

A Note on the Effect of Organic Manures and Fertilisers in conjunction with Lime on—Bhindi (*Abelmoschus esculentus* Moench)

Bhindi is one of the most important vegetable crops grown in Kerala. Experiments with organic manures and fertilisers in conjunction with lime are very rare on this crop. The acidic nature of the soils of Kerala necessitate the application of lime. Moreover, liming is found to enhance the efficient utilisation of artificial fertilizers applied to acid soils (Blue and Eno, 1957, Mariakulandai, 1957). Hence a trial was undertaken with a view to studying the effect of organic manures and fertilisers in conjunction with lime on Bhindi for two years during the Kharif seasons in 1964 and 1965 in the red loam soils of Vellayani with the following treatments.

1. Control — No manures
2. Organic manures
3. Fertilisers
4. Organic manures + lime
5. Fertilizers + lime
6. Organic manures + fertilizers
7. Organic manures + fertilizers + lime

The organic manures and fertilisers were given on an equal nutrient basis to supply 70 kg N, 90 kg P_2O_5 and 120 kg K_2O per hectare to all the plots, except control. Lime was applied at the rate of 1500 kg./hectare. The entire dose of organic manures, P and K fertilisers and half the dose of N were given as basal dressing. The other half of the N was given as top dressing three

weeks after sowing. The gross plot size was 2.28 m × 1.83 m ($7\frac{1}{2}' \times 6'$). The spacing given was 0.76 m × 0.63 m ($2\frac{1}{2}' \times 2'$). The variety used for the experiment was 'Pusa Sawani'. The soil was acidic with a pH of 5.7.

The data for the two years are given in the table below :

TABLE I
Yield of Bhindi (kg/ha) for different treatments

Treat- merits	Year 1964	Year 1965	Mean yield of two years	Increase over control (%)
1	5930	6987	6455	..
2	9631	15073	10759	66
3	6635	15626	12050	85
4	8585	12592	10328	60
5	12188	16833	15063	133
6	14512	19134	16569	156
7	18092	24449	20871	215
C. D. at 5%			4941	..

The results presented in Table I show that a combined application of organic manures and fertilisers (tr. 6) has given a substantial increase in yield over that of either organic manures (tr. 2) or fertilisers (tr. 3) alone. This indicates that it is definitely beneficial to apply the nutrients in a combination of both organic and inorganic forms to Bhindi.

It is also evident that the application of fertilizers has given more yield than organic manures alone. This may be due to the fact that the nutrients are more easily available from fertilisers than from organic **manures**, especially for a short duration crop like **Bhindi**.

It is also seen from the Table that liming has resulted in increasing the yield of **Bhindi**, whenever it was used in combination with fertilisers. Tr. 7 (Organic manures + fertilisers + lime) and tr. 5 (fertilisers + lime) have recorded increased yield over tr. 6 (organic manures + fertilisers) and tr. 3 (fertilisers alone). This may be due to the beneficial effect of lime in correcting the acidity of the soil and supplying calcium as a nutrient.

Thus from this experiment it is seen that a combined application of fertilisers and organic manures is far better than their individual application. It is also found that liming at 1500 kg /hectare, has considerably increased the yield of **Bhindi** under Vellayani conditions.

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