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COMPARATIVE STUDY ON WEEDS AND CROP GROWTH AS INFLUENCED BY INTEGRATED WEED MANAGEMENT AND BALANCED FERTILIZATION IN CORIANDER (*Coriandrum sativum* L.)

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ABSTRACT

A field experiment was conducted at Instructional Farm, Rajasthan College of Agriculture, Udaipur (Rajasthan), to determine the weed and crop growth dynamics, in relation to integrated weed management and balanced fertilization. Pooled analysis of two year data indicated that, all weed management practices significantly reduced the dry matter of weeds, improve the crop dry matter accumulation and seed yield of coriander as compared to control at 60, 75, 90 and at harvest. Two HW at 30 and 45 DAS resulted in maximum reduction in weed dry matter (88.50 % as compared to control at harvest) and greater crop dry matter accumulation (28.61 g/plant at harvest) and highest seed yield (15.84 q/ha) of coriander. However, at par reduction in weed dry matter and improvement in crop dry matter accumulation and seed yield were obtained by another treatment of pendimethalin 1.0 kg/ha + one hand weeding at 45 DAS. Both the treatments also remained at par in their effect on crop stand at 30 DAS and at harvest, plant height at harvest, straw yield and resulted in maximum weed control efficiency as compared to rest of practices. Balanced fertilization with 60 kg N+ 30 kg P+ 30 kg K + 30 kg S/ha also significantly improved weed dry matter at all stages but also simultaneously enhanced the crop dry matter accumulation and finally the seed yield of coriander over N+P and N+P+K application. Interactive effect of weed management and balanced fertilization was also found significant in respect of weed dry matter accumulation at 60 DAS and crop dry matter accumulation at 60, 90 DAS and at harvest of crop. Significant and negative correlation between weed dry matter and crop dry matter at 30, 45, 60, 75, 90 DAS and harvest (r=-0.842, -0.582, -0.680, 0.676, -0.759, -0.799, respectively) was reported whereas between the crop growth parameters and seed/straw yield it was found positive. A pre-emergence application pendimethalin 1.0 kg/ha, followed by one HW at 45 DAS and fertilization with 60 kg N + 30 kg P + 30 kg K + 30 kg S/ha would be recommended to achieve maximum weed control efficiency, higher seed and straw yield from coriander cultivation.

KEYWORDS: Coriander, Hand Weeding, Interaction, Pendimethalin, Seed Yield, Weed Control Efficiency

INTRODUCTION

Coriander (*Coriandrum sativum* L.), belonging to the family *Apiaceae* is popularly known as "*Dhania'',* is one of the oldest and most widely used seed spice crop, by entire mankind of the world. India is the largest producer, consumer and exporter of spices in the world. It is extensively used in culinary, medicine, perfumery, food and beverage and pharmaceuticals industries. The dried ground fruits are the major ingredient of the curry powder. The whole fruits are also used to flavor foods like pickles, sauces and confectionary. The seed contain 18-21 per cent fatty oil which is used in the cosmetic industries. The young plants as well as the leaves are used in the preparation of chutney and are also used as

seasoning in curries, soups and sauces. In India, coriander is cultivated in about 0.45 million hectare with annual production of about 0.31 million tonnes (N.H.B., 2015). The average productivity of coriander in India is around 0.7 tons/ha, which is far below than its genetic potential.

Coriander is grown as *Rabi* crop under irrigated conditions. Among many constraints limiting its production weed infestation is most one which is responsible for the low yield of coriander in our country. Coriander, a short-stature crop with slow initial growth is severely smothered due to the infestation of weeds at early stages of growth, which causes severe competition and may result in complete crop failure (Kushwaha *et al.* 2002). Use of pre-emergence herbicide alone or in combination with hand weeding may be useful to economize the costly labour. To have higher productivity, nutrient management strategies are also equally important. Hence, an experiment was conducted to compare the effect of integrated weed management and balanced fertilization on productivity of coriander.

