

BEAN FERTILIZATION II - ALTERNATIVE SOURCES OF FERTILIZERS

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Alternative sources of fertilizers have been tested in field experimentation with the objective of stimulation bean cultivation and at the same time to obtain better utilization of crop residues.

Two field experiments were conducted at the National Rice and Bean Research Center, Capivara Farm. The soil type in the experimental field was a Dark Red Latossol (Haplustox). Chemical analysis showed this soil contain 1.9 ppm phosphorus, 5.5 ppm potassium, 1.2 meq/100g calcium plus magnesium, 1.8% organic matter, 2.0 meq/100g aluminum and a pH of 5.3.

The basic treatments were residue of pigeon pea at flowering, residue of sugar cane (100 t/ha), bovine biofertilizer (10 t/ha), apatite phosphate (1 t/ha), triple superphosphate (80 kg P₂O₅/ha) tested in isolation and in combination. There were four checks of 0 (without fertilizer) and NPK/30-80-30 (based on soil recommendation) and bovine biofertilizer (50 and 100 t/ha).

Before planting of the first experiments, 40 and 30 kg/ha of P₂O₅ and K₂O were applied respectively.

The fertilizers were applied and incorporated at the time of ploughing operation. Nitrogen (20 kg N/ha) was applied 35 days after planting.

There were no results of bean grain yield in the first experiment on plots cultivated with pigeon pea because this plant was still growing.

In general, the best results were obtained by using 50 and 100 t/ha of biofertilizer, N-P-K (according to soil recommendation) and combinations of different sources. Residue of pigeon pea in the second year proved to be the one of the good sources of fertilizer. Nitrogen application five weeks after planting increased grain yield about 20%.

Table 1. Effects of different sources of fertilizer on bean yield (kg/ha), Carioca cultivar.

Treatments	1983		1984	
	-N	+N	-N	+N
0-check (1)	622(73%)	846	730(45%)	1.625*
Pigeon pea (2)	-	-	1.050(63%)	1.670*
Residue of (3)	912(88%)	1.038*	880(44%)	2.015*
Sugar cane				
Bovine biofertilizer (4) 10 t/ha	947(63%)	1.031*	705(39%)	1.820*
Apatite phosphate (5)	658(60%)	1.101*	695(46%)	1.505*
Triple superphosphate (6)	843(74%)	1.135*	1.010(58%)	1.745*
(5) + (2)	-	-	1.010(53%)	1.900*
(5) + (3)	824(74%)	1.108*	850(41%)	2.055*
(5) + (4)	811(75%)	1.073*	910(51%)	1.765*
(6) + (2)	-	-	1.400(75%)	1.875*
(6) + (3)	814(69%)	1.170*	995(55%)	1.805*
(6) + (4)	947(85%)	1.106*	885(46%)	1.920*
(5) + (6) + (2)	-	-	885(43%)	2.075*
(5) + (6) + (3)	923(79%)	1.171*	1.130(65%)	1.730*
(5) + (6) + (4)	979(81%)	1.205*	985(47%)	2.105*
Check (biofertilizer 50 t/ha)	1.109(79%)	1.403*	1.110(55%)	2.005*
Check (biofertilizer 100 t/ha)	1.129(87%)	1.357*	1.910(95%)	2.020*
Check (N P K/30-80-30)	1.112(92%)	1.212*	1.390(82%)	1.690*
Mean yield	880(77%)	1.136*	1.030(56%)	1.851*
C.V.	25.61	16.77%	22.06%	10.59%

*100%