WINDBREAKS IN ARGENTINA

MANAGEMENT STRATEGIES FOR CITRUS CANKER

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MAIN ARGENTINEAN CITRUS REGIONS

NWA:
Area = 64.088 ha
Production = 2,008,000 tn

NEA:
Area = 83.378 ha
Production = 1,092,000 tn
ARGENTINEAN CITRUS PRODUCTION
STRUCTURE AND ECONOMIC VALUE

<table>
<thead>
<tr>
<th></th>
<th>#</th>
<th>Production Tn</th>
<th>Value U$S</th>
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<tbody>
<tr>
<td>Growers</td>
<td>5,300</td>
<td>3,100,000</td>
<td>500,000,000</td>
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<tr>
<td>Packing/Exportation</td>
<td>79</td>
<td>21 %</td>
<td>43 %</td>
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<tr>
<td>Packing/Internal Market</td>
<td>450</td>
<td>32 %</td>
<td>33 %</td>
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<tr>
<td>Industries</td>
<td>16</td>
<td>47 %</td>
<td>24 %</td>
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<tr>
<td>Total direct labor</td>
<td>120,000</td>
<td>(1 x 1,3 ha)</td>
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MARKETS REQUIREMENTS

FRUIT HEALTHY AND QUALITY

• Citrus canker affect production & quality

Therefore:

Healthy is an strategic problem for national citrus production
CITRUS CANKER SYMPTOMS
FAVORABLE CONDITIONS FOR CITRUS CANKER INFECTION

- Rain with strong winds and high temperatures
- Aggressive strains
- Use of susceptible varieties
CITRUS CANKER

Integrated Management:

involves biological, physical and
operatives factors that affects
disease viability
PREVENTIVE MEASURES and ORCHARD DISEASE MANAGEMENT

- **Windbreaks**
  - Every 3-4 ha: External double line and Internal one line
- **Resistant Varieties**
- **Desinfection & Monitoring**
- **Remove diseased organs:**
  - Leaf and fruit pruning, defoliation with Diquat
- **Chemical Control:**
  - Products, doses, timing and application methods
- **Cultural Practices:**
  - Irrigation, fertilization, weed control
WINDBREAKS: MAIN SPECIES OF TREES USED IN ARGENTINA

- *Eucalyptus grandis*;
- *Eucalyptus torelliana*;
- *Pinus elliottis*;
- *Pinus taeda*;
- *Grevillea robusta*;
- *Casuarina cunningamia*
Competition between windbreaks and citrus plants

Eucalyptus

Pinus
Bamboo
Shade
MAIN WINDBREAK ADVANTAGE ON CITRUS FRUIT PRODUCTION

- **Reduction of canker infection (30%)**
- **Minimizing damages in fruit by leaves and branches rubbing** (Blemish)
- **Improvement of the pulverizations on windy days**
- **Improvement externally fruit quality**
Flushing in different seasons

LEAF DEVELOPMENT

Spring | Summer | Autumn
Chemical control in orchards:

Spray on each flushing (4 per year)

Products: Copper oxychloride, Copper hydroxide, Copper oxyde, Tribasic copper sulfate (micronizados)

Doses: 1,5 kg metallic copper/1000 lt water

Resistant Bacteria to Cu: add Mancozeb 2 kg

Leaf miner:
- Flushes of 3,5 to 5 cm
- Vertimex 200cc + 5 lt oil/ 1000 lt
- 15 days old flushes
- Vertimex 200cc + 5 lt oil + Copper/ 1000 lt

Spray quality: Moment, Volume, drops size and quantity, penetration and hole contact surface, etc.
PRUNE OF BRANCHES AND FRUITS WITH CITRUS CANKER
Prevention
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