Nutrient Management in CAST

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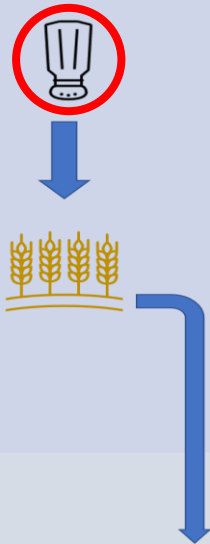
Recap

CAST nutrient application

Three counties compared

Request for nutrient management
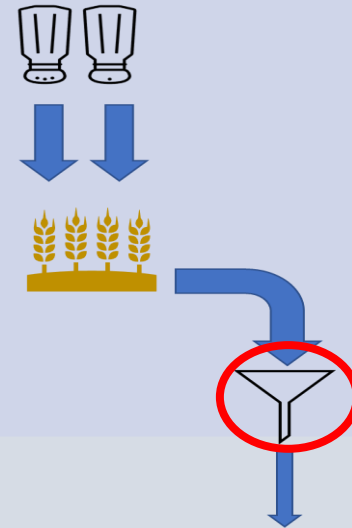
The Best Management Practices (BMPs) of Nutrient Management
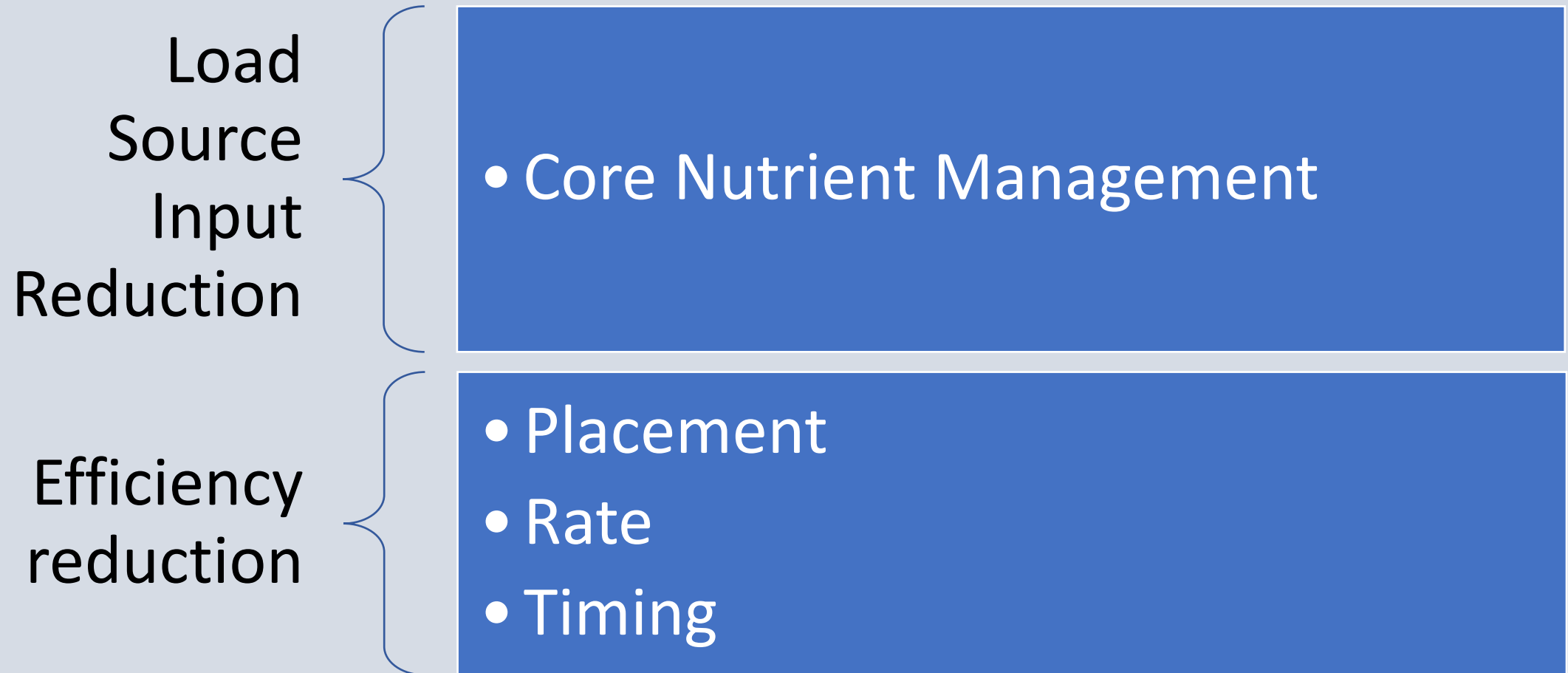
- BMPs reduce the amount of pollution

