

AgWG Ad Hoc CAST Issues

September 7th, 2020

Why Are We Here?

CAST-19 (i.e. most recent update of the watershed model)

- Release approved, with reservations from some partners...
 - Reservations included concerns regarding the agricultural data used to inform the model
 - AND how that data is utilized
 - See CBPO response to CAST-19 feedback under “[Model Documentation](#)”
 - [Comments from the Jurisdictions and the Chesapeake Bay Program Responses](#)

- **Ag Census** - Determine alternative or supplemental source of data. The data we use are crop land acres, harvested acres, and crop yields (bushels per acre, for example).
 - The Agriculture Workgroup has already begun discussions on the purpose and use of the Ag Census data
- **Soybeans** - The nutrient management expert panel did not consider that the Nutrient Management BMP could be applied to full season soybeans' nitrogen load. That should be reevaluated since there is a minimal amount of nitrogen applied to the full season soybean crop.
- **Double Cropping** - There are unexpected effects from the current methodology. The method for determining double cropped acres and the crops that are matched with each other in a year should be reevaluated. In addition, there is an existing glitch that could be corrected by using a more robust way of determining the total vegetable acres.

From Water Quality GIT
presentation to
Management Board
7/9/20

CAST-21 Workplan (Working Draft)

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

| KEY ACTION | STATUS |
|--|---|
| Task 1: Updates to data & methods that typically occur every 2 years. | <ul style="list-style-type: none">• On-going• In process: “Rules of the Road” document for data submissions |
| Task 2: Investigate alternative forecasting methods for ag land uses & animals | <ul style="list-style-type: none">• In process• CBPO presentation to AgWG in Oct/Nov |
| Task 3: Investigate 2012-2017 Ag Census change for fallow/idle acres | <ul style="list-style-type: none">• In process• Under review within NASS• AgWG presentation Sept 17 |
| Task 4: Investigate use of latest landcover & LiDAR imagery to better define changes in total ag (& other land use) acres | <ul style="list-style-type: none">• In process• Initial LUWG presentation to AgWG in Oct (first of several) |

CAST-21 Workplan (Working Draft)

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| KEY ACTION | STATUS |
|---|--|
| Task 5: Investigate alternatives for double-crop acre estimates | <ul style="list-style-type: none">• On-going• Fall presentation to AgWG |
| Task 6: Consider supplemental NM for soybeans | <ul style="list-style-type: none">• In process• Ad Hoc Discussion Meeting #2• Return to AgWG Nov/Dec |
| Task 7: QA/QC'd historic & current layer pop. data for Hillandale Farms (PA) | <ul style="list-style-type: none">• In process• CBPO- future presentation to AgWG |
| Task 8: Build-in Verification Ad Hoc Team products | <ul style="list-style-type: none">• In process• Meeting #2 Sept 8 |

Improving Ag Data?

Crop Acreage Data

Alternative methods to account for fitting Ag Census data to CBP needs?

- Adjusting methods for estimating crop acres (e.g. double crops, vegetables, etc.)

Alternative/supplemental data sets

- Other data sets at the state or federal level?

Crop
Application
Goal

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**

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?

4. Define Inorganic Fertilizer
Available to Crops

KEY ACTION

Task 1: Updates to data & methods that typically occurring every 2 years.

STATUS

- On-going
- In process: “Rules of the Road” document for data submissions

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.

| KEY ACTION | | STATUS | | |
|---|------------------|---|---------------|-----------------|
| Task 3: Investigate 2012-2017 Ag Census change for fallow/idle acres | | <ul style="list-style-type: none">• In process• Under review within NASS• AgWG presentation Sept 17 | | |
| <u>Cropland in cultivated summer fallow</u> | | | | |
| | <u>2012 Area</u> | <u>2017 Area</u> | <u>Change</u> | <u>% Change</u> |
| DE | 575 | 788 | 213 | 37 |
| MD | 5693 | 9432 | 3739 | 66 |
| NY | 24388 | 39419 | 15031 | 62 |
| PA | 29664 | 50571 | 20907 | 70 |
| VA | 11543 | 15878 | 4335 | 38 |
| WV | 431 | 4124 | 3693 | 857 |
| Total | 72294 | 120212 | 47918 | 66 |
| <u>Cropland idle of used for cover crops or soil improvement but not harvested and not pastured or grazed</u> | | | | |
| | <u>2012 Area</u> | <u>2017 Area</u> | <u>Change</u> | <u>% Change</u> |
| DE | 9219 | 8556 | -663 | -7 |
| MD | 85703 | 97210 | 11507 | 13 |
| NY | 115147 | 138155 | 23008 | 20 |
| PA | 298783 | 297370 | -1413 | 0 |
| VA | 73030 | 116541 | 43511 | 60 |
| WV | 9778 | 25172 | 15394 | 157 |
| Total | 591660 | 683004 | 91344 | 15 |

