Response of IDM Practice in Conjunction With Indigenous Technical Knowledge for Managing Downy Mildew of Cucumber

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International Journal of Plant Protection, Vol. 2 No. 1 : 88-90 (April, 2009 to September, 2009)

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SUMMARY

An investigation was carried for the management of downy mildew of cucumber through IDM practice in conjunction with I.T.K. Thirteen treatments were tested with three replications. Seed treatment with Ridomil MZ -72 (0.25%) + one foliar spray of organophosphorus allite (0.25%) at 45 day after sowing on bower system gave the average minimum disease intensity (12.98%) and maximum fruit yield (318.26 q/ha). The next best treatment was seed treatment with Ridomil MZ-72 (0.25%) + one spray of Akormin (Potassum phosphorate) 0.3% as regards to general health of the plants.

Key words : Allite, Akomin, Salicylic acid, Cucumber, Downy mildew, *Pseudoperonospora cubensis*

Accepted :* *February, 2009

Cucumber suffers from a number of diseases caused by fungal pathogens such as *Pseudoperonospora cubesis*, *Erysiphe cichoracearum, Colletotrichum lagenarium, Fusarium oxysporum, Fusarium solani, Alternaria cucumerina,* and *Rhizoctonia solani*. Among them, downy mildew caused by *Pseudoperonospora cubesis* is a serious disease as reported by Mahrishi and Sirdhana (1988). The spread of the disease is more common, rapid and devastating under sprinkler condition and rainy season (Qureshi, 1981).

MATERIALS AND METHODS

For seed treatment, Ridomil MZ-72 was used with foliar spray of Akomin, Allite, Mancozeb and cow urine and cow dunk slurry. In ITK practice, removal of infected leaves, disease free seed and bower system were used. The soil of experiment plot was sandy loam in nature, well drained with low C.N. ratio. The most susceptible variety of cucumber, K. Green was grown in the sickplot. Crop was planted after thoroughly mixing the FYM 25t/ha, 30 kg nitrogen/ha, 30 kg phosphorus /ha and 30 kg potash/ha in the soil. Remaining dose of nitrogen (30kg/ha) was broadcast at 35 days after sowing. In bower system, plants stagging were done just after irrigation and before flowering of the crop. The seed treatment was done before 12 hrs of sowing. The foliar spray of chemical and bioagent was done as per described in the treatment. Irrigation management was done as per crop requirement and weeds were managed manually. Observation on disease intensity was recorded in both the crop seasons. The experiment was conducted at Vegetable Research Station Kalyanpur, Kanpur in RBD having thirteen treatments *viz.* seed treatment with Ridomil MZ-72 (0.25%)+ one spray of Akomin (Potassium phophorate (0.3%) at 45 days after sowing, seed treatment with Ridmil MZ-72 (0.25%)+ 3 sprays Mancozeb (0.25%) at 40, 50 and 60 days after sowing, seed treatment with Ridomil MZ-72 (0.25%)+2 need based sprays of Salicylic acid 25 ppm at 30 and 60 days after sowing, seed treatment with Ridomil MZ- 72 (0.25%)+ removal of lower infected leaves in morning and foliar spray of Mancozeb (0.25%) in evening at 40, 50 and 60 days after sowing, disease free seed from summer crop+ need based spray of cow dung 5% + cow urine 5% slurry. Seed treatment with Ridomil MZ-72 (0.25%) + one spray of Akomin (Potassium phosphonate (0.3%) at 45 days after sowing on bower system, Seed treatment with Ridomil MZ-72 (0.25%)+ one need base spray of Allite (0.25%) at 45 days after sowing on bower system, Seed treatment with Ridomil MZ-72 (0.25%)+3 sprays of Mancozeb (0.25%) at 40, 50 and 60 days after sowing on bower system, Seed treatment with Ridomil MZ-72 (0.25%)+2 need base sprays of salicylic acid 25 ppm at 30 and 60 days after sowing on bower system, Seed treatment with Ridomil MZ-72 (0.25%)+ removal of infected leaves in morning and foliar spray of Mancozeb (0.25%) in evening at 40,

50, and 60 days on bower system and Disease free seed from summer crop+ 3 need based spray of cow Dung+ Cow urine slurry at 40, 50 and 60 days after sowing on bower system with three replications during 2006 and 2007.

RESULTS AND DISCUSSION

Disease intensity:

Perusal of results as depicted in Table 1 revealed that significantly (P<0.05) lower disease intensity was recorded in seed treatment with Ridomil MZ-72 (0.25%) + one need base spray of (organophosphorus) Allite (0.25%) at 45 days after sowing on bower system (12.98%) as compared to seed treatment with Ridamil MZ-72 (0.25%)+ one spray of Akomin (Potassium phosphonates) (0.3%) at 45 days after sowing (13.98%) seed treatment with Ridomil MZ-72 (0.25%)+3 sprays of Mancozeo (0.25%) at 40, 50 and 60 days after sowing, seed treatment with Ridamil MZ-72 (0.25%)+2 need based sprays of Salicylic acid 25pp m at 30 and 60 days after sowing , seed treatment with Ridamol MZ -72 (0.25%) +removal of lower infected leaves in morning and foliar spray of spray of Mancozob (0.25%) in evening at 40,50 and 60 days after sowing. Disease free seed from summer crop+ need based spray of cow dung+cow urine slurry (5%) at 40, 50 and 60 days after sowing, Seed treatment with Ridomil MZ-72 (0.25%) + one spray of Akomin (Potassium phosphonate (0.3%) at 45 days after sowing on bower system, Seed treatment with Ridomil MZ-72 (0.25%)+3 sprays of Mancozeb (0.25%) at 40, 50 and 60 days after sowing on bower system, Seed treatment with Ridomil MZ-72 (0.25%)+2 need base sprays of salicylic acid 25 ppm at 30 and 60 days after sowing on bower system, Seed treatment with Ridomil MZ-72 (0.25%)+ removal infected leaves in morning and foliar spray of Mancozeb (0.25%) in evening at 40, 50, and 60 days on bower system and Disease free seed from summer crop+ 3 need based spray of cow Dung+ cow urin slurry at 40, 50 and 60 days sowing on bower system. The disease intensity recorded in present investigation is in conformity of finding reported by Hansen (2000), who reported that older leaves near soil infected first so that bower system may be effective. Sain and Sharma *et al*. (1999) reported Ridomil MZ-72 (0.2%) and Fosetyl A_1 (organophosphorus) (0.25%) most effective which controled the disease 78.3% and 75.8% over control,

Table 1 : Effect of treatment on disease intensity and yield in cucumber

Sr. No.	Treatments	Disease intensity		Mean	Yield q/ha		Mean	% Disease control
		2006	2007		2006	2007		
T_1	Seed treatment with Ridomil MZ-72 (0.25%) + one spray of Akomin (Potassium phosphonate (0.3%) at 45 days after sowing	14.33	13.62	13.98	326.23	206.71	266.47	73. 86
T_2	Seed treatment with Ridomil MZ-72 (0.25%)+ one need base spray of Allite (0.25%) at 45 days after sowing	16.67	16.53	16.60	241.72	156.42	199.07	68. 96
T_3	Seed treatment with Ridomil MZ-72 (0.25%)+3 sprays of Mancozeb (0.25%) at 40, 50 and 60 days after sowing	17.00	18.77	17.89	225.05	149.75	187.40	66. 55
T_4	Seed treatment with Ridomil MZ-72 (0.25%)+2 need base sprays of Salicylic acid 25 ppm at 30 and 60 days after sowing	32.00	31.30	31.65	158.65	137.25	147.95	40. 82
T_5	Seed treatment with Ridomil MZ-72 (0.25%)+ removal infected leaves in morning and foliar spray of Mancozeb (0.25%) in evening at 40, 50, and 60 days	17.67	17.48	17.58	225.33	158.09	191.71	67.13
T_6	Disease free seed from summer crop+ 3 need based spray of cow dung+ cow urine slurry at 40, 50 and 60 days sowing	41.33	32.72	37.03	150.86	148.92	149.89	30. 76
T_7	T_1 on bower system	16.33	16.32	16.33	233.10	156.14	194.62	69. 47
T_8	T_2 on bower system	13.67	12.28	12.98	340.07	296.45	318.26	75. 73
T_9	T_3 on bower system	19.33	17.48	18.41	291.39	178.37	234.88	65. 58
T_{10}	T_4 on bower system	36.00	25.65	30.83	190.37	164.48	177.43	42. 35
T_{11}	T_5 on bower system	26.67	23.50	25.09	261.72	173.09	217.41	53. 09
T_{12}	T_6 on bower system	46.00	42.40	44.20	122.57	139.42	131.00	17. 35
T_{13}	Control	56.67	50.28	53.48	93.35	80.16	86.76	
CD (P= 0. 05)		6.30	3.72	36.17	27.49			
CV%		9.03	5. 58	7.20	7.28			

respectively. Yucel and Gncu (1994) reported best control of downy mildew by Fosetyl A_1 (organophosphorus) and Fosetyl A_1+ Mancozeb.

Fruit yield :

The maximum yield of cucumber was 318.26 q/ha in seed treatment with Ridomil MZ-72 (0.25%)+ one need base spray of (organophosphorus) Allite (0.25%) at 45 days after sowing on bower system followed by seed treatment with Ridomil MZ- 72 (0.25%)+ one spray of Akomin (Potassium phosphonate) 0.3% at 45 days after sowing. All other treatments were statistically superior over control. The present finding is in accordance with the findings of Sain and Sharma (1999) and Sharma and Rajpurohit (2004).

Per cent disease control :

In term of per cent disease control (PDC), seed treatment with Ridomil MZ-72 (0.25%)+ one need base spray of (organophosphorus) Allite (0.25%) at 45 days after sowing on bower system gave maximum P.D.C. (75.73) followed by seed treatment with Ridomil MZ-72 (0.25%)+ one spray of Akomin (Potassium phosphonate) 0.3% at 45 days after sowing. Other treatments in per cent disease control were statistically superior over control. Finding of per cent disease control is in accordance with that of Sharma and Rajpurohit (2004).

CONCLUSION

Seed treatment with Ridomil MZ-72 (0.25%) +one foliar spray of (organophosphorus) allite (0.25%) at 45 days after sowing on bower system, decreased downy mildew infection and increased the fruit yield of cucmber.

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