

Supplementary materials

S1 Variations in cumulated C-CO₂ quantities of OWP expressed in gC-CO₂ 100 g⁻¹ of organic carbon of OWP (hypothesis 2)

The calculations for the Hypothesis 2 (Figure S1) were done as follows:

$$C_i^{\%} = \frac{oC_{si} - oC_s}{OC_i} \times 100$$

$$C_{ij}^{\%} = \frac{oC_{sij} - oC_{sj}}{OC_i} \times 100$$

Where $C_i^{\%}$ is the cumulated carbon quantity (in gC-CO₂ 100 g⁻¹ of OC) emitted by the ith OWP; oC_{si} is the observed cumulated carbon quantity (on gC-CO₂) emitted by the microcosm containing soil + ith OWP; oC_s is the observed cumulated carbon quantity (in gC-CO₂) emitted by the microcosm containing soil alone; OC_i is the organic carbon quantity (in gOC) provided by the ith OWP; $C_{ij}^{\%}$ is the cumulated carbon quantity (in gC-CO₂ 100 g⁻¹ of OC) emitted by the ith OWP and jth BM combination; oC_{sij} is the observed cumulated carbon quantity (in gC-CO₂) emitted by the microcosm containing soil + ith OWP + jth BM; oC_{sj} is the observed cumulated carbon quantity (in gC-CO₂) emitted by the microcosm containing soil + jth BM.

Figure S1

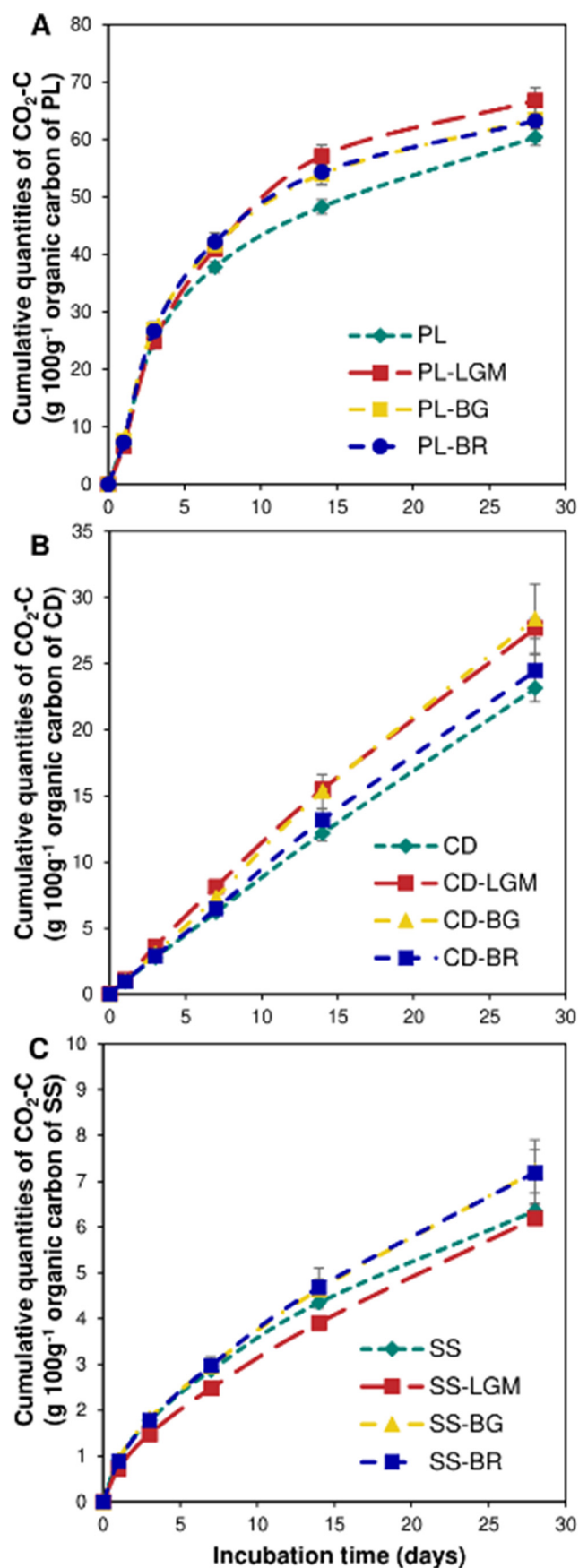


Figure S1 Variations in cumulated C-CO₂ quantities of OWP expressed in gC-CO₂ 100 g⁻¹ of organic carbon of OWP (hypothesis 2). OWP organic waste products, BM local beneficial microorganisms, S soil, CD cow dung, PL poultry litter, SS sewage sludge, LGM groundnut + millet from Saint-Louis, BG

groundnut from the southern groundnut basin, BR rice from the southern groundnut basin. Error bars correspond to the standard deviation of three replicates

S2 Impact of OWP or BM on microcosm dissolved organic carbon

A 15 ml volume of a soil:water suspension (1:5) filtered at 0.22 μm and acidified with 2% ultrapure HNO_3 was used. The dissolved organic carbon (DOC) of the microcosms and the control were measured using a Shimadzu TOC Analyzer.

