



Commercial Agricultural Production Data Decisions



A Review of Partnership Decisions on Commercial Agricultural Production Data

Commercial Agricultural Production Data

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Poultry Litter Subcommittee (PLS)

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- ▶ Poultry Litter Subcommittee (PLS) –
 - ▶ In 2011, the Ag Workgroup determined that a subcommittee was needed to review modeling assumptions in the Phase 5.3.2 Watershed Model for nutrient generation by poultry.
 - ▶ This decision was made in response to CBP partnership concerns that poultry nutrient generation in the Model did not adequately reflect nutrient generation across the watershed.
 - ▶ The AgWG charged the Poultry Litter Subcommittee (PLS) to review the current methods and develop new methods for estimating nutrient generation by poultry across the watershed.

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- ▶ Poultry Litter Subcommittee (PLS) –
 - ▶ The PLS was charged with the following tasks:
 - ▶ Collect data that better reflect modern (and historical) N and P concentrations in poultry litter for each of the poultry types present within the watershed.
 - ▶ Develop poultry litter generation quantities for each poultry type, both modern and historic.
 - ▶ Develop alternate methods to estimate poultry population numbers across the watershed and compare to current methods used in the model.

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- ▶ **Poultry Litter Subcommittee (PLS) –**
 - ▶ The PLS summarized over a decade of litter sample data collected mainly from broilers and turkeys, with very small amounts of data from pullets and layers.
 - ▶ Broiler litter manure analysis data collected from State/ LGU labs, NMP, and permit databases from DE/MD/VA/WV. (~9,800 data points)
 - ▶ Broiler litter manure bulk generation data collected from NMP planners, growers, and manure haulers/brokers from DE/MD/VA. (Expansive)
 - ▶ Sufficient broiler data collected to develop statistical estimates of annual N and P generation per lb. of bird over time for replacing ASABE data.

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- ▶ Poultry Litter Subcommittee (PLS) –
 - ▶ Turkey litter manure analysis data collected from State/ LGU labs and NMP and permit databases from VA/WV. (~ 2,000 data points)
 - ▶ Turkey litter manure bulk generation data collected from NMP planners, growers, and manure haulers/brokers from VA only. (Limited)
 - ▶ Insufficient turkey data collected to develop statistical estimates of annual N and P generation per lb. of bird over time for replacing ASABE data.

