

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

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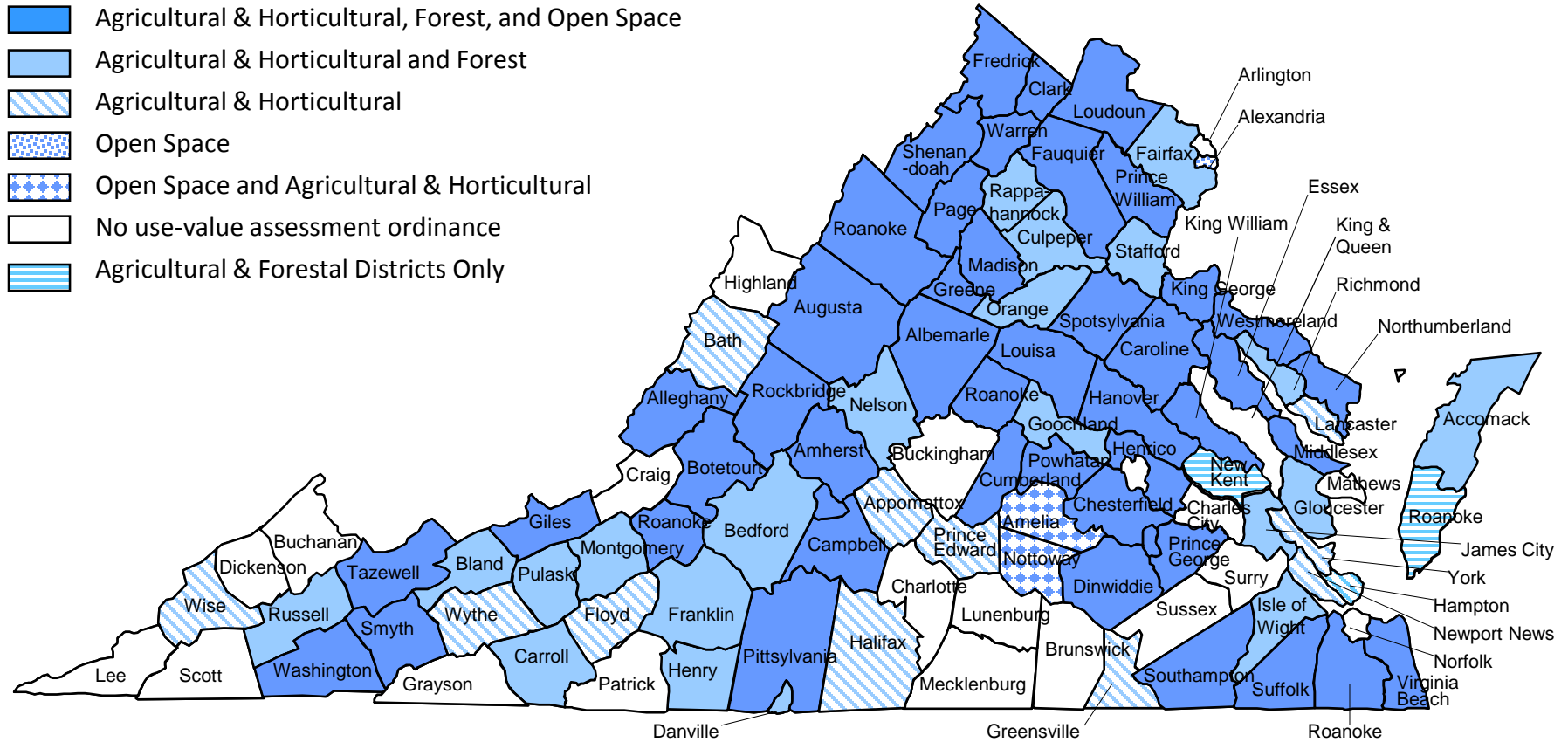
Website: <http://usevalue.agecon.vt.edu/>

January 27, 2017

Outline

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

TY2017: Counties/Cities* with use-value assessment ordinances



* Counties/Cities are identified from annual use-value reports and may differ from actual implementation. Contact government officials in each county/city for the current use-value implementation. Not all participating cities are identified on this map.

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.
- 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.

Use-Value Assessment in Virginia

Organization

- State Land Evaluation and Advisory Council (SLEAC) provides annual use-value estimates for each jurisdiction in the program
 - State Tax Commissioner (Chair)
 - Commissioner of Agriculture
 - State Forester
 - Director of VA Department of Conservation and Recreation
 - Dean of Virginia Tech College of Agriculture and Life Sciences
- ***Responsibility for final value of assessment resides with the local the COR or a duly appointed assessor***

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

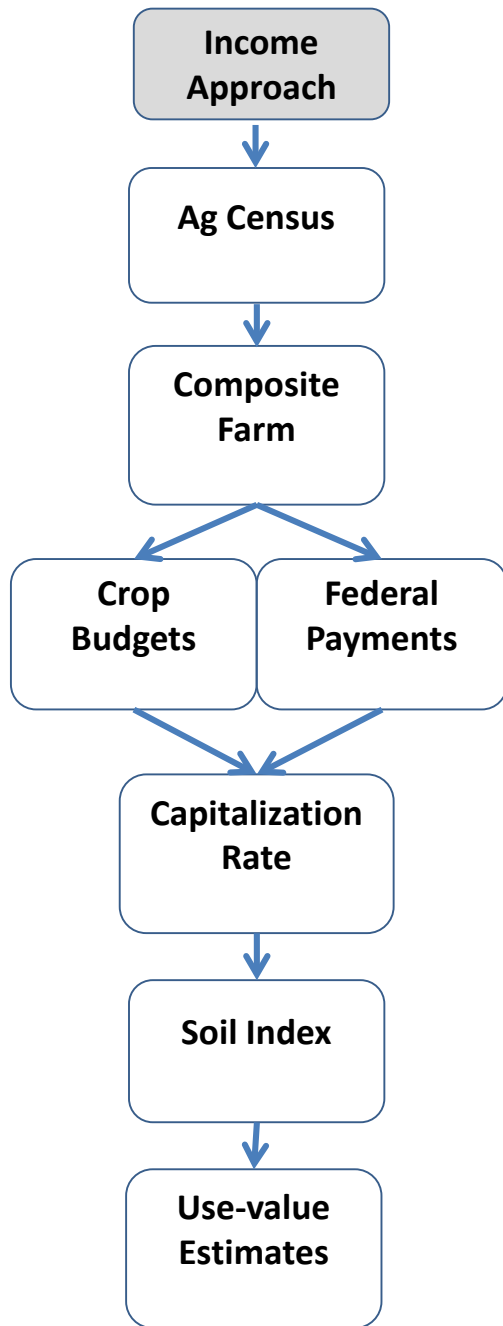
Two Approaches

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)

