

RESEARCH ARTICLE

Evaluation of bio-agents and antibiotics against *Xanthomonas axonopodis* pv. *punicae*, causal agent of bacterial blight of pomegranate

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ABSTRACT

In the present studies the antagonistic microorganisms and antibiotics were tested for their efficiency in inhibition of growth of *Xanthomonas axonopodis* pv. *punicae*, the incitant of bacterial blight of pomegranate. Among the different isolates of bioagents, *Pseudomonas fluorescens* (Pf4) was found significantly superior in inhibiting (15.73 mm) the growth of *X. a. pv. punicae* but remained on par with *Bacillus subtilis* isolates BS1 and BS2 with 12.1 and 13.66 mm, respectively. Whereas bioagents BS3 and Pf6 showed lower inhibitory zone of 0.76 and 0.93 mm, respectively. The isolates of bioagents BS 4, Tv-16, Tv-R, Th-10 and Th-R recorded zero inhibition zone. Differences among the treatments and concentrations were found to be statistically significant except between streptomycin and streptomycin + CuSO₄. Among them, streptomycin was found to be the best and was significantly superior from the rest of the chemicals with mean inhibition zone of 25.75 mm in all the tested concentrations, followed by streptomycin + CuSO₄ (20.24) and bactinash-200 (11.74). Among different concentrations, 1000 ppm recorded the mean maximum inhibition zone (11.33 mm) followed by 750 and 500 ppm. Whereas the least inhibition was observed at 250 ppm (8.33 mm).

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INTRODUCTION

Pomegranate (*Punica granatum* L.) is a favourite table fruit in tropical and sub tropical regions of the world which belongs to family Punicaceae. In India, pomegranate is commercially cultivated in Maharashtra and small scale plantations are seen in Gujarat, Rajasthan, Karnataka, Tamil Nadu, Andhra Pradesh, Uttar Pradesh, Punjab and Haryana (Chadha, 2001). A plant with wider adaptability and benefits may also fall sick, which may be due to a pest or pathogen attack. Such sick plants grow and produce poorly. However, bacterial blight caused by *Xanthomonas axonopodis* pv. *punicae* is assuming serious proportion in view of the fact that the pathogen is present in a plant and translocates

easily wherein the wilting of branches are seen one after another, ultimately the whole plant dries and dies. The disease causes spots on leaves leading to defoliation and fruit spots, and cankerous lesions on stem and in severe cases leading to death of plants. The disease has assumed its severity in all the growing areas of Maharashtra, Karnataka and Andhra Pradesh resulting in severe yield losses both in terms of quality and quantity. The information available on this disease, pathogen and management strategies are very meagre. In the present investigation, an attempt has been made to identify the best bioagent and antibiotic for the inhibition of growth of *Xanthomonas axonopodis* pv. *punicae* through inhibition zone method.