ISSN: 3048-7250
natureandlife.co.in

NATURE & LIFE

Volume: 2 ; Issue: 3
December'24

AN ONLINE INTERNATIONAL RESEARCH JOURNAL
OF ENVIRONMENT AND LIFE-SCIENCES

Nature & Life

https://natureandlife.co.in/

VOLUME:2, ISSUE:3 ISSN: 3048-7250
Published: 31.12.2024

EFFECT OF TRICHODERMA HARZIANUM ON SIZE AND WEIGHT OF CAULIFLOWER CURD WITH FYM.

Suman Lata Yadav*, **Dr. Nidhi Lal**

Department of Botany, St. Andrew's College Gorakhpur

Prasoonlata1352001@gmail.com

Abstract-This experiment was conducted in research field of St. Andrew's College Gorakhpur, during winter season of 2021-2022 with an aim to study the different treatment of Trichoderma harzianum with FYM on size and weight of Cauliflower. Three types of Treatment – soil, seed and foliar in combination with farm yard manure. The result was recorded at fifty and sixty days after sowing and at the time of harvest. The best result was recorded in foliar treatment followed by soil and seed treatment in comparison with control. Therefore from present investigation, it is concluded that, an eco-friendly biopesticide (Trichoderma harzianum) is very easy to use and having no adverse effect on crops, animals or people. They can be applied to prevent and control several pathogenic fungi and grow healthy crop. Trichoderma harzianum can be used as a biocontrol agent as it is low cost and profitable dependent system to all people and animals. Trichoderma harzianum play important role in conserving natural resource and ecologically sustainable approach.

Key words – Biopesticide, Foliar Treatment, FYM, Trichoderma harzianum , soil treatment , seed Treatment ,

Introduction-

India is fortunate enough to have vast diversity of land, soil and agro-climatic condition to grow various vegetable. India shares 13.38% of vegetable production, important vegetables cabbage, cauliflower, peas etc. Cauliflower are the few vital vegetables to the world food supply colecrops. It's high nutritional value contains vitamin-B, vitamin-C, beta- carotene, antioxidant, calcium, potassium etc. It's nutritive value leads to increase high demand (Haque, 2006). Cauliflower contains vitamins, minerals, anti-cancer compounds – glucosinolates, sulforaphane.etc. (Kirsh et al. 2007). Cauliflower (Brassica oleracea var. botrytis) is one of the most important vegetable crops in the mustard family (Brassicaceae) . In India, cauliflower is a major vegetable crop grown mainly in states like Bihar, Uttar Pradesh, Orissa, West Bengal, Assam, Maharashtra and Himachal Pradesh. 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 is only to apply cultural and biological protection. Biological control methods are alternative means of disease control and grow healthy crop. An eco-friendly biopesticide – Trichoderma harzianum is very easy to use and having no adverse effects on environment. Trichoderma species hss a direct as well as indirect impact on crop growth, yield parameters and quality in the field. FYM is an important, the most valuable organic fertilizer for crop production. FYM releases the soil compaction and improves the aeration in addition to supply of plant nutrients (Kale and Bano,1986) . Trichoderma harzianum and FYM can be applied to prevent and control several pathogenic fungi like FusariumAlternaria, Erysiphe , Peronosporaetc . and grow healthy crop.

Materials and Methods–

The experiment was conducted in the research field of St. Andrew's college, Gorakhpur. During the Rabi season 2021. The experimental field was ploughed with the help of hoe. The seed beds were prepared for respective treatment as per the layout planned plot for each treatment 7.50m2. The seed variety selected for the study was shatabdi (F1 hybrid) . FYM was given @250g /7.50m2 in selected plot and and mixed well with soil and spread uniformly in the soil and 9 plants are planting in each plot.

Types of Application –

1. Seed Treatment – The seeds of cauliflower treated with T. harzianum and then spread in plot for seedbed preparation.
2. Soil Treatment – Little amount of soil was taken and treated. Treated soil was broadcasted uniformly with hand.

3. Foliar Spray – Foliar spray was given by hand sprayer till the leaves become thoroughly wet. This treatment was given 31 days after plantation. This spray was repeated after 20 days of interval till February.