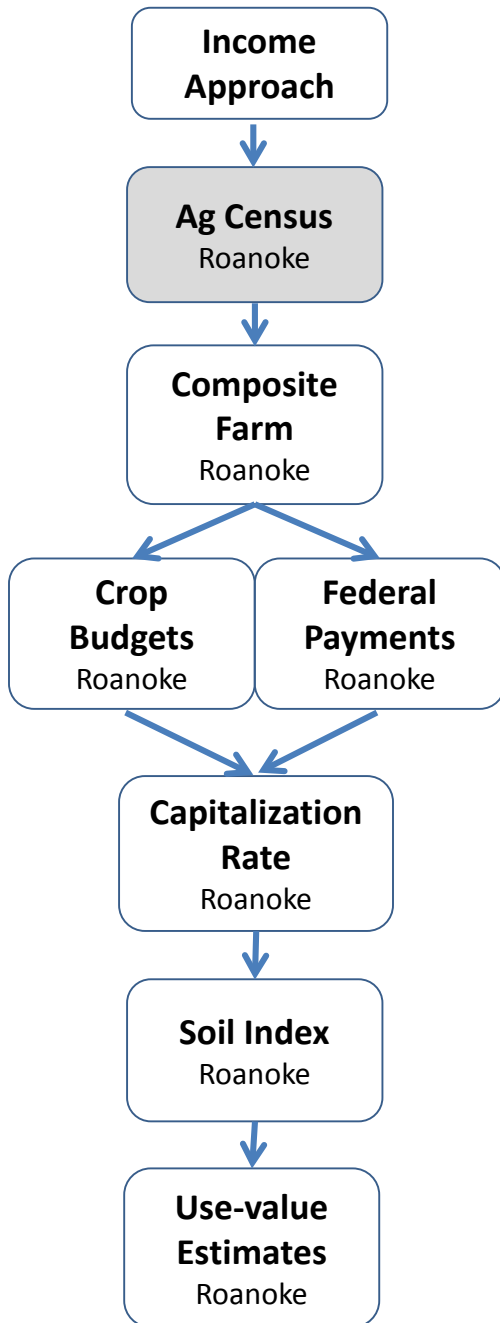
Implemented in 2010 by Groover and Bruce



Income approach for each County

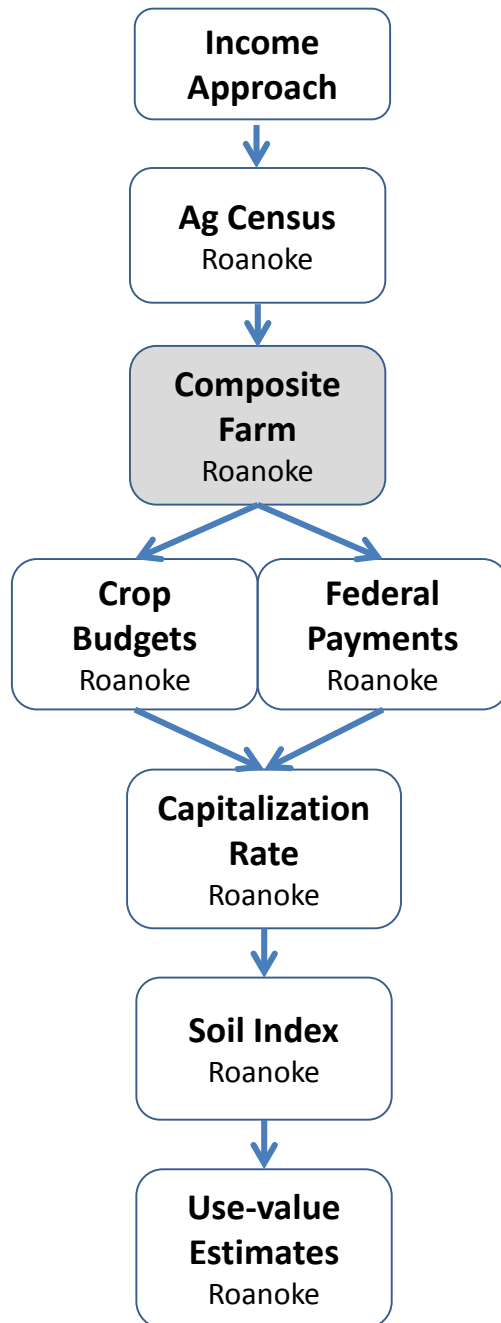
- Task: How to create an annual stream of net income that will be capitalized?
- How?
 - **Build** on secondary/published data
 - Use **Net Returns = Income - Costs**
 - **How?** Define a representative farm (composite farm) – based on current Ag Census for each county
 - **Create** an enterprise budget 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



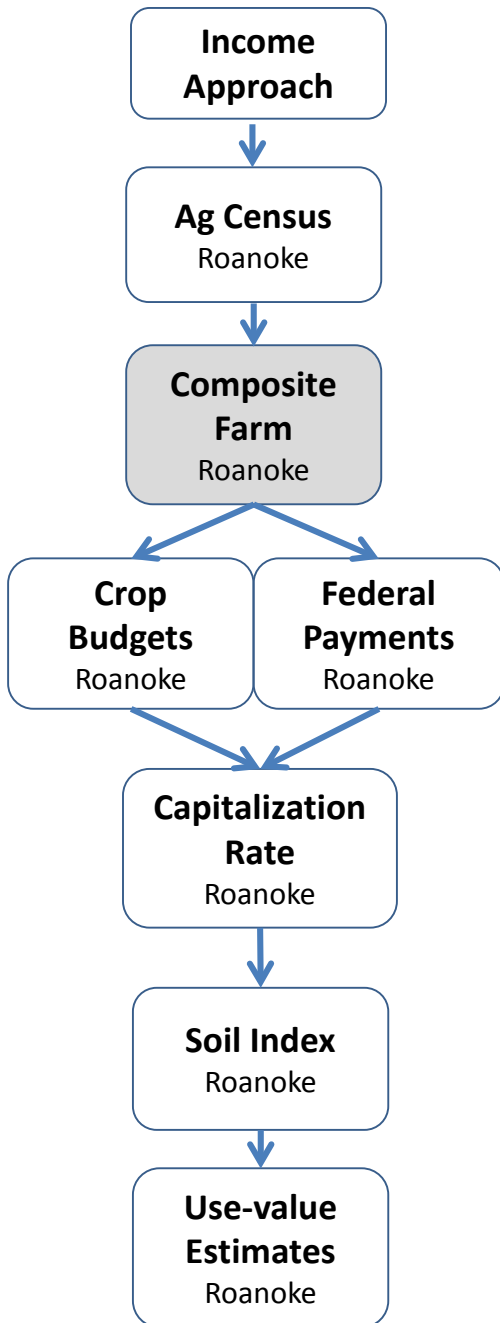
- Conducted and published by National Agricultural Statistics Service (USDA/NASS)
 - Published every 5 years
 - Current Ag Census 2012 (released in 2014)
- Use the following for each county
 - Number of **farms reported**
 - Individual crops grown e.g., corn, wheat, pasture...
 - **Acres** reported for 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
- **Roanoke County – 2012 Census**
 - **280** reported farms => more land owners
 - **Three** CF crops, e.i., alfalfa, hay+haylage, and pasture.

