

**REPORT OF THE DEPARTMENT OF CONSERVATION AND
RECREATION**

**Agricultural Farm Activity and Best
Management Practices Implementation Report**

**TO THE CHAIRMEN OF THE SENATE FINANCE
COMMITTEE AND THE HOUSE APPROPRIATIONS
COMMITTEE**



**COMMONWEALTH OF VIRGINIA
RICHMOND
MARCH 2013**

Douglas W. Domenech
Secretary of Natural Resources



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Director

COMMONWEALTH of VIRGINIA
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March 4, 2013

The Honorable Walter A. Stosch, Chairman, Senate Finance Committee
The Honorable Lacey E. Putney, Chairman, House Committee on Appropriations

Dear Senator Stosch and Delegate Putney:

I am pleased to submit the attached report in accordance with Chapter 890 of the 2011 Virginia Acts of Assembly, Item 351M. This Budget Bill Item requires the Department of Conservation and Recreation (DCR) with the assistance of the Department of Agriculture and Consumer Services (VDACS) to report on the number of active farmers in the Commonwealth, including types of farming operations, acreage, and region. DCR was also tasked to provide specific information on agricultural best management practices implemented on those farms and determine the increased need and type of practices to achieve the levels described in Virginia's Watershed Implementation Plan for Chesapeake Bay.

The information presented in this report addresses those reporting requests with the best available data. Agricultural farm activity data was provided by USDA National Agricultural Statistics Service Virginia Field Office, which is housed at VDACS. Information on livestock farm acreage was estimated based on data provided by the U.S. Environmental Protection Agency's Chesapeake Bay Model. Data for the implementation of best management practices was provided through DCR's Agricultural Best Management Practice Tracking Program database.

As always, I look forward to our continuing efforts to improve water quality in the Chesapeake Bay and in the Southern Rivers and working with the legislative branch on these and other important matters.

Respectfully submitted,

A handwritten signature in cursive script that reads "David A. Johnson".

David A. Johnson

cc: Mr. Clyde Cristman
Mr. Paul VanLenten

***State Parks • Stormwater Management • Outdoor Recreation Planning
Natural Heritage • Dam Safety and Floodplain Management • Land Conservation***

PREFACE

This report has been prepared in accordance with and fulfills the requirements of:

Chapter 890 of the 2011 Virginia Acts of Assembly, Item 351M, that requires the Department of Conservation and Recreation, with assistance from the Department of Agriculture and Consumer Services, to report on the number of farmers active in Virginia by region and type of farming operation, the number of acres farmed by region and type of farming operation, how many of those acres are using one of the five priority agricultural best management practices by type of farming operation, the total percentage of agricultural best management practices in use on the number of acres by type of farming operation, and the increased need and type of agricultural best management practices that would be required to be implemented on the number and type of acres farmed to achieve the nutrient and sediment reductions required by the Watershed Implementation Plan.

The following pages provide a summary of farm operations across Virginia and their utilization of agricultural best management practices, including the five priority practices, according to the Virginia Agricultural Best Management Practices Tracking Program database during the 2011 and 2012 fiscal years.

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EXECUTIVE SUMMARY

The Department of Conservation and Recreation (DCR) with assistance from the Department of Agriculture and Consumer Services (VDACS) has compiled the following information regarding Virginia's agricultural industry and their efforts to implement best management practices (BMPs). Some of the data requested for this report are not collected by state agencies at the level of resolution requested and some of the data cannot be disclosed for proprietary reasons. Aside from these limitations, this report was compiled using the best available data on Virginia's agricultural farm activities and the agricultural best management practices implemented in 2011 and 2012.

Across Virginia more than 47,000 farms span 8.1 million acres. The two main categories of farming operations are crop production and livestock operations. Virginia's top two localities with the most farms are located in the Shenandoah Valley: Rockingham and Augusta Counties. Rockingham County has 1,440 crop farms on more than 114,500 acres and 1,514 livestock operations on 67,868 acres. Augusta County has the second most agricultural operations with more than 1,200 crop farms on almost 108,000 acres and 1,260 livestock operations on 105,703 acres.

In 2005, Virginia identified a suite of five priority practices to reduce runoff of manure and nutrients from agricultural operations. Based on their cost and capacity to reduce nutrient runoff and protect water quality, those practices are: nutrient management, vegetative buffers, conservation tillage, cover crops, and livestock stream exclusion. Of the available funding for Virginia's Agricultural Cost-Share Program, 80 percent was at that time directed towards implementing those five key practices statewide.

The most current data available for fiscal year 2012 shows that 1,466 participants received state funding assistance to voluntarily implement these five BMPs (up from 1,353 participants in 2011). Nutrient management was utilized on 111,931 acres (up from 89,442 acres in 2011), cover crops on 89,647 acres (500 acres less than 2011), stream buffers on 601 acres (up from 562 acres in 2011), continuous no-till on 338 acres (remained constant with 2011 levels), and livestock exclusion on 167 miles of streams (up from 131 miles in 2011). These levels of participation are expected to reduce edge of field nitrogen pollution by 4.07 million pounds, phosphorous by 861,333 pounds and sediment by almost 600,000 tons.

These achievements for the five priority practices are notable and help the Commonwealth in meeting its pollution reduction goals. According to the latest agricultural census published in 2007, there are over 3.1 million acres of cropland in Virginia. Those acres that received state financial incentives for the key practices in 2012 make up 3.6 percent of the total cropland acreage for nutrient management, 2.9 percent of the total for cover crops, and 0.01 percent of the total for continuous no-till.

The U.S. Environmental Protection Agency (EPA) has established a Total Maximum Daily Load (TMDL) for the entire Chesapeake Bay watershed, which required Virginia to develop a Watershed Implementation Plan (WIP) to describe how it plans to meet pollution reduction goals. Virginia must complete 60 percent of the overall implementation plan by 2017,

and 100 percent of the plan by 2025. Progress to complete the goals of the WIP in each of the four sectors of pollution (urban stormwater, agriculture, onsite septic systems, and sewage treatment plants) will be measured and reported to EPA through two year milestones, which will be developed by the Commonwealth.

As farmland covers so much acreage in the state, its potential impact on water quality is quite significant. Using the Chesapeake Bay Phase 5.3.0 Model, Virginia estimated the total need for agricultural BMPs based on the amount of nutrient and sediment reductions to be achieved from agricultural lands. Virginia's Phase I Watershed Implementation Plan (WIP I) approved by EPA on December 29, 2010, set a goal for 95 percent of the total cropland acreage in the Bay watershed to implement nutrient management practices (1.29 million acres), 45 percent of the total to use cover crops (264,627 acres), and 60 percent to use continuous no-till (306,962 acres).

