

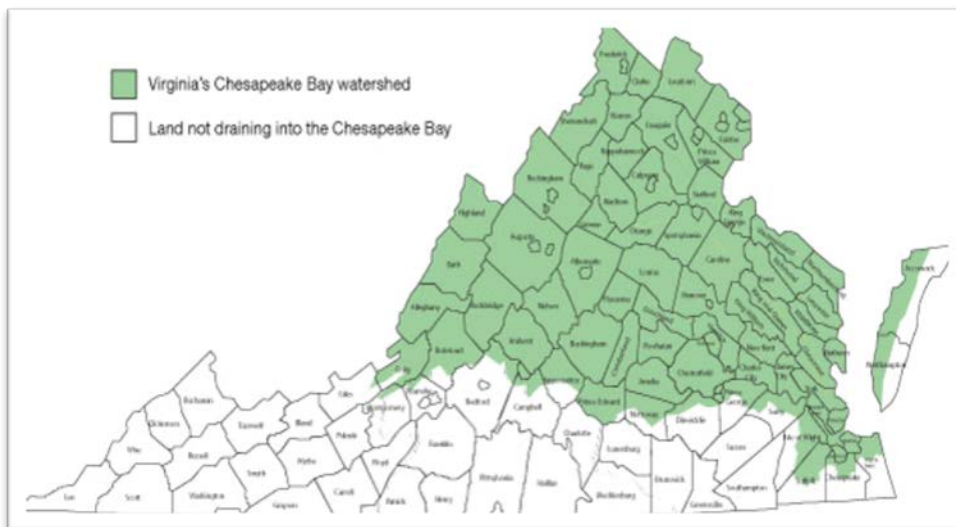


## Roadside Survey of Continuous No-till and Cover Crop Acres in Virginia

### Background

In 2009, the Chesapeake Clean Water Ecosystem Restoration Act (HB 3852/S 1816) was passed, and was intended to strengthen certain standards for the Chesapeake Bay, particularly, to address nonpoint source pollution. Nonpoint source pollution includes that of urban, suburban and agricultural runoff. Cited in the bill was the need to establish and codify the Bay-wide pollution budget, or Total Maximum Daily Loads, (TMDL) for nitrogen, phosphorous and sediment that EPA was in process of developing for the Bay. Hence all states and their perspective watersheds would have pollution caps for all sources of pollution.

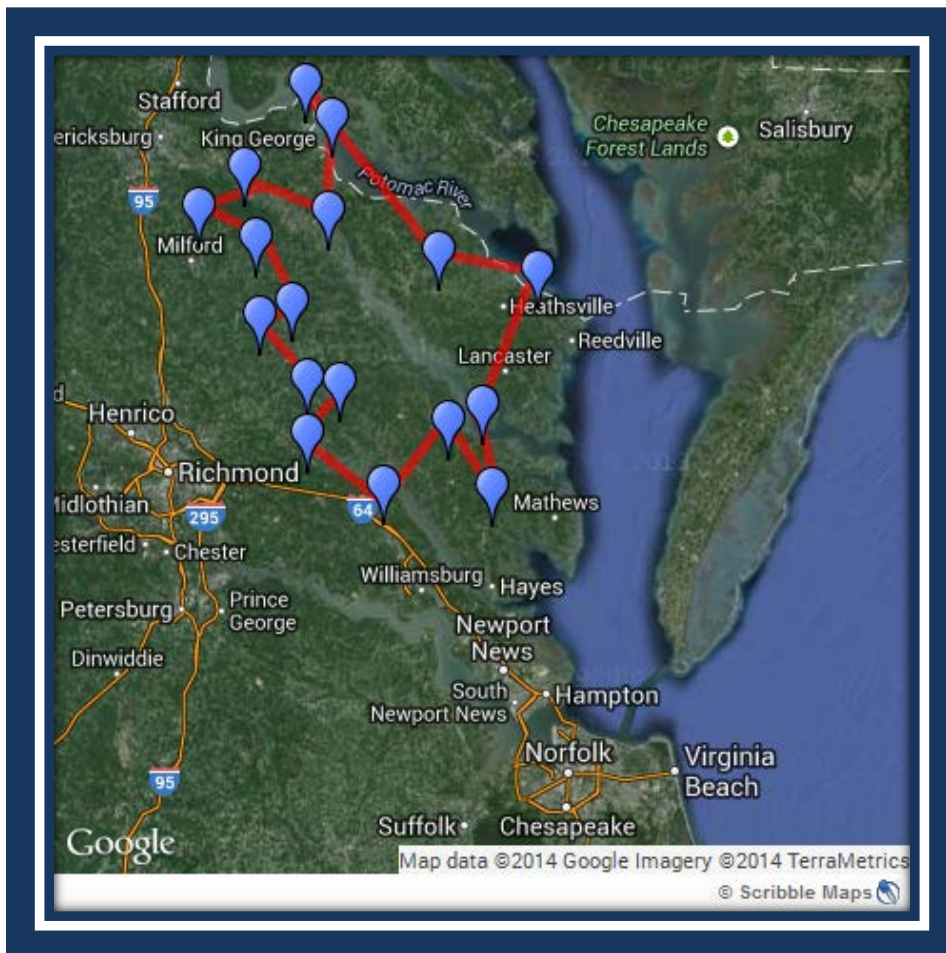
One source of pollution is runoff from agricultural fields. No-tillage production is a proven practice used to decrease runoff, and decrease pollution to the Bay and its tributaries in eastern Virginia. Producers have adopted no-till largely due to reduced input costs. To estimate the number of acres in the continuous no-tillage program, TMDL based the acceptance of the no-tillage practices on the acres enrolled in local cost-share programs, which was erroneous since most no-tillage acres were not enrolled in such a program. Producers in those areas believed the number of acres in continuous no-tillage production is much higher and that the idea of using the cost-share numbers to determine acres in no-tillage was flawed.



