

WEED MANAGEMENT IN CORIANDER

SAVALIYA, D. V.; *PATEL, T. U.; PATEL, D. D.; ARVADIYA, L. K.,
PATEL, P.S. AND PATEL, D.K.

DEPARTMENT OF AGRONOMY
N. M. COLLEGE OF AGRICULTURE,
NAVSARI AGRICULTURAL UNIVERSITY
NAVSARI - 396 450, GUJARAT, INDIA

**EMAIL: tushagri.ank@nau.in*

ABSTRACT

A field experiment was conducted during rabi season at Navsari, Gujarat to study the weed management in coriander under South Gujarat condition. Application of pendimethalin 1.0 kg/ha + quizalofop ethyl 0.04 kg/ha at 20 DAS were found most effective by reducing dry weight of weeds. It was also recorded the higher seed (747 kg/ha) and straw yields (1977 kg/ha) and remained at par with two hand weeding at 20 & 40 DAS. Further, It was obtained highest BCR of 1.66 which was followed by BCR of 1.65 under two hand weeding at 20 & 40 DAS.

KEY WORDS: BCR, coriander, weed management

INTRODUCTION

India is known as the 'Home of spices' from very ancient times. Spices play pivotal role in human diet as well as they give an agreeable flavour and aroma to food, which add greatly to the pleasure of eating. Among the various factors known to augment the crop production, the weed management is the key factor. Coriander, a short-stature crop, seed takes longer time for germination and also having slow early vegetative growth, the crop is very sensitive to early weed competition. Uncontrolled weed can reduce coriander seed yield by 82 per cent (Sagarka *et al.*, 2005).

MATERIALS AND METHODS

A field experiment was conducted during 2012-13 and 2013-14 at the Research Farm, Navsari agricultural University, Navsari, Gujarat. The soil was clay in texture, having 0.53% organic C, medium in

available nitrogen (267 kg/ha) and phosphorus (32.1 kg/ha), fairly rich in available potassium 152 (342 kg/ha) and slightly alkaline in reaction (pH 7.9) with normal electrical conductivity (0.33). The experiment consisted of ten weed management treatments viz., Pendimethalin 1.0 kg/ha (PE), Pretilachlor 1.5 kg/ha (PE), Pendimethalin 1.0 kg/ha (PE) + Quizalofop ethyl 0.04 kg/ha at 20 DAS, Pendimethalin 1.0 kg/ha (PE) + Metribuzin 0.30 kg/ha at 20 DAS, Pretilachlor 1.5 kg/ha (PE) + Quizalofop ethyl 0.04 kg/ha at 20 DAS, Pretilachlor 1.5 kg/ha (PE) + Metribuzin 0.30 kg/ha at 20 DAS, Quizalofop ethyl 0.04 kg/ha at 20 DAS + One hand weeding at 40 DAS, Metribuzin 0.30 kg/ha at 20 DAS + One hand weeding at 40 DAS, Two hand weeding at 20 and 40 DAS and Weedy check (Control) were evaluated on coriander cv. Gujarat Coriander 2.

The experiment was laid out in Randomized Block Design with four replications. The observations were recorded on dry weight of weeds, Weed Control Efficiency, Weed Index, seed yield and straw yield by adopting appropriate procedure.

RESULTS AND DISCUSSION

Effect on weeds

Among the different treatments tried, W₃ (Pendimethalin 1.0 kg /ha as pre-emergence + Quizalofop ethyl 0.04 kg/ha at 20 DAS) recorded significantly the lowest total weed density (25.5 per m²) at 20 DAS. Treatment W₁₀ (weedy check) recorded significantly higher total weed density (77.3 per m²). While incase of 40 DAS and at harvest significantly lowest total weed density was recorded under W₉ (Two hand weeding at 20 and 40 DAS), which was statistically at par with treatment W₃ and at harvest treatment W₇ & W₈. Its might be due to effectively control of different weed species by the application of herbicides with integration of hand weeding.

The data in Table 1 revealed that the lower dry weight of weeds were recorded at 40 DAS (16.9 g) and at harvest (549 kg/ha) with treatment W₉ (Two hand weeding at 20 and 40 DAS) due to hand weeding. Owing to fact that hand weeding cause a substantial reduction in weed density, hence recorded the lowest dry weight of weeds. It was statistically at par with treatment W₃ at 40 DAS and treatment W₇ at harvest. Treatment W₁₀ (weedy check) recorded significantly the highest dry weight of weeds (1744 kg /ha). These findings are in conformity with those reported by Meena and Mehta (2009), Nagar *et al.* (2009a) and Choudhary *et al.* (2014).

