

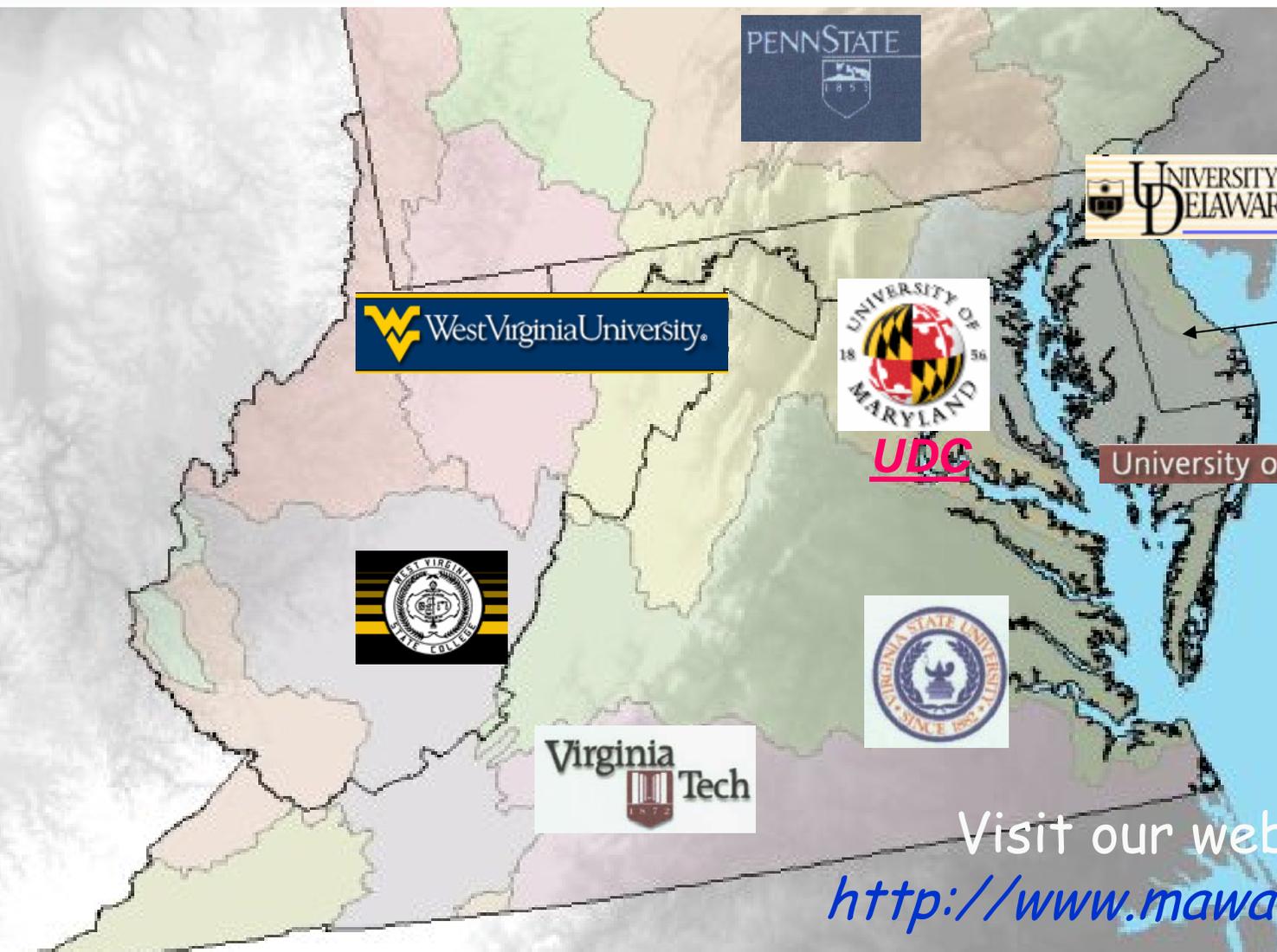
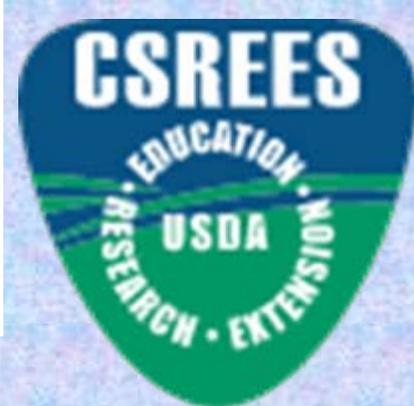


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Mid-Atlantic

Regional Water Quality Program

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Integrating Nutrient Credit Trading and Tributary Strategies