Load Source Input Reduction

Efficiency Value

Defining nutrient management (NM)

Load
Source
Input
Reduction

- Core Nutrient Management

Efficiency
reduction

- Placement
- Rate
- Timing

For reference, please see expert panel recommendations for CAST BMPs

The Best Management Practices (BMPs) of Nutrient Management

|	
Load Source Input Reduction	Increase application rate in non nutrient management areas
Efficiency Value	Percent reduction applied to acres where BMP is implemented

CAST learning: 2016 counties chosen

County type	Description	Chosen county
Organic nutrient dominated	mostly manure application	Rockingham, VA
Mixed source	mixed manure and inorganic fertilizer applications	Berks, PA
Inorganic nutrient dominated	primarily inorganic fertilizer application	New Castle, DE

Crop Need

The amount of nutrients a crop is estimated to require to produce a typical crop yield

Crop need under different amounts of Nutrient Management for **Grains with manure** in lbs/acre
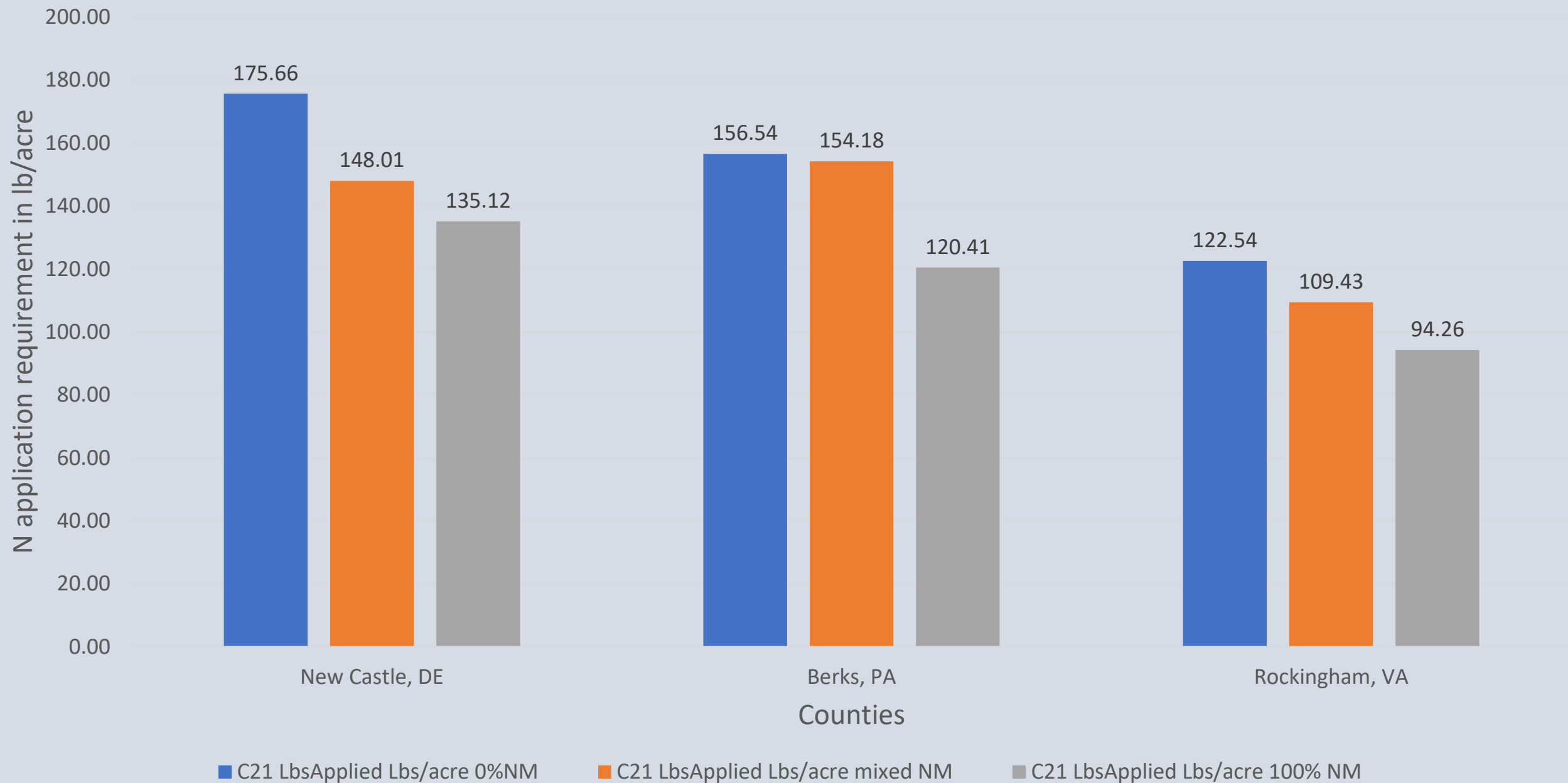
A Note on Pasture

