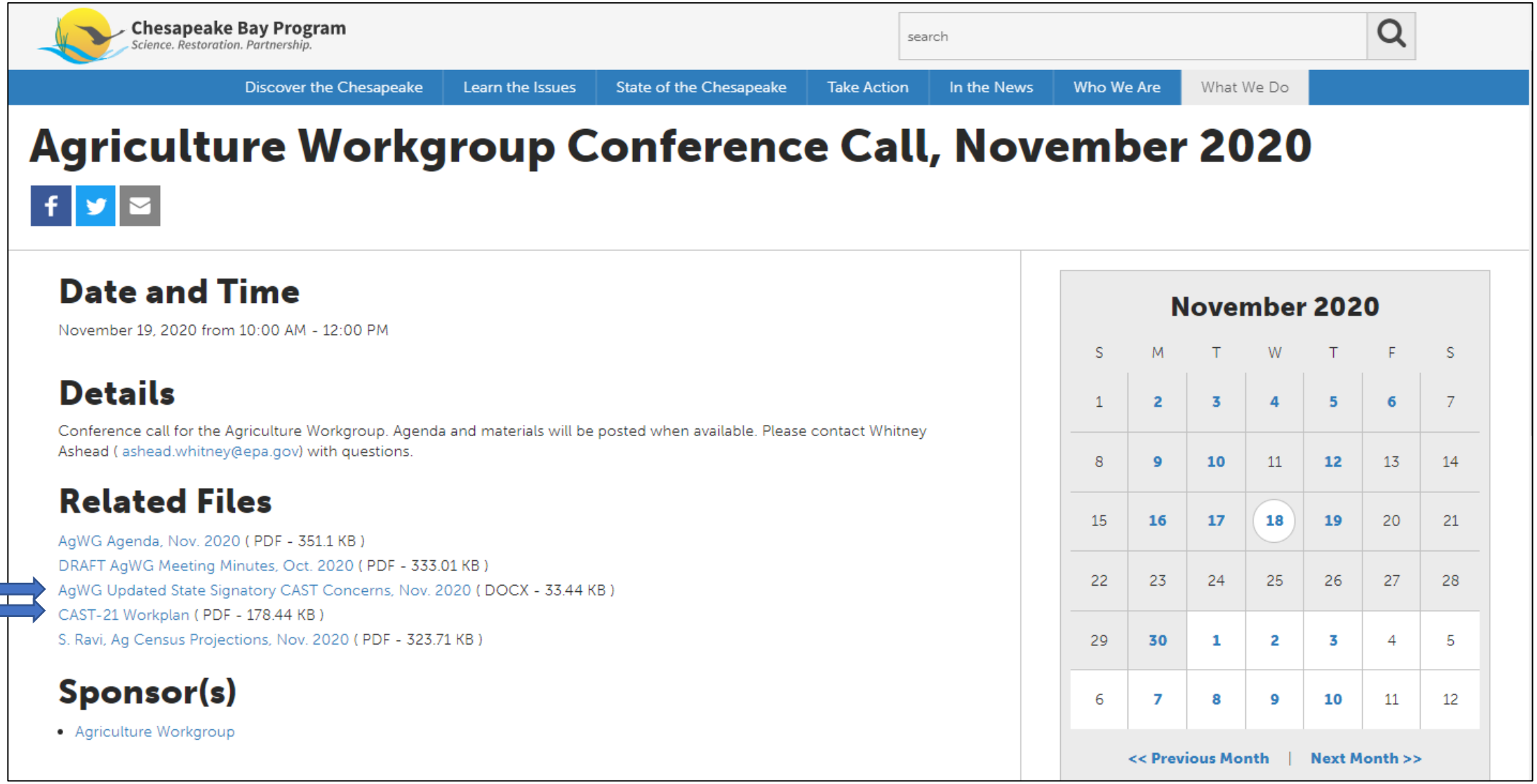
AgWG CAST Issues

November 19th, 2020

https://www.chesapeakebay.net/what/event/agriculture_workgroup_conference_call_november_2020



