

# AgWG Ad Hoc CAST Concerns

July 29, 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
<b>Task 1:</b> Updates to data & methods that typically occur every 2 years.	<ul style="list-style-type: none"><li>On-going</li><li><a href="#">CAST Data Update Frequency</a></li></ul>
<b>Task 2:</b> Investigate alternative forecasting methods for ag land uses & animals ✓	<ul style="list-style-type: none"><li>Nov 19 AgWG: CBPO presentation on 4 methods of forecasting</li><li>Feb AgWG; See Mar AgWG decision</li></ul>
<b>Task 3:</b> Investigate 2012-2017 Ag Census change for fallow/idle acres ✓	<ul style="list-style-type: none"><li>AgWG Sept 17; NASS consulted; no new information; No further action; See Jan AgWG decision</li></ul>
<b>Task 4:</b> Investigate use of latest landcover & LiDAR imagery to better define changes in total ag (& other land use) acres ✓	<ul style="list-style-type: none"><li>Oct; Jan; Feb; Apr; New methodology approved, see May AgWG decision</li></ul>
<b>Task 5:</b> Investigate alternatives for double-crop acre estimates ✓	<ul style="list-style-type: none"><li>Oct 15 AgWG; NASS consulted- no new information; no recommended change to methodology, see May AgWG decision</li></ul>
<b>Task 6:</b> Consider supplemental NM for soybeans ✓	<ul style="list-style-type: none"><li>Dec/Jan/Mar/Apr Ad Hoc</li><li>Updates Jan/Feb/Mar/Apr/May; See June AgWG decision</li></ul>
<b>Task 7:</b> QA/QC'd historic & current layer pop. data for Hillandale Farms (PA)	<ul style="list-style-type: none"><li>In process</li><li>Feb Ad Hoc; July 1 WTWG; <b>Aug 5 WTWG</b></li></ul>
<b>Task 8:</b> Build-in Verification Ad Hoc Team products	<ul style="list-style-type: none"><li>In process; Action Team monthly meetings; July AgWG Update</li></ul>

## 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

# Task 6: Consider additions to current methods for “crediting” Nutrient Management on soybeans and propose options

## Decision Requested:

The AgWG CAST Concerns Ad Hoc was not able to achieve consensus to support a change to the Supplemental Nitrogen Nutrient Management BMP on the full-season soybean load source (Rate, Timing, and/or Placement).

The AgWG is asked to **endorse** or **not endorse** application of a non-zero reduction efficiency for the Supplemental Nitrogen Nutrient Management BMP on the full-season soybean load source (rate, timing, and/or placement).

Long-term recommendations discussed in the Ad Hoc group include:

- review of ag loading rates
- continued efforts to improved accuracy of crop data sources
- improved understanding of real-world soybean management for future incorporation into CAST (watershed model).

## Governance Vote Break-Down:

Endorse 2

Not Endorse 22

Not Present 5

No Vote 4

# Task 7: Accommodate with CAST21 QA/QC'd historic and current layer population data for Hillandale Farms, Spring Grove, PA

## Available Layer Population Data Sources

1. 2017 NASS (National Agricultural Statistics Survey) **Census of Agriculture**
2. **NASS Annual Statistical Survey**
3. Hillandale Farms **Facility Layer Inventory Data**
4. Nutrient Management Plans (**NMPs**)
5. **CAFO** (Concentrated Animal Feeding Operation) Permits
6. Pennsylvania Manure Management Plans (**MMPs**)

July 1 Watershed  
Technical Workgroup

# Task 7: Accommodate with CAST21 QA/QC'd historic and current layer population data for Hillandale Farms, Spring Grove, PA

## [July 1 Watershed Technical Workgroup](#)

### Summary of Comments:

- ❖ Why Isn't Hillandale Represented in Ag Census?
  - ❖ *What else could be missing from the Ag Census?*
- ❖ Effect of Data Incorporation on Calibration Years for Phase 6?
- ❖ Wait to Make Change in Phase 7?
- ❖ Can This be Completed & Approved in Time for CAST-21?
- ❖ Impact on Loads for Other Jurisdictions?
- ❖ Parity Across Jurisdictions
- ❖ New Precedent for Data Incorporation in CAST.
- ❖ Hillandale manure currently transported. Will incorporating layer significantly change nutrient mass balance?
  - ❖ *Crop nutrient need is met regardless.*

# Task 7: Accommodate with CAST21 QA/QC'd historic and current layer population data for Hillandale Farms, Spring Grove, PA

## Watershed Technical Workgroup Aug 5<sup>th</sup>, 10 AM-12 PM

### *To Be Addressed:*

- What is a “Change Product” to a milestone model update,
- How incorporating this data will not affect the model phase calibration,
- How the manure will be distributed across the watershed,
- How the feeding space land use will be impacted,
- How watershed loads (EOS and EOT) may be impacted.