~300,000 lb
N load

| KEY ACTION | STATUS |
|--|---|
| Task 6: Consider supplemental NM for soybeans | <ul style="list-style-type: none"> • In process • Ad Hoc Discussion Meeting #2 • Presentation to AgWG in Nov |

Soybean Crop Application Goal

Full Season Soybeans

- 0.12 lbs N/bu (~**5.7 lbs N/ac**)
- CBW Average: (~**3.58 lb/N ac**)
- UME, Penn State, VT recommend zero N application

Double Cropped Soybeans

- Zero N applications
- UME, Penn State, VT recommend zero N application

Assumption: “Nitrogen application is not recommended for soybean production, however, **use of commercially available fertilizer formulations may result in application of up to 50 lb N / acre when fertilizer formulation and application rate is determined by crop P2O5, K2O, S, or other nutrient needs.** Organic waste nitrogen application to full-season soybean is not recommended because it is an agronomically inefficient use of applied nutrients. Organic wastes should only be applied to small grain - double-crop soybean rotations at rates and timings to supply the recommended nitrogen rate to the small grain crop.” – [UME SFM-1](#)

NM Supplemental Percent Reductions

(Only after Core NM is applied)

| Land Use | Nutrient Management BMP | | | Nutrient Management BMP | | |
|---------------------------|-------------------------|--------------------------|-----------------------|-------------------------|--------------------------|-----------------------|
| | N Rate Supplemental | N Placement Supplemental | N Timing Supplemental | P Rate Supplemental | P Placement Supplemental | P Timing Supplemental |
| Full Season Soybeans | 0% | 0% | 0% | 5% | 10% | 1% |
| Grain w/ Manure | 15% | 5% | 10% | 10% | 20% | 20% |
| Grain w/o Manure | 5% | 3% | 5% | 5% | 10% | 1% |
| Legume Hay | 0% | 0% | 0% | 1% | 10% | 1% |
| Silage w/ Manure | 15% | 5% | 10% | 10% | 20% | 20% |
| Silage w/o Manure | 5% | 3% | 5% | 5% | 10% | 1% |
| Small Grains and Grains | 5% | 3% | 10% | 5% | 10% | 1% |
| Small Grains and Soybeans | 5% | 3% | 10% | 5% | 10% | 1% |
| Specialty Crop High | 15% | 5% | 5% | 5% | 10% | 1% |
| Specialty Crop Low | 5% | 3% | 5% | 5% | 10% | 1% |
| Other Agronomic Crops | 5% | 3% | 5% | 5% | 10% | 1% |
| Other Hay | 0% | 3% | 5% | 0% | 10% | 1% |
| Pasture | 0% | 0% | 0% | 0% | 0% | 0% |

Data provided by [Phase 6.0 Nutrient Management Expert Panel](#)

CRITICAL CONCEPT:

Supplemental NM is applied to Edge of Stream Delivery

Concern:

Nutrient management on full-season soybeans?

YES: “core NM”

NO: “supplemental NM” for N rate, placement & timing

Why? NM on soybeans is controlling for P...

Given the same acreage...

A shift from double-crop to full-season soybeans will result in an increase in attributed N load.

CRITICAL CONCEPT:

N load attributed to soybean acres includes estimated leaching/runoff of residual N based on scientific literature review.

