Office Hours AMT

3/14/2025

Main topics

- Crops in other hay
- Poultry data – (note this is being presented by DE)
- Inorganic Ag Fertilizer

February Recap: 5 Decisions

1. Two new Land Uses Managed Hay and Pasture.
2. Four manure application groups
3. Defined managed and unmanaged hay and pasture.
4. Acres of managed Land Uses will be state reporting each year by November 1st.
5. Assigned Non - Nutrient Management multipliers for Nitrogen and Phosphorus.

A quick caveat:

Crop:	CAST Land Use:
bromegrass seed	Other Hay
cropland on which all crops failed or were abandoned	Other Hay
fescue seed	Other Hay
orchardgrass seed	Other Hay
other field and grass seed crops	Other Hay
other haylage; grass silage and greenchop	Other Hay
other managed hay	Other Hay
ryegrass seed	Other Hay
small grain hay	Other Hay
timothy seed	Other Hay

A quick caveat:

Fixes Nitrogen

Crop Name:	CAST Land Use:
bromegrass seed	Other Hay
cropland on which all crops failed or were abandoned	Other Hay
fescue seed	Other Hay
orchardgrass seed	Other Hay
other field and grass seed crops	Other Hay
other haylage; grass silage and greenchop	Other Hay
other managed hay	Other Hay
ryegrass seed	Other Hay
small grain hay	Other Hay
timothy seed	Other Hay

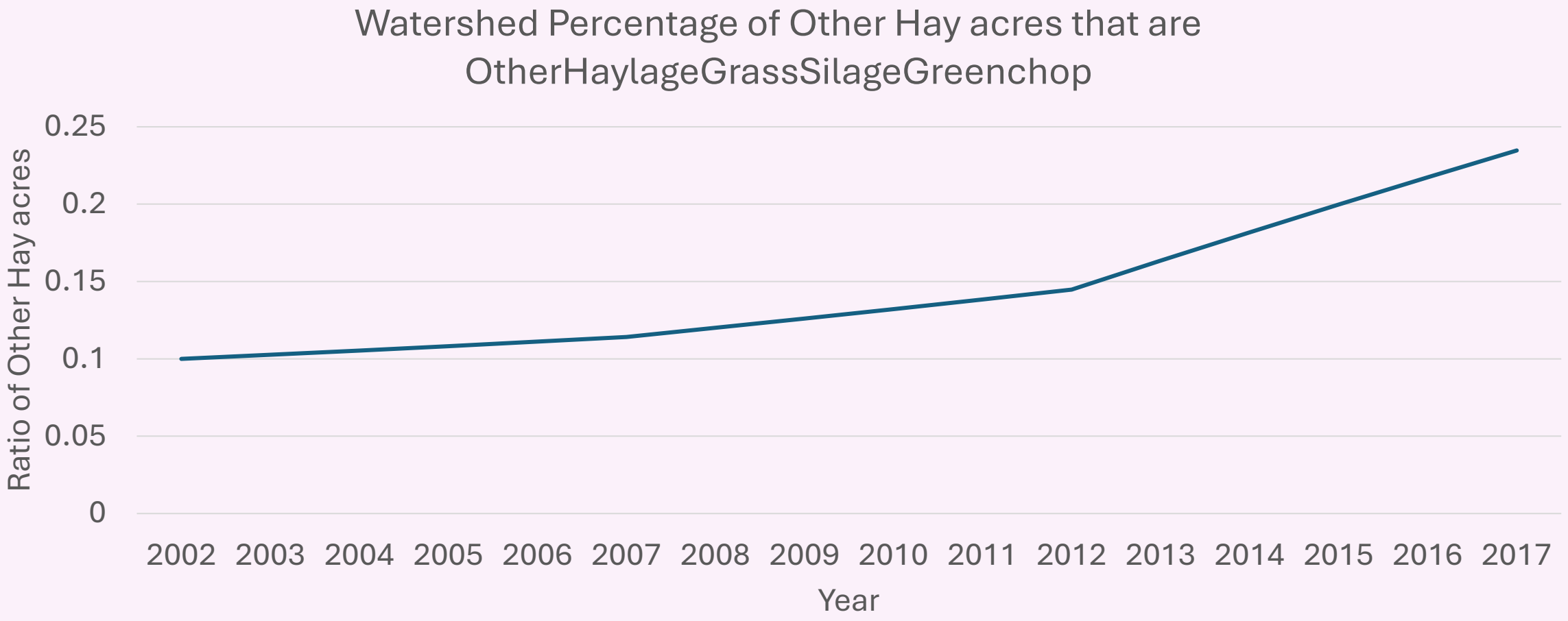
Some things to think about

- Other haylage; grass silage and greenchop
  - Ag census definition:
    - "*haylage, grass silage, and greenchop (hay cut and fed green) made from such crops or mixtures as small grains, clover, lespedeza, fescue, timothy, Bermuda grass, sudangrass, sorghum-sudan crosses, orchardgrass, soybeans, peanuts, etc*".
  - Currently:
    - 30.24 lbs N fixed per yield unit
    - Currently ~ 25% of other hay acres

Should we switch the Land Use?

Crop Name:	CAST Land Use:
alfalfa seed	Leguminous Hay
vetch seed	Leguminous Hay
alfalfa hay	Leguminous Hay
birdsfoot trefoil seed	Leguminous Hay
haylage or greenchop from alfalfa or alfalfa mixtures	Leguminous Hay
red clover seed	Leguminous Hay
other haylage; grass silage and greenchop	Other Hay
cropland on which all crops failed or were abandoned	Other Hay
other managed hay	Other Hay
orchardgrass seed	Other Hay
other field and grass seed crops	Other Hay
ryegrass seed	Other Hay
fescue seed	Other Hay
bromegrass seed	Other Hay
timothy seed	Other Hay
small grain hay	Other Hay

What is the impact of changing this?



What is the impact of changing this?

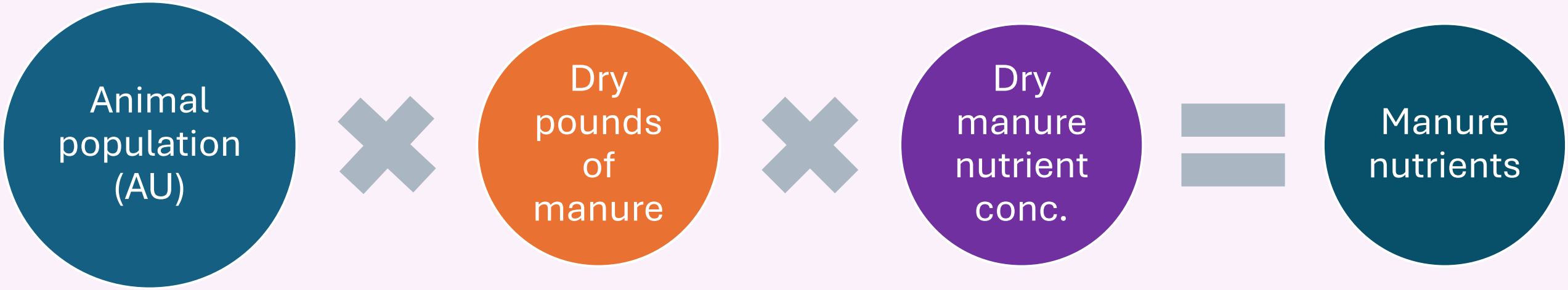
Year	Sum of OtherHayAcres	Sum of OtherHaylageGrassSilageGreenchopAcres
2002	2,365,400	236,489
2003	2,333,419	239,520
2004	2,301,479	242,551
2005	2,269,541	245,582
2006	2,237,605	248,613
2007	2,205,682	251,645
2008	2,189,357	262,781
2009	2,173,031	273,918
2010	2,156,706	285,054
2011	2,140,380	296,190
2012	2,124,544	307,696
2013	2,143,608	350,402
2014	2,164,158	393,389
2015	2,184,774	436,380
2016	2,205,391	479,371
2017	2,227,549	522,833

Questions?

