

# Incentivizing Pollution Control in Agriculture: What More Can Be Done With USDA Conservation and Commodity Programs?

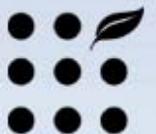
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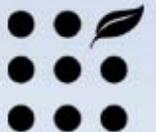
# What is agriculture's problem?

- Regional nutrient budget out of balance
  - More nutrients brought into region than can be assimilated by crops (much in the form of imported animal feed)
  - Focusing on best management practices alone will not address this
- Not enough farmers are using the most effective management practices for reducing nutrient losses
  - About 87,000 farms in the watershed



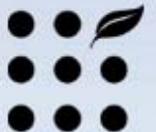
# Current program incentives

- Working lands programs (EQIP, CStP)
  - Provide financial incentives/technical support for ***voluntary*** adoption of best management practices
- Land retirement programs (CRP, CREP, WRP)
  - Provide payments for long term contracts
  - CREP a USDA-State partnership that enables targeting of buffers
- Commodity programs
  - Provide income support for program crops and dairy
- Subsidized crop insurance
- In 2009, \$102 million for conservation and \$166 million for commodity programs in DE, MD, PA, and VA



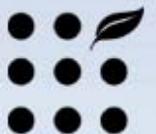
# Issues with current approach

- Goal has been to broadly reach producers rather than target environmental problems
- Payments based on practice, not performance
- No guarantee that farmers on most important acres will enroll and adopt most effective practices
  - Farmers make decisions based on their own best interest; may not know their connection to problem
  - Desirable practices such as cover crops and vegetative filters provide little or no economic return
  - Difficult to target program resources
- Focus on the field fails to directly address regional nutrient imbalance



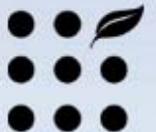
# Issues with current approach

- Commodity programs, including subsidized crop insurance, provide perverse incentives from environmental standpoint
  - Scale effects; total production or acreage
  - Mix effects; which crops/livestock produced
  - Location effects; production on marginal land
  - Intensity effect; input use per acre and animals per acre



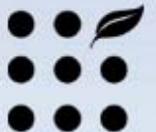
# What does the TMDL mean to farmers?

- Specific performance goals for agriculture – establishes a performance baseline
- Identification of high-priority sub-watersheds (conducive to targeting)
- Creates potential demand for offsets from regulated sources (due to tightened discharge limits)



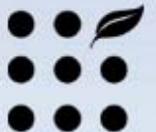
# Existing conservation programs could be made more effective

- Target EQIP to critical watersheds (CREP already targeted)
- Offer incentives through cooperative projects on a scale that makes sense to address the problem
- Consider paying for performance
  - Use same modeling tools used to estimate offsets in trading markets
  - Allows maximum flexibility for producers to find most cost-effective approaches
- Allow bidding in contract offers



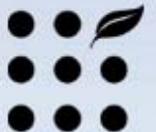
# Pay for performance experiment– Choptank watershed

- Develop farmer-led watershed councils to instill long-term ownership of water quality issues
- Reward farmers for achieving residual N levels of less than 5ppm in each field
- Monitor ambient water quality at mouth as part of adaptive management framework
- Provide demonstration and outreach



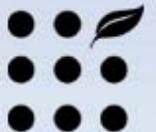
# But are conservation programs alone enough?

- Voluntary approach still has drawbacks:
  - Enrollment still voluntary - very expensive to “bribe” every farmer to adopt practices that are optimal from the watershed standpoint
  - Equity issue: should public pay for pollution reduction that is not considered “above and beyond” a minimum level of stewardship?



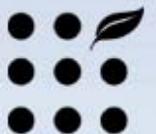
# Additional incentives for nutrient management

- Nutrient Compliance
  - Strength of incentive depends on level of payments (fluctuates with crop prices)
  - Question as to whether farmers who receive greatest payments are also those who can reduce pollution losses most cost-effectively
- Backstop regulation
  - Require that farmers adopt TMDL-baseline practices if all other incentives fail

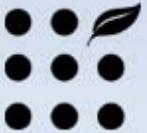
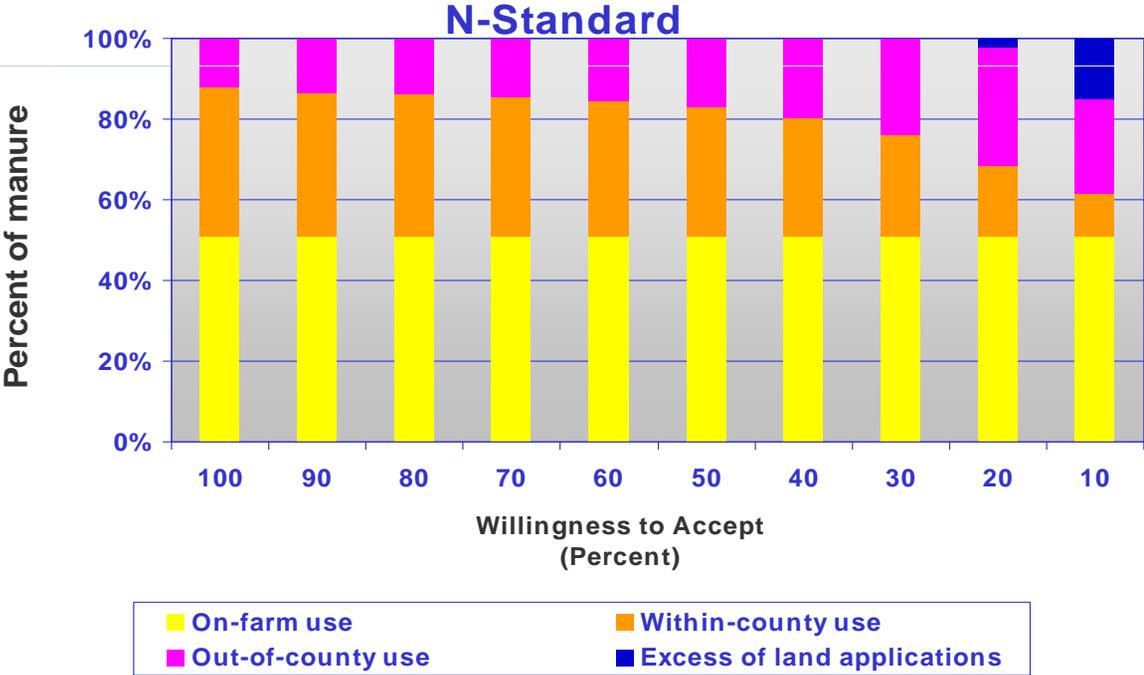