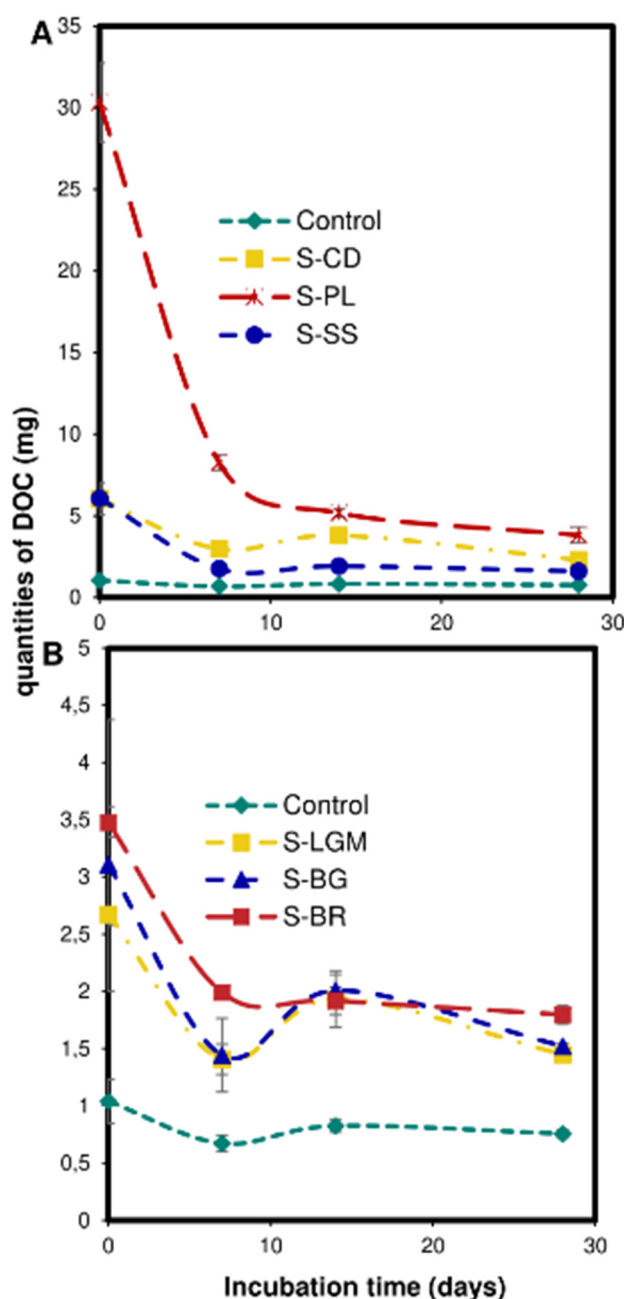


Figure S2 Variations in DOC quantities in microcosms expressed in mgDOC. DOC dissolved organic carbon, S soil, CD cow dung, PL poultry litter, SS sewage sludge, LGM groundnut + millet from Saint-

Louis, BG groundnut from the southern groundnut basin, BR rice from the southern groundnut basin. Error bars correspond to the standard deviation of three replicates

OWP or BM input increased the microcosm DOC quantities (Figure S2). DOC quantities in the S-OWP and S-BM microcosms were significantly higher ($p < 0.0001$) than in the control. Yet the DOC quantities in the S-OWP microcosms (Figure S2a) were higher than in the S-BM microcosms (Figure S2b). DOC quantities in the S-OWP and S-BM microcosms decreased with increasing incubation time. The S-OWP microcosms, according to their DOC quantities, were ranked as follows: S-PL > S-CD > S-SS ($p < 0.0001$, Figure S2a). S-BM microcosms, according to their DOC quantities, were ranked as follows: S-BR \geq S-BG = S-LGM ($p < 0.0001$, Figure S2b).

S3. Impact of OWP or BM on microcosm pH

A soil:water suspension (1:5) was used to measure the pH of the microcosms and the control using a MultiLine® WTW Multi-parameter portable meter.

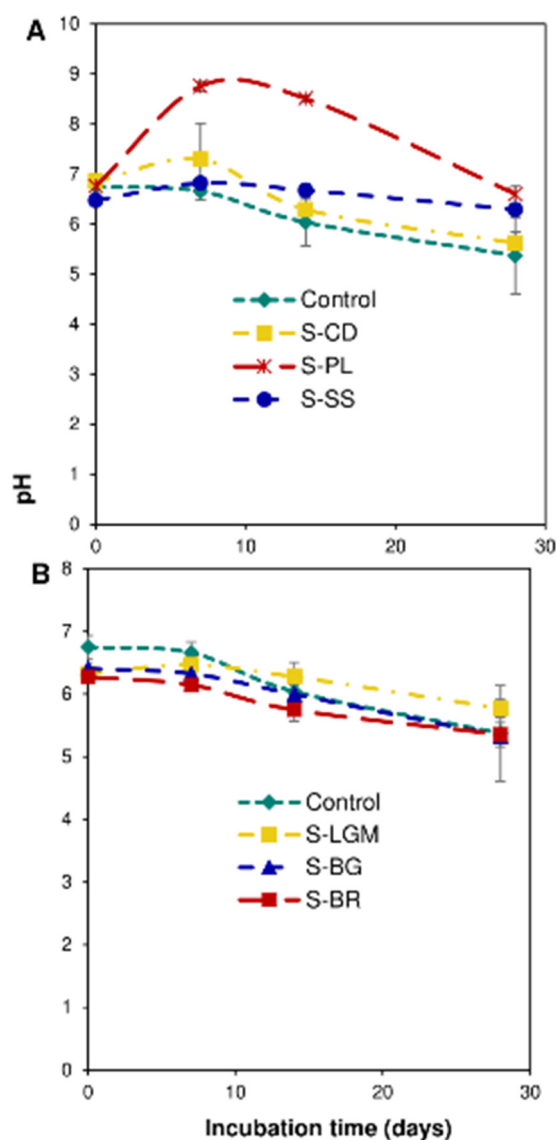


Figure S3 Variations in microcosm pH. S soil, CD cow dung, PL poultry litter, SS sewage sludge, LGM groundnut + millet from Saint-Louis, BG groundnut from the southern groundnut basin, BR rice from the southern groundnut basin. Error bars correspond to the standard deviation of three replicates