Composite Farm - Roanoke

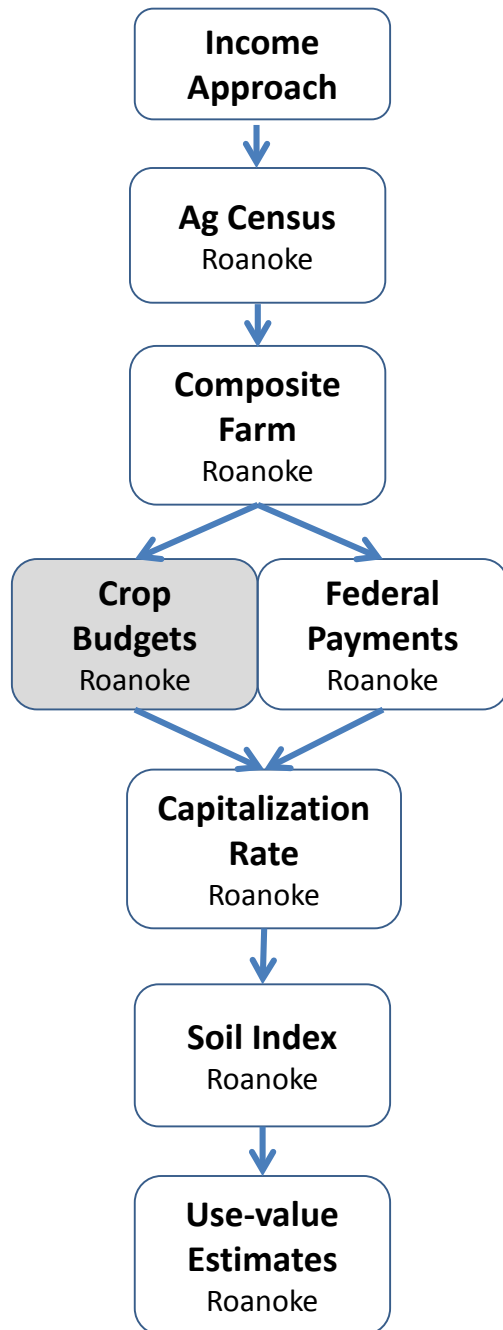


2012 Ag Census Roanoke		Based on 280 farms
Crop	Reported Acres	Composite Farm Acres
Alfalfa	141	1
Barley	0	
Corn	32	
Cotton	0	
Hay	6,325	23
Soybeans	0	
Snap Beans	1	
Soybeans	0	
Sweet Corn	45	
Tobacco	0	
Tomatoes	4	
Watermelons	0	
Wheat	0	
Double-cropped*	(-) 0	(-) 0
Total Cropland Harvested	15,675	57

Example for Hay = 6,325 ac / 280 farms = 23 acres of hay in the Composite Farm (CF)

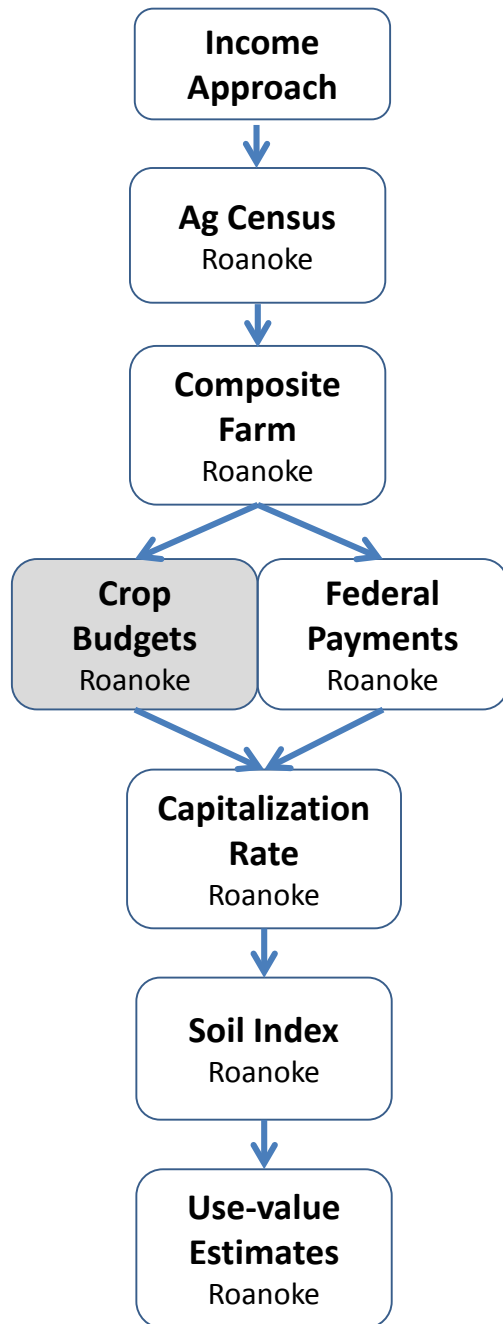
*Barley, rye, and wheat
(D) = withheld to avoid disclosing data of individual farms

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

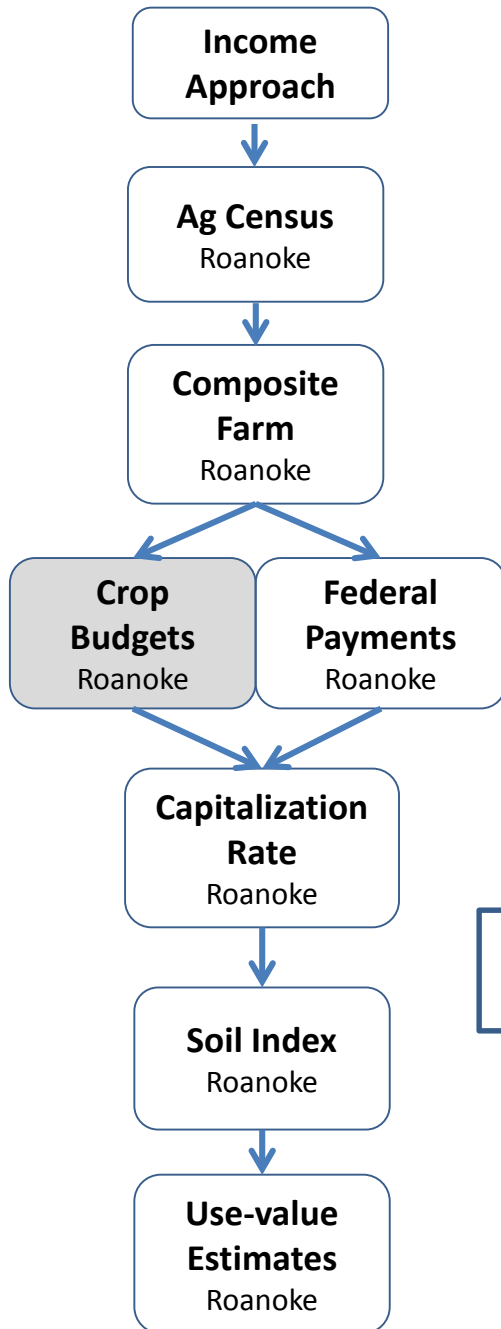
Crop Budgets



- 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 2017 reflects 2015 data

Abbreviated Example Budget

Roanoke Hay TY2017



Hay: Yield = 1.70 Ton/ac * Price = \$153/Ton = \$260.10
Net Crop Insurance = \$00.00
Total Income = \$260.10