MATERIALS AND METHODS

The field experiment was conducted during winter seasons of 2002-03 and 2003-04 at Instructional Farm, Rajasthan College of Agriculture, Udaipur. The soil was clay loam having medium available N (276.83 kg/ha) & available P (18.99 kg/ha), high K (365.54 kg/ha) and S (10.02 ppm) pH 8. Thirty-three treatment combinations, comprising 11 weed management practices in main plots [W1=weedy check, W2=one hand weeding (HW) at 30 days after sowing (DAS), W3=two HW at 30 and 45 DAS, W4= pendimethalin 1.0 kg/ha, W5= oxyfluorfen 0.25 kg/ha, W6= metribuzin 0.30 kg/ha, W7= oxadiargyl 75 g/ha, W8= pendimethalin 1.0 kg/ha + HW at 45 DAS, W9= oxyfluorfen 0.25 kg/ha + HW at 45 DAS, W10= metribuzin 0.30 kg/ha + HW at 45 and W11= oxadiargyl 75 g/ha + HW at 45 DAS] and 3 balanced fertilization treatments in sub plots (F1=N_{60} + P_{30}, F2=N_{60} + P_{30} + K_{30} and F3=N_{60} + P_{30} + K_{30} + S_{30} kg/ha) were laid out in a split plot design with 3 replications. Coriander variety 'CS-6' was used. The seeds were sown in furrows spaced 30 cm apart on 16th Oct. in 2002-03 and 23rd Oct. in 2003-04 keeping a seed rate of 15 kg/ha. All herbicides was applied as per emergence at 2 DAS, while hand weeding was done at 30 and 45 DAS as per treatments. Half dose of N and full dose of P, K and S was applied basal through urea, DAP, MOP and gypsum and remaining half dose of N was top dressed at 30 DAS. The dry weight of weeds was recorded by uprooting them from the 0.25 m^2 area at the time of 30, 45, 60, 75, 90 DAS and 90 at harvest of crop and dried in oven at 70ºC for 24 hours and weighed to obtain weed dry matter. The weed dry matter was then computed and expressed in terms of kg/ha. In the similar way three crop plant were randomly selected from each plot at these stages and dried in oven for 72 hours after taking 2 days in open air for computation of crop dry matter accumulation in g/plant. Observation of weed and crop dry matter was taken before application of HW treatments at 30 and 45 DAS. Weed control efficiency at harvest was worked by following formula:

$$\text{Weed Control Efficiency (\%)} = \frac{\text{Dry matter of weeds in control plot} - \text{Dry matter of weeds in treated plot}}{\text{Dry matter of weeds in control plot}}$$

RESULTS AND DISCUSSIONS

Dry Matter Accumulation and Growth Parameters

The major weed flora comprised at experimental site was Goose foot (*Chenopodium murale* L.), Corn spurry (*Spergula arvensis* L.), Indian sweet clover (*Melilotus indica* L.), Scarlet pimpernel (*Anagallis arvensis* L.) and Purple nutsedge (*Cyperus rotundus* L.). Among them, previous six falls under the category of dicot weeds, which were dominant weeds throughout the crop season. The maximum dry weight of weeds was recorded in weedy check, during

whole crop season (Table 1 and 2). The herbicides, hand weeding and their integration lowered the dry weight of weeds at 60, 75, 90 DAS and at harvest as compared to control. Treatment two HW caused maximum decrease in dry matter of weeds at all stages of crop growth except on which first HW was performed. Two HW being at par pendimethalin + one HW, proved statistically superior over oxyfluorfen + HW, oxadiargyl + HW, metribuzin + HW, one HW, herbicide alone treatments and weedy check. All the herbicides when integrated with HW produced significantly, lowest amount of weed dry matter than their alone application. On pooled basis, two HW recorded for 86.63, 89.07, 89.32, 89.32, 88.50 per cent reduction in weed dry matter at 45, 60, 75, 90 DAS and at harvest over weedy check, respectively. These treatments resulted effective and timely control of weeds and did not allow weeds to regenerate and therefore lower dry weight of weeds were recorded. The results are in agreement with the findings of Gora *et al.* (1996).