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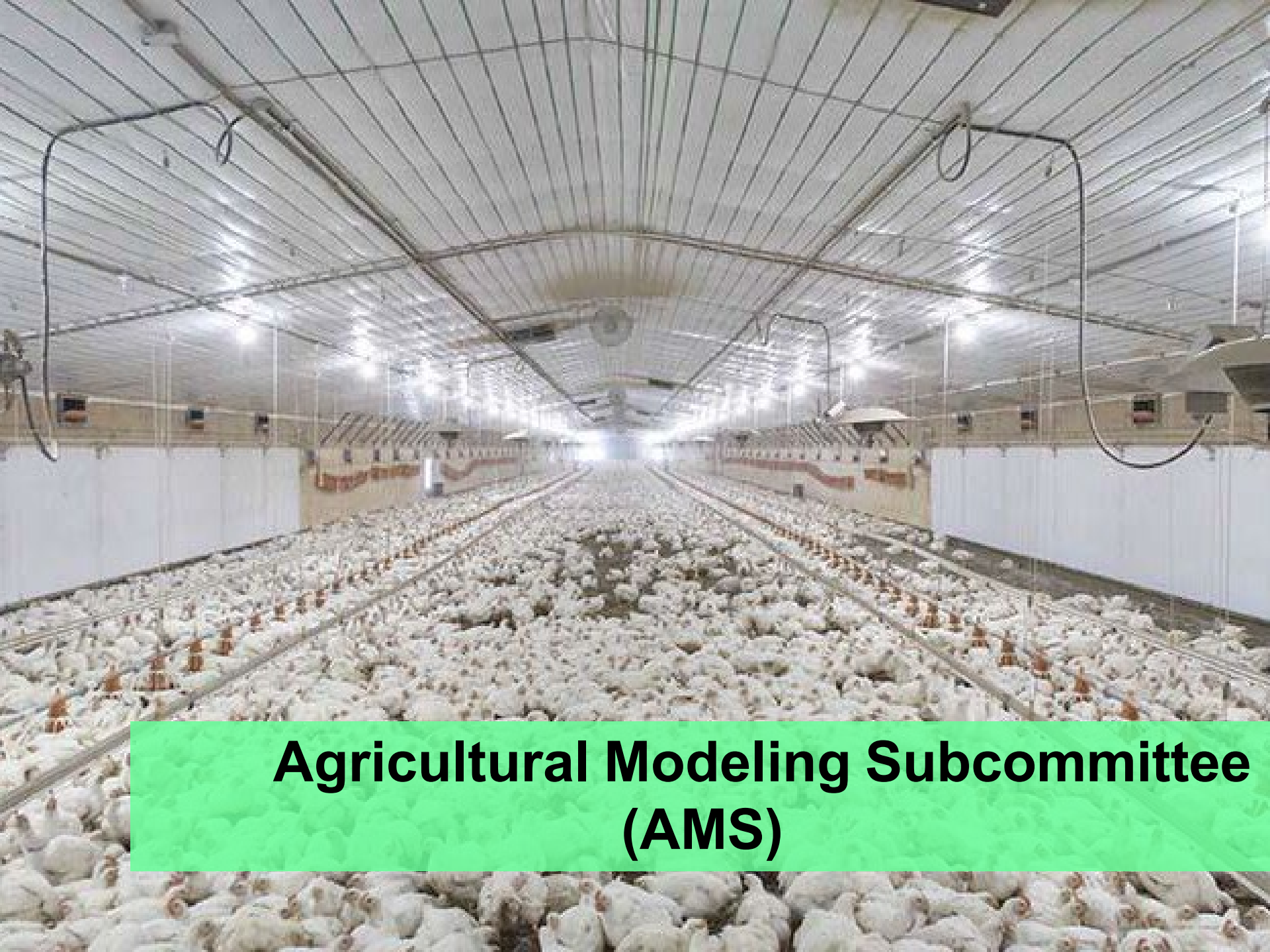
- ▶ Poultry Litter Subcommittee (PLS) –
 - ▶ Layer/breeder manure analysis data collected from State/ LGU labs and NMP and permit databases from VA/WV. (~ 1,900 data points)
 - ▶ Very limited layer/breeder manure analysis data collected from PA for most recent years only.
 - ▶ No layer/breeder manure bulk generation data collected from NMP planners, growers, and manure haulers/brokers. (None)
 - ▶ Insufficient layer/breeder data collected to develop statistical estimates of annual N and P generation per lb. of bird over time for replacing ASABE data.

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- ▶ Poultry Litter Subcommittee (PLS) –
 - ▶ Very limited pullet litter manure analysis data collected from State/ LGU labs and NMP and permit databases from all states. (limited data points)
 - ▶ No pullet litter manure bulk generation data collected from NMP planners, growers, and manure haulers/brokers. (None)
 - ▶ Insufficient pullet data collected to develop statistical estimates of annual N and P generation per lb. of bird over time for replacing ASABE data.

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- ▶ Poultry Litter Subcommittee (PLS) –
 - ▶ The PLS completed a draft recommendation report in 2014 entitled “Redefinition Of Poultry Litter Nutrient Generation, Litter Volume Generation And Poultry Population Datasets”
 - ▶ The draft report and associated data required additional statistical analysis and a defined method for incorporating the recommendations into the Phase 6 modeling tools.
 - ▶ A copy of the PLS report is available in Appendix A of the Agricultural Modeling Subcommittee report located at:
[Recommendations to estimate poultry nutrients for phase 6 model 03062015 \(1\).pdf](#)



Agricultural Modeling Subcommittee (AMS)

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- ▶ **Agricultural Modeling Subcommittee (AMS) –**
 - ▶ In October 2014, the AgWG asked the Agricultural Modeling Subcommittee (AMS) to review the PLS records and report (found in Appendix A).
 - ▶ The AMS was asked to provide recommendations for incorporating the data into poultry nutrient production estimates for the Phase 6 Watershed Model.
 - ▶ The AMS report of March 2015 describes processes to estimate poultry litter production by year for each state and type of bird.
 - ▶ Many of the recommendations in this report were originally suggested by the PLS. Some other recommendations are based on analysis of the submitted data and other data sources available.

