MORPHOLOGICAL DEVELOPMENT OF CACTUS PEAR FORAGE (*OPUNTIA FICUS-INDICA* AS AFFECTED BY PLANT POPULATION AND ORGANIC FERTILIZATION[1]

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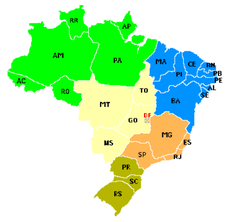
Introduction

Cactus is an important component of small farming systems in Northeast Brazil. Depletion of soil nutrients and lack of organic or chemical fertilization on cactus crop reduce its productivity. Plant population also affects cactus productivity.

Estimating cactus productivity on the field using non-destructive measurements is important not only for research purposes but also for the farm planning.



Objective

Thus, this research evaluated the effect of organic fertilization and plant population on the morphological development of cactus (*Opuntia ficus-indica* Mill cv. IPA 20).

Materials and methods

• A split-plot arrangement in a complete randomized blocks design was applied; plots were formed by organic fertilization levels and split-plot formed by plant populations, with four replications.

• Treatments: organic fertilization levels (0, 20, 40, and 80 Mg/ha of manure applied on a dry matter basis) and plant population (20,000; 40,000; 80,000; and 160,000 plants/ha)

• Before harvesting (after two years of regrowth), the following indirect measurements were taken:

Results

Morphological development of cactus (*Opuntia ficus-indica* Mill cv. IPA 20) as affected by organic fertilization; Caruaru-PE

Organic fertilization	NC4	PH (cm)	PC3(cm)	PC4(cm)	CC4(cm)
0 t/ha	0.17B	96.33C	65.14B	7.17B	3.0B
20 t/ha	0.33B	114.42BC	83.80A	6.67B	2.83B
40 t/ha	0.66B	119.67AB	79.86A	34.07AB	14.20AB
80 t/ha	2.92A	136.,58A	82.29A	60.12A	25.39[a]
Standard Error	0.48	7.02	3.61	11.02	4.63

Means followed by the same letter within each column do not differ (P>0.05) by SAS LSMEANSN using the PDIFF; A4 = 4th order cladode number, PH = plant height; PC3 = 3th order cladode perimeter, PC4 = 4th order cladode perimeter, CC4= 4th order cladode length

Cladode thickness and cladode number of cactus (*Opuntia ficus-indica* Mill cv. IPA 20) as affected by plant population and organic fertilization; Caruaru-PE

	1st order Cladode thickness (cm)			
	Plant population (plants/ha)			
Organic fertilization	20,000	40,000	80,000	160,000
0 t/ha	3.3bB	3.7aA	3.3bcAB	3.0bB
20 t/ha	3.5bA	3.9aA	4.1aA	4.1aA
40 t/ha	3.7bA	4.0aA	3.8abA	3.3bA
80 t/ha	4.6aA	4.2aA	3.2cB	3.3bB
Standard Error				0.24
	3rd order cladode number			
0 t/ha	7.3aA	2.3cB	2.0bB	3.7aB
20 t/ha	6.3aB	11.3aA	8.7aAB	6,0aB
40 t/ha	6.3aA	6.7bA	6.3aA	6,0aA
80 t/ha	9.0aA	5.7bcAB	5.3abB	5.33aB
Standard Error				1.18

Means followed by the same small letter within each column and capital letter within each line do not differ (P>0.05) by SAS LSMEANSN using the PDIFF.

Conclusions

Perimeter, number, and length of younger cladodes increased with organic fertilization. Increasing plant population reduced cladode number per plant at 0 t/ha but in the presence of organic fertilization this effect was reduced. In general, increasing organic fertilization and plant population increased morphological development.