Among all the herbicidal treatments metribuzin resulted in poorest weed contol over weedy check, especially at later stages which might be due to its high water solubility and less persistence in soil system. On the other hand, oxyfluorfen and oxadiargyl were found inferior to pendimethalin, but significantly superior over weedy check. Oxyflurofen and oxadiargyl exert their phototoxic effect through contact action, on germinating weeds. Pendimethalin being dinitroaniline, is known to be absorbed by germinating weeds and inhibits cell division in meristematic tissue so that most of weeds die within few days of their emergence. Application of pendimethalin, followed by One HW at 45 DAS performed very well in controlling weeds because of the fact that, emergence and early growth of weeds was inhibited by pre emergence pendimethalin whereas later emerging weeds were effectively controlled by implication of HW at 45 DAS (Choudhary, 2000). This might be due to the fact that, herbicide application or one HW at 30 DAS could retain weed free environment, upto 45-50 days only. Thereafter, the population of weeds increased progressively with the advancement of crop growth, due to late flushes of weeds and considerably higher density of weeds was recorded, at subsequent stages. On the contrary, another HW at 45 DAS done under two HW treatments removed second flush of weeds provided weed free environment, to crop throughout the growing season (Gora *et al.*, 1996).

Appraisal of data in Table 1 and 2 also reveals that weed management practices evaluated were found to vary significantly in their effect on crop dry matter production, plant stand and height at various growth stages. All the weed management practices enhance these growth characters of coriander at most of the stages over weedy check. Among the treatments, two HW recorded the highest crop dry matter production at 60, 75, 90 DAS and at harvest with mean biomass production of 28.61 kg/ha at harvest, registered an increase of 236.19 per cent over unweeded control. It also attained significantly higher plant height (98.01 cm) and crop stand (9.61 No./m row length) at harvest. Pendimethalin + HW was found at par with two HW, but proved significantly superior over rest of treatments. Likewise, oxyfluorfen + HW, oxadiargyl + HW, metribuzin + HW, one HW, pendimethalin, oxyfluorfen, oxadiargyl and metribuzin are the treatments in order of their effectiveness of bringing about significant improvement, in growth parameters as compared to weedy check. The improvement in growth parameters rendered by these treatments could be ascribed to the fact that weed free environment provided by these treatments minimized the weed crop competition to the extent of their efficacy in weed control that lead to better growth of crop in terms of plant height, dry matter accumulation and plant stand. Weed free environment also saved the nutrients, moisture, sunlight & space and provided better edaphic and nutritional environment in the root zone, consequently improved these parameters of coriander significantly under above mentioned treatments. Whereas, uncontrolled growth of weeds throughout crop season in unweeded plot, arrested the crop growth due to severe weed crop competition. This competition associated with the effect of fast growing weeds exerted on slow germinating and short stature crop might be the most probable reason of significantly reduced plant stand of crop at harvest

observed under weedy check, metribuzin, oxadiargly, and mertibuzin + HW as compared to two HW. The fact can further be explained in terms of significant negative correlation coefficient (Table 3), between weed dry matter and crop dry matter at 30, 45, 60, 75, 90 DAS and at harvest (r =-0.842, -0.582, -0.680, 0.676, -0.759, -0.799, respectively. Similar findings were also reported by Choudhary and Gupta (1991).

Weed Control Efficiency and Yield of Coriander

The highest weed control efficiency (88.50 %) was recorded under two HW, followed by pendimethalin + HW (88.14 %), followed by oxyflurofen + HW (83.48 %). Such findings were also reported by Sethivel (2001).

