Potassium Release From Coffee Husks As Affected by N Fertilization

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INTRODUCTION

- Coffee husk = 50% (by weight) of the total amount of coffee harvested.
- 45 kg of dry coffee pulp = 4.5 kg of inorganic fertilizer formulated 14-3-37.
- There is growing interest in using wastes to improve soil productivity in agricultural systems.
- Plant residues are beneficial in the regeneration of soil nutrients, organic matter and improving the physical and biological properties.
- The combined application of organic wastes and chemical fertilizers improved the synchrony between nutrient release and plant uptake.

OBJECTIVE

This research aimed to estimate K mineralization from soil applied coffee husks, as affected by nitrogen application.

MATERIAL AND METHODS

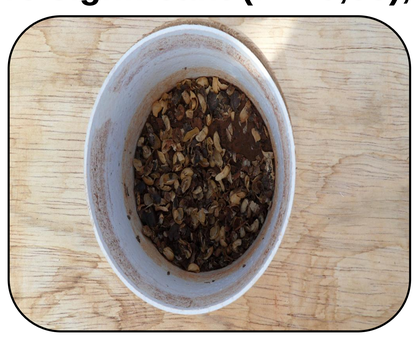
Study site: College of Agricultural Sciences (soil columns in a greenhouse).

Treatments: 0, 80, 160, 240 and 320 kg ha^{-1} of N, as NH_4NO_3 fertilizer, in the presence and absence of 10 t ha^{-1} of coffee husks.

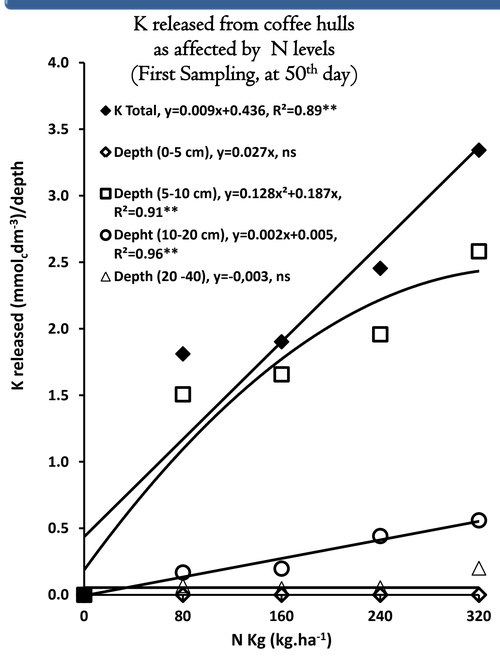
Sampling: At 50th, 100th and 150th day.

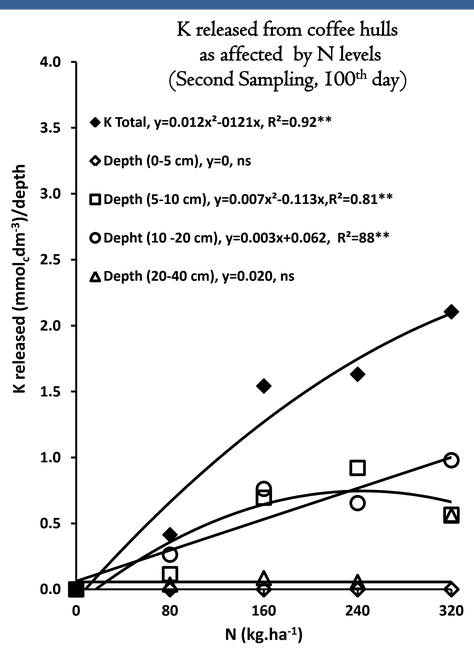
Evaluations: Soil samples were collected and analyzed for K contents at depths of 0-0.05; 0.05-0.10; 0.10-0.15 and 0.15 to 0.40 m.

Data analyses: Data were subjected to analysis of variance, and when F values were significant (P < 0,05), to regression analysis.


RESULTS





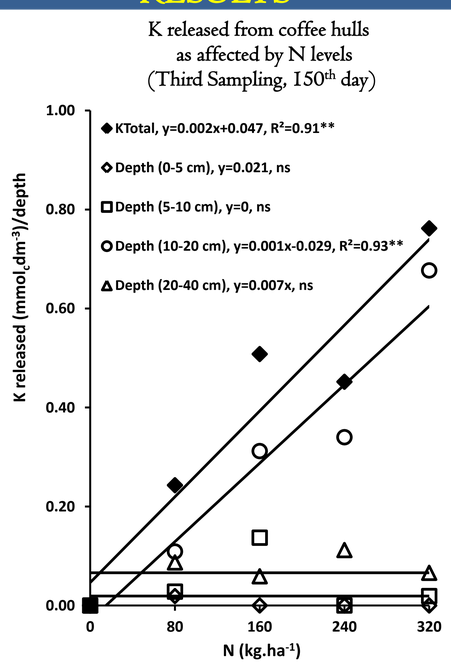



Table 1. Coffee hulls characterization.

N	P	K	Ca	Mg	C	S
			g.kg^{-1}			
13.23	0.78	24.79	3.09	0.77	412.5	2.12
C:N Ratio	Cellulose	Lignin	Phenol*	pH	C.E	Brix
	g.kg^{-1}				µS/cm²	%
31.18	25.64	15.41	16.90	5.62	1,953.00	29.80

*Tannic acid equivalent.

CONCLUSIONS

- ❑ Regardless of the evaluation period (i.e. day 50, 100, or 150), Higher N applications resulted in greater K release from coffee hulls.
- ❑ The application of N levels (on treatments without coffee hulls) did not affect soil K contents during the evaluation period.

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