**Fig. 1** *The Chesapeake Bay Watershed of Virginia*

## Survey of Acres in Eastern Virginia

In the years 2010 through 2012, an Extension Summer Intern was hired at the Middlesex Office of Virginia Cooperative Extension. The Intern position was partially funded through grant funds from the Virginia Soybean Board. Part of the duties of the interns was to conduct a roadside survey scouting fields on a 350 mile trek through the grain production areas of eastern Virginia. At every field on the travel route, the following data were acquired: 1) GPS coordinates of the field; 2) crop currently growing; 3) tillage practice; and, 4) make note of presence of growing or senescing cover crops. The route used for these surveys was the same for each of the survey years (2010-2012) so that a determination could be made as to the continuation of no-till practices (Fig. 2.)

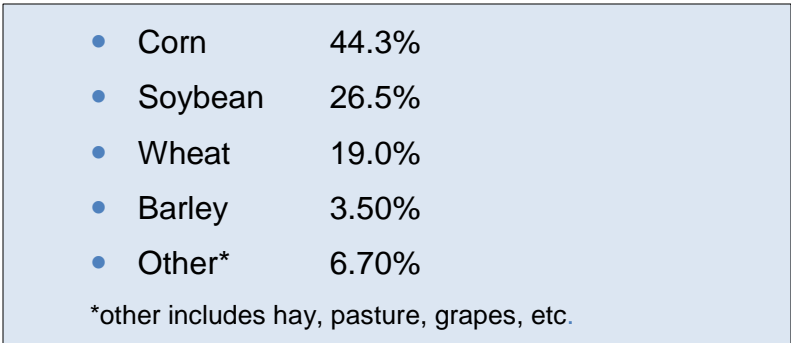


**Fig. 2** Route used during roadside survey during years of 2010-2012 to determine the use of continuous no-tillage. Each red pin-point is an identified field. Approximately 800 fields were surveyed each year.

The first survey route began in Gloucester County and continued north on US Route 17 until reaching Port Royal in Caroline County, then east on Route 301 into King George County and then south on Route 3 into Westmoreland, Richmond, Northumberland, Lancaster Counties and then back into Middlesex County. The second route began in King & Queen County and traveled west on Route 33 to West Point, then north through King William County on Route 30 to Route 360 at Central Garage. At King William County line on Route 360, the survey headed east into Essex, Richmond, Northumberland and Lancaster Counties where it would connect with Route 3. The final route of the survey went west on Route 5 leaving Williamsburg,

through James City and Charles City Counties and then north and finishing with New Kent County on Routes 106 and 249. Total distance traveled was over 350 miles.

Chart at right shows average percentage of crops growing in survey area during the month of May in years 2010-2012



### Crop and No-tillage Acreage

Crops planted in the survey area were identified in the month of May during the survey years and crop makeup did not vary significantly. Corn or soybean was found in approximately 44% and 25% of the fields, respectively. Fields planted to small grains (19%) would most likely be planted to double-crop soybean, which is a standard practice eastern Virginia, making the final total crops planted for soybeans to be somewhere over 55%.

