Citrus Production and Utilization in China
A. Citrus Production in China

1. Production

China is one of the top 3 producing countries
World Top Three Citrus Producers

Production (MT)

Year

2001 2002 2003 2004 2005 2006 2007E

Brazil  China  USA

5,000,000 10,000,000 15,000,000 20,000,000 25,000,000
A. Citrus Production in China

1. Production

China is one of the top 3 producing countries
Citrus ranks second among fruits produced in China
China Fruit Production (2006)

Apples, 27%

Pears, 13%

Bananas, 7%

Others, 27%

Grapes, 7%

Pineapples, 1%

Citrus, 18%

MOA statistics
A. Citrus Production in China

1. Production
2. Production Regions
   very broad with the following key producing provinces
3 Key Advantageous Growth Bands:

**Band 1: Upper & middle Yangtze River**

To be the Asia’s largest production base for fresh and juice processing oranges.

**Band 2: Southern Jiangxi & Hunan**

To be the Asia’s largest production base for high-quality fresh Navel oranges.

**Band 3: S. Zhejiang, W. Fujian, & E. Guangdong**

To be the production base for export fresh & canned mandarins plus other citrus such as pomelo.

MOA, 2002
Band 1: Fresh & Juice Oranges

Band 2: Fresh Navel Oranges

Band 3: Fresh & Canned Mandarins
Band 1: Upper & middle Yangtze River

Courtesy of XLTang
Band 2: Southern Jiangxi & Hunan provinces

 Courtesy of XLTang
Band 3: S. Zhejiang, W. Fujian, & E. Guangdong
A. Citrus Production in China

1. Production Volume
2. Production Regions
3. Regional Plantation Area and Yield
China’s Citrus Plantation Area in 2006

<table>
<thead>
<tr>
<th>Region</th>
<th>Acres</th>
<th>90-lbs Boxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>4,483,135</td>
<td>438,335,719</td>
</tr>
<tr>
<td>Hunan</td>
<td>775,400</td>
<td>61,432,404</td>
</tr>
<tr>
<td>Fujian</td>
<td>566,600</td>
<td>55,526,525</td>
</tr>
<tr>
<td>Guangdong</td>
<td>554,740</td>
<td>54,977,825</td>
</tr>
<tr>
<td>Sichuan</td>
<td>530,030</td>
<td>50,406,954</td>
</tr>
<tr>
<td>Guangxi</td>
<td>420,564</td>
<td>50,343,266</td>
</tr>
<tr>
<td>Hubei</td>
<td>392,889</td>
<td>44,363,901</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>374,357</td>
<td>44,216,927</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>297,014</td>
<td>34,141,905</td>
</tr>
<tr>
<td>Chongqing</td>
<td>271,563</td>
<td>20,750,185</td>
</tr>
</tbody>
</table>

Ha = Ac / 2.5
MT = box / 24.5

Deng et al. 2008
A. Citrus Production in China

1. Production
2. Production Regions
3. Regional Plantation Area and Yield
4. Varieties
## Citrus Production in China

*(Based 2006 yield data)*

<table>
<thead>
<tr>
<th>Region</th>
<th>Band</th>
<th>Easy Peelers</th>
<th>Oranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td></td>
<td>72%</td>
<td>16%</td>
</tr>
<tr>
<td>Chongqing</td>
<td>1</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>Sichuan</td>
<td>1</td>
<td>60%</td>
<td>27%</td>
</tr>
<tr>
<td>Hubei</td>
<td>1</td>
<td>89%</td>
<td>11%</td>
</tr>
<tr>
<td>Guangxi</td>
<td>2</td>
<td>59%</td>
<td>24%</td>
</tr>
<tr>
<td>Hunan</td>
<td>2</td>
<td>87%</td>
<td>10%</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>2</td>
<td>60%</td>
<td>7%</td>
</tr>
<tr>
<td>Guangdong</td>
<td>3</td>
<td>71%</td>
<td>10%</td>
</tr>
<tr>
<td>Fujian</td>
<td>3</td>
<td>62%</td>
<td>7%</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>3</td>
<td>87%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Mandarins/Tangerines

- Satsuma: ~ 60%
- Penkan/Lugan: ~ 30%

Courtesy of XLTang
Oranges

- Jin: ~33%
- Navel: ~20%
- Red River and Bingtang: ~20%
- Valencia: 2<%
Navel

 Courtesy of XLTang
Red River

Courtesy of XLTang
A. Citrus Production in China

1. Production
2. Production Regions
3. Regional Plantation Area and Yield
4. Varieties
5. Harvest Season
A. **Citrus Production in China**

1. Production
2. Production Regions
3. Regional Plantation Area and Yield
4. Varieties
5. Harvest Season
6. Production Trends
Production Trends

Increasing output

Plantation Expansion
Yield Improvement
A. Citrus Production in China

1. Production
2. Production Regions
3. Regional Plantation Area and Yield
4. Varieties
5. Harvest Season
6. Production Trends
7. Huanglongbing Challenge
Huanglongbing Challenge

Use disease-free seedlings
Disease-free container seedlings

Courtesy of XLTang
Huanglongbing Challenge

Use disease-free seedlings
Control citrus psyllids
Enhance tree tolerance
B. **Citrus Utilization in China**

1. Mostly as Fresh Fruit for Domestic Consumption
2. As Fresh Fruit for Export
3. For Canning, Juicing and others
Strong Domestic Fresh Fruit Market

Contributing Factors:

• Raising purchase power
• Growing market size
• Belief of fresh fruit as healthier
• Better value/cost ratio
• Better fruit quality
• Improved availability
Improving Handlings, Shipping and Storage
Various Types of Packaging
As Fresh Fruit for Export

- Export 435,000 MT in 2006
- Mostly to SE Asians and Russia
- Mostly easy peelers
B. Citrus Utilization in China

For Canning - the major processing

- Increasing output
- Capacity of 500,000 MT
- Produced 2-300,000 MT
- Mostly for export
- Operation migrates other regions
B. **Citrus Utilization in China**

For Juicing

- Major plants in Chongqing, Sichuan, & Jiangxi
- Total processing capacity is 1,000,000 MT
- Juice production is ~ 20,000 MT
- Challenges: Utilize out-of-grade fruit
  - Few suitable orange fruit
  - Too concentrated season
- ‘Buying is better than extracting’
Production:

- Production: 22,000,000 – 24,000,000 MT
- D. market demand forecast: 24,680,000 MT
- >70% national plantation within Adv. Bands
- >80% nation yield within Adv. Bands
- Variety mix: Early/Mid/Late – 15:50:35
- Fresh-fruit yield: 1 MT/MU (13,379 lb/Ac)
- Juice-fruit yield: 2 MT/MU
- Gradable fruit: >75%
C. Future Perspectives

Canning:

- Production: 700,000 MT
- Develop mechanical peeling technology
- Utilize new fruit material (e.g., grapefruit)
- Develop products with soft packaging
- Explore whole fruit canned products
- Bio-segment membrane removal technology
- Develop domestic markets
- Improve plant utilization producing non-citrus canned products
Juicing:

- Solve fruit shortage through establishing the juice-orange plantations with proper variety mix in the Three-gorge region
- Maximize utilization of the fruit
- Develop juice blending technologies
- Develop domestic orange juice market
Acknowledgement

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Fruit Research Institute
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Thanks!