

Ecosystem Markets and Agriculture

Ecosystems Markets – the Future Economic Viability of Agriculture

- Agriculture is viewed as an opportunity to help industry meet air and water quality standard
- Agriculture is viewed as a mechanism to channel business and private citizens to offset their nitrogen emissions and footprint (CBF – Carbon footprint)
- Markets are available now
- Many entities are forming to take advantage of these markets (Bay Bank, Chesapeake Fund, EcoFinance Development Corp.
- Farmers need reliable factual information on what is going on and is it credible

Ecosystems Markets

Current Activities

- Nutrient Trading
 - MDE – MDA Offset Program established
 - Private financed investment in on the ground nitrogen reduction - Chesapeake Fund
- Carbon Trading
 - The Wild West!!
 - Federal guidelines on the way
 - Pinchot Institute developing a carbon calculation tool
 - MASCD, Conservation Districts and MDA to test and incorporate carbon trading into water quality trading tool (stacking) – next year
- Wildlife benefits
 - Initial interest no viable market yet
 - Potential partners – Conservation Fund, D.U., Wildlife Partners

Maryland's Water Quality Trading Program Phase II - Agricultural Nutrient Trading in Maryland

John Rhoderick
Maryland Department of Agriculture

Nutrient Trading – What is it?

- Not a replacement for NRCS or MDA conservation programs
- A new revenue stream that can compliment current conservation programs
- A voluntary option that can further environmental improvement
- Develop new options at a lower cost

Nutrient Trading

A program to provide to Maryland farmers a payment for conservation practices. The practices provide offsets to address new or increased loads associated with a growing population.

- Point Source to Non-Point Source (WWTP and Agriculture)

Nutrient Trading – Where are we to date?

- Seventeen states have adopted a trading program for environmental improvement
- All states in the Chesapeake Bay watershed have a trading program including the surrounding states that have interstate watershed boundaries with Maryland
- Maryland's Phase 1 Policy for Point to Point Source Trading has begun as of March 2008
- Phase II – Non-point Source Agricultural Trading proposed for Adoption – June 2009

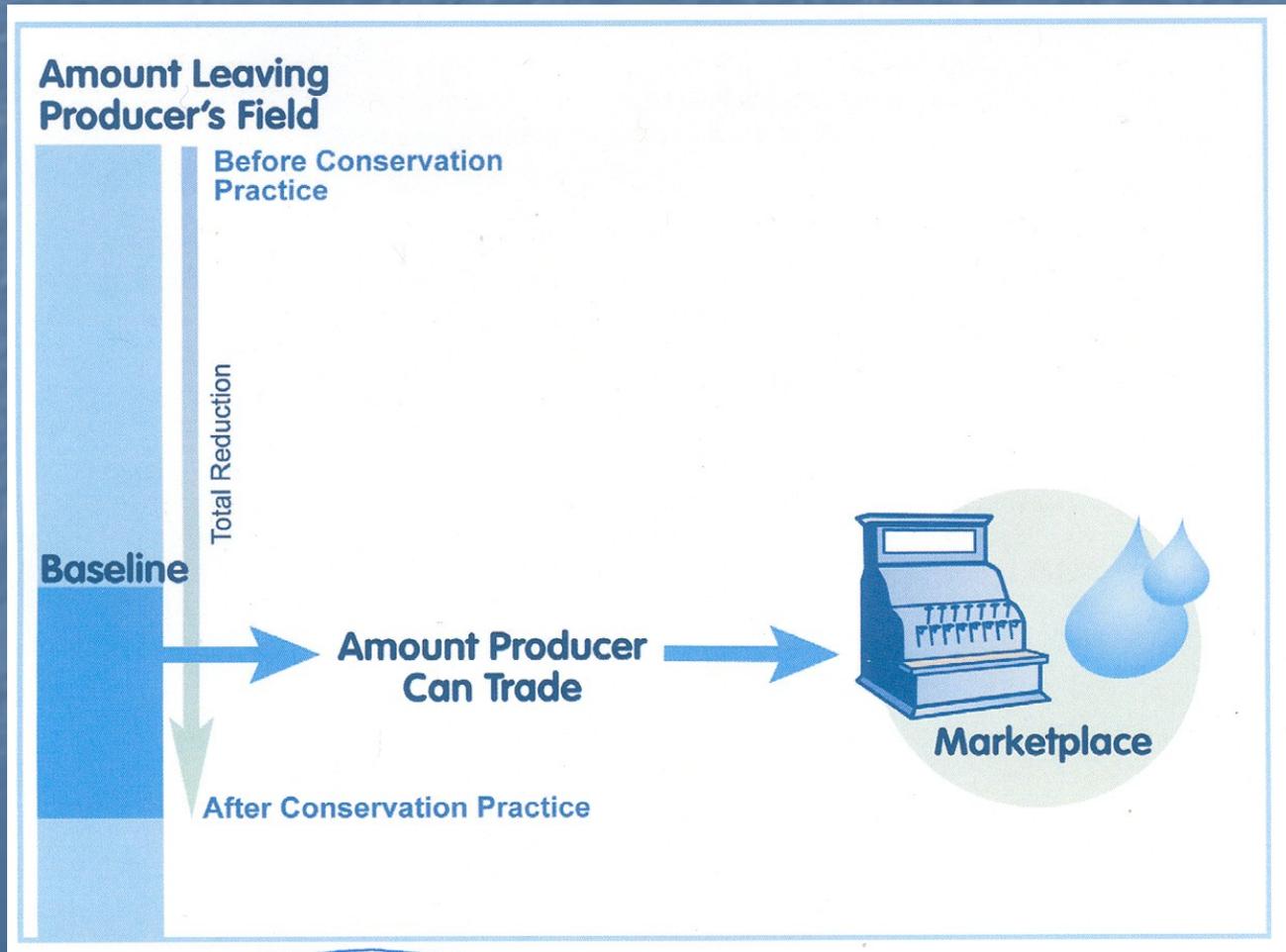
Maryland's Trading Program – Agricultural

