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## A Deadly Bacterial Blight Disease Management in Pomegranate

T. Sahila<sup>1\*</sup>, G. Nivitha<sup>2</sup> and Anu P. Mani<sup>3</sup>

<sup>1</sup>Dept. of Plant Pathology, <sup>2</sup>Dept. of Microbiology, <sup>3</sup>Dept. of Horticulture, STAC, Vasudevanallur, Tenkasi, Tamil Nadu (627 760), India

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### Corresponding Author

T. Sahila

e-mail: [sahimdu16@gmail.com](mailto:sahimdu16@gmail.com)

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E-mail: [bioticapublications@gmail.com](mailto:bioticapublications@gmail.com)

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### Abstract

Pomegranate (*Punica granatum* L.) also known as “Fruit of Paradise” is one among the major fruit crops grown extensively in subtropics. Its production was severely affected by certain agro climatic conditions such as biotic and abiotic stresses in crop health. Biotic stress such as fungi, bacteria, nematodes, viruses and non parasitic disorders are involved. Among the diseases, Bacterial blight of pomegranate is among the most devastating disease that inflicted huge losses to pomegranate crop productivity especially in India. During recent years, the disease has reached its alarming stage bringing substantial damage to the crop and heavy losses to the farmers. This disease can be efficiently managed by following management practices.

### Introduction

Pomegranate (*Punica granatum* L.) is a good table fruit growing well in tropical and subtropical region of the world belongs to Punicaceae family. Pomegranate grows very well on the moderately alkaline soils as well as slightly acidic soils. It is common to the tropics, sub-tropics and sub temperate regions and is well adapted to areas with hot and dry summers (Ashish and Arora, 2016). The fruit is very much favoured for its cool and refreshing juice and other processed products such as concentrate, syrup, jelly, Anardana, Wine *etc.* Pomegranate is a rich source of carbohydrates, vitamin C and minerals such as calcium, iron and sulphur. The main sugar constituents present in pomegranate fruits are glucose (5.46%) and fructose (6.14%) but no sucrose (Bora and Kataki, 2014). Bacterial blight in pomegranate is a major disease which is caused by *Xanthomonas axonopodis* pv. *punicae*. The bacterium was first noticed in some farms in Bellary district in the 1980; it started spreading rapidly in the early 2000’s and took epidemic proportions in the last 4 to 5 years. It has caused severe damage and destroyed 90% of the cultivated area and quality of fruits affecting the marketing value of fruits (Raju *et al.*, 2015).

### Symptoms

#### Infection on Leaves

- Initially small, discoloured and water-soaked spots were noticed on the leaves.
- On the upper surface of leaves, diffused water-soaked zone was seen around the spot.
- Later on these spots increased in size (2.0-5.0 mm in diameter), coalesced and extended upto midrib within a week covering the major portion of the leaf lamina.
- The infected leaves lost their lush green colour and became yellow resulting into premature leaf fall.



Figure 1: Small, discoloured water-soaked spots occurs on Leaves

**Infection on Flowers**

- The disease even spreads to flowers, which lead the way for falling of flowers reducing fruit set.

**Infection on Stems**

- The disease even spreads to branches and stem, which leads to drying of those affected parts, under severe condition it leads to death of branches.
- Twigs and stems reveal brownish black lesions generally initiating at the nodes and extending along the bark and although infections are normally observed in the bark and cortex region, at times infections also observed extending to the vascular region of the plant. Blight lesions on twigs often resulting in gridling. Since blight infections are prominent at nodes, hence the disease is also popularly known as nodal blight.
- Old infections, particularly on main stems and branches leads to canker formation, thereby restricting the further spread of the pathogen (Sharma et al., 2010).

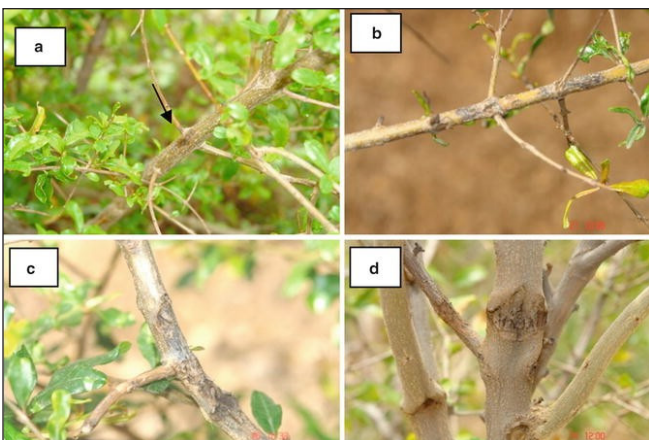


Figure 2: Infected twigs and stems reveal brownish black lesions

**Infection on Fruits**

- The disease is more severe during the fruiting season. Black spots appear on fruits which later increase in size and cover the whole fruit surface causing cracking/ splitting of fruits.
- Spots on fruits were dark brown irregular slightly raised with oily appearance, which split open with L-shaped cracks under severe cases. Further the infected fruits will start to rot.



