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# Efficacy of herbicidal weed management in chilli + coriander intercropping system

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### Abstract

A field experiment was conducted at the Vegetable Division in Kittur Rani Channamma College of Horticulture, Arabhavi, University of Horticultural Sciences, Bagalkot (Karnataka) during *kharif* 2014 and 2015 to identify the best possible method of weed control for maximizing the productivity of chilli+ coriander intercropping system. The weed population, dry weight of weeds, weed control efficiency and yield components of chilli and coriander were significantly affected in response to weed control treatments. Among the different chemical treatments, pre-emergent application of alachlor @ 1.5 kg ai/ha + 2 HW at 45 and 60 DAT recorded the lowest pooled dry matter of weeds (3.8 g), lowest population of monocot (3.47), dicot weeds (2.82) and thus exhibited the highest weed control efficiency (83.45%). The yield per ha of chilli (285q) and coriander (73.02q) net returns (Rs. 1,33,661) and B:C ratio (2.63) were also found to be highest and it was followed by pre emergence application of pendimethalin at 1.5 kg/ha +2 HW at 45 and 60 DAT.

**Keywords:** Chilli + coriander intercropping, weed control treatments and B: C Ratio

### Introduction

Weed management is an important component of crop production, which improves the production potential of the crop. Out of total annual loss of agricultural produce from various biotic factors in India, weeds account for 45 per cent (Subramaniam *et al.*, 1999) [12]. The losses due to weeds are attributed to the competition between crops and weeds for natural resources. It has been generally accepted that intercropping may have significant effect in suppressing weeds in wide row planted crops particularly characterized with slow initial growth. Besides addition yield of intercrops, there is better utilization of resources, less incidence of pest and diseases and suppression of weeds at the critical early growth stages of crop (Singh and Abraham, 2017) [2].

Chilli is an important vegetable- cum- spice crop essentially used in every Indian cuisine, due to its pungency, taste, color and aroma. Among the Indian states, Andhra Pradesh stands first in terms of production and area coverage under chilli cultivation. It alone commands for 49 per cent of the chilli production in India, with a production of around 0.27 million tonnes of chillies. Karnataka follows Andhra Pradesh, contributing 14 per cent of the country's production. Immediately after transplanting, chilli seedlings grow slowly whereas weeds emerge fast and grow rapidly competing with the crop for growth resources, *viz.* nutrients, moisture, sunlight and space during entire vegetative and early reproductive stages of chilli (Isik *et al.*, 2009) [6]. The extent of reduction in fruit yield of chilli has been reported to be in the range of 60-70 per cent depending on the intensity and persistence of weed density in standing crop (Khan *et al.*, 2012) [7].

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 come leafy vegetable crop, by entire mankind of the world. Chilli + coriander inter cropping is one of the preferred inter cropping system followed in some parts of Karnataka. The present study evaluates the efficacy of different herbicides treatments on weed control and growth and yield of chilli + coriander inter cropping system.

### Material and Methods

The study was carried out at the Vegetable Division in Kittur Rani Channamma college of Horticulture, Arabhavi, University of Horticultural Sciences, Bagalkot (Karnataka) during *Kharif* season of 2014 and 2015 on well drained red loamy soil to find out the effectiveness of

chemicals in weed management in intercropping of chilli (Var 'Byadagi') + coriander (Local Variety).

