Research Paper :

Management of Stemgall of Coriander Through IDM Practice

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SUMMARY

Stemgall of coriander (*Coriandrum sativum* L.) due to *Protomyces macrosporus* causes much damage to the crop. To manage the disease through IDM practice, experiment was conducted with ten treatments of chemicals, solarization and biocontrol agents for seed treatment, soil treatment and seed + soil treatments with three replications. The seed treatments with *Trichoderma viride* @ 4 g/kg seed+ soil treatment with *Trichoderma viride* @ 2 kg/ha gave the lowest disease intensity of 6.12% with maximum grain yield 14.51 q/ha and highest per cent disease control (51.31) over control treatment.

Key words : Soil solarization, *Trichoderma viride*, Stemgall, *Protomyces macrosporus*

Coriander (*Coriandrum sativum* L.) is one of the first seed spices to be used by mankind as early as 5000 BC. It is popular for its aromatic seeds, leaves and stems. Coriander suffers from a number of diseases of fungal origin in which stemgall of coriander caused by *Protomyces macrosporus* is responsible for reduction and uncertain yield of coriander. The pathogen in seed as well as soil borne and causes upto 15% damage to seed yield (Gupta, 1954). Most of the varieties are highly susceptible to stemgall and to minimize the infection of the fungus, the present investigation was laid out.

MATERIALS AND METHODS

The experiment was laid out at the research farm of Department of Vegetable Science, Chandra Shekhar Azad University of Agriculture and Technology, Kanpur in randomized block design with ten treatments along with three replications. The coriander variety, Azad Dhania -1 was taken for disease management. Crop was sown after through mixing of organic manure 115 q/ha, phosphatic fertilizer (40 kg P_2O_5/ha), potasic fertilizer (30 kg MOP/ha) and one third nitrogenous fertilizer (20 kg/ha) in the soil. Remaining dose of nitrogen fertilizer was applied as broadcast at 30 days (20 kg/ha) and at 60 days (20 kg/ha) after sowing. The soil of experiment plot was sandy loam in nature, well drained with low CN ratio. The experiment was conducted by infected seed in both the years (2005-06 and 2006-07). Seed treatment, seed solarization (Seeds kept on cemented floor for eight hours photo period 8.00 AM to 4.00 PM in last week of May), soil solarization and soil treatment by chemicals and bioagents were done as discribed by Lifschitz *et al*. (1985) and Pullman *et al*. (1981). Two foliar sprays of chemical (Carbendazim 0.1%) was done at 45 and 60 days after sowing. Observations on disease intensity and seed yield were recorded in both the crop seasons. The treatments *viz.*, seed treatment by Agrosan GN @ 2g/kg of seed (T_1), seed treatment by thiram @ 2 g/kg of seed (T_2), seed treatment by carbendazim @ 2 g /kg of seed (T_3), seed treatment by carbendazim @ 1 g + thiram @ 1 g /kg of seed (T_4), seed treatment by carbendazim @ 1 g + captan @ 1 g /kg of seed (T_5), seed treatment by carbendazim 2 g/ kg seed +two foliar sprays of carbendazim 0.1% (T_6), seed treatment by thiram 2 g/kg seed + two foliar sprays of carbendazim 0.1% (T_7), seed solarization + soil solarization for 30 days (20 May to 18 June) by 200 gauge polythene (T_8) and seed treatment by *Trichoderma viride* @ 4 g/kg seed + soil treatment by *Trichoderma viride* @ 2 kg/ha (T_9) and control (T_{10}) were used.

RESULTS AND DISCUSSION

The results obtained from the present investigation are presented in Table 1.

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Table 1 : Effect of treatments on disease intensity and yield of coriander

Sr. No.	Treatment	Disease intensity (%)		Average	Yield (q/ha)		Average	% Disease control
		2005-06	2006-07		2005-06	2006-07		
T_1	Seed treatment with Agrosan GN 2g/kg seed	9. 00	9. 10	9. 05	13. 15	13. 20	13. 17	28. 00
T_2	Seed treatment with thiram 2g/kg seed	8. 65	8. 80	8. 72	13. 30	13 . 35	13. 32	30. 62
T_3	Seed treatment with Carbendazim 2g/kg seed	8. 10	8. 15	8. 12	13. 40	13. 35	13. 38	35. 40
T_4	Seed treatment with Carbendazim 1 g+thiram 1 g / kg seed	7. 45	7. 65	7. 55	13. 60	13. 55	13. 57	39. 93
T_5	Seed treatment with Carbendazim 1 g+captan 1 g / kg seed	8. 20	8. 18	8. 19	13. 35	13. 40	13. 38	34. 84
T_6	Seed treatment with Carbendazim 2 g /kg seed + two foliar sprays of Carbendazim (0.1%)	7. 35	7. 49	7. 42	13. 75	13. 60	13. 67	40. 97
T_7	Seed treatment with thiram 2 g /kg seed + two foliar sprays of Carbendazim (0.1%)	7. 05	7. 19	7. 12	14. 40	13. 85	14. 12	43. 35
T_8	Seed solarization + soil solarization for 30 days (20 May to 18 June)	6. 65	6. 70	6. 17	14. 40	14. 25	14. 31	50. 91
T_9	Seed treatment with *T. viride* 4 g /kg seed + Soil treatment with *T. Viride* 2 kg /ha	6. 15	6. 10	6. 12	14. 60	14. 45	14. 51	51. 31
T_{10}	Control	12. 65	12. 50	12. 57	12. 80	12. 95	12. 87	-
	C.D. (P =0.05)		0. 91	0. 64			0. 57	0. 94
	CV %		2. 35	1. 64			1. 77	2. 93

Disease intensity:

The perusal of results of Table 1, depicts that significantly (P<0.05) average lower disease intensity was recorded in seed treatment by *Trichoderma viride* 4 g/ kg seed +soil treatment by *Trichoderma viride* 2 kg/ha (6.12 %) as compared to seed solarization + soil solarization for 30 days (20 May to 18 June) in both the years (6.17 %); seed treatment by thiram 2g/kg seed + two foliar sprays of (0.1%) carbandazim (7.12%); seed treatment by carbendazim 2 g/kg seed + two foliar sprays of (0.1%) carbendazim (7.42%), seed treatment by carbendazim 1 g + thiram 1 g/kg seed (7.55 %); seed treatment by carbendazim 2 g/kg seed (8.12%); seed treatment by thiram 2 g /kg seed (8.72%) and seed treatment by Agrosan GN 2 g/kg seed (9.05%). The disease intensity recorded in present investigations is in conformity of findings reported by EI-Rafai *et al*. (2003) and Nakkeeran and Devi (1997).

Yield:

The average yield of coriander was 14.51, 14.31, 14.12, 13.67, 13.57, 13.38, 13.38, 13.32, and 13.17 q/ha in T_9, T_8, T_7, T_6, T_4, T_3, T_5, T_2 and T_1, respectively. The statistical analysis revealed that significantly (P<0.05) higher yield of coriander was recorded in seed treatment by *Trichoiderma viride* 4 g/kg seed +soil treatment by *Trichoderma viride* 2 kg/ha (T_9) because of low seed and soil inoculum of the fungus. The finding of present investigation is similar to that as reported by Deepak *et al*. (2008) in case of blight of Cumin.

CONCLUSION

On the basis of above results it may be concluded that seed treatment with *Trichoderma viride* 4 g/kg seed + soil treatment by *Trichoderma viride* 2 kg/ha may be recommended for management of stemgall of coriander.

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