The Agricultural Modeling Subcommittee significantly modified the LGU nutrient application recommendations across the six states for pasture land uses.

The approved application rates for pasture are reflective of an average application rate condition.

- represents a range of annual nutrient applications from zero to above the recommended application rates from the LGU.
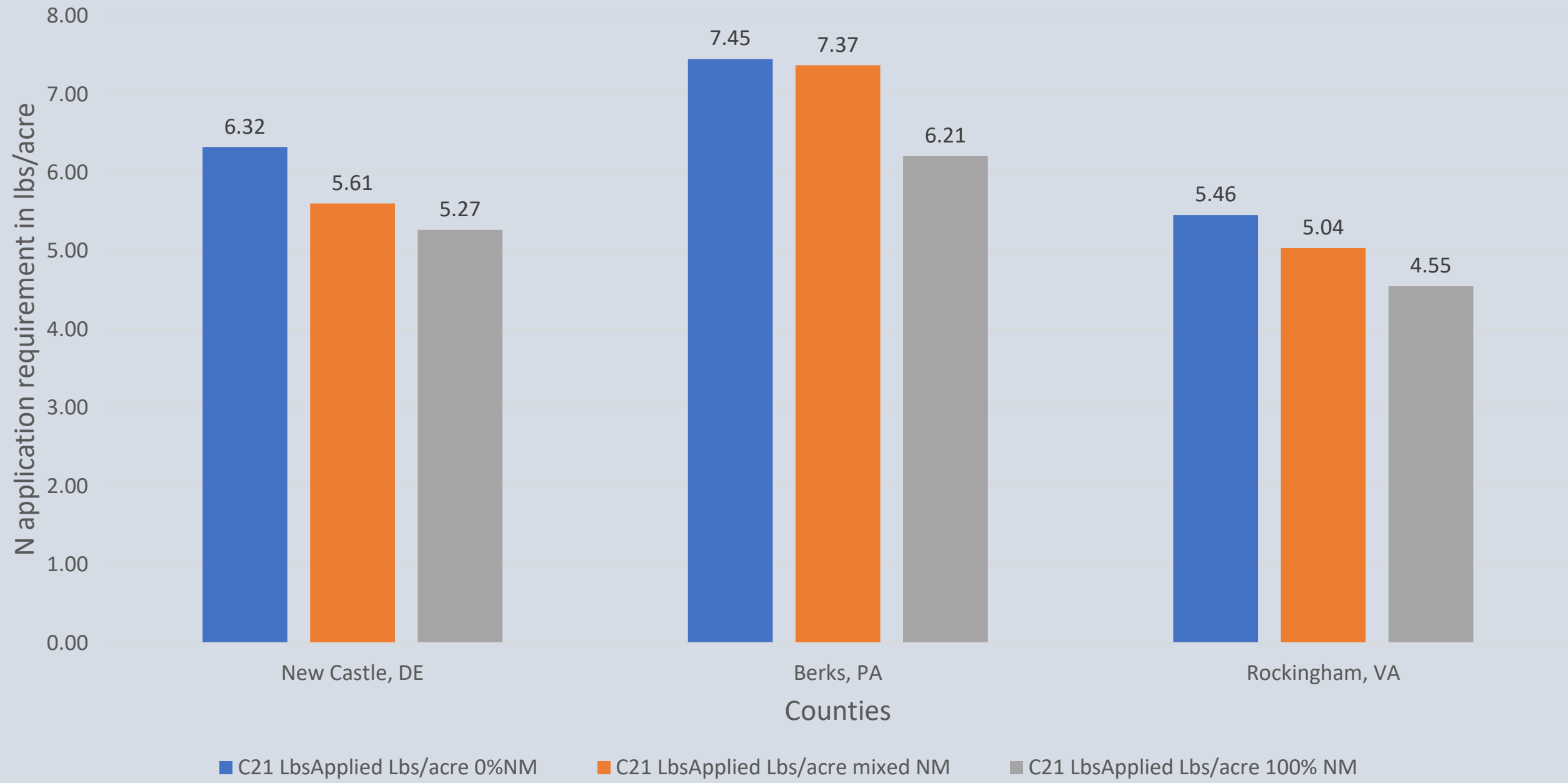
Expert panel recommendations were modified creating a neutral multiplier for pasture land uses.