The gross size and net size of the plots were 16.20 m<sup>2</sup> and 11.80 m<sup>2</sup> respectively. Four to Five weeks old chilli seedlings were transplanted into main field with a spacing of 75cm × 45 cm and in between the chilli, 2 rows of coriander was sown. The field experiment was laid out in Randomized Complete Block Design (RCBD) with two replications consisting of fourteen treatments including unweeded check (T<sub>1</sub>. Alachlor (PE)-1.5 kg ai/ha T<sub>2</sub>. Alachlor (PE)-1.0 kg ai/ha T<sub>3</sub>. Alachlor (PE)-1.5 kg ai/ha + 1 HW at 45 DAT T<sub>4</sub>. Alachlor (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT T<sub>5</sub>. Alachlor (PE)-1.0 kg ai/ha + 1 HW at 45 DAT T<sub>6</sub>. Alachlor (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT T<sub>7</sub>. Pendimethalin (PE)-1.5 kg ai/ha T<sub>8</sub>. Pendimethalin (PE)-1.0 kg ai/ha T<sub>9</sub>. Pendimethalin (PE)-1.5 kg ai/ha + 1 HW at 45 DAT T<sub>10</sub>. Pendimethalin (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT T<sub>11</sub>. Pendimethalin (PE)-1.0 kg ai/ha + 1 HW at 45 DAT T<sub>12</sub>. Pendimethalin (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT T<sub>13</sub>. Weed free check T<sub>14</sub>. Unweeded check). RDF for chilli, 150:100:125 kg of N: P<sub>2</sub>O<sub>5</sub>: K<sub>2</sub>O with 25 tonnes of FYM (as per package of practices – UHS, Bagalkot) was applied at the time of field preparation. Remaining dose of N (50%) was applied at 3 split doses *viz.*, after 30, 60 and 90 days of transplanting. During the course of investigation, observations regarding weed population, crop growth and yield parameters at 30, 60 and 90 DAT and at the time of harvest were recorded from the randomly selected and tagged plants. The weed index was calculated by the formula given by Gill and Vijaya Kumar (1969) [3]. Besides fixed cost of cultivation, variable costs on spray, manual weeding and cost of herbicide in each treatment was worked out to obtain total cost of production. The net income was obtained after deducting cost of production from value of produces. The mean data was subjected to the statistical analysis using ANOVA and mean separation (LSD) procedures (Gomez and Gomez, 1984) [4].

## Results and Discussion

The weed population, dry weight of weeds, weed control efficiency and yield components of chilli and coriander were significantly affected in response to weed control treatments. The results of the study showed that among the different treatments, the effect of weed control on monocot weeds (3.47) was lowest in pre-emergent application of alachlor 1.5 kg ai/ ha + 2HW (3.75) at 45 and 60 DAT (T<sub>4</sub>) followed by pre-emergent application of pendimethalin @ 1.5 kg ai/ ha + 2HW at 45 and 60 DAT (T<sub>10</sub>).

Higher dicot weeds (8.03) and weed population (13.02) was observed in unweeded check whereas treatment T<sub>4</sub> resulted in lower dicot weeds (2.82) and weed population (4.58) followed by T<sub>10</sub> (2.99 and 4.70 respectively) (Table 1). The treatment T<sub>4</sub> recorded significantly lower dry weight of weeds at harvest (3.80g), lowest weed index in chilli and coriander (4.81 and 14.17, respectively) and thus highest weed control efficiency (83.45%) and was followed by T<sub>10</sub> (7.86, 21.18 and 80.64%, respectively) (Table 2 & 3). Pre-emergent application of herbicide followed by timely hand weeding might be the possible reason for lower weed population in these treatments. The lower dry weight of weeds might be attributed to the less number of weeds. Thus the higher weed control efficiency

could be accounted to the lower weed dry weight. These results are of agreement with Muthusan Karanarayanan *et al* (1997) [8] and Shil and Adhikary (2014) [10].

Similarly treatment T<sub>4</sub> was found significant for highest plant height (105.38 cm), number of branches/plant (24.99) and dry weight of plant (107.11g) whereas unweeded check recorded lowest values (94.41cm, 9.01 and 41.65 g, respectively) (Table 4). Yield and yield components of chilli varied significantly among various weed control treatments. Weed free check recorded significantly higher number of fruits/plant (123.99), fruit weight /plant (1.21 kg), and yield per plot (47.49 kg) and yield per ha (299.81q) of chilli and was followed by T<sub>4</sub> (119.05, 1.15kg, 46.79kg and 285 q, respectively) whereas unweeded check showed the minimum values (68.53, 0.65kg and 25.79kg) (Table 5). The significant increase in number of fruits per plant, fruit weight per plant and yield per plot in the treatments are attributed to lower weed count and higher weed control efficiency which in turn resulted in better crop growth. Reported Similar findings are in line with Ved Prakash *et al.* (2003) [14] and Hajebi *et al* (2016) [5] in chilli.