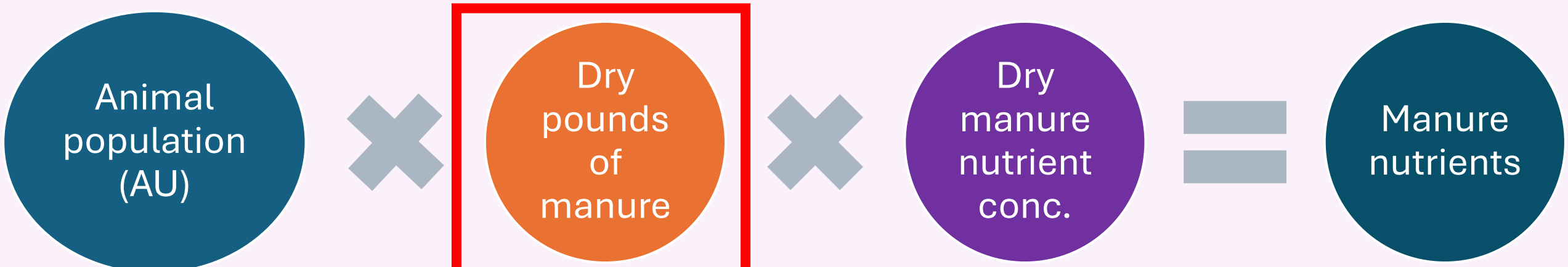
The discussion: Where do we want to go?

- Crop: other haylage; grass silage and greenchop
  - Current Land Use: Other Hay
  - Suggested Land Use: Leguminous Hay

Calculating manure nutrients



Poultry Industry Input

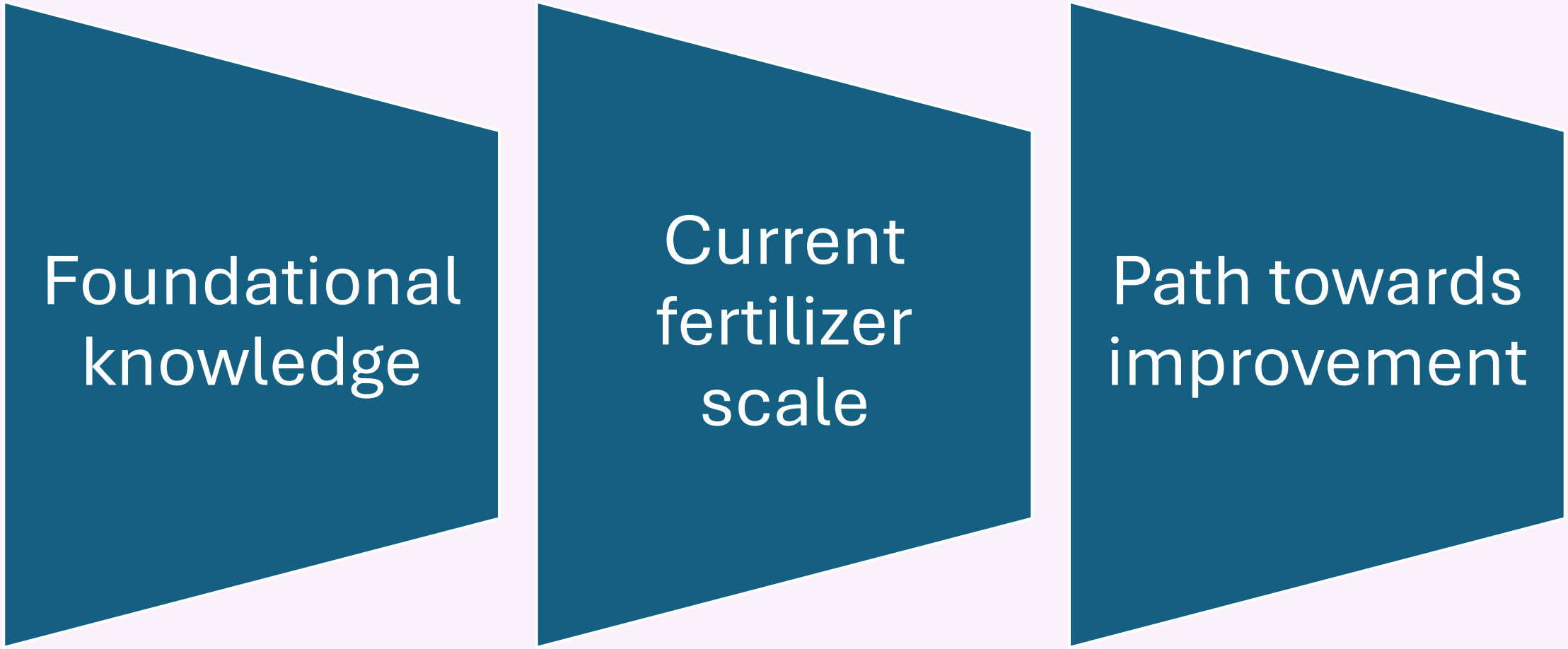


- Weights
-Numbers

- Manure/litter generation

- Nutrient content

Recap inorganic fertilizer in CAST



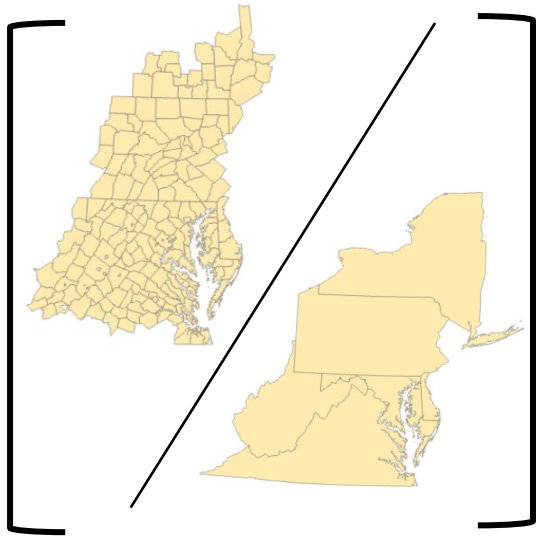
Foundational:

3. Six State Level

AAPFCO/State

X

6. Expenditures Fraction



Ag Census

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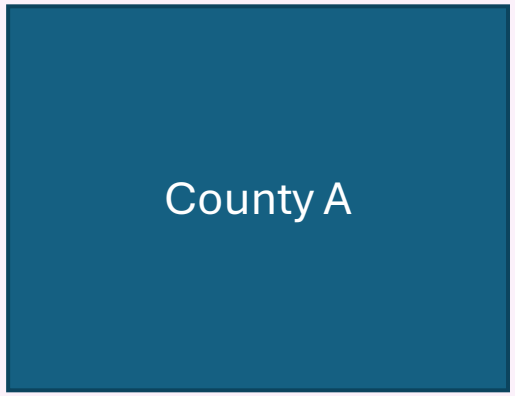
7. Counties & CBW Levels

