Global Trends in Tropical Fruit Production and Trade

Yacob Ahmad
International Tropical Fruit Network

Content
- Production trends if major tropical fruits
- Export of tropical fruits
- Import of tropical fruits
- Tropical fruit value chain
- Conclusion - challenges

Production trends of major tropical fruits (2008)

<table>
<thead>
<tr>
<th>Fruit</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bananas</td>
<td>82,899,146</td>
<td>84,825,516</td>
<td>86,020,870</td>
<td>87,078,660</td>
<td>79,118,521</td>
<td>79,963,153</td>
<td>83,758,704</td>
<td>85,572,243</td>
<td>86,703,732</td>
</tr>
<tr>
<td>Mangoes</td>
<td>14,524,943</td>
<td>15,142,708</td>
<td>16,274,941</td>
<td>18,326,571</td>
<td>20,886,312</td>
<td>22,514,489</td>
<td>24,976,471</td>
<td>29,299,571</td>
<td>32,681,567</td>
</tr>
<tr>
<td>Papayas</td>
<td>5,504,032</td>
<td>6,160,157</td>
<td>7,089,328</td>
<td>8,320,026</td>
<td>11,218,295</td>
<td>13,864,314</td>
<td>16,910,664</td>
<td>19,308,758</td>
<td>20,885,625</td>
</tr>
<tr>
<td>Pineapples</td>
<td>11,078,870</td>
<td>13,071,809</td>
<td>15,000,419</td>
<td>19,031,491</td>
<td>27,317,517</td>
<td>32,813,851</td>
<td>39,496,893</td>
<td>41,880,791</td>
<td>39,362,046</td>
</tr>
</tbody>
</table>

(Data Source: UNCTAD)

Production trends of major tropical fruits

2008 estimations
- Banana – 90.7 million tonnes
- Major tropical fruits – 66.4 million tonnes
- Minor tropical fruits – 19.0 million tonnes
- Undertreated fruits
- Rare fruits

Comparison on trade value (2008)

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Value (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avocados</td>
<td>60,000,000</td>
</tr>
<tr>
<td>Bananas</td>
<td>2,000,000,000</td>
</tr>
<tr>
<td>Mangoes</td>
<td>1,500,000,000</td>
</tr>
<tr>
<td>Papayas</td>
<td>500,000,000</td>
</tr>
<tr>
<td>Pineapples</td>
<td>1,000,000,000</td>
</tr>
</tbody>
</table>

(Data Source: UNCTAD)

Major Fruits Produced in the World (tonnes):
- Bananas,
- Mangoes, Papayas, Pineapples, Avocados,

- World production estimated 87.1 million tonnes in 2008 (82.1 million in 2007)
- Mango – 40%, Pineapple – 25%, Papaya – 4%, Avocado – 4%
- Asia largest producer, followed by Latin America and the Caribbean, Africa and Oceania
- 2008 Asia largest producer of mango – 74%, Latin America / Caribbean – 16%, Africa – 10%
- Pineapple, Asia – 49% of production, Latin America / Caribbean – 38%, and Africa – 12%
- Papaya – Asia – 45%, Latin America / Caribbean – 39%, Africa – 16%
- Avocado – Latin America / Caribbean – 68% Asia – 12.3%, Africa – 12%
## Production trends of major tropical fruits (2008)

### Major Fruits Produced in the World (tonnes):
- Avocados, Bananas, Mangos, Papayas, Pineapples

<table>
<thead>
<tr>
<th>Fruit</th>
<th>2000</th>
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<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papayas</td>
<td>6,254,823</td>
<td>6,341,327</td>
<td>6,281,258</td>
<td>6,764,368</td>
<td>7,088,489</td>
<td>8,046,314</td>
<td>12,110,564</td>
<td>9,208,719</td>
<td>7,580,625</td>
</tr>
<tr>
<td>Pineapples</td>
<td>13,724,071</td>
<td>13,551,903</td>
<td>12,805,498</td>
<td>12,871,486</td>
<td>13,667,357</td>
<td>17,011,321</td>
<td>21,040,203</td>
<td>23,885,793</td>
<td>23,566,548</td>
</tr>
</tbody>
</table>

### Production trends of major tropical fruits (2008)

#### Major Banana Producers:
- India, Philippines, China, Ecuador, Brazil, Indonesia
- Bananas Production 2008 = 90,705,922 tonnes