- Two Key Elements
 - Generation of Agricultural Credits
 - Exchange of Agricultural Credits

Guidelines for Generation of Agricultural Credits

- Assessing Credit Generation Potential
- Understanding and identifying baselines
- Calculating Potential Credits
- Certification and Approval of Credits

Determining How Much a Producer Can Trade



Key Principles

Establish the foundation of any trading program. They are essential for an equitable, environmentally protectable, yet viable, trading program.

Key Principle #1

- Any generator of agricultural non-point source credits must first demonstrate they have met the baseline water quality requirements of their watershed. These include the minimum level of nutrient reductions outlined in the Tributary Strategies or the applicable TMDL requirements.

Key Principles Cont.

Key Principle #2

- Agricultural generators must be in compliance with all local, state, federal laws, regulations and programs. The credit generator and trade can not cause or contribute to water quality effects locally, downstream or, bay wide.

Key Principle #3

- BMP's funded by federal or state cost-share can not be used to generate credits. However, prior funded BMP's can count toward baseline.

Key Principles Cont.

Key Principle #4

- The Agricultural Trading Program is not intended to accelerate the loss of productive farmland. Therefore, credits will not be generated under this policy for the purchase and idling of whole or substantial portions of farms to provide nutrient credits for use off site.

Key Principle #5

- Trades must result in a net decrease in loads. A portion of the agricultural credits generated in a trade will be retired and used to achieve Tributary Strategies or TMDLs, the other portion becomes tradable credit.

Key Principle #6

- An Agricultural practice can only generate credits once it is installed and verified, or placed in operation.

Eligibility of Generators to Sell

In order to sell nutrient credits as part of this program, credit generators must meet the following requirements:

- Must be in compliance with all applicable federal, state and local laws, obtain the necessary permits.
- Agricultural operations generating credits must have a current nutrient management plan, an updated Soil and Water Conservation Plan including, if applicable, a Waste Management System Plan for the entire farm operation

“Baseline” Requirements for Agricultural Non-point sources

Maryland’s agricultural non-point nutrient trading program requires that operators of agricultural operations or other landowners wishing to generate credits must have achieved a level of nutrient reduction known as baseline

Baselines are applied to the pasture/field/animal area that is being used to generate credits and must first achieve the stricter of:

- a) the level of nutrient reduction called for in the tributary strategies; or
- b) the level of nutrient reduction called for in an applicable TMDL for the watershed where the credits are generated from.