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 • In process: "Rules of the Road" document for data submissions
Task 2: Investigate alternative forecasting methods for ag land uses & animals	• In process • Nov 19: CBPO presentation on 4 methods of forecasting
Task 3: Investigate 2012-2017 Ag Census change for fallow/idle acres	• Sept 17 AgWG presentation (L. Collins, D. Montali) • Consulted NASS, no AgWG feedback • No further action: Seek clarity via landcover & LiDAR imagery (Task 4)
Task 4: Investigate use of latest landcover & LiDAR imagery to better define changes in total ag (& other land use) acres	• Oct 15 AgWG: P. Claggett, USGS & J. Czawlytko, Chesapeake Conservancy • Send inquiries to Peter Claggett • Return in Jan/Feb 2021 for decision
Task 5: Investigate alternatives for double-crop acre estimates	• Oct 15 Oct AgWG (O. Devereux) • Consulted NASS: agreed with estimation method, no partnership feedback • No further action
Task 6: Consider supplemental NM for soybeans	• Dec Ad Hoc & AgWG
Task 7: QA/QC'd historic & current layer pop. data for Hillandale Farms (PA)	• In process • CBPO- future presentation to AgW
Task 8: Build-in Verification Ad Hoc Team products	• In process • Meeting #2 Sept 8

TODAY

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

Challenges

September AgWG Call:

Action: The Ad Hoc Cast Concerns group will discuss and prioritize CAST concerns raised in addition to the current “CAST-21 Workplan” and bring recommendations back to the AgWG.

October AgWG Call:

Action: AgWG members and interested parties are asked to review materials and send feedback to Loretta Collins (lcollins@chesapeakebay.net) and Gary Felton (gfelton@umd.edu) with additional feedback regarding today’s discussion of CAST concerns by COB Friday November 6th.

Resources

- Capacity is limited at the CBPO & state agencies

BMP Effectiveness Protocol

- Care to follow science

Feedback Received

Nutrient Management on Pasture

- Review of CAST data sources for Phase 6 with Ad Hoc Group
  - Issue resolved

“Winter Crop” BMP

- Would like to resolve before new watershed model- Bill A.
  - Schedule presentation on recent research on N fate following fall-manured forage crops.

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)**

~~Nutrient Management on Pasture (NY/PA)~~ Resolved

BMP Tracking & Reporting

Dairy Precision Feeding (PA)

Heavy Use Area Protection- NRCS 561 (PA)

BMP Effectiveness/Modeling

Winter Crop (NY/PA)

~~Heavy Use Area Protection (Poultry Pads- DE/MD/WV)~~ Resolved

Manure Transport / Manure Treatment Technologies (PA)

CAST Workplan Task 1:

Updates to data & methods that typically occur every 2 years.

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)**

Improving Ag Data?

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.

- 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.

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

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

State	Cluster	Concern & Updates	CAST-21 Priority?* /Status	Action (First Steps)	**FEEDBACK RECEIVED** & NOTES **(NOV)**
MD/NY	Animal Data	**Improve animal population estimates** • Explore other estimating options: Dairy, Equine, Beef • Accounting for partial CBW counties.	High/on-going with CAST updates- (**CAST-21 Workplan: TASK 1**)	<u>Winter 2020-2021</u> • Loretta Collins will address NASS annual surveys for dairy. • State report partial county animal population ratios to CBPO. • Mark Dubin will update AgWG on animal characterization studies.	Loretta work with CBPO staff on possible use of annual NASS data for dairy Schedule Mark Dubin for AgWG update
MD/PA	Crop Production Data	**Improve annual crop estimates** • Annual Implementation Reports (AIR-MD) • USDA-FSA crop reporting • National Commodity Crop Productivity Index (NRCS)	High/on-going with CAST updates- (**CAST-21 Workplan: TASK 1**)	• MD will reach out to state FSA office • Encourage assignment of USDA liaison to the CBP (how? TBD) to facilitate better communication and understanding of data options	Seek periodic updates.
MD/PA/VA/NY	Nutrient Assumptions	**Fertilizer Sales and Use Data**: engaging state chemists	High/on-going with CAST updates- (**CAST-21 Workplan: TASK 1**)	• State & industry partners work w/ state chemist to improve submission to AAPFCO.	Collaboration between MDA and industry partners working with state chemists to create template for all Bay states to improved data submissions to AAPFCO. CBPO assistance unnecessary.

