Genetic and pathological diversity among *Xanthomonas* strains responsible for bacterial spot on tomato and pepper in the South West Indian Ocean region

- Bacterial Spot of Tomato and Pepper (BSTP) can be caused by *Xanthomonas euvesicatoria*, *X. gardneri*, *X. perforans*, *X. vesicatoria* or *X. campestris pv. raphani*
- pathogens listed on the A2 list of the European and Mediterranean Plant Protection Organization (EPPO)
- prevalence of BSTP in the South West Indian Ocean (SWIO) territories (regional program for plant protection, http://www.prpv.org)
- accurate identification of strains causing BSTP is of particular importance for surveillance and pest management

**Objectives**
- a global survey of strains causing BSTP in the SWIO region
- identification at the species level using AFLP and MLSA
- pathological characterization

**Amplified Fragment Length Polymorphism**
- 133 strains including 72 strains isolated in the SWIO
  - all strains easily identified at the species level (EGD values < 0.030 nsps with one of the type strain of the genospecies associated with BSTP)
  - all species except *X. campestris pv. raphani* are present in the SWIO region
  - prevalence of *X. euvesicatoria* in the SWIO (65% of strains)
  - *X. perforans* closely related to *X. euvesicatoria*

**Multi-Locus Sequence Analysis**
- based on the sequencing of 4 housekeeping genes: *atpD*, *dnaK*, *efp* and *gyrB* for 95 strains including all SWIO strains
- two to three sequence types per genospecies
- recombination event detected on the *atpD* gene for *X. euvesicatoria* strains (45/51)
- MLSA data consistent with AFLP data when analyzing concatenated dataset but the recombinant region

**Pathological characterization**
- pathogenicity tests on tomato (*Solanum lycopersicum*) cv. Marmande and pepper (*Capsicum annuum*) cvs. Yolo wonder and Aiguille
- inoculation of all strains of the SWIO region (n=72) and 4 type strains (2 repetitions)
- pathological characteristics of SWIO strains causing BSTP agree with data available in the literature
- pathological variations observed among *X. euvesicatoria*

**Conclusions**
- first comprehensive description of the status of *Xanthomonas* species that cause BSTP in the SWIO region
- AFLP and MLSA consistently assigned strains at the species level: reliable tools for regional and international sanitary surveillance and pest management
- possible synonymy of *X. euvesicatoria* and *X. perforans* consistent with other recent data

**Pathogenicity profiles based on leaf infiltrations of 72 xanthomonad strains associated with bacterial spot of tomato and pepper in the South West Indian Ocean region**

<table>
<thead>
<tr>
<th><em>Xanthomonas</em> species</th>
<th>Tomato cv. Marmande</th>
<th>Pepper cv. Yolo wonder</th>
<th>Pepper cv. Aiguille</th>
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</thead>
<tbody>
<tr>
<td><em>X. euvesicatoria</em> (63)</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><em>X. euvesicatoria</em> (9)</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><em>X. perforans</em></td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>X. gardneri</em></td>
<td>+</td>
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<td>+</td>
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<tr>
<td><em>X. vesicatoria</em></td>
<td>-</td>
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</tbody>
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Hamza A. A., Robène-Soustrade I., Jouen E., Gagnevin L., Lefeuvre, P., Chiroleu F., Boyer C. and Pruvost O. CIRAD-Université de la Réunion, France