Among the chemical treatments, T<sub>4</sub> was found significant for highest plant height (25.31cm) and number of branches /plant at harvest (8.68) in coriander Significantly higher yield per plot(14.83kg) and yield per ha (86.20q) was recorded in weed free check. However, treatment T<sub>4</sub> showed maximum yield per plot and yield per ha (12.69 kg and 73.02 q, respectively) followed by T<sub>10</sub> (11.69 and 66.85, respectively) (Table 6). The improvement in yield of coriander under these treatments is directly associated with the corresponding increase in growth and yield attributing characters. Similar results have been reported by Patel *et al.* (2004) [9] and Tiwari *et al.* (2005) [13] in coriander.

The effect of weed control treatments on economics of chilli +coriander intercropping indicated that weed free check recorded highest gross returns (Rs. 2,36,105) and among chemical treatments, T<sub>4</sub> (Rs. 2,15,521) was highest. Cost of cultivation was highest in weed free check (Rs. 90,960) followed by T<sub>4</sub> (Rs. 81,860). The higher cost of cultivation is due to increased labour charges incurred during hand weeding. Since no control measures has taken against weeds, unweeded check recorded least cost of cultivation (Rs. 76,960). Among treatments, highest net returns (Rs. 133661) and benefit: cost ratio (2.63) was achieved by T<sub>4</sub> followed by T<sub>10</sub> (Rs. 1,24,010 and 2.51, respectively) (Table. 7). The higher B:C ratio in T<sub>4</sub> is due to higher net returns and lower cost of cultivation in comparison with weed free check. The results are in line with the findings reported by Biradar (1999) [1], and Singh *et al.* (2011) [11] and Patel *et al.* (2014).

## Conclusion

Pre-emergent application of alachlor @ 1.5 kg ai/ ha + 2 HW at 45 and 60 DAT recorded the lowest dry matter of weeds, lowest population of monocot and dicot weeds and thus exhibited the highest weed control efficiency, highest yield per ha, net returns and B:C ratio in chilli + coriander intercropping system. Thus it can be recommended as the best weed control method for chilli based intercropping (coriander) system.

