Ag Input Concerns

March 18, 2021

CAST-21 Workplan (Working Draft)

Approved data and method changes need to be finalized through the WQGIT by Sept. 1, 2021

Questions/ Comments?

KEY ACTION	STATUS
Task 1: Updates to data & methods that typically occur every 2 years.	• On-going • May AgWG update: on-going ag data collecting projects
Task 2: Investigate alternative forecasting methods for ag land uses & animals **TODAY** ➡	• Nov 19 AgWG: CBPO presentation on 4 methods of forecasting • Feb AgWG; March 18 AgWG for decision
Task 3: Investigate 2012-2017 Ag Census change for fallow/idle acres	• AgWG Sept 17; NASS consulted; no new information; No further action; See Jan AgWG decision
Task 4: Investigate use of latest landcover & LiDAR imagery to better define changes in total ag (& other land use) acres	• Oct AgWG; Jan AgWG; Feb AgWG; decision pending updated landcover & LiDAR imagery for 14 prototype counties Apr AgWG
Task 5: Investigate alternatives for double-crop acre estimates	• Oct 15 AgWG; NASS consulted- no new information; No further action; no recommended change to methodology; April for decision (associated with Task 4 change to ag acre calculations)
Task 6: Consider supplemental NM for soybeans	• In process • Dec Ad Hoc; Jan Ad Hoc; Mar Ad Hoc; Apr-May AgWG
Task 7: QA/QC'd historic & current layer pop. data for Hillandale Farms (PA)	• In process • Feb Ad Hoc- general discussion; May AgWG
Task 8: Build-in Verification Ad Hoc Team products	• In process

Reminder - CAST 21 Schedule:
- Sept 1, 2021 - All data and methods approved
- Nov 1, 2021 - CAST-21 Beta release
- Jan 1, 2022 - Final CAST-21 release

https://www.chesapeakebay.net/channel_files/41834/cast21workplan_022221.pdf

Next Step NM on Soybeans
Task 7
(Further Deliberation March Ad Hoc)

ACTION: PA will work on gathering information to better understand what real-world soybean management looks like. Other jurisdictions are encouraged to do the same.

ACTION: Clarify with CBPO how the simulation of how N assumptions are handled in the model (e.g. reduction of N fixation in the model with applied N).

Animal Data

Animal Populations: explore other estimating options (MD/NY; Task 1)

Crop Production/Acres

Crop Production Acres: improve annual estimates (MD; Task 1)

Nutrient Applications/Assumptions

Fertilizer Sales and Use Data (MD; Task 1)

BMP Tracking & Reporting

Dairy Precision Feeding (PA)

BMP Effectiveness/Modeling

Winter Crop (NY/PA)

Manure Transport / Manure Treatment Technologies (PA)

CBPO- NASS annual dairy surveys.

AgWG May Updates

MD Working w/ State Chemist.

Target Date June 2021 for Report Back to the AgWG.

Forthcoming Discussions.

Future Discussions with Modeling Team.

Improving Ag Data? (TASK 1)

Crop Acreage Data

Crop Application Goal

Alternative methods to account for fitting Ag Census data to CBP needs?
- Adjusting methods for estimating crop acres (e.g. double crops)

Alternative/supplemental data sets
- Other data sets at the state or federal level?

Animal Population Data

Additional NASS Annual Survey Data may be available to inform population trends between census years (incorporated every two years)
- Dairy, Beef Cattle, Layers, Swine…

Direct from industry data can inform animal population **_trends_** between census years.
- Requires careful cooperation
- Legal, privacy assurances

Manure Generated

Other Data Issues (new data incorporation every 2 years)

Soil P data
- Gary Shenk Sept 2018 presentation to AgWG on data set incorporated into the CBWM
- **Additional soil P data is welcome and encouraged (NY & WV have made inquiries)**

Manure Nutrient Concentration Data
- Changes in management may result in changes in nutrient concentrations
- **Additional manure concentration data is welcome and encouraged**

Fertilizer Data
- More accurate allocation of fertilizer within the CBW?
  - **Jurisdictions working with state chemists**

4. Define Inorganic Fertilizer Available to Crops

CRITICAL CONCEPT:

To maintain integrity of CBWM there are two options for new data sets:

- Provide data all the way back through 1985.
  OR
- Use the **trend** in new data sets for the years available.