The highest seed yield (15.84 q/ha) and straw yield (25.27 q/ha) of coriander was obtained under two HW treatment, followed by pre emergence application of pendimethalin + HW (15.74 and 23.88 q/ha, respectively) and both treatment remained at par to each other, but proved superior over rest of practices. Application of oxyfluorfen + HW, oxadiargyl + HW, mertibuzin + HW were noted to be the next, in order of superiority and promising herbicidal treatments. Choudhary and Gupta (1991), also observed an increase in seed and straw yield of cumin, through weed management practices. The increase in seed and straw yields with weed management measures, is obviously the results of better weed control, which rendered favorable conditions like increased availability of nutrients, moisture, light and other factors, in turn which resulted in better growth and higher dry matter accumulation by crop plants and there by yields. A strong negative correlation coefficient between seed yield and weed dry matter accumulations substantiate this fact. Enhanced values of crop dry matter and other growth characters were the outcome of these effects. Correlation coefficient between crop seed/straw yield and crop dry matter production validate profound effects of these parameters on yield.

Effect of Balanced Fertilization

Balanced fertilization significantly increased dry matter of weeds. Application of N+P+K+S registered an increase of 20.43, 18.89, 30.58, 24.80, 12.39 and 12.48 per cent in weed dry matter over N+P and 8.20, 8.49, 13.26, 10.54, 6.49 and 6.00 per cent over N+P+K fertilization at 30, 45, 60, 75, 90 DAS and at harvest, respectively. This might be due to more availability of nutrients resulting into higher growth and development of weeds.

Pooled analysis of data (Table 1) on crop growth (dry matter accumulation and plant height) and yield (seed and straw) revealed that N+P+K+S fertilization showed significant improvement compared to N+P and N+P+K fertilization. At harvest balanced fertilization with N+P+K+S significantly registered an increase in crop seed yield by 9.26 per cent over N+P fertilization and 8.36 per cent over N+P+K fertilization. This improvement in growth and there by seed and straw yield might be due to on account of their potential role in modifying soil and cellular environment conducive for better growth and development. Nitrogen is considered to be an essential constituent for synthesis of protein, chlorophyll and other organic compounds of physiological significance. While phosphorus improves metabolic and physiological processes, potassium is not a structural part of any molecule inside the plant but activate many enzymatic processes. Sulphur is a constituent of amino acids, thus influence the synthesis of chlorophyll, proteins and other growth substances, required for large number of physiological and metabolic processes in the plants. Marked increase in seed and straw yield with N+P+K+S fertilization seems to be due to exploitation of crop genetic potential for vegetative and reproductive growth up to greater extent. The results are in close accordance with the findings of Tripathi *et al.* (2001).

Interaction Effect

Interactive effect of weed management and balanced fertilization was also found significant in respect of weed dry matter at 60 DAS and crop dry matter at 60, 90 DAS and at harvest of crop (Table 4). The valley and peak point in Figure 1 also clarify the interaction effect of weed management and balanced fertilization on weed dry matter and crop dry matter at these stages. Pooled data indicated that two hand weeded plots fertilized with N+P recorded significantly lowest weed dry matter at 60 DAS (90.00 kg/ha) as followed by pendimethalin + HW with N+P fertilization (94.64 kg/ha) and both these treatment combination remained at par from their value with N+P+K or N+P+K+S fertilization. Two HW with N+P fertilization reduced the weed dry matter by 89.01 per cent than weedy check plot fertilized with only N+P. The maximum weed dry matter (1013.07 kg/ha) was recorded in weedy check plots supplied with N+P+K+S fertilization. The interaction effect between weed management and balanced fertilization treatments could be ascribed due to fact that N+P+K+S fertilization increased the dry matter accumulation by weeds irrespective of weed management practices. The weed management practices which were not effective in reducing the dry matter accumulation by weeds and weedy check treatment, the increase in dry matter production was more as compared to other practices which were more effective in reducing dry matter with increasing balanced fertilization doses. This also indicates that two HW and pendimethalin + HW have resulted in increased fertilization use efficiency.