PL input led to an increase in microcosm pH, which remained higher than that of the control, S-SS and S-CD microcosms ($p < 0.01$, Figure S3a). S-OWP microcosms, according to their pH, were ranked as follows: S-PL > S-CD = S-SS. BMs had no impact on the microcosm pH ($p > 0.05$, Figure S3b).

Table S1a of Figure 1 A Cumulative quantities of C-CO ₂ (mg)				Table S1b of Figure 1 B Cumulative quantities of C-CO ₂ (mg)			
Time (days)	Treatments	Means \pm SD	P value	Time (days)	Treatments	Means \pm SD	P value
1	Control	0,21 \pm 0d	0,016*	1	Control	0,21 \pm 0,01c	<0,001***
	S-CD	3,2 \pm 0,07b			S-LGM	0,73 \pm 0,03a	
	S-PL	20,55 \pm 1,07a			S-BG	0,34 \pm 0,03b	
	S-SS	2,39 \pm 0,03c			S-BR	0,35 \pm 0,03b	
3	Control	0,6 \pm 0,01d	0,016*	3	Control	0,6 \pm 0,01c	<0,001***
	S-CD	9,45 \pm 0,19b			S-LGM	1,46 \pm 0,06a	
	S-PL	68,29 \pm 1,85a			S-BG	0,97 \pm 0,08b	
	S-SS	4,81 \pm 0,08c			S-BR	1 \pm 0,09b	
7	Control	1,24 \pm 0,02d	<0,001***	7	Control	1,24 \pm 0,02c	<0,001***
	S-CD	21,04 \pm 0,1b			S-LGM	2,51 \pm 0,14a	
	S-PL	104,68 \pm 2,8a			S-BG	2,13 \pm 0,13b	
	S-SS	8,06 \pm 0,19c			S-BR	2,26 \pm 0,17b	
14	Control	2,11 \pm 0,05d	<0,001***	14	Control	2,11 \pm 0,05b	<0,001***
	S-CD	41,04 \pm 1,78b			S-LGM	4,3 \pm 0,25a	
	S-PL	134,24 \pm 3,42a			S-BG	3,89 \pm 0,26a	
	S-SS	12,44 \pm 0,29c			S-BR	4,27 \pm 0,25a	
28	Control	3,33 \pm 0,15d	<0,001***	28	Control	3,33 \pm 0,15c	<0,001***
	S-CD	77,39 \pm 3,3b			S-LGM	7,15 \pm 0,42ab	
	S-PL	168,63 \pm 4,02a			S-BG	6,57 \pm 0,59b	
	S-SS	18,41 \pm 0,42c			S-BR	7,54 \pm 0,34a	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S1c of Figure 1 C Cumulative quantities of C-CO ₂ (g 100g ⁻¹ organic carbon of OWP)				Table S1d of Figure 1 D Cumulative quantities of C-CO ₂ (g 100g ⁻¹ organic carbon of BM)			
Time (days)	Treatments	Means ± SD	P value	Time (days)	Treatments	Means ± SD	P value
1	S-CD	0,95 ± 0,02b	<0,001***	1	S-LGM	0,28 ± 0,018a	<0,001***
	S-PL	7,51 ± 0,39a			S-BG	0,06 ± 0,015c	
	S-SS	0,93 ± 0,02b			S-BR	0,11 ± 0,023b	
3	S-CD	2,8 ± 0,06b	<0,001***	3	S-LGM	0,45 ± 0,03a	<0,01**
	S-PL	25 ± 0,68a			S-BG	0,17 ± 0,038c	
	S-SS	1,8 ± 0,03c			S-BR	0,31 ± 0,067b	
7	S-CD	6,26 ± 0,03b	<0,001***	7	S-LGM	0,68 ± 0,074a	<0,01**
	S-PL	38,21 ± 1,03a			S-BG	0,43 ± 0,061b	
	S-SS	2,91 ± 0,08c			S-BR	0,8 ± 0,13a	
14	S-CD	12,3 ± 0,56b	<0,001***	14	S-LGM	1,16 ± 0,131b	<0,01**
	S-PL	48,8 ± 1,26a			S-BG	0,84 ± 0,122c	
	S-SS	4,41 ± 0,12c			S-BR	1,68 ± 0,197a	
28	S-CD	23,4 ± 1,04b	<0,001***	28	S-LGM	2,03 ± 0,221b	<0,001***
	S-PL	61,05 ± 1,48a			S-BG	1,53 ± 0,281b	
	S-SS	6,43 ± 0,18c			S-BR	3,28 ± 0,268a	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S2a of Figure 2 A Cumulative quantities of C-CO ₂ (mg)			
Time (days)	Treatments	Means ± SD	P value
1	PL-LGM observed	18,71 ± 0,78a	0,053
	PL-LGM calculated	20,87 ± 1,08a	
3	PL-LGM observed	68,87 ± 2,04a	0,848
	PL-LGM calculated	68,55 ± 1,9a	
7	PL-LGM observed	113,27 ± 3,38a	0,03*
	PL-LGM calculated	104,72 ± 2,88b	
14	PL-LGM observed	158,36 ± 5,52a	<0,01**
	PL-LGM calculated	134,32 ± 3,51b	
28	PL-LGM observed	186,51 ± 6,37	0,022*
	PL-LGM calculated	169,11 ± 4,09	

