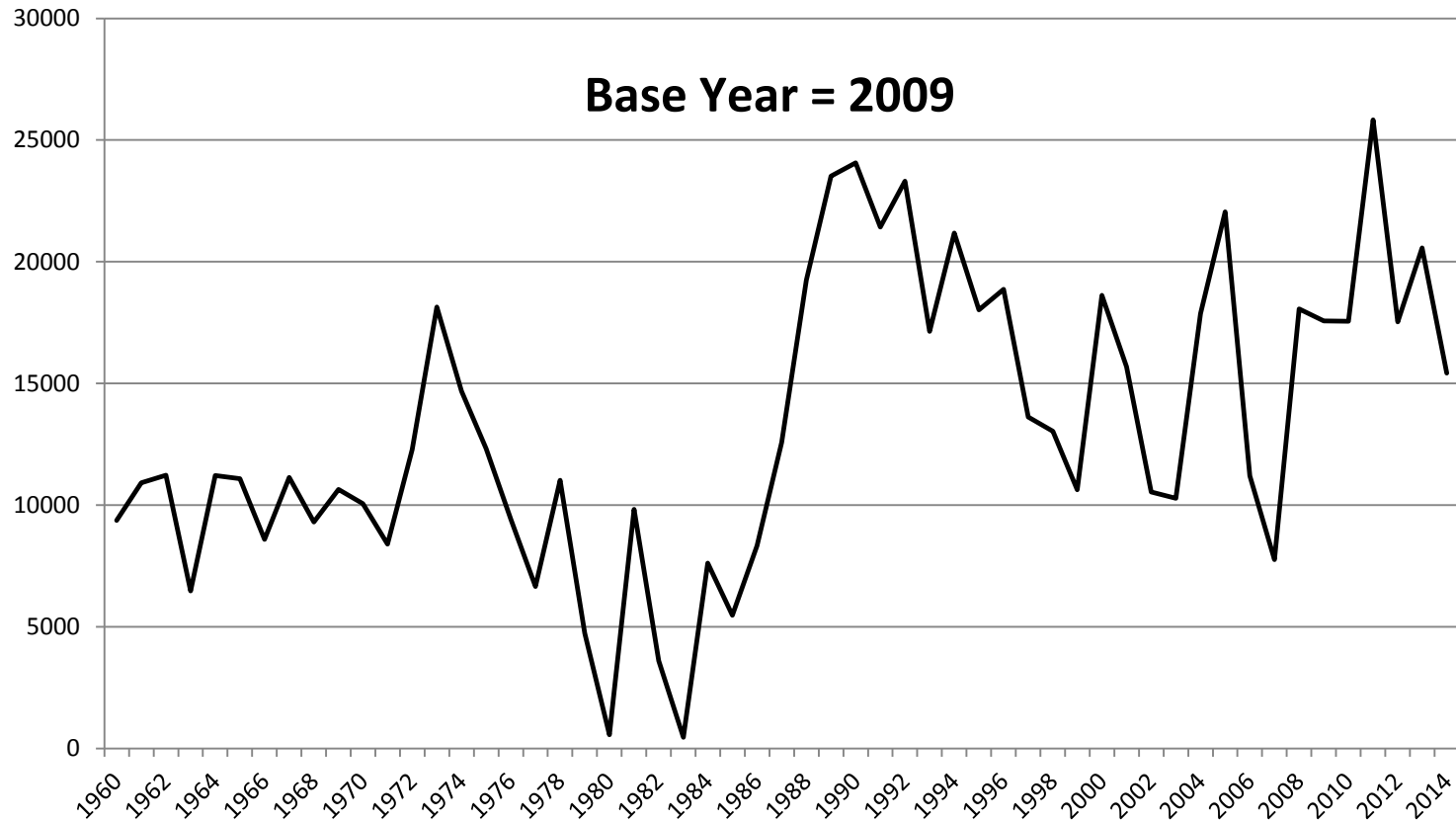


Use-value Estimates: Type III Land (w/out risk)