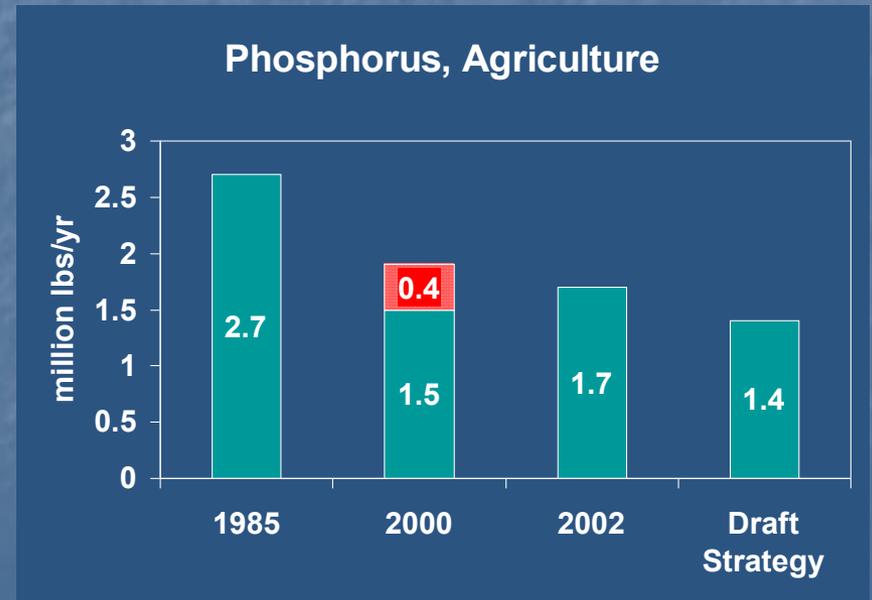
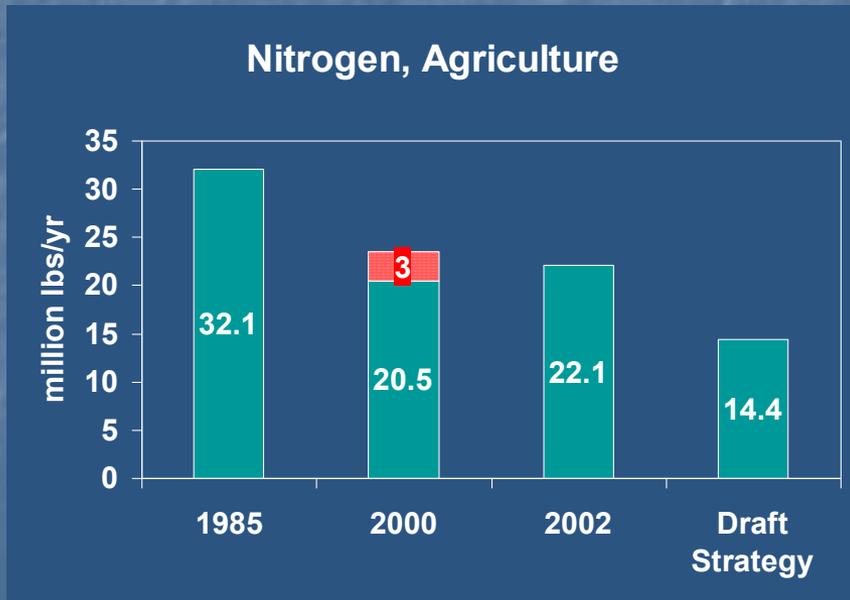
Current agronomic and structural practices can be utilized to meet baseline load reductions.

Baseline requirements may require additional implementation of BMP’s.

An agricultural operator or landowner may use federal and state cost-share programs to implement BMP’s that are used to meet the baseline nutrient reductions.

Baseline (cont.)

	<u>1985</u>	<u>Nitrogen Strategy</u>			<u>1985</u>	<u>Phosphorus Strategy</u>	<u>%Red</u>
<u>%Red</u>							
Total	82.43	36.59	55%	Total	6.77	2.86	57 %
Ag	32.14	11.57	64%	Ag	2.74	1.11	59 %



Baseline (cont.)

Segment Loadings
Choptank – Upper

1985 model residual load for Agriculture 22 lbs./ac.

64% reduction = 8.9 lbs/ac. to meet trib strategy loads.

Baseline (cont.)

Example: Current on farm loadings

Residuals in soil 5 lbs./ac.

Total Application 133 lbs./ac.

Total available 138 lbs./ac.

Crop up take 114 lbs./ac. (calculated from yield)

Current load 24 lbs./ac.

Current BMP's

Grass Buffers – 11.5 lbs./ac.

Conservation Tillage – 4 lbs/ac.
15.5 lbs./ac.

Net Loading = 8.5 lbs/ac. *Eligible to Trade

Options:

Cover Crops – 6 lbs. ac. (credits)

Commodity Cover Crops 2 lbs. ac. (credits)

Calculating Potential Credits

How to Generate Credits

Once a landowner or operator has determined they have achieved the baseline requirements for the watershed additional implementation of water quality improvements can be considered as a tradable credit.

