

Energy Biomass Production and the Chesapeake Bay: *At Odds or In Concert?*

Jim Pease
Virginia Tech

US DOE “Biomass 2010”

Arlington, VA

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Bottom Line:

Environmental protection/restoration programs provide a significant dis-incentive for biomass production in the Mid-Atlantic States

Chesapeake Bay States & Watershed

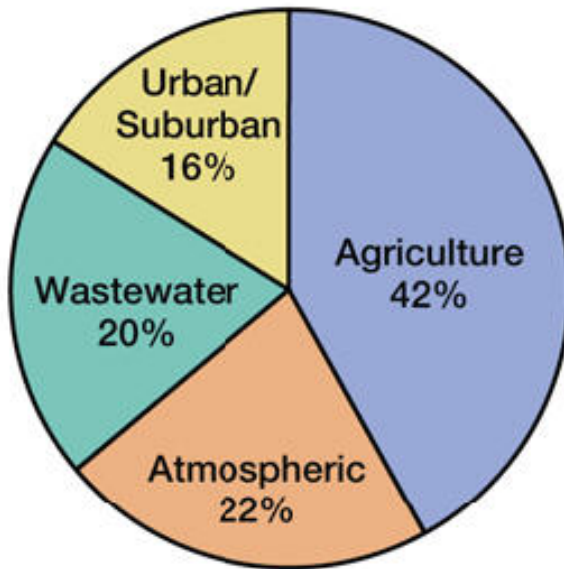


Source: Chesapeake Bay Foundation