Questions on the general presentation topics above, should be submitted to Vanessa Van Note ([VanNote.Vanessa@epa.gov](mailto:VanNote.Vanessa@epa.gov)) by **COB July 30<sup>th</sup>**.

CBPO- NASS  
annual dairy  
surveys

## Animal Data

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

Hillandale  
(Task 7)

## Crop Production/Acres

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

New NRCS CB  
Coordinator

## Nutrient Applications/Assumptions

Fertilizer Sales and Use Data (MD; Task 1)

MD Working w/  
State Chemist

## BMP Tracking & Reporting

Dairy Precision Feeding (PA)

June 2021 AgWG  
PA team updates?

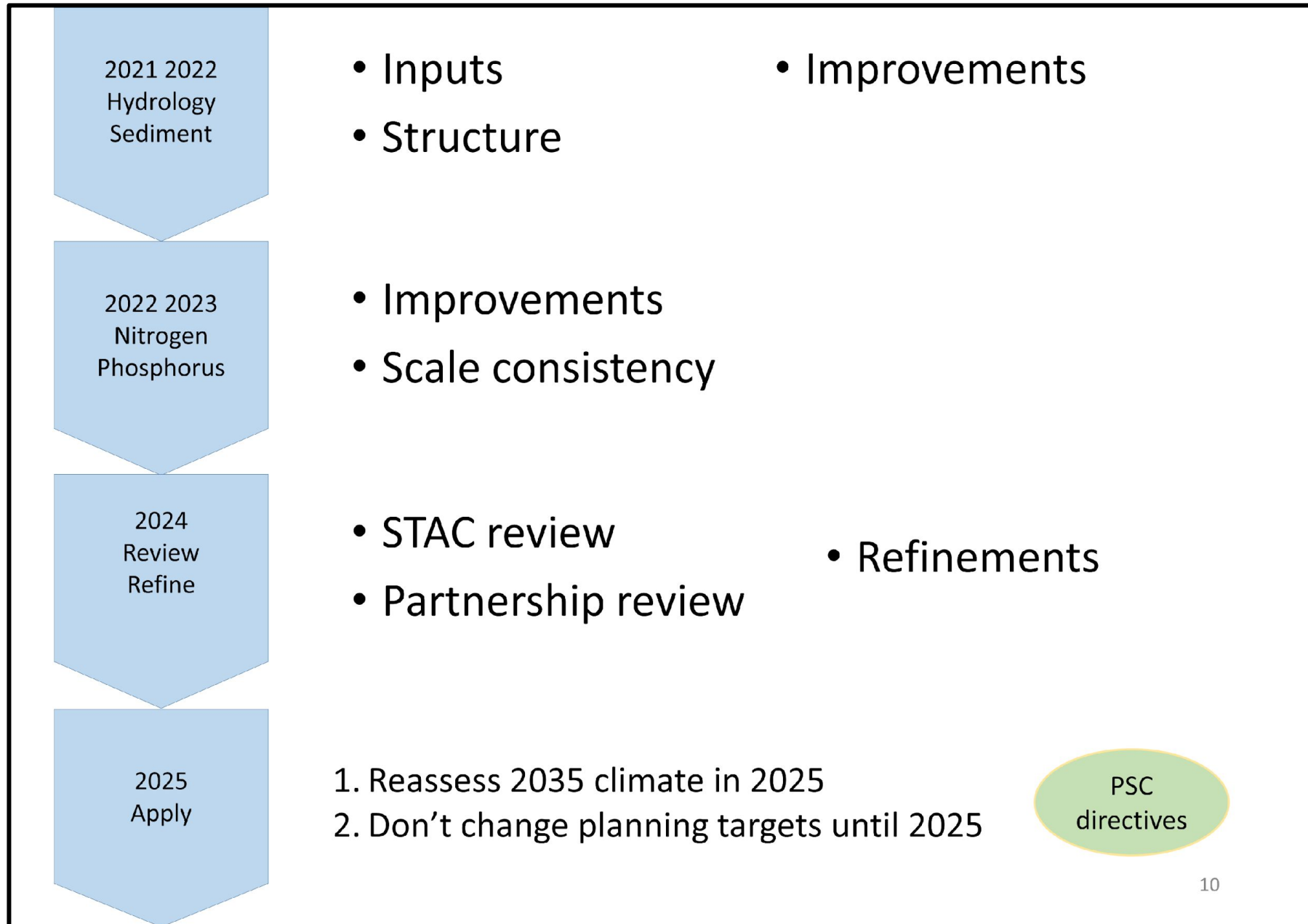
## BMP Effectiveness/Modeling

Winter Crop (NY/PA)

Manure Transport / Manure Treatment Technologies (PA)

Phase 7  
Development

TODAY



2021 2022  
Hydrology  
Sediment

2022 2023  
Nitrogen  
Phosphorus

2024  
Review  
Refine

2025  
Apply

- WQGIT gives priorities – October 2021
  - Climate change!
  - Scale?
  - Uncertainty?
  - AgWG Priorities?
  - Something else?

1. TMDL implementation deadline 2025
2. Reassess 2035 climate in 2025
3. Don't change planning targets until 2025

PSC  
directives



“Winter Crop”

# • Recognize Dairy Systems

- Fall harvest

- ☐ fall manure

- ☐ winter crop

- (spring grazing or harvest as feed) ☐ On-farm N cycling

# “Winter Crop” Request

“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.”

### Winter Crop

Baseline:

**Fallow Ground**

+ soil residual N + **manure N**

BMP:

**Winter Crop**

+ soil residual N + **manure N**

## Phase 6 Cover Crop BMP

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- Traditional Cover Crop (no harvest)
  - Baseline: **Fallow Ground** + soil residual N + zero applied N
  - BMP Option 1: winter cereal/legume mix + soil residual N + **zero applied N**
  - BMP Option 2: winter cereal/legume mix + soil residual N + **50 lbs N/ac manure (70% of Option 1 Efficiency)**
- Commodity Cover Crop (harvest)
  - Baseline: **Commodity small grain** + soil residual N + **30 lbs N/ac**
  - BMP: Commodity small grain + soil residual N + **zero fall-applied N**

# (Staver) Cover Crops

## Dec 2020 AgWG Presentation

### **Many studies but many gaps. Consistent findings:**

- Winter cereals respond to higher soil N, producing more biomass and moving more soil nitrate-N into above-ground biomass as soil N availability increases.
- The reference cover crop used in past panel reports (cereal rye planted at 2 bu/acre) when planted in early or standard planting periods is capable of taking more N out of the soil than is generally available postharvest in summer annual row crop settings.
- Reducing cover crop uptake potential by reducing planting rates, or delaying planting, increases the likelihood that nitrate will be leached out of reach of cover crop roots before uptake can occur.
- Increasing the fall soil nitrate pool by applying manure or inorganic N will increase winter cereal N uptake but also increase the potential for nitrate leaching.

