

STUDIES ON THE FERTILIZER REQUIREMENT OF GINGER
(*Zingiber officinale* Roscoe)

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Though much work has been done to evolve suitable agronomic practices for ginger, the third important spice crop of India, considerable variation exists in the fertilizer recommendations made by different workers and institutions'. Muralidharan (1971) reviewed the previous fertilizer trials and reported that though the results were in general inconsistent, 50-75 lb N and 45-90 lb P_2O_5 /ac in combination increased the yield and that potash when applied alone decreased the yield but the same in combination with N and P increased the yield. The present study was conducted to find out an optimum NPK fertilizer dose for ginger under the agroclimate of Wynad, Kerala State.

Materials and Methods

The experiment consisting 8 treatments (Table 1) was laid out in moderately fertile clay-loam soil of the Central Horticultural Research Station, Ambalavayal in randomized-block design with 4 replications during the years 1968-69, 1969-70 and

Table 1
Details of treatments

Treatment No	N (kg/ha)	Equivalent CAN (g/plot)	Quantity of nutrients			
			P_2O_5 (kg/ha)	Equivalent superphosphate (g/plot)	K_2O (kg/ha)	Equivalent Muriate of potash (g/plot)
T ₁	0	0	0	0	6	0
T ₂	40	240	40	300	80	192
T ₃	50	300	50	375	100	240
T ₄	60	360	60	450	120	288
T ₅	70	420	70	525	140	336
T ₆	80	480	80	600	160	384
T ₇	100	600	100	750	200	480
T ₈	120	720	120	900	240	576

1970-71. Each plot consisted of 4 beds of 3m X 1m. A uniform basal dose of 5 kg farm yard manure per bed was applied. Nitrogen was applied as CAN (20%) in 2 equal instalments after the 1st and 3rd month of planting. Full dose of P_2O_5

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Table 2
Orchard tillers and yield

Treatment No.	Med ht. of plants (cm)		Mean no of tillers/plant		Gross yield of rhizomes per plot (kg)							
	68-69	70-71	68-69	70-71	68-69	69-70	70-71	Combined				
T ₁	41.48	32.54	38.32	37.44	5.05	5.38	4.31	4.91	28.60	30.15	32.90	30.88
T ₂	40.67	32.66	37.33	38.29	6.16	5.58	5.02	5.59	36.98	35.56	41.00	37.85
T ₃	43.12	33.90	38.66	38.56	5.44	6.49	5.88	5.94	28.72	37.10	40.58	35.46
T ₄	45.00	36.54	37.87	32.80	5.33	6.79	6.46	6.26	36.68	36.71	39.41	37.60
T ₅	40.56	35.76	37.95	32.40	6.53	6.46	5.89	6.29	34.54	36.28	36.69	35.84
T ₆	47.86	33.32	36.33	32.17	6.66	6.10	5.87	6.21	34.26	34.31	36.26	34.86
T ₇	46.33	32.76	34.07	37.22	6.43	6.07	5.90	6.13	32.57	33.61	36.69	34.29
T ₈	49.99	33.01	33.71	38.90	6.47	5.86	5.65	5.99	36.45	31.50	32.62	33.50
CD (0.05)	3.0	NS	NS	NS	NS	NS	1.0	0.63	NS	NS	NS	NS

NS: Not significant.

as single superphosphate (16%) and half dose of K_2O as muriate of potash (50%) were given before planting. The remaining potash was applied along the 1st dose of N. The beds were mulched with green leaves @ 5 kg/bed immediately after planting and repeated with the same quantity at 2 months after planting. Other cultural practices were adopted uniformly according to package of practices. The crops were harvested on completion of 250 days after planting.

Results and Discussion

Table 2 shows the analytical data regarding growth characters (height, tiller number) and yield of rhizomes. Significant difference in height of plants was noticed during 1968-69. The difference in tiller number was also significant only during one year (1970-71) of the experiment but persisted in the pooled analysis. Tiller number steadily increased with the higher levels of nutrients but declined beyond the application of 70 : 70 : 140 kg/ha N : P_2O_5 : K_2O which might be due to an imbalance between other elements or due to toxic effects. Though there was slight increase in yield with the application of 40:40:80 and 60:60:120 kg/ha N : P_2O_5 : K_2O , the differences were not statistically significant.

The absence of significant response to fertilizer application in the Present study might be due to the high initial fertility of the experimental farm coupled with the application of heavy doses of farm yard manure and green leaf mulch as reported by Muralidharan (1971). However, it is apparent from the Table that the optimum dose of NPK for proper growth and yield of ginger is around 60:60:120 kg/ha N : P_2O_5 : K_2O , which can be passed for general adoption until more definite results are obtained.

Summary

Field experiments were conducted for 3 years since 1968-69, at the Central Horticultural Research Station, Ambalavayal, to find out the optimum requirement of NPK fertilizers for ginger. It was observed that the application of fertilizers upto the level of 70 kg P_2O_5 and 140 kg K_2O /ha increased significant effect on either height of plants or yield though the latter was slightly increased with the application of 40 : 40 : 80 and 60 : 60 : 120 kg/ha of N : P_2O_5 : K_2O fertilizer mixtures.

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