Tradable credits can be generated from any planned agronomic, land conversion, or structural practice which is shown to reduce nutrient loadings below the applicable baseline.

Agricultural Non Point Source Credit Potential

- Three categories of credit-generating practices
 1. BMPs with “approved” load reductions
 - Bay Program peer review has been done
 - Stipulated BMP efficiencies built into watershed model
 - Uncertainty built into efficiency
 - No separate uncertainty ratio for the trade

Agricultural Non Point Source Credit Potential (cont.)

- **BMP's with Approved Load Reductions**
 - **Continuous No-Till**
 - **Riparian Forest Buffers Continuous No-Till**
 - **Riparian Grass Buffers**
 - **Wetland Restoration**
 - **Tree Planting**
 - **Cover Crops (Early – and Late – Planting)**
 - **Off – StreamWatering w/Fencing**
 - **Off – StreamWatering w/o Fencing**
 - **Off – StreamWatering, Fencing & Rotation
Grazing**
 - **Animal Waste Management Systems: Livestock**
 - **Animal Waste Management Systems: Poultry**
 - **Barnyard Runoff Control/Loafing Lot
Management**

Agricultural Non Point Source Credit Potential (cont.)

- Three categories of credit-generating practices
 1. BMPs requiring no review
 - Practices currently in use
 - Require no review and establishment of efficiencies by technical workgroup
 - Credits can be traded but will be assigned an uncertainty ratio
 2. BMPs requiring technical review
 - Practices currently in use
 - Require review and establishment of efficiencies by technical workgroup
 - Credits can be traded but will be assigned an uncertainty ratio

Agricultural Non Point Source Credit Potential (cont.)

- BMP's Requiring Technical Review
 - Dairy Precision Feeding
 - Precision Agriculture
 - Conservation – Tillage Precision Grazing
 - Water Control Structures
 - Stream Restoration
 - Cropland Conversion
 - Enhanced Nutrient Efficiency
 - Commodity Cover Crops
 - Ammonia Emissions

Agricultural Non Point Source Credit Potential (cont.)

- Three categories of credit-generating practices
 3. Other BMPs, practices, or innovative approaches
 - Innovative practices not currently in widespread use
 - Will be reviewed on case-by-case basis
 - Will establish specifications for
 - Installation
 - Operation
 - Maintenance
 - Monitoring
 - Will establish uncertainty ratio
 - Proposal will be reviewed by a technical workgroup

Agricultural Non Point Source Credit Potential (cont.)

- Other BMP's, practices, or innovative approaches
 - Algal Turf Scrubber
 - Oyster Aquaculture
 - Carbon Sequestration
 - Alternative Crops

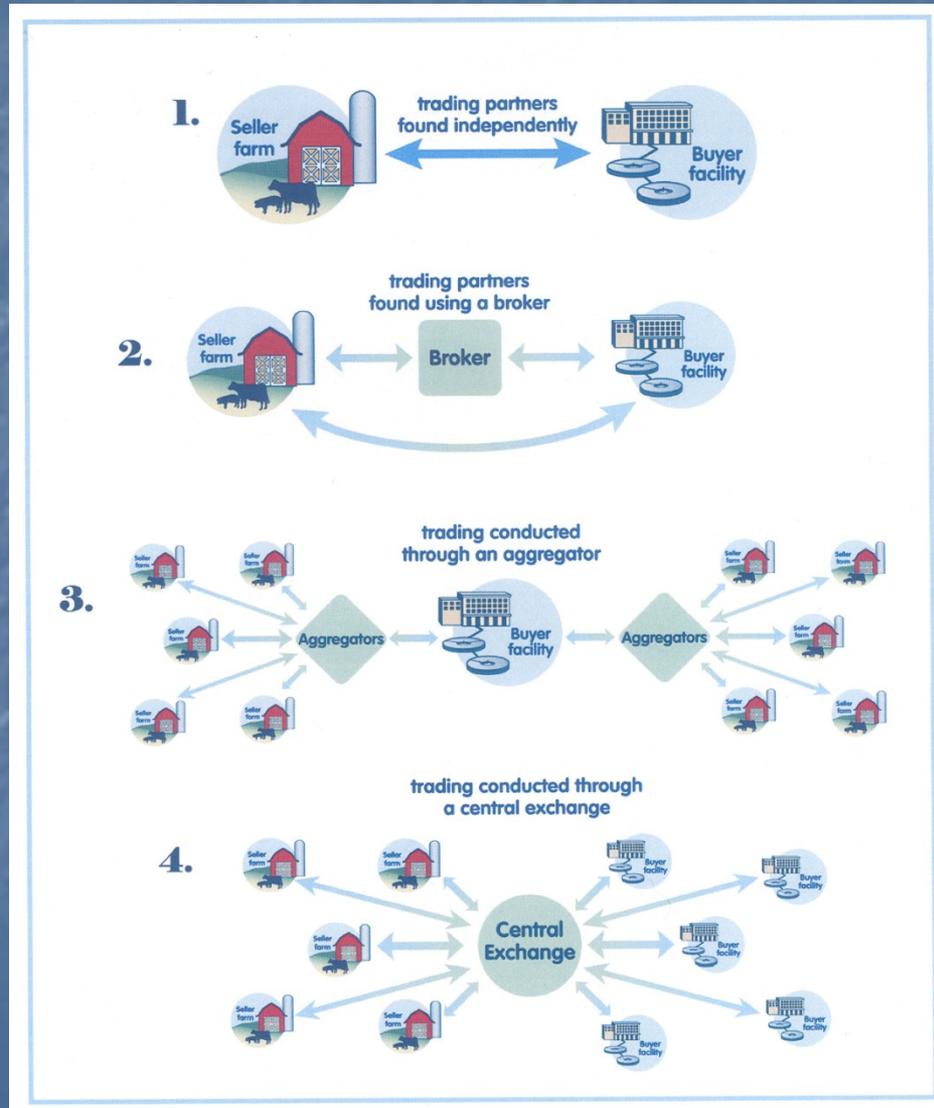
Agricultural Non Point Source Credit Certification and Approval