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- ▶ Agricultural Modeling Subcommittee (AMS) –
 - ▶ The CBP approved AMS Report :
“Recommendations to Estimate Poultry Nutrient Production in the Phase 6 Watershed Model”
 - ▶ The report established standards for statistical analysis methods, data quantity (30 data points min), and equations for developing manure nutrient generation for model inputs for Phase 6.
 - ▶ A copy of the AMS report is available at:
[Recommendations to estimate poultry nutrients for phase 6 model 03062015 \(1\).pdf](#)



Manure Treatment Technologies (MTT) Expert Panel Report

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CBP/TRS – 311 – 16

Manure Treatment Technologies

Recommendations from the Manure Treatment Technologies Expert Panel
to the Chesapeake Bay Program's Water Quality Goal Implementation
Team to define Manure Treatment Technologies as a Best Management
Practice



September 2016

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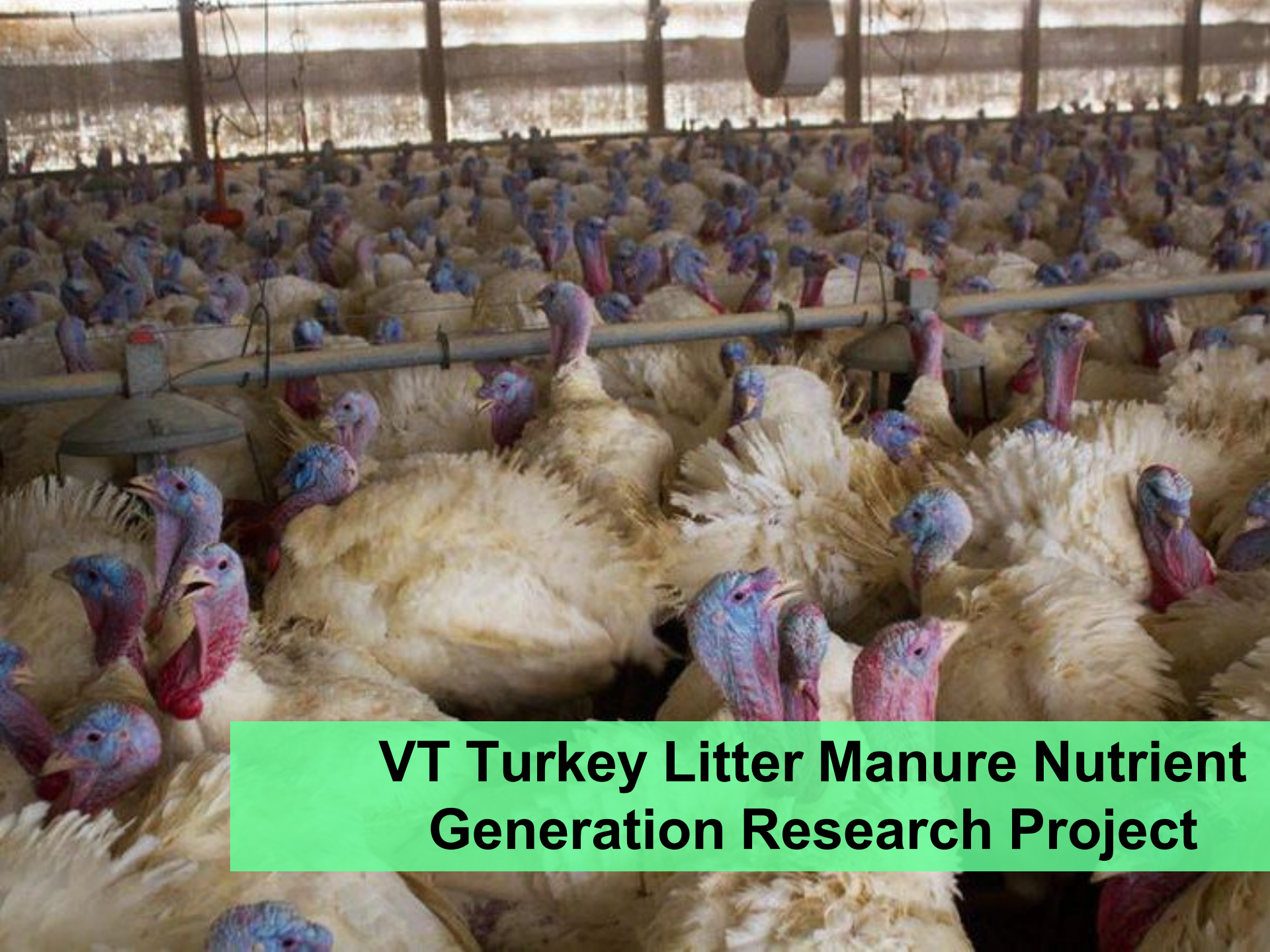
- ▶ **Manure Treatment Technologies Expert Panel Report –**
 - ▶ **MTT19 - Directly Monitored Manure Treatment Technology.**
 - ▶ **Any Manure Treatment system that utilizes one of more manure treatment technologies described in the Manure Treatment Technology Expert Panel Report (Pyrolysis, Gasification, Combustion, or Composters).**
 - ▶ **This BMP allows MTT facilities to utilize monitoring data to determine and report the nitrogen load eliminated from the primary manure stream.**