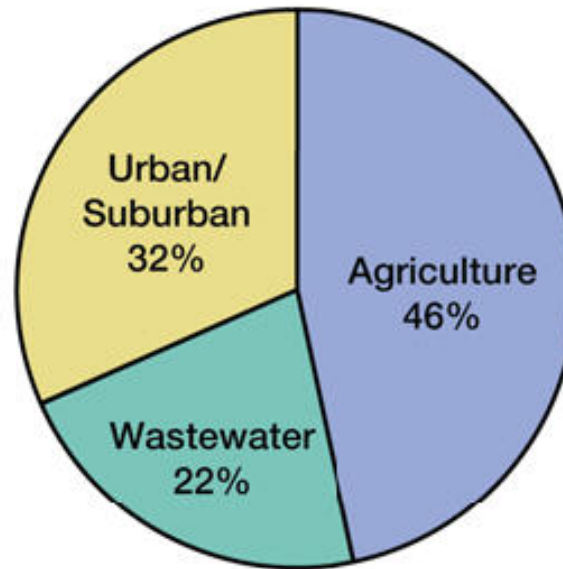


Pollutant Sources to Bay

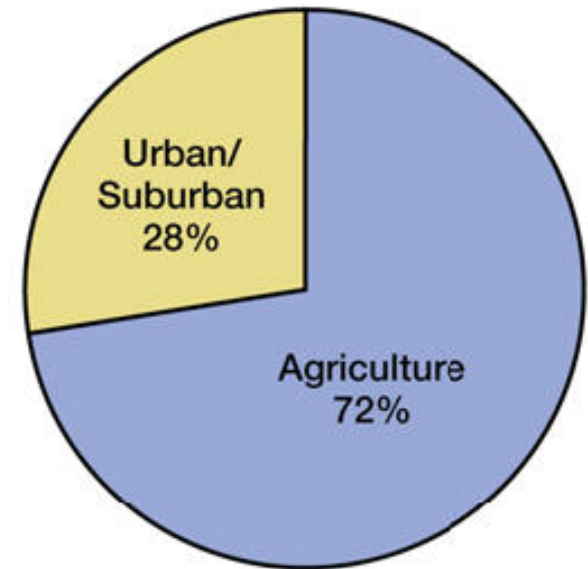
Nitrogen



Phosphorus

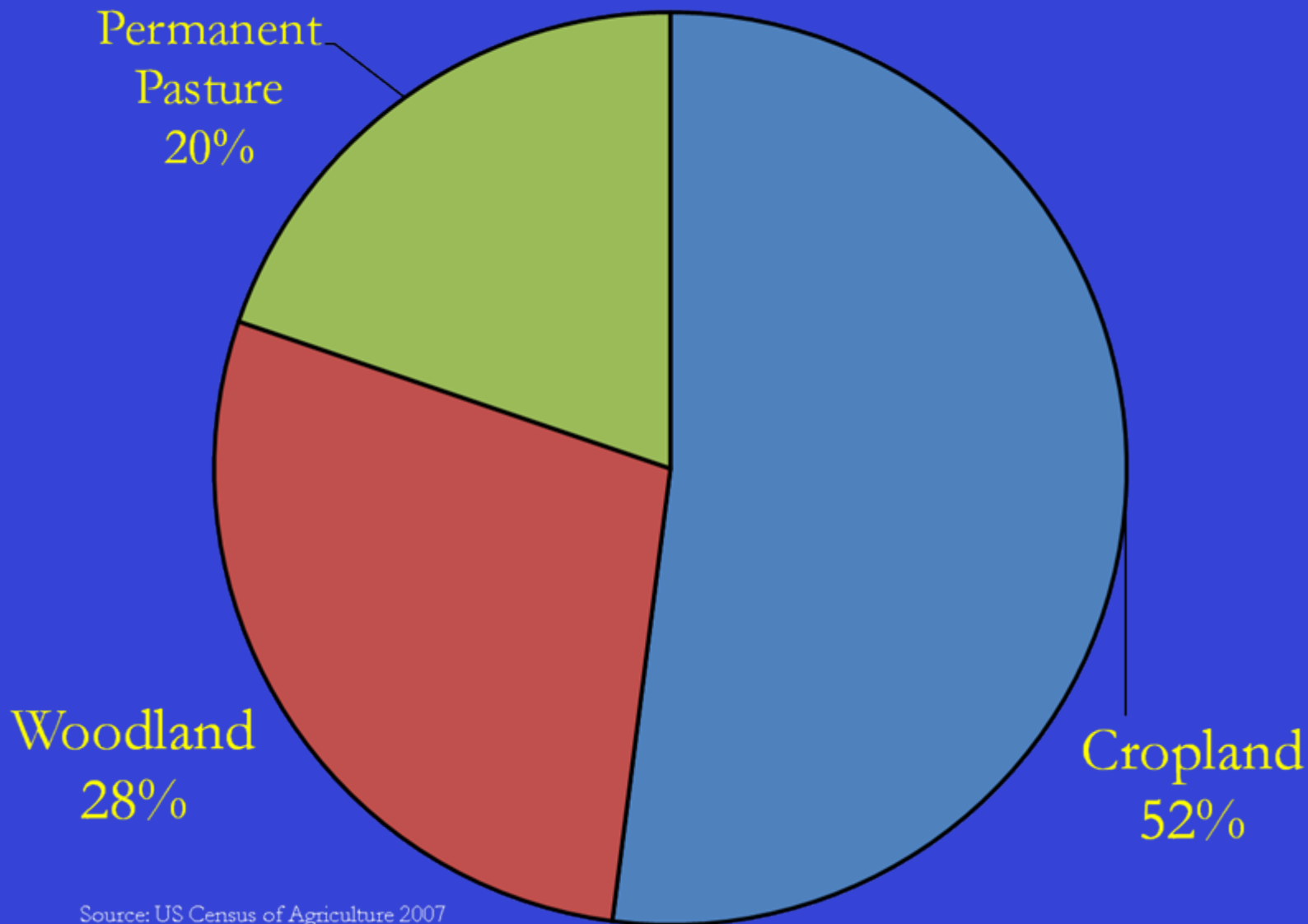


Sediment



Wastewater loads based on measured discharges; the rest are based on an average-hydrology year.
Does not include loads from direct deposition to tidal waters, tidal shoreline erosion or the ocean.
Data and Methods: www.chesapeakebay.net/status_reducingpollution.aspx

