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RESPONSE OF GARLIC *(ALLIUM SATIVUM L.)* TO LINE APPLICATION IN ACIDIC SDIL

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Soils of North East (NE) India are generally acidic in nature. The role of amelierating agent especially line, in inducing better nutritional environment in acidic soil is well recognized. Dutta and Gupta (1983) and Prasad et. al. (1983) reported about some cereals and legumes which were highly responsive to lime application is acidic soils of Meghalaya and Nagaland. On the effect of lime on bulb crops especially garlic in NE India study is scanty. An attempt was, therefore made to assess the effect of lime application to an acidic soil on the yield and uptake of nutrients by garlic.

A field experiment in randomized block design was conducted during Rabi 1997-98 at the ICAR Research Farm, Umiam, Meghalaya on an acidic soil having p^H 5.31, organic carbon 1.68%, total N.O. 059%, available S 16 kg ha^{-1} and availablë K 250 kg/ha, using garlic as test crop. The treatment consisted of 5 levels of lime (0, 1.0, 1.5, 2.0 and 3.0 t/ha which were replicated five times. N. P. K @ 100 kg and S @ 20/ kg was applied, N. P. K. were applied through urea, diammonium phosphate and muriate of potash while sulphar was applied in the form of elemental sulphar. Plant samples (bulb) were analysed for total P and S. p^H of post harvest soil was analysed following standard procedures.

Bulb yield : The bulb yield of garlic increased significantly with the application of increasing levels of lime (Table 1). The result was in conformity with the findings of Prasad et.al. (1983) and Datta et.al. (1983).

Table 1. Effect of liming on the bulb yield (t / ha) of garlic and p^H of post harvest soil

Treatments	Bulb yield (t/ha)	Soil (1 : 2.5 ratio)
T_1 (0 t lime/ha)	12.41	5.32
T_2 (1.0 t lime/ha)	13.62	5.47
T_3 (1.5 t lime/ha)	15.65	5.63
T_4 (2.0 t lime/ha	16.90	5.80
T_5 (3.0 t lime/ha)	18.16	6.05
C. D. at 0.05	0.52	0.06

S content : Application of increasing levels of lime significantly increased the S content of garlic which ranged between 0.55 to 0.87% (Table 2).

Table 2. Effect of liming on the S and P contest (%) of garlic.

Treatment	S content (%)	P content (%)
T_1	0.55	0.26
T_2	0.61	0.30
T_3	0.69	0.31
T_4	0.79	0.33
T_5	0.87	0.35
C. D. at 0.05	0.05	NS

The high S content in garlic was justified by the fact that the special aroma in garlic was due to the presence of glyeesides in which sulphar is one of the main constituent. So the high S content in garlic due to lime application was an indication of its high pungency i. e. good quality.

P content : The P content of garlic (Table 2) increased but non-significantly with the increasing levels of lime application. This may be because of higher amount of acidic cations ($A1^{3+}$ Fe^{3+} etc.) present in the soil, thus nullifying the beneficial effect of lime by fixing available phosphorus. The P content of garlic ranged between 0.26 to 0.35%.

Soil p^H : The p^H of post harvest soil (Table 1) increased significantly with the increasing levels of lime application. Similar trend was also obtained by Prasad et.al. (1983). But p^H could not be raised upto neutral range which might be due to high buffering capacity of soils (organic carbon 1.68%).

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