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- ▶ **Manure Treatment Technologies Expert Panel Report –**
 - ▶ **What kind of data is needed to submit the Directly Monitored, MTT19, BMP?**
 - ▶ **Monitoring Data from the Treatment Facility, including Manure Sample Analyses and a Description of the Facility's process /Technology within the Facility**
 - ▶ **Amount of manure treated, or Number of animals present in operation with animal type**
 - ▶ **Nutrient Concentrations of Manure: TN and Ammonia**
 - ▶ **Moisture Content (%) or Dry Fraction**
 - ▶ **Total Calculated Nitrogen Reduction from the Facility/BMP**
 - ▶ **Air Emissions emanating from the facility**

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- ▶ **Manure Treatment Technologies Expert Panel Report –**
 - ▶ A copy of the MTT report is available at: [Manure treatment Technologies \(d18lev1ok5leia.cloudfront.net\)](https://d18lev1ok5leia.cloudfront.net)



VT Turkey Litter Manure Nutrient Generation Research Project

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- ▶ **VT Turkey Manure Nutrient Generation Research Project –**
 - ▶ The CBP approved PLS and AMS reports of 2014 and 2015 demonstrated the lack of available data for turkey litter manure nutrient generation for Phase 6 model inputs.
 - ▶ A commercial turkey research project was developed between the CBPO and Virginia Tech (VT) in 2015.
 - ▶ The research project obtained turkey production data from state agency databases, private companies, and growers in VA and WV.

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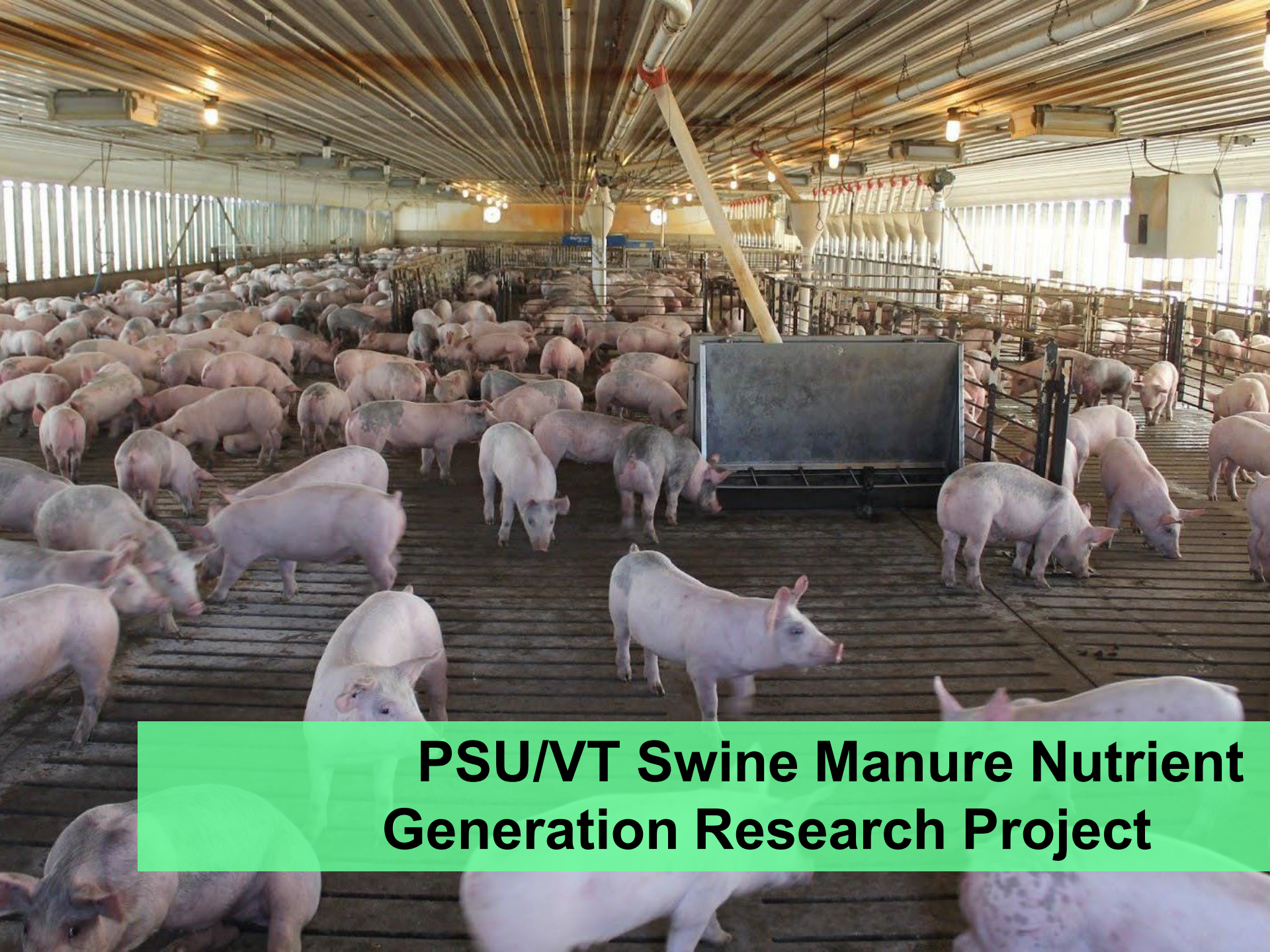
- ▶ VT Turkey Manure Nutrient Generation Research Project –
 - ▶ The research project followed the data standards and statistical analysis methods established by the AMS report of 2015.
 - ▶ The CBP approved Appendix B of the “Agriculture BMP Verification Guidance, *Statistical Sampling Approach for Initial and Follow-Up BMP Verification*” was also followed.
 - ▶ A copy of the report is available at Appendix B -Ag BMP Verification Guidance Final.pdf (chesapeakebay.net)