On the contrary, two HW combined with N+P+K+S fertilization produced significantly higher crop dry matter (6.21, 22.29 and 32.56 g / plant) as compared two HW with N+P (4.49, 17.05 and 24.39 g/plant) and N+P+K (4.47, 19.80 and 28.89 g/plant) combinations at 60, 90 DAS and at harvest. The next best treatment was pendimethalin +HW with N+P+K+S where in 6.19, 22.18 and 32.27 g/ plant dry matter production was recorded at 60, 90 DAS and at harvest. The significantly lowest amount of crop dry matter was obtained in weedy check plot fertilized with only N+P (3.16, 7.06 and 7.84 g/plant, respectively). The possible increase in crop dry matter accumulations by crop under these combinations seems to be due to reduced crop weed competition, which resulted in efficient utilization of the applied nutrients with N+P+K+S fertilization. It boosted up the growth and vigor which ultimately reflected in the form of higher and straw yield of coriander. However, under weedy check the crop plants at all balanced fertilization treatments faced competition with weeds for every resource and gave lower yields.

CONCLUSIONS

Based upon the pooled results of two years experimentation, it may be concluded that weeds in coriander should be controlled by pre emergence application of pendimethalin @ 1.0 kg/ha, followed by HW at 45 DAS and crop should be fertilized with 60 kg N + 30 kg P + 30 kg K + 30 kg S/ha.

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APPENDICES

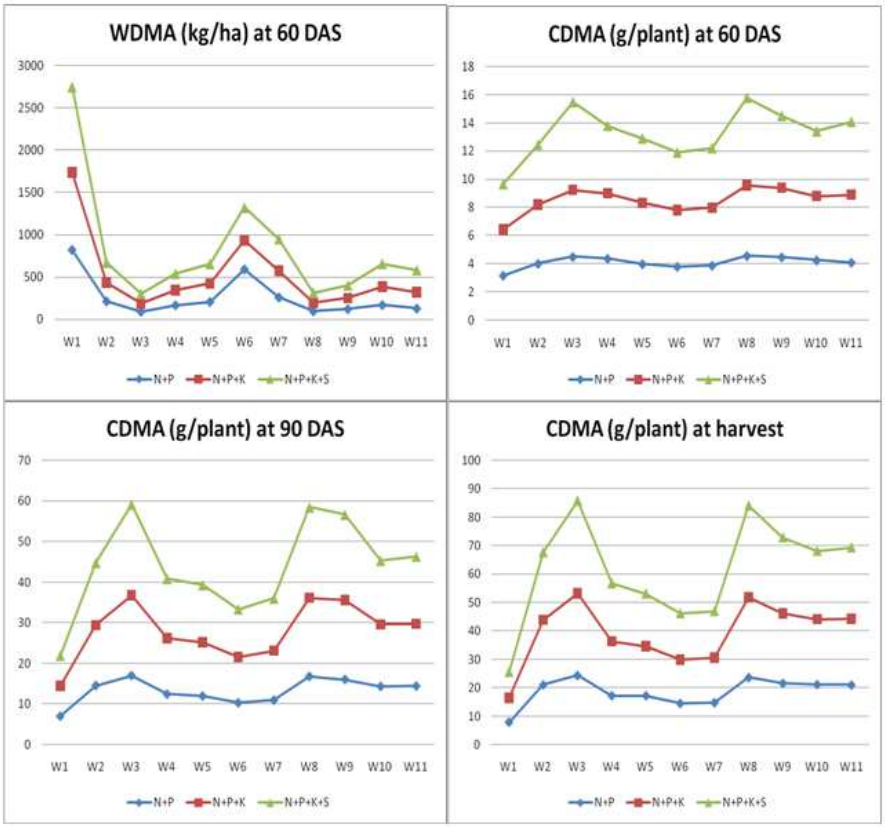

Figure 1: Interaction Effect of Integrated Weed Management and Balanced Fertilization on WDMA and CDMA in Coriander