Ag Loading Rate Review Steering Committee

[Agricultural Loading Rates](#)

| KEY ACTION | STATUS |
|--|--|
| Task 5: Investigate alternatives for double-crop acre estimates | <ul style="list-style-type: none">• On-going• Fall presentation to AgWG |

Model Assumption

Full Season (under Core NM):

Assume 40 bu/ac @ 100 ac

$40 \text{ bu/ac} \times 0.12 \text{ lbs N/bu} \times 1.0 \times 100 \text{ ac} =$

480 lbs N applied

Double-Crop

Assume 25 bu/ac @ 100 ac

$25 \text{ bu/ac} \times 0 \text{ lbs N/bu} \times 1.0 \times 100 \text{ ac}$

0 lbs N applied

Crop Application Goal on Major Crops

Crop
Application
Goal

$\text{lbs of N/Year} = \text{State-Supplied lbs of N/Application Goal Yield Unit/Year} \times \text{Yield/Year} \times 1.1^*$

| Crop | DoubleCrop | Nutrient | Yield Unit | DE_1 | MD_1 | NY_1 | PA_1 | VA_1 | WV_1 |
|--|------------|----------|------------|-------|-------|-------|-------|-------|-------|
| Alfalfa Hay Harvested Area | N | TN | dry tons | 1 | 1 | 1 | 1 | 1 | 1 |
| Alfalfa Hay Harvested Area | N | TP | dry tons | 5 | 5 | 5 | 6 | 5 | 5 |
| Corn for Grain Harvested Area | N | TN | bushels | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Corn for Grain Harvested Area | N | TP | bushels | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| Corn for Grain Harvested Area | Y | TN | bushels | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 |
| Corn for Grain Harvested Area | Y | TP | bushels | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| Wheat for Grain Harvested Area | N | TP | bushels | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 | 0.31 |
| Wheat for Grain Harvested Area | N | TN | bushels | 1.25 | 1.25 | 1 | 1 | 1.25 | 1.25 |
| Wheat for Grain Harvested Area | Y | TP | bushels | 0.465 | 0.465 | 0.465 | 0.465 | 0.465 | 0.465 |
| Wheat for Grain Harvested Area | Y | TN | bushels | 1.25 | 1.25 | 1 | 1 | 1.25 | 1.25 |
| Pastureland and rangeland other than cropland and woodland pastured Area | N | TN | acres | 15 | 15 | 15 | 15 | 15 | 15 |
| Pastureland and rangeland other than cropland and woodland pastured Area | N | TP | acres | 4 | 4 | 4 | 4 | 4 | 4 |
| Soybeans for beans Harvested Area | N | TN | bushels | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| Soybeans for beans Harvested Area | N | TP | bushels | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 | 0.33 |
| Soybeans for beans Harvested Area | Y | TN | bushels | 0 | 0 | 0 | 0 | 0 | 0 |
| Soybeans for beans Harvested Area | Y | TP | bushels | 0 | 0 | 0 | 0 | 0 | 0 |

Data provided by states after consultation with nutrient management program staff.

Chesapeake Bay Program Phase 6 Beta 3 Watershed Model Webinar
July 11, 2016

*AMS elected to multiply yearly yield by 1.1 assuming farmers are optimistic, and average yields are often under-estimated.

CRITICAL CONTEXT:
“Crop Application Goal”
assumes Core NM is in place

Full Season Beans receive
0.12 lb N/bu
&
0.33 lb P/bu

Double Crop Beans
0 lb N/bu
&
0 lb P/bu

*NM on full season beans is
controlling/managing for
phosphorus!*

Application Goal Multipliers

| Land Use | <u>Non NM N</u> Multiplier | NM N Multiplier | <u>Non NM P</u> Multiplier | NM P Multiplier |
|-----------------------------|-------------------------------|--------------------|-------------------------------|--------------------|
| Full Season Soybeans | 1.2 | 1.0 | 1.5 | 1.0 |
| Grain with Manure | 1.3 | 1.0 | 3 | 1.0 |
| Grain without Manure | 1.2 | 1.0 | 1.5 | 1.0 |
| Legume Hay | 1.2 | 1.0 | 1 | 1.0 |
| Silage with Manure | 1.4 | 1.0 | 3 | 1.0 |
| Silage without Manure | 1.2 | 1.0 | 1.5 | 1.0 |
| Small Grains and Grains | 1.2 | 1.0 | 1.5 | 1.0 |
| Small Grains and Soybeans | 1.2 | 1.0 | 1.5 | 1.0 |
| Specialty Crop High | 1.3 | 1.0 | 2 | 1.0 |
| Specialty Crop Low | 1.2 | 1.0 | 2 | 1.0 |
| Other Agronomic Crops | 1.1 | 1.0 | 1.5 | 1.0 |
| Other Hay | 1 | 1.0 | 1 | 1.0 |
| Pasture | 1 | 1.0 | 1 | 1.0 |