Detail of Treatments–

1. T0 – control (without treatment)
2. T1 – soil application @5kg/ha + FYM
3. T2 – seed application @600-700g/ha + FYM
4. T3 – foliar application @1.5kg/ha + FYM

Observation On Head Size An Head Weight Of Cauliflowers-

1. Minimum size of Cauliflowers Head (cm) – Minimum size of cauliflowers measured at 50, 60 and 70 DAS with the help of measuring scale.
2. Maximum size of Cauliflowers Head (cm) – Maximum size of cauliflower measured at 50 , 60 and 70 DAS with the help of measuring scale.
3. Minimum weight of Cauliflowers Head (gm) – Minimum weight of cauliflower measured at 50, 60 and 70 DAS with the help of weighing scale or weight machine.
4. Maximum weight of Cauliflowers Head (gm) – Maximum weight of cauliflower measured at 50 , 60 and 70 DAS with the help of weighing machine

RESULT – Effects Of *Trichoderma harzianum* With FYM On Yield Parameters

FYM- Farm yard manure, DAS- Days After Sowing , T.H.- Trichoderma harzianum

SIZE AND WEIGHT	HEAD SIZE (CM)						HEAD WEIGHT (GM)					
TIME	50 DAYS		60 DAYS		70 DAYS		50 DAYS		60 DAYS		70 DAYS	
TREATMENT	MINIMUM SIZE	MAXIMUM SIZE	MINIMUM SIZE	MAXIMUM SIZE	MINIMUM SIZE	MAXIMUM SIZE	MINIMUM WEIGHT	MAXIMUM WEIGHT	MINIMUM WEIGHT	MAXIMUM WEIGHT	MINIMUM WEIGHT	MAXIMUM WEIGHT
T0(control)	1.63	2.36	2.36	4.66	2.93	5.13	41.66	56.66	66.66	351.66	90	383.3
T1 (soil) T.H.+FYM	2.3	3.13	3.36	6.6	3.90	7.30	66.66	93.33	183.33	483.33	183.3	500
T2(seed) T.H.+FYM	2.46	3.13	3.33	6.16	3.70	6.63	53.33	118.33	166.66	433.33	200	480
T3(foliar) T.H.+FYM	2.5	3.4	3.46	6.8	3.60	5.86	70	133.33	150	466	266.6	470.60

Discussion-

Effect of T. harzianum with FYM on yield parameters(size and weight) of cauliflower are recorded at different days. The Treated plot indicated that maximum curd size and curd weight significant increase in treatment T1 (soil, T.H.+FYM) , Then treatment T2 (Seed, T.H.+FYM) then treatment T3 (Foliar, T.H+FYM) respectively in compare to control Thus, application of T. harzianum increased cauliflower cured size and cured weight. The application of beneficial soil microbes like Trichoderma species promoter vegetative growth, healthier and greener leaves, healthy root system and increases yield. Similar findings have been supported by (Samawat et al; 2001), (Bharadwaj et al; 2002), (Choudhary et al; 2003), (Chang et al; 1986). Plants with higher fertility levels had more vegetative growth and early head (curd) formation , whereas those with lower fertility had slower growth and development. (Chaubey et al. 2006) . Curd compactness is the important character in cauliflower which indicates the quality of curd. Curd compactness is inversely correlated with curd depth and the market acceptability of the curds depends upon curd solidity (Singh and Nath, 2012) . According to Shree et al. (2014), the significant effect on yield parameters such as plant height, number of leaves, curd weight, yield, curd size index and leaf size index as a consequence of application of

N, P and K along with organics and inorganic sources together which increased the foliage of the plant and there by increased photosynthesis.

Conclusion -

From all the above we can conclude that biocontrol agent when applied in combination with FYM had beneficial effect on cauliflower growth. Overall, the paper demonstrates and the discussion here shows that application of Trichoderma harzianum increases growth characters of crops, compared to the control(T0). T. harzianum is one of the beneficial micro-organisms in the agro- ecosystem which influences soil health and crop growth. However, its use is not limited to anti- pathogenic activity but also acts as bio-fertilizer, plant growth promoter, bioremediation and increase in crop yield both biological and economic yield. Thus, the use of Trichoderma for sustainability of agricultural systems.

Reference -

Bireswar sinha , Dolpriya devi , Pramesh kh, K Sarda , Chanu (2021) . Effect of native Trichoderma on the growth and yield of some vegetable crops in Manipur International Journal of Aquatic Science vol. (12)

Deepa Sharma, Ishant Dutta , Prachi choudhary (2022) . Growth, yield and quality of cauliflower (Brassica oleracea var. botrytis) as affected by integrated nutrients management under low hill region of Himachal Pradesh. Biological Forum – An International Journal 14(1): 508-512

Nidhi Lal (2019). Study on growth parameters of potato by using bio- control agent Neem product (Neem – Shield) with FYM . International Journal of Research and Analytical Reviews.

Sandesh Thapa, Neha Satang , Anka Kumari Limbu , Arpana Joshi (2020). Impact of Trichoderma sp. in agriculture: A mini-Review. Journal of biology and today's world 2020, 9(7): 227.