Table 1: Effect of Integrated Weed Management and Balanced Fertilization on Dry Matter Accumulation by Weeds and Coriander (Pooled Data of 2 Years)

Treatments	Dry Matter Accumulation									
	30 DAS		45 DAS		60 DAS		75 DAS		90 DAS	
	Weeds (kg/ha)	Crop (g/plant)	Weeds (kg/ha)	Crop (g/plant)	Weeds (kg/ha)	Crop (g/plant)	Weeds (kg/ha)	Crop (g/plant)	Weeds (kg/ha)	Crop (g/plant)
Weed Management										
Weedy check	237.81	1.15	684.66	1.89	916.39	3.22	1328.93	5.74	1745.10	7.28
One HW (30 DAS)	239.25	1.17	97.38	2.29	222.93	4.15	295.67	8.59	437.87	14.91
Two HW (30 and 45 DAS)	239.17	1.17	91.48	2.25	100.15	5.16	141.91	11.61	186.25	19.71
Pendimethalin 1.0 kg/ha	55.70	1.87	107.01	3.08	178.89	4.60	298.58	8.49	488.92	13.61
Oxyfluorfen 0.25 kg/ha	58.69	1.74	114.42	2.85	217.78	4.30	362.98	8.06	528.50	13.09
Metribuzin 0.30 kg/ha	62.24	1.61	128.13	2.59	340.16	3.97	505.83	7.22	673.48	11.10
Oxadiargyl 75 g/ha	59.61	1.64	121.04	2.70	316.38	4.07	456.03	7.39	631.15	11.99
Pendimethalin 1.0 kg/ha + HW (45 DAS)	55.88	1.83	98.71	3.02	103.95	5.26	147.62	11.54	197.03	19.47
Oxyfluorfen 0.25 kg/ha + HW (45 DAS)	57.79	1.72	106.26	2.83	132.48	4.83	9191.64	9.69	268.66	18.87
Metribuzin 0.30 kg/ha + HW (45 DAS)	63.46	1.60	123.12	2.64	218.70	4.47	269.32	8.72	383.42	15.09
Oxadiargyl 75 g/ha + HW (45 DAS)	59.46	1.62	114.76	2.78	193.52	4.70	244.19	9.43	352.01	15.43
CD (P=0.05)	10.67	0.11	12.05	0.18	9.15	0.29	32.44	0.63	45.53	0.87
Balanced Fertilization (kg/ha)										
60 N + 30 P	97.75	1.42	148.37	2.42	231.94	4.09	342.63	8.05	505.45	13.32
60 N + 30 P + 30 K	108.80	1.58	162.59	2.66	267.39	4.43	386.84	8.75	533.47	14.70
60 N + 30 P + 30 K + 30 S	117.73	1.66	176.40	2.81	302.85	4.77	427.63	9.52	568.10	15.77
CD (P=0.05)	5.14	0.05	5.51	0.08	9.15	0.14	14.10	0.30	18.62	0.40

DAS= Days after Sowing

Table 2: Effect of Integrated Weed Management and Balanced Fertilization on Dry Matter Accumulation by Weeds and Crop, Weed Control Efficiency, Growth Attributes and Seed Yield of Coriander (Pooled Data of 2 Years)