**Table 1:** Effect of weed control treatments on weed parameters in chilli + coriander intercropping

Treatments	Treatment details	Monocot weeds at harvest			Dicot weeds at harvest			Weed population at harvest		
		I year	II year	Pooled	I year	II year	Pooled	I year	II year	Pooled
T <sub>1</sub>	Alachlor (PE) -1.5 kg ai/ha	53.48 (7.31)	53.35 (7.3)	53.42 (7.31)	27.4 (5.23)	27.51 (5.24)	27.45 (5.24)	80.88 (8.99)	80.86 (8.99)	80.87 (8.99)
T <sub>2</sub>	Alachlor (PE) -1.0 kg ai/ha	61.13 (7.82)	61 (7.81)	61.07 (7.81)	36.2 (6.02)	36.31 (6.02)	36.25 (6.02)	97.33 (9.87)	97.31 (9.86)	97.32 (9.86)
T <sub>3</sub>	Alachlor (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	36.78 (6.06)	36.65 (6.05)	36.72 (6.06)	16.45 (4.05)	16.56 (4.06)	16.5 (4.06)	53.23 (7.3)	53.21 (7.29)	53.22 (7.29)
T <sub>4</sub>	Alachlor (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	12.08 (3.48)	11.95 (3.46)	12.02 (3.47)	7.95 (2.82)	8.06 (2.83)	8.00 (2.82)	20.98 (4.58)	20.96 (4.58)	20.97 (4.58)
T <sub>5</sub>	Alachlor (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	41.68 (6.46)	41.55 (6.45)	41.62 (6.45)	18.45 (4.29)	18.56 (4.3)	18.50 (4.3)	60.13 (7.75)	60.11 (7.75)	60.12 (7.75)
T <sub>6</sub>	Alachlor (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	28.28 (5.32)	28.15 (5.31)	28.22 (5.31)	9.85 (3.14)	9.96 (3.15)	9.90 (3.14)	38.13 (6.17)	38.11 (6.17)	38.12 (6.17)
T <sub>7</sub>	Pendimethalin (PE)-1.5 kg ai/ha	60.28 (7.76)	60.15 (7.76)	60.22 (7.76)	32.20 (5.67)	32.31 (5.68)	32.25 (5.68)	92.48 (9.62)	92.46 (9.62)	92.47 (9.62)
T <sub>8</sub>	Pendimethalin (PE)-1.0 kg ai/ha	66.48 (8.15)	66.35 (8.14)	66.42 (8.15)	39.25 (6.26)	39.36 (6.27)	39.30 (6.27)	105.73 (10.28)	105.71 (10.28)	105.72 (10.28)
T <sub>9</sub>	Pendimethalin (PE)-1.5 kg ai/ha+ 1 HW at 45 DAT	44.68 (6.68)	44.55 (6.67)	44.62 (6.68)	19.95 (4.47)	20.06 (4.48)	20.00 (4.47)	64.63 (8.04)	64.61 (8.04)	64.62 (8.04)
T <sub>10</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	14.13 (3.76)	14 (3.74)	14.07 (3.75)	8.90 (2.98)	9.01 (2.99)	8.95 (2.99)	22.08 (4.7)	22.06 (4.7)	22.07 (4.7)
T <sub>11</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	52.88 (7.27)	52.75 (7.26)	52.82 (7.27)	23.05 (4.8)	23.16 (4.81)	23.10 (4.81)	75.93 (8.71)	75.91 (8.71)	75.92 (8.71)
T <sub>12</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	30.98 (5.56)	30.85 (5.55)	30.92 (5.56)	11.50 (3.39)	11.61 (3.4)	11.55 (3.39)	42.48 (6.52)	42.46 (6.51)	42.47 (6.51)
T <sub>13</sub>	Weed free check	0.00 (0.71)	0.00 (0.71)	0.00 (0.7)	0.00 (0.71)	0.00 (0.71)	0.00 (0.71)	0.00 (0.71)	0.00 (0.71)	0.00 (0.71)
T <sub>14</sub>	Unweeded check	105.13 (10.25)	105 (10.24)	105.07 (10.25)	64.45 (8.03)	64.56 (8.03)	64.50 (8.03)	169.58 (13.02)	169.56 (13.02)	169.57 (13.02)
	Mean	43.43 (6.18)	43.36 (6.2)	43.37 (6.2)	22.54 (4.42)	24.17 (4.43)	22.59 (4.42)	65.97 (7.59)	65.95 (7.59)	65.96 (7.59)
	S. Em $\pm$	0.09	0.09	0.09	0.04	0.07	0.05	0.07	0.11	0.07
	C.D.at 5%	0.27	0.29	0.26	0.12	0.22	0.16	0.21	0.33	0.21