Full Season Soybeans:
40 bu/ac @ 100 ac

Core NM:

40 bu/ac x 0.12 lbs N/bu x 1.0 x 100 ac =

480 lbs N applied

40 bu/ac x 0.33 lbs P/bu x 1.0 x 100 ac =

1,320 lbs P applied

Non NM:

40 bu/ac x 0.12 lbs N/ac x 1.2 x 100 ac =

570 lbs N applied

40 bu/ac x 0.33 lbs P/bu x 1.5 x 100 ac =

1,980 lbs P applied

CRITICAL CONCEPT:

Multipliers are applied to
Crop Application Goal

Data provided by [Phase 6.0 Nutrient Management Expert Panel](#)

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Questions/
Comments?

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BREAK
(5 min)

July 2020 AgWG Action: Loretta Collins will reach out to the state jurisdictional members to curate a list of issues to be addressed related to Phase 6 watershed model ag inputs before release of CAST-21. An ad hoc group will be formed to discuss these issues, seek resolution, and bring recommendations back to the AgWG.

Are there any issues related to the agricultural inputs to the watershed model (CAST) that you would like discussed that are not included in the CAST-21 Workplan?

Additional Concerns- MD

Animal Populations: explore other estimating options

- ☐ Improve livestock (dairy, equine, beef) population estimates
 - ☐ Reduction goals for some counties unattainable due to inaccurate population assumptions (i.e. poultry mortality, waste management).

Crop Production Acres: improve annual estimates

- ☐ MD's Nutrient Management Annual Implementation Report (AIR)
- ☐ other means (USDA-FSA crop reporting)

Fertilizer sales and use data

- ☐ Better understanding via state chemist

Additional Concerns- NY

Animal Populations: explore other estimating options

- ☐ Over-estimation for counties partially within the watershed

Cover Crops:

- ☐ Additional category Commodity Cover Crops with Manure (not inorganic fertilizer).
 - ☐ Encourage/credit cover cropping in forage-based dairy cropping systems

Nutrient Management on Pasture:

- ☐ Credit options and/or inorganic fertilizer rates

Additional Concerns - PA

Dairy Precision Feeding:

- ☐ Revisit the criteria for measurement of implementation

Rotational/Prescribed Grazing:

- ☐ Revisit the criteria for determining implementation

Cover Crops:

- ☐ Revisit the criteria for crediting commodity cover crop (harvested, nutrients applied)

Manure Transport / Manure Treatment Technologies:

- ☐ Revisit the requirement to apply NM to offset an assumed “backfill” of inorganic application
 - ☐ Assumption does not adequately reflect current practice

Heavy Use Area Protection (NRCS 561):

- ☐ HUAP is not currently credited
- ☐ HUAP should be synonymous to Loafing Lot Management BMP

Nutrient Management on Pasture:

- ☐ Crediting NM on pasture/non-cropland acres

Challenges

❖ Resources

- ❖ Capacity is limited at the CBPO & state agencies

❖ BMP Effectiveness Protocol

- ❖ Care to follow science

Animal Data

Crop Production/Acres

**Nutrient
Applications/Assumptions**

BMP Tracking & Reporting

BMP Effectiveness

Animal Data

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

Crop Production/Acres

Crop Production Acres: improve annual estimates (MD)

Nutrient Applications/Assumptions

Fertilizer Sales and Use Data (MD)

BMP Tracking & Reporting

Dairy Precision Feeding (PA)

Rotational/Prescribed Grazing (PA)

Heavy Use Area Protection- NRCS 561 (PA)*

BMP Effectiveness

Nutrient Management on Pasture (NY/PA)

Commodity Cover Crops (NY/PA)

Heavy Use Area Protection- NRCS 561 (PA)*

Manure Transport / Manure Treatment Technologies (PA)

BMP Tracking & Reporting

Dairy Precision Feeding (PA)

Rotational/Prescribed Grazing (PA)

Heavy Use Area Protection- NRCS 561 (PA)*

BMP Effectiveness

Nutrient Management on Pasture (NY/PA)

Commodity Cover Crops (NY/PA)

Heavy Use Area Protection- NRCS 561 (PA)*

Manure Transport / Manure Treatment Technologies (PA)*

All BMP effectiveness estimates are subject to potential future reviews according to the availability of new scientific information and CBP partnership needs, as defined in the [BMP Review Protocol](#).

