

Management of aonla rust incited by *Ravenalia emblicae* var. *fructicolae* Syd

R.G. JAT, S.K. GOYAL AND R.P. DIDEL

Department of Plant Pathology, S.K.N. College of Agriculture (SKRAU), JOBNER (RAJASTHAN) INDIA
Email : rgjat.patho@gmail.com; shashikant69@gmail.com

Indian gooseberry (*Emblica officinalis* Gaertn) commonly known as aonla is one of the important fruit crop in arid and semi arid growing regions. To see the effect of different bioagents alone and alongwith effective fungicide against aonla rust, a field experiment was conducted. Pooled data revealed that chlorothalonil (0.2 %) reduced the maximum disease intensity significantly in comparison to control and other treatments. Minimum disease severity (5.80%) was obtained in chlorothalonil (0.2 %) followed by 1% *Trichoderma viride* +0.1% chlorothalonil (8.82 PDI). Maximum per cent disease control (71.80) was obtained in chlorothalonil (0.2 %) followed by 1% *Trichoderma viride* + 0.1% chlorothalonil (57.12) and also increased fruit yield significantly in comparison to other treatments. Maximum B: C ratio was obtained with chlorothalonil 0.2% (1:1.38) followed by 1% *Trichoderma viride* + 0.1% chlorothalonil (1: 1.29).

Key words : *Emblica officinalis*, *Ravenalia emblicae*, *Trichoderma viride*, *Pseudomonas fluorescens*, Chlorothalonil, Aonla rust

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INTRODUCTION

Aonla (*Emblica officinalis* Gaertn.) is an important economic fruit crop which come up very well in vertisols even under rainfed conditions for arid and semi arid tracts, which is known for its high ascorbic acid content and for its higher medicinal and nutritive value. Rust of aonla caused by *Ravenalia emblicae* var. *fructicolae* Syd. is a serious constraint in aonla growing areas in the Rajasthan (Anonymous, 1996). This disease also widely occurs in other states like; U.P., Andhra Pradesh, Tamil Nadu, Haryana, etc. It was first observed in Rajasthan by Tyagi (1967). Affected fruits may drop before maturity causing severe loss in productivity and quality of fruits (Tyagi and Pathak, 1988; Jat and Goyal, 2004.). On the fruits, black pustules appear which sometimes cover the entire surface of the fruits. Plants with a severe attack on fruits show no symptoms on the leaves and vice-versa (Tyagi, 1967). Owing to expansion of aonla orchards, working out of management strategies is equally important to sustain the yield and quality of aonla fruits. Hence, the present study was undertaken to see the effect of different bioagents alone and alongwith effective fungicide against aonla rust.

RESEARCH METHODOLOGY

A field experiment was conducted on local cultivar at farmer's field at Itawa Bhopji village (Chomu) in statistically Randomized Block Design in the four consecutive years (2006-2007 to 2009-2010). For the management, chlorothalonil fungicide was selected and applied alone and alongwith bioagents which was found most effective against the aonla rust (Theradimani *et al*, 2006 and Anonymous, 2005). Each treatment was replicated thrice by keeping single tree per replication. Under the study different bioagents alone and alongwith effective fungicide ($T_1 = 1\% P. fluorescens$, $T_2 = 1\% P. fluorescens + 0.1\%$ chlorothalonil, $T_3 = 1\% Trichoderma viride$, $T_4 = 1\% Trichoderma viride + 0.1\%$ chlorothalonil, $T_5 = 0.1\%$ chlorothalonil alone spray and $T_6 = 0.2\%$ chlorothalonil alone spray) were tested against aonla rust. An equal number of unsprayed plants were kept as control. Four foliar sprays were given at 15 days interval and disease intensity was recorded after 20 days of last spray. First spray was given in 1st week of August, just after the initiation of the disease symptoms. The data on the development of rust on aonla fruits were recorded on the four marked fruiting twigs per plant. Diseased fruits were graded into six categories of disease incidence *i.e.* 0=healthy, 1=1-10, 2=10.1-25, 3=25.1-50, 4=50.1-