



ISSN: 3048-7250
natureandlife.co.in

NATURE & LIFE

Volume: 2 ; Issue: 3
December'24

**AN ONLINE INTERNATIONAL RESEARCH JOURNAL
OF ENVIRONMENT AND LIFE-SCIENCES**



STUDY ON GROWTH PARAMETERS OF CABBAGE BY USING BIOCONTROL AGENT TRICHODERMA VIRIDE WITH FYM

Hemant Kumar Chaturvedi, Professor Nidhi Lal

Department of Botany, St. Andrew's college Gorakhpur

INTRODUCTION

India is fortunate enough to have vast diversity of land soil and agro climatic condition to grow various vegetables. Cabbage is the one of the most starchy food crops of the world. Today farmer are searching for resource efficient low cost and profitable dependent system, chemical pesticides when especially used indiscriminately have contaminated the environment. A number of plant diseases especially the soil and seed born could not be significantly controlled by chemical means and gain the resistance from the chemicals. So the substitute only to apply cultural and biological

practices, biological control methods are alternative means of disease control and grow healthy crop, which are the otherwise unprotected because of the involved expenses. An ecofriendly biopesticides viz. *Trichoderma viride* product is very easy to use and having no adverse effects on environment (crop, people and animals). They can be applied to prevent and control several pathogenic fungi such as *Alternaria*, *Rhizoctania*, *Pythium*, *Phytophthora*, *Fuarium* etc. and grow healthy crop.

MATERIALS AND METHODS

Experimental site:

The field experiment was conducted in the farm of ST. Andrews College Gorakhpur during winter season (November to February) of 2021-22 and 2022-23. The soil was sandy loam in texture.

Field preparation for cabbage plantation:

The land is prepared by plowing it 3 to 4 times. The first plowing was done by soil turning plow, then the soil was prepared using FYM/Compost @ 0.3g mixed with different treatment of *Trichoderma*, and it was applied before transplanting. The land preparation was done in 2*3m² experimental plot size in three replication and seven treatment in a randomized block designed (RBD). The seedlings of cabbage with 60cm*45cm spacing were planted in each plot respectively by the following recommended agronomical practices of the crop.

Transplanting and spacing of cabbage plants:

Transplanting of the seedling was done at 4-5 true leaves stage, about 25 days after sowing. Usually, we space them 45cm apart in double rows of 45-60 cm apart on each bed of 90-100cm wide.

The seed variety selected for the study was Kaveri. FYM: farm yard manure are given 100gm in selected plot and mixed well with the soil and was broadcast uniformly in the soil.

TYPES OF APPLICATION

SEED TREATMENT

The seeds of cabbage were treated and then the seed were spread on an airy and hygiene place. The uniform sized and healthy seeds were collected for sowing.

SOIL TREATMENT

Little amount of soil was taken and treated. 15 cm deep furrows were made with the help of hoe. Treated soil was broadcast informally into the furrows. Seeds were placed in the furrows and were later covered with soil

FOLIAR PRAY

Foliar spray was given by hand sprayer till the leaves became thoroughly wet. This treatment was given 50 days after sowing. This spray was repeated after 10 days of interval till February.

Detail of Treatments :-

1. T₁- soil application @ 3 Kg/ha+FYM
2. T₂- seed application @ 200 g/500 seed+FYM 3-T₃-Foliar application @ 2.5kg/ha+FYM
1. T₀-control

OBSERVATION ON PLANT GROWTH PARAMETER

1. Shoot length (cm):-Shoot length was measured from the soil to the upper part of the plant at 50,60 and 70 DAS with the help of measuring scale.
2. Root length (cm) :- Root length was measured at 50, 60 and 70 DAS with the help of measuring scale
3. Fresh and dry shoot weight (gm): plants were randomly dug with underground plant portion and detached from root and weighed at

50, 60 and 70 DAS .Then the same were dried at 60C for 48 hours and weighted to record the shoot dry weight.

1. Fresh and dry root weight (gm):- plants were randomly dug with underground plant portion and detached from shoot and root were weighted at 50,60 and 70 DAS. The same were dried at 60C for 48 hours and weighted to record the root dry weight.
2. Number and weight of Cabbage head (gm):-

Three plant were randomly dug out and number & weight of cabbage head were recorded.

