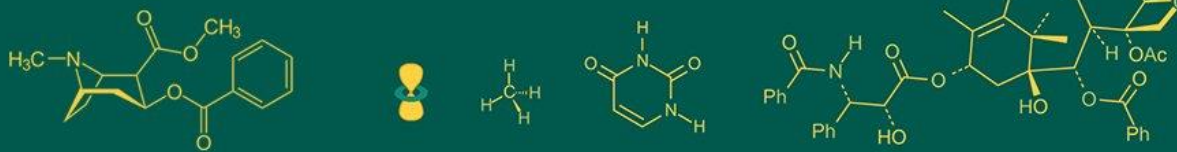


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## Management of *Alternaria* blight of Ashwagandha Using fungicides

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### Abstract

A study was done in the field during the years 2019-20 and 2020-21 to investigate the management of *Alternaria* blight in Ashwagandha using fungicides. The fungicides Vitavax Power and Mancozeb had the lowest PDI values of 5.4 and 5.6, respectively, out of the six fungicides that were assessed. The highest yield was observed in Vitavax Power (7.5 q/ha) and Mancozeb (6.7 q/ha), whereas Chlorothalonil had a yield of 5.8 q/ha.

**Keywords:** Ashwagandha, *Alternaria alternata*, management, fungicides

### Introduction

Ashwagandha [*Withania somnifera* (L.) Dunal], is a plant that is native to India and related to the family Solanaceae. It is considered to be a vital tropical medicinal plant. It is native to the Mediterranean region of North Africa and grows naturally in woodlands, particularly in drier regions of India such as Madhya Pradesh, the foothills of Punjab, Himachal Pradesh, western Uttar Pradesh, and the Himalayas. It is also found in the Himalayas. Approximately four thousand hectares of land in India are used for the cultivation of Ashwagandha. With an average yield of 15.46 q/ha, it is cultivated in the districts of Neemuch, Chhindwara, Mandsaur, Seoni, Katni, Shahdol, Dewas, Dindori, Hoshangabad, and Jabalpur in the state of Madhya Pradesh (Anonymous, 2003) [2]. Louse, gynecological illnesses, cough, rheumatism, and dropsy are some of the conditions that can be treated using the roots of the plant. The overall concentration of reducing sugars (20%) and chlorophyll (26.5%) was lower in diseased leaves, whereas the amounts of proline (25%), free amino acids (3%), and proteins (74.3%) were higher in diseased leaves.

The Ashwagandha leaf blight, which was caused by *Alternaria alternata*, provided only a limited amount of information, particularly concerning the disease prediction module and treatment techniques utilized in Madhya Pradesh. Fungicides, organic manure, and biofertilizer were applied in an effort to manage the situation, which is why it was attempted.

### Materials and Methods

An experiment was done in a natural environment (*in vivo*) to study disease incidence. The experiment followed a randomized block design with three replications. Each plot had a size of 6 X 3 m<sup>2</sup>. The experiment was carried out throughout the years 2019-20 and 2020-21. Leaf blight was tested against six fungicides (Table 1) at the indicated dosage. The fungicide suspension was formulated and applied to Ashwagandha plants that were 90 days old. The plot that was treated with sterilized water was used as the control. The data was collected at regular intervals of 15 days until the sickness began, and then it was analyzed using statistical methods.

### Results and Discussion

Table 1 clearly depicted that during 2019-20 and 2020-21, the percent illness incidence was 30.5 and 32.0 percent, respectively, which was nearly equal across all therapies. The mean PDI for all treatments (fungicides) was substantially lower than the control. The highest PDI among treatments was 10.6 percent for Carboxin and 9.4 percent for Copper oxychloride. Vitavax Power and Mancozeb had minimum PDI values of 5.4 and 5.6, respectively. Similarly, all treatments considerably enhanced yield as compared to the control.

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Out of six fungicides, Vitavax Power (7.5 q/ha) and Mancozeb (6.7 q/ha) had the highest increase in yield (Kg/ha), followed by Chlorothalonil (5.8 q/ha). Copper oxychloride, Carbendazim, and Carboxin had the lowest yield and percentage disease over control.

Vitavax power has been shown to be effective in controlling *Alternaria* blight in Ashwagandha plants. However, Mancozeb spray was proven to be the most effective

(Wadibhasme *et al.*, 1991; Kathal D. and Gupta Om 2017)<sup>[8, 5]</sup>. However, a spray of carbendazim provided adequate control of Ashwagandhaleaf blight (Anonymous 1994)<sup>[1]</sup> (Kamble *et al* 2000)<sup>[4]</sup> (Patil *et al* 1992)<sup>[6]</sup>. The results contradict Wadibhasme *et al.*, (1991)<sup>[8]</sup>. This could be because Vitavax Power is a new chemical that has not been tested before.

**Table 1:** Efficacy of various fungicides against *Alternaria* blight of Ashwagandha caused by *Alternaria alternata*

Treatment	Does %	PDI (%)		Mean (%)	Yield Q/ha		Mean Q/ha
		2019-20	2020-21		2019-20	2020-21	
Carboxin	0.10	10.53	10.6	10.6	5.50	5.53	5.5
Copper Oxychloride	0.25	9.33	9.4	9.4	5.56	5.51	5.5
Chlorothalonil	0.20	7.6	7.6	7.6	5.77	5.77	5.8
Carbendazim	0.10	8.4	8.3	8.4	5.57	5.50	5.5
Vitavax Power	0.10	5.3	5.4	5.4	7.45	7.52	7.5
Mancozeb	0.25	5.5	5.7	5.6	6.66	6.65	6.7
Control		30.5	32.0	31.3	4.10	4.23	4.2

S.Em 0.15 0.44 0.10 0.12

CD 5% 0.33 0.96 0.22 0.26

### Conclusion

As per finding it is observed that the application of Vitavax Power @ 0.10% after 90 days of Ashwagandha crop against the *Alternaria* blight disease was best treatment for its management.

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