Figure 3: Severely infected fruits show L-shaped cracks

**Favourable Conditions**

- The increase in day temperature (38.6 °C) and afternoon relative humidity of 30.4% along with cloudy weather and intermittent rainfall favored the disease initiation and further spread of the disease.
- The disease remains prevalent in mild to moderate form throughout the year at the temperature of 9.0-43.0 °C and low humidity and become severe under highly humid conditions (> 80%) and moderate temperature (25-35 °C) during rainy season (Jadhav and Sharma, 2009).

**Disease Cycle**

- Bacteria propagate in lesions in leaves, stems and fruit.
- When there is free moisture on the lesions, the bacteria ooze out and can be dispersed to infect new growth.
- Wind-driven rain is the main dispersal agent. Wind aids in the penetration of bacteria through the stomatal pores or wounds made by thorn or by birds and insects on fruit.
- Pruning cause severe wounding and can lead to infection.
- The bacteria remain alive in the margins of the lesions in leaves and fruit until they abscise and fall to ground.
- Bacteria have also been reported to survive in lesions on woody branches upto a few years of age.

## Mode of Spread and Survival

- Primary source of inoculum is infected cuttings.
- Secondary source of inoculum spreads through wind splashed rains.

## Management

- Select disease free planting material.
- Avoidance of rainy season crop.
- **Sanitation measures** - Pruning tools should be disinfested with suitable disinfectant like Sodium hypochlorite (2%) before pruning the new plant. Burning of diseased fruits, twigs and leaves and dusting/ drenching orchard soil surface around the plants with bleaching powder (20 kg ha<sup>-1</sup>) or 4% copper dust (20 kg ha<sup>-1</sup>) result in minimizing the bacterial inoculums.
- Spray with Streptocycline (0.025%) in combination with Copper oxychloride (0.25%) or Carbendazim (0.15%) at 15 days interval for 5-6 times starting from leaf initiation stage.
- If possible, cut ends should be pasted with Bordeaux (10%) paste.
- Three foliar sprays of paushamycin (0.05%) + copper oxychloride (0.2%) at fortnightly intervals was most effective.
- This disease can be effectively managed by pruning of the diseased twigs followed by four sprays of Blitox (0.2%) + streptocycline (100 ppm) or Kocide (0.2%) + streptocycline (100 ppm) starting from mid June to end July at 15 days interval in reducing the percent disease index on leaves and fruits of pomegranate.

## Conclusion

**B**acterial blight in recent years has emerged as a major problem in pomegranate cultivation in all important pomegranate growing states of the country resulting in huge losses both in domestic and international market. Management of the disease can be possible through the spray of various agro-chemicals and destruction of debris (diseased fallen leaves).

## References

- Ashish, Arora, A., 2016. An overview of bacterial blight disease: A serious threat to pomegranate production. *International Journal of Agriculture Environment and Biotechnology* 9(4), 629. DOI: 10.5958/2230-732X.2016.00082.6.
- Bora, L.C., Katak, L., 2014. *Xanthomonas axonopodis* pv. *Punicae* - A New Threat to Pomegranate Plants in Assam. *Indian Journal of Hill Farming* 27(1), 57-58.
- Jadhav, V.T., Sharma, K.K., 2009. Integrated management of diseases in pomegranate. Souvenir and abstracts 2<sup>nd</sup> international symposium on pomegranate and minor including Mediterranean fruits, UAS Dharwad, pp. 23-27.
- Raju, J., Benagi, V.I., Jayalakshmi, K., Nargund, V.B., Nirmalanath, J., Priti, S., Naik, S.T., Giri, M.S., 2015. Bacterial Blight of Pomegranate: A Menace in Quality Fruit Production. *Journal of Pure and Applied Microbiology* 9(4), 3239-3243.
- Sharma, K.K., Sharma, J., Jadhav, V.T. (2010). Etiology of Pomegranate Wilt and its Management. *Fruit, Vegetable and Cereal Science and Biotechnology* 4(Spl. 2), 96-101.