In 2012, the next iteration of the Chesapeake Bay model was released, Phase 5.3.2. This model was used for calculating needed BMPs in the next stage of the Chesapeake Bay TMDL. Virginia's Phase II Watershed Implementation Plan (WIP II) was submitted to EPA in March of 2012. The WIP II refined the WIP I numbers and raised the goal to 1.16 million acres of cropland in the Bay watershed to implement nutrient management practices, 308,860 acres to use cover crops, and 304,400 acres to use continuous no-till.

The December 7, 2012 report, entitled 2012 Virginia Soil and Water Conservation Districts' Funding Study, from the Office of the Secretary of Natural Resources (2012-RD403), provides additional information on options to calculate funding needs for Virginia's agricultural BMPs pursuant to the WIP II. The report also presents an in-depth analysis of the process used to determine multiple funding scenarios to meet the 2025 TMDL pollution reduction goals.

Additional information on both point source and nonpoint source efforts to reduce nutrient and sediment pollution in fiscal years 2011 and 2012 is presented in the two recent Chesapeake Bay and Virginia Waters Clean-Up Plan – Progress Reports, January 2012 (2011-RD416) and November 2012 (2012-RD331) from the Secretary of Natural Resources to the Governor and members of the General Assembly. These two comprehensive reports focus on water quality achievements made through the Water Quality Improvement Fund, annual funding options for effective implementation of agricultural BMPs, and progress made towards implementing strategies to clean-up the Chesapeake Bay and Virginia's Southern Rivers.

AGRICULTURAL FARM ACTIVITY AND BEST MANAGEMENT PRACTICES IMPLEMENTATION

Agricultural Farm Activity

Virginia's agricultural industry is the largest contributor to the state's economy with an economic impact of \$55 billion annually. While Virginia's 47,000 farms provide traditional agricultural jobs, the economic benefits of agriculture extend beyond the farm to support associated industries throughout the Commonwealth for a total of more than 357,000 jobs.

According to the most recent Census of Agriculture (2007), agriculture employs nearly 60,000 farmers and workers in Virginia and generates approximately \$2.9 billion in total output. Value-added industries, those that depend on farm commodities, employ an additional 76,000 workers and generate \$26 billion in total industrial output. Agriculture-related industries contribute an additional 221,000 jobs and nearly \$26 billion in total output.

Virginia's farmland spans 8.1 million acres, or 32 percent of the state's total land area, and mainly includes croplands, pasturelands, and woodlands. Virginia's varied agricultural production history, mid-Atlantic geographic location, seasonal weather patterns, and assorted geologic features have given rise to extremely diverse agricultural markets. The top 20 commodities produced in 2010 and their annual value are listed in Table 1, which illustrates the variety of agricultural products produced in the state.

Table 1: Commodity Rank and Cash Receipts of Virginia's Top Agricultural Products

Rank	Commodity	Cash Receipts
1	Broilers	\$623,000,000
2	Cattle and Calves	\$373,000,000
3	Milk	\$332,000,000
4	Turkeys	\$285,000,000
5	Nursery/Greenhouse/Sod/Turfgrass	\$262,000,000
6	Soybeans	\$164,000,000
7	Equine *	\$102,000,000
8	Corn, Grain	\$94, 000,000
9	Tobacco (Unprocessed Leaf)	\$78,000,000
10	Eggs	\$77,000,000
11	Hay	\$72,000,000
12	Hogs	\$63,000,000
13	Aquaculture	\$53,000,000
14	Tomatoes (Fresh Market)	\$52,000,000
15	Cotton (Lint and Seed)	\$51,000,000
16	Wheat (Winter)	\$40,000,000
17	Apples	\$33,000,000
18	Potatoes (Summer)	\$12,000,000
19	Grapes	\$11,000,000
20	Barley	\$10,000,000
Reprinted from VDACS website. Source: National Agricultural Statistics Service, 2010.		
*Source: University of Virginia Weldon Cooper Center for Public Service, 2010.		

Data on Virginia's crops and farmland activities was provided by the National Agricultural Statistics Service (NASS), which has an office within the Virginia Department of Agriculture and Consumer Services (VDACS). The most recent agriculture census was conducted in 2007 by NASS. The next national census is scheduled to be published in 2014.

The two main categories of farming operations in Virginia per the 2007 report are cropland production and livestock operations. Table 2 presents a regional (by locality) listing of agricultural operations in the 95 counties and three of the cities (Chesapeake, Suffolk, and Virginia Beach) in Virginia. Attributed to each locality are the number of agricultural operations by type (cropland or livestock), the total acreage of harvested cropland, and the total acreage of livestock operations. Many farms produce both crops and livestock. NASS counts those farms twice, once in each category. So the total number of farms cannot be calculated by adding cropland and livestock operations because many of the farms would be double counted.

The statewide cropland category includes acres of harvested crops only; it does not include pasturelands, woodlands, buffers, or other idle lands. The number of livestock farms was provided by NASS. However, the acreage associated with livestock operations is not collected by NASS, so data from the Chesapeake Bay model was used to estimate the total acreage in this category. Although the Commonwealth has concerns with the accuracy of the model, use of it was the only way to estimate the requested information. No data is available for the acreage of livestock farms outside of the Chesapeake Bay watershed. Only those portions of a county in the Chesapeake Bay watershed are counted, so this data does not give a full projected accounting of those counties that are not wholly within the Chesapeake Bay watershed. The estimated acreage for livestock operations includes both pastureland and animal confinement areas in the Chesapeake Bay watershed.

Table 2: Virginia Farms by County and Type of Agricultural Operation

County	Cropland Operations		Livestock Operations	
	# of Farms Statewide	Harvested Acres Statewide	# of Farms Statewide	# of Acres in Bay Watershed Only
ACCOMACK	185	76,576	105	1,030
ALBEMARLE	566	46,216	478	40,240
ALLEGHANY	182	7,970	120	6,813
AMELIA	360	33,503	236	18,551
AMHERST	304	21,010	275	22,470
APPOMATTOX	270	26,931	203	13,752
ARLINGTON	3	32	5	0
AUGUSTA	1,237	107,811	1,260	105,703
BATH	92	11,818	62	10,175
BEDFORD	1,120	68,918	893	5,609
BLAND	328	19,583	296	n/a
BOTETOURT	492	27,662	405	21,608
BRUNSWICK	298	26,820	151	n/a
BUCHANAN	61	2,023	55	n/a
BUCKINGHAM	314	28,677	267	20,721
CAMPBELL	561	49,891	412	3,891
CAROLINE	158	36,045	112	5,093
CARROLL	765	41,737	705	n/a