Treatments	DMA at Harvest (kg/ha)		Crop Stand (No./ m Row Length)		Plant height (cm) at harvest	Seed Yield (q/ha)	Weed Conrol Efficiency (%)	Straw Yield (q/ha)
	Weeds (kg/ha)	Crop (g/plant)	30 DAS	At harvest				
Weed Management								
Weedy check	2268.49	8.51	10.03	7.61	64.82	5.27	-	8.86
One HW (30 DAS)	654.98	22.57	9.93	9.30	86.68	12.31	71.13	20.25
Two HW (30 and 45 DAS)	260.87	28.61	10.33	9.61	98.01	15.84	88.50	25.27
Pendimethalin 1.0 kg/ha	755.57	18.93	10.07	9.49	82.57	10.40	66.70	16.61
Oxyfluorfen 0.25 kg/ha	831.62	17.72	10.07	9.40	78.39	8.99	63.34	15.09
Metribuzin 0.30 kg/ha	1095.50	15.40	9.90	8.93	70.15	8.27	51.71	13.28
Oxadiargyl 75 g/ha	1057.54	15.66	10.07	8.99	73.31	8.53	53.38	13.76
Pendimethalin 1.0 kg/ha + HW (45 DAS)	268.98	28.07	9.64	9.57	95.31	15.74	88.14	23.88
Oxyfluorfen 0.25 kg/ha + HW (45 DAS)	374.64	24.32	9.93	9.53	91.22	13.26	83.48	22.67
Metribuzin 0.30 kg/ha + HW (45 DAS)	618.46	22.75	10.14	8.99	86.82	12.48	72.74	20.81
Oxadiargyl 75 g/ha + HW (45 DAS)	581.91	23.14	10.07	9.06	87.50	12.77	74.35	21.06
CD (P=0.05)	70.59	1.30	NS	0.56	4.46	0.80	-	1.42
Balanced Fertilization (kg/ha)								
60 N + 30 P	749.26	18.60	9.18	9.10	80.05	10.33	66.97	17.08
60 N + 30 P + 30 K	797.14	20.64	9.22	9.14	83.21	11.25	64.86	18.31
60 N + 30 P + 30 K + 30 S	845.03	22.31	9.24	9.16	86.22	12.19	62.75	19.57
CD (P=0.05)	24.58	0.60	NS	NS	2.03	0.34	-	0.61

DMA= Dry matter accumulation

Table 3: Correlation Coefficient and Regression Equations Showing Relations between Weed Dry Matter and Growth Parameters and Yields of Coriander as Independent (X) and Dependent (Y) Variables on Pooled Data Basis

S.No.	Dependent Variable (Y)	Independent Variable (X)	Correlation Coefficient ®	Regression Equations Y=a+Bx
1	CDMA (g/plant) at harvest	Plant height (cm) at harvest	0.182	Y=1.154+0.005 X
2	CDMA (g/plant) at 30 DAS	WDMA (kg/ha) at 30 DAS	-0.842**	Y=1.866-0.003 X
3	CDMA (g/plant) at 45 DAS	WDMA (kg/ha) at 45 DAS	-0.582**	Y=2.844-0.001 X
4	CDMA (g/plant) 60 DAS	WDMA (kg/ha) at 60 DAS	-0.680**	Y=4.976-0.002 X
5	CDMA (g/plant) 75 DAS	WDMA (kg/ha) at 75 DAS	-0.676**	Y=10.248-0.004 X
6	CDMA (g/plant) 90 DAS	WDMA (kg/ha) at 90 DAS	-0.759**	Y=18.028-0.007 X
7	CDMA (g/plant) at harvest	WDMA (kg/ha) at harvest	-0.799**	Y=26.759-0.009 X
8	Seed yield (q/ha)	CDMA (g/plant) at 30 DAS	0.179	Y=7.917+2.149 X
9	Seed yield (q/ha)	CDMA (g/plant) at 45 DAS	0.375*	Y=2.671+3.266 X