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- ▶ **VT Turkey Manure Nutrient Generation Research Project –**
 - ▶ Turkey litter manure analysis data collected from State/ LGU labs, NMP, and permit databases from VA. (Expansive)
 - ▶ Turkey litter manure bulk generation data collected from NMP planners, growers, and manure haulers/brokers from VA. (Expansive)
 - ▶ Commercial turkey population data by bird production type collected from state NMP planners, private companies and growers and compared to USDA-NASS data.
 - ▶ Sufficient turkey data collected to develop statistical estimates of annual N and P generation per lb. of bird by type of production over time for replacing ASABE data.

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- ▶ VT Turkey Manure Nutrient Generation Research Project –
 - ▶ Turkey research project recommendation report published in December 2016: “Final Report for Turkey Litter Generation and Nutrient Content for use in Phase 6.0 Chesapeake Bay Program Watershed Model”
 - ▶ After AgWG, WTWG, CBPO review and approval, the report recommendations were incorporated into the development of the Phase 6 modeling tools to replace ASABE annual N and P generation per lb. of bird for all 6 Bay states.
 - ▶ A copy of the VT report is available at [Phase 6 Turkey Litter Nutrients Characterization for the Phase 6 Watershed Model Draft Final Report 121416.1.pdf \(chesapeakebay.net\)](#)



PSU/VT Swine Manure Nutrient Generation Research Project

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- ▶ **PSU/VT Swine Manure Nutrient Generation Research Project –**
 - ▶ The CBP approved PLS and AMS reports of 2014 and 2015 demonstrated the lack of available data for swine manure nutrient generation for Phase 6 model inputs.
 - ▶ A commercial swine research project was developed between the CBPO, Penn State University (PSU), and Virginia Tech (VT) in 2015.
 - ▶ The research project obtained swine production data from state agency databases, private companies, and growers in PA and VA.