	Cropland Operations		Livestock Operations	
County	# of Farms Statewide	Harvested Acres Statewide	# of Farms Statewide	# of Acres in Bay Watershed Only
CHARLES CITY	54	18,353	40	2,415
CHARLOTTE	428	40,739	261	n/a
CHESAPEAKE CITY	178	43,217	89	139
CHESTERFIELD	147	6,556	91	3,410
CLARKE	302	32,530	287	22,975
CRAIG	164	11,081	125	6,838
CULPEPER	489	56,111	377	29,478
CUMBERLAND	230	17,149	162	12,774
DICKENSON	105	3,100	100	n/a
DINWIDDIE	263	35,330	169	1,163
ESSEX	80	38,298	32	2,492
FAIRFAX	88	2,872	55	2,056
FAUQUIER	749	85,075	720	71,856
FLOYD	720	45,010	555	n/a
FLUVANNA	264	18,136	163	10,714
FRANKLIN	854	66,792	717	n/a
FREDERICK	475	37,900	391	25,841
GILES	268	16,022	244	7
GLOUCESTER	110	16,393	62	1,724
GOOCHLAND	221	22,821	222	11,987
GRAYSON	655	40,319	552	n/a
GREENE	164	12,571	143	9,776
GREENSVILLE	124	29,578	41	n/a
HALIFAX	777	70,640	391	n/a
HANOVER	459	56,034	276	11,878
HENRICO	105	12,216	58	3,262
HENRY	271	15,342	165	n/a
HIGHLAND	183	12,612	179	29,328
ISLE OF WIGHT	143	50,641	65	2,047
JAMES CITY	47	2,990	25	1,321
KING AND QUEEN	132	32,324	43	2,262
KING GEORGE	147	15,410	68	5,527
KING WILLIAM	111	25,605	60	2,220
LANCASTER	49	10,438	16	374
LEE	884	37,738	659	n/a
LOUDOUN	922	73,593	742	45,386
LOUISA	391	30,147	285	14,958
LUNENBURG	310	31,597	187	n/a
MADISON	399	42,011	383	29,759
MATHEWS	35	3,171	19	90
MECKLENBURG	497	66,145	317	n/a
MIDDLESEX	69	13,716	21	651
MONTGOMERY	472	30,219	423	100
NELSON	365	22,898	240	18,628
NEW KENT	78	14,061	48	1,570
NORTHAMPTON	122	58,230	41	587
NORTHUMBERLAND	117	36,896	27	504
NOTTOWAY	323	24,877	227	8,494
ORANGE	341	45,202	279	26,911

	Cropland Operations		Livestock Operations	
County	# of Farms Statewide	Harvested Acres Statewide	# of Farms Statewide	# of Acres in Bay Watershed Only
PAGE	387	27,702	399	20,625
PATRICK	509	25,435	316	n/a
PITTSYLVANIA	1,149	103,576	760	n/a
POWHATAN	155	11,606	106	5,179
PRINCE EDWARD	360	25,006	230	15,495
PRINCE GEORGE	148	22,275	55	1,713
PRINCE WILLIAM	247	18,182	138	7,341
PULASKI	305	21,091	291	n/a
RAPPAHANNOCK	313	20,871	212	18,963
RICHMOND	105	24,216	44	2,805
ROANOKE	238	8,793	153	1,487
ROCKBRIDGE	610	40,497	544	49,851
ROCKINGHAM	1,440	114,523	1,514	67,868
RUSSELL	869	35,431	715	n/a
SCOTT	1,181	41,935	819	n/a
SHENANDOAH	777	60,247	748	42,752
SMYTH	593	30,319	488	n/a
SOUTHAMPTON	258	91,291	101	n/a
SPOTSYLVANIA	278	23,773	199	8,365
STAFFORD	168	10,551	98	2,483
SUFFOLK CITY	222	53,760	131	1,077
SURRY	96	29,344	49	912
SUSSEX	128	38,344	49	n/a
TAZEWELL	398	31,479	409	n/a
VA BEACH CITY	112	21,542	51	23
WARREN	234	13,354	223	15,928
WASHINGTON	1,418	64,205	1,156	n/a
WESTMORELAND	140	44,742	43	1,704
WISE	129	3,835	103	n/a
WYTHE	784	51,991	699	n/a
YORK	26	292	19	75
TOTALS	34,514 farms	3,159,614 acres	27,744 farms	961,807 acres
"n/a" means information is not available.				

The information in Table 2 indicates that more than 34,500 farms in Virginia harvest crops on more than 3.1 million acres of cropland. There are almost 28,000 livestock operations (including dairy, cattle, swine, sheep, and poultry) throughout Virginia. The Chesapeake Bay model estimates there are almost 962,000 acres of pasture and animal containment within Virginia's portion of the Chesapeake Bay watershed. The counties with the most crop farms, the most cropland acreage, and the largest number of livestock operations are found in the Shenandoah Valley. Rockingham County has 1,440 crop farms on more than 114,500 acres, and 1,514 livestock operations on about 68,000 acres. Augusta County has more than 1,200 crop farms on almost 108,000 acres, and 1,260 livestock operations on 105,703 acres.

More detailed information on the different types of crops produced statewide in Virginia and their associated acreage is provided in Appendix A. The information is again presented by

locality and includes the acreage of the major crops produced: soybeans, corn, wheat, cotton, barley, and peanuts. Other crops of lesser acreage are not included in the chart, such as tobacco, sorghum, oats, rye, and sunflowers. Also, to protect privacy concerns, NASS does not disclose crop data in counties where there are less than three producers of a specific crop or if one farmer produces 60 percent or more of one crop in that county.

Best Management Practices Implementation

Agricultural Best Management Practices (BMPs) include a variety of voluntary on-the-ground actions to control the runoff of soil, fertilizer, and manure from farmlands. The practices improve soil conservation and protect the water quality of nearby streams and rivers. BMPs can be implemented on croplands, pasturelands, and highly erodible farmlands or they can address the impacts of livestock operations. Individual BMPs can be employed to address specific nonpoint source runoff problems. For example, some practices such as no-till planting systems can directly manage soil erosion issues. Others, such as anaerobic digesters, control the management of animal wastes. Nutrient management plans manage the appropriate application of nutrients and others such as integrated pest management prevent excessive or unnecessary application of pesticides. The Virginia Department of Conservation and Recreation maintains specifications for 86 BMPs that cover the full spectrum of agricultural operations in Virginia.

