An early-warning system as a tool to control *Mycosphaerella* leaf spots in banana plantations of small farms in southern Brazil

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Banana in the region
Southern coast of the Santa Catarina State, Brazil

- 8,500 hectares
- 80% Prata subgroup (AAB): Dwarf Prata
- 20% Cavendish subgroup (AAA): Giant Cavendish, Gran Nain
- Windy and frosty
- Hillside crops to avoid frost
SIDERÓPOLIS
Santa Catarina State
Brazil

Google Earth
The banana plantations
Inside a plantation
Frost damage
Wind damage (cyclone 2004)
Sigatoka leaf spots

- *Mycosphaerella musicola*
- *M. fijiensis* in the year 2004
- Up to 6 sprays to control sigatoka
The early-warning system

• The first: November 2000
  • Nowadays: 8 places

• Fortnightly readings of sigatoka in 10 plants
  • Gross sum

• Spray when gross sum is rising and above 800
  • Weather forecast

• Defoliation and good practices
THE WARNING SYSTEM

1. Monitoring the sigatoka

2. Curve of the gross sum
3. Weather information

4. Defoliation and good practices
5. Spraying

Atomizer coupled to a tractor

Backpack atomizer
Banana leaves after a pulverization
Evaluation of the early-warning system

Site 1: Follows the system
Site 2: Does not follow the system
Duration of the period “sigatoka under control” (< 800)

<table>
<thead>
<tr>
<th>Description</th>
<th>Site-1 follows the system</th>
<th>Site-2 does not follow the system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Period of observation</td>
<td>January 2005 to August 2011</td>
<td></td>
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<tr>
<td>Total number of days</td>
<td>2430 days</td>
<td></td>
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<tr>
<td>Period under control</td>
<td>1614 days</td>
<td>284 days</td>
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<tr>
<td>Percentage of days under control</td>
<td>66%</td>
<td>12%</td>
</tr>
<tr>
<td>Longest period under control</td>
<td>281 days</td>
<td>88 days</td>
</tr>
<tr>
<td>Shortest period under control</td>
<td>21 days</td>
<td>7 days</td>
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</table>
Conclusion

The early-warning system proved to be a reliable and efficient toll in the control of sigatoka diseases even in small banana plantations.
Acknowledgments

**EPAGRI** - Institute for Agricultural Research and Rural Extension of the Santa Catarina State, Brazil

**CNPq** - National Council for Scientific and Technological Development Brazil