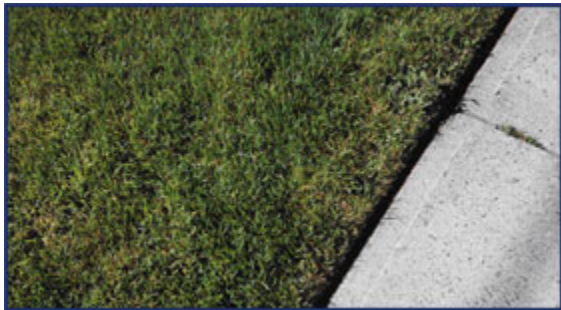


## The Clipping Point: The Grass Crop of the Chesapeake Bay Watershed

By Tom Schueler, CSN Newsletter #9

Summer is here and the grass is growing. Combine sunshine, water and soil together, and you get a lush green yard. In this issue, we explore the surprisingly large “crop” of grass grown in the Chesapeake Bay watershed, and assess its impact on the health of the Bay.

It may surprise you, but lawns and turf grass is now the largest crop grown in the Chesapeake Bay watershed — more than 3.8 million acres covering a staggering 9.5% of the watershed’s total land area. CSN developed the new statistics using three independent methods in collaboration with Peter Claggett, Research Geographer at the USGS. We have just submitted a manuscript to a peer-reviewed journal, but here are some of the troubling headlines from our initial research:



- About 75% of all turf grass is devoted to home lawns, which has increased in the least decade.
- Overall, the amount of turf cover in the watershed appears to have tripled in the last three decades.
- The extent of turf cover is more than double the total acreage of tidal and non-tidal wetlands (4.2%).
- Bay turf cover now exceeds total pasture cover (7.7%), hay/alfalfa acres (7.4%) and the acreage of row crops (9.2% — corn, soybean, wheat) grown in the Chesapeake Bay watershed.

- For every acre of sea grass in the Bay, there are now at least 50 acres of turf grass in the watershed, which partly explains why we have so little of the former.

Where is the grass crop grown in the Bay? Not surprisingly, most of it is found in the suburban counties that ring the major cities such as D.C., Baltimore, Harrisburg, Richmond and Norfolk. The undisputed titan of turf is Montgomery County, MD with a whopping 140,000 acres of grass — or more than 44% of the entire county. The top 15 “turfiest” counties are profiled in Table 1. Together, the ten top suburban counties produced 30% of the total turf cover in the watershed, even though they compromise less than 10% of its total land area.

<b>Table 1 Counties in Bay Watershed with the most Turf Grass</b>				
<b>Jurisdiction/County</b>	<b>State</b>	<b>Turf Acres</b>	<b>Total Land Acres</b>	<b>Percent Turf</b>
Montgomery	Maryland	140,272	317,420	44.2%
Baltimore	Maryland	136,456	379,708	35.9%
Prince George’s	Maryland	121,008	306,846	39.4%
Lancaster	Pennsylvania	119,615	605,215	19.8%
Fairfax	Virginia	116,932	251,360	46.5%
York	Pennsylvania	110,564	577,749	19.1%
Frederick	Maryland	96,309	424,381	22.7%
Anne Arundel	Maryland	93,081	260,832	35.7%
Carroll	Maryland	85,114	286,896	29.7%
Harford	Maryland	77,084	272,524	28.3%
Howard	Maryland	66,239	160,906	41.2%
Luzerne	Pennsylvania	63,887	486,405	13.1%
Washington	Maryland	61,527	295,043	20.9%
Dauphin	Pennsylvania	56,347	337,650	16.7%

<b>Henrico</b>	<b>Virginia</b>	<b>55,643</b>	<b>150,305</b>	<b>37.0%</b>
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Fine, as my old college roommate would say, but what's the harm in a little grass?