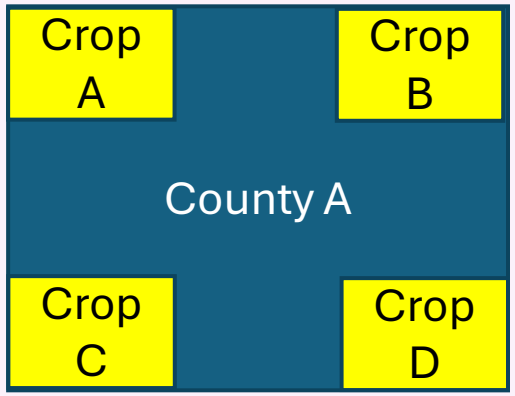
AAPFCO/State & Ag Census

- CURRENTLY fertilizer from ALL states feeds a single stock
- Fertilizer from one state can theoretically be applied in another
- Implications for all of the watershed

Basics of nutrient application

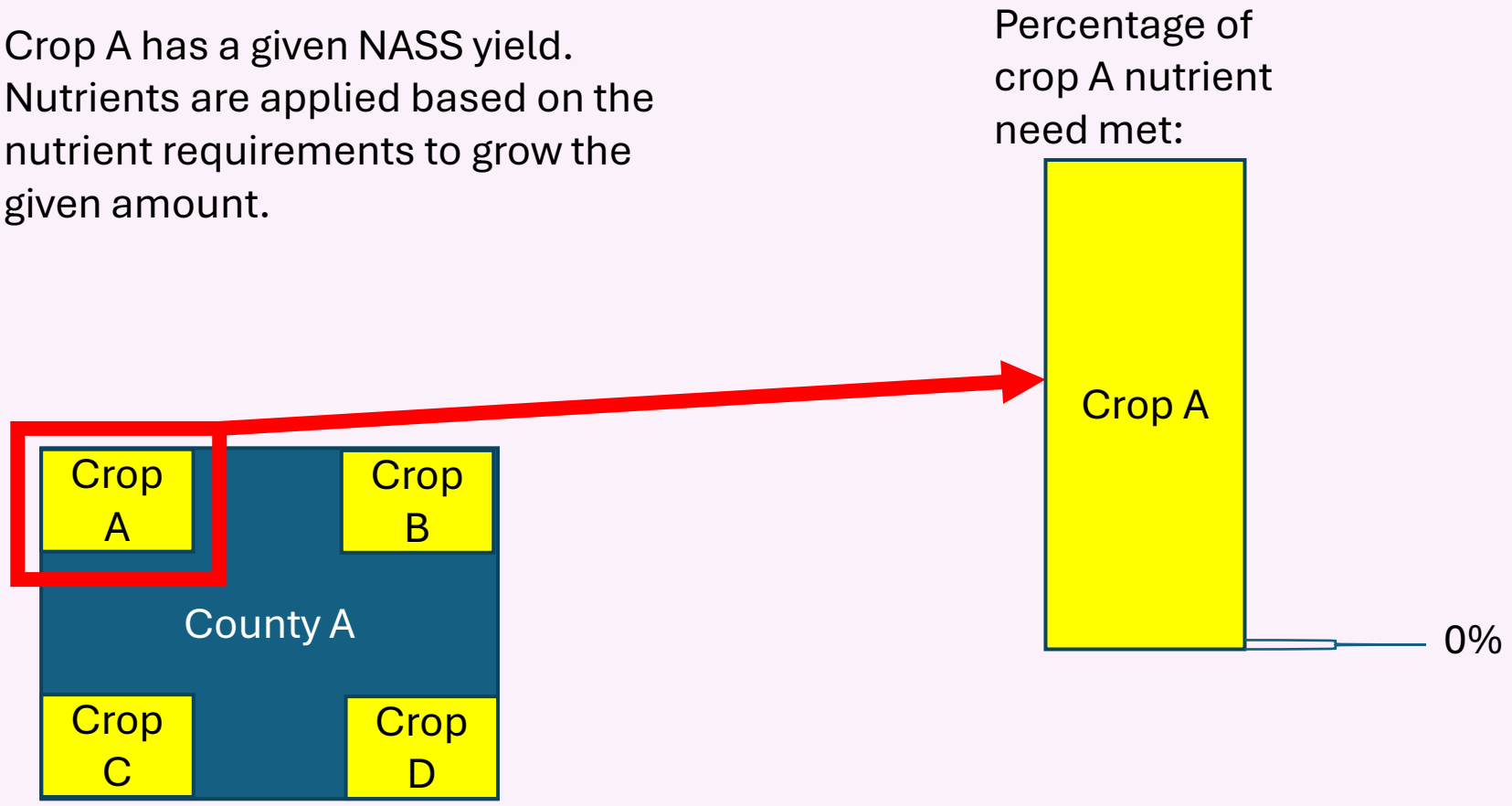


Basics of nutrient application



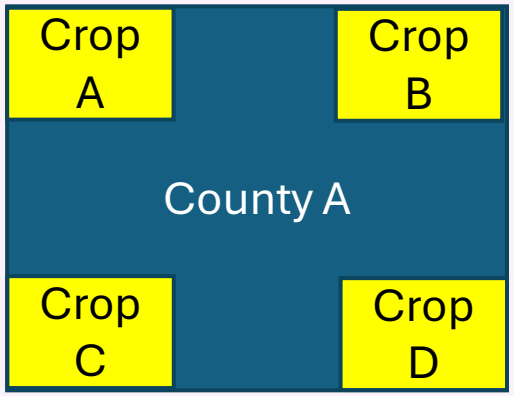
Basics of nutrient application

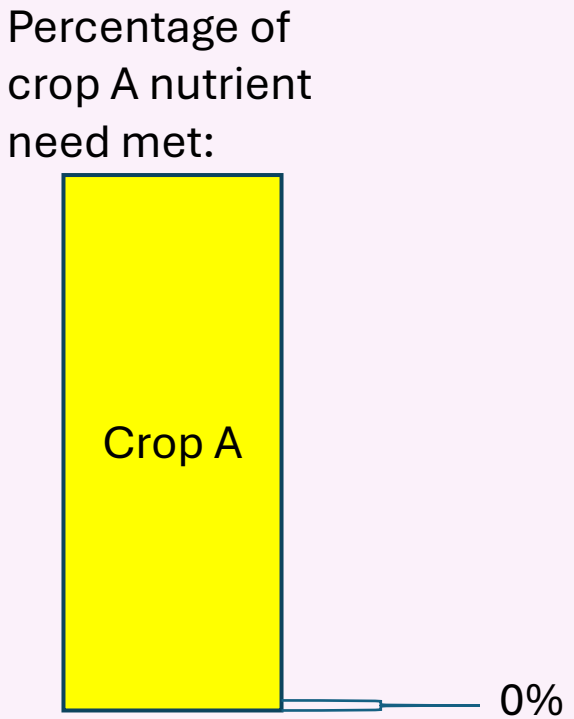
- Crop A has a given NASS yield.
- Nutrients are applied based on the nutrient requirements to grow the given amount.



