PRACTICE ABSTRACT 4

Controlling Common blight in organic bean

Common bacterial blight caused by Xanthomonas campestris pv. phaseoli is a very important disease of field bean in many regions of the world and can lead to high losses of production (25 to 60%). The bacterium is primarily transmitted through infected seed. Xanthomonas can survive over 15 years in seed before emerging to infect the plant during the vegetative period. The disease occurs on all above-ground tissues from which bacteria can be spread by humans, farm implements, insects, wind, rain or hail.

On seed. If infection occurs when the pods are young, the seed rot or become wrinkled and shrivelled. If the bacteria enter by way of the funiculus, only the hilum may be discoloured. The seeds of pods strongly attacked typically remain small, firm, and yellow.

On seedlings. The first symptoms appear on the cotyledons in the form of circular or irregular, slightly pitted brown spots. Later, on the leaves appear small translucent, wet, greenish spots, with exudates visible in humid weather. As the spots develop, the tissues around them dry and turn brown with a yellow margin 2-5 mm wide.

On plants. Following infection in the field, small, water-soaked areas appear on the leaves, these enlarge and become encircled by a narrow zone of lemon-yellow tissue. These lesions turn brown as the leaf rapidly becomes necrotic, and defoliation may result. The stem surface often splits, releasing a yellow bacterial exudate (in halo blight infections, exudates are light cream or silver coloured). On pods infection occur on any part as small, water-soaked spots which gradually enlarge and may be surrounded by a distinct narrow zoning of reddish-brown tissue. Infections may occur in the vascular elements causing water-soaking of the adjoining tissue. The infected tissue dries out and darkens, and droplets of yellow bacterial exudates may appear which, on drying, form a crust on the surface of older lesions of the pods.

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- Use certified seed from organic agriculture.
- Bean seed solarization: after harvesting, seed are exposed to the sun for between 6–8 hours (non-chemical environmentally friendly method for controlling diseases, using solar power to increase the seeds temperature to levels where bacteria will be killed or greatly weakened them infections).
- Choose local varieties less susceptible to common bacterial diseases.
- Avoid overhead irrigation where possible.
- Avoid working in fields when plants are wet.
- Incorporate infested bean debris into the soil after harvest.
- Rotate beans with non-host crops such as small grains for at least three-four years.
- Good sanitation by removing diseased plants or weeds from the field.
- Applying 2–3 treatments of Bordeaux mixture (copper(II) sulphate and quicklime) as a fungicide.

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THE PROJECT

BRESOV
SHAPING THE FUTURE OF ORGANIC BREEDING & FARMING

BRESOV aims to tackle the nutritional challenges of a growing world population and changing climatic conditions by enhancing productivity of different vegetable crops in an organic and sustainable farming infrastructure. BRESOV works on broccoli, snap bean and tomato as those staple vegetable crops have significant roles in meeting our global food and nutritional security goal, and under organic conditions can contribute to storing carbon, introduce nitrogen and improve organic soil quality.

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