#### Major Mango Producers:
- India, China, Indonesia, Mexico, Thailand, Pakistan
- Mango Production 2009 = 50,035,641 tonnes

#### Major Papaya Producers:
- Indonesia, Thailand, Colombia, Philippines, Peru
- Papaya Production 2009 = 10,213,069 tonnes

#### Major Pineapple Producers:
- Philippines, Thailand, Costa Rica, Indonesia, Brazil
- Pineapple Production 2009 = 18,448,674 tonnes

#### Major Avocado Producers:
- Mexico, Chile, Indonesia, Dominican Rep., Colombia
- Avocado Production 2008 = 3,532,011 tonnes

Data Sources: FAO/IAEA
Conclusion: challenges in developing the tropical fruit industry

- Small production
- Insufficient supply chain infrastructure
- Lower market integration
- Weak marketing
- Market access
- Poor infrastructure and services
- Consumer demand
- Internationally competitive
- Lack of access to markets for exports

THANK YOU
Implementation of IndoGAP – Increasing the Competitiveness of Indonesia Tropical Fruits

DR. Winny Dian Wibawa
Director of Fruit Crops
Ministry of Agriculture
2010

Background

GLOBAL MARKET
- Growth of Tropical Fruit share in total fruit trade:
  - 20% in year 2000 → 30% year 2007
- Consumers awareness (quality assurance system)
- Higher standard requirements
- Quality and safety issues
- Environmental issues
- Workers safety, health and welfare issues

DOMESTIC MARKET
- Import of horticulture (fruit & vegetables)
- Growth of convenience stores/supermarket
- Peoples’ welfare

COMMITMENT TO IMPROVE PRODUCT COMPETITIVENESS
Indonesia Good Agricultural Practices (Indo-GAP)

- Initiated in 2005, covered only fruits
- Legal aspect: Ministry of Agriculture Decree on GAP No. 61/2006
- Since 2009 covered fruits and vegetables
- Legal Aspects: Ministry of agriculture Decree on GAP No. 48/2009

OBJECTIVES

- General reference of good fruit & vegetables cultivation
- High productivity, good quality, and optimum benefit
- Environmentally friendly, considering farmers’ safety and prosperity as well as sustainable farming

CRITICAL CONTROL POINTS (MAJOR MUST)

1. Land free from hazardous contaminants
2. Land slope <30% for vegetables and seasonal fruit.
3. Soil / medium is free from hazardous contaminants and poisonous materials
4. Land conservation activity is implemented on the steep slope
5. Nightsoil is prohibited for fertilizer.
6. Fertilizer is stored separately to agricultural products.
7. Farmers are able to explain the way and reason of application of pesticides

SCOPE

1. Criteria
2. Registration & Certification
3. Land
4. Seed and Plant Variety
5. Planting
6. Fertilization
7. Plant Protection
8. Irrigation
9. Harvest
10. Post Harvest Handling
11. Tools and machineries
12. Environmental Preservation
13. Labors
14. Hygienic Facilities
15. Farmer’s health and welfare
16. Disposal place
17. Monitoring, Documentation and Traceability
18. Complaint
19. Internal evaluation
20. Closing statement
8. Pesticide that used is not expired
9. Pesticide is stored separately to agricultural products
10. Irrigation water is free from hazardous contaminant
11. Harvesting container is in a good condition, clean and free from contamination
12. Clean water is used for washing the harvested product
13. Package is labeled that contain information to indicates the products
14. Packging area is separated to fertilizer and pesticides storage

Comparison of Indo GAP and ASEAN GAP
- Grouped into four modules:
  - Food Safety
  - Environmental Management
  - Worker health, safety and welfare
  - Produce Quality
- 226 control points
- More detail

- Grouped into tree levels:
  - Prima 1 → Food Safety
  - Prima 2 → Food Safety and Product Quality
  - Prima 3 → Food Safety, production quality and environmental management
  (Worker health, safety and welfare are integrated in every activities)
- 100 control points
- Less detail but covers all of the points in ASEAN GAP