Table S2b of Figure 2 B Cumulative quantities of C-CO ₂ (mg)			
Time (days)	Treatments	Means ± SD	P value
1	PL-BG observed	21,31 ± 0,86a	0,351
	PL-BG calculated	20,47 ± 1,05a	
3	PL-BG observed	74,3 ± 3,45a	0,069
	PL-BG calculated	68,05 ± 1,82a	
7	PL-BG observed	114,74 ± 2,70a	<0,01**
	PL-BG calculated	104,34 ± 2,72b	
14	PL-BG observed	149,38 ± 4,65a	0,011*
	PL-BG calculated	133,91 ± 3,21b	
28	PL-BG observed	177,2 ± 9,93a	0,266
	PL-BG calculated	168,53 ± 3,43a	

Table S2c of Figure 2 C Cumulative quantities of C-CO ₂ (mg)			
Time (days)	Treatments	Means ± SD	P value
1	PL-BR observed	20,19 ± 1,36a	0,781
	PL-BR calculated	20,48 ± 1,05a	
3	PL-BR observed	73,46 ± 2,04a	0,03*
	PL-BR calculated	68,09 ± 1,92b	
7	PL-BR observed	116,46 ± 4,38a	0,021*
	PL-BR calculated	104,47 ± 2,94b	
14	PL-BR observed	150,84 ± 6,33a	0,026*
	PL-BR calculated	134,28 ± 3,61b	
28	PL-BR observed	177,26 ± 9,68a	0,300
	PL-BR calculated	169,5 ± 4,22a	

Table S2d of Figure 2 D Cumulative quantities of C-CO ₂ (mg)			
Time (days)	Treatments	Means ± SD	P value
1	CD-LGM observed	3,98 ± 0,08a	<0,01**
	CD-LGM calculated	3,52 ± 0,1b	
3	CD-LGM observed	12,38 ± 0,27a	<0,001***
	CD-LGM calculated	9,70 ± 0,23b	
7	CD-LGM observed	27,23 ± 0,81a	<0,001***
	CD-LGM calculated	21,08 ± 0,05b	
14	CD-LGM observed	51,74 ± 1,16a	<0,001***
	CD-LGM calculated	41,12 ± 1,55b	
28	CD-LGM observed	92,29 ± 2,55a	<0,01**
	CD-LGM calculated	77,87 ± 2,89b	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S2e of Figure 2 E Cumulative quantities of C-CO ₂ (mg)			
Time (days)	Treatments	Means ± SD	P value
1	CD-BG observed	3,29 ± 0,1a	0,056
	CD-BG calculated	3,12 ± 0,04a	
3	CD-BG observed	10,19 ± 0,22a	<0,01**
	CD-BG calculated	9,21 ± 0,15b	
7	CD-BG observed	24,3 ± 1,26a	0,038*
	CD-BG calculated	20,7 ± 0,11b	
14	CD-BG observed	50,85 ± 4,2a	0,037*
	CD-BG calculated	40,71 ± 1,8b	
28	CD-BG observed	94,06 ± 8,44a	0,033*
	CD-BG calculated	77,29 ± 3,46b	