The highest weed control efficiency was registered under W₉

(Two hand weeding at 20 and 40 DAS). The lower weed control efficiency observed under treatment W₁₀ (Weedy check). The highest WCE (79.30 %) was registered under treatment W₃ (Pendimethalin 1.0 kg /ha as pre-emergence + Quizalofop ethyl 0.04 kg/ha at 20 DAS) followed by treatment W₅ (Pretilachlor 1.5 kg /ha as pre-emergence + Quizalofop ethyl 0.04 kg /ha at 20 DAS), treatment W₇ (Quizalofop ethyl 0.04 kg /ha at 20 DAS + One hand weeding 40 DAS) and treatment W₄ (Pendimethalin 1.0 kg /ha as pre-emergence + Metribuzin 0.30 kg /ha at 20 DAS) with a value of 68.81, 63.89 and 58.56 %, respectively. Similar findings were reported by Raghvani *et al.* (1985), Kothari *et al.* (1989), Meena and Mehta (2009), Nagar *et al.* (2009a and b) and Yadav and Keshwa (2013).

The highest Weed Index (WI) (41.08 %) was recorded under treatment W₁₀ (weedy check) (Table 1). Among rest of the treatments, the lower WI 0.00, 3.28 and 8.24 per cent were recorded under treatments W₃ (Pendimethalin 1.0 kg /ha as pre-emergence + Quizalofop ethyl 0.04 kg/ha at 20 DAS), W₉ (Two hand weeding at 20 and 40 DAS) and W₄ (Pendimethalin 1.0 kg /ha as pre-emergence + Metribuzin 0.30 kg /ha at 20 DAS), respectively.

Effect on yield, yield attributes and Economics

Seed and straw yield (Table 2) were produced significantly higher under treatment W₃ (Pendimethalin 1.0 kg /ha as pre-emergence + Quizalofop ethyl 0.04 kg/ha at 20 DAS) and it was found at par with treatment W₉ (Two hand weeding at 20 & 40 DAS). The increase in seed and straw yield over weedy check was 69.77 and 69.11 per cent due to treatments W₃ (Pendimethalin 1.0 kg /ha as pre-emergence + Quizalofop ethyl 0.04

kg/ha at 20 DAS) and W₉ (Two hand weeding at 20 & 40 DAS), respectively. Analogous findings have been reported by Kothari *et al.* (1989), Raghvani *et al.* (1985), Shukla *et al.* (2003), Tewari *et al.* (2005), Nagar *et al.* (2009a and b) and Choudhary *et al.* (2014).

Economics

So far economics is concerned, among the various weed management treatments, pre-emergence application of Pendimethalin 1.0 kg /ha as pre-emergence + Quizalofop ethyl 0.04 kg/ha at 20 DAS (W₃) secured highest BCR of 1.66, which was closely followed by BCR of 1.65 under treatment W₉ (Two hand weeding at 20 and 40 DAS) (Table 1). Weedy check (W₁₀) recorded the lowest BCR of 1.18. The result substantiated the finding of Choudhary *et al.* (2014), who reported that significantly higher net return was obtained by two hand weeding. Similarly, the results are in agreement with those reported by Senthivel (2001), Patel *et al.* (2004), Sagarka *et al.* (2005), Tewari *et al.* (2005), Nagar *et al.* (2009a and b) and Meena and Mehta (2009).

CONCLUSION

From the results, it can be concluded that application of pendimethalin 1.0 kg/ha + quizalofop ethyl 0.04 kg/ha at 20 DAS were found most effective for weed management in coriander, as it reduced the dry weight of weeds and recorded the higher seed (747 kg/ha) and straw yields (1977 kg/ha) with high BCR of 1.66.