- Avoid the "double crediting" of nutrient management on these land uses as the "model credit" as already been represented in the base model condition established by the AMS.
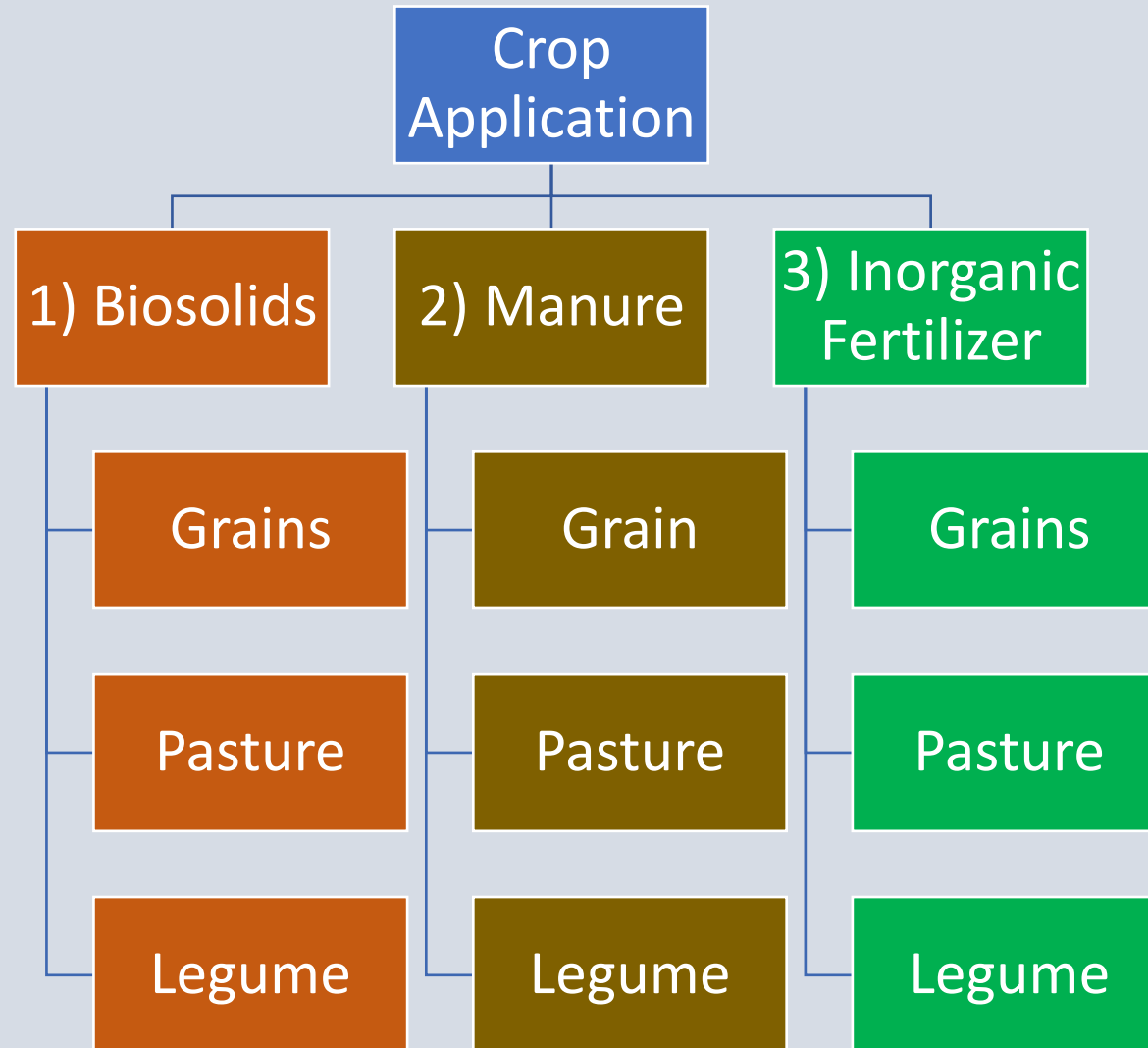
Crop need under different amounts of Nutrient Management for **Pasture** in lbs/acre
