Supplementary data

Table S1. Enzymes and substrates used for enzyme activities assays.

Recommended name	Abbreviations	EC number	Assays conditions		References
			Substrate	Optimum pH	
N cycle enzyme activities					
Arylamidase	ARYL	3.4.11.2	L-Leucine β-Naphthylamide (8 mM)	8.0	[38]
N-acetyl-glucosaminidase	NAG	3.2.1.30	p-NP-N-Acetyl-glucosaminide (10 mM)	6.0	[39]
Cellulase	CEL	3.2.1.4	4-NP-β-D-cellobioside (10 mM)	6.0	[39]
β-glucosidase	GLU	3.2.1.21	p-NP-β-D-glucopyranoside (50 mM)	6.0	[39]

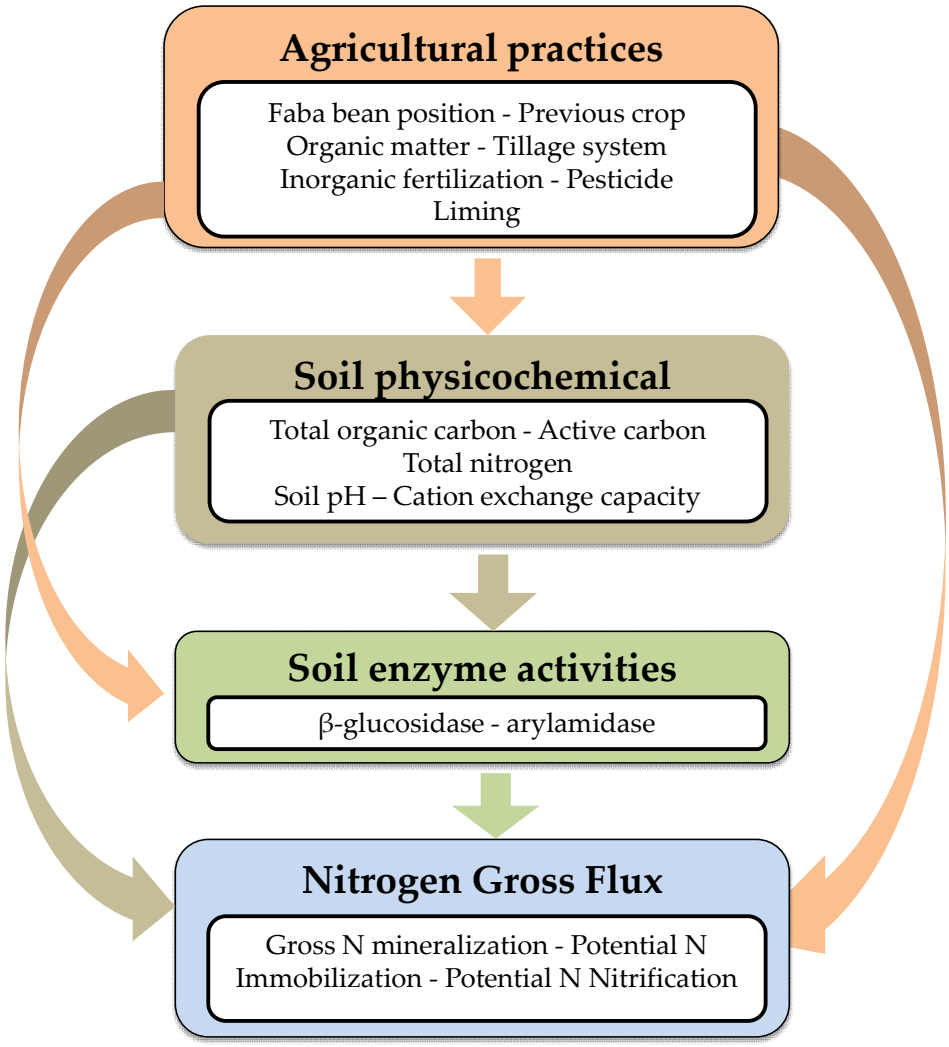

Figure S1. General conceptual model of hypothesized direct and indirect relationships between gross nitrogen flux and agricultural practices through soil physicochemical properties and soil enzyme activities.

