

**Shenandoah Valley, Virginia
Pilot Project*
Findings**

*Funded by a NFWF INSR grant
with additional support for the
Blue Moon Fund
and Keith Campbell Foundation

Fifty farms were evaluated for their level of water quality protection and customized Continuous Improvement Plans (CIPs) were developed for each farm that will move them closer to Chesapeake Bay protection goals when implemented. Thirty-four of the farms were either beef/poultry or dairy operations. The remainders were dairy/beef, dairy/poultry or beef operations.

Local Producers WSI found that medium sized cooperatives are looking to differentiate themselves through supply chain metrics like those within the WSI program. In particular, WSI met with the board of the Virginia Poultry Growers Cooperative (VPGC) and presented our approach to their annual growers meeting in Harrisonburg. As a result, about 20 of the farms in this project grow turkeys for VPGC. WSI is also working with the newly formed Shenandoah Valley Beef Producers Cooperative (SVBPC) and enrolled all 20 board members into the WSI program. Although they are still in the process of business plan development, WSI will continue to meet with the SVBPC board to explore certification of their members and marketable products.

Continuous Improvement Unlike prior work with farmers in the Valley, the WSI Beta Test, CIPs are now written in two-year increments to provide more specific and short-term goals for the farmer to work toward. As far as the CIP scenario is concerned, WSI was able to develop CIPs more aggressively to reduce phosphorous than for nitrogen. WSI is finding it is more difficult to convince farmers to adopt nitrogen reduction strategies because high amounts of reduction usually mean that we are asking them to make significant changes to production systems by converting more land to perennial crops and/or reducing nutrient applications to small grain silage crops in their double crop system. In animal production areas like the Shenandoah Valley, many farmers depend on the current cropping system to meet their

demand for animal feed and are faced with limited land availability and high animal and nutrient concentrations which also make N reductions difficult.

New Landuse/BMPs During the course of the project it became apparent that there were a number of instances where denuded areas were present in pastures. WSI developed a “denuded pasture” land use load to describe any semi-confined feeding area in a pasture where the ground is denuded and bare of grass for a majority of the year. There was a total of 109 acres of denuded pasture among the 50 farms in the Pilot Project. As a result, WSI created three new BMPs to address these situations. This new landuse and associated new BMPs may be submitted to the Chesapeake Bay Program Water Quality Goal Implementation Team for inclusion in the Bay Model.

Low Load Farms One unexpected outcome of the project was our experience with trying to get farms that are dominated by perennial vegetation and have low numbers of animals to reach the 55% nutrient reduction goal which is the current Virginia Tributary Strategy goal. These operations have a relatively low nutrient load per acre, and we categorized them as “Low Load Farms”. For these farms, the nutrient load is so low to begin with that achieving a 55% additional reduction is practically impossible and an inefficient use of resources. WSI will work with Virginia officials as they try to reconcile how to make reduction goals for agriculture equitable, but also fair to operations of this type. To qualify as a WSI Low Load Farm, one must have implemented the VA five priority practices and be dominated by perennial land uses. The criteria are as follows:

- ❖ Land dominated by perennial crops at >60% of acreage – including buffer acreage
- ❖ Absence of denuded pasture feeding areas
- ❖ On all row crop fields, full implementation of Virginia five priority practices
 1. Nutrient Management
 2. Cover crops – may receive <40 lbs N /A of fall-applied liquid manure *if storage is an issue*
 3. All streams through pastures are fenced with a minimum of 35 foot buffer
 4. All streams adjacent to crop land have buffers >35 feet, preferably >50 feet
 5. Conservation or no tillage on row crops

CIP Recommendations Moving from conservation tillage to continuous no-till was almost universally desirable among farms, with many participants experimenting with winter radish to improve drainage and avoid the need for any tillage. Reducing and eventually discontinuing the use of poultry litter on high soil test phosphorous (P) fields was also seen by farmers as in their long term business interest considering the increased regulatory attention to phosphorous.

The following table is a collection of the most common BMPs recommended in CIPs. Most dairies rely on fall applied manure to small grains that they harvest in the spring for silage. As a result, almost all of their CIPs include a recommendation to increase liquid manure storage capacity and discontinue the fall application of manure. Various strategies were suggested to achieve expanded storage capacity including the use of a dry pack barn to store manure in a dry state that is easily transferrable or expanding their use of grazing in the spring and fall when grass growth is at its maximum.

CIP recommendations by farm type

Farm Type	# of Farms	Cover Crops (acres)	CNT (acres)	Buffers (acres)	Stream Fencing ≥35 ft wide (acres)
Beef	7	93	77	0	22
Beef-Poultry	13	298	484	7	31
Dairy	21	2250	3243	11	26
Dairy-Beef	2	0	252	0	11
Dairy-Poultry	2	25	114	0	5
Poultry	5	229	157	0	0
TOTAL	50	2895	4327	18	90

Cover crops include commodity cover crops, CNT=continuous no-till, and Buffers include grass and forest buffers

Nutrient Reductions The following tables show the nutrient reductions that will be achieved when the 50 CIPs are fully implemented in total pounds and percent reduction of nitrogen and phosphorous. The first assessment of progress in CIP implementation will be in 2013. At that time, existing loads will be updated and CIPs will be revised to move the farms closer to reaching the 55% nutrient reduction goal. All loads and reduction estimates presented were calculated using the WSI Nutrient Load Estimator (NLE). A total of 101,393 lbs of

Edge of Stream (EOS) Load Reduced for nitrogen (TN) and phosphorous (TP) from Existing Scenario to CIP Scenario by Farm Type

Farm Type	# of Farms	TN (EOS lbs)		TP (EOS lbs)	
		Ave	Total	Ave	Total
Beef	7	854	5,975	59	415
Beef-Poultry	13	1,297	16,862	137	1,781
Dairy	21	3,129	65,712	296	6,223
Dairy-Beef	2	1,975	3,950	225	450
Dairy-Poultry	2	1,248	2,497	181	363
Poultry	5	1,203	6,016	100	502
ALL	50	2,028	101,393	195	9,734

N and 9,734 lbs of P are estimated to be reduced from the edge of stream nutrient loads when the current CIPs are fully implemented. The highest average reduction is expected from dairy operations where substantial potential for additional BMP implementation exists. Beef operations, in contrast, have less potential for additional nutrient reductions because they are usually inherently low loading unconfined operations unless they include a confinement feeding operation.

The full report on the Pilot Project can be found at the WSI website:

www.WaterStewardshipInc.org