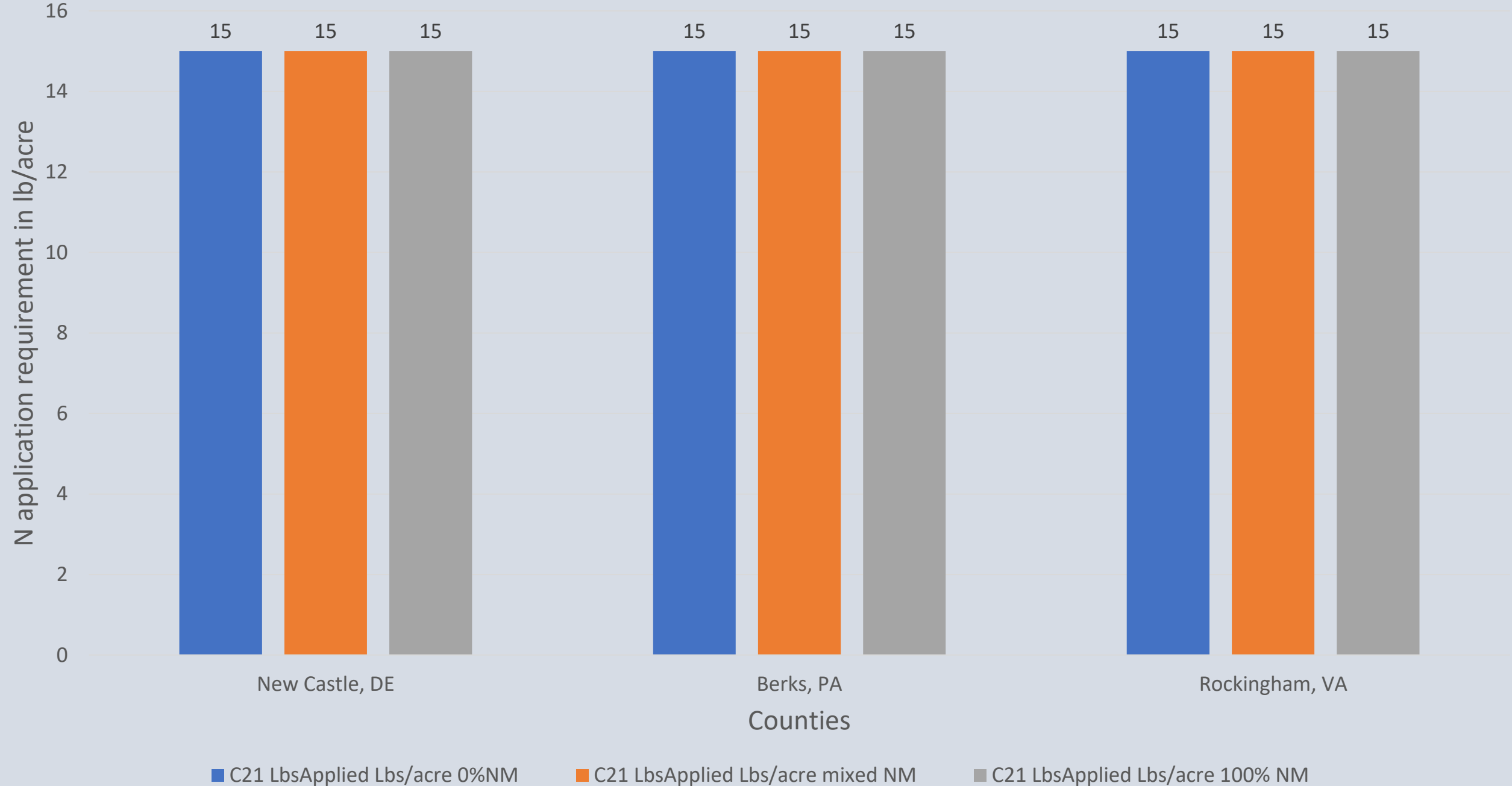
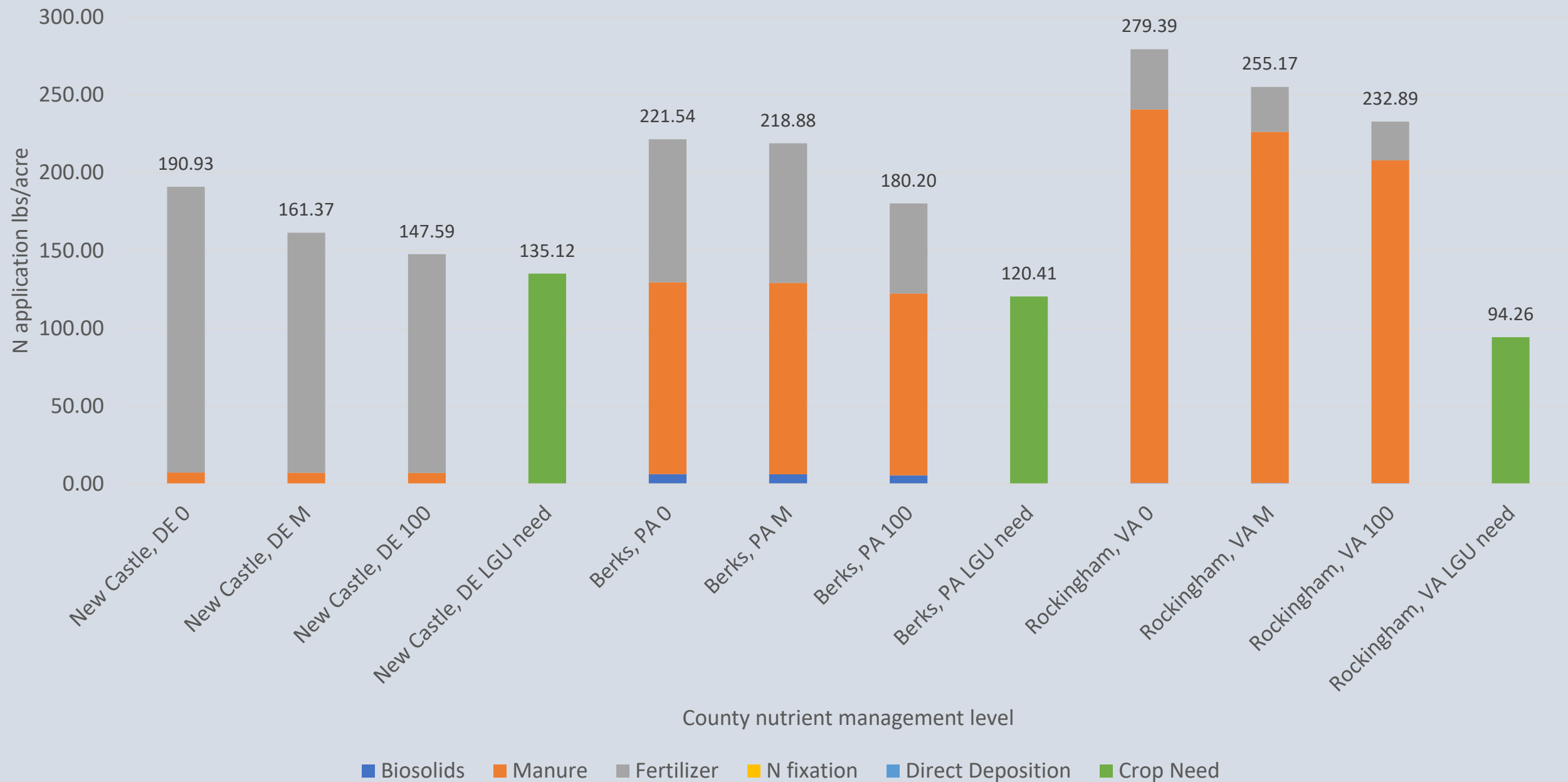Crop need under different amounts of Nutrient Management for **Full Season Soybeans** in lbs/acre