IIB. Review Process for Existing Estimates or Treatment Processes

If approved by the WQGIT Chair, the review of existing estimates and, when applicable, the definition of a BMP can be conducted within a source Workgroup in consultation with the WTWG. This approach should reduce the amount of time necessary to conduct the review because the definition(s) have already been developed, a background of available data already exists, and issues of how the practices or land use is incorporated into the CBWM have been addressed. Reviews of existing estimates should follow the guidelines listed in IIA above except that a separate Panel is not convened and the information generated is added to the existing support documentation for the estimate.

| BMP Concern | CBP BMP Effectiveness Source |
|---|--|
| Dairy Precision Feeding (PA) | Definitions and reductions approved by the WQGIT in 2009 |
| Rotational/Prescribed Grazing (PA) | Definitions and benefits were reviewed and approved by the Agriculture Workgroup and WQGIT in 2010 |
| Heavy Use Area Protection- NRCS 561 (PA) | Loafing Lot Management definitions and reductions approved by the Chesapeake Bay Program's Nutrient Subcommittee in 2003 . |
| Nutrient Management on Pasture (NY/PA) | Nutrient Management Practices for use in the Phase 6.0 Chesapeake Bay Program Watershed Model (2016) |
| Commodity Cover Crops (NY/PA) | Cover Crops Practices for use in Phase 6 of the Chesapeake Bay Watershed Model (2016) |
| Manure Transport / Manure Treatment Technologies (PA) | <ul style="list-style-type: none"> • <i>Manure Treatment Technologies</i>: Recommendations from the Manure Treatment Technologies Expert Panel to the CBP's WQGIT to define Manure Treatment Technologies as a Best Management Practice (2016) • <i>Manure Transport</i>: definition and benefits have remained in use since review and approval by the CBP partnership's source sector workgroups for tributary strategy development. |

| BMP Concern | CBP BMP Effectiveness Source |
|------------------------------|--|
| Dairy Precision Feeding (PA) | Definitions and reductions approved by the WQGIT in 2009 Find original documentation. |

Dairy Precision Feeding:

- ☐ revisit the criteria for measurement of implementation

Harrison, J.H., et al. 2013. An introduction to NRCS Feed Management Practice Standard 592: <http://articles.extension.org/pages/11312/an-introduction-to-natural-resources-conservation-service-nrcs-feed-management-practice-standard-592>

eXtension.org, Dairy video archive: <http://articles.extension.org/pages/15830/dairy-video-archive>

Penn State Extension. Precision feeding dairy heifers: strategies and recommendations. <https://extension.psu.edu/precision-feeding-dairy-heifers-strategies-and-recommendations>

All BMP effectiveness estimates are subject to potential future reviews according to the availability of new scientific information and CBP partnership needs, as defined in the [BMP Review Protocol](#).

| BMP Concern | CBP BMP Effectiveness Source |
|------------------------------------|---|
| Rotational/Prescribed Grazing (PA) | Definitions and benefits were reviewed and approved by the Agriculture Workgroup and WQGIT in 2010 |

Rotational/Prescribed Grazing:

- ☐ Revisit the criteria for determining implementation
- ☐ State regs and/or tech standards

Find original documentation.

Chesapeake Bay Program. 2015. [Video]. Restoration Spotlight: The Grass Whisperer gets to the root of grazing.