All of the practices in the Virginia Department of Conservation and Recreation's program are designed to improve or protect water quality. Many also increase farm productivity by conserving soil and making wise use of other farm resources. New or revised BMPs have been developed as agricultural technology has advanced over the years and funding streams have become more reliable. New and better methods of applying nutrients and minimizing soil loss often mean direct savings to farmers as well as improved reductions in pollutant loads that reach state waters.

In 2005, Virginia identified a suite of five priority BMPs based on their cost and capacity to reduce soil and nutrient runoff and to protect water quality: nutrient management, vegetative buffers, conservation tillage, cover crops, and livestock stream exclusion. A majority of Virginia's BMP funding, 80 percent at that time, was directed to implementing these five key practices with the goal of maximizing Virginia's return on taxpayer funding and stakeholder investments in addition to increasing cost-effective nutrient and sediment reductions. Local Soil and Water Conservation Districts (SWCDs) were directed to actively promote getting these BMPs on the ground wherever farmers are willing to have them applied.

Virginia has several programs to encourage and assist farmers and landowners to implement BMPs. The Virginia Soil and Water Conservation Board and the Virginia Department of Conservation and Recreation work in close partnership with local SWCDs and other significant partners, including the federal Natural Resources Conservation Service and the Virginia Department of Forestry to develop, implement, and improve Virginia's Agricultural Cost-Share Program (VACS). Through VACS, Virginia farmers and landowners can receive technical assistance and financial support for the voluntary implementation of BMPs to improve the water quality of Virginia's waterways. VACS is administered by the Virginia Department of Conservation and Recreation through the 47 SWCDs who partner with farmers at the local level to enhance statewide participation in the program. Table 3 provides a listing of Virginia's 47

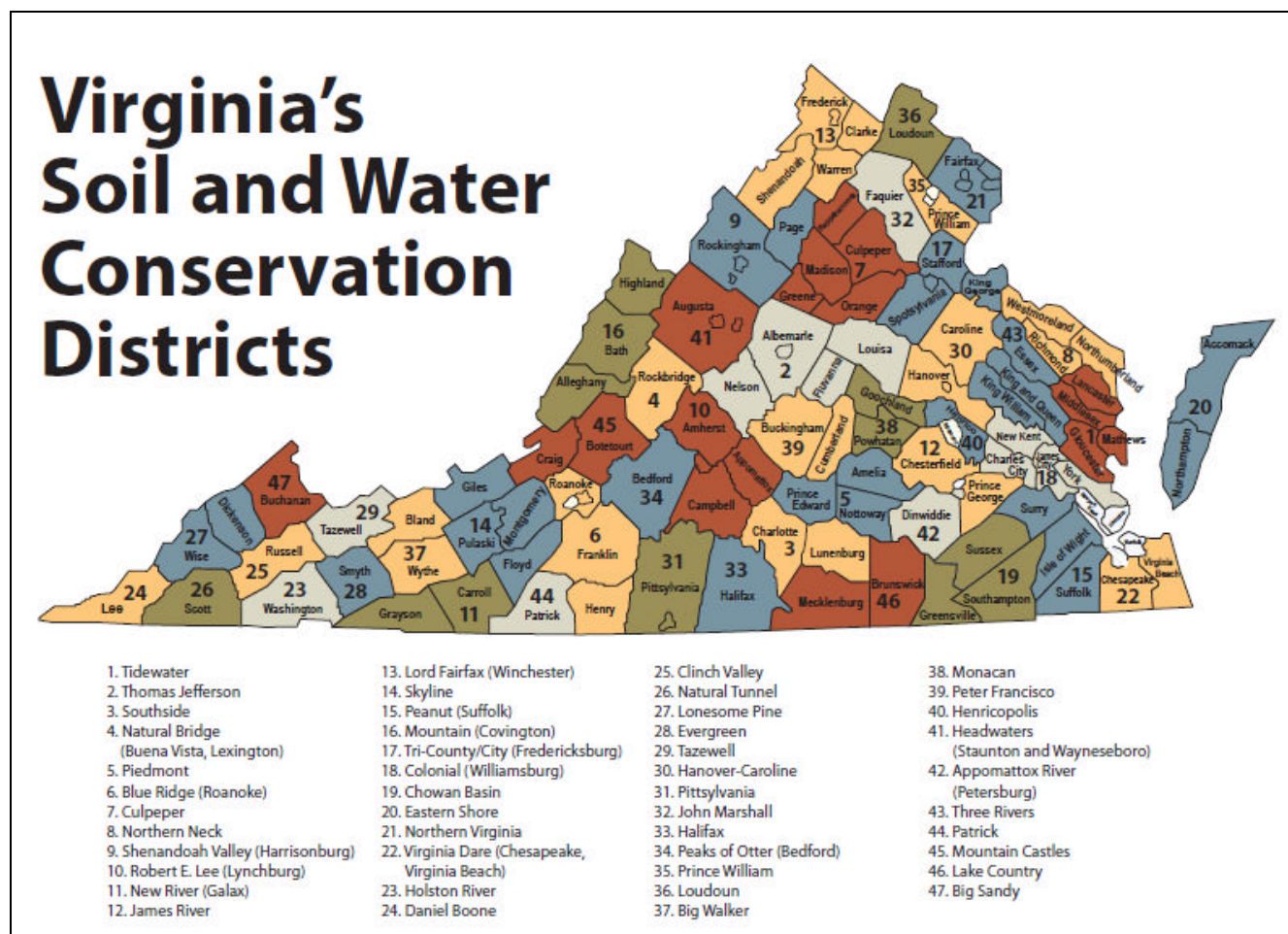
SWCDs and the level of funding received from the Virginia Department of Conservation and Recreation in fiscal years 2011 and 2012 for BMP VACS payments.

