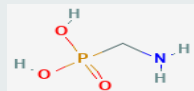


Authors: Gonzalo Mayoral, Eliana S.; Aparicio, Virginia; Costa, José Luis; De Gerónimo, Eduardo
Contact: gonzaloeliana@gmail.com



INTRODUCTION

AMPA (Aminomethylphosphonic acid)



- Metabolite of microbial degradation of the glyphosate and other phosphonate compounds, such as detergents.
- In the soil, AMPA has a stronger adsorption than glyphosate.
- No studies have been reported on adsorption of AMPA in the soil profile.

Objective

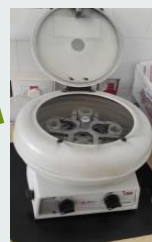
to determine the adsorption coefficients of AMPA in the three main horizons of a typical Argiudoll.

MATERIALS AND METHOD



1 g of soil
10 ml of CaCl₂ (0,01 M)
AMPA concentration:
0, 2, 5, 10, 20, 50 and 100 ppm
Six replications per horizon (A-B-C)

Shaking 24 hs at 25°C



Centrifugated at 3000 rpm for 10 minutes.



Determination of AMPA concentration in UHPLC MS/MS

The experimental data was adjusted following the Freundlich model. Physical-chemical determinations of each horizon were made in order to characterize the soil.

RESULTS

Table 1. Physical-chemical characteristics

Horizon	A (0-30cm)		B (30-75 cm)		C (75-160 cm)	
pH	5,62	c	6,50	b	7,01	a
EC (ds m ⁻¹)	0,10	a	0,08	a	0,07	a
OC (%)	3,23	a	0,97	b	0,20	c
CEC (cmol ⁺ Kg ⁻¹)	24,26	a	28,19	a	19,07	b
Sand (%)	47,66	b	41,27	c	55,98	b
Silt (%)	27,59	a	18,62	b	20,08	b
Clay (%)	24,75	b	40,11	a	23,94	b
Fe (mg Kg ⁻¹)	3,05	b	5,38	a	4,33	a
Al (mg Kg ⁻¹)	6,28	a	6,36	a	3,02	a
K _f	295,28	a	325,60	a	150,10	b
n	0,54	a	0,49	b	0,48	b

Different letters indicate differences between horizons (*Tukey, p<0.05).

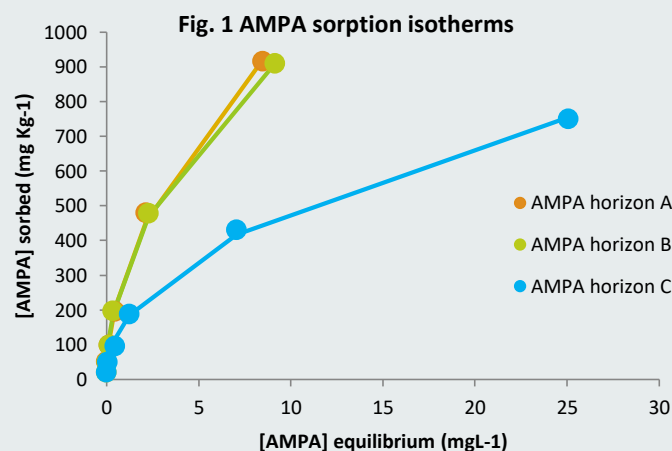


Table 2. Correlation coefficient of K_f with soil properties

	pH	EC	OC	CEC	Sand	Silt	Clay	Fe	Al
K _f	-0,82	0,63	0,74	0,79	-0,91	0,61	0,44	0,18	0,21

CONCLUSION

AMPA adsorption appeared to be mainly controlled by soil texture, pH, EC, OC content and CEC. The sand content and pH of the soil are inversely associated with increased adsorption. The adsorption of AMPA is stronger in horizon B and A than in C, so the risk of this compound reaching groundwater is relatively low.