Nutrition and Yield of Corn As a Function of Surface Application of Lime and Gypsum

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INTRODUCTION

OBJECTIVE

This research was conducted aiming to evaluate the effects of surface application of lime and gypsum in corn nutrition grains yield

MATERIAL AND METHOD

Location: Botucatu, São Paulo State/Brazil.

Experimental design : completely randomized block, with subdivided plots and four replications.

Plots: 0, 1.000, 2.000 and 4.000 kg ha^{-1} superficial liming (Oct. 2010).

Subplots: 0 and 2.100 kg ha^{-1} superficial gypsum application.

Sowing date: November of 2010.

Rainfall: 140 mm in November 2010, 243 mm in December 2010, 712 mm in January 2011 and 188 mm in February 2011.

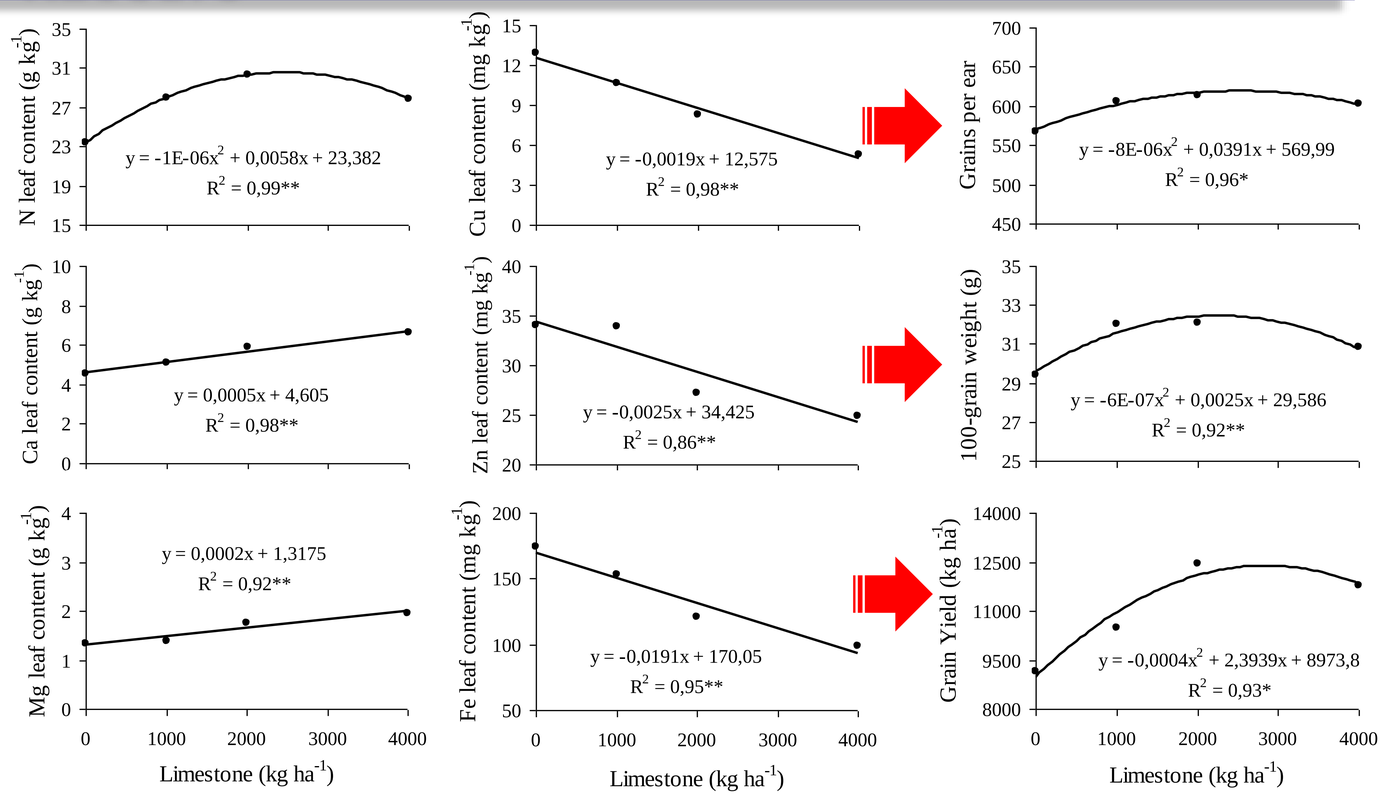
Determinations: Nutrients contents (N, P, K, Ca, Mg, S, Cu, Zn, Mn and Fe), population, yield components (grain per ear and weight of 100 grains) and grain yield.

Data analyses: In the absence of significant interaction of Lime x Gypsum, gypsum Means were compared by the t test (LSD) at a probability level of 5% and lime rates were evaluated by regression analysis.

RESULTS

Treatments	N	P	K	Ca	Mg	S	Cu	Zn	Mn	Fe
	g kg^{-1}						mg kg^{-1}			
Gypsum										
Without	27	3,8	10,9	5,4	1,6	1,7 b	9,2	30	57	130
With	28	3,8	11,3	5,7	1,7	2,6 a	9,3	30	64	143
Significance										
Limestone (L)	*	ns	ns	**	**	ns	-·-·-	-·-·-	ns	-·-
Gypsum (G)	ns	ns	ns	ns	ns	**	ns	ns	ns	ns
L x G	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
VCplot (%)	13,0	9,1	7,2	7,1	16,5	10,4	24,1	8,6	20,4	12,1
VCsubplot (%)	9,9	4,6	7,9	7,9	16,5	18,7	19,7	6,3	14,8	14,7

Treatments	Population	Grain per ear	100-grain weight	Grain Yield
	plants ha^{-1}	n^{o}		
Gypsum				
Without	81713	593	30,68	10899
With	83796	602	31,47	11017
Significance				
Limestone (L)	ns	*	**	**
Gypsum (G)	ns	ns	ns	ns
L x G	ns	ns	ns	ns
VCplot (%)	6,7	4,3	3,1	13,4
VCsubplot (%)	7,2	4,4	4,9	7,7



CONCLUSION

- Gypsum did not affect the nutrients uptake, the yield components and grain yield.
- Limestone increased the N, Ca and Mg uptake, however decreased Cu, Zn and Fe Uptake.
- The grain per ear, 100-grain weight and grain yield incresead with surface liming.