Well, surveys indicate that a significant proportion of Bay turf is fertilized, irrigated and/or receives pesticide applications. When these homeowner behaviors are extrapolated across the entire watershed, it is possible to get an order of magnitude estimate of the current impact of turf cover in the Bay. Consider the following factoids:



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- The annual biomass generated by lawn clippings is equivalent to 272 million bushels of corn.
- The best estimate for how much nitrogen fertilizer is applied to lawns in the Bay watershed is nearly 215 million pounds per year. This is enough nitrogen to grow nearly 2 million acres of corn.
- About 19 million pounds of pesticide active ingredients are used each year (mostly herbicides to kill otherwise fine-looking "weeds"). These pesticides are reaching local streams and rivers. According to USGS monitoring data, one or more pesticides were detected in 99% of urban streams, and one out of every five samples exceeded water quality standards to protect aquatic life.
- Summer lawn irrigation is calculated to suck nearly 7875 cubic feet per second (cfs) of river flow to Bay during the summer months. To put this amount of water consumption in perspective, it is roughly five times the combined summer flow of the Choptank, James, Monocacy,

Patapsco, Pamunkey, Patuxent and Rappahanock rivers in an average year.

- Our compacted lawns produce a lot of extra runoff to the Bay. Our rough calculations suggest that it produces an extra storm runoff flow of 1244 cubic feet per second each day to the Chesapeake Bay.
- The aggregate volume of gas consumed by lawn mowers is equivalent to one fully laden supertanker per year, and if you're like me, you always seem to spill a good portion of it when filling up your mower.
- Lawn/garden equipment is recognized as the second leading emitter of smog precursors in Maryland in the summer months, and is just a few percentage points behind cars and truck emissions.
- On the positive side, the turf statistics pretty much demolish the argument that there is not enough room to fit in environmental site design or runoff reduction practices in our suburban landscape. When you have an average of three acres of grass for each acre of impervious cover producing runoff, there is an enormous opportunity to use grass as a stormwater sponge or filter.

The out-of-pocket cost to establish and maintain the Chesapeake Bay watershed grass crop is astonishing — nearly 5 billion dollars per year, which does not even include our free labor on the weekends (equivalent to 61,000 full time jobs). An estimated 6.1 million “grass farmers” and 50,000 lawn care workers exist in the watershed who collectively spend more than \$600 million for fertilizers and chemicals alone.

Despite our great numbers, we are not very bright grass farmers. For example, turf grass industry surveys indicate that less than 10% of homeowners report consulting technical info on lawn management, beyond the advice they get at the point of sale at the local lawn and garden center. The statistics are equally dismal when it comes to the folks that maintain turf on public lands — less than 30% indicated that they had been trained in watershed-friendly practices. Indeed, much of the training and technical assistance delivered by cooperative extension agencies actually promotes intensive, high input turf grass management. So, we certainly are fighting a losing game when it comes to education.

And, despite the fact that turf is on par with agriculture in the Bay, it is a poor cousin when it comes to how Bay managers spend their money. It is conservatively estimated that residential nutrient management programs get a penny for every dollar spent on agricultural nutrient management practices.

When you think about, the fact the nearly ten percent of the Bay watershed is now devoted to turf represents an incredible restoration opportunity. Envision for a moment what could be done over a 6000 square mile expanse of grass to heal the Bay, particularly since it is not managed for any particular economic use or benefit, but simply to arrest the natural succession process. It is certainly possible to achieve major nutrient reductions and habitat improvements by simply spending less on our lawns, or shifting the dollars we currently spend to more watershed-friendly practices.

Think for a minute about the power of change if this 100,000 person workforce shifted its efforts to plant trees, incorporate soil compost amendments, install rain gardens, or create meadows or butterfly gardens, or a start a new organic vegetable garden. Think about how much nutrient and pesticide runoff could be reduced if we all pledged to eliminate fertilizer, pesticide and water use on our individual lawns over the next five years.

Most of all, think for a moment about the "clipping point" we have just passed. Each of us is a grass farmer, and there are millions of us. Collectively, we may have the same environmental impact as real farmers. What kind of new suburban stewardship ethic will emerge now that we have transformed so much of our watershed into lawn habitat?

As always, I invite the reactions and feedback from the Network on the implications of the new Chesapeake Bay turf data. Also, please pass along your favorite homeowner outreach material on rain gardens, rooftop disconnection and low/no input lawn care, etc. In closing, CSN would like to present two possible lawn care messages to deliver to our fellow grass farmers.