

# Maryland Soil Health Advisory Committee: Setting the Framework and Objectives

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# Outline

- Today's goal is to set a common page for the Committee members and begin outlining the path forward
- Begin to Answer:
  - WHY? The drivers for soil health focus
  - WHAT? What is soil health
  - HOW? Objectives of the Committee
- Roundtable – we want your input



# 2017 Healthy Soils Legislation

- House Bill 1063
- Established a Healthy Soils Program within MDA
- “The purpose of the Program is to:
  1. Improve the health, yield, and profitability of the soils of the state;
  2. Increase biological activity and carbon sequestration in the soils of the state...; and
  3. Promote widespread use of healthy soils practices among farmers in the state.”



# Existing State Framework

- Legislation also speaks to implementing the Program to “enhance” other programs that provide financial assistance to farmers
- MDA has a long history of promoting conservation
  - Relies primarily on our network of 24 Soil Conservation Districts for technical assistance and the Maryland Agricultural Water Quality Cost-Share (MACS) for financial assistance.
  - Since 1984, MACS provides cost-share up to 87.5% to install more than 30 best management practices on farms.
- Federal partners provide technical and financial assistance for best management practices.
- Existing programs, and their authority, address water quality



## Other State Conservation Grants and Loans

- Cover Crops
- Income Tax Subtraction for conservation equipment
- Low Interest Loan for Agricultural Conservation (LILAC) for installing BMPs or purchasing conservation equipment
- State incentive payment for Conservation Reserve Enhancement Program (CREP)
- Manure transport and Manure injection



# Conservation Delivery to Ag Sector

- Conservation programs are largely administered through Soil Conservation Districts
  - Trusted source of assistance
  - Established process for conservation delivery
- Efforts to date are focused on nutrient and sediment reductions to the Chesapeake Bay
- Phase III Watershed Implementation Plan underway



# Increasing Recognition of Co-benefits

- Water quality, carbon sequestration, and soil health
- Most recently, Maryland issued its draft Greenhouse Gas Emission Reduction Act (GGRA) plan to reduce emissions by 40% by 2030 (from 2006 levels)
  - Includes MDA's Healthy Soils Program as adaptation and resiliency strategy
  - Includes suite of practices effective in building soil carbon
  - Next steps: metrics and tools to quantify soil carbon, and develop program to encourage further adoption of practices

NRCS Conservation Practices	Description of practice	GHG Reduction		
		Mt CO <sub>2</sub> e/ac/yr		
Cropland Management		CO <sub>2</sub>	N <sub>2</sub> O	Sum
Conventional Tillage to No Till (CPS 329)		0.42	-0.11	0.31
Conventional Tillage to Reduced Tillage (CPS 345)	Reduced tillage = strip till	0.13	0.07	0.20
N Fertilizer Management (CPS 590)	Improve N fertilizer management to reduce by 15% through 4R or nitrification inhibitors	0.00	0.11	0.11
Replace N Fertilizer w/ Soil Amendments (CPS 590)	Soil amendments include compost, manure	1.75	0.00	1.75
Conservation Crop Rotation (CPS 328)	Decrease fallow or add perennial crop to rotation	0.21	0.01	0.22
Cover Crops (CPS 340)	Add seasonal cover crop to cropland	0.32	0.05	0.37
Insert forage planting into rotation (CPS 512)	Add annual or perennial forage to rotation	0.21	0.01	0.22
Mulching (CPS 585)	Add high carbon mulch to cropland	0.32	NA	0.32
<b>Land use changes- add herbaceous plants</b>				
Conservation Cover (CPS 327)	Convert to permanent unfertilized grass, legume, pollinator or other mix, ungrazed	0.98	0.28	1.26
Forage and biomass planting (CPS 512)	Convert to grass, forage or biomass plant	0.21	0.01	0.22
Riparian herbaceous cover (CPS 390)	Convert area near water to permanent unfertilized grass	0.98	0.28	1.26
Contour buffer strips (CPS 332),	Covert strips to permanent unfertilized grass, legume, pollinator or other mix	0.98	0.28	1.26
Field border (CPS 386)	Convert strips to permanent unfertilized grass/legume to reduce runoff	0.98	0.28	1.26
Filter Strip (CPS 393)	Convert strips to permanent unfertilized grass/legume	0.98	0.28	1.26
Grassed Waterway (CPS 412)	Convert strips to permanent unfertilized grass/legume to filter water	0.98	0.28	1.26
Vegetative barrier (CPS 601/342)	Plant stiff vegetative cover on hillsides or by streams to reduce erosion; can be used in critical areas	0.98	0.28	1.26
<b>Land use changes- add woody plants</b>				
Convert unproductive cropland or grassland to farm woodlot (CPS 612)	Plant trees and shrubs in marginal cropland to restore diversity, improve water quality	1.98	0.28	2.26
Tree & shrub establishment (CPS 612)	Plant trees and shrubs	1.98	0.28	2.26
Riparian Forest Buffer Establishment (CPS 391)	Replace strip of cropland near water with woody plants	2.19	0.28	2.47
Alley Cropping (CPS 311)	Replace 20% of annual cropland with woody plants	1.71	0.03	1.74
Multistory Cropping (CPS 379)	Replace 20% of cropland with trees & shrubs of different heights, could be permaculture	1.71	0.03	1.74
Hedgerows (CPS 422)	Replace strip of cropland with one row woody plants, could combine with Conservation Cover for pollinators	1.42	0.28	1.70
<b>Grazing</b>				
Silvopasture (CPS 381)	Add trees and shrubs to grazed pastures (> 20 plants/acre)	1.34	0.00	1.34
Prescribed grazing/rotational grazing (CPS 528)	Short-term intense grazing in small paddocks	0.26	0.00	0.26

Note: Some implementation guidelines not listed in the NRCS Conservation Practice Standards (CPS) may be required to ensure adequate carbon sequestration and alignment with the GHG reduction estimates from COMET-Planner.





