

# Manure Eligibility in CAST

10.5.23

# Background

Thank you to DE for bringing up this topic!

- CBPO is happy to support partners in addressing concerns.

## Goal:

- Informational today
- Introduce results of a new CAST-23 with an altered nutrient eligibility in advance of October AgWG and WQGIT meetings.

# Nutrient Application Eligibility

The Chesapeake Assessment Scenario Tool (CAST) simulates nutrient applications onto Agricultural lands.

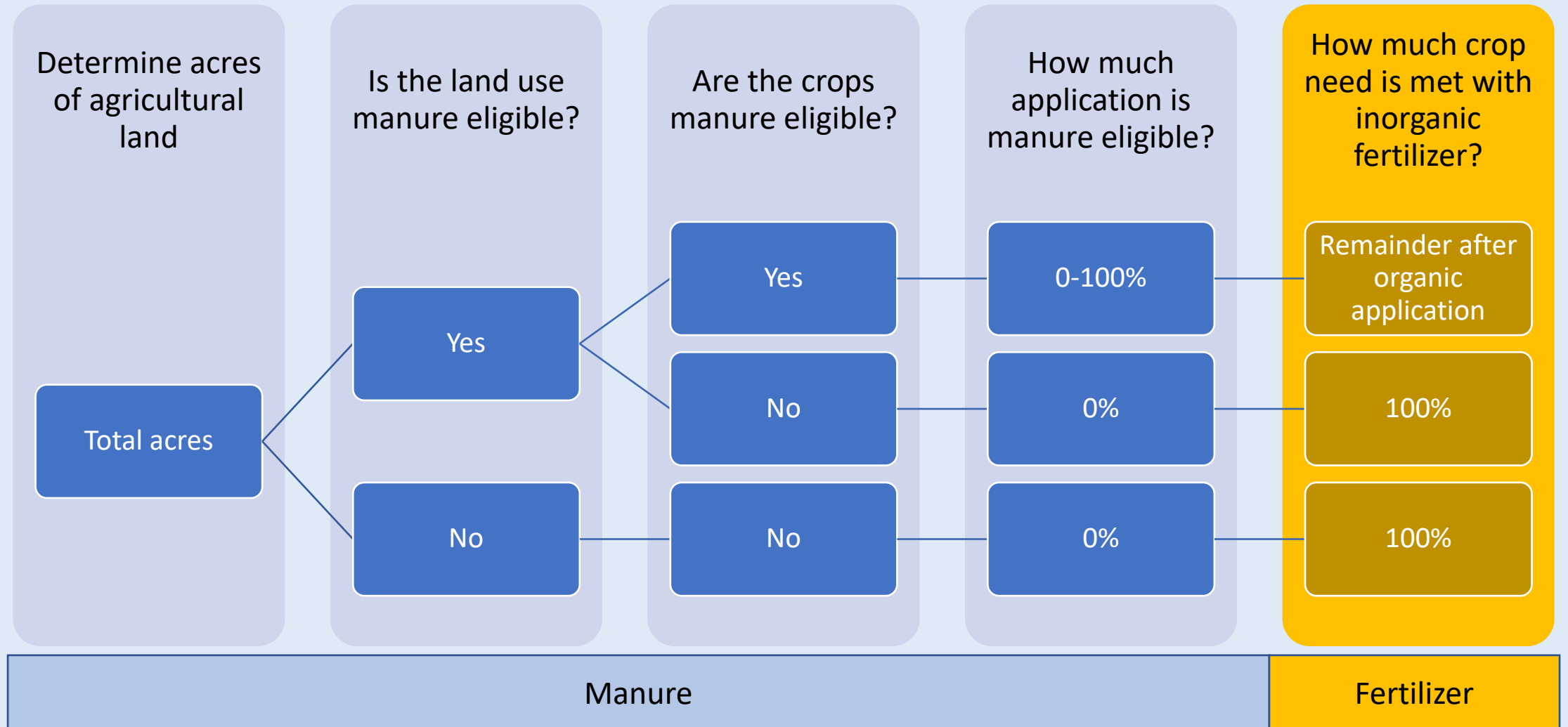


A **specific file** within this tool restricts the time in which applications can occur as well as the source of nutrients.