Table 3: FY2011 and FY 2012 SWCD Agricultural Cost-Share Contracts

SWCD	2011 Contract Amount	2012 Contract Amount	SWCD	2011 Contract Amount	2012 Contract Amount
Appomattox River	\$70,229	\$131,446	Mountain Castles	\$149,244	\$297,108
Big Sandy	\$14,218	\$25,819	Natural Bridge	\$187,222	\$189,816
Big Walker	\$110,000	\$185,807	New River	\$176,000	\$389,859
Blue Ridge	\$143,593	\$822,549	Northern Neck	\$273,193	\$754,403
Chowan Basin	\$276,941	\$1,081,463	Northern Virginia	\$5,556	\$10,020
Clinch Valley	\$154,000	\$167,799	Patrick	\$56,694	\$183,051
Colonial	\$170,792	\$328,688	Peaks Of Otter	\$109,263	\$394,947
Culpeper	\$305,482	\$1,510,310	Peanut	\$291,476	\$923,143
Daniel Boone	\$99,000	\$179,091	Peter Francisco	\$57,993	\$265,295
Eastern Shore	\$391,424	\$1,040,053	Piedmont	\$128,142	\$638,495
Evergreen	\$76,961	\$187,347	Pittsylvania	\$144,799	\$312,227
Halifax	\$121,985	\$252,786	Prince William	\$23,642	\$33,856
Hanover-Caroline	\$193,289	\$930,910	Robert E. Lee	\$184,512	\$450,871
Headwaters	\$333,046	\$560,769	Scott County	\$134,429	\$205,706
Henricopolis	\$34,929	\$19,801	Shenandoah Valley	\$368,440	\$547,384
Holston River	\$156,742	\$265,973	Skyline	\$231,000	\$389,571
James River	\$72,211	\$76,671	Southside	\$101,556	\$264,154
John Marshall	\$181,551	\$752,916	Tazewell	\$77,000	\$312,888
Lake Country	\$92,799	\$218,632	Thomas Jefferson	\$208,649	\$1,147,087
Lonesome Pine	\$30,806	\$78,079	Three Rivers	\$170,776	\$1,113,089
Lord Fairfax	\$341,246	\$832,317	Tidewater	\$85,506	\$387,640
Loudoun	\$175,748	\$358,170	Tri-County/City	\$86,823	\$219,513
Monacan	\$53,404	\$273,584	Virginia Dare	\$109,922	\$508,802
Mountain	\$141,728	\$94,815	Total:	\$7,103,961	\$20,314,741

Figure 1 provides a map of Virginia's 47 Soil and Water Conservation Districts and the localities that make up each district. The numbering of the Districts reflects the order in which each District was originally established.

Figure 1: Soil and Water Conservation District Localities



Aside from cost-share funds, farmers can also qualify for state income tax credits for the cost of the installation of certain BMPs through the Virginia Agricultural Best Management Practices Tax Credit Program. Tax credits are also available for the cost of certain conservation tillage equipment. State and federal governmental programs also provide additional opportunities for farmers to receive economic support to implement BMPs designed to support water quality improvements, such as the federal Natural Resources Conservation Service's Conservation Reserve Enhancement Program (CREP), the Virginia Department of Environmental Quality's low-interest loans, and numerous impaired stream work efforts, also known as Total Maximum Daily Load projects. These programs require technical assistance and the on-going recruitment of landowners by SWCDs and state and federal agency staff to increase the statewide implementation of BMPs.

The Agricultural BMP Tracking Program database, a modern web-based reporting system, is used to record participant information, practice data, and financial figures for all of the state-funded agricultural incentive programs. SWCD staff collects and enters data for all approved BMPs. It is important to note that only those practices that receive state cost-share funding or tax incentives are recorded. While the type and location of the practice are documented if state funding is used, no other farm operation information is collected. To further protect the confidentiality of collected data, analytical reports only summarize the number of participants, pollutant reductions associated with the BMPs implemented, the general location of BMPs, and the financial support provided.

Many farmers utilize best management practices at their own cost, with no payment from the state or other entities. These practices are not currently accounted for in the state's database even though they provide needed soil conservation and water quality benefits. Pursuant to Virginia Code § 2.2-220.3, with assistance from other state agencies and significant stakeholder input, the Virginia Department of Conservation and Recreation has developed a reporting system to account for these voluntary practices where farmers do not receive state incentives. This information will help to provide more accurate numbers for actual practices on the ground. Counting both state-funded and non-state-funded BMPs in the BMP tracking database will help to provide a clearer picture of what practices are on the ground, where efforts are needed for more recruitment, and what actions are needed to meet Virginia's water quality goals. Additionally, the Virginia Department of Conservation and Recreation is developing a database module through which Resource Management Plan developers can, with a farmer's approval, provide BMP information collected during an on-farm assessment as part of the development of a Resource Management Plan.

To significantly advance the Commonwealth's nutrient and sediment pollution reduction goals, high emphasis continued to be placed on widespread adoption of the five priority BMPs through fiscal years 2011 and 2012. Tables 4A and 4B, provide a progress report on the acreage and linear feet of completed priority practices contracted for in those two fiscal years.

Looking specifically at the priority practices, in 2011 just over 89,000 acres of nutrient management, 90,000 acres of cover crops, 338 acres of continuous no-till, 562 acres of stream buffers, and 692,000 linear feet of livestock exclusion practices were installed on the ground statewide. This level of implementation is expected to reduce nitrogen pollution by 3.7 million pounds and phosphorous by almost 793,000 pounds measured at the edge of field. In 2012, almost 112,000 acres of nutrient management, almost 90,000 acres of cover crops, 338 acres of continuous no-till, 601 acres of stream buffers, and 167 miles of livestock exclusion were put into practice. These efforts are expected to reduce nitrogen pollution by 4.07 million pounds and phosphorous by more than 861,000 pounds at the edge of field.

Table 4A: 2011 Implementation of Five Key Practices

Key Practice	Number of Participants	Level of Implementation	Pounds of Nitrogen Reduced	Pounds of Phosphorous Reduced	Tons of Sediment Reduced
Nutrient Management	179	89,442 acres	661,692	67,377	0
Cover Crops	865	90,158 acres	2,786,426	678,484	512,211
Livestock Exclusion	231	692,373 linear ft. (131 miles)	248,511	44,926	45,682
Stream Buffers	73	562 acres	5,704	1,150	1,048
Continuous No-Till	5	338 acres	4,508	780	829
Total	1,353	N/A	3,706,841	792,717	559,770

Table 4B: 2012 Implementation of Five Key Practices

Key Practice	Number of Participants	Level of Implementation	Pounds of Nitrogen Reduced	Pounds of Phosphorous Reduced	Tons of Sediment Reduced
Nutrient Management	231	111,931 acres	828,289	81,710	0
Cover Crops	841	89,647 acres	2,911,628	719,064	535,226
Livestock Exclusion	288	882,180 linear ft. (167 miles)	314,916	57,999	57,889
Stream Buffers	101	601 acres	8,582	1,780	1,578
Continuous No-Till	5	338 acres	4,508	780	829
Total	1,466	N/A	4,067,923	861,333	595,522

Implementation of BMPs is an important element of overall farm stewardship, with the resulting environmental benefits substantiating the high values of these practices. Table 5A shows the EPA modeled environmental benefits of BMPs to local water quality by river basin. The table quantifies the miles of protected stream banks and tons of sediment (SL) and pounds of nitrogen (N) and phosphorous (P) prevented from reaching state waters because of active BMP implementation. In fiscal year 2011, the Department of Conservation and Recreation contracted \$7.1 million to SWCDs to cost-share the installation of BMPs statewide. These practices are expected to reduce edge of field nutrient and sediment losses by about 2.8 million pounds of nitrogen, 682,000 pounds of phosphorous, and more than 514,000 tons of sediment. It should be noted that statewide totals for the five key practices in Tables 4 A and B exceed these numbers because that data was compiled at a later date when more practices were completed and recorded than the data in Table 5A.