<https://vimeo.com/144890052>

USDA NRCS. Pasture resources.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/rangepasture/pasture/>

University of Maryland Extension. Publications: [Horse] Pasture Management:

<https://extension.umd.edu/horses/resources/publications>

All BMP effectiveness estimates are subject to potential future reviews according to the availability of new scientific information and CBP partnership needs, as defined in the [BMP Review Protocol](#).

| BMP Concern | CBP BMP Effectiveness Source |
|---|---|
| Heavy Use Area Protection- NRCS 561 (PA)* | <p>Loafing Lot Management definitions and reductions approved by the Chesapeake Bay Program's Nutrient Subcommittee in 2003.</p> <p>Find original documentation</p> |

Heavy Use Area Protection (NRCS 561):

- ☐ Heavy Use Area Protection HUAP is not currently credited
- ☐ HUAP should be synonymous to Loafing Lot Management BMP

Loafing lot management is the stabilization of areas frequently and intensively used by people, animals or vehicles by establishing vegetative cover, surfacing with suitable materials, and/or installing needed structures. *This does not include poultry pad installation.* ([CBP BMP Quick Guide](#))

DEFINITION: Heavy Use Area Protection is used to stabilize a ground surface that is frequently and intensively used by people, animals, or vehicles.

PURPOSE: Heavy Use Area Protection is used: • To provide a stable, non-eroding surface for areas frequently used by animals, people or vehicles • To protect or improve water quality
https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1263184.pdf

All BMP effectiveness estimates are subject to potential future reviews according to the availability of new scientific information and CBP partnership needs, as defined in the [BMP Review Protocol](#).

| BMP Concern | CBP BMP Effectiveness Source |
|--|--|
| Nutrient Management on Pasture (NY/PA) | Nutrient Management Practices for use in the Phase 6.0 Chesapeake Bay Program Watershed Model (2016) |

Nutrient Management on Pasture:

☐ Crediting NM on pasture/non-cropland acres

Q10. Can states take credit for practices on pasture? A10. No. The panel specifically recommended reductions to application goals and runoff estimates on non-pasture acres only. (p.49)

“N Core NM BMP multiplier values for Other Hay and Pasture were set at 1.00 because the CBP Partnership’s modification of the LGU N application recommendations **created a uniform and much-reduced N application rate goal for these two agricultural land uses that included an assumed implementation rate of NM BMPs across the entire CBW**. Therefore, the Panel could not apply a N application rate BMP multiplier other than 1.00 to these two land uses.” (p.24)

“...Panel recommendations are **avoiding the ‘double crediting’** of nutrient management on these land uses as the “model credit” as already been represented in the base model condition established by the AMS application rate table. One potential option for the partnership to consider would be the representation of several management levels for pasture land uses in the future. Currently, only one pasture land use is available in Phase 6.” (p. 99-100)

| BMP Concern | CBP BMP Effectiveness Source |
|-------------------------------|---|
| Commodity Cover Crops (NY/PA) | Cover Crops Practices for use in Phase 6 of the Chesapeake Bay Watershed Model (2016) |

Cover Crops:

- ☐ Additional category Commodity Cover Crops with Manure (not inorganic fertilizer).
 - ☐ Encourage/credit cover cropping in forage-based dairy cropping systems
- ☐ Revisit the criteria for crediting commodity cover crop (harvested, nutrients applied)

Both require change to EP recommendations

| BMP Concern | CBP BMP Effectiveness Source |
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| Manure Transport / Manure Treatment Technologies (PA) | <ul style="list-style-type: none"> • <i>Manure Treatment Technologies:</i> Recommendations from the Manure Treatment Technologies Expert Panel to the CBP's WQGIT to define Manure Treatment Technologies as a Best Management Practice (2016) • <i>Manure Transport:</i> definition and benefits have remained in use since review and approval by the CBP partnership's source sector workgroups for tributary strategy development. |

Manure Transport / Manure Treatment Technologies:

- ☐ Revisit the requirement to apply NM to offset an assumed “backfill” of inorganic application
- ☐ Assumption does not adequately reflect current practice

There is no requirement to apply NM
“Backfill” is part of MTT EP report recommendations.

