

## Effect of Organic Sources of Nutrition on Cabbage Production in Tirap District of Arunachal Pradesh

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### INTRODUCTION

The cabbage (*Brassica Oleracia* L.) is a main winter seasonal vegetable crop grows in Arunachal Pradesh during the winter season. It is high in fiber & minerals, low in fat, high in foliate, water & vitamin C. It process high in nutritional density which protect a wider range of disease from cancer to cataract. It also supplies Potassium and calcium too to human body.

In Tirap district, farmers do not uses any type of chemical fertilizers by default. This leads low productivity of cabbage and all vegetables. Though different agencies like- dept of Agriculture/Horticulture/Krishi Vigyan Kendra has done a lot of efforts to educate farmers about scientific way to application of organic and inorganic fertilizers. Besides that farmers could not adopted as much needed. The vegetables crop declined due to low fertility level of soil. The organic manuring can play a vital role in sustaining soil fertility and crop production. It is well known fact that inorganic fertilizers are not a positive sign to crop production soil and human health, ecology too. The integrated nutrient management is the best way to maintain the soil fertility as well as food quality too.

The severity of problem regarding improper/not using of organic fertilizers was reported 40 % in the district. Too keeping all these facts, the Krishi Vigyan Kendra - Tirap, Deomali- Arunachal Pradesh conducted On Farm Trials (OFT) in Rabi season, 2017-18. The OFT conducted in five location (0.10 ha) in five selected villages namely - Lekhi village, Nutan Basti, Noitong, Mopaya and makat.

All the selected farmers were educated through training program. The soil of the district is silt clay loam type having pH 5.8 (based on soil testing result in KVK Tirap). The plot size of every selected farmer was 0.02 ha. The fields were weed free, well ploughed & leveled.

The Three (03) treatments were applied-T<sub>1</sub> (Rock phosphate@ 375 Kg/ha + FYM @ 10 Tonnes/ha), T<sub>2</sub>( Rock phosphate@200 Kg/ha + FYM @ 10 Tonnes/ha) and T<sub>3</sub> (Control -no use of any manure & fertilizer) . Rock phosphate in powdered form @ 375 Kg/ha was applied during last ploughing. Golden Acre variety was growing at Nursery of Krishi Vigyan Kendra- Tirap during second week of October, 2017. The 25 days old seedlings were distributed to every selected farmer and transplanted @ 45 cm x 30 cm spacing, during the 1<sup>st</sup> week of November, 2017. All the scientific package and practices were applied during the crop duration.

**Table no.1: Soil composition of Tirap district**

Soil Characteristics	Analytical value
<b>Physical Properties</b>	
Sand	17.1 %
Silt	47.3%
Clay	35.6%
Texture	Silt clay loam
Bulk density	1.4 gm/cm <sup>3</sup>
Particle density	2.6 gm/cm <sup>3</sup>
<b>Chemical Properties</b>	
Soil pH	5.8
Total N (%)	0.058 %
Organic carbon (%)	0.8 %
C: N ratio	13.79
Available P <sub>2</sub> O <sub>5</sub> (ppm)	12

**Table no.2: Result on growth & yield of cabbage influenced by different doses of Rock phosphate and manure**

Treatments	Results of parameters				
	Plant height (cm)	Weight of head (gm)	Total yield (q/ha)	Marketable yield (q/ha)	
T <sub>1</sub>	32.7	302.8	164.6	148.3	
T <sub>2</sub>	30.6	267.6	147.2	136.7	
T <sub>3</sub> ( Control)	27.1	218.3	120.9	107.2	

T<sub>1</sub> – Rock phosphate@ 375 Kg/ha + FYM @ 10 Tonnes/ha  
T<sub>2</sub>- Rock phosphate@200 Kg/ha + FYM @ 10 Tonnes/ha  
T<sub>3</sub>. Control (no use of any manure & fertilizer)

The result showing in table no 2 that T<sub>1</sub> reported maximum plant height (32.7 cm), average weight of head (302.8 gm), total yield (164.6 q/ha) and marketable yield (148.3 q/ha) respectively followed by T<sub>2</sub> - plant height (30.6 cm), average weight of head (267.6 gm), total yield (147.2 q/ha) and marketable yield (136.7 q/ha) respectively while T<sub>3</sub> reported the minimum values of all parameters : plant height (27.1 cm), average weight of head (218.3 gm), total yield (120.9 q/ha) and marketable yield (107.2 q/ha) respectively.

The result showing that rockphosphate @375 Kg+ FYM@10tonnes/ha might have supplied sufficient amount of nutrients to the plants which converted into maximum values of all parameters. Application of sufficient amount of FYM improves the soil environment, water holding capacity and increase the soil microbial activity might increase the nutrient availability for cabbage production thus increase the total weight of cabbage as compared to the other treatments.



**Photo of OFT on Cabbage**