# Markets for offsets (trading)

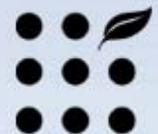
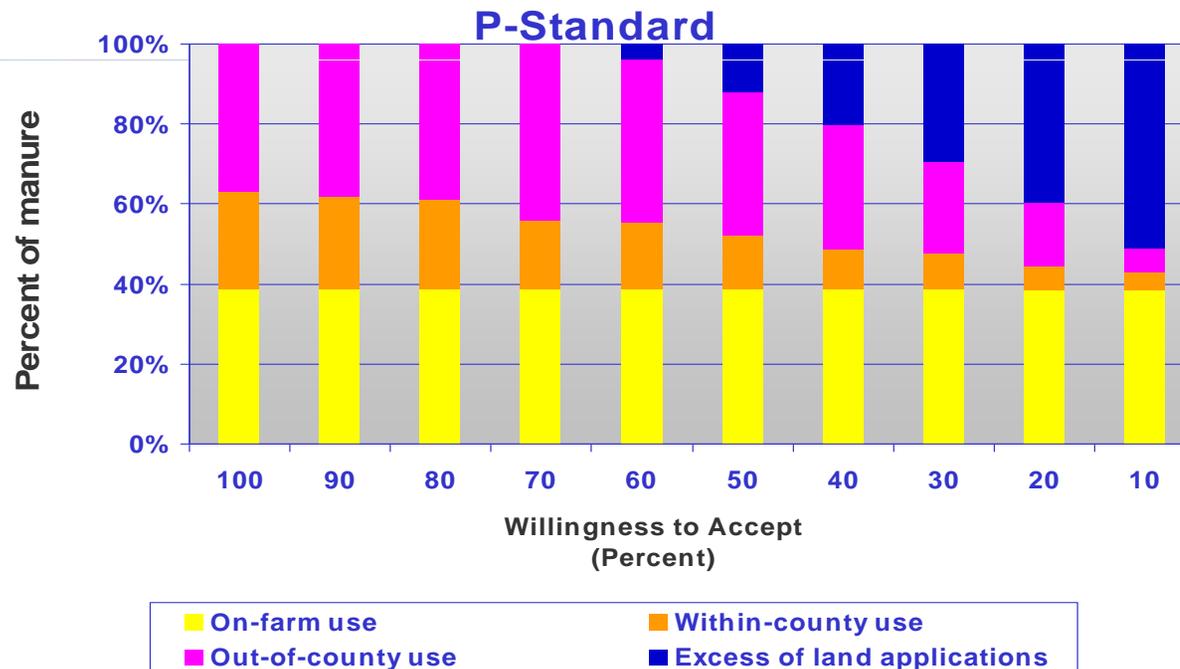
- Once a farmer is meeting TMDL-baseline, then eligible to sell offsets in whatever markets exist
- Shifts payment burden to regulated sector
- Conservation programs help farmers achieve baseline
- However, dominance of nonpoint loads means that only a small share of cropland can benefit from markets – other approaches are still needed



# Effect of willingness to accept manure on its disposition in the Bay watershed - N standard

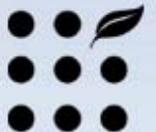


# Effect of willingness to accept manure on its disposition in the Bay watershed – P standard



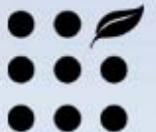
# Regional management of nutrient budget

- Strict enforcement of on-field nutrient management requirements will force producers to deal with this on their own
- Coordinated regional solution would be less costly
  - Adjust animal diets to reduce nutrient content of manure
  - Encourage increased use of manure by crop farmers
  - Manure as fuel for power generation (Fibrowatt)
  - Manure converted to commercial fertilizer products
  - State-subsidized transportation of animal-produced nutrients out of basin (next to last resort)
  - Reduce herd size (last resort)
    - Florida dairy herd buyout program to protect Everglades



# What might a more cost-effective policy look like?

- Ban practices known to be damaging (spreading manure on frozen ground; allowing animals in streams)
- Target conservation programs to producers in critical watersheds for achieving TMDL baseline
- Pay for performance after TMDL baseline met to maximize producer flexibility
- Encourage cooperative conservation on watershed scale – program bonuses
- Use conservation programs to increase willingness to accept manure



# What might a more cost-effective policy look like?

- Take advantage of opportunities for bi-lateral trades between regulated sources and farms
- Require nutrient management plans on all cropland as regulatory back-up
- Employ nutrient compliance to take advantage of existing incentives from commodity programs
- Take a regional approach to dealing with nutrient imbalance issue
- Incorporate adaptive management to make adjustments as knowledge improves