Table S2h of Figure 2 H Cumulative quantities of C-CO ₂ (mg)			
Time (days)	Treatments	Means ± SD	P value
1	SS-BG observed	2,33 ± 0,05a	0,728
	SS-BG calculated	2,31 ± 0,06a	
3	SS-BG observed	4,68 ± 0,08a	0,286
	SS-BG calculated	4,57 ± 0,13a	
7	SS-BG observed	7,95 ± 0,22a	0,270
	SS-BG calculated	7,72 ± 0,23a	
14	SS-BG observed	12,79 ± 0,52a	0,153
	SS-BG calculated	12,11 ± 0,40a	
28	SS-BG observed	20,36 ± 1,12a	0,049*
	SS-BG calculated	18,31 ± 0,78b	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S3a of Figure 3 A Cumulative quantities of C-CO ₂ (g 100g ⁻¹ organic carbon of PL)				Table S3b of Figure 3 B Cumulative quantities of C-CO ₂ (g 100g ⁻¹ organic carbon of CD)			
Time (days)	Treatments	Means ± SD	P value	Time (days)	Treatments	Means ± SD	P value
1	PL	7,44 ± 0,39a	0,084	1	CD	0,94 ± 0,02c	<0,001***
	PL-LGM	6,84 ± 0,29a			CD-LGM	1,25 ± 0,02a	
	PL-BG	7,79 ± 0,32a			CD-BG	1,03 ± 0,03b	
	PL-BR	7,38 ± 0,5a			CD-BR	1 ± 0,06bc	
3	PL	24,74 ± 0,68b	0,024*	3	CD	2,77 ± 0,06c	<0,001***
	PL-LGM	25,17 ± 0,74ab			CD-LGM	3,87 ± 0,09a	
	PL-BG	27,16 ± 1,26a			CD-BG	3,18 ± 0,07b	
	PL-BR	26,85 ± 0,75a			CD-BR	3 ± 0,16b	
7	PL	37,81 ± 1,02b	<0,01**	7	CD	6,19 ± 0,03c	<0,001***
	PL-LGM	41,4 ± 1,23a			CD-LGM	8,52 ± 0,25a	
	PL-BG	41,93 ± 0,99a			CD-BG	7,6 ± 0,39b	
	PL-BR	42,56 ± 1,6a			CD-BR	6,76 ± 0,41c	
14	PL	48,29 ± 1,25b	<0,01**	14	CD	12,17 ± 0,56c	<0,001***
	PL-LGM	57,88 ± 2,02a			CD-LGM	16,18 ± 0,36a	
	PL-BG	54,59 ± 1,7a			CD-BG	15,9 ± 1,31a	
	PL-BR	55,13 ± 2,31a			CD-BR	13,85 ± 0,86b	
28	PL	60,41 ± 1,47b	0,063	28	CD	23,15 ± 1,03b	<0,01**
	PL-LGM	68,16 ± 2,33a			CD-LGM	28,85 ± 0,8a	
	PL-BG	64,76 ± 3,63ab			CD-BG	29,41 ± 2,64a	
	PL-BR	64,78 ± 3,54ab			CD-BR	25,76 ± 1,22ab	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S3c of Figure 3 C Cumulative quantities of C-CO ₂ (g 100g ⁻¹ organic carbon of SS)			
Time (days)	Treatments	Means ± SD	P value
1	SS	0,92 ± 0,01b	0,023*
	SS-LGM	0,95 ± 0,01ab	
	SS-BG	0,98 ± 0,02a	
	SS-BR	0,95 ± 0,02ab	
3	SS	1,77 ± 0,03b	0,003**
	SS-LGM	1,84 ± 0,03b	
	SS-BG	1,97 ± 0,04a	
	SS-BR	1,95 ± 0,08a	
7	SS	2,87 ± 0,08b	<0,01**
	SS-LGM	3,02 ± 0,06b	
	SS-BG	3,35 ± 0,09a	
	SS-BR	3,41 ± 0,19a	
14	SS	4,35 ± 0,12c	<0,01**
	SS-LGM	4,83 ± 0,08b	
	SS-BG	5,38 ± 0,22a	
	SS-BR	5,59 ± 0,41a	
28	SS	6,35 ± 0,18c	<0,001***
	SS-LGM	7,8 ± 0,12b	
	SS-BG	8,58 ± 0,47ab	
	SS-BR	8,96 ± 0,72a	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S4a of Figure 4 A Quantities of mineral nitrogen (mg)				Table S4b of Figure 4 B Quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value	Time (days)	Treatments	Means \pm SD	P value
1	Control	0,038 \pm 0,005c	<0,001***	1	Control	0,038 \pm 0,005c	0,016*
	S-CD	0,003 \pm 0,012c			S-LGM	0,832 \pm 0,009a	
	S-PL	1,314 \pm 0,065a			S-BG	-0,14 \pm 0,016d	
	S-SS	0,282 \pm 0,005b			S-BR	0,054 \pm 0,01b	
3	Control	0,222 \pm 0,035c	<0,001***	3	Control	0,222 \pm 0,035c	<0,001***
	S-CD	0,018 \pm 0,06d			S-LGM	0,968 \pm 0,061a	
	S-PL	2,07 \pm 0,168a			S-BG	0,583 \pm 0,011b	
	S-SS	1,049 \pm 0,016b			S-BR	0,218 \pm 0,037c	
7	Control	0,567 \pm 0,033c	<0,001***	7	Control	0,567 \pm 0,033b	<0,001***
	S-CD	0,447 \pm 0,019d			S-LGM	1,458 \pm 0,081a	
	S-PL	1,494 \pm 0,056b			S-BG	0,474 \pm 0,008c	
	S-SS	2,372 \pm 0,035a			S-BR	0,357 \pm 0,003d	
14	Control	1,063 \pm 0,011b	<0,001***	14	Control	1,063 \pm 0,011c	<0,001***
	S-CD	0,416 \pm 0,012d			S-LGM	2,657 \pm 0,027a	
	S-PL	0,762 \pm 0,008c			S-BG	1,364 \pm 0,041b	
	S-SS	3,909 \pm 0,184a			S-BR	0,855 \pm 0,025d	
28	Control	1,427 \pm 0,017b	<0,001***	28	Control	1,427 \pm 0,017b	<0,001***
	S-CD	-0,153 \pm 0,002d			S-LGM	2,598 \pm 0,169a	
	S-PL	1,055 \pm 0,046c			S-BG	0,912 \pm 0,011c	
	S-SS	4,049 \pm 0,032a			S-BR	0,597 \pm 0,015d	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S4c of Figure 4 C Net quantities of mineral nitrogen (g 100g ⁻¹ organic nitrogen of OWP)				Table S4d of Figure 4 D Net quantities of mineral nitrogen (g 100g ⁻¹ organic nitrogen of BM)			
Time (days)	Treatments	Means ± SD	P value	Time (days)	Treatments	Means ± SD	P value
1	S-CD	-0,172 ± 0,061c	<0,001***	1	S-LGM	17,636 ± 2,011a	<0,001***
	S-PL	2,079 ± 0,138a			S-BG	-3,147 ± 0,294c	
	S-SS	0,965 ± 0,023b			S-BR	0,493 ± 0,29b	
3	S-CD	-1,033 ± 0,304b	<0,001***	3	S-LGM	16,582 ± 2,644a	<0,001***
	S-PL	3,009 ± 0,27a			S-BG	6,386 ± 0,204b	
	S-SS	3,268 ± 0,062a			S-BR	-0,148 ± 1,105c	
7	S-CD	-0,605 ± 0,093c	<0,001***	7	S-LGM	19,734 ± 2,335a	<0,001***
	S-PL	1,51 ± 0,105b			S-BG	-1,654 ± 0,147b	
	S-SS	7,134 ± 0,165a			S-BR	-6,363 ± 0,155c	
14	S-CD	-3,263 ± 0,062c	<0,001***	14	S-LGM	35,344 ± 3,661a	<0,001***
	S-PL	-0,49 ± 0,006b			S-BG	5,313 ± 0,687b	
	S-SS	11,246 ± 0,686a			S-BR	-6,298 ± 0,911c	
28	S-CD	-7,961 ± 0,04c	<0,001***	28	S-LGM	25,72 ± 1,388a	<0,001***
	S-PL	-0,604 ± 0,067b			S-BG	-9,115 ± 0,245b	
	S-SS	10,366 ± 0,125a			S-BR	-25,083 ± 0,934c	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S5a of Figure 5 A Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	PL-LGM observed	2,224 \pm 0,033a	0,047*
	PL-LGM calculated	2,071 \pm 0,071b	
3	PL-LGM observed	0,11 \pm 0,59b	0,01*
	PL-LGM calculated	2,593 \pm 0,219a	
7	PL-LGM observed	0,822 \pm 0,056b	<0,001***
	PL-LGM calculated	1,818 \pm 0,11a	
14	PL-LGM observed	2,877 \pm 0,024a	<0,001***
	PL-LGM calculated	1,293 \pm 0,024b	
28	PL-LGM observed	11,248 \pm 0,042a	<0,001***
	PL-LGM calculated	0,8 \pm 0,212b	