- Submit credit registration and certification form to MDA
- Application review:
 - Base line requirement
 - Compliance met
 - Credit generation proposal is reasonable
 - Landowner/operator consent
 - Tract information correct

Agricultural Non Point Source Credit Certification and Approval (cont.)

- Approved credits are given a unique registration number and entered in the online Trading Registry.
- The program or representative may conduct field visit to verify baseline condition and credit generation proposal is appropriate

Finding a Trading Partner



Guidelines for the Exchange of Non Point credits

- How to purchase credits
 - Market place
 - Registry
 - Contracts
- Exchange Contact Approval
- Implementing a BMP
- Verification, Inspection

Non Point Source Program Structure

- Utilizing a web based nutrient trading application with tools to calculate eligibility and credit potential
- Provides for nitrogen and phosphorus credit calculation from agricultural sources
- Provides a separate market place for buyers and sellers of approved credits to post and exchange information on credit quantity and price
- Provides a registry to track and register trades

Exchanging Non Point Source Credits - Agricultural

- Credits may be sold directly to a regulated point source or to a conservation buyer
- Bilateral agreements
- Purchasing contracts between buyers and sellers
- May be brokers or aggregators
- Requirements for contract elements
- Contracts for sales to regulated buyers approved by MDE
- Contracts for sales to non regulated buyers, conservation organizations and aggregators approved by MDA
- A 5% retirement ration applies to all exchanges

Implementing a BMP

- A practice can only generate credits once it is installed and functioning
- An inspection to certify standards and spec were met and the BMP is functional is required
- The full annual credit produced by the practice will not be certified until the year following the year of installation
- Credits are used in the year they are generated
- Credits can not be banked for sale and used in future years

Annual Verification and Inspection

- Trading contracts will require annual verification and reporting
- Credits generated by annual practices, such as cover crops, will require inspection twice during the annual life
- Structural BMP's inspections are required once a year
- The Maryland Department of Agriculture (or its designee) will perform annual spot checks on a minimum of 10% of all traded Agricultural credits



***Producing and Selling Credits in
Maryland's Nutrient Trading
Market***

**Guidance for Agricultural Producers
and Land Owners**



Role of the District

- Local Conservation District trained in use, and familiar with Farm
- Accumulate interest in credit trading for aggregators (Broker) (\$)
- Reviews the Conservation Plan with owner/operator to verify practices are current and properly maintained (Baseline) (\$)

Role of the District (cont.)

- Calculate credits available for sale/trade (Nutrient, Carbon, Bio-diversity, etc.) (\$)
- Serve as a verifier to provide accountability and confidence in the process (\$)

Get the Word Out!

- Each conservation District has regular newsletters, mid-winter farmer meetings, seminars and news articles
- Cooperate closely with related organizations and groups both agricultural and environmental.
- This takes everyone's involvement!