REFERENCES

- Choudhary, I.; Yadav, S. S.; Yadav, L. R.; Sharma, O. P. and Yadav, B. L. (2014). Effect of weed and nitrogen management on coriander (*Coriandrum sativum* L.) yield and economics. *J. Spices Arom. Crops*, **23**(1): 38-44.
- Kothari, S. K.; Singh, J. P. and Singh, K. (1989). Chemical weed control in Bulgarian coriander (*Coriandrum sativum* L.). *Trop. Pest Mgt.*, **35**: 2-5.
- Meena, S. S. and Mehta, R. S. (2009). Integrated weed management in coriander (*Coriandrum sativum*). *Indian J. Agril. Sci.*, **79** (10): 824-826.
- Nagar, R. K.; Meena, B. S. and Dadheech, R. C. (2009a). Effect of integrated weed and nutrient management on weed density, productivity and economics of coriander (*Coriandrum sativum* L.). *Indian J. Weed Sci.*, **41**(1/2): 71-75.
- Nagar, R. K.; Meena, B. S. and Dadheech, R. C. 2009. Effect of weed and nutrient management on growth, yield and quality of coriander (*Coriandrum sativum* L.). *Indian J. Weed Sci.*, **41** (3/4): 183-188.
- Patel, R. H.; Shroff, Jagruti; Usadadia, V. P. and Shah, S. N. (2004). Influence of nitrogen and weed management practices on weeds and coriander. *Indian J. Weed Sci.*, **36**(1/2): 86-88.
- Raghvani, B. R.; Malavia, D. D. and Kavani, H. D. (1985). Evaluation of herbicides in coriander (*Coriandrum sativum* L.). *Abstracts of papers, Annual Conference of Indian Society of Weed Science*, 1985.
- Sagarka, B. K.; Ramani, B. B., Mathukia, R. K. and Khanpara, V. D. (2005). Integrated weed management in coriander. *Indian J. Weed Sci.*, **37** (3/4): 231-233.

- Senthivel, T. (2001). Chemical weed control in rainfed coriander. *Madras Agric. J.*, **88** (7/9): 532-533.
- Shukla, H. O.; Tripathi, S. S.; Singh, G. and Singh, R. (2003). Effect of post-emergence herbicides on seed yield of coriander (*Coriandrum sativum* L.) and associated weeds. *Indian J. Weed Sci.*, **35**(3/4): 294-295.
- Tewari, A. N.; Tiwari, S. N.; Tripathi, A. K. and Singh, S. K. (2005). Herbicidal control of weeds in coriander (*Coriandrum sativum*) with special reference to *Coronopus didymus*. *Indian J. Weed Sci.*, **37**(3/4): 234-236.
- Yadav, L. R. and Keshwa, G. L. 2013. Growth and yield of coriander (*Coriandrum sativum* L.) as influenced by weed management and nitrogen levels. *Indian J. Agron.*, **58** (4): 597-602.

Table 1: Weed growth and weed control efficiency as influenced by weed management

Treatments	Dry Weight of Weeds		WCE (%)	WI (%)	Seed Yield (kg/ha)	Straw Yield (kg/ha)	BCR
	40 DAS (g/m ²)	At Harvest (kg/ha)					
Pendimethalin 1.0 kg /ha (PE)	75.7	1207	34.01	27.82	539	1319	1.29
Pretilachlor 1.5 kg /ha(PE)	86.2	1413	24.83	33.40	498	1297	1.24
Pendimethalin 1.0 kg /ha (PE) + Quizalofop ethyl 0.04 kg/ha at 20 DAS	23.8	882	79.30	--	747	1977	1.66
Pendimethalin 1.0 kg /ha (PE) + Metribuzin 0.30 kg /ha at 20 DAS	47.5	946	58.56	8.24	686	1714	1.57
Pretilachlor 1.5 kg /ha (PE) + Quizalofop ethyl 0.04 kg /ha at 20 DAS	35.8	1015	68.81	18.46	609	1592	1.39
Pretilachlor 1.5 kg /ha (PE) + Metribuzin 0.30 kg /ha at 20 DAS	57.5	1084	49.87	14.13	642	1605	1.52
Quizalofop ethyl 0.04 kg /ha at 20 DAS + One hand weeding 40 DAS	41.4	697	63.89	21.81	584	1577	1.33
Metribuzin 0.30 kg /ha at 20 DAS + One hand weeding 40 DAS	59.2	783	48.39	18.77	607	1581	1.42
Two hand weeding (20 & 40 DAS)	16.9	549	85.27	3.28	723	1928	1.65
Weedy check (Control)	114.7	1744	0	41.08	440	1169	1.18
S.Em ₊	2.96	82.78			25.04	73.90	
CD (P=0.05)	9.48	264.83			80.10	236.43	
C.V. %	10.61	16.04			8.24	9.38	

Data in parentheses indicate actual values and outside parentheses indicate (X+1) transformed values,

WCE: Weed Control Efficiency, WI: Weed Index

[MS received: March 05, 2017]

[MS accepted: March 14, 2017]