BMP Tracking & Reporting

Dairy Precision Feeding (PA)

Heavy Use Area Protection- NRCS 561 (PA)

Dairy Precision Feeding (PA)

Ask:

- Request developing alternative methods to develop the needed data.
- Is there an effective approach in the mold of phytase use in poultry?

Challenge:

- Enabling and ensuring accurate tracking of farm operations (implemented on voluntary basis)
- Dairy Precision Feeding BMP recs from 2009 (merits revisiting)

WIP III SNAPSHOT:
Dairy Precision Feeding

State	2019 Progress % Implementation	WIP 2025 % Implementation (AU)
DE	0	100 (4308.11)
MD	0	47 (19400.0)
NY	3.8	3.7 (10371.0)
PA	0	42.2 (25879.34)
VA	0	100 (68962.26)
WV	0	0

Heavy Use Area Protection (HUAP) & Loafing Lot Management

Ask:

- NRCS CPS 561: Heavy Use Area Protection credit under CBP BMP Loafing Lot Management (excluding poultry)- PA

Challenge:

- The AWMS did not consider HUAP for other livestock (non-poultry)
- NRCS data privacy requirements
- Tracking methods may vary by state

WIP III SNAPSHOT:

Barnyard Runoff Control + Loafing Lot Management

State	2019 Progress % Imp	WIP 2025 % Imp. (ac)
DE	99.3	100 (1060)
MD	44.3	46.7 (904)
NY	5	6.2 (113)
PA	62.5	72.8 (4899)
VA	40.1	66.7 (2769)
WV	46.2	47.7 (340)

State	Cluster	Concern & Updates	CAST-21 Priority?* /Status	Action (First Steps)	**FEEDBACK RECEIVED** & NOTES **(NOV)**
PA	BMP Tracking & Reporting	**Dairy Precision Feeding:** • PA has an initial approach to develop data for reporting but long way to go. • Request developing alternative methods to develop the needed data. • "Pennsylvania stakeholders are engaged in how we can develop this data, however, as with phytase use, we believe there may be more effective methods that the partnership should explore instead of running down individual feed mixtures and "head under management" level reporting."	Medium/Possible for 2021 progress reporting- *if approved by relevant groups in the partnership*.	PA facilitate presentation and discussion to the AgWG/Ad Hoc on suggested change in implementation tracking based on updated science on MUN and tracking. Dairy expertise necessary (e.g. Penn State dairy specialist).	Phytase use is currently not tracked as a BMP but is accounted for through the incorporation of updated nutrient concentration data for manure/litter. PA will take the lead in bringing issue forward for consideration.
PA	BMP Tracking & Reporting	**Heavy Use Area Protection (HUAP)** • In Pennsylvania, poultry pads are reported under NRCS CPS 313 (Waste Storage Facility) and we see no conflict in mapping **NRCS CPS 561 (HUAP) to CBP BMP Loafing Lot Management.**	Medium/Possible for 2021 progress reporting- *if approved by relevant groups in the partnership*.	Suggested Fall/Winter 2021 Schedule a review of tracking/reporting of Loafing Lot Management BMP across jurisdictions to determine feasibility of reporting NRCS CPS 561 as creditable. Include CBPO staff and AgWG/ad hoc/WTWG. (excludes poultry pads)	Can NRCS crosswalk mapping be different for different states depending on their tracking methods for barnyard BMPs and AWMS BMP?

BMP Effectiveness/Modeling

Winter Crop (NY/PA)

Manure Transport / Manure Treatment Technologies (PA)

“Winter Crop”

Ask:

- New BMP recognizing forage-based cropping systems

Challenge:

- Expert Panel needed
  - Resource limitations
  - Adequate modeling

Manure Transport / Manure Treatment Technologies

Ask:

- AgWG sponsored study group
  - inter-county manure transport
  - Manure treatment technologies & backfill issues

Challenge:

- Unresolved(?) issues related to MTT & N backfill (circa 2017)- need to check on this
- Agricultural input data for the Phase 6 CBWM is collected, analyzed, and interpreted on a county-level
  - Crediting transport within-county or across river segments is not feasible with Phase 6 CBWM