Net Returns = Income - Costs

$$\text{NR} = \$260 - \$368 = \text{-\$108/ac}$$

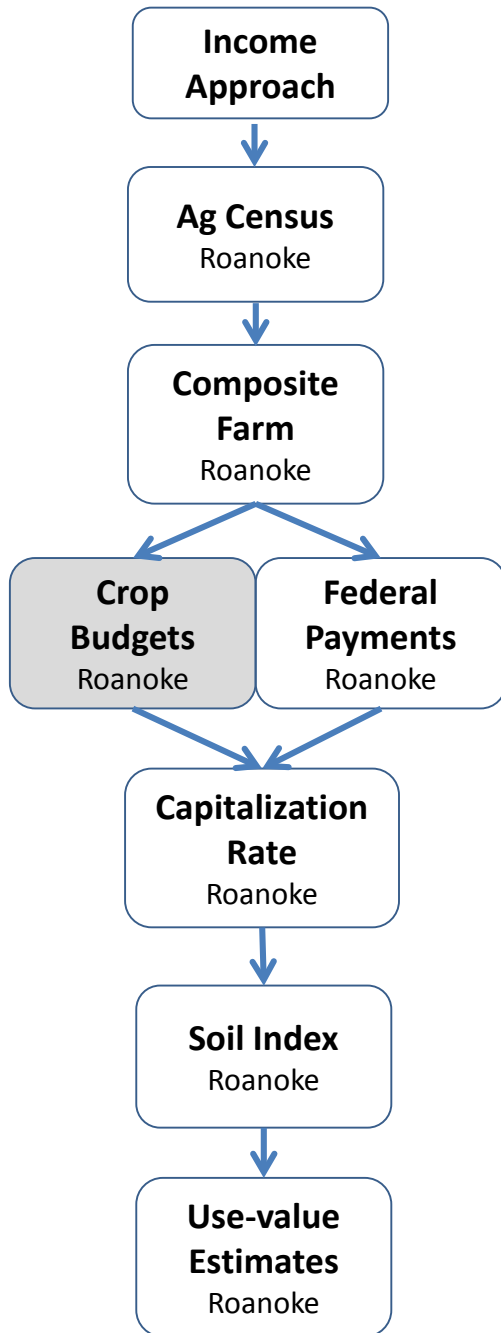
Pre-Harvest Costs: N 30.5 Lb
Price = \$0.61/lbs. = \$51.85/ac

Harvest Costs: Labor, fuel & oil,
drying, hauling = \$70.05/ac

Fixed Costs: Machinery and
Overhead = \$77.96/ac

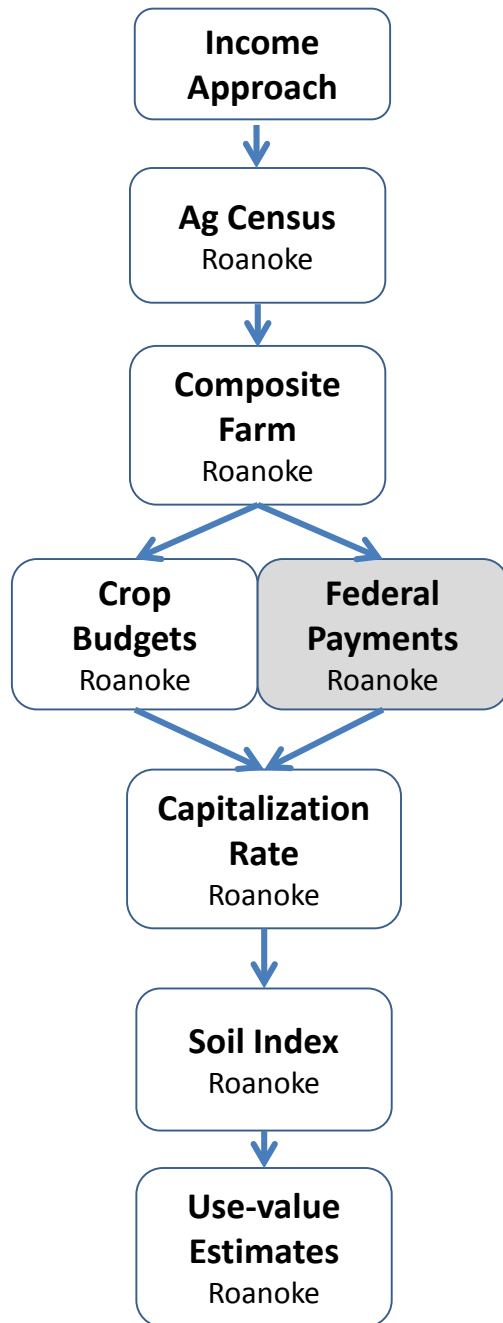
Total Costs = \$368.43/ac

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
- Roanoke **Hay example** TY2011-2017

Roanoke: Hay	Crop Budget
TY2011	\$0.00
TY2012	\$0.00
TY2013	\$0.00
TY2014	\$0.00
TY2015	\$0.00
TY2016	\$0.00
TY2017	\$0.00
Olympic AVG	\$0.00

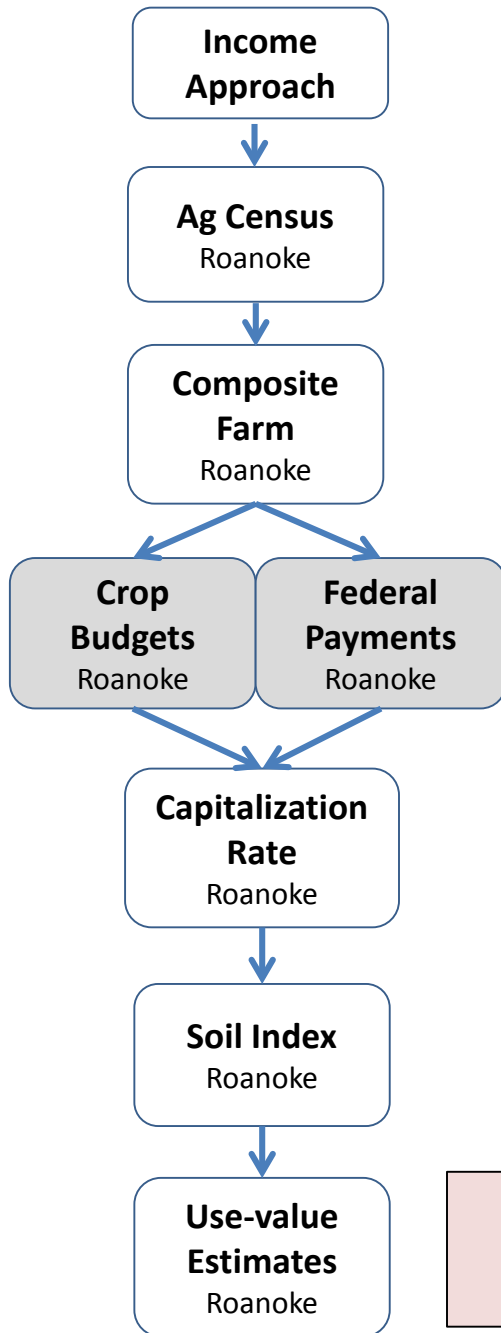


Federal Payments

- **USDA-FSA** provides data for program crops by county
- Roanoke receives payments for **corn, wheat, and soybeans**
- Annual payments = Payment/crop acreage
- **Roanoke receives no federal payments.**

