

BioBlight

Management of Bacterial Blight Disease of
Pomegranate using BioBlight
(R & D based bio-product from Gokulam Biotech)

About the disease:

Bacterial blight is a major disease in most of the pomegranate growing regions of Karnataka, Gujarat, Rajasthan, Andhra Pradesh. It reduces crop yield significantly and affects the market value of fruits.

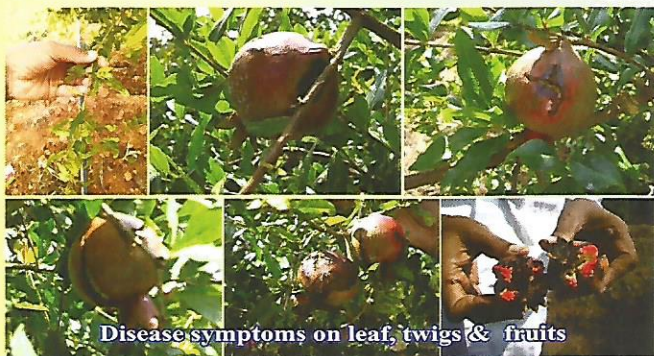
The disease is caused by *Xanthomonas axonopodis* pv *punicae*, a yellow pigmented, gram-negative, short rod-shaped bacterium.

The bacterium survives on infected plant parts in soil for a very long time and spreads through rain splashes, irrigation and through farm tools. Humidity more than 50%, temperature ranging from 25 to 30C, and rainy season are conducive for *Xanthomonas* infection. Through secretion of special proteins, *Xanthomonas* is able to destabilize the defense responses of plants and elicit infection.



Xanthomonas, Short Rods

On leaves, *Xanthomonas* infestation causes water-soaked lesions that coalesce and turn black in color with an oily appearance (hence the name "oily-spot" disease). The affected leaves turn yellow and fall off. The pathogen also affects flowers, branches and fruits. Affected flowers fall off resulting in reduced fruit set. The disease is severe during the fruiting season. Affected fruits exhibit heavy water soaked necrotic lesions which leads to fruits turning black in color, cracking, splitting and rotting.



Disease symptoms on leaf, twigs & fruits

Currently, spraying of crops with antibiotics at doses sometimes above 500 ppm is being practiced with limited success for controlling the disease.

Development of BioBlight:

Krishi - BioBlight is a novel research and development based bio-product for the management of blight disease. It is based on a consortium of bio-control antagonists of *Xanthomonas* such as various species of *Bacillus*, *Pseudomonas* which were selected based on in-vitro antagonism studies. Other antagonists of *Xanthomonas* and their active metabolites are also incorporated in BioBlight.



BioBlight Packaging



Kamala Farms, Chitballapur, KA

BioBlight improves plant hygiene, strengthens the defense mechanism of plants and helps them fight against challenges posed by various diseases. It contains a blend of

bacterial antagonists of *Xanthomonas* with an individual CFU of 15 to 20 x 10¹⁵ per ml. When sprayed on the foliage, BioBlight suppresses proliferation of *Xanthomonas*. Periodical foliar spraying of BioBlight at frequent intervals minimizes infection and spread of *Xanthomonas*.

Target Crops: BioBlight has been specially developed for the management of *Xanthomonas* infestation in pomegranate. But it is also equally effective against soil-borne and foliar bacterial diseases of paddy, cotton, sugarcane, pepper, cardamom, banana, turmeric, grapes, citrus, mango, groundnut, ginger, and all vegetable crops. BioBlight is highly successful for the management of bacterial blight disease of pomegranate caused by *Xanthomonas*.

Dosage and Directions

for use: Foliar spraying of BioBlight is recommended at the rate of minimum 2 to 5 ml per liter of water. While spraying, the plant canopy must be thoroughly



Foliar spraying of BioBlight

drenched with the spray solution. Spraying is recommended at 7- to 15- day intervals. Spraying must be carried out during the cooler periods of the day, preferably during late evening hours. Spraying of BioBlight during the resting phase of the crop is also important for suppression of *Xanthomonas* surviving on dry leaves and twigs. For controlling soil-borne diseases, BioBlight can be used to drench soil at the rate of 500 to 1000 ml per acre at required intervals based on severity of disease.

Precaution: Spraying of antibiotics must be avoided 7 days before and after application of BioBlight.

Shelf-life: BioBlight has a shelf-life of one year from the date of manufacturing.

Packing: Krishi - BioBlight is available in 1, 5, 20 and 50 liter containers.



Storage: Bottles of BioBlight must be stored in a cool and dry place away from direct sunlight.

BioBlight: A success story.

The effectiveness of Krishi - BioBlight has been readily recognized by progressive farmers and field advisors in Karnataka. Success of BioBlight for the effective management of bacterial blight disease is mainly to the very high spore load of antagonists in the formulation achieved as a result of advanced fermentation technology developed by the R & D team at Gokulam Biotech. CFU count of antagonists in BioBlight formulations is often maintained as high as $>30 \times 10^{15 \text{ to } 30}$ per ml.

For the effective management of bacterial disease, besides regular spraying of BioBlight, one should also follow proper cultural practices including sanitation protocols and application of known chemical pesticides once in a while.

TESTIMONIAL

Testimonial from Mr Chetan Nandhan, a successful and progressive farmer from Chickballapur, Kolar District, KA.



I am Chetan Nandhan from Chickballapur, Kolar District, KA. I have been growing pomegranate since 2018 on my 80 acres pomegranate farm. Like other farmers, I also had a very bad experience in orchard due to bacterial

disease. I have lost valuable crops in the past due to this dreadful disease and had difficulty in marketing the affected fruits. I have tried many chemical treatment regimens and have sprayed heavy doses of popular antibiotics, sometime at spray concentrations more than 1000 ppm. These treatments have weakened my trees and made them more susceptible to further attack by *Xanthomonas*.

During this period I met Mr. Ramu Timalapur, a well sought-out field advisor on pomegranate cultivation from Hiriyur (KA) who introduced me to various bio-products of Gokulam Biotech, such as BioBlight, WMF (Wilt Management Formula) and bio-fertilizers such as phosphobacterium and potash mobilizer manufactured. Since then we have been buying these products directly from Gokulam Biotech situated at Pondicherry.

I have been spraying Biobligh continuously in my orchard from 2018 and enriching the orchard soil with biofertilizers. This has resulted in tremendous improvement in health of soil and our pomegranate trees.

In my farm, I commenced spraying of Biobligh @ 2 to 5 ml per liter of water from the resting stage of the crop and from the first watering onwards, at 10- to 15-day intervals. I follow this spray schedule religiously till harvest. Totally I carry out about 6 to 8 sprays during the cropping season. While Biobligh has not eliminated *Xanthomonas* spread in my orchard completely, it has definitely kept the infection under control and I was



able to harvest fruits with minimum percentage of rejections due to bacterial spots on the fruit.

I have also learnt from Mr Ramu and Senior Scientists at Gokulam Biotech that besides spraying BioBlight, one should also improve soil/plant health and make sure nutrients are made available to plants in a well-balanced manner. Maintaining a well-balanced nutrient profile in cell sap of foliage plays a major role in plant's resistance/susceptibility to disease. Imbalanced nutrient profile in cell sap is a predisposing factor for *Xanthomonas* infection by other pathogens.

I wish the R& D team at Gokulam Biotech all the best in developing new generations of BioBlight and other bio-products for the benefit of farmers in general and pomegranate farmers in particular.

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