Some of the state inputs to this file have created unrealistic nutrient applications.

# Visualizing Manure Eligibility



# Example: *Current* application to a manure eligible land use

30 days before planting

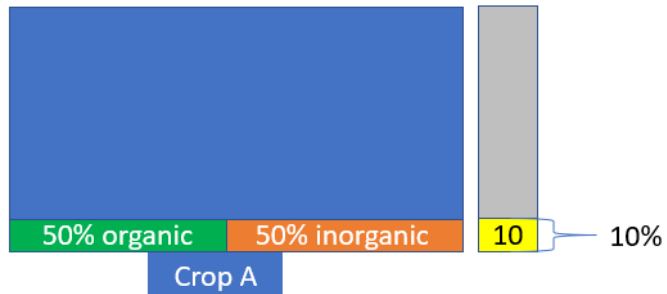
Planting

60 days after planting

Manure Stock

Fertilizer Stock

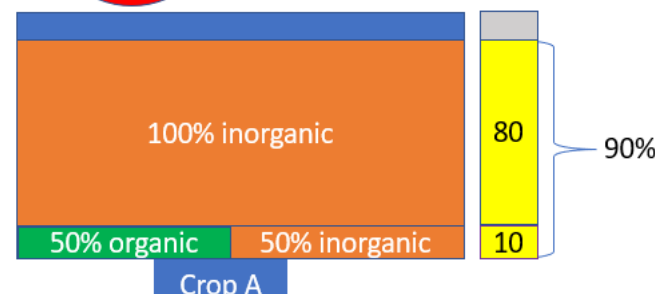
Percentage of crop need met



Manure Stock

Fertilizer Stock