Current alignment of national GAP programs with ASEAN GAP

<table>
<thead>
<tr>
<th>Country</th>
<th>Food safety</th>
<th>Environmental management</th>
<th>Worker’s health, safety and welfare</th>
<th>Produce quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>C</td>
<td>P</td>
<td>P</td>
<td>C</td>
</tr>
<tr>
<td>Malaysia</td>
<td>C</td>
<td>P</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td>Indonesia</td>
<td>C</td>
<td>C</td>
<td>P</td>
<td>P</td>
</tr>
<tr>
<td>Singapore</td>
<td>C</td>
<td>N</td>
<td>N</td>
<td>S</td>
</tr>
<tr>
<td>Philippines</td>
<td>C</td>
<td>N</td>
<td>P</td>
<td>S</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>C</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

T = Total alignment
C = close alignment
P = partial alignment
N = no alignment
S = covered by another national standard

Audited by Independent Auditor from GLOBAL GAP (17 checklists)
1. General
2. Storage and fertilizers
3. Plant protection
4. Packing house
5. Packing and storage areas
6. Packing
7. Principals of hygiene
8. Rodent and bird control
9. Glass procedure/lamp
10. Sanitizing
11. Sanitary facilities (in storage room)
12. Harvesting equipment
13. Intern transport
14. Waste and Pollution
15. Patches
16. Sanitary facilities (out in the field for harvesting)
17. Washing after harvesting

TOOLS for ASSESING IndoGAP

Checklist
Guidance for Farm Registration
Guidance for Online registration

STANDARD OPERATING PROCEDURE
Specific Commodity, Specific Location, Specific Market
Farm Registration prepared for certification

REGISTRATION

GAP Orchard

Provincial Office

PRIVATE AUDITOR / COMPANY

CENTRAL/PROVINCIAL GOVERNMENT (COMPETENT AUTHORITY)

Internal Audit

CERTIFICATION

Mechanism of GAP Implementation

Ministry of Agriculture

DG of Horticulture

DG of Standardization & Quality

DG of Food Security

Provincial Component Authority

REGISTRATION

District Agriculture

Farms

CERTIFICATION

Registration Number of GAP Farm

GAP.01 - Prov. District. 1 - 1.001

Segment 1

Segment 2

Segment 3

Example of Farm Number

GAP.01 - 34.04.1 - 1.050

Horticulture

DRI Province

SULAMAN District

FARM NUMBER: 1

SALACCA

Challenge of GAP Implementation

- Small scale & Individual farms
- Scattered
- Unstructured Supply Chain (established traditional supply chain)
- Low technology inputs
- Unorganized / less organized farmers
- Lack of database of production

- Reliable supply chain (predicted harvest, correct type [variety], amount, quality, continuity, price, size, safety)
- Traceable → TRUST

Strategy of Implementation

- Focus on main production centers (community orchards)
- Empowerment of farmer groups (1)
  - Technology transfer & implementation
  - Intensive guidance (involving “champion”)
  - Improvement of supply chain (empowerment of traditional supply chain)
- Strengthening Farmer institutions
  - Commodity Association
  - Consolidated farmer groups
- Involvement of private sectors (retailers/exporters)
  - Partnership
- Involvement of researchers/academic
- Development of Commodity Consortium
GAP REGISTERED FRUITS FARMS

<table>
<thead>
<tr>
<th>No.</th>
<th>Province</th>
<th>No. Of Farms</th>
<th>No. Of Commodity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Central Java</td>
<td>2,348</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Yogyakarta</td>
<td>1,071</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>East Java</td>
<td>273</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>West Java</td>
<td>549</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>S. Sumatra</td>
<td>132</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>W. Sumatra</td>
<td>112</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>N. Sulawesi</td>
<td>50</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Bengkulu</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>South Kalimantan</td>
<td>48</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>West Kalimantan</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>North East Nusatenggara</td>
<td>16</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>South Sulawesi</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>Lampung</td>
<td>26</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Bali</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>Jambi</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

- Total GAP Registered farms 4,788 farms, 21 commodities 15 Provinces, 74 Districts.
- Published : 229 SOP Fruits, 24 Commodities 21 Provinces, 141 Districts

Impact of GAP Implementation
- Better domestic market appreciation (moden market)
- Open access to international market

MARKET DESTINATIONS

**EXPORT**
- Mangoes
  - Hong Kong, Singapore, Brunei, China, France, Germany, South Korea, Malaysia, