Table S1. Primers used in this study.

FUNCTION	TARGET GENE	GENE DEFINITION	PRIMER SET	PRIMER SEQUENCE (5' – 3')	ANNEALING TEMPERATURE (°C)	AMPLICON SIZE (BP)	REFERENCE
Nitrification	*amoA*	ammonia monooxygenase	amoA1F	GGGGTTTCTACTGGTGGT	57	491	[75]
			amoA2R	CCCCTCKGSAAAGCCTTCTTC			
Denitrification	*nirK*	nitrite reductase	nirK876F	ATYGGCGGVCAYGGCGA	58	165	[76]
			nirK1040R	GCCTCGATCAGRTTRTGGTT			
N_2 fixation	*nifH*	nitrogenase reductase	PolF	TGC GAY CCS AAR GCB GAC TC	55	362	[46]
			PolR	ATSGCCATCATYTCRCCGGA			
Carbon fixation	*cbbL*	cbbL red-like gene	cbbL-RedF	AAGGAYGACGAGAACATC	57	820	[77]
			cbbL-RedR	TCGGTCGGSGTGTAGTTGAA			
Carbon degradation	*GH7*	cellulose degradation	GH7-F	GAGATCAAGCGCYTCTAYGTBCA	56	242	[78]
			GH7-R	GTCRAGCCASAGCATGTTGG			

Table S2. *amoA* PCR cycling conditions.

Step	# of cycles	Temperature	Time
Initial denaturation	1	95ºC	10 min
Denaturation	40	95ºC	15 sec
Annealing		58ºC	30 sec
Extension		72ºC	45 sec

Table S3. *nirK* PCR cycling conditions.

Step	# of cycles	Temperature	Time
Denaturation	1	95ºC	10 min
Denaturation	40	95ºC	25 sec
Annealing		60ºC	30 sec
Extension		72ºC	30 sec

Table S4. *cbbL* PCR cycling conditions.

Step	# of cycles	Temperature	Time
Denaturation	1	95ºC	10 min
Denaturation	40	95ºC	1 min
Annealing		57ºC	2 min
Extension		72ºC	2 min

Table S5. *GH7* PCR cycling conditions.

Step	# of cycles	Temperature	Time
Denaturation	1	95ºC	10 min
Denaturation	40	95ºC	30 sec
Annealing		56ºC	30 sec
Extension		72ºC	30 sec

Table S6. *nifH* PCR cycling conditions.

Step	# of cycles	Temperature	Time
Denaturation	1	95ºC	5 min
Denaturation	40	95ºC	30 sec
Annealing		55ºC	30 sec
Extension		72ºC	30 sec

Table S7. Pearson correlation results of the properties analyzed.

* P-value < 0.05; ** P-value < 0.01.

Table S8. Main soil characteristics. Values are mean ± standard error (n = 4).

		BA+FU	BA	F50	F100	ANOVA
pH		9,03 ± 0,02	9,00 ± 0,04	9,02 ± 0,04	9,02 ± 0,02	ns
Total organic C	g kg^{-1}	10,6 ± 0,3	10,96 ± 0,49	10,52 ± 0,46	10,17 ± 1,62	ns
Total N	g kg^{-2}	1,00 ± 0,05	1,07 ± 0,03	1,02 ± 0,04	0,99 ± 0,00	ns
Cation exchange capacity	cmol kg^{-1}	14,9 ± 0,40	15,07 ± 0,43	14,95 ± 0,41	14,99 ± 0,33	ns
Exchangeable Ca	cmol kg^{-1}	10,3 ± 0,30	10,19 ± 0,27	10,09 ± 0,24	10,25 ± 0,28	ns
Exchangeable Mg	cmol kg^{-1}	2,44 ± 0,05	2,41 ± 0,06	2,39 ± 0,06	2,41 ± 0,06	ns
Exchangeable K	cmol kg^{-1}	1,45 ± 0,05	1,75 ± 0,15	1,79 ± 0,15	1,58 ± 0,06	ns
Exchangeable Na	cmol kg^{-1}	0,71 ± 0,00	0,72 ± 0,05	0,68 ± 0,02	0,75 ± 0,03	ns
Sum of bases	cmol kg^{-1}	14,9 ± 0,40	15,07 ± 0,43	14,95 ± 0,41	14,99 ± 0,33	ns
Carbonate content	%	28,10 ± 1,49	26,53 ± 1,63	27,23 ± 2,80	30,98 ± 6,30	ns
NH_4^+	mg kg^{-1}	1,39 ± 0,08	1,66 ± 0,09	1,44 ± 0,03	1,72 ± 0,44	ns
NO_3^-	mg kg^{-1}	13,28 ± 4,08	13,79 ± 1,62	11,07 ± 6,61	12,93 ± 6,02	ns
P available	mg kg^{-1}	60,65 ± 4,58	60,75 ± 1,38	57,5 ± 2,83	51,88 ± 4,34	ns
Fe bioavailable	mg kg^{-1}	2,23 ± 0,19	2,1 ± 0,09	2,13 ± 0,13	2,22 ± 0,07	ns
Cu bioavailable	mg kg^{-1}	1,75 ± 0,17	1,76 ± 0,10	1,74 ± 0,11	1,58 ± 0,07	ns
Zn bioavailable	mg kg^{-1}	5,68 ± 0,56	5,74 ± 0,36	5,81 ± 0,30	5,01 ± 0,14	ns
Mn bioavailable	mg kg^{-1}	7,97 ± 0,17	7,72 ± 0,21	7,73 ± 0,49	8,42 ± 0,13	ns
Mo bioavailable	mg kg^{-1}	7,13 ± 3,21	2,63 ± 1,46	8,67 ± 3,53	11,18 ± 2,50	ns
B bioavailable	mg kg^{-1}	7,59 ± 0,08	7,7 ± 0,18	7,73 ± 0,24	7,78 ± 0,10	ns

BA+FU (F50 + the application of a formulation of bacteria and non-mycorrhizal fungi), BA (F50 + the application of a formulation of nitrogen-fixing and phosphorus and potassium solubilizing bacteria), F50 (50% of the rate of inorganic fertilizers added in F100), F100 (inorganic fertilizers applied at the rate to cover the nutritional demands of the crop). ns: not significant (p= 0.05).

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