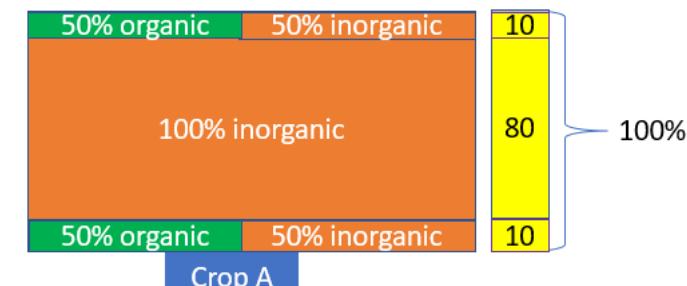
Percentage of crop need met



Manure Stock

Fertilizer Stock

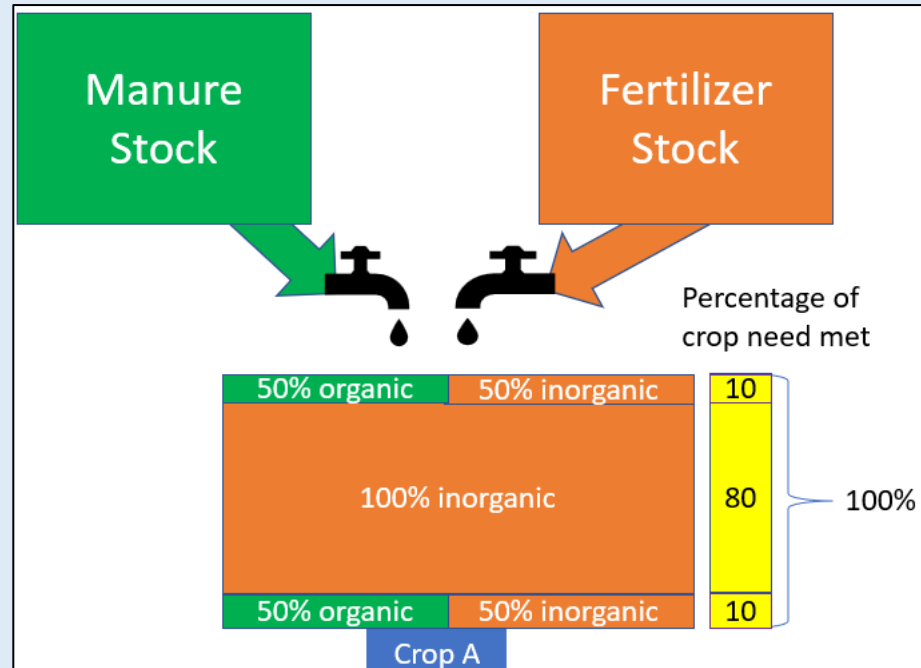
Percentage of crop need met



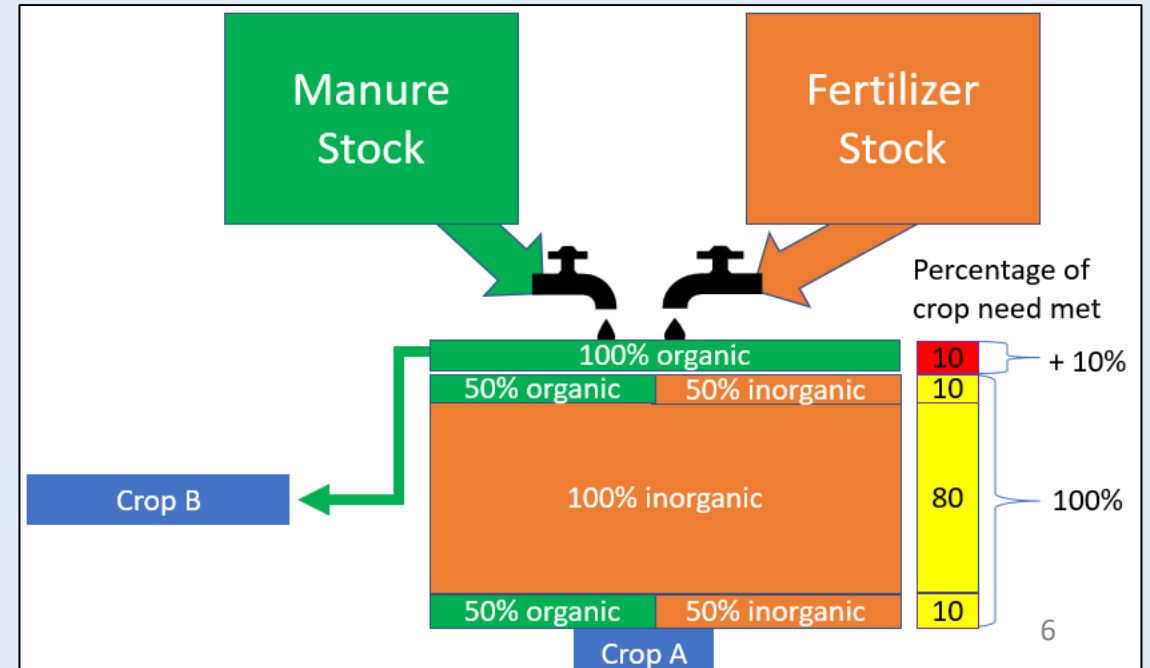
# What happens if you still have manure?

- Manure must still be distributed within the county.
- Manure ends up going to other crops in levels that do not necessarily occur in real life.

