

SEMIs Workshop-SQA (25.4.2017): Important seed-borne bacterial pathogens

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Important seed-borne bacterial pathogens

Bacterial Pathogens Borne in True Seed

- **Crop Pathogen(s)**
- **Wheat:** *Pseudomonas syringae* pv. *syringae*, *Xanthomonas campestris* pv. *translucens*
- **Maize:** *Pantoea stewartii* subsp. *stewartii*, *Clavibacter michiganensis* subsp. *nebraskensis*
- **Rice:** *X. oryzae* pv. *oryzae*, *X. oryzae* pv. *oryzicola*, *Acidovorax oryzae*

Important seed-borne bacterial pathogens: Bacterial Pathogens Borne in True Seed

- **Bean:** *P. syringae* pv. *phaseolicola*,
Curtobacterium flaccumfaciens
pv. *flaccumfaciens*, *Xanthomonas campestris* pv.
phaseoli and *X. fuscans* var. *fuscans*
- **Soybean:** *P. syringae* pv. *glycinea*
- **Chickpea:** *Rhodococcus fascians*
- **Cereals, grasses:** *Rathayibacter* sp.
- **Alfalfa:** *C. michiganensis* subsp. *insidiosus*

Bacterial Pathogens in Vegetative Planting Material

- **Crop Pathogen(s)**

- **Potato:** *Clavibacter michiganensis* subsp. *sepedonicus*, *Ralstonia solanacearum*, *Streptomyces scabies*, *Erwinia/Dickeya* spp.,

- **Cassava:** *Xanthomonas campestris* pv. *cassavae*

- **Banana:** *X. campestris* pv. *musacearum*

Detection of True Seed-borne Bacterial Pathogens

- Seed health testing: Important means of reducing disease risk
- Direct testing
 - ✓ Symptoms/grow-outs
 - ✓ Isolation of pathogen
 - ✓ Identification
 - ✓ Proof of pathogenicity

Detection of True Seed-borne Bacterial Pathogens

- Indirect testing
- Detection of proteins (serological)
- Detection of nucleic acids: (PCR, isothermal amplification, etc.)

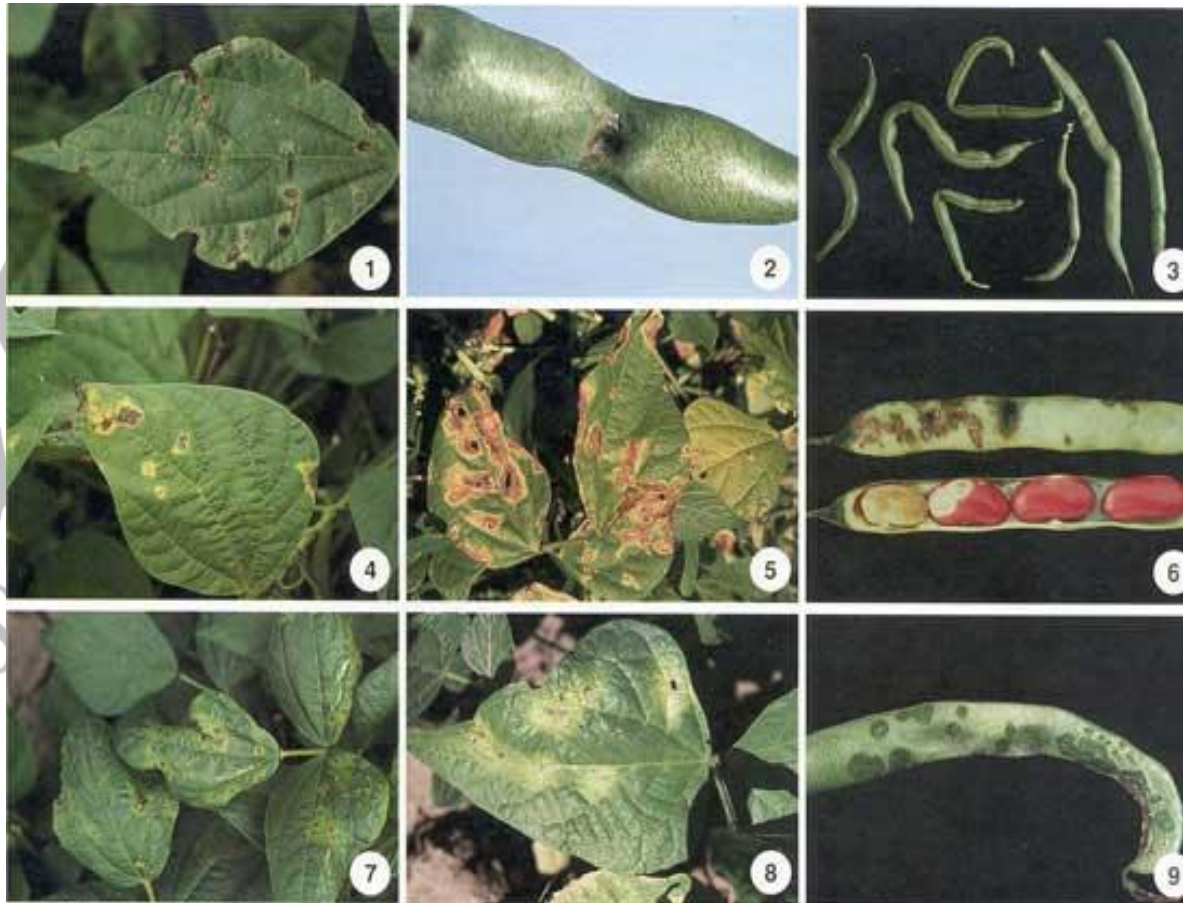
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The blackish spots have a small light halo (chlorosis or yellowing tissue) around them.





Common Bean: Halo Blight & CBB



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Seed Borne Virus Diseases:

- *Bean common mosaic virus* (BCMV) is still an important disease of beans worldwide
- BCMV is seedborne in bean.
- *Bean yellow mosaic virus* (BYMV),
- **Bean Necrotic Mosaic Virus**
- *Soybean mosaic virus* (SMV)

Maize Lethal Necrosis Disease (MLND):

The **Maize Lethal Necrosis Disease (MLND)** is a result of a combination of two viruses, the Maize Chlorotic Mottle Virus (MCMoV) and any of the cereal viruses in the Potyviridae group, like the Sugarcane Mosaic Virus (SCMV), Wheat Streak Mosaic Virus (WSMV) or Maize Dwarf Mosaic Virus (MDMV).

The double infection of the two viruses gives rise to what is known as MLND, also referred to as Corn Lethal Necrosis (CLN).

Maize Lethal Necrosis Disease (MLND):



Seed borne Nematodes

- Wheat: *Anguina Tritici*
- Potato cyst nematode: ***Globodera rostochiensis in Kenya.***

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Potato cyst nematode: *Globodera rostochiensis* in Kenya.