CBWM= Chesapeake Bay Watershed Model

Prioritizing Concerns (post CAST-21)

- AgWG Home Page
  https://www.chesapeakebay.net/who/group/agriculture_workgroup

Formula bar: `Revisit in March 2021 in CAST Ad Hoc to clarify ask and resources needed`

BMPs	ORIGINAL APPROVAL	Priority Level	CAST-21	TIMELINE	JURISDICTIONS	LEAD	CBPO Contact	ACTION	NOTE	Status
Dairy Precision Feeding	Simpson & Weammert, 2009	PA leading	Possible for 2021 Progress- If approved by relevant groups in the partnership.	TBD	PA	Bill Argstact (PA)	Mark Dubin	Presentation to AgWG/Ad Hoc on recent MUN research and suggested change in implementation tracking based on updated science. Dairy expertise necessary (e.g. Penn State dairy specialist).	PA actively working on solution to tracking challenges. Seeking flexibility in CBP requirements. This would require a change to the Simpson & Weammert (2009) report recommendations. Dr. Virginia Ishler (Penn State) and Dr. Kathy Soder (ARS), both involved in original recommendations, have more recent research on dairy herds and MUN levels. Jennifer Reed Harry (Penn Ag Ind. Assoc.) & Ron Ohrel (Mid Atlantic Dairy Assoc.) working on dairy processor co-op sub-population verification. Brady Seeley (DEP) writing up a narrative of path forward. Interested in tracking % of PA dairy population under DPF versus individual herd management. Up to 70% of PA dairy population may use DPF.	Bringing dairy expertise to AgWG/Ad Hoc to review new science team to discuss new science, tracking, and reporting for dairy. Team expects to have info for CBP in June 2021.
Rotational/Precision Grazing	STAC, 2010	N/A	N/A	N/A	PA (withdrawn)	N/A	N/A	No Action		Withdrawn
Heavy Use Area Protection (HUAP)	Loafing Lot BMP, 2003	PA Leading	Possible for 2021 Progress- If approved by relevant groups in the partnership		PA	Ted Tesler	Mark Dubin, Loretta Collins	No Action. RESOLVED 01/13/20	Track & Reporting issue. Can NRCS 561 reported as Loafing Lot Management? Is 561 exclusive to Loafing Lots (non-poultry) across all jurisdictions? Every state tracks differently, some can differentiate poultry pads from loafing lots.	Withdrawn
Heavy Use Area Protection (HUAP) - Poultry Pads	AWMS EP 2016	N/A	N/A	N/A	MD, DE, WV (withdrawn)	N/A	N/A	No Action. RESOLVED 11/13/20	Concern regarding crediting for poultry pads. Language included in 2016 AWMS EP report. Poultry pads defined as part of AWMS BMP.	Withdrawn
Winter Crop (proposed)	NM Expert Panel 2015	?Determine in AgWG	No	Next Watershed Model (possibly sooner)	PA, NY, MD		Vanessa Van Note	Revisit in March 2021 in CAST Ad Hoc to clarify ask and resources needed	PA no change in EP recs, "WINTER CROP" proposal (EP)- corn silage-man-forage (multi-species foraging & feed- greenchop. "triple cropping" over two years. Charlie White (Penn State) research. Man N uptake (not leached) NEW SCIENCE! AgWG consider EP for winter crop. legume/legume-grass hay LU as most appropriate for application of BMP.	Charlie White Jan 2021 AgWG call.

MODELING	ORIGINAL APPROVAL/CROSSOVER	Priority Level	CAST-21	TIMELINE	JURISDICTIONS	LEAD	CBPO Contact	ACTION	NOTE	Status
Manure Treatment & Transport	MTT EP 2016, Phase 6 CBWM 2017	?/next model phase	No	Next Watershed Model	PA, MD		Vanessa Van Note	PA request to AgWG for study group; Check w/ MWG on progress on refined modeling efforts and efforts in general for the CBWM.	Backfill, Local tracking of manure; 1. PA needs better tracking and reporting- pilot project Penn Ag Industries lead. SCC, PA 4r Alliance, manure-haulers & brokers possible regulatory change 2. PA wants study group on inter-county manure transport county-level budgets. AgWG study group: how to do this? Need farmers to reduce applications but need to move. Lig manure is short distance- NEED INCENTIVES for short-distance MT. MTT-Jason/Ted	Further discussion needed with MWG.
Ag Loading Rates	Ag Loading Rate Review Steering Committee	High	No	Next Watershed Model				Review of ag loading rates determined by committee under the Agricultural Modeling Subcommittee (AMS) in development of the Phase 6 model. Associated		

Sheet1

- March 22 WQGIT
  - Update on CAST-21 Progress

- March Ad Hoc:
  - Discussion NM on Soybeans
  - Clarification "Winter Crop" BMP Ask (time permitting)

- April AgWG
  - Decision Landcover/ LiDAR Data (Task 4)
  - Decision Double Crop Methods (Task 5)
  - Detailed update NM on Soybeans (Task 6)

- May AgWG
  - NM on Soybeans (Task 6)
  - Hillandale Data (Task 7)

- June
  - Update from Dairy Precision Feeding Group

What is Driving N Load Concerns?

No consensus in Ad Hoc yet…

Agricultural Loading Rates?

Ag Census (i.e., Source Of Crop Data) **?**

NM BMP Recommendations?

- Changing an Approved Expert Panel Recommendation Must Follow Science (BMP Protocol)
  - Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model

Agricultural Loading Rates

Based on Available Literature & Best Professional Judgement

"N losses from soybeans are only somewhat lower than corn, because N fixation inputs (which are poorly characterized) are apparently substituting for fertilizer inputs." (p.11)

Ag Loading Rate Review Steering Committee: Agricultural Loading Rates

Census of Agriculture

Concern Regarding Accuracy of Ag Census Crop Acres

Spatially Distributed Land Use from the Land Cover/Land Use Data Team Starting With the CAST-21 Could Mitigate Concern

Method of Modeling Double-Crop Soybeans Approved by CBP Partnership

Determined Sound by USDA-NASS

CAST-21 Workplan TASK 3

NM Expert Panel Recommendations

Land Use:
Full-Season Soybeans

On Soybeans NM Controls for P (*not N*)

Land Grant Universities Do Not Recommend N Application (Via Fertilizer or Manure)

"Core" NM BMP ☐ **N & P**
- Applies to Crop Application Goal (What is Applied to Crop)

Supplemental NM BMPs ☐ **P only**

General Thinking
- Timing & Placement of Excess N Irrelevant (Still Subject to Loss)
- Rate? Excess N Reduced *is Still Excess N* Subject to Loss…
- Fraction of Applied N Tiny Compared to Residual N From Fixation
- Applies to Total Soybean Load
  - Total Load is Primarily Residual N From Fixation

BMP Concern	CBP BMP Effectiveness Source	Next Steps
Dairy Precision Feeding (PA)	Definitions and reductions approved by the WQGIT in **2009**	**PA Action Team**
Rotational/Prescribed Grazing (PA)	Definitions and benefits were reviewed and approved by the Agriculture Workgroup and WQGIT in **2010**	**RESOLVED**
Heavy Use Area Protection-NRCS 561 (PA)	Loafing Lot Management definitions and reductions approved by the Chesapeake Bay Program's Nutrient Subcommittee in **2003**.	**RESOLVED**
Nutrient Management on Pasture (NY/PA)	Nutrient Management Practices for use in the Phase 6.0 Chesapeake Bay Program Watershed Model (**2016**)	**RESOLVED**
Commodity Cover Crops (NY/PA)	Cover Crops Practices for use in Phase 6 of the Chesapeake Bay Watershed Model (**2016**)	**EP Chair discussion with AgWG (Dec 2020) Charlie White, Penn State @ AgWG Jan 2021**
Manure Transport / Manure Treatment Technologies (PA)	• *Manure Treatment Technologies*: Recommendations from the Manure Treatment Technologies Expert Panel to the CBP's WQGIT to define Manure Treatment Technologies as a Best Management Practice (**2016**) • *Manure Transport*: definition and benefits have remained in use **since review and approval by the CBP partnership's source sector workgroups for tributary strategy development**.	**Work with MWG**
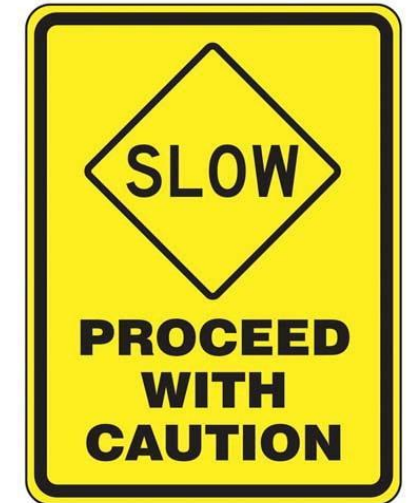
SLOW
PROCEED WITH CAUTION