Table S5b of Figure 5 B Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	PL-BG observed	1,275 \pm 0,022a	0,020*
	PL-BG calculated	1,098 \pm 0,055b	
3	PL-BG observed	1,769 \pm 0,081b	0,034*
	PL-BG calculated	2,208 \pm 0,178a	
7	PL-BG observed	1,151 \pm 0,029a	<0,01**
	PL-BG calculated	0,833 \pm 0,048b	
14	PL-BG observed	0,707 \pm 0,04a	<0,001***
	PL-BG calculated	0 \pm 0,033b	
28	PL-BG observed	5,159 \pm 0,125a	<0,001***
	PL-BG calculated	-0,886 \pm 0,042b	

Table S5c of Figure 5 C Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	PL-BR observed	1,333 \pm 0,013a	0,430
	PL-BR calculated	1,293 \pm 0,071a	
3	PL-BR observed	2,232 \pm 0,093a	0,042*
	PL-BR calculated	1,844 \pm 0,175b	
7	PL-BR observed	1,676 \pm 0,064a	<0,001***
	PL-BR calculated	0,716 \pm 0,057b	
14	PL-BR observed	0,455 \pm 0,011a	<0,001***
	PL-BR calculated	-0,509 \pm 0,033b	
28	PL-BR observed	3,154 \pm 0,091a	<0,001***
	PL-BR calculated	-1,2 \pm 0,058b	

Table S5d of Figure 5 D Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	CD-LGM observed	0,252 \pm 0,03b	<0,001***
	CD-LGM calculated	0,761 \pm 0,007a	
3	CD-LGM observed	-0,549 \pm 0,184b	<0,001***
	CD-LGM calculated	0,541 \pm 0,119a	
7	CD-LGM observed	-1,239 \pm 0,057b	<0,001***
	CD-LGM calculated	0,771 \pm 0,077a	
14	CD-LGM observed	-2,089 \pm 0,019b	<0,001***
	CD-LGM calculated	0,947 \pm 0,03a	
28	CD-LGM observed	-3 \pm 0,016b	<0,001***
	CD-LGM calculated	-0,408 \pm 0,169a	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S5e of Figure 5 E Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	CD-BG observed	-0,088 \pm 0,024a	<0,01**
	CD-BG calculated	-0,212 \pm 0,026b	
3	CD-BG observed	-0,263 \pm 0,054b	<0,01**
	CD-BG calculated	0,156 \pm 0,069a	
7	CD-BG observed	-0,674 \pm 0,01b	<0,001***
	CD-BG calculated	-0,213 \pm 0,014a	
14	CD-BG observed	-0,67 \pm 0,019b	<0,001***
	CD-BG calculated	-0,347 \pm 0,052a	
28	CD-BG observed	-2,015 \pm 0,007a	<0,001***
	CD-BG calculated	-2,094 \pm 0,012b	

Table S5f of Figure 5 F Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	CD-BR observed	-0,086 \pm 0,006b	<0,001***
	CD-BR calculated	-0,018 \pm 0,006a	
3	CD-BR observed	-0,193 \pm 0,097a	0,849
	CD-BR calculated	-0,209 \pm 0,094a	
7	CD-BR observed	-0,414 \pm 0,003b	<0,01**
	CD-BR calculated	-0,33 \pm 0,019a	
14	CD-BR observed	2,821 \pm 0,014a	<0,001***
	CD-BR calculated	-0,855 \pm 0,013b	
28	CD-BR observed	-1,57 \pm 0,002a	<0,001***
	CD-BR calculated	-2,408 \pm 0,014b	

