

Fertilizer Expert Group (FEG) Agricultural Fertilizer Recommendations

Background:

The Chesapeake Bay Program (CBP) Partnership has expressed concerns with the quality of fertilizer data used to inform the Chesapeake Assessment Scenario Tool (CAST). As a result, on August 29, 2022 the Principals' Staff Committee (PSC) reached consensus to evaluate new data sources for the current version of the Chesapeake Assessment Scenario Tool (CAST). However, there was no formal group prepared to examine both the urban and agricultural fertilizer data. Therefore, the Fertilizer Expert Group (FEG) was created to support the PSC's request to primarily examine the agricultural fertilizer inputs, inputs, in the current and future versions of CAST.

Fertilizer Expert Group Tasks:

- Develop short-term, interim recommendations to the PSC as resolutions to Phase 6 model agricultural fertilizer data concerns before moving forward with CAST 2021.
- Examine potential long-term resolutions for agricultural fertilizer data in the Phase 7 model to recommend to the separate Agricultural Modeling Team (AMT) for their consideration.
- Report progress towards these actions at the next PSC meeting, July 2023.

Scoping Questions Driving the Work:

1. Are there other data sources that can inform Phase 6 model nutrient application rates?
2. From what sources and at what frequency and scale are inorganic fertilizer data available?
3. What is the feasibility of collecting more relevant jurisdictional level data at a greater frequency to reduce current data latency concerns?
4. Are there streamlined methods of collecting inorganic fertilizer information that do not cause undue burden on the local and jurisdictional agencies?
5. What recommendations can be made to improve the inorganic fertilizer nutrient data sets and application rate calculations for Phase 7?

Findings:

1. Directly reported state agency fertilizer sales tonnage reports can be processed, enabling consistent implementation of these data across all jurisdictions (see Phase 6 model recommendations).
2. The recommended state reported inorganic fertilizer sales tonnage data are available at the county scale.
3. The collection of these data has been accomplished by requesting access to existing fertilizer sales data reports the states possess where available.
4. By collecting existing state fertilizer sales reports in combination with historic fertilizer sales data published by the Association of American Plant Food Control Officials (AAPFCO), no additional effort is required of the states.
5. Continued investigation of alternative agricultural inorganic fertilizer data sets and processing methods by the AMT should be conducted for Phase 7 development.

o See Appendix A for details regarding the workplan and progress of the fertilizer expert group

¹ For more detail regarding findings please see Appendix B

FEG participants:

Membership includes representatives and fertilizer experts from each of the jurisdictions within the watershed, Washington D.C., the fertilizer industry, and several federal agencies ([Table 1C](#). ²). Jurisdictional representatives act as a point of contact that ensures relevant information is disseminated to their jurisdictions. Jurisdictional fertilizer experts are those who manage the state's fertilizer tonnage collection as well as other sources of fertilizer data from within their respective state. Additional members, such as the Federal government and industry members, will provide relevant experience pertaining to fertilizer data.

² Detailed membership is listed in Appendix C.

Recommendations:

Fertilizer Expert Group Recommendations: June 2023

Phase 6 Model Recommendations:

1. Prior to release of a new CAST version, fertilizer tonnage sales data should be collected from Association of American Plant Food Control Officials (AAPFCO) and directly from states, as available. Data should be analyzed according to the following recommendations and incorporated into the new CAST version. The fertilizer data should only be updated with a version change.
2. For fertilizer sales data covering 2016 and before, AAPFCO fertilizer sales tonnage data should be used.
3. For fertilizer sales data covering 2017 and after, direct state reports will be collected and assimilated assuming three or more out of six states provide data^(3,4).
4. Watershed-wide fertilizer sales data will be used up through the last year in which conditions under Recommendation 3 are met.

³ See Appendix D for further recommendation details.

⁴ See Appendix E for detailed data processing methods

Phase 7 Model Recommendations to the AMT:

1. Re-examine the use of both farm and nonfarm categories of AAPFCO fertilizer in calculating fertilizer sales totals.
2. Further examine alternative fertilizer data sets (The Fertilizer Institute).
3. Examine the use of additional fertilizer *application* datasets (Agrochemical application surveys, CEAP) to ground-truth estimates of application based on sales.
4. Re-examine outlier removal and infilling methods.
5. Examine the potential for calculating state specific fertilizer stocks as opposed to the existing watershed wide fertilizer bucket.
6. Examine methods for projecting fertilizer beyond the last known year