Phase 6 Nutrient Management Expert Panel
Guiding Principles

1. Nitrogen and phosphorus assessments are handled similarly but separately.

2. Historical base-line conditions (i.e.1985) are used as a uniform reference point for pre-BMP, non-nutrient management conditions at the field scale.

3. A Core Nutrient Management BMP efficiency factor is based on state LGU recommendations and represents a landuse-specific nitrogen and phosphorus application rate in the models.

4. Supplemental Nutrient Management BMP efficiencies for rate, timing and placement of nitrogen and phosphorus are additive to the Core Nutrient Management BMP efficiencies for nitrogen and phosphorus, but can not be applied without Core BMPs.

5. Supplemental Nutrient Management BMP efficiency factors are applied as a reduction in nutrient loss between the edge of field and the stream.

6. All efficiency values shown in **bright blue** on the follow diagrams for nitrogen and phosphorus will be numeric variables that will be defined pursuant to future deliberations of the Nutrient Management Expert Panel.

7. The sequence and logic of spreading available nutrients across a county was determined separately from establishing efficiency factors for nutrient management BMPs.

Nitrogen Nutrient Management BMP Efficiency Factors

NITROGEN Core Nutrient Management BMP (ALL core elements required to be implemented and verified)
N application goal (N rate) according to LGU recommendations at field level
Manure analysis and volume - test value or book value
Spreader/applicator calibration
Yield estimates and cropping plan at field level
Cropping and manure history at field level

NO → No credit for N Core Nutrient Management BMP → N application goal = LGU recommendation (**LGU Rec (Year)**) x **A**

YES → Credit for N Core Nutrient Management BMP efficiency → N application goal = LGU recommendation (**LGU Rec (Year)**) x **B**

NITROGEN Supplemental Nutrient Management BMPs
If Core Nutrient Management BMP efficiency is applied, follow with advanced assessment for Supplemental Nutrient Management BMPs

Advanced N Assessment
PSNT
Manure analysis < 3 years old
On-farm replicated research
CSNT
N-loss risk assessments & models - Ammonia loss
Yield mapping
ISNT
On-farm strip trials
N-loss risk assessments & models - Leaching loss
FSNT
N-loss risk assessments & models - Denitrification losses
Whole farm balances
In-season sensors/remote sensing in general
Geo-spatial mapping

IMPLEMENTATION →

N Rate Adjustment (implementation of one or more BMPs required)
N rate less than LGU recommendations
Split N applications for reduced total rate
Variable rate N application

YES → **N Rate Supplemental BMP Efficiency = C%**

IMPLEMENTATION →

N Placement Adjustment (implementation of one or more BMPs required)
Subsurface injection/incorporation of inorganic N
N application setbacks from water

YES → **N Placement Supplemental BMP Efficiency = D%**

IMPLEMENTATION →

N Timing Adjustment (implementation of one or more BMPs required)
Split N applications

YES → **N Timing Supplemental BMP Efficiency = E%**

Phosphorus Nutrient Management BMP Efficiency Factors

PHOSPHORUS Core Nutrient Management BMP (ALL core elements required to be implemented and verified)
P application goal (P rate) according to LGU recommendations at field level
P soil tests at field level
Manure analysis and volume - test value or book value
Spreader/applicator calibration
Yield estimates and cropping plan at field level
Cropping and manure history at field level

NO → No credit For P Core Nutrient Management BMP → P application goal = LGU recommendation (**LGU Rec (Year)**) x **F**

YES → Credit for P Core Nutrient Management BMP efficiency → P application goal = LGU recommendation (**LGU Rec (Year)**) x **G**

PHOSPHORUS Supplemental Nutrient Management BMPs
If Core Nutrient Management BMP efficiency is applied, follow with advanced assessment for Supplemental Nutrient Management BMPs

Advanced P Assessment
Soil test P remediation/declining
Soil tests < 3 years old
P Index assessment
Grid soil sampling
Manure analysis < 3 years old
On-farm replicated research
Yield mapping
On-farm strip trials
Whole farm balances
Geo-spatial mapping

IMPLEMENTATION →

P Rate Adjustment (implementation of one or more BMPs required)
P-based manure rate based on annual crop removal
P rate less than LGU recommendations
Variable rate P
Split P applications

YES → **P Rate Supplemental BMP Efficiency = H%**

IMPLEMENTATION →

P Placement Adjustment (implementation of one or more BMPs required)
Subsurface injection/incorporation of inorganic P
P application setbacks from water

YES → **P Placement Supplemental BMP Efficiency = I%**

IMPLEMENTATION →

P Timing Adjustment (implementation of one or more BMPs required)
P application in lower P-loss risk season

YES → **P Timing Supplemental BMP Efficiency = J%**

Determination of Total Nitrogen Application, aka “The N Spread”

Step #1: Total NITROGEN Application Goal by Land Use per County

Non-NM N goal **x** Non-NM acres **=** Non-NM total N application (pounds)

NM N goal **x** NM acres **=** NM total N application (pounds)

SUM → Total N Application Goal (pounds) by Land Use per County

Step #2: Fertilizer NITROGEN Application Goal by Land Use per County

Total N Application Goal (pounds) **–** Manure PAN (pounds) **=** Fertilizer N application goal (pounds)

Note: At this point, Fertilizer N Application Goal is limitless.

Step #3: Fertilizer NITROGEN Application Goal per County

Sum of all Fertilizer N Application Goals for all land uses within a county

Step #4: Fertilizer NITROGEN Application Goal Supply Limit per County

A = Fertilizer N application goal

B = Redistributed AAPFCO Fertilizer N Sales

If **A < B**, then **A =** Fertilizer N application goal limits fertilizer N supply

If **A > B**, then **B =** Redistributed AAPFCO Fertilizer N Sales limits fertilizer N supply

Determination of Total Phosphorus Application, aka “The P Spread”

Step #1: Total PHOSPHORUS Application Goal by Land Use per County

Non-NM P goal **x** Non-NM acres **=** Non-NM total P application (pounds)

NM P goal **x** NM acres **=** NM total P application (pounds)

SUM → Total P Application Goal (pounds) by Land Use per County

Step #2: Fertilizer PHOSPHORUS Application Goal by Land Use per County

Total P Application Goal (pounds) **–** Manure P (pounds) **=** Fertilizer P application goal (pounds)

Note: At this point, Fertilizer P Application Goal is limitless.

Step #3: Fertilizer PHOSPHORUS Application Goal per County

Sum of all Fertilizer P Application Goals for all land uses within a county

Step #4: Fertilizer PHOSPHORUS Application Goal Supply Limit per County

A = Fertilizer P application goal

B = Redistributed AAPFCO Fertilizer P Sales

If **A < B**, then **A =** Fertilizer P application goal limits fertilizer P supply

If **A > B**, then **B =** Redistributed AAPFCO Fertilizer P Sales limits fertilizer P supply