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Extended Abstract

Effect of sanjeevani a liquid organic manure on growth and yield of cabbage (Brassica Oleracea var. capitata L.)

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Abstract:

The present study was conducted by employing cabbage cv. Golden Acre as planting material and different concentrations of Sanjeevani as treatments, viz. T1:Sanjeevani (1%), T2:Sanjeevani (5%), T3:Sanjeevani (10%), T4:Sanjeevani (15%), T5:Sanjeevani (20%), T6:Sanjeevani (25%), and T7 :Control. The experiment was designed after RCBD with thrice replication of different treatments. Important growth, yield, and its attributes of the crop were considered for efficacy study of Sanjeevani. Results found to be significant in most of the studied characters of growth and yield and it was observed that T2 (5% Sanjeevani) is the best for expression of different growth and yield attributes culminated with the highest yield (53.02 tha-1).

Introduction:

Cabbage (Brassica oleracea var. capitata L.) is an important cole crop of Brassicaceae family with its somatic chromosome number 2n=2x=18. The crop is extensively cultivated in India during winter season. However, indiscriminate uses of agro-chemicals in production cycle of the crop leads to reduction of soil fertility and accumulation of toxic substances in the harvested produces. These adverse effects can be compensated through organic farming by utilizing liquid organic manures like Sanjeevani which not only increase the yield [1] but also low-cost production approach as well [2]. The crop has significant role in the nutritional viewpoint with its higher antioxidant properties [3]. Considering the facts, the present investigation was attempted by utilizing low-cost organic liquid homemade formulation instead of synthetically produced fertilizers or pesticides as an alternate source of crop production inputs.

Materials and Methods:

The experiment was conducted by considering six different concentrations of Sanjeevani plus control as treatments viz., T1:Sanjeevani (1%), T2:Sanjeevani (5%), T3:Sanjeevani (10%), T4:Sanjeevani (15%), T5:Sanjeevani (20%), T6:Sanjeevani (25%), and T7 :Control and these were applied four times @ 15 days interval initiated seven days after transplanting of cabbage cv. Golden Acre. Randomized complete block design of the experimental model was adopted where treatments were replicated thrice. Thus, the experimental plot was subdivided into 21 subplots each of with 9.0 m x 3.0 m area where 28-days old seedlings were transplanted at a spacing of 45 cm inter-row and 30 cm intra-row distance. Sanjeevani was prepared by mixing cow-dung: cow-urine: water @ 1:1:2 proportion and kept the mixture for ten days to ferment at ambient condition. It is liquid organic manure that contents plant nutrients along with huge quantity of beneficial microbes [4]. Plant height (at harvest), wrapper and non-wrapper leaves per plant, leaf area [5], head weight and yield were estimated from the pre-selected tagged plants considering the standard methods. Data thus obtained were analysed as per the standard procedure for Analysis of Variance [6]. The significance of treatments was tested by 'F' test, and the standard error of mean (SEm±) was computed in all cases.

Results:

Table 1: Per se performance of growth and yield attributes of cabbage as influenced by Sanjeevani

Treatments	Plant height (cm)	Number of leaves plant-1		Leaf area (cm2)	Head weight (kg)	Yield (tha-1)
		Wrapper	Non-wrapper			
T1	23.19	54.00	10.44	315.92	0.92	51.67
T2	25.78	59.89	10.11	313.35	0.87	53.02
T3	24.31	52.44	9.00	295.18	0.58	39.97
T4	25.68	51.56	9.78	277.64	0.63	38.40
T5	25.00	53.89	10.44	258.27	0.66	41.02
T6	24.08	51.67	9.89	249.22	0.73	46.30
T7	21.67	47.11	11.11	246.28	0.54	33.02
SEm (±)	0.69	2.12	1.21	18.73	0.07	4.02
CDP≤0.05		1.74	5.34	NS	NS	0.20
	10.12					

NS-Non-significant

It was found that different studied traits performed independently under different concentrations of Sanjeevani but their performances surpassed over the control. The expressions of different traits greatly influenced by the T2 (5%

Sanjeevani) and consequently the highest yield (53.02 tha-1) was obtained from this concentration of liquid organic manure. Although non-wrapper leaves per plant and leaf area recorded non-significant differences but in other cases significant differences observed with at par effect as documented among different treatments except control (Table 1).

Discussion:

The better performance of the crop in almost all treatment conditions as compared to their control counterpart was due to better supplement of plant nutrients from Sanjeevani as well as congenial growing condition under the influence of this organic liquid manure. Lower concentration of Sanjeevani performed well as compared to its higher concentrations because at higher concentration the beneficial microbial population is drastically reduced as pH level increases with increasing cow-urine in the medium. Similarly, under very low concentration microbes fail to survive and multiplicate mainly because of shortage of food from the source [7].

Conclusion:

From the observations, it may be concluded that Sanjeevani (5%) may be used as an effective low-cost organic liquid input for successful cultivation and production of the comparatively safer crop of cabbage.

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