**Table 2:** Effect of weed control treatments on weed parameters in chilli + coriander intercropping

Treatments	Treatment details	Dry weight of weeds at harvest			Weed control efficiency at harvest		
		I year	II year	Pooled	I year	II year	Pooled
T <sub>1</sub>	Alachlor (PE)-1.5 kg ai/ha	37.95 (6.11)	37.63 (6.16)	37.79 (6.13)	57.25	56.82	57.04
T <sub>2</sub>	Alachlor (PE)-1.0 kg ai/ha	47.05 (6.82)	46.80 (6.86)	46.92 (6.84)	46.72	46.53	46.62
T <sub>3</sub>	Alachlor (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	26.2 (5.12)	25.63 (5.12)	25.91 (5.06)	71.33	70.22	70.78
T <sub>4</sub>	Alachlor (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	14.90 (3.74)	14.48 (3.85)	14.69 (3.8)	83.88	83.02	83.45
T <sub>5</sub>	Alachlor (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	30.60 (5.43)	30.03 (5.53)	30.31 (5.48)	66.13	65.64	65.88
T <sub>6</sub>	Alachlor (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	20.80 (4.43)	20.23 (4.56)	20.51 (4.5)	77.47	76.34	76.91
T <sub>7</sub>	Pendimethalin (PE)-1.5 kg ai/ha	39.50 (6.21)	39.05 (6.28)	39.27 (6.25)	55.82	55.12	55.47
T <sub>8</sub>	Pendimethalin (PE)-1.0 kg ai/ha	49.05 (6.9)	48.35 (7)	48.70 (6.95)	45.38	44.17	44.78
T <sub>9</sub>	Pendimethalin (PE)-1.5 kg ai/ha+ 1 HW at 45 DAT	30.25 (5.44)	29.93 (5.5)	30.09 (5.47)	66.25	65.18	65.72
T <sub>10</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	17.40 (4.06)	16.95 (4.17)	17.17 (4.12)	81.08	80.19	80.64
T <sub>11</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	34.25 (5.8)	33.93 (5.85)	34.09 (5.82)	61.50	61.05	61.27
T <sub>12</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	23.35 (4.76)	23.03 (4.83)	23.19 (4.8)	73.98	73.43	73.70
T <sub>13</sub>	Weed free check	0.00 (0.71)	0.00 (0.71)	0.00 (0.71)	100.00	100.00	100.00
T <sub>14</sub>	Unweeded check	88.00 (9.35)	87.68 (9.38)	87.84 (9.36)	0.00	0.00	0.00
	Mean	32.80 (5.34)	32.40 (5.41)	32.60 (5.33)	63.34	62.7	63.02
	S. Em $\pm$	0.11	0.11	0.11	1.33	1.38	1.34
	C.D.at 5%	0.34	0.33	0.36	4.07	4.20	4.10

**Table 2.1:** Effect of weed control treatments on weed index in chilli and coriander

Treatments	Treatment details	Weed index in chilli			Weed index in coriander		
		I year	II year	Pooled	I year	II year	Pooled
T <sub>1</sub>	Alachlor (PE)-1.5 kg ai/ha	27.31	25.38	24.13	50.47	40.24	47.13
T <sub>2</sub>	Alachlor (PE)-1.0 kg ai/ha	33.38	31.03	31.27	55.51	56.42	57.88
T <sub>3</sub>	Alachlor (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	17.30	16.07	14.02	33.99	34.88	35.56
T <sub>4</sub>	Alachlor (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	4.95	4.48	4.81	17.15	9.96	14.17
T <sub>5</sub>	Alachlor (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	19.11	17.76	16.15	38.62	34.95	38.08
T <sub>6</sub>	Alachlor (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	8.74	8.12	8.51	32.90	33.11	34.27
T <sub>7</sub>	Pendimethalin (PE)-1.5 kg ai/ha	31.49	29.28	30.04	54.67	51.59	54.89
T <sub>8</sub>	Pendimethalin (PE)-1.0 kg ai/ha	35.43	32.93	33.00	57.48	57.99	59.62
T <sub>9</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	19.09	22.50	19.82	43.85	36.94	41.97
T <sub>10</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	8.37	6.71	7.86	19.66	21.40	21.18
T <sub>11</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	21.77	20.24	20.94	48.46	38.11	44.99
T <sub>12</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	12.97	12.05	10.76	33.02	33.52	34.29
T <sub>13</sub>	Weed free check	0.00	0.00	0.00	0.00	0.00	0.00
T <sub>14</sub>	Unweeded check	47.70	44.35	45.60	62.70	64.39	65.81
	Mean	20.91	19.35	19.09	39.18	36.68	3.43
	S. Em $\pm$	5.07	4.63	3.71	3.86	4.67	4.62
	C. D. @ 5%	15.50	14.15	11.33	11.43	14.89	12.36