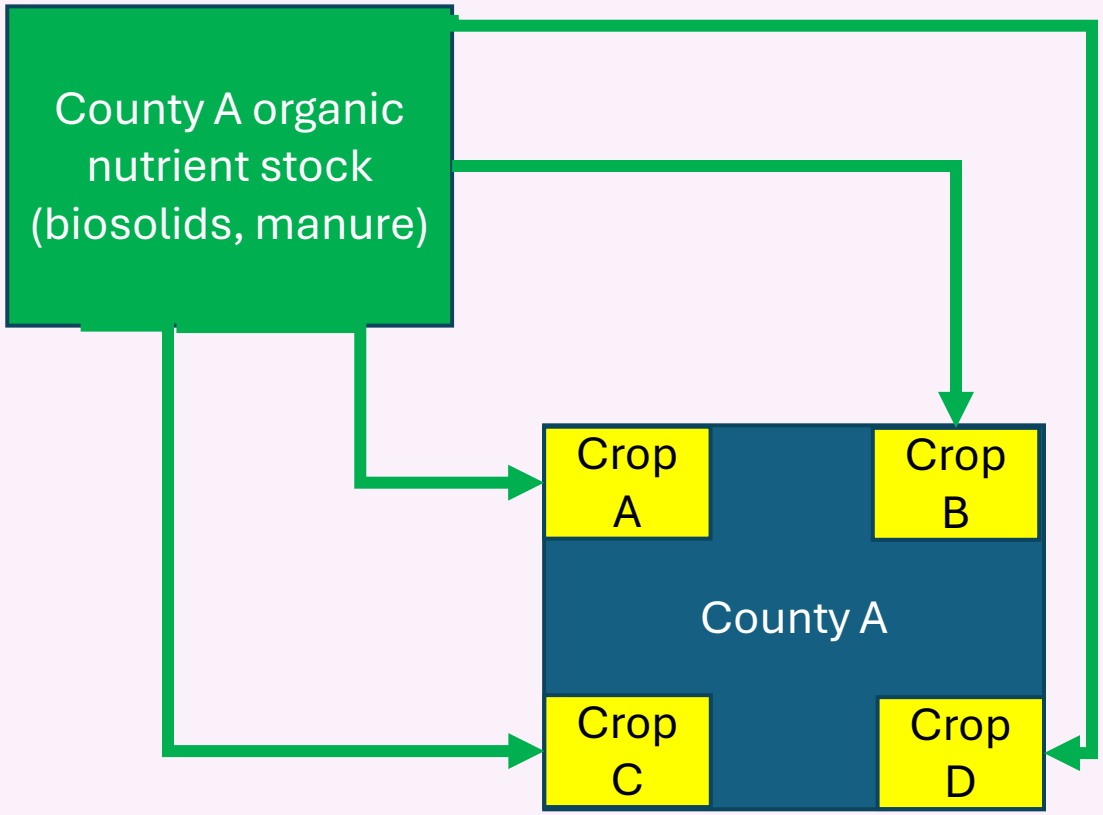
Nutrient application visualization

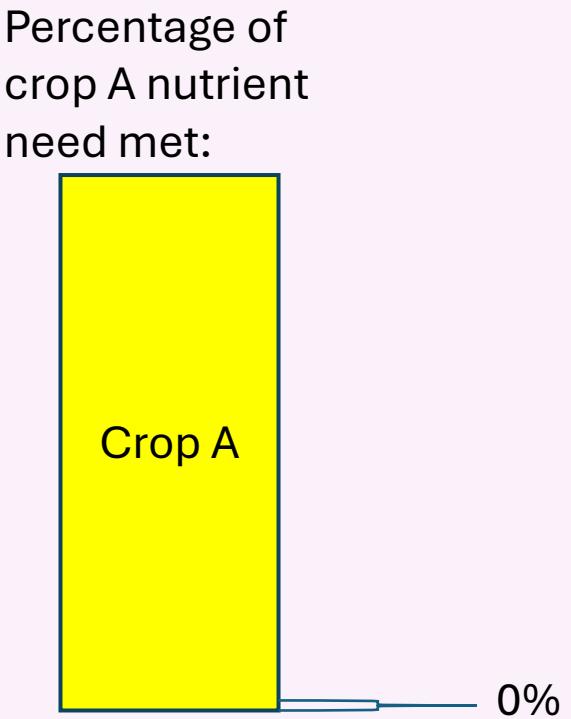
County A organic nutrient stock (biosolids, manure)





Nutrient application visualization





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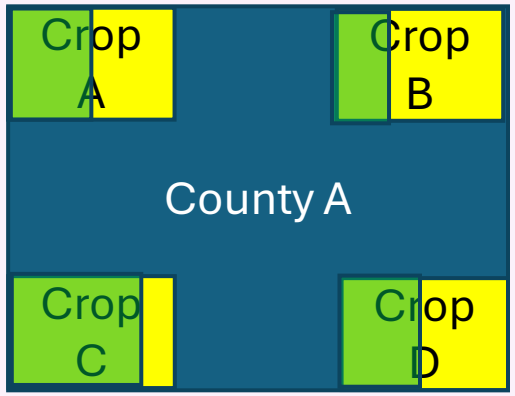
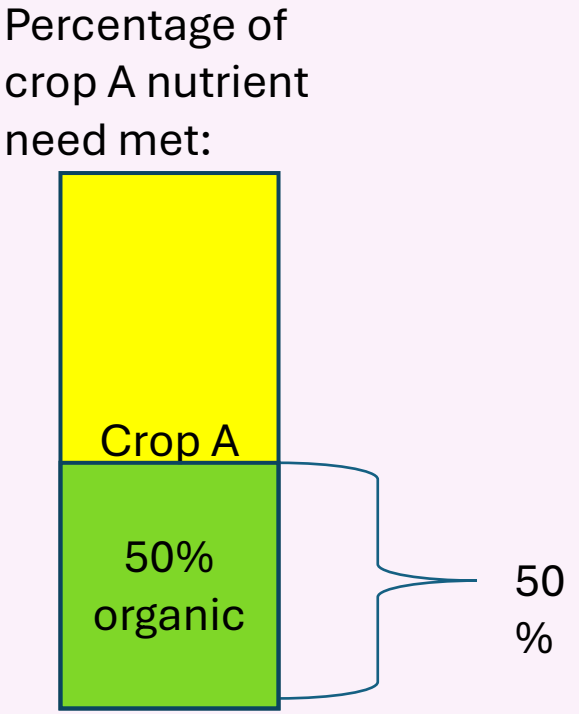
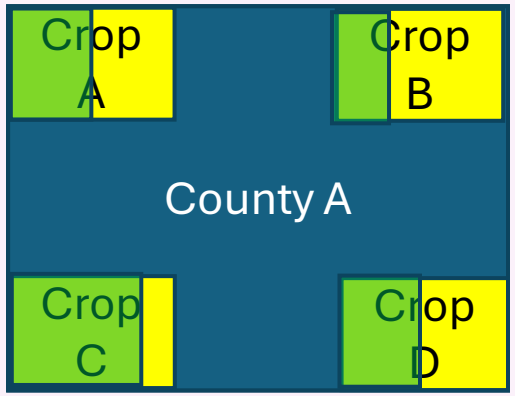