Animal Data

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



NASS Annual Surveys
State Data (QA/QC'd)
Industry Data (QA/QC'd)
CBPO evaluating forecasting methods

Crop Production/Acres

Crop Production Acres: improve annual estimates (MD)



State Data (QA/QC'd)
Industry Data (QA/QC'd)
CBPO evaluating forecasting methods

Nutrient Applications/Assumptions

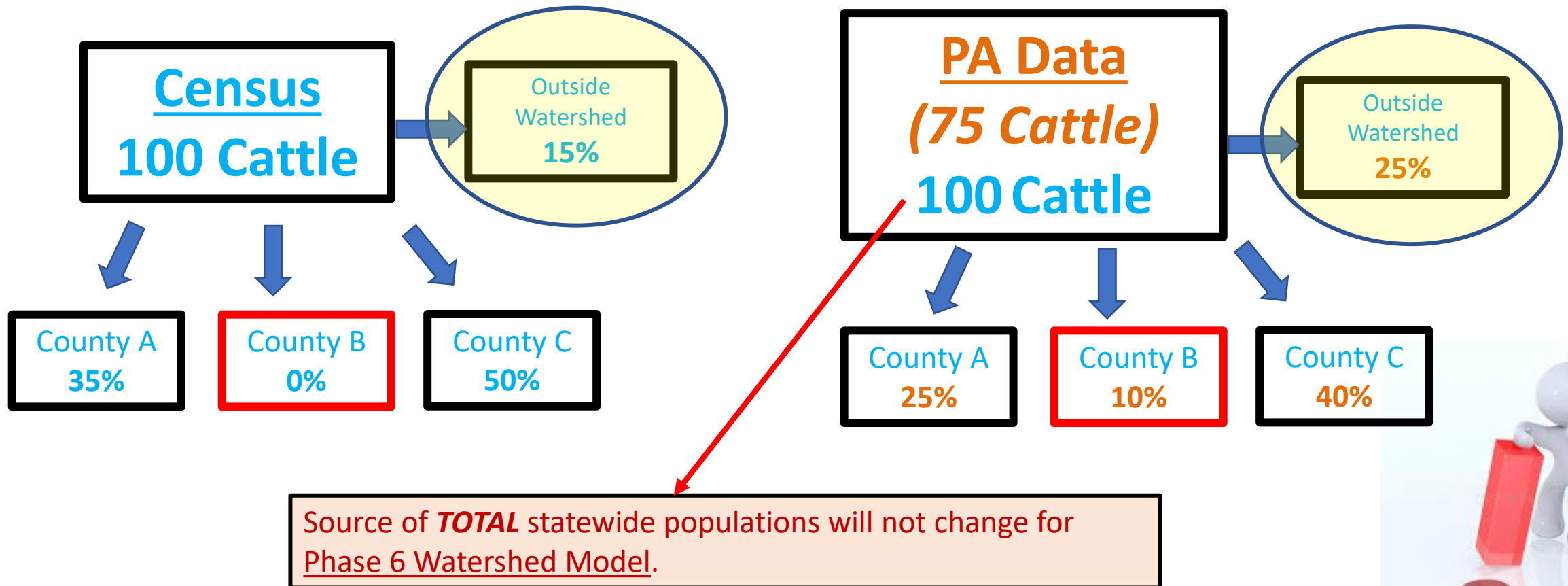
Fertilizer Sales and Use Data (MD)



Pilot project in VA for fertilizer data
Communication with state chemists

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.



Improving Ag Data?

Crop Acreage Data

Alternative methods to account for fitting Ag Census data to CBP needs?

- Adjusting methods for estimating crop acres (e.g. double crops, vegetables, etc.)

Alternative/supplemental data sets

- Other data sets at the state or federal level?

Crop
Application
Goal

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**

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?

4. Define Inorganic Fertilizer
Available to Crops

KEY ACTION

Task 1: Updates to data & methods that typically occurring every 2 years.

STATUS

- On-going
- **In process: "Rules of the Road" document for data submissions**

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.

