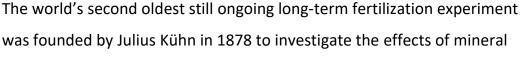
Eternal rye





and organic (farm yard manure) fertilizers on rye yield and soil fertility. Six different treatments are analyzed, including mineral-only (NPK, PK), mineral-organic combined (FM+NPK), and organic-only (FM I and FM II) fertilizer application, and unfertilized plots (U). In 1953, after 60 years of application of farmyard manure, fertilization was discontinued in FM II plots, to explore its after-effects.

In 1961, after 83 years of only rye, each of six plots was divided into three subplots to compare continuous rye cropping with rye-potato-rotation and continuous maize cropping in their interactions with fertilization treatments.

The plots of FM+NPK had originally been established by Julius Kühn as pure mineral N fertilization, but were changed to a mineral-organic combination in 1990.

The field measures 6012 m² in total, each subplot is 290 m² (not randomized, no replicates).

Geographical position

Julius-Kühn-Field, Halle,	Eastern foreland of Harz	51° 28' 58.44 N
113 m above sea level	Mountains (East Germany)	11° 58' 9.48 E

Climate (1981-2010)

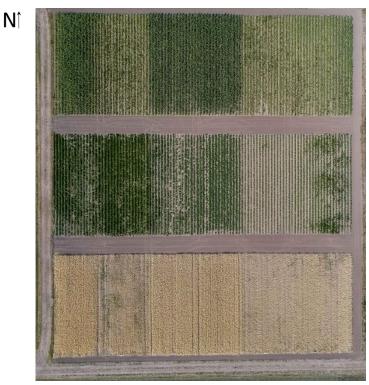
Annual mean air temperature	Annual average sum of precipitation	Average sum of precipitation April-July	
9.7 °C	490 mm	48 mm	

Soil conditions

Soil type	Sand	Silt	Clay	Humus content (Ap horizon)	Atmospheric N deposition
Sandy loess (80-120 cm)	69 %	22 %	9 %	2.1 to 2.6 %	40-50 kg/(ha*a)

Current experimental set-up (complete block design)

Section A – Silage maize monocropping					
		onage i		00.0p	y8
ΡĀ	PK	NPK	NPK NPK+FM		FM
S	ection B	– Potato	-winter ry	e rotat	ion
Α	ЬК	NPK	NPK NPK+FM		FM
S	Section C – Winter rye monocropping				
ΕM	УΑ	NPK	MH+HMN	n	FM II
60 kg N 20 kg P 60 kg K	24 kg P 75 kg K	60 kg N 24 kg P 75 kg K	120 kg N 44 kg P 135 kg K	-	43 kg N 13 kg P 40 kg K until 1952



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FM = Farmyard manure, U = unfertilized

Grain yield of winter rye: 10-year moving average