For fiscal year 2012 (Table 5B), the amount of funding to SWCDs for BMP implementation increased to \$20.3 million. The 2012 practices are expected to reduce edge of field nutrient and sediment losses by about 3.9 million pounds of nitrogen, almost 715,000 pounds of phosphorous, and more than 788,000 tons of sediment.

**Table 5A: 2011 Environmental Benefits of BMP Implementation in
Chesapeake Bay and Southern Rivers**

FY2011 Preliminary BMP Summary of Reduction from Ag-Cost Share Practices Installed July 1, 2010 – June 30, 2011			
Chesapeake Bay Basin	Tons SL Reduced	Pounds N Reduced	Pounds P Reduced
Chesapeake Bay Coastal	2,545	13,847	2,951
James-Appomattox	23,160	125,992	28,654
James-Rivanna	888	4,830	746
Upper James	15,083	82,051	15,027
Middle James	7,396	40,368	5,845
Lower James	171,462	932,754	253,158
Potomac-Shenandoah	45,318	246,834	56,753
Upper Potomac	5,343	29,068	4,846
Lower Potomac	12,380	67,350	11,013
Rappahannock	10,909	59,669	10,942
York	14,886	80,981	14,854
Southern Rivers Basin	Tons SL Reduced	Pounds N Reduced	Pounds P Reduced
Albemarle Sound Coastal	1,390	7,560	1,390
Atlantic Ocean Coastal	0	0	0
Big Sandy	6	33	6
Upper Chowan	134,477	731,556	195,085
Chowan-Meherrin	17,145	93,271	25,333
Upper Roanoke	11,688	63,768	11,958
Roanoke-Dan	7,922	43,094	8,154
Tennessee-Clinch	2,748	14,950	3,034
Tennessee-Holston	26,352	143,459	28,881
Tennessee-Powell	1,741	9,473	1,741
Yadkin	1,596	8,683	1,596
State wide Totals	514,437.72	2,799,590.92	681,966.34
Source of table: January 2012 Chesapeake Bay and Virginia Waters Clean-Up Plan- Progress Report.			

**Table 5B: 2012 Environmental Benefits of BMP Implementation in
Chesapeake Bay and Southern Rivers**

FY2012 Preliminary BMP Summary of Reduction from Ag Cost-Share Practices Installed July 1, 2011 – June 30, 2012			
Chesapeake Bay Basin	Tons SL Reduced	Pounds N Reduced	Pounds P Reduced
Chesapeake Bay Coastal	5,188	28,228	5,777
James-Appomattox	34,341	186,813	43,595
James-Rivanna	2,373	12,907	1,953
Upper James	83,269	83,269	14,745
Middle James	22,816	124,171	18,307
Lower James	228,431	1,242,663	351,889
Potomac-Shenandoah	24,695	134,703	30,420
Upper Potomac	2,077	11,299	1,871
Lower Potomac	17,043	92,717	15,839
Rappahannock	24,969	136,651	24,686
York	56,821	309,107	56,500
Southern Rivers Basin	Tons SL Reduced	Pounds N Reduced	Pounds P Reduced
Albemarle Sound Coastal	8,150	44,335	10,227
Atlantic Ocean Coastal	138	753	213
Big Sandy	336	1,828	336
Upper Chowan	176,796	960,728	26,066
Chowan-Meherrin	33,074	179,925	48,607
Upper Roanoke	9,657	52,851	1,007
Roanoke-Dan	11,681	63,545	12,623
Tennessee-Clinch	11,833	64,372	12,473
Tennessee-Holston	27,041	147,102	29,639
Tennessee-Powell	6,451	35,095	6,451
Yadkin	1,618	8,805	1,618
State wide Totals	788,861	3,921,867	714,842

Chesapeake Bay Watershed Implementation Plan

The Environmental Protection Agency has established a Total Maximum Daily Load (TMDL) for the entire Chesapeake Bay watershed, which required Virginia to develop a Watershed Implementation Plan to describe pollution reduction goals through 2025. In November 2010, Virginia submitted its Final Phase I Watershed Implementation Plan (WIP I) to achieve the nutrient and sediment allocations set by EPA. In WIP I Virginia committed to achieve two-year “milestones” to accelerate the Bay’s restoration. The two-year milestones beginning with 2013 are part of the accounting system for making progress towards meeting the TMDL and may carry regulatory consequences if they are not achieved.

In March, 2012, Virginia submitted its Phase II Watershed Implementation Plan (WIP II) to EPA, which supplements the Phase I WIP and provides a framework for the needed pollution reduction control measures to achieve the TMDL allocations. Agricultural best management practices make up a significant portion of the nonpoint source measures.

Using the Chesapeake Bay Phase 5.3.2 Model, Virginia estimated the total need for agricultural BMPs based on the amount of nutrient and sediment reductions to be achieved from agricultural lands. The total collection of BMPs included in the Phase II WIP that must be implemented through 2025 was assembled with an increasing progression of practices that could be implemented each year. Progress to achieve these end points will be measured and assessed incrementally through two year milestones that begin with the 2013 milestone. By 2017, Virginia must complete 60 percent of the overall implementation plan required to meet the final TMDL by 2025.

Table 6 contains the list of agricultural BMPs provided in Virginia’s Phase II WIP, with BMP coverage in 2009 (known as “current progress” just prior to the TMDL) and implementation targets from WIP I for 2025 and WIP II for 2025. Steady progress to ramp up efforts is needed to achieve the projected levels of BMPs as projected in the WIPs.

