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Studies on effect of mulching and training on growth, yield and economics of pointed gourd (*Trichosanthes dioica* Roxb.)

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ABSTRACT : The present investigation entitled, studies on effect of mulching and training on growth, yield and economics of pointed gourd (*Trichosanthes dioica R*oxb.) was carried out during 1998-99 at MES, department of vegetable science, N.D. University of Agriculture and Technology, Faizabad. In this experiment fifteen treatments comprised of four mulches (water hyacinth, paddy straw, mustand and typha leaves) and three training systems (single stake, bower system and flat bed method) were taken to study the vine length, number of branches per plant, number of nodes per vine, average fruit weight, yield per plant and economics of each treatment by adopting Factorial Randomized Block Design. On the basis of results, it was found that paddy straw mulch and single stake system of training showed significant response and gave maximum yield. From the economic point of view it also appeared that among all the treatments paddy straw mulch and single stake system is economic and were most suitable to get maximum profit in parwal cultivation.

KEY WORDS : Pointed gourd, Training, Mulching, Economics

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Pointed gourd (*Trichosanthes dioica* Roxb.) commonly known as parwal, belongs to family Cucurbitaceae. It is a perennial and dioecious vegetable and grown widely in eastern part of U.P., Bihar and West Bengal. It is mostly propagated through cutting with exceptions by seeds in few cases due to appearance of large number of male plants. It has been observed that most of the growers cultivated local cultivars and follow poor agro-techniques, therefore, they do not able to produce satisfactory yield. Use of organic mulches play an important role in the production of cucurbitaceous crops especially parwal because they help in conservation of soil moisture, soil temperature, weed suppression, improving soil fertility and structure of soil which are ultimately helpful in boosting up the production. Training of plant is another important agro-technique which contributes beneficial effect on the production of vine crops. Beside this, it also improves the quality of produce and, therefore, marketability of the produce is highlighted and get higher price in the market. In view of the present scenario of cultivable aspect in mind, the present investigation was undertaken in order to assess the importance of different types of organic mulches as well as system of training towards better production of parwal.

RESEARCH METHODS

The present experiment was conducted during the year 1998-99 at N.D. University of Agriculture and Technology, Kumarganj, Faizabad. Experiment was laid out in three replications adopting Randomized Block Design with factorial concept. Treatments comprised of four types of organic mulches *viz.*, water hyacinth –M_1, paddy straw –M_2, mustard leaves –M_3, and typha-M_4, and three training systems *viz.*, single stake –T_1, bower system –T_2, and flat bed –T_3. Local cultivar of parwal was used for this investigation. Plants were planted at the distance of 1.25m×1.25m. Before planting the cuttings, pits were prepared in the size of 45×45×30cm. and they were filled up with FYM and pits' soil in the ratio of 1:1 in such a manner that mound was raised

. Vines with the length of one meter were taken from the mother plants and it was folded 5-6 times in order to make the vine in the shape of eight of English figure. The prepared bundles were kept on mound across and were pressed by putting some amount of cow dung manure along with soil to facilitate sprouting. Irrigation was given as and when required till the sprouting was over. All the treatments were supplied as specified earlier. Data on growth and yield and their attributing characters along with economics were subjected to statistical analysis as suggested by Panse and Sukhatme (1967) in order to draw the valid conclusion on the basis of C.D. value at 5% level of significance.

RESEARCH FINDINGS AND DISCUSSION

The observations collected on effect of varies mulches and training treatment were length of vine, number of branches per vine, number of nodes per vine, average fruits weight, yield per plant, yield quintal per hectare, total cost, gross income, net profit, net return per rupee investment and cost benefits ratio. The result indicated that use of organic mulches proved to be beneficial for all the characters studied (Table 1 and 2). Among the organic mulches paddy straw produced maximum vine length, number of branches. Number of nodes, average fruits weight and yield per plant followed by typha except average fruits weight where water hyacinth and mustard were next to paddy straw (Table 1). In general use of organic mulches proved to be helpful in the enhancement of fruits yield of parwal as compared to control. The improvement of growth attributing traits and fruits yield of parwal by using paddy straw mulch might be