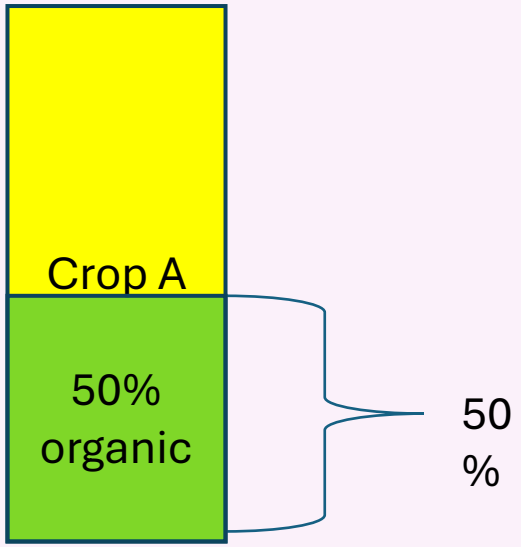


Nutrient application visualization

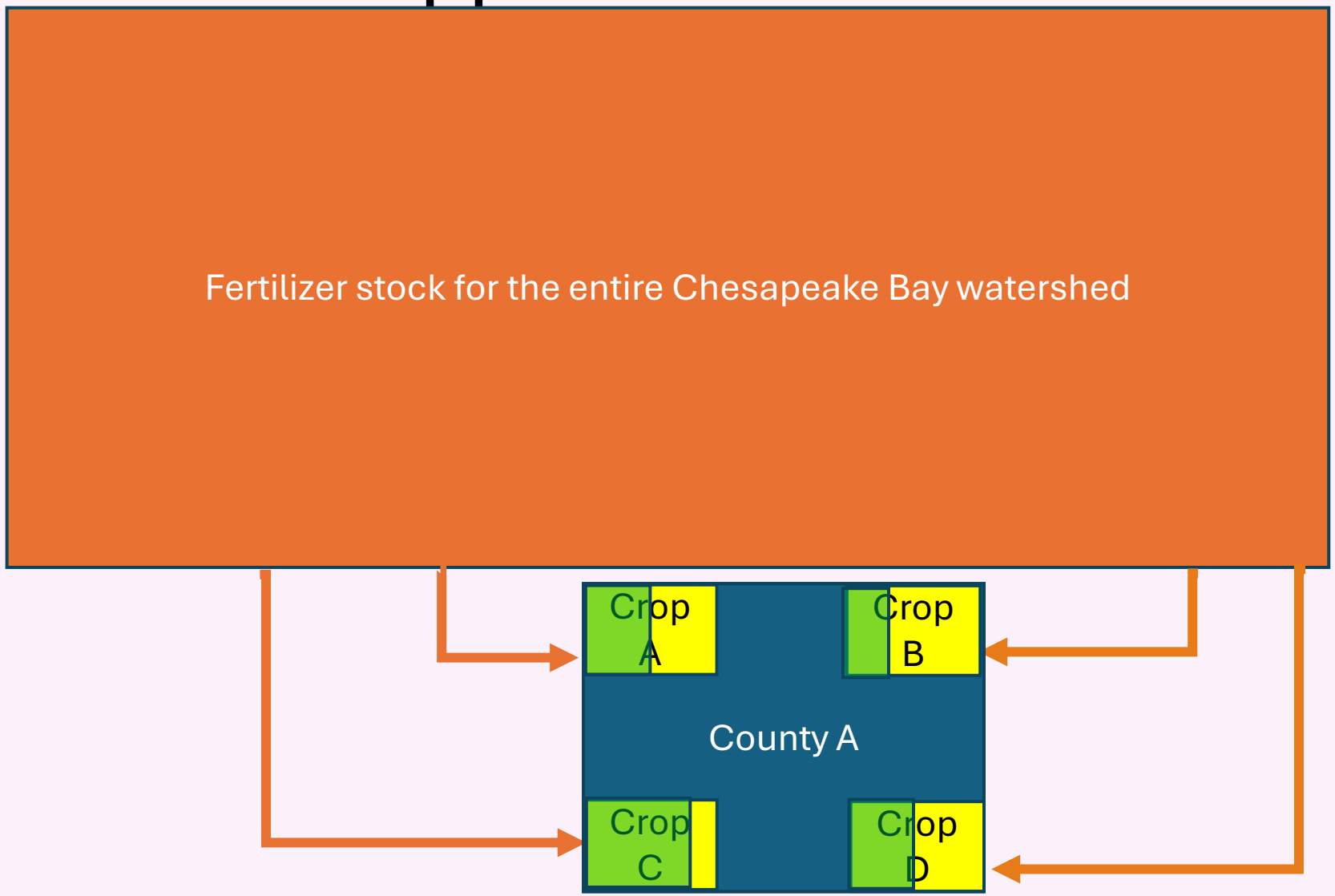
Fertilizer stock for the entire Chesapeake Bay watershed



Percentage of crop need met:

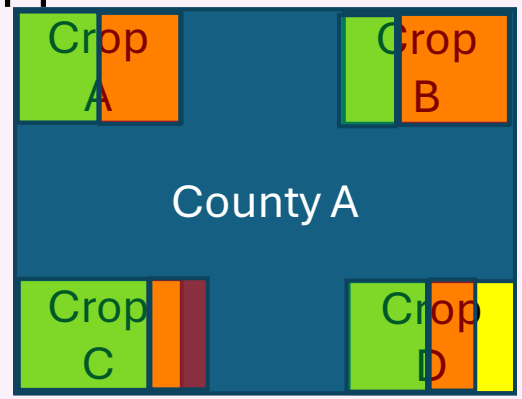


Nutrient application visualization

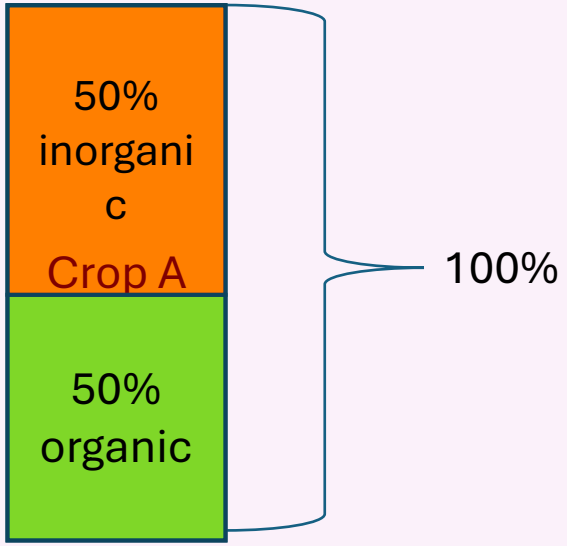


Nutrient application visualization

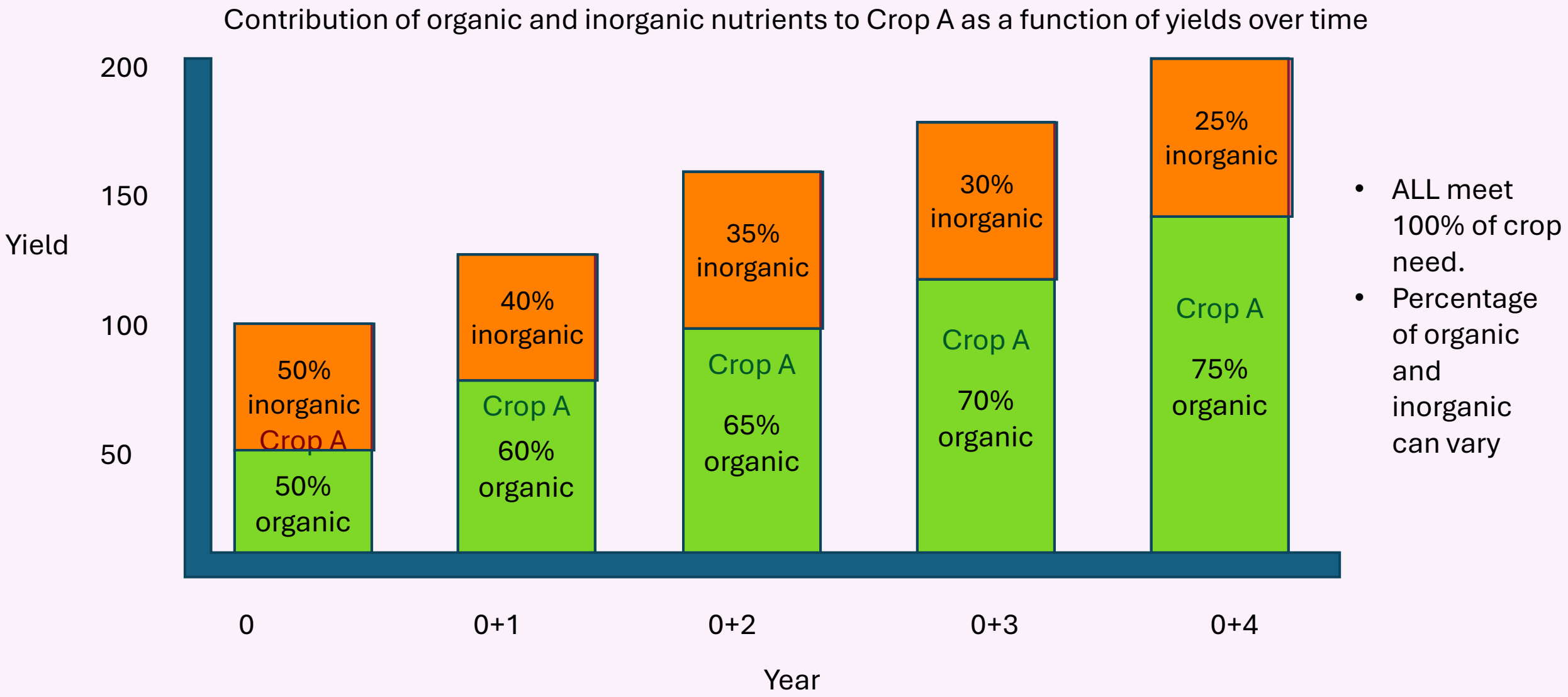
- This calculation can only be done when we have actual fertilizer data
- Provides an application ratio of crop need (organic nutrients to inorganic nutrients (50/50))
- This ratio is used to apply nutrients for all subsequent years
- Varying yields impact applications



