

# Management of *Alternaria* blight of Ashwagandha Using Organic manure and biofertilizer

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**Abstract:** Studies on management of *Alternaria* blight of Ashwagandha through organic manure and biofertilizer were conducted under field condition during the year 2019-20 and 2020-21. Among seven amendments of biofertilizers for the management of disease under field condition revealed that minimum PDI i.e 5.7 and 6.7 was observed in FYM and RDF + FYM. Similarly all the treatments significantly increased the yield as compared to control. Maximum increase in yield was recorded in FYM followed by RDF + FYM.

**Keywords:** Ashwagandha, *Alternaria alternata*, management, organic manure, biofertilizer

## INTRODUCTION

Ashwagandha [*Withania somnifera* (L.) Dunal] is an important tropical medicinal plant of India that belongs to family Solanaceae. It is native of Mediterranean region in North Africa and found naturally in forests particularly in drier regions of India including Madhya Pradesh, foot hills of Punjab, Himachal Pradesh, western Uttar Pradesh and Himalayas. Ashwagandha is cultivated in an area of about 4146 ha in India (Anonymous 2014). In Madhya Pradesh, it is cultivated in Neemuch, Chhindwara, Mandsaur, Seoni, Katni, Shahdol, Dewas, Dindori, Hoshangabad and Jabalpur districts with an average production of 15.46 q/ha (Anonymous, 2003). The roots are used in preparing medicine against Liccup, gynecological disorders, cough, rheumatism and dropsy. A decrease in total content of reducing sugars (20%) and chlorophyll (26.5%) was observed in diseased leaves whereas an increase was noticed in proline (25%), free amino acids (3%) and proteins (74.3%).

The leaf blight of Ashwagandha caused by *Alternaria alternata* revealed a little information particularly on disease prediction module in Madhya Pradesh and its management. Therefore, an attempt was made for its management by the application of organic manure and biofertilizer.

## MATERIALS AND METHODS

Experiment was conducted under field condition (in vivo) in natural disease incidence at COA, Powarkheda following randomized block design with three replications having plot size 6 X 3 m<sup>2</sup> during the year 2019-20 and 2020-21. Seven organic manure including biofertilizer were applied for controlling same disease (Table 2). Observations on percent disease incidence were recorded after the initiation of disease at an interval of 15 days and finally computed the yield.

## RESULTS AND DISCUSSION

In field condition data presented in Table 2 clearly indicated that during 2019-20 and 2020-

21 the percent disease incidence was 33.49 and 32.59 percent respectively which was near to at par at all treatments. The mean PDI of all the treatments (biofertilizer) had significantly reduced as compared to control. The maximum PDI, among treatment of 16.3 percent and 13.1 percent was recorded in Recommended does of fertilizer and Vermicompost respectively. Minimum PDI of 5.7 and 6.7 was observed in FYM and RDF + FYM. Similarly all the treatments significantly increased the yield as compared to control. Maximum increase in yield was recorded in FYM and RDF + FYM.

After the application of bio-fertilizer, maximum yield (7.6 q/ha) and % disease incidence over control was observed (5.7%) FYM followed by RDF+ FYM and FYM+ Azotobactor

+ PSB and least yield and % disease over control by RDF followed by Vermicompost out of seven amendments of bio-fertilizes.

Evaluation of seven amendments of biofertilizes for the management of disease under field condition revealed that maximum yield and minimum % disease incidence were recorded in FYM (7.6 q/ha and 5.7 percent disease incidence) followed by RDF+ FYM (7.2 q/ha and 6.7 percent disease incidence) whereas low yield coupled with low percent disease incidence were recorded in RDF (5.8 q/ha and 16.3 percent disease incidence). Effect of organic manures and biofertilizes in the control of diseases caused by *A. alternata* have been reported in different (Kathal *et al.*, 2018 Tyagi *et al.*, 1990 ; Gupta *et al.*, 1999; Jayathilake *et al.*, 2002 ; Mughrabi, 2006).

**Table 1: Efficacy of various biofertilizers 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	
T <sub>1</sub> =FYM	10t/ha	5.73	5.67	5.7	7.68	7.61	7.6
T <sub>2</sub> =FYM+ <i>Azotobactor</i> + PSB	5t/ha 2kg/ha	7.48	7.32	7.4	6.58	6.51	6.5
T <sub>3</sub> =RDF + Vermicompost	50% 5t/ha	8.3	8.13	8.2	6.37	6.30	6.3
T <sub>4</sub> =Vermicompost	5t/ha	13.17	13.07	13.1	6.04	5.99	6.0
T <sub>5</sub> =Vermicompost + <i>Azotobactor</i> + PSB	2.5t/ha 2kg/ha	8.63	8.47	8.6	6.47	6.29	6.4
T <sub>6</sub> =RDF	100%	16.39	16.28	16.3	5.81	5.72	5.8
T <sub>7</sub> =RDF+ FYM	50% 5t/ha	6.83	6.63	6.7	7.26	7.17	7.2
T <sub>8</sub> =Control		33.49	32.59	33.0	4.06	4.00	4.0
SEm±		0.61	1.53		0.41	0.37	
CD		1.8	4.66		1.24	1.14	

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