# (White) Nitrogen Scavaging in Forage Systems

## Jan 2021 AgWG Presentation

### Concluding Thoughts

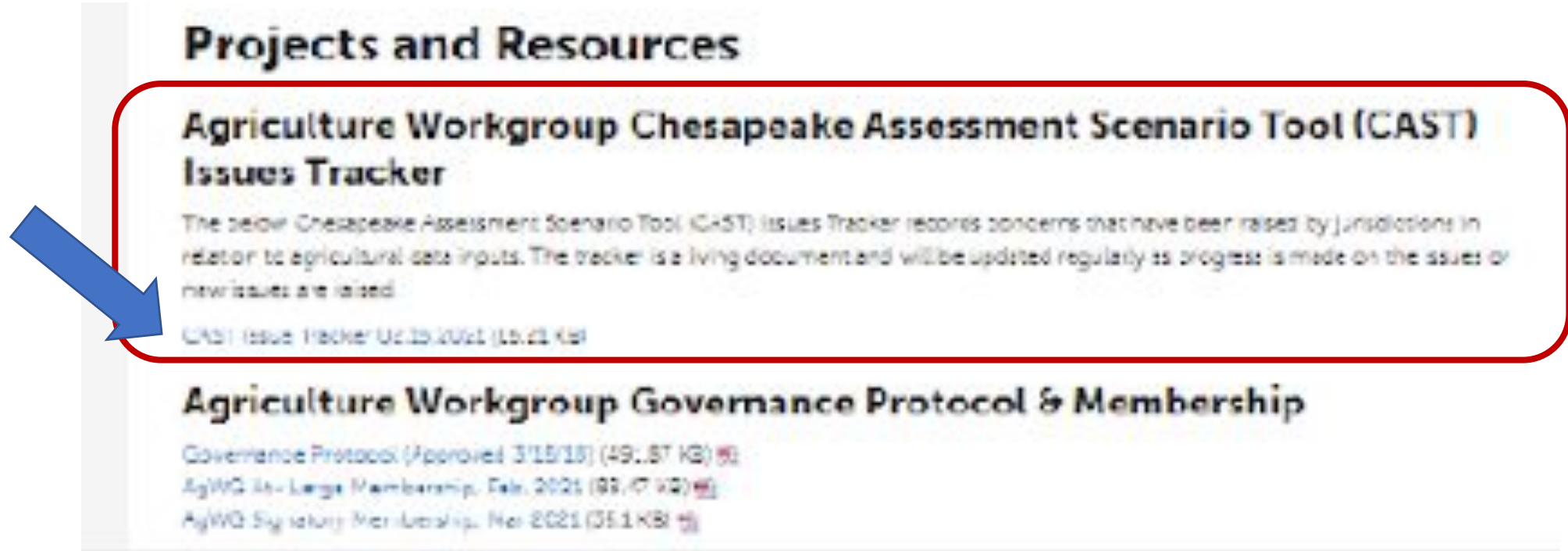
- Winter cover crop growth is N limited
- When manure is applied in the fall, cover crop growth responds to scavenge the manure N
- Fall manure applications did not increase subsoil NO<sub>3</sub> until spring, when leaching rates slow down and summer-planted crops can recover the N in the profile
- Availability of N at soil surface from fall manure applications may have a small effect on reducing cover crop scavenging ability in the subsoil during low N demand periods of cover crop growth (late winter)
- Spring cover crop growth has a high N demand and cleans up the soil profile N equally in manured and non-manured treatments
- Not sure how to handle this in the Bay Model, but please consider whether there is a “double penalty” for the fall manure + cover crop practice

# Questions/Comments Actions

# Prioritizing Concerns (post CAST-21)

- AgWG Home Page

[https://www.chesapeakebay.net/who/group/agriculture\\_workgroup](https://www.chesapeakebay.net/who/group/agriculture_workgroup)



**Projects and Resources**

**Agriculture Workgroup Chesapeake Assessment Scenario Tool (CAST) Issues Tracker**

The below Chesapeake Assessment Scenario Tool (CAST) Issues Tracker records concerns that have been raised by jurisdictions in relation to agricultural data inputs. The tracker is a living document and will be updated regularly as progress is made on the issues or new issues are raised.

[CAST Issue Tracker Oct 2021 \(15.21 KB\)](#)

**Agriculture Workgroup Governance Protocol & Membership**

[Governance Protocol \(Approved 3/15/18\) \(49.57 KB\)](#)

[AgWG 36+ Large Membership, Feb. 2021 \(83.47 KB\)](#)

[AgWG Signature Membership, Nov 2021 \(35.1 KB\)](#)

**Ad Hoc November Recommendation:** Create a tracking mechanism for jurisdictions' wish list for 2-year CAST updates & the next model phase.