Table 6: Phase II Watershed Implementation Plan Agricultural BMP Summary

BMP	Units	2009 Progress BMPs	2025 WIP I Proposed BMPs	2025 WIP II Proposed BMPs
Animal Waste Management Systems	(Systems)	1,554	6,879	5,119
Mortality Composters	(Systems)	3	130	127
Manure Transport	(Tons Out of Watershed)		75,000	148,500
Barnyard Runoff Control	(Systems)	523	6,646	5,488
Pasture Fence	(Linear feet)	11,581,207	101,473,609	113,761,116
Off Stream Water No Fence	(Acres)	20,528		13,917
Precision Rotational Grazing	(Acres)	239,059	578,878	534,265
Horse Pasture Management	(Acres)			23,570
Capture Reuse	(Acres Treated)		4,059	3,753
Conservation Plan	(Acres) (Life of Plan)	926,138	1,774,084	1,883,053
Ag Nutrient Management	(Acres) (Life of Plan)	574,959	1,292,679	1,161,456
Cover Crop	(Acres) (Annual)	79,488	264,627	308,860
Continuous NoTill	(Acres)	33,994	306,962	304,400
Non Urban Stream Restoration	(Linear feet)	19,330	99,996	104,528
Water Control Structure	(Acres)		927	700
Wetland Restore	(Acres)	198	5,558	19,215
Grass Buffers	(Acres)	30,267	110,086	140,959
Forest Buffers	(Acres)	16,764	76,514	99,437
Land Retirement to hys	(Acres)	83,114	127,485	102,542
Tree Planting	(Acres)	18,591	103,413	107,108
Source of table: March 30, 2012 Commonwealth of Virginia Phase II Watershed Implementation Plan, Appendix A.				

The December 7, 2012 report, entitled 2012 Virginia Soil and Water Conservation Districts' Funding Study, from the Office of the Secretary of Natural Resources (2012-RD403), provides additional information on funding options for Virginia's agricultural BMPs pursuant to the WIP II. The report also presents an in-depth analysis of the process used to determine multiple funding scenarios to meet the 2025 TMDL pollution reduction goals.

Additional information on both point source and nonpoint source efforts to reduce nutrient and sediment pollution in fiscal years 2011 and 2012 is presented in two recent Chesapeake Bay and Virginia Waters Clean-Up Plan – Progress Reports, January 2012 (2011-RD416) and November 2012 (2012-RD331) from the Secretary of Natural Resources. These two comprehensive reports focus on water quality achievements made through the Water Quality Improvement Fund, annual funding needs for effective implementation of agricultural BMPs, and progress made towards implementing strategies to clean-up the Chesapeake Bay and Virginia's southern rivers.

APPENDICES

Appendix A- Acreage of Major Crops Produced in Each Virginia County

	Barley		Corn for Grain		Corn for Silage		Cotton		Peanuts		Soybeans		Wheat	
		# of		# of		# of		# of		# of		# of		# of
Locality	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms
ACCOMACK	(D)	2	32,670	81	(D)	1	(D)	1	0	0	36,928	94	13,235	48
ALBEMARLE	(D)	1	715	8	371	5	0	0	0	0	(D)	2	(D)	2
ALLEGHANY	(D)	1	0	0	(D)	6	0	0	0	0	0	0	(D)	1
AMELIA	993	15	3,490	41	2,297	19	0	0	0	0	5,039	33	1,387	12
AMHERST	0	0	(D)	9	434	6	0	0	0	0	0	0	(D)	1
APPOMATTOX	(D)	1	671	25	600	14	0	0	0	0	1,175	11	455	12
AUGUSTA	1,621	50	17,342	182	12,020	186	0	0	0	0	4,147	65	3,512	54
BATH	0	0	1,541	13	506	6	0	0	0	0	0	0	0	0
BEDFORD	280	7	702	20	2,476	42	0	0	0	0	0	0	526	5
BLAND	0	0	66	4	925	36	0	0	0	0	0	0	0	0
BOTETOURT	0	0	846	13	1,038	14	0	0	0	0	(D)	2	696	3
BRUNSWICK	(D)	2	449	8	73	4	(D)	1	0	0	7,020	35	797	15
BUCHANAN	0	0	(D)	2	0	0	0	0	0	0	0	0	0	0
BUCKINGHAM	64	3	459	8	323	6	0	0	0	0	(D)	2	208	5
CAMPBELL	530	7	1,930	31	1,628	20	0	0	0	0	1,179	15	714	17
CAROLINE	1,428	11	11,698	32	460	7	0	0	0	0	15,556	39	6,032	23
CARROLL	0	0	296	7	1,135	40	0	0	0	0	0	0	0	0
CHARLES CITY	(D)	2	6,598	14	0	(D)	0	1	0	0	7,285	10	5,005	10
CHARLOTTE	(D)	4	1,877	39	1,027	28	0	0	0	0	1,790	18	1,885	20
CHESAPEAKE CITY	0	0	10,855	36	(D)	3	(D)	1	0	0	26,536	54	7,805	22
CHESTERFIELD	(D)	1	344	12	56	3	0	0	0	0	1,491	12	511	7
CLARKE	220	6	3,115	25	1,750	13	0	0	0	0	2,030	9	474	8
CRAIG	0	0	144	4	227	10	0	0	0	0	0	0	(D)	1
CULPEPER	312	7	6,026	44	2,699	26	0	0	0	0	5,279	26	1,420	12
CUMBERLAND	25	3	460	21	675	4	0	0	0	0	391	8	257	4

	Barley		Corn for Grain		Corn for Silage		Cotton		Peanuts		Soybeans		Wheat	
		# of		# of		# of		# of		# of		# of		# of
Locality	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms
DICKENSON	0	0	(D)	1	0	0	0	0	0	0	0	0	0	0
DINWIDDIE	31	3	5,155	29	540	5	1,320	6	901	8	14,961	61	2,974	18
ESSEX	2,395	10	16,338	37	(D)	1	0	0	0	0	17,414	39	9,645	26
FAIRFAX	0	0	326	7	0	0	0	0	0	0	404	8	(D)	1
FAUQUIER	1,218	18	8,595	51	6,230	53	0	0	0	0	3,619	30	1,143	12
FLOYD	0	0	(D)	4	1,875	44	0	0	0	0	0	0	0	0
FLUVANNA	75	5	935	10	87	4	0	0	0	0	762	7	869	4
FRANKLIN	401	14	2,987	60	12,419	101	0	0	0	0	740	18	1,494	32
FREDERICK	(D)	1	2,199	36	1,126	31	0	0	0	0	831	8	638	14
GILES	0	0	103	11	118	13	0	0	0	0	0	0	0	0
GLOUCESTER	(D)	2	6,564	24	0	0	0	0	0	0	7,195	26	1,202	10
GOOCHLAND	244	4	4,774	20	1,848	10	0	0	0	0	3,200	11	2,380	10
GRAYSON	0	0	(D)	1	1,484	29	0	0	0	0	(D)	1	0	0
GREENE	0	0	127	6	399	6	0	0	0	0	0	0	0	0
GREENSVILLE	0	0	2,576	23	(D)	2	5,099	17	3,317	24	12,241	46	2,255	20
HALIFAX	37	5	2,824	86	645	5	0	0	0	0	2,074	45	1,714	57
HANOVER	1,015	13	11,298	45	1,845	18	0	0	0	0	17,285	64	7,266	31
HENRICO	(D)	4	3,058	13	0	0	0	0	0	0	3,524	16	1,880	14
HENRY	0	0	113	10	(D)	2	0	0	0	0	0	0	(D)	1
HIGHLAND	0	0	(D)	1	243	8	0	0	0	0	0	0	0	0
ISLE OF WIGHT	0	0	10,708	58	662	15	12,189	36	2,089	21	18,966	80	4,605	39
JAMES CITY	0	0	(D)	4	0	0	0	0	0	0	(D)	1	391	4
KING AND QUEEN	142	4	13,210	59	(D)	2	0	0	0	0	14,471	64	5,568	34
KING GEORGE	(D)	2	3,283	31	(D)	2	0	0	0	0	3,373	26	930	10
KING WILLIAM	975	6	8,858	35	350	3	(D)	1	0	0	9,808	32	5,507	21
LANCASTER	540	5	4,231	23	(D)	2	0	0	0	0	4,673	20	2,170	11
LEE	0	0	963	85	603	30	0	0	0	0	0	0	81	5
LOUDOUN	226	7	5,395	42	1,014	28	0	0	0	0	2,847	14	1,281	18
LOUISA	272	11	2,033	39	729	21	0	0	0	0	1,492	13	661	19