Table 1 : Effect of mulching and training on growth and yield and their attributing traits of pointed gourd

Treatments	Length of vine (cm)	No. of nodes per vine	Average weight of fruit (kg)	Yield per plant (kg)	No. of branches per vine
Mulching	262.39	17.43	25.12	1.98	9.22
Control					
Water hyacinth	277.40	19.78	26.13	2.22	9.49
Paddy straw	301.32	21.78	26.63	2.44	9.71
Mustard	279.05	18.78	26.13	2.21	9.46
Typha leans	284.08	19.89	26.04	2.30	9.52
S.E.M $\pm$	6.57	0.89	0.13	6.57	0.08
C.D. (P=0.05)	19.04	2.56	0.39	19.04	0.23
Training					
Single stake	366.80	23.81	27.69	2.62	10.00
Bower system	325.22	19.61	26.65	2.30	9.57
Flat bed	150.52	13.81	23.55	1.78	8.86
S.E.M $\pm$	5.09	0.69	0.10	5.09	0.06
C.D.(P=0.05)	14.75	2.01	0.30	14.75	0.18

Table 2 : Economics of the crop as affected by various types of mulching and training system

Treatments	Yield (q/ha)	Total cost (Rs/ha)	Gross income (Rs/ha)	Net profit (Rs/ha)	Net return/rupee investment	Cost benefit ratio
$T_1 M_0$	149.76	51925	119808	67883	1.30	1:2.30
$T_1 M_1$	167.04	52425	133632	81207	1.50	1:2.5
$T_1 M_2$	180.48	53925	144384	90459	1.67	1:2.67
$T_1 M_3$	168.32	53425	134656	81231	1.52	1:2.52
$T_1 M_4$	172.16	52425	137728	85303	1.62	1:2.62
$T_2 M_0$	131.84	52125	105472	53347	1.02	1:2.0
$T_2 M_1$	147.20	52625	117760	65135	1.23	1:2.3
$T_2 M_2$	158.72	54125	126976	72851	1.34	1:2.3
$T_2 M_3$	146.65	53525	117248	63723	1.19	1:2.1
$T_2 M_4$	150.40	52625	120320	67695	1.28	1:2.2
$T_3 M_0$	18.56	51775	78848	36073	0.69	1:1.5
$T_3 M_1$	112.00	52275	89600	37325	0.71	1:1.71
$T_3 M_2$	129.28	53775	103424	49649	0.92	1:1.9
$T_3 M_3$	109.44	53275	87552	34277	0.64	1:1.6
$T_3 M_4$	119.04	52275	95232	42957	0.82	1:1.8

due to early decomposition of the material by which some quantity of nitrogen and organic matter was produced and added to the soil and plants were utilized these organic matter for their growth and development. Similar findings have also been reported by Ghorai (1995). The marked effect of training on length of vine number of branches, number of nodes per vine, average fruits weight and yield per plant was observed (Table 1). Maximum vine length, number of branches per plant, number of nodes per vine, average fruits weight and yield per plant were obtained by the use of single stake system of training followed by bower system of training. Maximum values in above aspect were recorded under flat bed system of cultivation of parwal. The growing of cucurbits using single stake system of training has also been recommended by Mehta (1959). Interaction effect due to use of training x organic mulches were not found to be significant. The economics of the promising recommendations of studies on parwal, planted under Faizabad conditions, was worked out in order to determine the feasibility of their acceptability by formers. Fifteen treatments were considered for obtaining the cost of cultivation, gross, income, net profit, net return per rupee investment and cost – benefits ratio (Table 2). The net return per rupee investment was highest with single stake and mulching with paddy straw (T_1 M_2), the highest cost was incurred with bower system of training in comparison to single stake, while among the mulches paddy straw showed with minimum expanse followed by mustard. From the above discussion it appears that among the various treatments single stake training and paddy straw mulch is most suitable to get maximum profit in parwal cultivation.

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