Final Net Returns Roanoke County TY2017

- Composite Farm weighted NR by crop acreage



Crop	Estimated Net Return
Alfalfa	\$63.83
Hay	\$0.00
Pasture	\$0.00

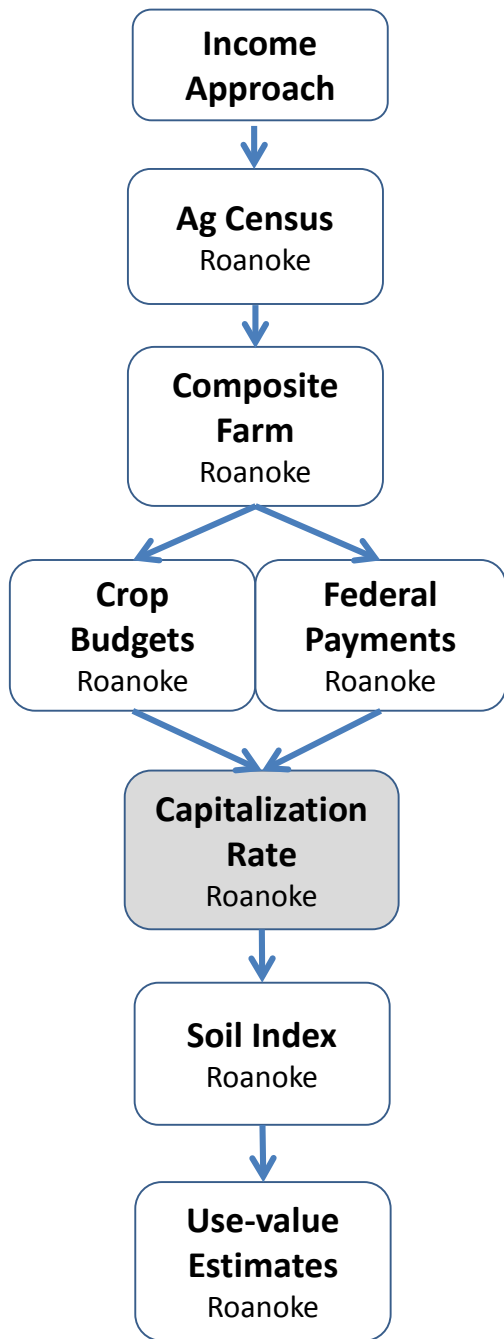
CF acres	% weight (e.g. hay 23/208=0.4035)	Final\$
1	0.0090	\$63.83
23	0.4035	\$0.00
33	0.5822	\$0.00
57	Net Return (Final)	\$0.57

Reflects double-cropped barley, rye & wheat (Roanoke has 0 CF acres double-cropped)

Capitalization Rate

Why use Capitalization Rate?

- *Cap Rate = Net Return (NR) ÷ 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)

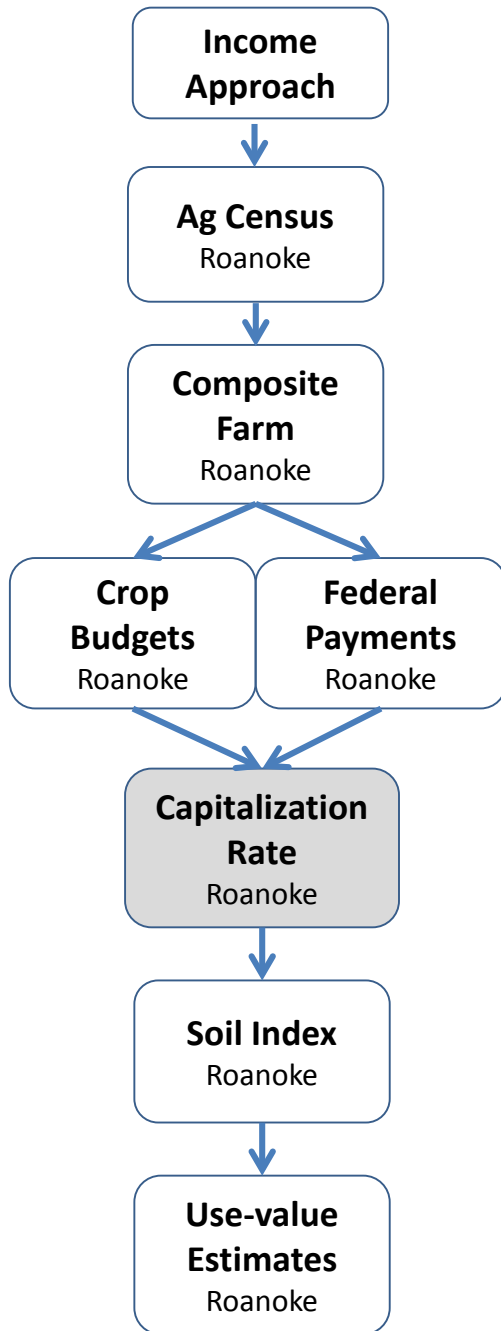
Roanoke TY2017

Cap Rate Components

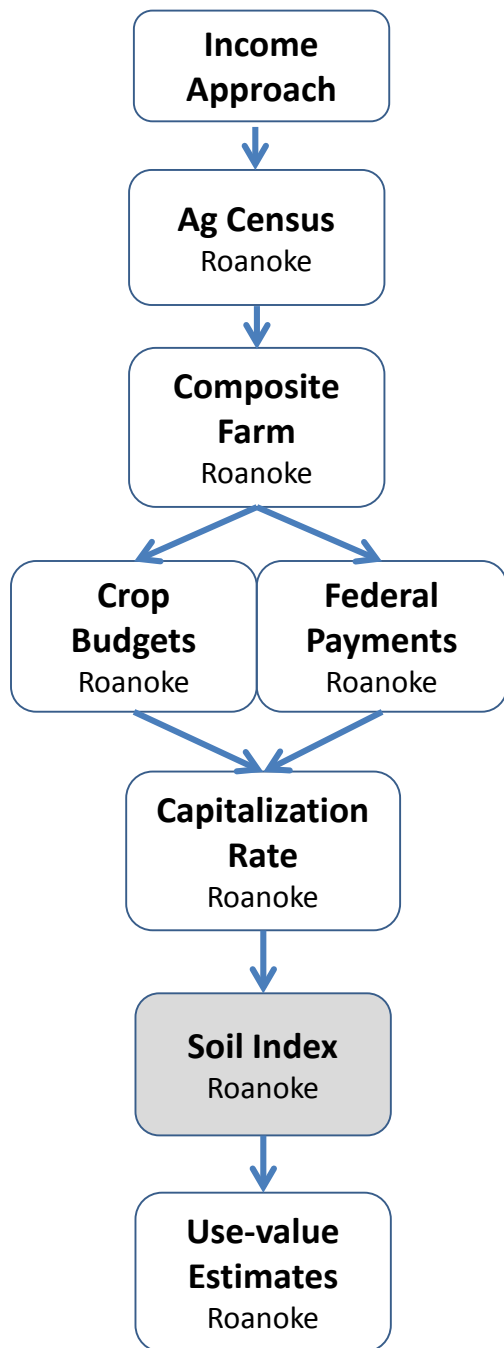
Interest Rate – statewide (10yr Avg)	0.0608
Property Tax – Roanoke (10yr Avg)	0.0101
Total without risk	0.0708
Crop loss due to Flooding 5%	0.0035
Total With risk	0.0744

