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Effect of mancozeb and propiconazole on *Alternaria* blight of *Lepidium sativum* and its seed yield

RS Mishra**Abstract**

Lepidium sativum is an important medicinal plant with high pharmacological properties has been affected by many fungal pathogens particularly *Alternaria alternate* characterized with brown necrotic spots on the leaf surface affecting the seed yield. Disease is positively correlated with weather parameters. Therefore, scheduling of fungicides spray proved to be effectiveness for mitigate the disease incidence and increase the seed yield. The minimum percent disease intensity (12.0) and maximum seed yield (20.0 q/ha) were recorded in mancozeb sprayed thrice at 40 + 55 + 70 days after sowing followed by spraying of propiconazole 40+55+70 DAS and mancozeb 40+55 DAS.

Keywords: Asalio, *Alternaria alternate*, mancozeb, propiconazole disease intensity, seed yield

Introduction

Asalio (*Lepidium sativum*) is an important medicinal plants with having pharmacological properties. It is an annual herb belonging to brassicaceae family. *Lepidium* seeds are an important source of iron, folic acid, calcium and vitamins. The seeds also contains arachidic, linolic fatty acids and protein (Doke and Guha, 2014) [3]. In spite of immense pharmaceutical important, the cultivation of asalio is not increasing very fast in northern part of India due to infection of diseases particularly *Alternaria alternate* characterized by appearance of brown necrotic spot on the leaf margin (Brunner *et al.*, 2003) [2]. The leaf blight disease caused by *Alternaria alternata* has potential to destroy asalio within a short period causing both quantitative and qualitative losses of crop yield (Reddy 2017) [7]. In absence of durable host resistance, which is hardly available in the commercial cultivation of asalio, fungicides serve as the most suitable methods for controlling leaf blight disease. But in India not much information is available for their proper use in time to avoid the problem of resistance build up in the target pathogen. The present study was undertaken to assess the performance of spray scheduling to avoid the yield loss.

Materials and Methods

Field experiment was carried out during rabi, 2019-20 with 15 treatments *viz*; T₁= Spraying of mancozeb 40 days after seed sowing (DAS), T₂= Spraying of mancozeb 55 DAS, T₃= Spraying of mancozeb 70 DAS, T₄= Spraying of mancozeb 40+55 DAS, T₅= Spraying of mancozeb 40+70 DAS, T₆= Spraying of mancozeb 55+70 DAS, T₇= Spraying of mancozeb 40 +55+70 DAS, T₈=Spraying of propiconazole 40 DAS, T₉= Spraying of propiconazole 55 DAS, T₁₀= Spraying of propiconazole 70 DAS, T₁₁=Spraying of propiconazole 40+55 DAS, T₁₂=Spraying of propiconazole 40+70 DA propiconazole S, T₁₃=Spraying of propiconazole 55+70 DAS, T₁₄=Spraying of propiconazole 40+55+70 DAS, T₁₅= Untreated control and three replication. Plat size was 2.7 x 1.8 m w propiconazole ith 30 x 10cm spacing in randomized block design the standard agronomical practices of *Lepidium* were adopted. The first disease appearance in each treatment was recorded. The spraying of fungicides was done as per treatments. The data of disease intensity was recorded at post flowering stage with 0-5 scale. Data of disease intensity were calculated as per formula described by Sohi and Sridhar (1972) [8]. Yield data was recorded in all treatments at the time of harvest.

$$\text{Sum of all numerical ratings} \times 100$$

$$\text{PDI} = \frac{\text{Sum of all numerical ratings} \times 100}{\text{Total number of leaves examined} \times \text{Highest rating}}$$
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Results and Discussion

The effects of the various treatments on the disease intensity and seed yield are presented in the Table-1. It appears from the results that mancozeb reduced the disease intensity more efficiently than propiconazole. The seed yield was also more in the mancozeb treated plants. However, performance of both the fungicides in reducing the disease intensity and increment in seed yield was significantly better than the plants of untreated control. The delay in application of fungicidal spray proportionately decreased the seed yield with concomitant increase in the PDI. However, even after late stage of the plant growth, the disease caused considerable loss in yield. Thus, three sprays of the fungicide seem to be unavoidable. The minimum percent disease intensity (12.0) and maximum seed yield (20.0 q/ha) were recorded in mancozeb sprayed thrice at 40 + 55 + 70 days after sowing followed by spraying of propiconazole 40+55+70 DAS and mancozeb 40+55 DAS,. Time scheduling of fungicide application is important because blight development have positive correlation with weather

parameters. Protective application of fungicides was found to provide better control of leaf blight than the post infection treatments. It was also shows that contact fungicides have been checking the disease more effectively as protective treatment only. Systemic fungicide was found effective over the control. Although, systemic fungicides have excellent eradivative action, but their curative use should be avoided due to risk of resistance development. Urech (1989) [9], supported with the studies conducted on *Alternaria alternata*. The lowest disease severity was reported in the mancozeb foliar spray against alternaria blight of Indian mustard (Meena *et al.* 2010) [6]. Meena *et al.* (2020) [7] reported 75.94% mycelia growth inhibition of *Alternaria alternata* by mancozeb (Dithane M-45). Earlier workers have found effective control of alternaria leaf blight of mustard with four spray of Indofil M-45 with initiation of diseases (Brains and Jhooty, 1979; Kumar, 1996) [1, 4]. The information about the efficacy of propiconazole for controlling asialio disease is scanty.

Table 1: Effects of mancozeb and propiconazole on percent disease intensity (PDI) of *Alternaria* blight of Chandrasoor and its seed yield

Treatments	PDI	Seed yield (q/h)
T ₁ = Spraying of mancozeb 40 days after sowing (DAS)	19.91	12.36
T ₂ = Spraying of mancozeb 55 DAS	21.72	11.6
T ₃ = Spraying of mancozeb 70 DAS	24.59	8.8
T ₄ = Spraying of mancozeb 40+55 DAS	14.55	19.3
T ₅ = Spraying of mancozeb 40+70 DAS	15.35	15.8
T ₆ = Spraying of mancozeb 55+70 DAS	16.10	17.36
T ₇ = Spraying of mancozeb 40 +55+70 DAS	12.00	20.00
T ₈ =Spraying of propiconazole 40 DAS	21.41	10.97
T ₉ = Spraying of propiconazole 55 DAS	24.04	10.27
T ₁₀ = Spraying of propiconazole e 70 DAS	30.76	9.93
T ₁₁ =Spraying propiconazole 40+55 DAS	15.05	16.87
T ₁₂ =Spraying of propiconazole 40+70 DAS	15.58	15.83
T ₁₃ =Spraying propiconazole 55+70 DAS	18.25	11.18
T ₁₄ =Spraying of propiconazole 40+55+70 DAS	13.01	17.71
T ₁₅ = Untreated control	59.83	8.91
CD (p=0.05)	3.122	3.07
CV %	8.142	10.09

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