

Doses of poultry litter and swine manure for crop-livestock integration system

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Introduction

Organic fertilizers derived from poultry litter and swine manure are alternatives which can increase the efficiency in the soil's nutrient availability in relation to mineral fertilizers in crop-livestock integration (CLI) systems. Thus, this study aimed to determine the response of fertilization with doses of poultry litter, swine manure and mineral fertilizers based on the corn yields through the years of 2011-2013 for .

Material and Methods

Experimental design was a randomized complete block, in the factorial with four replications. The treatments consisted of four increasing doses of N (0, 100, 200 and 300 kg ha⁻¹ N) in interaction with four types of fertilizers, two of them were organic (poultry litter and swine slurry) and two balanced minerals with the same amounts of N, P and K as the organic ones, M1 related to swine manure and M2 with poultry litter.

Results and Conclusions

Table 1 - Corn yields (kg ha⁻¹) due to increasing levels of nitrogen with organic and mineral (M) fertilizers in crop livestock integration (CLI) systems in the 2011/2012 and 2012/2013 seasons.

Doses (kg ha ⁻¹)	0	100	200	300	Regression
Crop 2011/2012					
Poultry Litter	6.184	8.567 b	8.698 c	11.153 b	6394 + 15,0**x R ² = 0,91
Swine Manure	6.184	8.410 b	11.753 b	14.629 a	5942 + 28,7**x R ² = 0,99
M1	6.184	12.666 a	14.925 a	14.118 a	6242 + 80,7**x - 0,182**x ² R ² = 0,99
M2	6.184	11.516 a	14.219 a	15.621 a	6250 + 60,5**x - 0,098**x ² R ² = 0,99
Crop 2012/2013					
Poultry Litter	3.327	6.485 ab	7.382	7.812	3416 + 34,8** - 0,07* x ² R ² = 0,99
Swine Manure	3.327	6.904 a	7.702	8.826	3482 + 35,7** - 0,06* x ² R ² = 0,97
M1	3.327	7.940 a	8.859	8.646	3455 + 53,1** - 0,120** x ² R ² = 0,98
M2	3.327	5.378 b	8.250	9.065	3.491 + 20,1** x R ² = 0,96
Corn Yield in the system					
Poultry Litter	9.511	15.051 b	16.079 c	18.964 b	9830+49**x - 0,07**x ² R ² = 0,92
Swine Manure	9.511	15.313 b	19.455 b	23.454 a	9587+59**x - 0,04**x ² R ² = 0,91
M1	9.511	20.605 a	23.783 a	22.763 a	9697+134**x - 0,30**x ² R ² = 0,93
M2	9.511	16.893 b	22.469	24.686 a	9434+90**x - 0,13**x ² R ² = 0,96


Means followed by different letters in the same column are different (P<0.05) by Student's t-test

The positive results of corn yield in both years allowed direct relationship between increasing doses of N with organic and mineral fertilizers and the total production in CLI system (Table 1). Organic fertilizer with poultry litter and swine manure shows the same efficiency as for as mineral fertilizer when N doses fertilizer were adopted.

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