Use Value Roanoke TY2017

	Use Value =	Net Returns	÷	Cap Rate
Use Value without risk =	\$0.57		÷	0.0708
Use Value without risk =		\$8.11		
Use Value with risk =	\$0.57		÷	0.0744
Use Value with risk =		\$7.72		



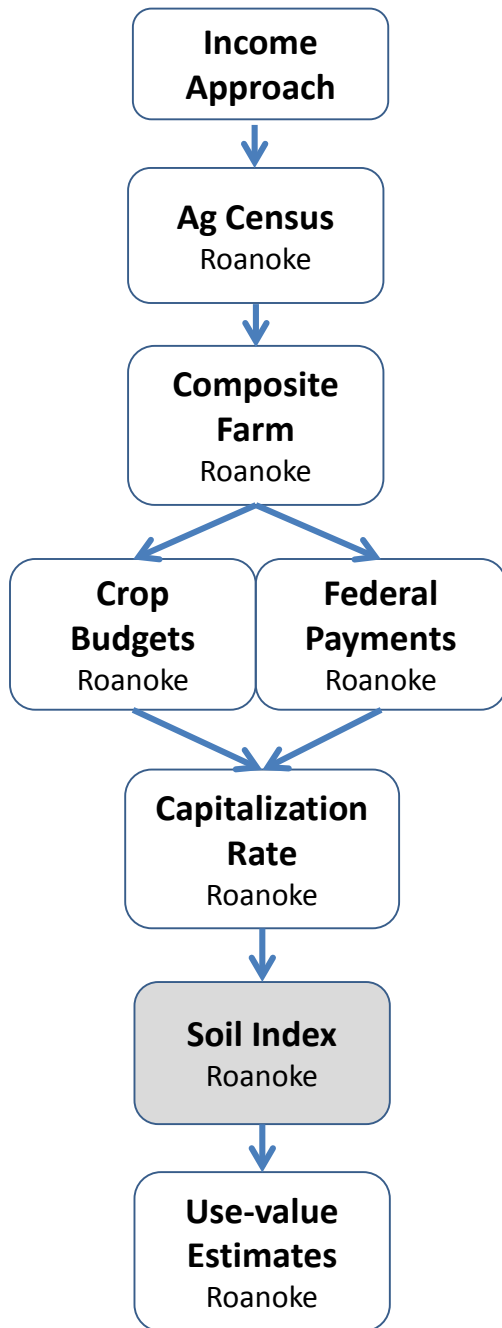
Adjustments for Soil Capabilities



USDA Land Classes for Ag use

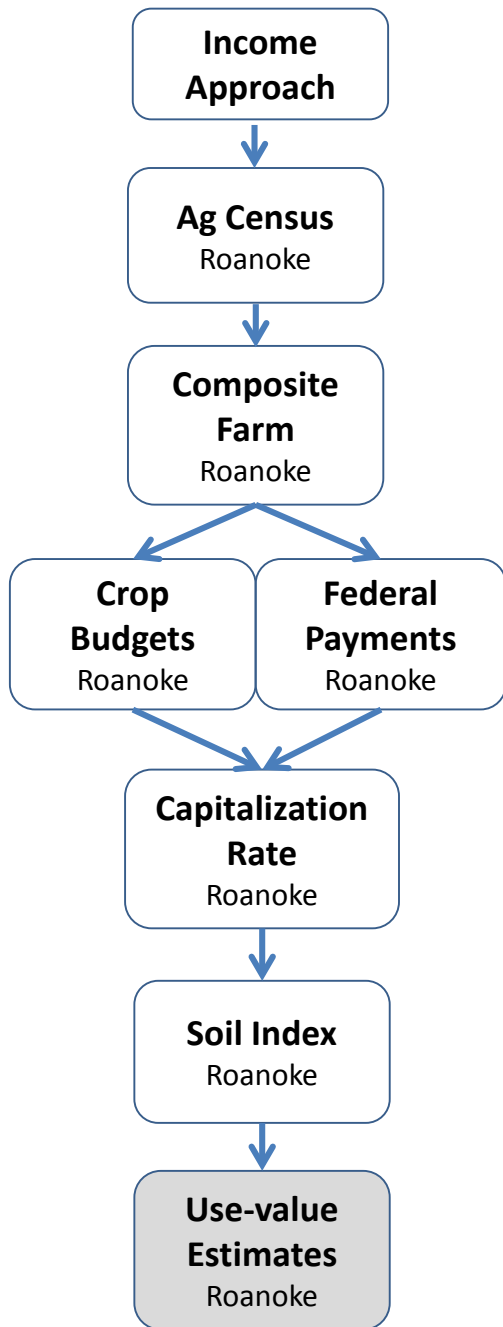
Land Capability Classes	Productivity Index
Class I - Excellent cropland	1.50
Class II - Good cropland	1.35
Class III - Average cropland	1.00
Class IV - Below average cropland – strip cropping only, hay	0.80
Class V – Good Pasture, hay	0.60
Class VI – Pasture	0.50
Class VII – Very limiting - Pasture only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

Indexing for Soil Productivity



Roanoke

Land Class	Reported Acreage	Productivity Index	Weighted Acreage
I	0	1.50	0.00
II	3,991	1.35	5,387.85
III	3,996	1.00	3,996.00
IV	3,182	0.80	2,545.60
Total	11,169		11,929.45
Soil Index Factor $11,929.45 \div 11,169 = 1.068$			



Adjusting to Class III land

Why?