Current Version **without** excess manure relative to crop need



Current Version **with** excess manure relative to crop need



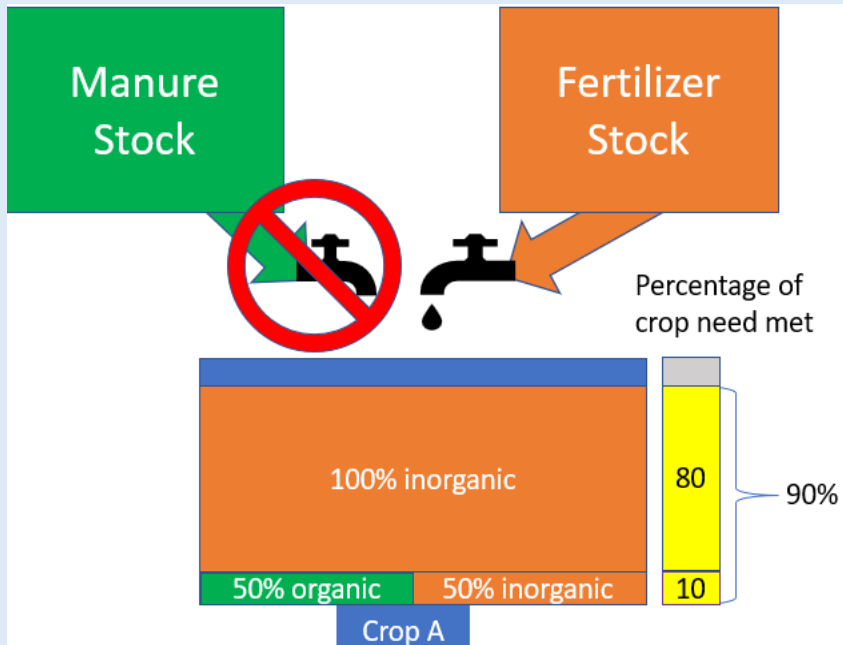
# Nutrient Eligibility: The Proposed Fix

Global change made to make all crops that had at least one timing eligible for manure and inorganic nutrients.

Restrictions on nutrient eligibility are not enforced.

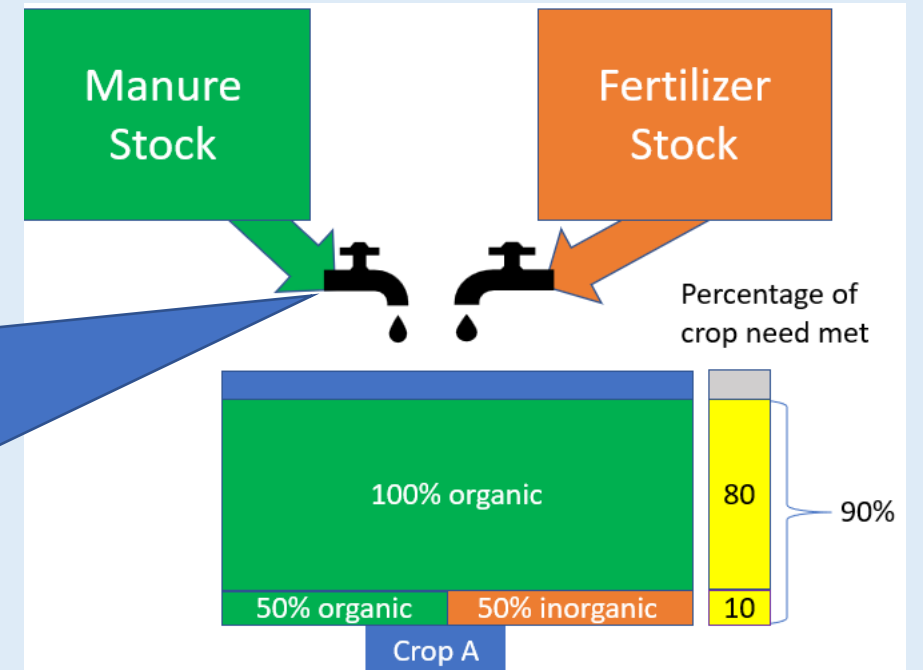
# An example of the proposed solution:

Current version



Proposed Solution

Make all crop nutrient applications to be both manure and fertilizer eligible if the crop/land use allows it.