Table S5g of Figure 5 G Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	SS-LGM observed	0,491 \pm 0,069b	<0,01**
	SS-LGM calculated	1,039 \pm 0,014a	
3	SS-LGM observed	-0,259 \pm 0,017b	<0,001***
	SS-LGM calculated	1,572 \pm 0,046a	
7	SS-LGM observed	0,71 \pm 0,024b	<0,001***
	SS-LGM calculated	2,696 \pm 0,088a	
14	SS-LGM observed	4,121 \pm 0,22a	0,134
	SS-LGM calculated	4,44 \pm 0,193a	
28	SS-LGM observed	1,649 \pm 0,108b	<0,001***
	SS-LGM calculated	3,794 \pm 0,177a	

Table S5h of Figure 5 H Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means \pm SD	P value
1	SS-BG observed	0,818 \pm 0,02a	<0,001***
	SS-BG calculated	0,066 \pm 0,012b	
3	SS-BG observed	0,377 \pm 0,016b	<0,001***
	SS-BG calculated	1,188 \pm 0,006a	
7	SS-BG observed	0,429 \pm 0,013b	<0,001***
	SS-BG calculated	1,712 \pm 0,042a	
14	SS-BG observed	1,876 \pm 0,092b	<0,01**
	SS-BG calculated	3,146 \pm 0,164a	
28	SS-BG observed	5,306 \pm 0,027a	<0,001***
	SS-BG calculated	2,108 \pm 0,038b	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S5i of Figure 5 I Net quantities of mineral nitrogen (mg)			
Time (days)	Treatments	Means ± SD	P value
1	SS-BR observed	0,336 ± 0,015a	<0,01**
	SS-BR calculated	0,261 ± 0,015b	
3	SS-BR observed	0,532 ± 0,025b	<0,001***
	SS-BR calculated	0,823 ± 0,027a	
7	SS-BR observed	0,567 ± 0,036b	<0,001***
	SS-BR calculated	1,595 ± 0,034a	
14	SS-BR observed	1,117 ± 0,01b	<0,01**
	SS-BR calculated	2,638 ± 0,204a	
28	SS-BR observed	2,142 ± 0,064a	<0,01**
	SS-BR calculated	1,794 ± 0,034b	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S6a of Figure 6 A Net quantities of mineral nitrogen (g 100g ⁻¹ organic nitrogen of PL and BM)				Table S6b of Figure 6 B Net quantities of mineral nitrogen (g 100g ⁻¹ organic nitrogen of CD and BM)			
Time (days)	Treatments	Means ± SD	P value	Time (days)	Treatments	Means ± SD	P value
1	PL	2,079 ± 0,138b	<0,001***	1	CD	-0,172 ± 0,061b	<0,001***
	PL-LGM	3,358 ± 0,037a			CD-LGM	1,039 ± 0,127a	
	PL-BG	1,87 ± 0,037c			CD-BG	-0,348 ± 0,094c	
	PL-BR	2,038 ± 0,034b			CD-BR	-0,371 ± 0,025c	
3	PL	3,009 ± 0,27a	<0,001***	3	CD	-1,033 ± 0,304a	0,026*
	PL-LGM	0,164 ± 0,894b			CD-LGM	-2,281 ± 0,822b	
	PL-BG	2,594 ± 0,113a			CD-BG	-1,034 ± 0,212a	
	PL-BR	3,412 ± 0,123a			CD-BR	-0,832 ± 0,417a	
7	PL	1,51 ± 0,105c	<0,001***	7	CD	-0,605 ± 0,093a	<0,001***
	PL-LGM	1,242 ± 0,079d			CD-LGM	-5,111 ± 0,198d	
	PL-BG	1,688 ± 0,038b			CD-BG	-2,651 ± 0,05c	
	PL-BR	2,562 ± 0,093a			CD-BR	-1,782 ± 0,023b	
14	PL	-0,49 ± 0,006d	<0,001***	14	CD	-3,263 ± 0,062c	<0,001***
	PL-LGM	4,344 ± 0,054a			CD-LGM	-8,623 ± 0,144d	
	PL-BG	1,038 ± 0,063b			CD-BG	-2,636 ± 0,073b	
	PL-BR	0,696 ± 0,015c			CD-BR	12,145 ± 0,059a	
28	PL	-0,604 ± 0,067d	<0,001***	28	CD	-7,961 ± 0,04b	<0,001***
	PL-LGM	16,985 ± 0,077a			CD-LGM	-12,385 ± 0,261c	
	PL-BG	7,566 ± 0,163b			CD-BG	-7,926 ± 0,054b	
	PL-BR	4,822 ± 0,099c			CD-BR	-6,758 ± 0,038a	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.

Table S6c of Figure 6 C Net quantities of mineral nitrogen (g 100g⁻¹ organic nitrogen of SS and BM)			
Time (days)	Treatments	Means \pm SD	P value
1	SS	0,965 \pm 0,023c	<0,001***
	SS-LGM	1,572 \pm 0,213b	
	SS-BG	2,652 \pm 0,071a	
	SS-BR	1,167 \pm 0,052c	
3	SS	3,268 \pm 0,062a	<0,001***
	SS-LGM	-0,829 \pm 0,056d	
	SS-BG	1,221 \pm 0,047c	
	SS-BR	1,844 \pm 0,084b	
7	SS	7,134 \pm 0,165a	<0,001***
	SS-LGM	2,272 \pm 0,084b	
	SS-BG	1,39 \pm 0,046d	
	SS-BR	1,965 \pm 0,124c	
14	SS	11,246 \pm 0,686b	<0,001***
	SS-LGM	13,188 \pm 0,699a	
	SS-BG	6,078 \pm 0,276c	
	SS-BR	3,875 \pm 0,043d	
28	SS	10,366 \pm 0,125b	<0,001***
	SS-LGM	5,277 \pm 0,368d	
	SS-BG	17,195 \pm 0,09a	
	SS-BR	7,428 \pm 0,219c	

Values followed by different letters in the same group are significantly different at the 5% threshold of test.



