

Nutrient loss from turf

IBSTAC – December 11, 2015

Andres, Denver, Volk, York

CAC resolution – part 1

- The Residential Fertilization Sub-committee of the CAC has recommended to the CAC and the CAC thus recommends to the Board that research on the nitrogen and phosphorus loads flowing into the bays as a result residential fertilization from increased development in the watershed be initiated. This information is necessary to understand the impact of this potentially important source of pollution on the estuary and to determine any actions that could help implement the CCMP in regards. This recommendation is consistent with Actions E., E1, and F of the Nutrient Management Focus Area of the 2012 CCMP Addendum.

Resolution - part 2

This research would include but not be limited to:

- Estimating the current and proposed acreage of lawns in the watershed,
- Researching literature for models to determine loading rates of N and P from lawns into the inland bays
- Determining the effects and impact of laws in adjoining states, which have mandated decreased content of nitrogen and very limited use of phosphorus in lawn fertilizers.
- Approved by CIB Executive Board – Oct 8-15

STAC Response

- Form working group and plan – no budget
- Review Barnegat and Chesapeake resources
- Limited lit and web searches
- Phone conferences

- N and P exports from turf and other
- CBP Model Project drives everything
- Many good resources – e.g., Livable Lawns
- Bigger fish to fry....

Estimating land in turf

- In-state resources not adequate for this task
- Chesapeake Bay Program model will be the *de facto* method..... once it is released

Nutrient Loss

Nutrient export coefficients			
Land Cover		N loss (kg/ha-yr)	P loss (kg/ha-yr)
Turf		1 to 4	0.01 to 1
Row crop agriculture - DE		> 20	0.1 to ~ 3
		(lb/ac-yr)	(lb/ac-yr)
Turf		0.89 - 3.56	0.0089 - 0.89
Row crop agriculture - DE		> 17.8	0.089 - 2.67
Nutrient export ratios - Ag : Turf			
N	5 to >20		
P	1 to 3		

Turf is a minor contributor to N load, somewhat more important contributor to P load

Laws in other states

- DE fertilizer sales a small part of the mid-Atlantic market
- Manufacturer formulations have adjusted to laws in MD, NJ, and VA
- DE Livable Lawns developed from same resources as laws in MD, NJ, and VA

Bigger fish..... Legacy P

- > 80 % of Sussex ag soil samples optimal to excessive levels of soil test P (UD Soil Testing Lab)
- Led to Nutrient Management Law, Regulations, and Programs that address on-farm new P but less emphasis on regulation, control, and mitigation of legacy P – land conversion question
- Reservoir of P in soil is parallel to N in groundwater – very long drawdown
- *P mass in stream and bay sediments largely unknown*

Legacy P magnitude

P mass (kg) for top 30 cm (1 ft) of a typical sandy soil

STP* (mg/kg)	P (kg)
50	8.39E+06
75	1.12E+07
100	1.68E+07

**Melich 3 Soil Test P – bioavailable*