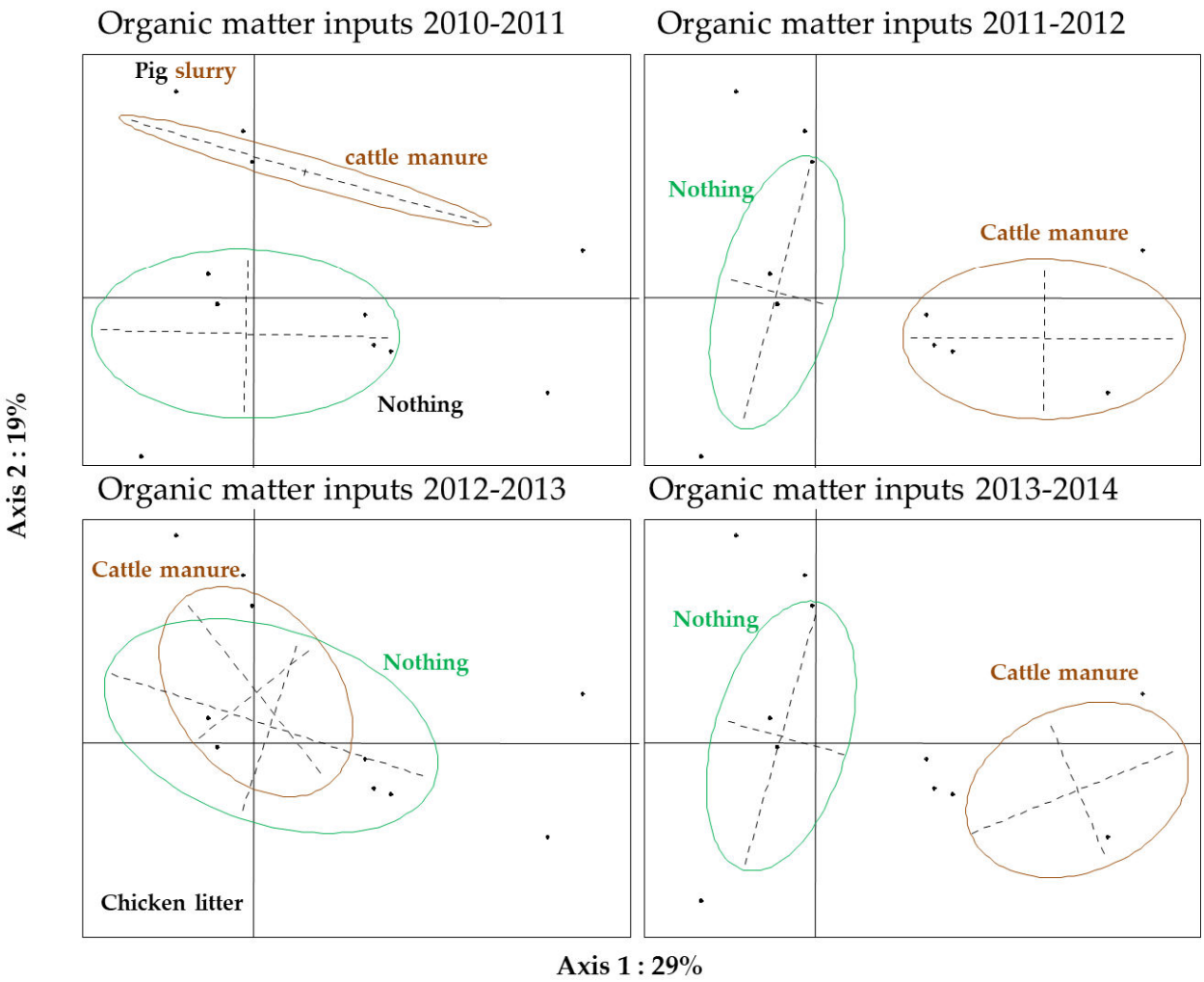

Figure S2. Preliminary Multiple Correspondence Analysis of organic matter inputs during the last four years preceding sampling date. Data were collected from farmers. The first axis was well correlated to organic matter inputs of 2013-2014 and 2011-2012 crop years. The second axis was correlated to organic matter inputs of 2010-2011 crop year. .

