INTERNATIONAL JOURNAL OF PLANT PROTECTION / VOLUME 5 | ISSUE 2 | OCTOBER, 2012 | 315-318

IJPP

RESEARCH ARTICLE

In vitro evaluation of chemicals, botanicals and bioagents against the bacterial blight of pomegranate caused by *Xanthomonas axonopodis* pv. *punicae*

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ARITCLE INFO

Received : 20.04.2012
Revised : 08.06.2012
Accepted : 28.08.2012

Key Words :
In vitro, *Xanthomonas axonopodis* pv. *punicae*, Chemicals, Botanicals, Bioagents

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ABSTRACT

Bacterial blight of pomegranate caused by *Xanthomonas axonopodis* pv. *punicae* has become potentially destructive disease. An investigation was carried out to screen the different bactericides, bioagents and botanicals to inhibit the pathogen. Among the different chemicals, Streptocycline + COC with an inhibition zone of 3.3cm exhibited superior efficacy followed by Streptocycline (2.80cm) and COC (2.65cm). From the botanicals Tulsi leaves followed by Neem seed oil, Garlic bulb extract and Patchouli leaves were found effective. From the different antagonists, it was observed that *Bacillus subtilis* and *Pseudomonas fluorescens* were found significantly superior over other antagonists in inhibiting the growth of the pathogen.

How to view point the article : Raju, J. Benagi, V. I., Jayalakshmi, K., Nargund, V.B. and Sonavane, Priti S. (2012). *In vitro* evaluation of chemicals, botanicals and bioagents against the bacterial blight of pomegranate caused by *Xanthomonas axonopodis pv. punicae*. *Internat. J. Plant Protec.*, **5**(2) : 315-318.

INTRODUCTION

Pomegranate (*Punica granatum* L.) is an ancient fruit, belonging to the smallest botanical family Punicaceae, which is the native of Iran. It is regarded as the "Fruit of paradise". It is one of the most adaptable subtropical minor fruit crops and its cultivation is increasing very rapidly. In India, it is regarded as a "vital cash crop". Successful cultivation of pomegranate in recent years has met with different traumas such as pests and diseases. Among various diseases, bacterial blight caused by *Xanthomonas axonopodis* pv. *punicae* (Vauterin *et al*., 1995) is a major threat of pomegranate that reduces fruit quality to a greater extent.

MATERIALS AND METHODS

***Inhibition zone assay method* :**

The bacterium was multiplied by inoculating the culture into 20 ml of nutrient broth taken in 'Erleyenmayers' flask. The inoculated flasks were incubated at 30^{0}C for 72 hours. The bacterial suspension was then seeded to the lukewarm Nutrient agar medium (1000 ml). The seeded medium was poured into the sterilized Petriplates and plates were allowed to solidify. The filter paper discs (Whatman No. 42) measuring 5 mm in diameter were soaked in the respective chemical solution for 5 minutes and transferred onto the surface of the seeded medium in Petriplates. The inoculated plates were kept in the refrigerator at 5^{0}C for 4 hours to allow the diffusion of chemical into the medium. Then plates were incubated at 30^{0}C for 72 hours and observed for the production of inhibition zone around the filter paper discs.

Four biocontrol agents *viz., Trichoderma viride*, *Trichoderma harzianum*, *Pseudomonas fluorescence* and *Bacillus subtilis* were evaluated for their efficacy against the growth of *X. axonopodis.* pv. *punicae* by inhibition zone assay