Percentage of crop A nutrient need met:



Applications and crop yield data example: 100% of crop need is met

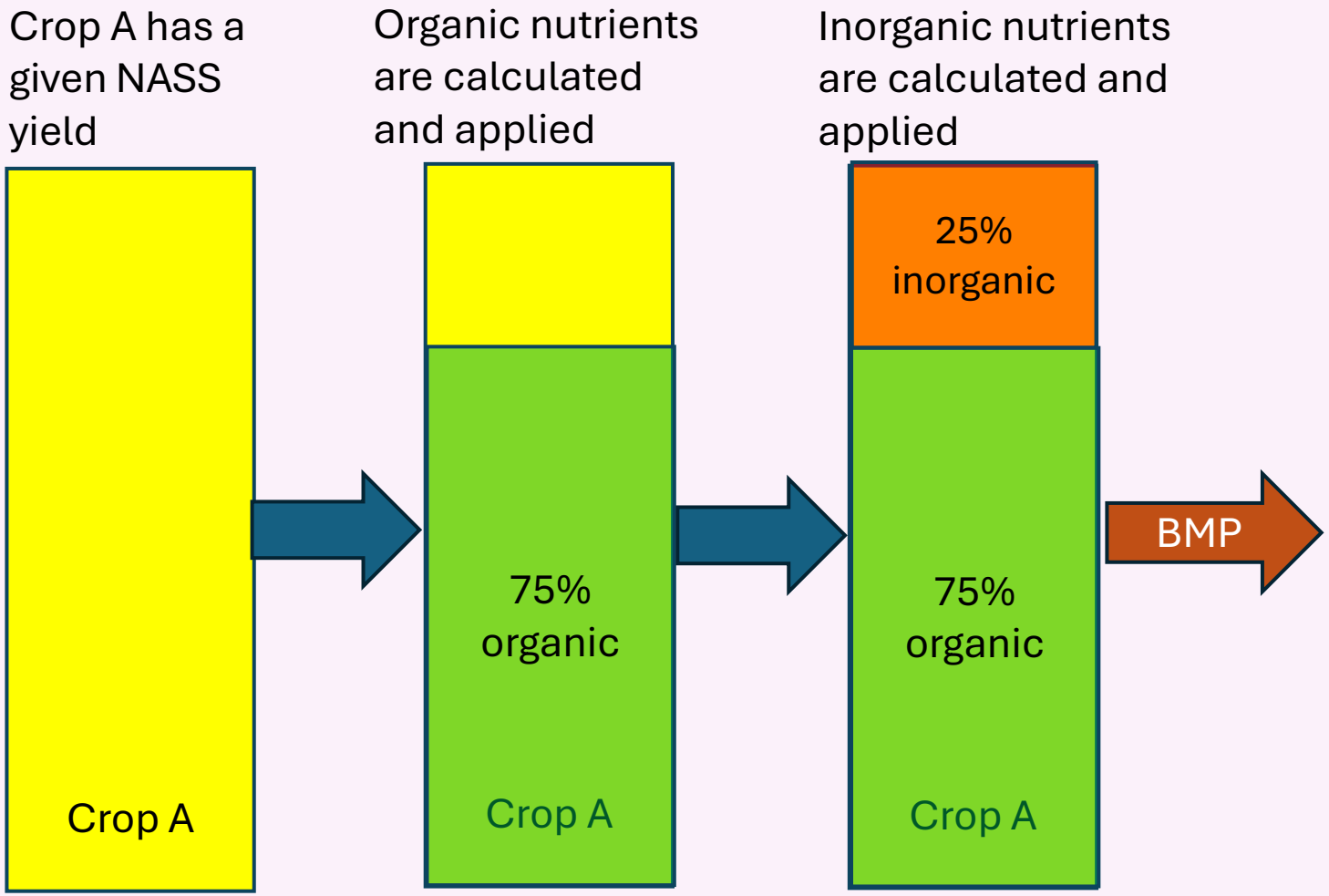


- ALL meet 100% of crop need.
- Percentage of organic and inorganic can vary

Some caveats:

- BMPs can impact application
  - Load Source Reduction (Core NM)
- BMPs can shift/replace nutrients
  - Manure transport
  - Manure treatment technologies

Example: an example application of BMPs



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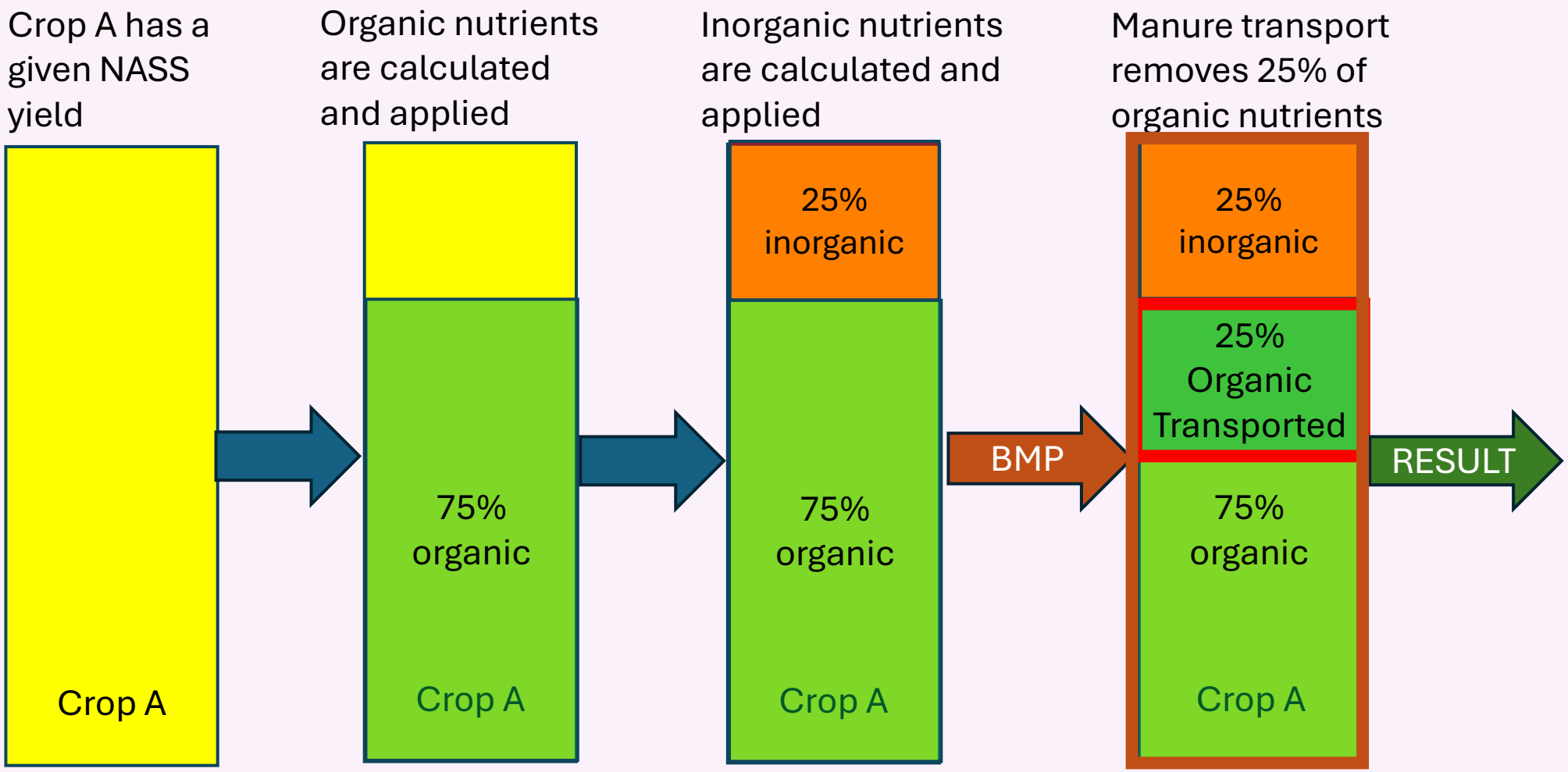