**Table 3:** Effect of weed control treatments on vegetative and yield parameters in chilli

Treatments	Treatment details	Plant height at harvest (cm)			No. of branches per plant at harvest			Dry weight of plant at harvest (g)		
		I year	II year	Pooled	I year	II year	Pooled	I year	II year	Pooled
T <sub>1</sub>	Alachlor (PE)-1.5 kg ai/ha	99.13	100.52	99.91	11.32	12.62	11.97	73.75	77.85	75.80
T <sub>2</sub>	Alachlor (PE)-1.0 kg ai/ha	94.13	94.81	94.33	9.41	10.89	10.15	72.13	74.45	73.29
T <sub>3</sub>	Alachlor (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	102.23	104.81	103.52	17.51	19.01	18.26	88.53	92.52	90.52
T <sub>4</sub>	Alachlor (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	104.75	106.13	105.38	23.19	26.79	24.99	105.33	108.90	107.11
T <sub>5</sub>	Alachlor (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	100.88	101.60	101.13	15.47	16.66	16.06	84.73	88.15	86.44
T <sub>6</sub>	Alachlor (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	104.63	105.18	104.97	19.78	20.86	20.32	97.63	100.93	99.28
T <sub>7</sub>	Pendimethalin (PE)-1.5 kg ai/ha	95.00	95.95	95.47	10.61	12.01	11.31	73.33	76.87	75.10
T <sub>8</sub>	Pendimethalin (PE)-1.0 kg ai/ha	93.91	94.53	94.36	8.63	9.99	9.31	64.41	67.70	66.05
T <sub>9</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	100.66	101.00	100.94	14.15	15.56	14.85	81.73	85.70	83.71
T <sub>10</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	105.17	105.50	105.02	21.07	21.80	21.43	100.83	104.41	102.62
T <sub>11</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	99.50	100.69	100.01	12.67	13.98	13.33	79.63	84.05	81.84
T <sub>12</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	102.63	104.88	104.06	18.61	19.91	19.26	94.73	98.25	96.49
T <sub>13</sub>	Weed free check	104.56	105.74	105.15	25.83	27.68	26.75	110.63	114.55	112.59
T <sub>14</sub>	Unweeded check	94.75	94.08	94.41	8.52	9.50	9.01	40.23	43.07	41.65
	Mean	100.14	101.1	100.62	15.48	16.95	16.21	83.40	86.96	85.18
	S. Em $\pm$	3.54	3.71	3.47	0.88	1.42	1.08	3.26	5.85	4.43
	C.D.at 5%	10.81	11.34	10.59	2.67	4.33	3.29	9.89	17.93	13.86

**Table 4:** Effect of weed control treatments on yield and yield attributes in chilli

Treatment	Treatment details	No. of fruits per plant			Fruit weight per plant (kg)			Yield per plot (kg)			Yield per ha (q)		
		I year	II year	Pooled	I year	II year	Pooled	I year	II year	Pooled	I year	II year	Pooled
T <sub>1</sub>	Alachlor (PE)-1.5 kg ai/ha	85.81	84.92	85.37	0.84	0.93	0.88	33.60	37.14	35.79	207.41	229.26	218.33
T <sub>2</sub>	Alachlor (PE)-1.0 kg ai/ha	79.41	80.90	80.15	0.78	0.86	0.82	31.00	34.54	32.54	191.36	213.21	202.28
T <sub>3</sub>	Alachlor (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	94.28	94.83	94.56	0.96	1.04	1.00	38.20	41.74	40.54	235.80	257.65	246.73
T <sub>4</sub>	Alachlor (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	119.25	118.84	119.05	1.11	1.20	1.15	44.40	47.94	46.79	274.07	295.93	285.00
T <sub>5</sub>	Alachlor (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	92.43	92.92	92.67	0.94	1.02	0.98	37.42	40.96	39.56	231.01	252.86	241.93
T <sub>6</sub>	Alachlor (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	102.91	103.01	102.96	1.06	1.15	1.10	42.40	45.94	44.09	261.73	283.58	272.65
T <sub>7</sub>	Pendimethalin (PE)-1.5 kg ai/ha	82.00	83.42	82.71	0.80	0.89	0.84	32.00	35.54	33.19	197.53	219.38	208.46
T <sub>8</sub>	Pendimethalin (PE)-1.0 kg ai/ha	79.00	78.89	78.94	0.75	0.84	0.79	30.00	33.54	31.69	185.19	207.04	196.11
T <sub>9</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	89.80	89.90	89.85	0.92	1.00	0.96	36.60	40.14	37.54	225.93	247.78	236.85
T <sub>10</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	103.13	103.86	103.49	1.08	1.17	1.12	43.20	46.74	45.09	266.67	288.52	277.59