N application requirement in lbs/acre

Counties

- C21 LbsApplied Lbs/acre 0%NM
- C21 LbsApplied Lbs/acre mixed NM
- C21 LbsApplied Lbs/acre 100% NM

New Castle, DE: 6.32, 5.61, 5.27
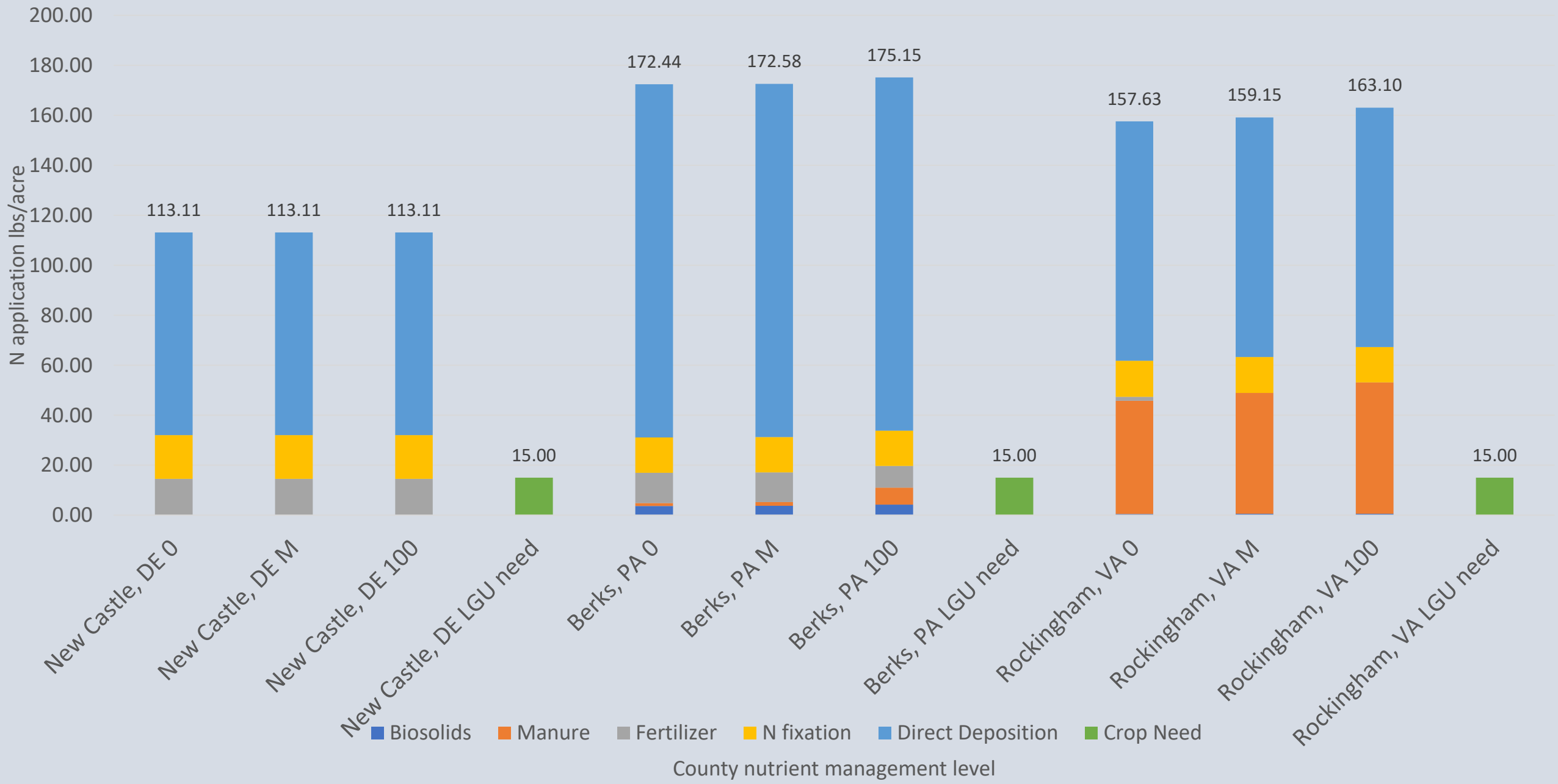**Berks, PA:** 7.45, 7.37, 6.21
Rockingham, VA: 5.46, 5.04, 4.55

Crop Application is sequentially applied

Total N applied per acre for **Grain with manure** under different levels of nutrient management compared to crop need

Total N applied per acre for **Pasture** under different levels of nutrient management compared to crop need

Total N applied per acre for **Full Season Soybeans** under different levels of nutrient management compared to crop need

* NOTE N fertilizer can be residual from P applications or from fertilizer to start the crop