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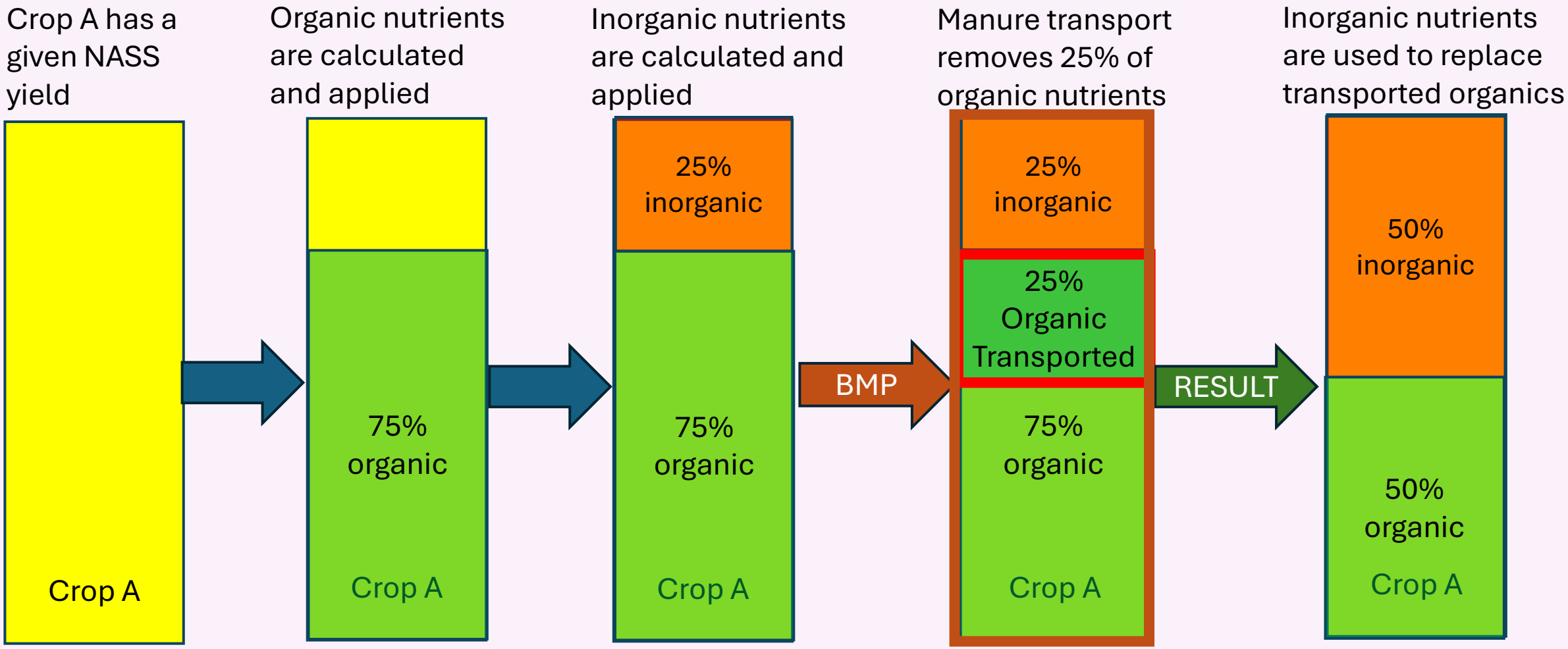