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

Use Value Roanoke TY2017

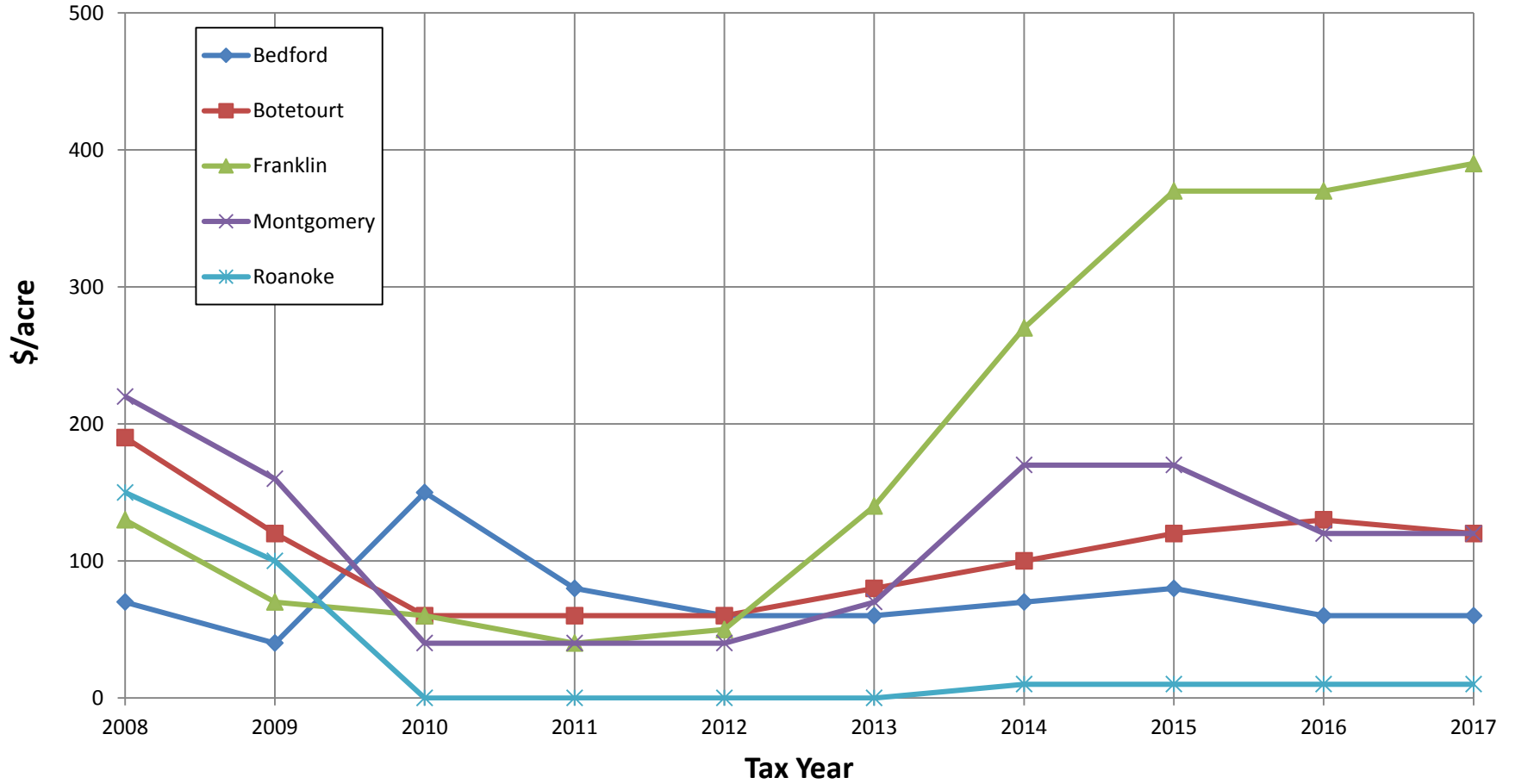
	Use Value =	Use Value	÷	Soil index
	Without risk =	\$8.11	÷	1.068
Without Risk Class III =				\$7.59
	With risk	\$7.72	÷	1.068
With Risk Class III =				\$7.23

Final Estimates Roanoke TY2017

	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	10	10	10	10	10	0	0	0	0	10	0
w/ Risk	10	10	10	10	10	0	0	5	0	10	0

- Note: Final estimated values are rounded to the nearest \$10
- The Class III w/out risk estimate of \$7.59 is reported as \$10

Use-value Estimates: Type III Land (w/out risk) Selected Jurisdiction Comparison (Tax Years 2008 to 2017)



Comparison Surrounding Counties: Acres and Composite Farm Acres

	Roanoke		Bedford		Botetourt		Franklin		Montgomery	
	Acers	CF	Acers	CF	Acers	CF	Acers	CF	Acers	CF
#Farms	280		1,369		584		1,023		603	
Alfalfa	141	1	1,661	1	1,383	2	1,426	1	3,115	5
Barley			324		(D)		490		(D)	
Corn	32		3,309	2	2,380	4	13,152	13	3,665	6
Cotton			---		--		---		---	
Hay	6,325	23	44,721	33	17,273	30	35,012	34	18,644	31
Pasture	9,126	33	78,458	57	33,547	57	43,211	42	44,453	74
Peanuts			---		---		(D)		---	
Potatoes	(D)		2		(D)		4		7	
Pumpkins	(D)		(D)		(D)		(D)		(d)	
Snap Beans	1		4		(D)		7		9	
Soybeans			456		263		2,862	3	(D)	
Sweet Corn	45		3		(D)		14		2	
Tobacco			---		---		891	1	(D)	
Tomatoes	4		8		(D)		7		7	
Watermelons	1		(D)		---		3		3	
Wheat			1,879	1	(D)		2,148	2	489	1
Double-cropped			2,338	2	---		3,028	3	489	1
Total	15,675	57	128,487	92	54,846	93	96,199	93	69,905	116

Comparison Surrounding Counties: Acres, Composited Farms, and Net Returns

	Roanoke			Bedford			Botetourt			Franklin			Montgomery		
	Acers	CF	Net\$	Acres	CF	Net\$	Acers	CF	Net\$	Acers	CF	Net\$	Acers	CF	Net\$
#Farms	280			1,369			584			1,023			603		
Alfalfa	141	1	\$63.83	1,661	1	\$27.93	1,383	2	\$33.59	1,426	1	\$55.28	3,115	5	\$51.65
Barley				324			(D)			490			(D)		
Corn	32			3,309	2	\$143.23	2,380	4	\$190.74	13,152	13	\$129.29	3,665	6	\$120.22
Cotton				---			--			---			---		
Hay	6,325	23	\$0.00	44,721	33	\$0.00	17,273	30	\$0.00	35,012	34	\$0.00	18,644	31	\$0.00
Pasture	9,126	33	\$0.00	78,458	57	\$0.00	33,547	57	\$0.02	43,211	42	\$1.23	44,453	74	\$0.50
Peanuts				---			---			(D)			---		
Potatoes	(D)			2			(D)			4			7		
Pumpkins	(D)			(D)			(D)			(D)			(d)		
Snap Beans	1			4			(D)			7			9		
Soybeans				456			263			2,862	3	\$214.28	(D)		
Sweet Corn	45			3			(D)			14			2		
Tobacco				---			---			891	1	\$176.71	(D)		
Tomatoes	4			8			(D)			7			7		
Watermelons	1			(D)			---			3			3		
Wheat				1,879	1	\$27.75	(D)			2,148	2	\$48.51	489	1	\$69.81
Double-cropped				2,338	2		---			3,028	3		489	1	
Total	15,675	57	\$0.57	128,487	92	\$4.46	54,846	93	\$9.14	96,199	93	\$28.14	69,905	116	\$9.41

Rental Rate Approach Roanoke TY2017

- Starting 2009 NASS published rental rate data annually¹ for
 - Cropland
 - Irrigated cropland
 - Pasture land
- Roanoke County rental rates for **2014 (TY2016)** (NASS)
 - Cropland = \$29.5^{wc}
 - Pastureland = \$21.5^{wp}

¹ Sometimes biennially based on NASS funding

^{wc} Western District Cropland (Combined Counties) - Alleghany, Augusta, Bath, Botetourt, Craig, Highland, Roanoke, and Rockbridge.