Image S1 Microcosms prepared in triplicate

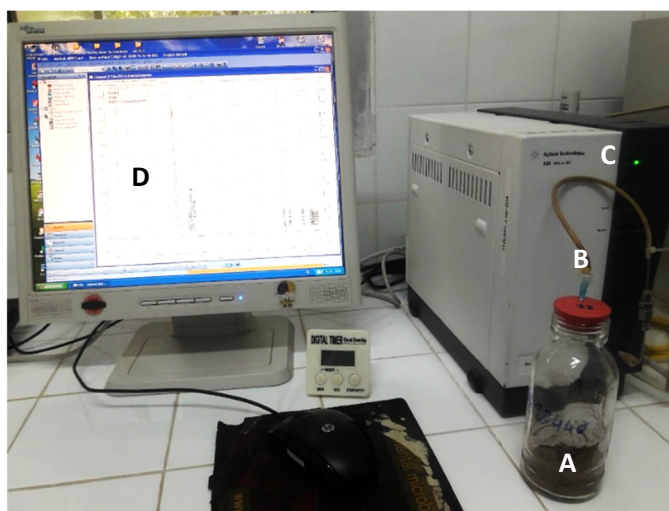


Image S2 C-CO₂ measurement by gas chromatography. A Microcosm, B Microsyringe, C Chromatograph, D Chromatogram

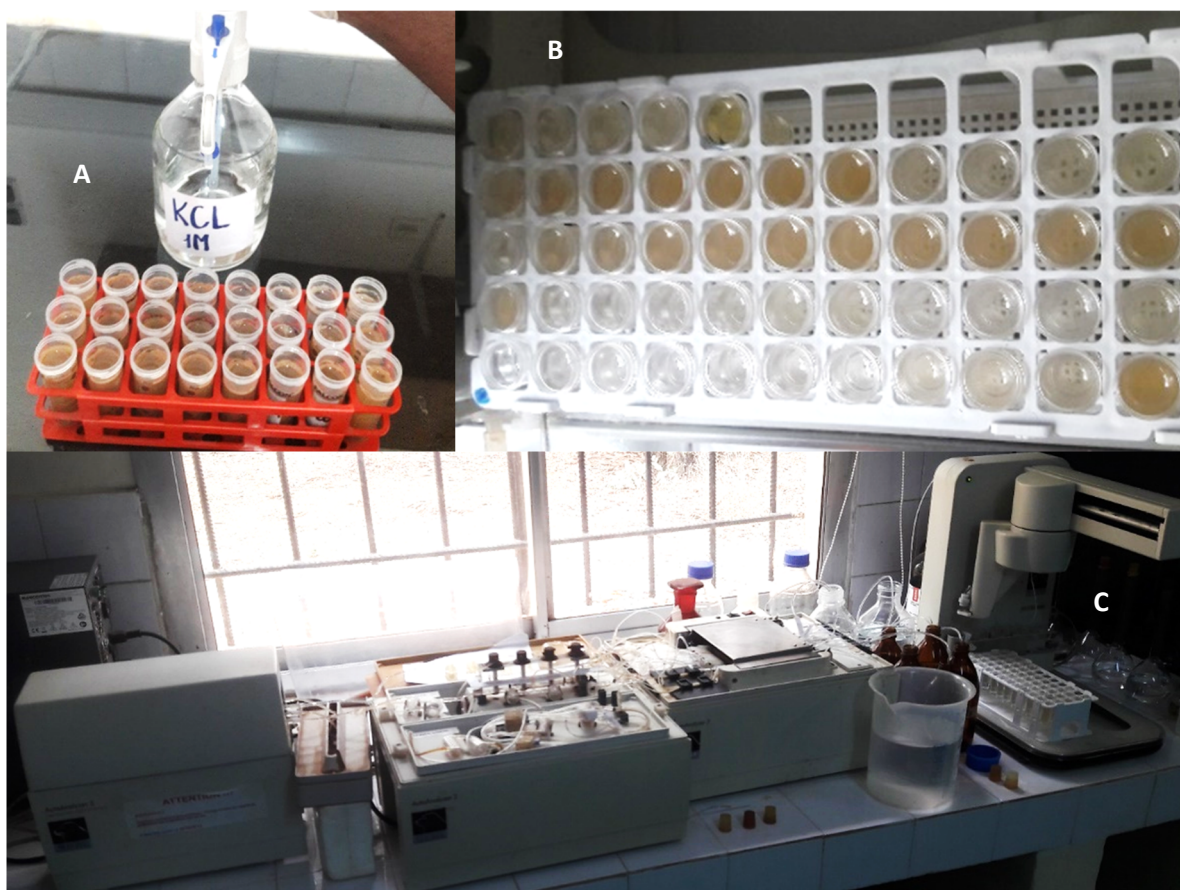


Image S3 Measurement of N-NO_3^- and N-NH_4^+ quantities. A Extraction with KCl, B Extracts, C Determination using the SEAL Technicon colorimetric analysis system