## Other MDA Soil Health efforts

- Initially focusing on subset of practices with known producer interest
  - RCPP (2018) in Kent, Caroline, Queen Anne's and Talbot
    - \$1 million
    - Multi-specie cover crop, precision nutrient management, and conservation tillage
    - Adaptive management
  - NFWF (2019) statewide
    - \$997K
    - Multi-specie cover crop, precision nutrient management, conservation tillage, and prescribed grazing
- Extended season cover crop incentive



## MDA program philosophy

- MDA recognizes our producers have already made significant contributions to conservation
- MDA will continue in our leadership capacity to support producer's needs as the industry and policy drivers evolve
- Programs will be inclusive of all producers – crop type, farm size, and management – with Committee's input to identify and address needs



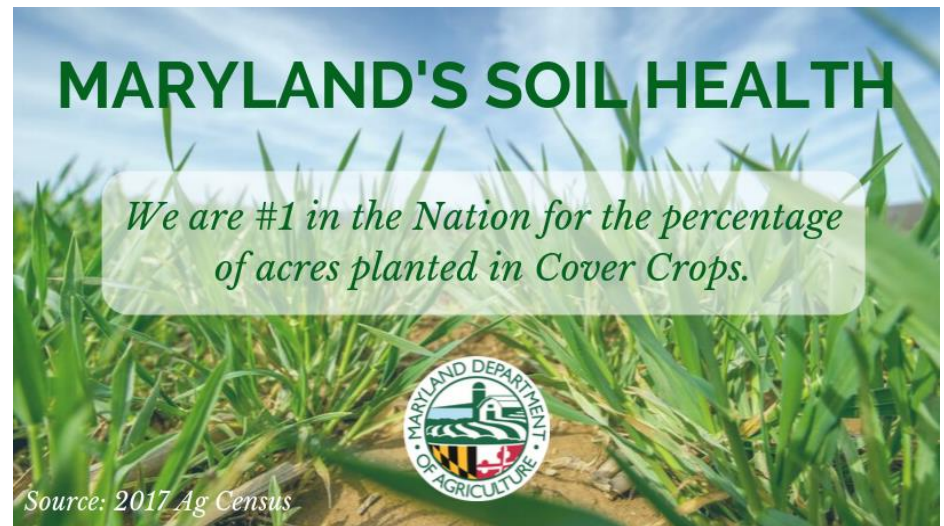
# What is Soil Health?

- NRCS – “continued capacity of the soil to **function** as a vital **living** ecosystem that sustains plants, animals, and humans”
  - Infiltrates and stores water
  - Habitat for microorganisms
  - Nutrient cycling
  - Plant growth (stability and support)
  - Decompose and cycle OM
- Healthy soils are more resilient



# NRCS' Core Soil Health Principles

1. Keep the soil covered as much as possible
2. Disturb the soil as little as possible
3. Keep plants growing throughout the year to feed the soil
4. Diversify as much as possible using crop rotation and cover crops





# Science of Soil Health

- Extensive literature and research in development
  - What to measure (chemical, physical, biological)
  - How to measure (consistent protocols)
  - How to interpret (intrinsic variability of soils)
- Plus several existing in-field and modeling tools
- Meanwhile, rely on promoting conservation practices commonly associated with soil health and
- Seek academic expertise



## Next Steps

- Soil health is at the nexus of important global issues but our focus will be the deliverables of the 2017 legislation
- “To carry out the purposes of the Program, the Department shall:
  1. Provide incentives, including research, education, technical assistance, and, subject to available funding, financial assistance to farmers to implement farm management practices that contribute to healthy soils;
  2. And determine whether the program may be implemented in a manner to enhance other state and federal programs that provide financial assistance to farmers”



# Open Discussion

- Key questions MDA is seeking to answer:
  - **Long-term: What form of assistance is needed?**  
Research, education, financial assistance, technical assistance , or some combination?
  - **Short-term: What do you need answered to support MDA's program development?**



# What do you need answered?

- A future presentation topic of interest (examples below or others?)
  - Evaluation tools – COMET, Field to Market, Soil Health Card, etc.
  - Producer application tools – cover crop calculator, in-field tools, etc.
  - Funding sources for soil health programs
  - Farm Bill provisions for soil health
  - Soil testing for soil health outcomes
  - Menu of practices associated with soil health
  - Innovative initiatives in the private sector to incentivize soil health
- Research question(s) – new or existing research, or research highlights from our academia members
- An MDA program of interest, i.e. opportunities to incentivize within existing framework
- Name the key element, in your opinion, to advancing soil health among producers