# Scenarios

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Data show the most recent Phase 3 WIP with climate change for the Chesapeake Bay watershed area only (CBWS) for 2025

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Changes had a minimal effect on loads in any state or scenario

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Differences are due to the specifics in each county for crop types and nutrients available throughout the modeling time frame

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Any increase in loads is expected to be addressed post-2025 in the unaccounted additional loads (UALs) approved by the PSC

## TN Comparison and Impact on WIP

- Units are pounds per year of total nitrogen delivered to the edge of tidal area (EOT) for all sources
- All changes were less than 1% of the total WIP load

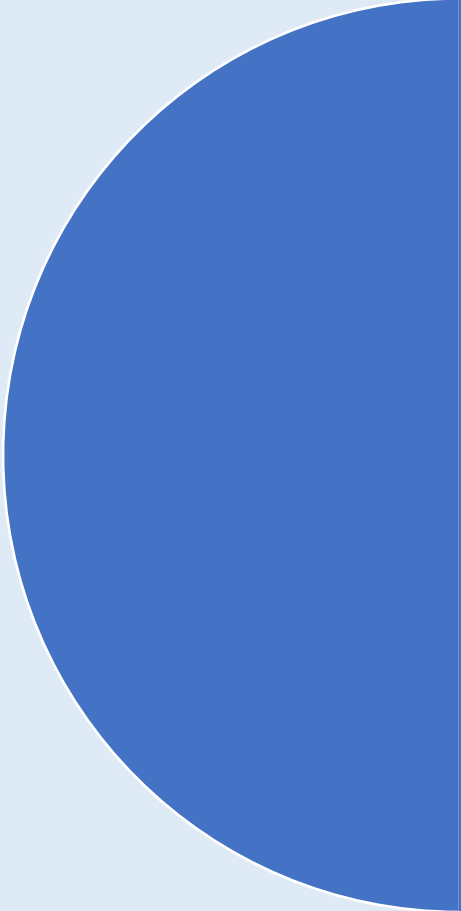
Geography (CBWS Portion Only)	CAST-2023 Version New Eligibility	CAST-2023 Version	Difference in lbs	Percent Change
Delaware	5,559,261	5,582,651	-23,389.81	-0.42%
District of Columbia	2,306,698	2,306,698	-	0.00%
Maryland	46,354,194	46,646,363	- 292,168.89	-0.63%
New York	12,105,284	12,107,553	- 2,269.50	-0.02%
Pennsylvania	86,250,805	86,209,765	41,040.03	0.05%
Virginia	50,836,519	50,809,591	26,928.43	0.05%
West Virginia	7,713,762	7,713,417	344.77	0.00%

## TP Comparison and Impact on WIP

- Units are pounds per year of total phosphorus delivered to the edge of tidal area (EOT) for all sources
- All changes were less than 2% of the total WIP load

Geography (CBWS Portion Only)	CAST-2023 Version New Eligibility	CAST-2023 Version	Difference in lbs	Percent Change
Delaware	81,802	80,886	916.31	1.13%
District of Columbia	100,642	100,642	-	0.00%
Maryland	2,868,313	2,874,593	- 6,280.27	-0.22%
New York	507,353	499,725	7,628.57	1.53%
Pennsylvania	2,898,017	2,918,934	-20,916.16	-0.72%
Virginia	4,844,772	4,831,333	13,439.08	0.28%
West Virginia	385,513	384,824	688.94	0.18%

# What if I want to look in more depth?



## Comparison tool for CAST 23 versions

- Phase 3 WIP with climate change corresponds to the year 2025 in web application

# Questions?

- As questions arise, please contact:
  - Chris Brosch ([Chris.Brosch@delaware.gov](mailto:Chris.Brosch@delaware.gov))
    - Cc: Tom Butler ([butler.thomas01@epa.gov](mailto:butler.thomas01@epa.gov))