When there are not enough responses in a county to meet NASS non-disclosure requirements, all the data for non-disclosed counties within a district is summarized and published as a combined county value.

^{wp} Western District Pastureland (Combined Counties) - Alleghany, Augusta, Bath, Botetourt, Craig, Highland, Roanoke, and Rockbridge.

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Rental Rate Use-Value Estimates

Roanoke TY2017

$$\text{Rental Rate}^1 (\$/\text{acre}) \div \text{Cap Rate}^2 = \text{Rental Rate Estimate}$$

Cropland	\$29.5	÷	0.0708	=	\$420
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Pasture	\$21.5	÷	0.0708	=	\$300
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Rental Rate Estimates are **not averaged over time**

¹ Rental Rates from TY2016

² Cap Rate from TY2017

Income Approach and Rental Rate Approach: Compared (\$/acre)

Roanoke	Income Approach (w/out risk)		Rental Rate Approach	
TY2017	Cropland (I-IV AVG)	\$10	Cropland	\$420
	Pastureland (V-VII AVG)	\$10	Pastureland	\$300

TY2017 Rental Rate Estimates (\$/acre): Selected Counties

	Cropland	Pastureland
Bedford	310	270
Botetourt	440 ^{wc}	240
Franklin	690	340
Montgomery	460	300
Roanoke	420 ^{wc}	300 ^{wp}

^{wc} Western District Cropland (Combined County) – Alleghany, Augusta, Bath, Botetourt, Craig, Highland, Roanoke, and Rockbridge. When there are not enough responses in a county to meet NASS non-disclosure requirements, all the data for non-disclosed counties within a district is summarized and published as a combined county value.

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Method 1

TY2017 Roanoke County <u>Average Rental Rate Estimates</u>¹ by Productivity Index				
Land Class		Productivity Index	TY2017 Rental Rate (AVG)	
I	Cropland	1.50		\$540
II	Cropland	1.35		\$486
III	Cropland	1.00	\$360 ¹	\$360
IV	Cropland	0.80		\$288
V	Pastureland	0.60		\$216
VI	Pastureland	0.50		\$180
VII	Pastureland	0.30		\$108
VIII	Pastureland	0.10		\$36

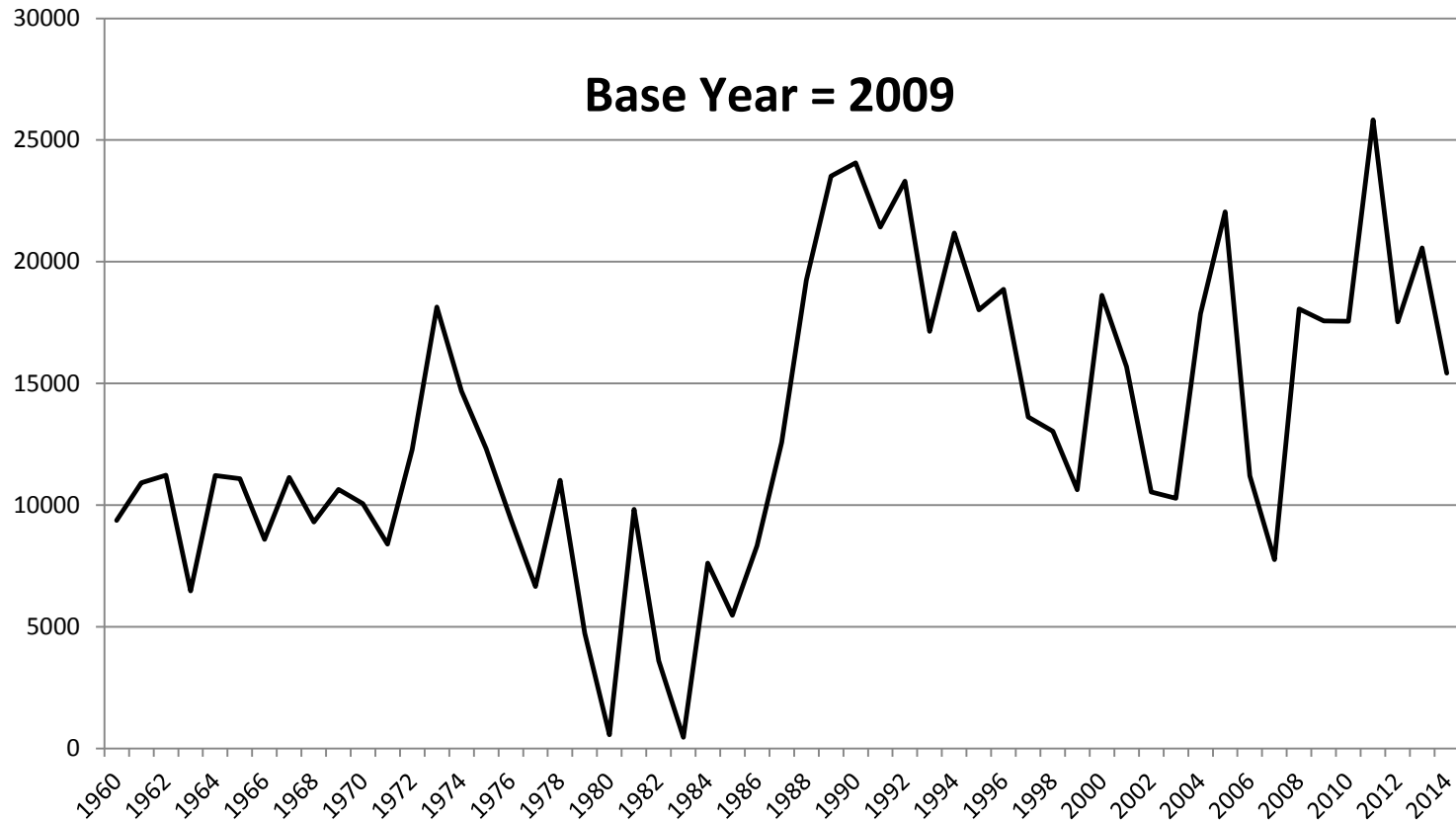
¹ TY2017 Roanoke County Rental Rate Estimates were Cropland \$420 and Pastureland \$300; \$360 AVG

Method 2

TY2017 Roanoke County <u>Rental Rate Estimates</u>¹ by Productivity Index				
Land Class		<u>Adjusted</u> Productivity Index	TY2017 Rental Rate (AVG)	
I	Cropland	1.50		\$630
II	Cropland	1.35		\$567
III	Cropland	1.00	\$420	\$420
IV	Cropland	0.80		\$336
V	Pastureland	1.00	\$300	\$300
VI	Pastureland	0.80		\$240
VII	Pastureland	0.30		\$90
VIII	Pastureland	0.10		\$30

¹ TY2017 Roanoke County Rental Rate Estimates were Cropland \$420 and Pastureland \$300

Real Net Farm Income Virginia \$/farm



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

Thanks!

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Discussion & Questions?

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