WIP III SNAPSHOT

Manure Transport Out of Area

State	2019 Progress Annual Dry Tons	WIP 2025 Annual Dry Tons
DE	32341.56	140405.52
MD	29391.68	65537.26
NY	0	0
PA	61127.29	321997.78
VA	9966.27	89221.00
WV	4406.25	7302.68

Manure Transport into Area

State	2019 Progress Annual Dry Tons	WIP 2025 Annual Dry Tons
DE	5483.26	0.00
MD	33953.88	0.00
NY	26.45	0.00
PA	51867.11	29282.09
VA	9057.60	0.00
WV	437.57	0.00

Manure Treatment Technologies Out of Area

State	2019 Progress Annual Dry Tons	WIP 2025 Annual Dry Tons
DE	0	0
MD	0	0
NY	0	0
PA	0	20000
VA	0	16700.15
WV	0	0

Manure Treatment Technologies into Area

State	2019 Progress Annual Dry Tons	WIP 2025 Annual Dry Tons
DE	0	0
MD	0	0
NY	0	0
PA	0	0
VA	0	16700.15
WV	0	0

State	Cluster	Concern & Updates	CAST-21 Priority?* /Status	Action (First Steps)	FEEDBACK RECEIVED & NOTES (NOV)
NY/PA/MD	BMP Effectiveness	**"Winter Crop" Category** • Request category for: "Systems where dairy farmers are taking off corn silage end of August 1 to September coming back with fall manure applications and then following up that with winter forage crops. These are neither commodity or traditional cover crops, they're truly forage crops, where they're doing multi species- particularly for the reason of spring grazing or harvest as feed. They are removing these crops to cycle the nitrogen within their farming operations. Perhaps it's even better defined as what we now have as a legume or legume grass mix hay land use."	Low/ **next watershed model**	Winter/Spring 2021 • Invite Dr. Charlie White, Penn State, to discuss recent research on nitrogen fate in terms of manured winter forage and green chop. • Follow-up discussion on Expert Panel need, available resources and timeline.	**(hopefully before Phase 7)- Bill A** **(Dr. White could be scheduled sooner or reviewed on-line; the EP charter (refine the need) does not have to be delayed for 6-8 months) Bill A**
PA	BMP Effectiveness	**Manure Transport/ Manure Treatment Technologies** • Request for a study group within the AgWG to better understand county nutrient budgets and applications. • We are requesting a study group within the AgWG to look at how we would do this, as the modeling workgroup is looking at finer scale river segments	Low/ **next watershed model**	Summer 2021/Fall 2021 Facilitate communication between AgWG Ad Hoc and MWG/CBPO staff to further discuss manure transport possibilities. Possibly structure specific group to engage this issue.	What is the timeline for a Phase 7 model? What are the fundamental changes to be expected? When does a group need to be convened to address ag inputs and how should it be organized? Discussion with CBPO needed.

Nov 30

- Water Quality GIT Update

Dec 17

- AgWG cover crop discussion
- Updates from ad hoc/CAST items

Early 2021

- Decision on forecasting (Task 2)
- Decision on land cover/LiDAR data (Task 4)
- Updated research on Dairy Precision Management

Allocation of Ag Nutrients in the Watershed Model

1.Define Crop Application Goal

A Crop Application Goal/Yield Unit

B Yields/Acre

C Acres

Crop Application Goal

A AMS
B NASS Annual Survey
C Ag Census

2. Define Manure Available to Crops

Manure Generated

Feed Additive BMPs

Direct Deposition on Pasture

Direct Deposition to Riparian Pasture Areas

Deposited within Barnyard

Ammonia Reduction BMPs

Stored Manure

Storage and Handling Loss

Barnyard BMPs

Available for Transport

Manure Transport

Available for Application

Mineralization

Volatilization

3. Spread Manure to Crops

4. Define Inorganic Fertilizer Available to Crops

AAPFCO Fertilizer Sales Data

Ag Census or NASS Annual Surveys (Animal populations dictate manure load estimates)

5. Spread Fertilizer to Crops

AMS= Agricultural Modeling Subcommittee

CRITICAL CONCEPT

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.