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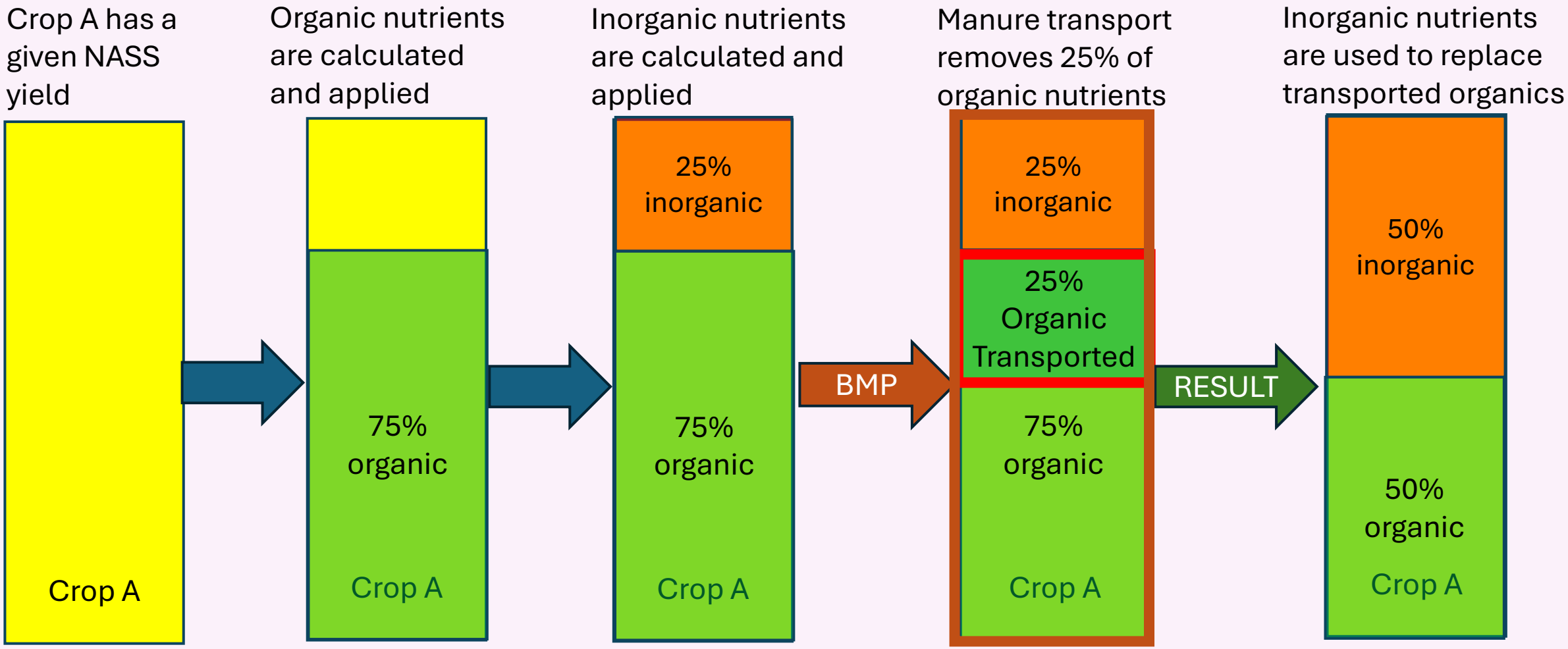
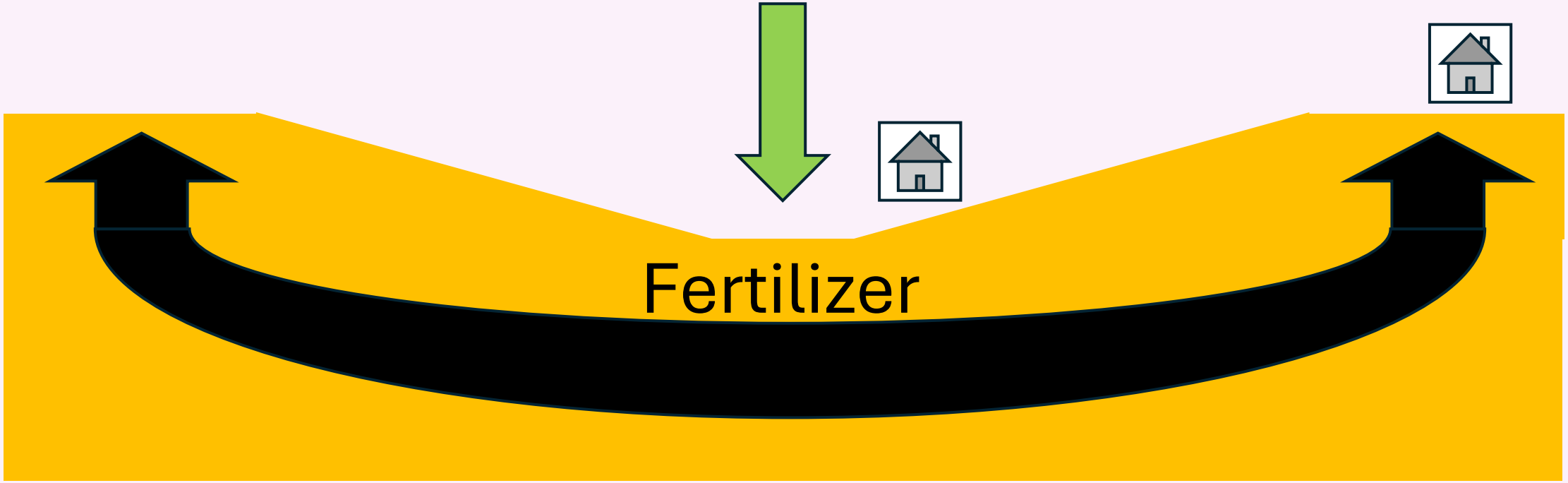


Remember, fertilizer is a watershed product

- If one area uses less fertilizer other areas will use more.



A note on Nitrogen Loading

- If you have two IDENTICAL fields, and apply the same amount ***Inorganic fertilizer*** will **load MORE** than ***manure***

Land

Fertilizer Application

100 Lbs

Runoff from Fertilizer

15 Lbs

Land

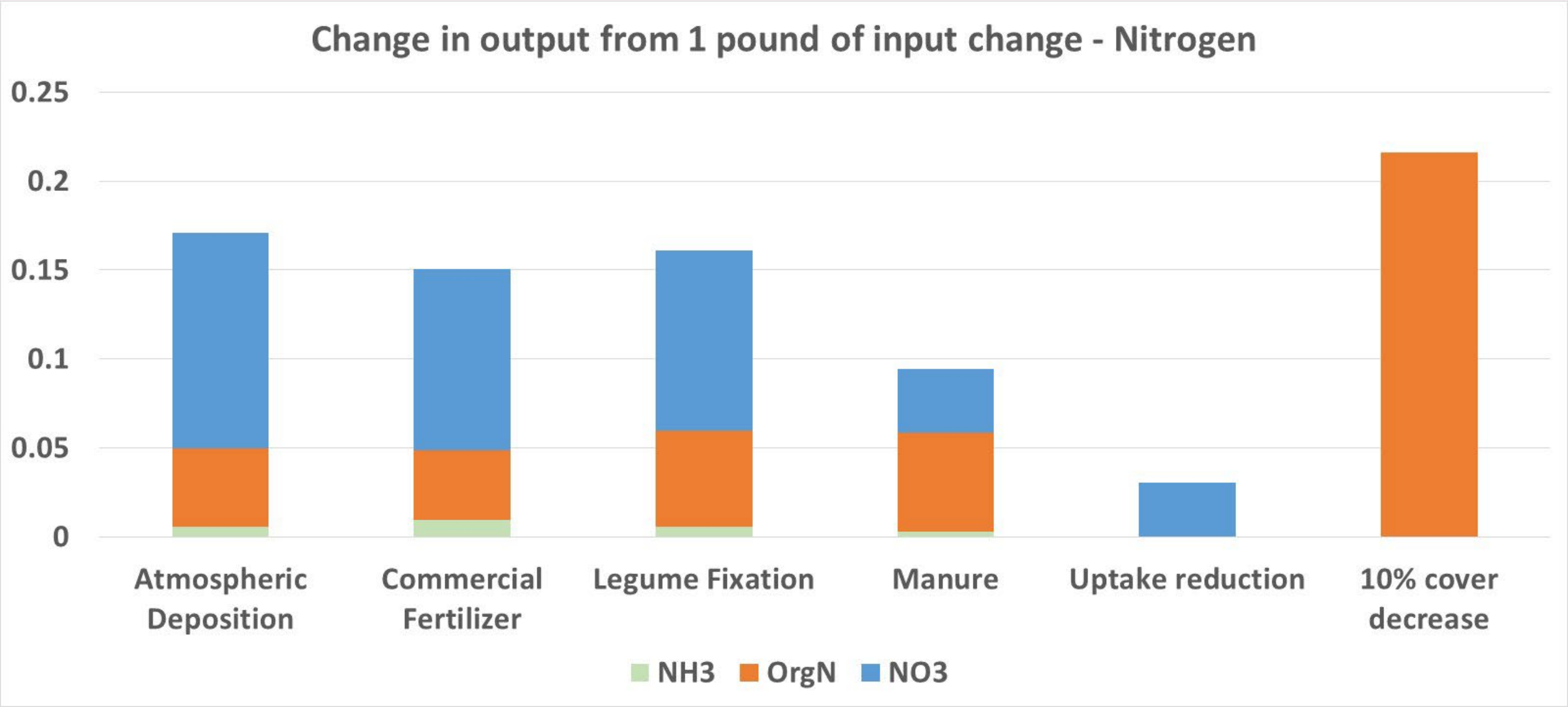
Manure Application

100 Lbs

Runoff from Manure

9 lbs

Sensitivities – all else being equal



Questions?

What can we improve?

Different scale?

- States won’t influence each other the same way.

Different methods for backfilling?

- Cap the percentage of fertilizer used to replace organic nutrients.

Thank you for attending office hours!

We will begin our main meeting at 09:00.