	Barley		Corn for Grain		Corn for Silage		Cotton		Peanuts		Soybeans		Wheat	
		# of		# of		# of		# of		# of		# of		# of
Locality	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms
LUNENBURG	(D)	1	71	7	0	0	0	0	0	0	3,008	17	269	6
MADISON	465	8	4,151	34	1,877	29	0	0	0	0	3,929	17	762	12
MATHEWS	(D)	1	1,030	8	0	0	0	0	0	0	1,414	7	(D)	2
MECKLENBURG	100	3	984	23	598	6	0	0	0	0	11,353	46	2,182	28
MIDDLESEX	35	3	6,090	26	(D)	2	0	0	0	0	4,835	20	2,507	10
MONTGOMERY	129	3	800	8	2,550	30	0	0	0	0	(D)	1	191	3
NELSON	0	0	687	9	0	0	0	0	0	0	(D)	2	(D)	1
NEW KENT	(D)	2	4,633	17	0	0	0	0	0	0	4,773	13	2,125	7
NORTHAMPTON	(D)	2	14,698	38	0	0	720	3	0	0	31,071	71	20,026	63
NORTHUMBERLAND	1,038	12	15,525	57	53	3	(D)	1	0	0	18,617	63	12,471	61
NOTTOWAY	199	4	923	10	761	10	0	0	0	0	566	6	207	4
ORANGE	441	8	4,497	31	1,871	19	0	0	0	0	4,644	20	1,879	13
PAGE	1,050	34	2,728	59	2,752	49	0	0	0	0	776	15	0	0
PATRICK	0	0	939	23	1,206	19	0	0	0	0	264	5	293	4
PITTSYLVANIA	494	9	1,681	72	4,803	42	0	0	0	0	1,585	28	4,436	75
POWHATAN	191	3	1,319	8	437	5	0	0	0	0	1,046	7	(D)	2
PRINCE EDWARD	144	6	732	24	808	4	0	0	0	0	185	3	143	9
PRINCE GEORGE	61	3	4,253	22	0	0	0	0	472	3	10,684	44	3,462	21
PRINCE WILLIAM	(D)	2	1,601	19	974	13	0	0	0	0	1,313	7	(D)	1
PULASKI	0	0	(D)	3	1,065	10	0	0	0	0	(D)	1	(D)	3
RAPPAHANNOCK	100	4	571	6	360	12	0	0	0	0	(D)	1	(D)	1
RICHMOND	1,096	15	9,921	52	(D)	2	0	0	0	0	10,403	52	6,216	40
ROANOKE	(D)	1	0	0	101	5	0	0	0	0	0	0	0	0
ROCKBRIDGE	320	5	930	18	1,507	33	0	0	0	0	430	3	306	5
ROCKINGHAM	2,370	70	14,155	275	22,365	388	0	0	0	0	6,281	120	968	21
RUSSELL	0	0	62	22	152	6	0	0	0	0	0	0	0	0
SCOTT	0	0	272	41	531	29	0	0	0	0	415	5	43	3
SHENANDOAH	1,064	51	8,787	121	3,684	78	0	0	0	0	3,217	33	637	13
SMYTH	42	3	274	21	2,274	52	0	0	0	0	0	0	(D)	3

	Barley		Corn for Grain		Corn for Silage		Cotton		Peanuts		Soybeans		Wheat	
		# of		# of		# of		# of		# of		# of		# of
Locality	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres	Farms
SOUTHAMPTON	(D)	1	18,196	111	(D)	2	22,332	76	6,923	62	27,230	126	7,452	56
SPOTSYLVANIA	698	13	3,314	28	1,262	17	0	0	0	0	2,914	20	796	18
STAFFORD	(D)	2	1,420	11	66	3	0	0	0	0	1,482	8	(D)	1
SUFFOLK CITY	0	0	14,356	69	0	0	9,589	28	3,950	31	18,202	73	7,093	32
SURRY	(D)	1	7,012	37	(D)	1	1,867	6	1,659	14	12,328	44	6,075	32
SUSSEX	0	0	6,094	32	(D)	1	3,571	14	2,320	17	18,799	58	4,545	23
TAZEWELL	0	0	137	8	809	30	0	0	0	0	0	0	(D)	2
VIRGINIA BEACH CITY	0	0	6,227	25	0	0	1,073	4	0	0	11,764	35	3,907	17
WARREN	0	0	140	8	154	8	0	0	0	0	(D)	1	(D)	1
WASHINGTON	0	0	440	38	2,393	37	0	0	0	0	(D)	2	0	0
WESTMORELAND	2,308	20	20,168	67	342	8	0	0	0	0	17,482	62	9,123	54
WISE	0	0	18	5	(D)	1	0	0	0	0	0	0	0	0
WYTHE	59	3	979	40	5,332	125	0	0	0	0	(D)	2	226	8
YORK	0	0	0	0	0	0	0	0	0	0	(D)	1	0	0
Totals	25,448	530	399,762	3,063	124,024	2,013	57,760	196	21,631	180	486,736	2,104	197,913	1,348
(D) - Not published due to confidentiality														
Data Source: USDA/NASS Census of Agriculture 2007														