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Effect of weed management practices on growth of cabbage (*Brassica oleracea L. var. Capitata.*)

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ABSTRACT

This study evaluated the effect of weed management practices on cabbage. A field experiment was conducted during early spring 2023 at the horticulture farm, Rajasthan College of Agriculture, MPUAT, Udaipur. The result showed that the growth characteristics was significantly affected by Pendimethalin @ 700 gha^{-1}+1 Hand weeding at 45DAT. The highest plant height, number of unwhirled leaves, minimum days taken to head initiation and head harvest was observed in Pendimethalin @ 700 gha^{-1}+1 Hand weeding at 45DAT. All of the above parameters were lowest where weedicide was applied i.e., control.

Key words: *Pendimethalin, Hand weeding, Cabbage*

Introduction

Cabbage (*Brassica oleracea var. capitata*) with chromosome number of 18 (2n = 18) is a member of the Brassicaceae family. Its origin is in the Mediterranean region. Cabbage (mostly white cabbage) occupies about 4% of the total area under vegetables in the country. Cabbage leaves are low in calories (24%), fat (0.2%), and carbohydrates (0.2%). It is a high-protein food (1.3%).

In Rajasthan, the area under cabbage cultivation is 1.20 thousand with the production in 11.69 thousand metric tonnes (Anonymous, 2022). High yield of cabbage is related to judicious application of fertilizer, proper cultural management etc. Cabbage is well known tobe an exhaustive crop and has the capacity to absorb higher amount of nutrient from soil. The supply of proper nutrient must be ensured during its cultivation, which is related to the judicious application of fertilizer. The crop production system with high yield targets cannot be sustainable unless nutrient inputs to soil are at least balanced against nutrient removed bycrops (Naher *et al.*, 2014).

Materials and Methods

A field experiment was conducted during *Winter* (August 2023 to December 2023), at Horticulture Farm, Department of Horticulture, Rajasthan College of Agriculture, MPUAT, Udaipur (Rajasthan) to investigate the effect of weed management practices on cabbage. The experiment was laid out in Randomized block design with thirteen treatments and three replications, where treatment consists of application of different weedicides plus the control treatment.

The field consist total 39 plots in number with plant spacing 45 × 30 cm for R × P. The treatments were as follows: T_1: Weedycheck (*i.e.* control), T_2: Hand weeding at 25 and 45 DAT, T_3:

Table 1. Effect of weed management practices on growth parameters of cabbage

Treatments	Plant height (cm)			Days taken to head initiation after transplanting	Days taken to head harvest after transplanting
	30 DAT	60 DAT	At harvest		
T_1	6.27	11.28	15.12	49.68	84.50
T_2	12.26	20.33	26.11	45.74	78.79
T_3	12.38	20.47	26.25	45.39	78.72
T_4	6.59	11.98	17.28	47.59	83.38
T_5	8.06	13.27	21.08	46.28	78.20
T_6	8.26	11.98	18.81	49.57	84.10
T_7	7.31	15.31	22.38	48.94	82.40
T_8	8.28	14.37	17.51	49.37	83.80
T_9	7.37	19.21	24.34	46.24	77.90
T_{10}	14.51	24.98	28.98	44.64	77.30
T_{11}	6.62	11.64	15.83	49.64	84.30
T_{12}	7.02	19.23	21.73	49.59	83.00
T_{13}	7.29	13.69	25.98	47.37	78.85
SEm.±	0.13	0.29	0.35	0.74	1.32
CDat5%	0.39	0.84	1.03	2.16	3.87

Blackplasticmulch (30 micron), T_4: Oxadizon 0.75 kg ha^{-1}, T_5: Oxyfluorfen 200 gha^{-1} , T_6: Pendimethalin 700 g ha^{-1}, T_7: Oxyfluorfen 250 gha^{-1} + Propaquizafop 75 gha^{-1}, T_8: Pendimethalin 700 g ha^{-1} + Propaquizafop 75 gha^{-1}, T_9: Oxyfluorfen 200 gha^{-1} + 1 Handweeding 45 DAT, T_{10}: Pendimethalin 700 gha^{-1}+ 1 Handweeding 45 DAT, T_{11}: Oxadizon0.75 kg ha^{-1} + 1 Handweeding 45 DAT, T_{12}: Pendimethalin 700 g ha^{-1} + Quizalofop 75 gha^{-1}, T_{13}: Oxyfluorfen 200 gha^{-1} + Quizalofop 75 gha^{-1}. The growth parameters were recorded at 30, 60 DAT (day after transplanting) and at harvest for plant height, number of unwhorled leaves.

Results and Discussion

The results of the study factors and their influence on the growth of cabbage had an effect on the treatments as indicated in the following variables investigated:

Effect of weed management practices on growth characteristics: The data given in the Table 1 with regards to plant height (cm), number of unwhorled leaves, at 30, 60 DAT and at harvest were significantly affected by application of weedicides. The maximum plant height at 30, 60 DAT and at harvest (*i.e.* 14.51 cm, 24.98 cm and 28.98 cm respectively) and number of unwhorled leaves at 30, 60 DAT and at harvest (*i.e.* 18.73, 24.51 and 27.36 respectively) and minimum days taken to head initiation (*i.e.*44.64 days) and head harvest (*i.e.* 77.30 days) were obtained in Pendimethalin @ 700 gha^{-1}+1 Handweeding at 45DAT. Similarly, the positive effect of the weed management practices in plant height, no. of unwhorled leaves, days taken to head initiation and days taken to head harvest is observed by Kumar *et al.,* 2014 in cabbage. The present finding is also in close conformity with the findings of Dhiman *et al.*, 2005; Chaurasiya *et al.*, 2018; Mekonnen and Dessie, 2017; Widaryanto and Roviyanti 2017 in cabbage, onion, cowpea and broccoli, respectively.

Conclusion

It was concluded form the study that application of treatment T_{10} [*i.e.*, Pendimethalin @ 700 gha^{-1}+1 Handweeding at 45 DAT] were found superior with significantly highest values of plant height (cm), number of unwhorled leaves, minimun days taken to head initiation and head harvest.

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