1. Cabbage yield (q/ha):- The cabbage yield was recorded from each plot separately.

RESULT: Effect of Trichoderma viride with FYM on growth parameters of cabbage

FYM- Farm yard manure; DAS-Days after sowing; T.V.- Trichoderma viride

Treatm ent	Shoot Length (cm)			Root Length (cm)			Fresh Shoot weight (g)			Dry Shoot weight (g)			Fresh Root weight (g)			Dry Root weight (g)			Min i m u m S i z e	Mini mu m Wei ght	Ma x i m u m S i z e	Maxi mu m Wei ght
Time	50 DAS	60 DAS	70 DAS	50 DAS	60 DAS	70 DAS	50 DAS	60 DAS	70 DAS	50 DAS	60 DAS	70 DAS	50 DAS	60 DAS	70 DAS	50 DAS	60 DAS	70 DAS	70 days	70 days	70 days	70 days
T ₀ Contro l	11.42 cm	14.92 cm	15.65 cm	3.82 cm	4.35 cm	4.65 cm	57.68. g	72.73 g	179.80 g	3.22 g	6.56 g	19.58 g	6.85 g	16.37 g	46.37 g	0.32 g	0.78 g	3.68 g	1.35 cm	65.65 gm	3.65 cm	350.65 gm
T ₁ Soil T.V-FY M	15.92 cm	17.32 cm	17.4 cm	4.6 cm	5 cm	5.76 cm	59.17. g	125.27. g	186.92. g	4.42 g	11.89. g	20.60g	10.73 g	35.85. g	56.35. g	1.37 g	3.18 g	4.83 g	2.35 cm	165.65 gm	5.5 cm	482.32 gm
T ₂ Seed T.V-FY M	12.82 cm	15.4 cm	16.72 cm	4.1 cm	5 cm	5.82 cm	62.51 g	85.70 g	219.04 g	4.95 g	6.84 g	24.6 g	7.95 g	32.32 g	50.90. g	0.54 g	1.11 g	6.26 g	2.1 cm	165.65 gm	5.15 cm	432.32 gm
T ₃ Foliar T.V-FY M	13.32 cm	17.02 cm	17.65 cm	4.62 cm	5.15 cm	6.86 cm	79.59 g	87.06 g	200.67 g	5.06 g	7.87 g	20.71. g	10.06 g	22.28 g	47.43 g	0.58 g	1.32 g	5.39 g	2.45 cm	149 gm	5.7 cm	465 gm

DISCUSSION

Effect of *Trichoderma viride* with FYM on growth parameter of cabbage - The data recorded on growth parameters of *Trichoderma viride* Treated plot indicated that fresh root weight, maximum weight of cabbage were increased in treatment T₁(FYM +soil T.V.) Whereas treatment T₃(FYM+Folier T .V.) increased shoot length, root length, maximum size of cabbage and minimum size parameter increased. Significant increase in fresh shoot weight, dry shoot weight, dry root weight and minimum weight parameter in T₂(FYM+Seed T.V) is found. Sharma and Prem(2004) reported that *Trichoderma viride* had beneficial effect on cabbage growth. Bahadur et al.(2004) reported that cabbage head yield was highest with(NPK+TSP)treatment. Londhe(2002) and Yadav et al.(2001) also reported that cabbage head nutritive quality and yield was highest with nitrogen management.

CONCLUSION

From all the above we can conclude that biocontrol agent when applied in combination with FYM had beneficial effect on cabbage growth.

REFERENCE

- Bahadur A, Singh J and Singh K P. 2004. Response to cabbage to organic manures and biofertilizers. Indian journal of Horticulture 61 (3): 278-9.
- Londhe S D. 2002. 'Studies on integrated nutrient management in cabbage cv. Golden Acre'. M.Sc Thesis. MPKV, Rahuri, Maharashtra.
- Sharma, P and D. Prem(2004).** Evaluation of *Trichoderma harzianum* *T. viride* isolates at BCA pathogen crop interface. J. Mycol and Plant Pathol., 34(1):47-55.
- Yadav V S, Yadav B D and Sharma Y K. 2001. Effect of NICAST(organic manure) in comparison to recommended doses of manure and fertilizers in cabbage. South Indian Horticulture 49(special): 157-9.