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Mid Atlantic Water Program
EPA -MAWP Nutrient Trading Workshop
ICPRB
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Goals and Objectives

Trading

- Help permitted facility to meet discharge limits
- Optimize cost effectiveness
- Create markets for nutrient pollution controls

Tributary Strategies

- Cost effective plan for removing impairments to Chesapeake Bay
- Reduce nutrient losses from point (regulated) and nonpoint (unregulated) sources
- Serve as road map and measuring stick for progress in restoring Bay

Comparison of approach

Trading

- Regulatory
- Part of NPDES permit
- Lower cost means of achieving reductions
- Faster means of achieving reductions
- Can be used to accommodate growth

Tributary Strategies

- Voluntary
- Part of Chesapeake Bay Agreements
- Full implementation of most current practices
- Becomes part of "reasonable assurance" for achieving Bay TMDL after 2011

Potential relationship of nutrient trading to tributary strategies

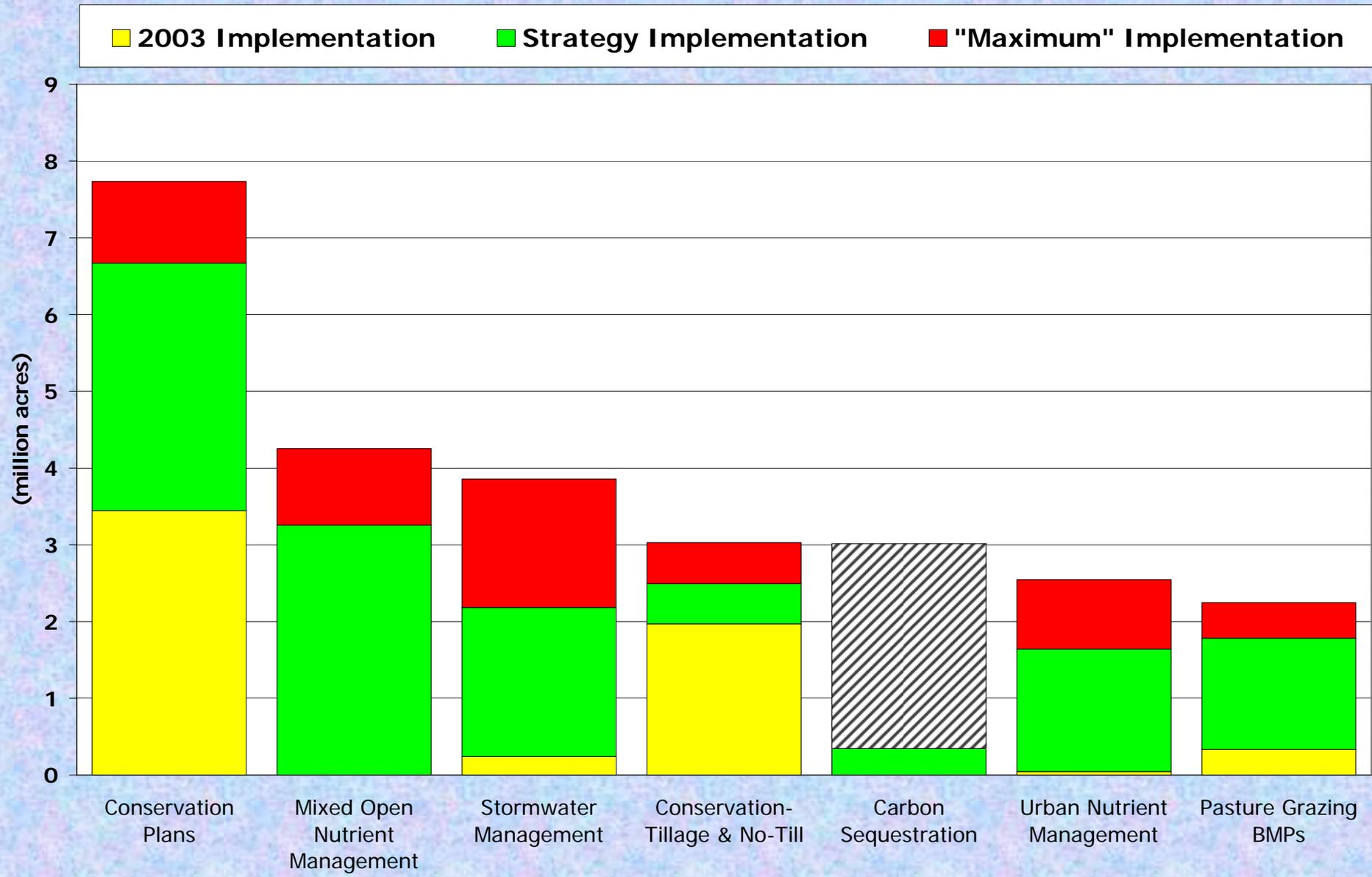
- None
- Trading has priority over Tributary Strategies
- Tributary Strategies have priority over trading
- Trading to accomplish Tributary Strategies?