T <sub>11</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	89.75	89.23	89.49	0.87	0.96	0.91	34.80	38.34	37.69	214.81	236.67	225.74
T <sub>12</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	100.00	100.03	100.02	1.01	1.10	1.05	40.40	43.94	42.19	249.38	271.23	260.31
T <sub>13</sub>	Weed free check	123.63	124.35	123.99	1.17	1.26	1.21	46.80	50.34	47.49	288.89	310.74	299.81
T <sub>14</sub>	Unweeded check	71.70	65.35	68.53	0.61	0.70	0.65	24.40	27.94	25.79	150.62	172.47	161.54
	Mean	93.79	93.60	93.70	0.92	1.01	0.96	36.80	40.34	38.57	227.17	249.02	238.10
	S. Em $\pm$	3.32	5.67	4.22	0.06	0.06	0.06	2.40	2.40	1.80	13.84	14.80	15.84
	C.D.at 5%	10.15	17.18	12.89	0.18	0.18	0.18	7.35	7.35	5.51	41.35	44.35	45.35

**Table 5:** Effect of weed control treatments on growth parameters in coriander

Treatments	Treatment details	Plant height at harvest (cm)			Number of branches per plant		
		I year	II year	Pooled	I year	II year	Pooled
T <sub>1</sub>	Alachlor (PE)-1.5 kg ai/ha	16.95	16.60	16.75	6.65	6.40	6.53
T <sub>2</sub>	Alachlor (PE)-1.0 kg ai/ha	16.85	18.15	17.33	6.75	6.00	6.38
T <sub>3</sub>	Alachlor (PE)-1.5 kg ai/ha + 1 HW at 45 DAT	20.30	20.95	20.98	8.00	7.70	7.83
T <sub>4</sub>	Alachlor (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	25.05	25.57	25.31	9.00	8.55	8.68
T <sub>5</sub>	Alachlor (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	18.95	18.90	18.93	7.41	7.25	7.38
T <sub>6</sub>	Alachlor (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	22.05	22.57	21.91	8.35	8.10	8.23
T <sub>7</sub>	Pendimethalin (PE)-1.5 kg ai/ha	16.95	17.05	17.00	6.85	6.25	6.53
T <sub>8</sub>	Pendimethalin (PE)-1.0 kg ai/ha	15.70	16.22	15.96	6.20	5.95	6.08
T <sub>9</sub>	Pendimethalin (PE)-1.5 kg ai/ha+ 1 HW at 45 DAT	18.70	19.12	18.91	7.60	7.05	7.18
T <sub>10</sub>	Pendimethalin (PE)-1.5 kg ai/ha + 2 HW at 45 and 60 DAT	24.15	24.67	24.41	8.40	8.30	8.43
T <sub>11</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 1 HW at 45 DAT	18.05	18.72	18.39	7.10	6.80	6.93
T <sub>12</sub>	Pendimethalin (PE)-1.0 kg ai/ha + 2 HW at 45 and 60 DAT	21.65	22.17	22.31	8.25	8.00	8.13
T <sub>13</sub>	Weed free check	25.50	24.80	25.15	8.80	8.15	8.45
T <sub>14</sub>	Unweeded check	16.35	17.45	16.85	5.95	6.00	5.98
	Mean	19.80	20.21	20.01	7.52	7.18	7.33
	S. Em $\pm$	0.76	0.73	0.52	0.19	0.28	0.24
	C.D.at 5%	2.25	2.12	1.20	0.53	0.81	0.71

