**Supplemental Table 1 |** Summary of TFs previously linked to N

**Supplemental Table 2 |** Promoters, TFs screened in yeast one-hybrid analysis and T-DNA mutant lines used for phenotyping analysis

**Supplemental Table 3 |** TF-promoter interactions as obtained using yeast one hybrid analysis

**Supplemental Table 4** **| a,** CPK-NLP7 and hormone-dependent genes in network

**Supplemental Table 5 |** Publically available gene expression datasets profiling transcriptome changes in response to nitrogen availability/treatment and cell type resolution gene expression dataset profiling transcriptome changes in response to nitrogen availability

**Supplemental Table 6 |** **a,** Pearson and Spearman Rank Correlation of transcription factor and target interactions across publically available nitrogen availability microarray experiments

**Supplemental Table 7 |** NeCORR transcription factor ranking analysis

**Supplemental Table 8 |** Transcription factors weighting and ranking based on the total number and percentage of targets that are classical N metabolism genes

**Supplemental Table 9 |** Novel N-Associated Transcription Factors and their Respective Root and Shoot Mutant Phenotypes

**Supplemental Table 10** **|** Root and Shoot Phenotyping Statistical Summary

**Supplemental Table 11** **|** Principal Component Traits and Loading Vector for Principal Axes

**Supplemental Table 12 |** Curated Genes Critical for Regulation of Root Length and Lateral Root Initiation and their presence in the YNM

**Supplemental Table 13 |** Correlation of Transcription Factor Mutant Shoot and Root Phenotypes Relative to Ranking Datasets

**Supplemental Table 14 |** Normalized Expression Data for Wild Type and Mutants at 1 and 10mM KNO3

**Supplemental Table 15 |** Genotype and Genotype by Nitrate Condition-Dependent Gene Expression in Wild Type (Col-0) Arabidopsis Roots and in Transcription Factor Mutant Alleles

**Supplemental Table 16 |** Significantly Differentially Expressed Genes in Nitrogen Metabolism Mutants and in Nitrogen Transcriptional Regulator Mutants microarray analysis