Table 3: Contd.,				
S.No.	**Dependent Variable (Y)**	**Independent Variable (X)**	**Correlation Coefficient ®**	**Regression Equations Y=a+Bx**
10	Seed yield (q/ha)	CDMA (g/plant) 60 DAS	0.883**	Y=-8.079+4.366 X
11	Seed yield (q/ha)	CDMA (g/plant) 75 DAS	0.949**	Y=-3.332+1.664 X
12	Seed yield (q/ha)	CDMA (g/plant 90 DAS	0.965**	Y=-0.794+0.826 X
13	Seed yield (q/ha)	CDMA (g/plant) at harvest	0.988**	Y=0.144+0.542 X
14	Seed yield (q/ha)	WDMA (kg/ha) at 30 DAS	-0.002	Y=11.271-0.0001 X
15	Seed yield (q/ha)	WDMA (kg/ha) at 45 DAS	-0.599**	Y=13.158-0.012 X
16	Seed yield (q/ha)	WDMA (kg/ha) at 60 DAS	-0.732**	Y=14.168-0.011 X
17	Seed yield (q/ha)	WDMA (kg/ha) at 75 DAS	0.745**	Y=14.115-0.008 X
18	Seed yield (q/ha)	WDMA (kg/ha) at 90 DAS	-0.733**	Y=14.100-0.0006 X
19	Seed yield (q/ha)	WDMA (kg/ha) at harvest	-0.760**	Y=14.517-0.004 X
20	Straw yield (q/ha)	CDMA (g/plant) at 60 DAS	0.874**	Y=-11.50+16.732 X
21	Straw yield (q/ha)	CDMA (g/plant at 90 DAS	0.964**	Y=-0.440+1.285 X
22	Straw yield (q/ha)	CDMA (g/plant) at harvest	0.984**	Y=1.081+0.840 X

* Signifiant at 5 % level of probability, ** Significant at 1 % level of probability

Table 4: Interaction Effect of Integrated Weed Management and Balanced Fertilization on Weed and Crop Dry Matter Accumulation in Coriander (Pooled Data of 2 Years)

Weed Management	WDMA (Kg/Ha) at 60 DAS			CDMA (G/Plant) at 60 DAS			CDMA (G/Plant) at 90 DAS			CDMA (G/Plant) at Harvest		
	N+P	N+P+K	N+P+K+S	N+P	N+P+K	N+P+K+S	N+P	N+P+K	N+P+K+S	N+P	N+P+K	N+P+K+S
Weedy Check	819.11	916.99	1013.07	3.16	3.26	3.25	7.06	7.36	7.43	7.84	8.59	9.11
One HW (30 DAS)	212.10	222.66	234.04	4.01	4.19	4.24	14.63	14.84	15.27	21.08	22.80	23.83
Two HW (30 and 45 DAS)	90.00	98.65	111.80	4.49	4.77	6.21	17.05	19.80	22.29	24.39	28.89	32.56
Pendimethalin 1.0 kg/ha	165.74	178.86	192.09	4.37	4.65	4.77	12.49	13.75	14.58	17.25	19.10	20.44
Oxyfluorfen 0.25 kg/ha	205.59	218.38	229.38	3.98	4.35	4.57	12.02	13.23	14.02	17.24	17.31	18.62
Metribuzin 0.30 kg/ha	589.55	340.46	390.48	3.79	4.02	4.10	10.34	11.22	11.75	14.49	15.43	16.28
Oxadiargyl 75 g/ha	258.23	314.82	376.10	3.87	4.12	4.23	11.01	12.11	12.84	14.75	15.82	16.42
Pendimethalin 1.0 kg/ha + HW (45 DAS)	94.64	102.70	114.52	4.56	5.03	6.19	16.87	19.37	22.18	23.68	28.22	32.27
Oxyfluorfen 0.25 kg/ha + HW (45 DAS)	120.86	132.13	144.52	4.47	4.93	5.10	16.13	19.49	20.98	21.62	24.56	26.79
Metribuzin 0.30 kg/ha + HW (45 DAS)	168.59	219.45	268.07	4.25	4.57	4.59	14.39	15.25	15.64	21.20	22.97	24.08
Oxadiargyl 75 g/ha + HW (45 DAS)	126.94	196.24	257.39	4.09	4.83	5.17	14.48	15.29	16.53	21.02	23.32	25.07
CD (P=0.05) For Balanced Fertilization At Same Weed Management Practice			30.36			0.45			1.38			1.99
CD (P=0.05) For Weed Management At Same Level Of Balanced Fertilization			32.47			0.46			1.39			2.06

WDMA= Weed dry Matter accumulation, CDMA= Crop Dry Matter Accumulation