<u>Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model</u>

AMS= Agricultural Modeling Subcommittee
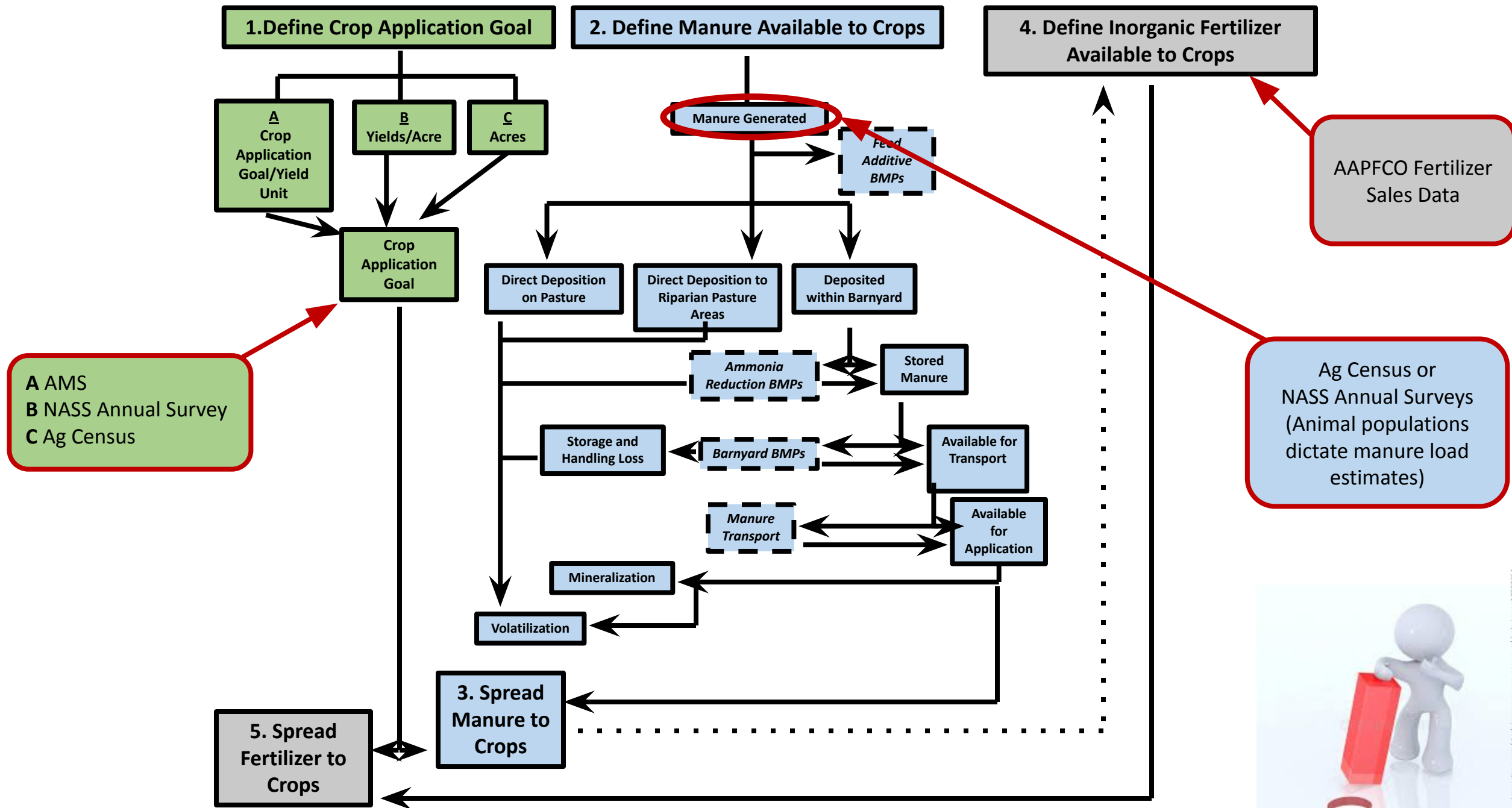
Source for *distribution* of statewide populations can change.

Example: Pennsylvania provides fraction of cattle in every county for the year 2019, and these fractions are used to distribute TOTAL statewide cattle populations from the Census of Agriculture.

Census
100 Cattle

Outside Watershed
15%

County A
35%

County B
0%

County C
50%

PA Data
(75 Cattle)
100 Cattle

Outside Watershed
25%

County A
25%

County B
10%

County C
40%

Source of ***TOTAL*** statewide populations will not change for Phase 6 Watershed Model.

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