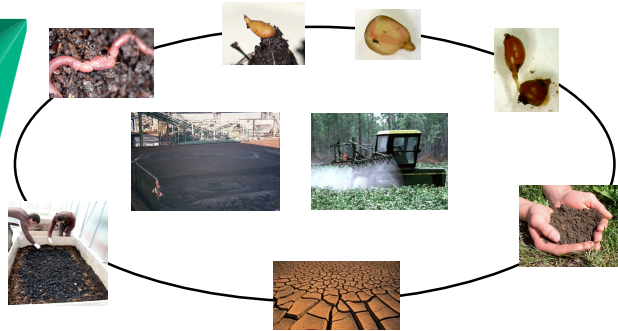


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## INTRODUCTION

Vermicomposts of organic wastes that are collected from human activities can be a valuable resource from technical, economical and environmental viewpoints.



Our objective is to know the influence of alperujo-vermicompost on soil microbial biodiversity and in the persistence of diuron

## EXPERIMENTAL SET UP

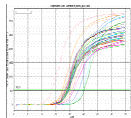
### Microbial Soil Structure

Automated Ribosomal Intergenic Spacer Analysis (ARISA) of the extracted DNA fragments from soil samples



### Soil Bacterial Abundance

Quantification of the 16S rDNA and *pcaH*



### Soil Microbial Activity

Measurement of dehydrogenase activity



### Diuron Analysis

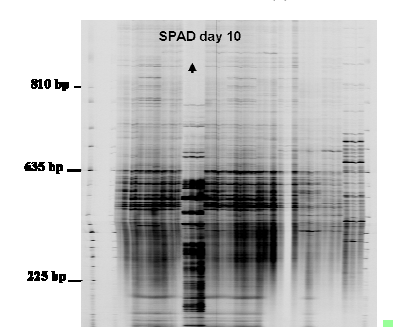
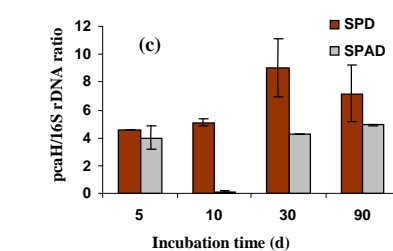
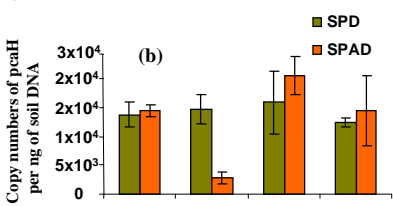
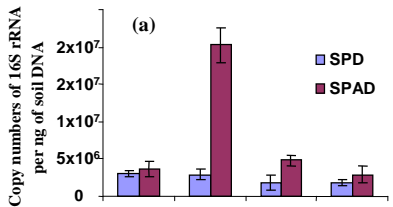


Table 1. Soil Properties and characteristics of the alperujo-vermicompost.

Sample	pH	TOC %	Sand %	Silt %	Clay %	-	-	-	-
SP	8.5	1.4	11	49	40	-	-	-	-
	pH	TOC	TEC	HA	FA	C/N	HR	Polyphen	Lignin
		g Kg <sup>-1</sup>	g Kg <sup>-1</sup>	g Kg <sup>-1</sup>	g Kg <sup>-1</sup>			g Kg <sup>-1</sup>	g Kg <sup>-1</sup>
A	8.6	292	201	75	126	15	69	1.3	200

A: Alperujo-Vermicomposted. TOC: total organic carbon. TEC: total extractable carbon. HA: humic acid, FA: fulvic acid. HR: humification rate.

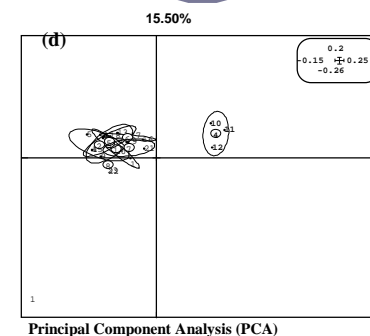
## RESULTS



The addition of vermicompost stimulates the soil bacterial communities, especially after 10 d of incubation (fig. a).

Changes in the structure of *pcaH* communities were observed after 10 d, but this was stabilised at the end of the incubation period (fig. b,c).

PCA analysis of ARISA fingerprinting indicates that communities in SPAD differ at day 10. (fig.d).



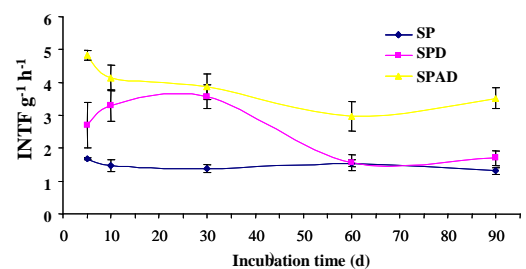
Azhari El, Bru D, Sarr A, Laurent FM (2008). Estimation of density of the protocatechuate-degrading bacterial community in soil by real-time. Eur J Soil Sci. 59: 665-673.  
López-Gutiérrez, J.C, Henry S, Hallet S, Laurent FM, Catroux G, Philippot L (2004). Quantification of a novel group of nitrate-reducing bacteria in the environment by real-time PCR. J. Microb. Meth. 57:399-407.  
Buser HR, Müller MD (1995). Isomer and enantioselective degradation of hexachlorocyclohexane isomers in sewage sludge under anaerobic conditions. Environ. Sci. Technol. 29: 664-72.

Table 2. Biotic and abiotic degradation parameters of diuron in the unamended (SPD, SPDc) and vermicompost-amended soils (SPAD, SPADc).

Treatment	C <sub>0</sub> ± sd <sup>1</sup>	k x 10 <sup>2</sup> ± sd	t <sub>1/2</sub>	k <sub>biotic</sub> /K <sub>total</sub> <sup>2</sup>	Mean <sup>3</sup>	R <sup>2</sup>
SPD	104 ± 1.41	8.4 ± 0.26	83	0.77	75.2 <sup>c</sup>	0.96
SPAD	106 ± 0.88	9.8 ± 0.43	70	0.65	76.1 <sup>c</sup>	0.88
SPDc	108 ± 3.25	1.93 ± 0.11	358	-	95.1 <sup>a</sup>	0.92
SPADc	110 ± 1.04	3.4 ± 0.17	203	-	93 <sup>b</sup>	0.92

<sup>1</sup> Standard deviation (n=3), <sup>2</sup> biotic contribution to overall degradation, <sup>3</sup> Tukey test carried out for each treatment shown in Mean<sup>3</sup> column; the letters indicate significant differences (n=3, p<0.05)

The biotic contribution to overall degradation was calculated using  $k_{biotic}/k_{total} = 1 - (k_{biotic}e/k_{total})$  as reported by Busen and Müller (1994). This confirms that degradation rates in SPD and SPAD were not significantly different (p>0.05), with a biodegradation rate of 76% and 65%, respectively (Table 2).



The addition of diuron and vermicompost stimulates the soil dehydrogenase activity. This correlates with the abundance of 16S.