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- ▶ PSU/VT Swine Manure Nutrient Generation Research Project –
 - ▶ The research project followed the data standards and statistical analysis methods established by the AMS report of 2015.
 - ▶ The CBP approved Appendix B of the “Agriculture BMP Verification Guidance, *Statistical Sampling Approach for Initial and Follow-Up BMP Verification*” was also followed.
 - ▶ A copy of the report is available at Appendix B -Ag BMP Verification Guidance Final.pdf (chesapeakebay.net)

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- ▶ **PSU/VT Swine Manure Nutrient Generation Research Project –**
 - ▶ Swine manure analysis data collected from State/ LGU labs, NMP, and permit databases from PA/VA. (Extensive)
 - ▶ Swine manure bulk generation data collected from NMP planners, growers, and manure haulers/brokers from PA/VA. (Extensive)
 - ▶ Commercial swine population data by animal production type collected from state NMP planners, private companies and growers and compared to USDA-NASS data. (Extensive)
 - ▶ Sufficient swine data collected to develop statistical estimates of annual N and P generation per lb. of animal by type of production over time for replacing ASABE data.

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- ▶ PSU/VT Swine Manure Nutrient Generation Research Project –
 - ▶ Swine research project recommendation report published in December 2016 entitled “Recommendations to Estimate Swine Nutrient Generation in the Phase 6 Chesapeake Bay Program Watershed Model”
 - ▶ After AgWG, WTWG, CBPO review and approval, the report recommendations were incorporated into the development of the Phase 6 modeling tools to replace ASABE annual N and P generation per lb. of animal by type of production for all 6 Bay states.
 - ▶ A copy of the PSU/VT report is available at Microsoft Word - 2016-12-16-DRAFT-CBF Swine Recommendation Report.docx (chesapeakebay.net)



**UM/CBPO Commercial Layer
Production Research Project**

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- ▶ **UM/CBPO Commercial Layer Production Research Project –**
 - ▶ The PA Department of Environmental Protection (PADEP) requested assistance from the CBPO due to the limited available layer production data (populations) for Adams and York Counties in the Phase 6 model inputs.
 - ▶ A commercial layer research project was developed between the CBPO, PADEP, and the University of Maryland (UM) in 2020.
 - ▶ The research project obtained commercial layer production data from state and county agency databases, and private companies and growers in PA.

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- ▶ UM/CBPO Commercial Layer Production Research Project –
 - ▶ The research project followed the data standards and statistical analysis methods established by the AMS report of 2015.
 - ▶ The CBP approved Appendix B of the “Agriculture BMP Verification Guidance, *Statistical Sampling Approach for Initial and Follow-Up BMP Verification*” was also followed.
 - ▶ A copy of the report is available at Appendix B -Ag BMP Verification Guidance Final.pdf (chesapeakebay.net)

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- ▶ **UM/CBPO Commercial Layer Production Research Project –**
 - ▶ Commercial layer population data by bird production type collected from state and county NMPs, Manure Management Plans (MMPs), CAFO permits, private companies and growers. (Extensive)
 - ▶ Sufficient commercial layer data collected to develop annual county-scale estimates of layer populations for Adams and York Counties. (1995 – 2021)
 - ▶ State and county agency public data used as QA/QC for company/grower private data.
 - ▶ Commercial layer populations compared to existing USDA-NASS and Phase 6 model data.

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- ▶ **UM/CBPO Commercial Layer Production Research Project –**
 - ▶ Layer production research recommendations published in 2021 for review by the AgWG and WTWG.
 - ▶ A copy of the recommendations is available at the AgWG and WTWG CBP sector workgroup webpages.



Summary

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► Summary

- The use of statistically valid commercial agricultural production data QA/QC with public agency data sources is supported by existing CBP partnership developed and approved data standards and verification protocols.
- Verified, reviewed, and approved commercial agricultural production data was used in the development of the existing Phase 6 (CAST) modeling tools approved for use by the CBP partnership.
- Verified, reviewed, and approved commercial agricultural production data is currently being used to represent livestock manure nutrient generation for all 6 Bay states in the existing Phase 6 (CAST) modeling tools.
- Implementation reporting for the MTT19 BMP requires the use of specific commercial agricultural monitoring data.



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Chesapeake Bay Program

A Watershed Partnership

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A scenic landscape photograph of a rural farm. In the foreground, there is a grassy bank with some dry reeds and leaves. A calm pond occupies the middle ground, reflecting the sky and the buildings. On the opposite side of the pond, there is a white two-story house, a large white barn, and a tall white silo. The background features rolling green hills with scattered trees, some of which have autumn-colored foliage. The sky is blue with a few wispy clouds.

For More Information go to
<https://www.chesapeakebay.net/>