**Table 6:** Effect of weed control treatments on coriander leaf yield

Treatments	Treatment details	Leaf yield per plot (kg)			Leaf yield per hectare (q)		
		I year	II year	Pooled	I year	II year	Pooled
T <sub>1</sub>	Alachlor (PE) -1.5 kg ai/ha	7.89	8.73	7.81	37.19	48.55	42.87
T <sub>2</sub>	Alachlor (PE) -1.0 kg ai/ha	7.09	6.34	6.21	32.25	33.80	33.02
T <sub>3</sub>	Alachlor (PE) -1.5 kg ai/ha + 1 HW at 45 DAT	10.52	9.57	9.55	53.46	53.77	53.61
T <sub>4</sub>	Alachlor (PE) -1.5 kg ai/ha + 2 HW at 45 and 60 DAT	13.20	13.19	12.69	69.97	76.08	73.02
T <sub>5</sub>	Alachlor (PE) -1.0 kg ai/ha + 1 HW at 45 DAT	9.78	9.56	9.17	48.89	53.70	51.30
T <sub>6</sub>	Alachlor (PE) -1.0 kg ai/ha + 2 HW at 45 and 60 DAT	10.67	9.73	9.70	54.39	54.75	54.57
T <sub>7</sub>	Pendimethalin (PE) -1.5 kg ai/ha	7.23	7.20	6.71	33.12	39.14	36.13
T <sub>8</sub>	Pendimethalin (PE) -1.0 kg ai/ha	6.77	6.20	5.99	30.31	32.96	31.64
T <sub>9</sub>	Pendimethalin (PE) -1.5 kg ai/ha+ 1 HW at 45 DAT	8.95	9.20	8.57	43.77	51.45	47.61
T <sub>10</sub>	Pendimethalin (PE) -1.5 kg ai/ha + 2 HW at 45 and 60 DAT	12.82	11.57	11.69	67.62	66.08	66.85
T <sub>11</sub>	Pendimethalin (PE) -1.0 kg ai/ha + 1 HW at 45 DAT	8.21	9.04	8.12	39.17	50.46	44.81
T <sub>12</sub>	Pendimethalin (PE) -1.0 kg ai/ha + 2 HW at 45 and 60 DAT	10.67	9.72	9.69	54.38	54.66	54.52
T <sub>13</sub>	Weed free check	15.95	14.70	14.83	86.98	85.43	86.20
T <sub>14</sub>	Unweeded check	6.00	5.22	5.11	25.52	26.89	26.21
	Mean	9.69	9.28	8.99	48.36	51.98	50.17
	S. Em $\pm$	0.60	0.69	0.50	3.71	4.28	3.06
	C.D.at 5%	1.56	2.05	1.41	11.80	12.22	8.9

**Table 7:** Effect of weed control treatments on economics of chilli +coriander inter cropping

Treatments	Treatment details	Gross returns (Rs)	Cost of cultivation (Rs)	Net returns (Rs)	B:C ratio
T <sub>1</sub>	Alachlor (PE) -1.5 kg ai/ha	152035	77860	74175	1.95
T <sub>2</sub>	Alachlor (PE) -1.0 kg ai/ha	134160	77560	56600	1.72
T <sub>3</sub>	Alachlor (PE) -1.5 kg ai/ha + 1 HW at 45 DAT	176975	79860	97115	2.21
T <sub>4</sub>	Alachlor (PE) -1.5 kg ai/ha + 2 HW at 45 and 60 DAT	215521	81860	133661	2.63
T <sub>5</sub>	Alachlor (PE) -1.0 kg ai/ha + 1 HW at 45 DAT	172265	79560	92705	2.16
T <sub>6</sub>	Alachlor (PE) -1.0 kg ai/ha + 2 HW at 45 and 60 DAT	190895	81560	109335	2.34
T <sub>7</sub>	Pendimethalin (PE) -1.5 kg ai/ha	140360	77635	62725	1.80
T <sub>8</sub>	Pendimethalin (PE) -1.0 kg ai/ha	129695	77410	52285	1.67
T <sub>9</sub>	Pendimethalin (PE) -1.5 kg ai/ha+ 1 HW at 45 DAT	166035	79635	86400	2.08
T <sub>10</sub>	Pendimethalin (PE) -1.5 kg ai/ha + 2 HW at 45 and 60 DAT	205645	81635	124010	2.51
T <sub>11</sub>	Pendimethalin (PE) -1.0 kg ai/ha + 1 HW at 45 DAT	157680	79410	78270	1.98
T <sub>12</sub>	Pendimethalin (PE) -1.0 kg ai/ha + 2 HW at 45 and 60 DAT	184675	81410	103265	2.26
T <sub>13</sub>	Weed free check	236105	90960	145145	2.59
T <sub>14</sub>	Unweeded check	106980	76960	30020	1.39

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