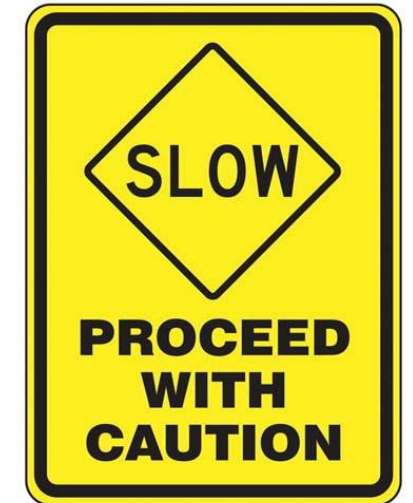
NEXT STEPS



| KEY ACTION | STATUS |
|---|---|
| Task 1: Updates to data & methods that typically occur every 2 years. Animal Populations: explore other estimating options (MD/NY) Crop Production Acres: improve annual estimates (MD) Fertilizer sales and use data (MD) | <ul style="list-style-type: none"> On-going In process: "Rules of the Road" document for data submissions CBPO needs state input (e.g. partial counties) |
| Task 2: Investigate alternative forecasting methods for ag land uses & animals | <ul style="list-style-type: none"> In process CBPO presentation to AgWG in Oct/Nov |
| Task 3: Investigate 2012-2017 Ag Census change for fallow/idle acres | <ul style="list-style-type: none"> In process Under review within NASS |
| Task 4: Investigate use of latest landcover & LiDAR imagery to better define changes in total ag (& other land use) acres | <ul style="list-style-type: none"> In process Initial LUWG presentation to AgWG in Oct (first of several) |
| Task 5: Investigate alternatives for double-crop acre estimates | <ul style="list-style-type: none"> On-going Fall presentation to AgWG |
| Task 6: Consider supplemental NM for soybeans | <ul style="list-style-type: none"> In process Ad Hoc Discussion Meeting #2 Return to AgWG Nov NEXT STEP: REACH OUT TO NM EP- BRING INFO TO NEXT AD HOC |
| Task 7: QA/QC'd historic & current layer pop. data for Hillandale Farms (PA) | <ul style="list-style-type: none"> In process CBPO- future presentation to AgWG |
| Task 8: Build-in Verification Ad Hoc Team products | <ul style="list-style-type: none"> In process Meeting #2 Sept 8 |



| BMP Concern | CBP BMP Effectiveness Source | Next Steps |
|---|--|---|
| Dairy Precision Feeding (PA) | Definitions and reductions approved by the WQGIT in 2009 | Ad Hoc- Review BMP documentation (FALL 2020) |
| Rotational/Prescribed Grazing (PA) | Definitions and benefits were reviewed and approved by the Agriculture Workgroup and WQGIT in 2010 | Ad Hoc- Review BMP documentation (FALL 2020) |
| Heavy Use Area Protection- NRCS 561 (PA) | Loading Lot Management definitions and reductions approved by the Chesapeake Bay Program's Nutrient Subcommittee in 2003 . | Ad Hoc- Review BMP documentation Invite NRCS for discussion (FALL 2020) |
| Nutrient Management on Pasture (NY/PA) | Nutrient Management Practices for use in the Phase 6.0 Chesapeake Bay Program Watershed Model (2016) | Ad Hoc- Review BMP documentation Invite NRCS for discussion (FALL 2020) |
| Commodity Cover Crops (NY/PA) | Cover Crops Practices for use in Phase 6 of the Chesapeake Bay Watershed Model (2016) | AgWG- Invite EP Chair to present to AgWG (Jan-Feb 2021) |
| Manure Transport / Manure Treatment Technologies (PA) | <ul style="list-style-type: none"> <i>Manure Treatment Technologies</i>: Recommendations from the Manure Treatment Technologies Expert Panel to the CBP's WQGIT to define Manure Treatment Technologies as a Best Management Practice (2016) <i>Manure Transport</i>: definition and benefits have remained in use since review and approval by the CBP partnership's source sector workgroups for tributary strategy development. | Ad Hoc- Review BMP documentation Invite NRCS for discussion (Jan-Mar 2021) |



[Protocol for the Development, Review, and Approval of Loading and Effectiveness Estimates for Nutrient and Sediment Controls in the Chesapeake Bay Watershed Model](#)

Moving Forward

- Post list of concerns on AgWG website
- Update AgWG on today's meeting (Sept 17)
 - Post meeting minutes on AgWG page
 - Create Google Drive for Ad Hoc materials
 - Next meeting: Late October?
- Prioritize additional concerns from state
 - Impact on loads?
 - WIP Goals?
 - Interested parties?
- Time Table
 - CAST-21 Workplan is prioritized by CBP partnership
 - Additional concerns
 - May need states to take lead
 - May need OK from WQGIT for Expert Panel issues
 - EP issues may require significant resources
 - Sept 2021 deadline may not be feasible