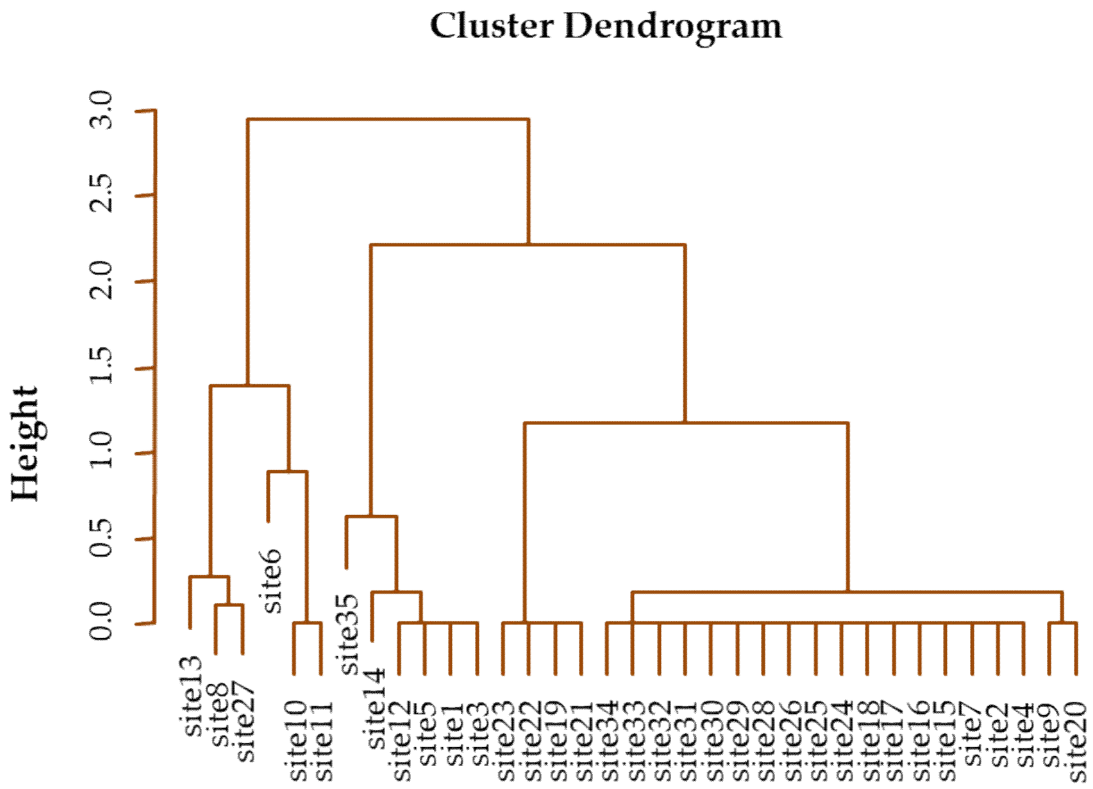

Figure S3. Hierarchical clustering of the thirty-six sites based on their organic matter inputs (modalities presented in Figure. S2) during the last four years preceding the sampling date. Data were collected from farmers.

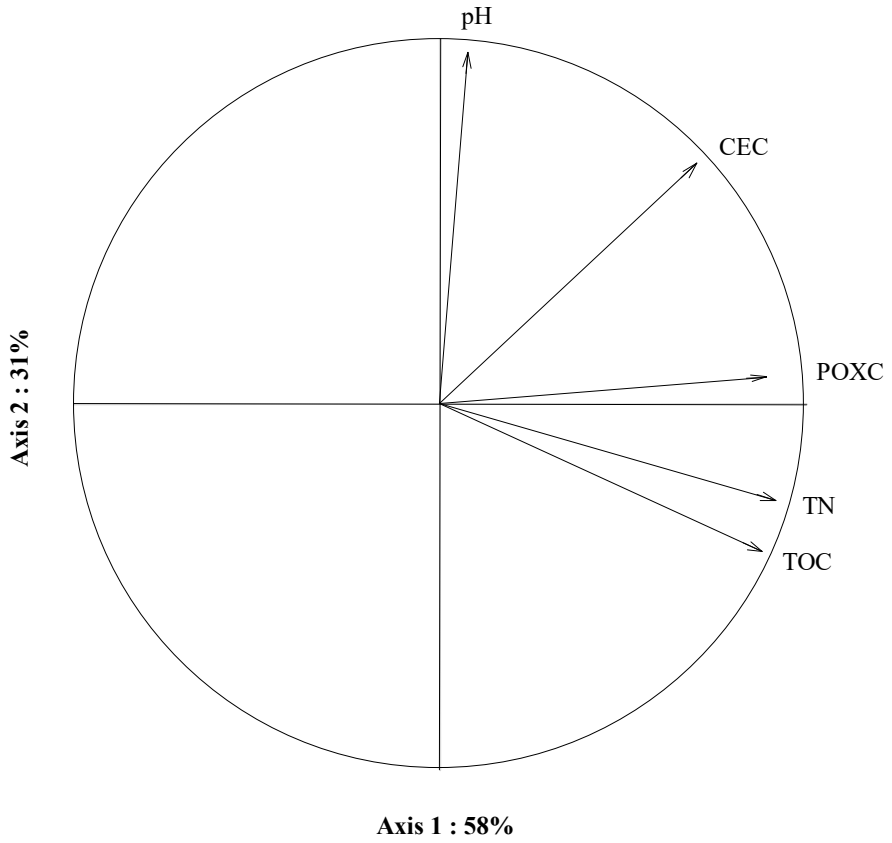

Figure S4. Correlation circle of soil physicochemical properties of agricultural sites chosen for this study. CEC: Cation Exchange Capacity, pH: pH measured in a 1:2.5 soil in water suspension using a glass electrode, TOC: Total organic carbon, POXC: active carbon, TN: total nitrogen.