2005 Tributary Strategy Agricultural BMPs

<u><i>BMPs with CBP or state (*) efficiencies</i></u>	<u><i>BMPs Requiring Peer Review</i></u>
Riparian Forest Buffers	Continuous No-Till
Riparian Grass Buffers	Dairy Precision Feeding /and Forage Management
Wetland Restoration*	Swine Phytase
Land Retirement	Ammonia Emission Reductions
Tree Planting	Precision Agriculture
Conservation-Tillage	Precision Grazing
Carbon Sequestration/Alternative Crops*	Water Control Structures
Poultry Phytase	Stream Restoration
Poultry Litter Transport	
Nutrient Management	
Enhanced Nutrient Management*	
Conservation Plans/SCWQP	
Cover Crops (Early- and Late-Planting)*	
Small Grain Enhancement (Early- and Late-Planting)*	
Off-Stream Watering w/ Fencing	
Off-Stream Watering w/o Fencing	
Off-Stream Watering, Fencing & Rotational Grazing*	
Animal Waste Management Systems: Livestock	
Barnyard Runoff Control/Loafing Lot Management	
Animal Waste Management Systems: Poultry	



Nonpoint Source BMP Implementation Levels



Frameworks for trading when Tributary Strategies exist

- All TS practices must be implemented to be eligible to trade
- Allow needed TS practices to be traded before TS implementation levels reached
- Require a baseline that accomplishes most of TS reductions
- Require credit purchaser to implement TS practices for NPS as part of credit purchase
- Allow already implemented TS practices to be traded

How can trading help achieve Tributary Strategy NPS practice implementation?

- Accelerate implementation of TS practices
- Fund implementation of NPS practices through creation of markets
- Promote innovative NPS controls to meet market demand
- "Regulate" NPS pollution by contract

What's left to trade after Tributary Strategy practice implementation?

A lot!! Row crop and animal ag BMPs only partially reduce nutrient losses

Advanced practices
Reduced nutrient use
Alternative crops
Land use/crop change
Land retirement

How valuable do credits need to be to get farmers to farm for credits?

- If credit values are greater than crop values, why not grow credits
- Stacking credits for profit
- Policies to promote/incentivize innovation in credit development
- Cropping systems with multiple revenue streams, including credits

Uncertainty in Tributary Strategy practices?

- Limited research/data on BMP effectiveness
- Watershed scale efficiency less due to spatial, temporal, hydrologic and management variability
- Hydrologic, legacy, implementation and practice maturity lag times
- Actual implementation, operation and maintenance
- Function during extreme climatic events
- Optimistic implementation tracking and reporting

From STAC White Paper on Innovation in Ag Conservation

<http://www.chesapeake.org/stac/stacpubs.html>

How uncertain is too uncertain?

- Trading "certain" PS reductions for uncertain NPS reductions
- "Standard" (US) nutrient credit trading ratio of 2:1 may only reflect lack of knowledge/research base
- Watershed scale spatial, temporal and management variability not included in ratio
- Hydrologic, pollutant legacy and management lag times must be considered (permit is for now)
- Implementation, operation and maintenance must be resolved
- Tracking, reporting and documentation must be accurate
- Lawyers say monitoring to prove reduction may be needed

Uncertainty in trading vs. TS

- Trading is part of a permitted activity so need legal assurance that water quality objective is met
- Trading is a contracted market activity so proof of performance/product quality is needed
- TS are "voluntary" means to removing nutrient impairments but have never used uncertainty factors
- Monitored PS and modeled NPS reductions are given equal weight in TS and annual progress estimates
- Should NPS practices in TS have an uncertainty factor comparable to those used in trading?

Conclusions

- A successful nutrient trading program *achieves water quality objectives* in an economically optimum manner
- Nutrient trading programs must address market, technical and accountability issues to accomplish both water quality and economic objectives
- Where Tributary Strategies require major reductions from both point and nonpoint sources, deciding what can be traded is difficult
- Uncertainty is an issue in both trading and TS
- Trading should support and be consistent with TS implementation, not compete for reductions

Question for Discussion

How do we use trading to enhance or accelerate implementation without undermining our ability to achieve NPS reductions needed to achieve Tributary Strategies or a Bay TMDL?