Summary

Nutrient management has two different types of BMP

- Load source reduction – reduces application
- Efficiency – causes percent reduction on acres
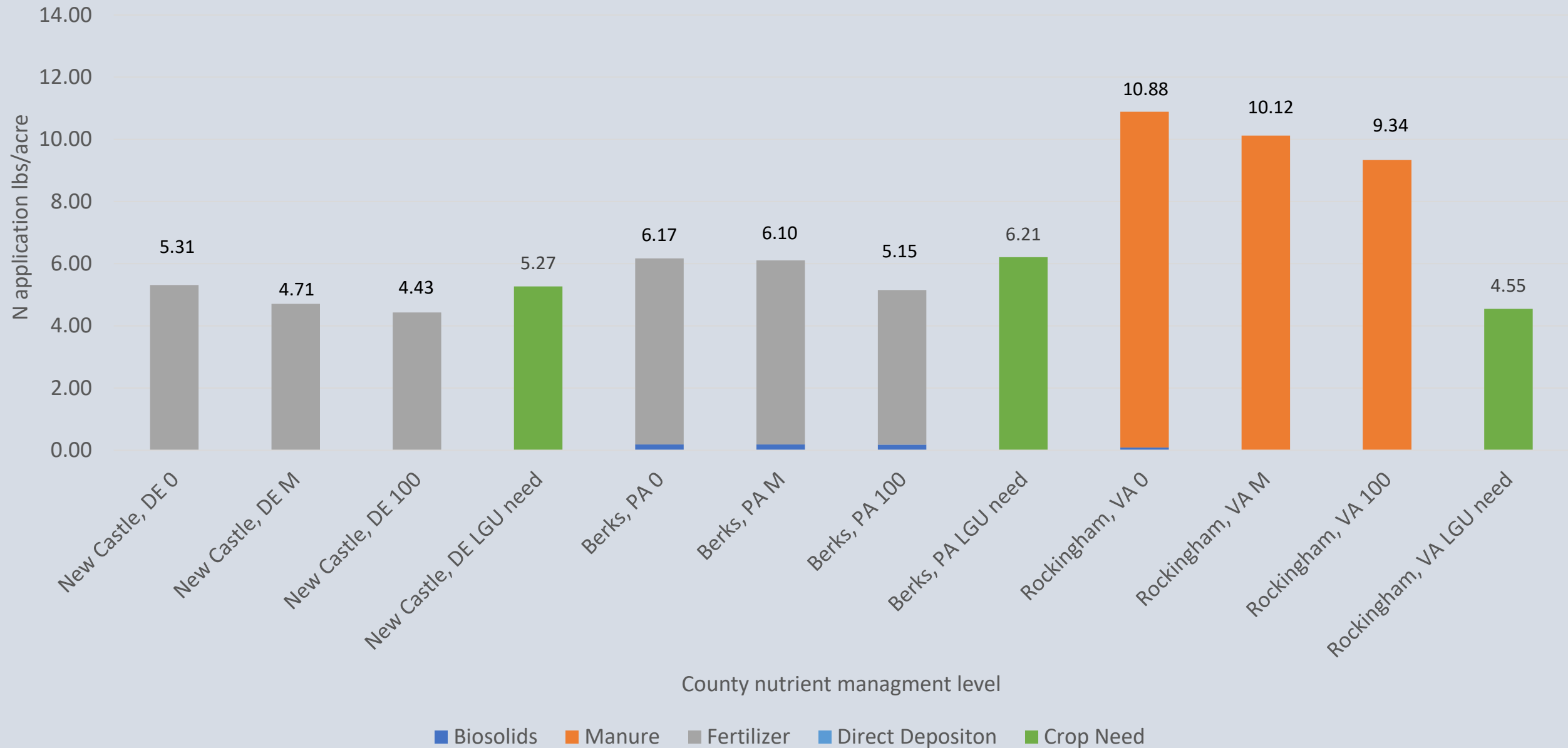
Pasture Nutrient Management is built in by default

- 15 lbs/acre

Application is one piece of loads

- Load calculations encompass average loads changes in inputs and sensitivities

Questions?

Total N applied per acre for **Full Season Soybeans** under different levels of nutrient management compared to crop need

Total N applied per acre for **Pasture** under different levels of nutrient management compared to crop need

Core N Nutrient Managment Rate Multipliers

Table 12. Core N Nutrient Management Application Rate Multiplier Values

Land Use	Nutrient Management BMP	
	Nitrogen Core *Non-Nutrient Management* BMP Application Rate Multiplier	Nitrogen Core *Nutrient Management* BMP Application Rate Multiplier
Full Season Soybeans	1.20	1.00
Grain w/ Manure	1.30	1.00
Grain w/o Manure	1.20	1.00
Legume Hay	1.20	1.00
Silage w/ Manure	1.40	1.00
Silage w/o Manure	1.20	1.00
Small Grains and Grains	1.20	1.00
Small Grains and Soybeans	1.20	1.00
Specialty Crop High	1.30	1.00
Specialty Crop Low	1.20	1.00
Other Agronomic Crops	1.10	1.00
Other Hay	1.00	1.00
Pasture	1.00	1.00