**Table 1. Harvested Cropland (Acres)**  
Survey County Totals (2012 Census)

Caroline	36,526	Lancaster	6,883
Charles City	20,697	Middlesex	13,191
Essex	37,129	New Kent	9,731
Gloucester	13,215	Northumberland	32,689
King & Queen	28,136	Richmond	21,864
King George	7,838	Westmoreland	33,945
King William	26,712		

According to 2012 Agricultural Census data, the counties involved in the roadside survey had a total of over 300,000 acres (Table 1). According to DCR program information, 18.1% of the acreage in these same counties was in continuous no-tillage- (*EPA/DCR Chesapeake Bay Model Data*). In contrast, according to the roadside survey, approximately 91% of the fields surveyed were in continuous no-tillage. Table 2 shows the breakdown and the averages for no-tillage and conventional tillage for the three years in the survey.

**Table 2. Tillage method over the 3 year survey.**

Tillage Method	2010	2011	2012	Average
<b>No-Till %</b>	90.0	92.55	91.1	91.2
<b>Conventional and non-crop%</b>	10.0	7.45	8.9	8.8

## The Use of Cover Crops

Fields were also scouted for the use of cover crops. The use of cover crops is a somewhat new practice where producers receive cost-share dollars to have a crop growing year round to scavenge leachable nutrients leftover from previous crops. Cover crops to increase of organic matter and, provide a receptive seed bed for the expected no-tilled crop in the spring. Actively growing cover crop species were identified. Remnants and residues of cover crops were also identified in the current growing crop; (e.g., desiccated rye previously killed with herbicide and still in the field). Small grain acreage was included as a cover crop in the numbers below since it has the same cover crop characteristics as explained above. Table 3 shows the three survey year results of fields in cover crops versus not in cover crops and versus fields that are not applicable (hay, pasture, etc.).

**Table 3. Cover crop usage over the 3 year survey.**

Cover Crops?	2010	2011	2012	Average
% Yes	34	47.5	44.5	42
% No	59	45.5	48.5	51
N/A	7	7	7	7

### Summary:

As stated earlier, according to Department of Conservation and Recreation data, only about 18% of the farm fields in the survey area are in a continuous no-tillage program. These data were compiled using the cost-share records for those localities and did not give a meaningful and accurate account of the use of no-tillage in eastern Virginia. Therefore, producers may not be credited for practices reducing runoff and leaching when determining TMDL for each body of water that lies around the farming areas of eastern Virginia. In short, producers may not be getting credit for: "clean-up" practices that they already are doing. No-tillage is a widely used production practice in eastern Virginia and has been since the late 1960's. There are fields in this same area that have been in continuous no-tillage production for more than 20 years.

The data that this bill (Chesapeake Clean Water and Ecosystem Restoration Act-S.1816/HR3852) utilizes to mandate the requirements is inaccurate. It may be based on the data that its creators collected, but this data only includes practices that have been implemented in the government incentive programs. Lacking are all practices that have been implemented in the government incentive programs Lacking are all practices that have been implemented without participation in the government incentive programs.

Finally, the authors recognized that this survey does not represent all acreage in the Chesapeake Bay watershed, nor is it a statistically valid sample of the acreage in the survey area. However, since every field in the surveyed route was examined for 3 continuous years, the authors do think that it most likely represents current production practices. In conclusion, it is recommended that statistically valid methods be used in the future to determine acreage meeting TMDL.

## Resources:

*Virginia Agricultural Statistics Bulletin. 84.* Richmond, Virginia: USDA/NASS/Virginia Field Office, 2009

“Agricultural BMP Database Query Parameter Selection Form.” *Virginia Agricultural BMP Cost Share and Tax Credit Programs.* Virginia Department of Conservation and Recreation, Sept. 2009. Web: July 2010-2012

DCR, “Bay Total Maximum Daily Load (TMDL)”; *SOIL & WATER CONSERVATION.* Web: July 2010-2012: [http://www.dcr.virginia.gov/soil\\_and\\_water/baytmdl.shtml](http://www.dcr.virginia.gov/soil_and_water/baytmdl.shtml)

[http://www.gpsvisualizer.com/map?output\\_home](http://www.gpsvisualizer.com/map?output_home)

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