Selected Jurisdiction Comparison (Tax Years 2007 to 2016)



Real Net Farm Income Virginia \$/farm



Source: USDA/ERS Farms and Land in Farms and USDA/ERS Farm Income and Wealth Statistics

Agricultural and Forestal Districts

- Knapp. John L., Ph.D. and Stephen C. Kulp. Virginia Local Tax Rates, 2013. 32nd Annual Edition. Weldon Cooper Center for Public Service. See <http://www.coopercenter.org/sites/default/files/econ/TaxRates/taxrates2013/trbook2013.pdf>
- Northampton: 47 with 32,363 ac
- Accomack: 22 with 80,571 ac

Northampton: Name of Districts	Date Created	Review Period (Years)	Acreage
Bridge Town	1/14/1991	10	638.43
Aspenwood	2010	10	303.00
Bayford	2010	10	687.54
Bayview	2010	10	361.73
Brickhouse Farm	2010	10	1061.24
Brookwood	2010	10	961.29
Caserta	2010	10	200.00
Church Neck	1/1/1996	10	223.51
Concord Wharf	1/1/1996	10	541.75
Custis Farms	2010	10	735.49
Dalbys	2010	10	675.62
Deer Path	2010	10	523.80
Edgehill	2010	10	418.73
Elkington	6/10/2002	10	1257.09
Farmers Delight	2010	10	608.09
Fern Point	2010	10	482.04
Greens Creek	2010	10	683.12
Happy Union	1/14/91	10	236.60
Hare Valley	2010	10	243.57
Herncliff-Pembroke	2010	10	1361.06
Hollybrook	2010	10	592.17
Hungars Creek	2010	10	456.71
Jacobus Point	2010	10	1,375.45
Jamesville	2010	10	1,470.30
Locust Grove	2010	10	242
Magotha	2010	10	535.60
Mapp Machipongo	2010	10	290.80
Mason Farm	2010	10	534.21
Milford Farm	2010	10	262.21
Newsted Farm	2010	10	693.56
Outten Farm	2010	10	647.7
Picketts Harbor	1/1/96	10	834.87
Plantation South	2010	10	609.91
Point Pleasant	1/1/96	10	878.05
Pony Neck	2010	10	492.59
Savages Neck	2010	10	823.16
Seaside	2010	10	3,264.01
Sheps End	10/13/87	10	2
T B Road	2010	10	422.78
The Glebe	1/14/94	10	561
The Hermitage	2010	10	1,361.47
Turner-hurtt	2010	10	741.82
Webb Island	2010	10	469.19
Weirwood	2010	10	877.71
Woodland	2010	10	560.04
Woodside	2010	10	827.53
Yeardley	2010	10	333.23
Total			32,363

Accomack: Name of Districts	Date Created	Review Period(Years)	Acreage
Atlantic	6/83	4	7,114.59
Bells Neck (Pungoteague)	9/83	4	5,250.04
Cashville	9/83	4	2,991.80
Craddockville	6/83	4	4,847.48
Davis Wharf A & F	4/80	4	900.83
Greenbush	9/83	4	1,930.91
Hacks Neck	10/83	4	599.41
Hallwood	10/83	4	2,472.71
Horntown A & F	9/82	4	1,485.64
Joynes Neck (Lee)	2/83	4	1,622.80
Leemont	6/83	4	3,938.25
Locustville	5/83	4	8,986.58
Modestown	12/82	4	9,776.80
Mutton Hunk (Metompkin)	1/01/84	4	709.21
New Church	9/83	4	11,188.26
Painter	6/83	4	1,976.35
Parramore Island	10/83	4	4,472.34
Pungoteague	5/83	4	4,532.73
Scarboroughs Neck (Pungoteague)	6/83	4	1,593.92
Shields (Pungoteague)	6/83	4	746.68
Tasley	5/83	4	1,802.25
Wattsville	9/83	4	1,631.17
Total			80,571

Thanks!

&

Discussion & Questions?

usevalue.agecon.vt.edu