Farmland Use, Mid-Atlantic States 2007

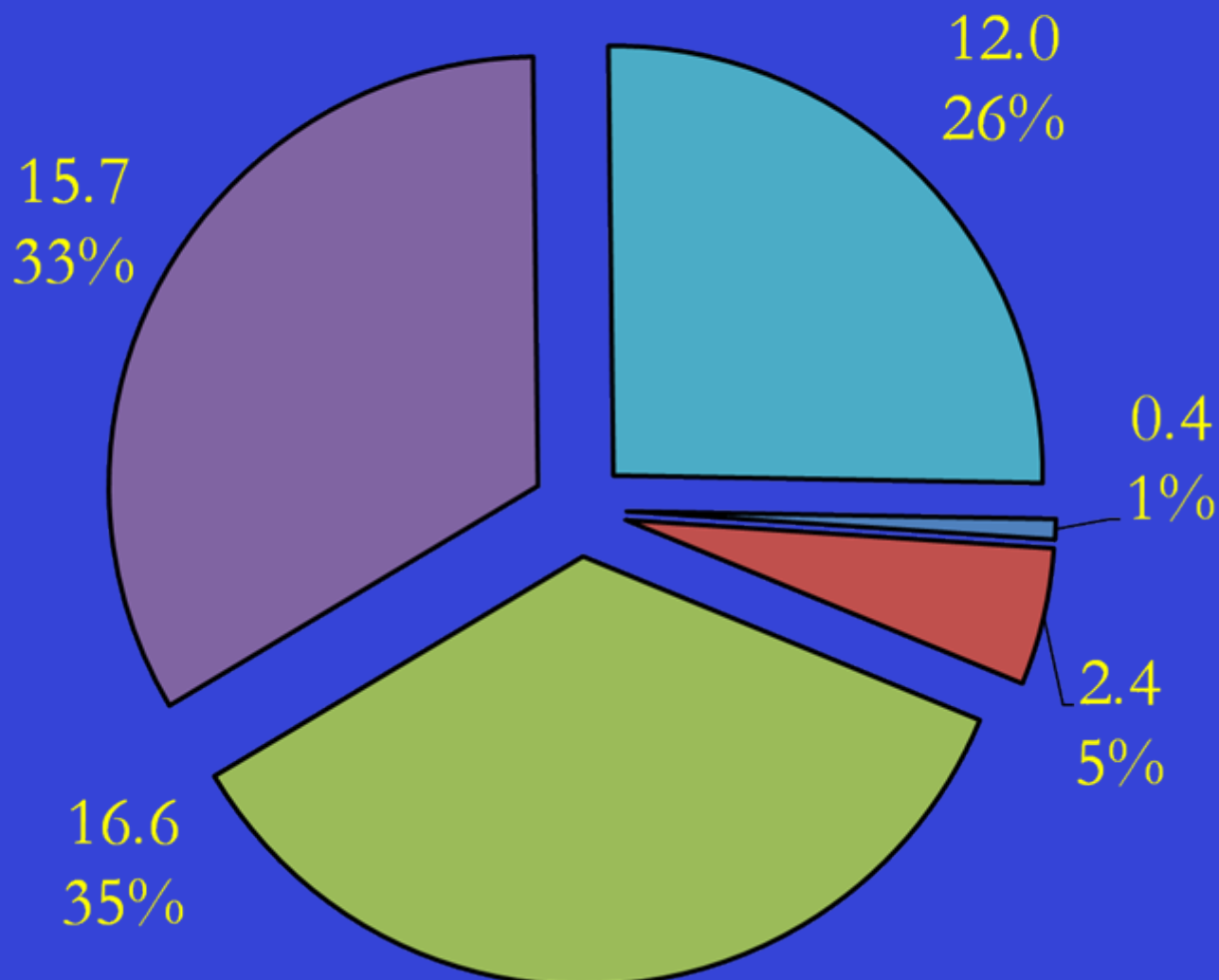


Source: US Census of Agriculture 2007

Total land in farms = 22.2 m acres; farmstead & other land omitted here

Forested Land, Mid-Atlantic States (million acres)

■ Delaware ■ Maryland ■ Pennsylvania ■ Virginia ■ West Virginia



Source: US Forest Service, <http://www.nrs.fs.fed.us/fia/>, March 25, 2010

Renewable Portfolio Standards in the Mid-Atlantic States

State	Goal % from Renewable Resources	Target Date
Delaware	20% total, 2% from solar	2019
Maryland	20% total, 2% from solar	2022
Pennsylvania	18.5%	2020
Virginia	12% (voluntary)	2022
West Virginia	none	NA

Renewable Energy Contextual Factors

- Resource Availability
- Technology Availability
- Technology Cost
- Energy Costs
- Economic Factors
- Project Financing Options
- Ownership Options
- Transmission Issues
- **Environmental Considerations**
- Institutional Structures
- **Land-Use Issues and Constraints**
- Information Dissemination
- Social Acceptance
- **Larger Policy Context**

Chesapeake Bay Commission
and the Bio-energy Boom

“The Chesapeake Bay region will lead the nation in the evolution of sustainable cellulosic and advanced biofuel production.”

- Sustainable = practices resulting in
 - Reduction nutrient/sediment pollution
 - Positive net energy
 - Net GHG reductions
 - No negative impacts on food security or cost
 - Net social/economic benefits to communities
 - No net loss biodiversity/natural resources

Chesapeake Biofuel Policies: Land Base for Biomass Production

- Cropland
 - Double-crop on corn & soy land
 - Failed cropland
 - Idle/CRP cropland
 - Summer fallow cropland
 - Recently abandoned cropland
- Forest slash & trimmings
- Abandoned mine land

Potential Biomass Production in Chesapeake Bay Watershed

Biomass	Land Use	Acres Available	Biomass Low Estimate (MMT)	Biomass High Estimate (MMT)
Rye	Corn grain	579	317	475
Rye	Soybean	187	115	173
Barley grain	Corn/soy	1,358	868	1,302
Barley straw	Corn/soy	1,358	1,302	1,953
Switchgrass	Failed Cropland	73	55	173
Switchgrass	Idle/CRP	447	336	1,050
Switchgrass	Summer Fallow	40	29	92
Switchgrass	Abandoned Mine	115	14	46
Switchgrass	Abandoned Cropland	1,680	423	1,983
Switchgrass	Forests	4.2 – 11.4 m	1,322	3,625
TOTAL			4,781	10,872

Source: Chesapeake Bay Commission (2010), “Chesapeake Biofuel Policies”

Chesapeake Bay

Executive Order & TMDL

- President Obama issued Exec Order calling the Bay a “national treasure,” and focusing actions of multiple federal agencies
- EPA required by courts to issue state TMDLs. States required to submit Watershed Implementation Plans by 11/1/2010 with “reasonable assurance” of accomplishment according to 2-year milestones. Consequences for noncompliance may be
 - Expand NPDES permitting, block NPDES permits
 - Reduce allowable loadings from point sources
 - Promulgate federal water quality standards for states
 - Require net improvement offsets

Potential Impacts of “Pollution Diet” on Biomass Production

- Land use
- Production/harvesting practices
- Storage & transport
- Bio-energy plant investment, siting, permitting