S1: Online Resource1: Parameters provided by the FarmLab cloud for each measurement (Stenon GmbH, 2024)

Soil parameters	Unit	Measuring range
Mineral nitrogen (N_{min})	kg / ha	0 – 252
Nitrate as nitrogen (NO_3-N)	kg / ha	0 – 252
Total nitrogen (N_{total})	%	0 – 0.5
Phosphorus (P)*	mg / 100 g	1.4 – 25
Potassium (K)*	mg / 100 g	3 – 25
Soil Moisture	%	0 – 30
pH value*		4.5 – 7.8
Soil Organic Carbon (SOC)*	%	0.3 – 3
Soil Organic Matter (SOM)*	%	0.5 – 5.2
Carbon/Nitrogen (C/N) Ratio*		5 – 40
Magnesium (Mg)*	mg / 100 g	1.5 – 25
Soil Temperature*	°C	-10 – 50
Light (infrared)**	lx	0 – 10,000
Light (visible)**	lx	0 – 10,000
Air Temperature**	°C	-10 – 50
Air Humidity**	%	10 % – 90 %
Air Pressure**	hPa	900 – 1,100
Volatile organic compounds**	Ohm	0 – 150,000,000
Carbon dioxide (CO_2)*	t	

* Parameters marked as "beta" are not certified by the DLG
** Parameters are physical measurements captured by the sensors

S2: Online Resource2: Results of Shapiro-Wilk tests on parameters Nmin, phosphorus, potassium and magnesium of location (a)

	Nmin [kg/ha]	*P [mg/100g]*	*K (beta) [mg/100g]*	*Mg [mg/100g]*
Statistic	0.917	0.977	0.975	0.993
p-value	0.00013	0.1988	0.1535	0.9789