# August

## WTWG

- Hillandale Data (Task 7)

## AgWG

- Hillandale Data (Task 7)
- Phase 7 AgWG Priorities

## WQGIT

- Hillandale Data (Task 7)
- Land Use Change Product (Task 4)

# September

## AgWG

- Phase 7 AgWG Priorities

# October

## WQGIT

- Face-2-Face on Phase 7 Science Needs



# Improving Ag Data? (TASK 1)

## 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)

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 (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**

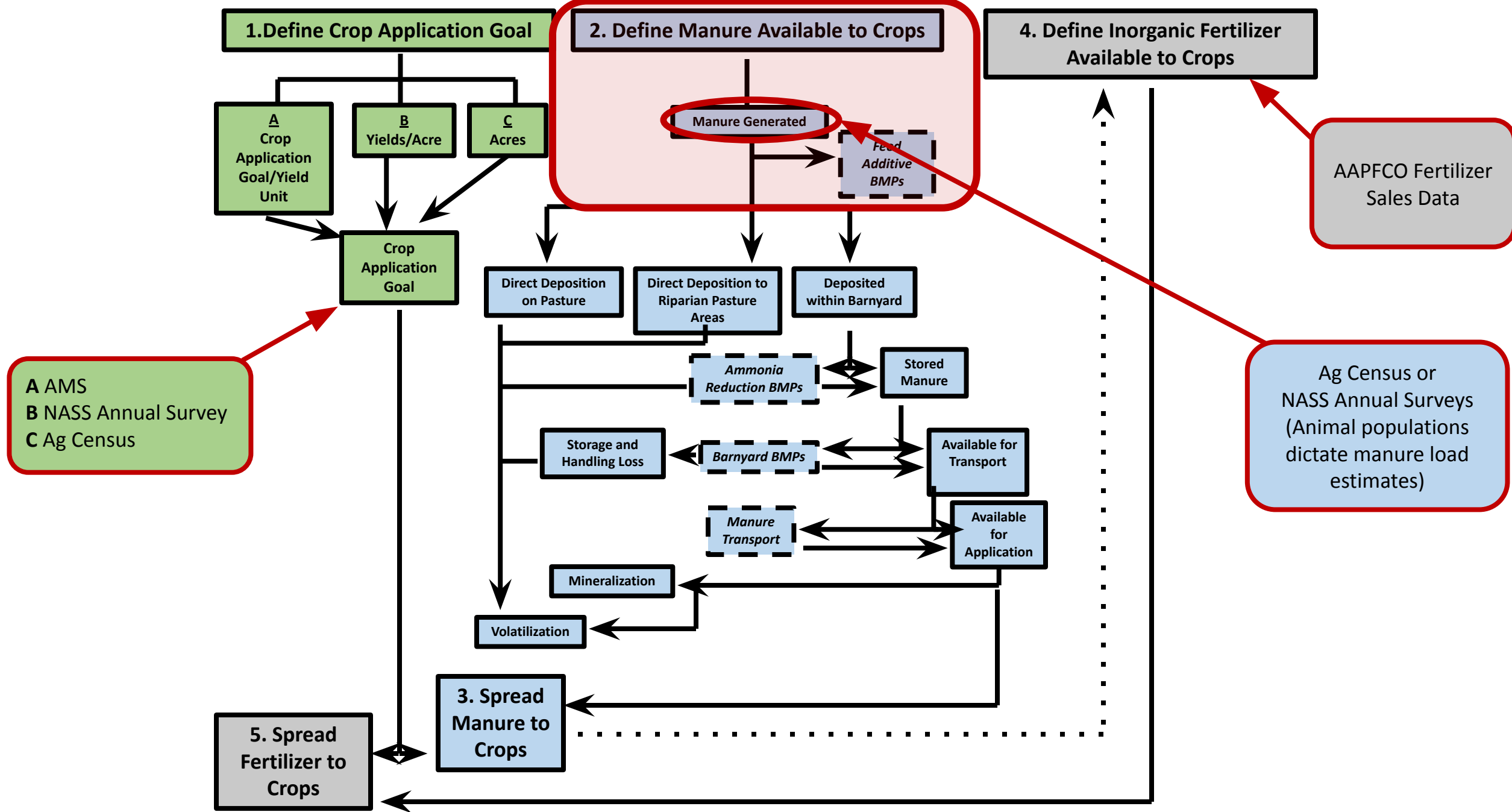
4. Define Inorganic Fertilizer  
Available to Crops

## 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



## Source for *distribution* of statewide populations can change.

Example: MD provides fraction of cattle in every county for the year 2020, and these fractions are used to distribute TOTAL statewide cattle populations from the Census of Agriculture.

