

## **Mutations associated with QoI-resistance**

Two amino acid substitutions have been detected in the cytochrome b gene in plant pathogens that govern resistance to Qo Inhibitors:

- Change from glycine to alanine at position 143 (G143A)
- Change from phenylalanine to leucine at position 129 (F129L)

Both G143A and F129L are based on single nucleotide polymorphisms in the cytochrome b gene; the selection process is qualitative (single step).

Based on current knowledge, resistance factors (RF = ED50\* [resistant strain] / ED50 [sensitive wild-type strain]) associated with G143A and F129L are different. RF's caused by F129L usually range between 10 and 50, whilst resistance factors related to G143A are in most cases greater than 100.

G143A has been shown to be responsible for QoI resistance in more pathogen species than F129L (17 out of 21 plant pathogens carry G143A or both of the mentioned point mutations in combination). Isolates carrying G143A express high (complete) resistance. Isolates with F129L express moderate (partial) resistance. F129L has been detected in 6 out of 21 plant pathogens, with 2 pathogens possessing both mutations.

As a consequence, applications of solo QoI's are expected to result in reduced disease control for species with F129L, whereas a severe loss in disease control has always been seen in populations where G143A predominates.

\*ED50 (Effective dose 50): Effective dose with 50% response (inhibition)

## **References**

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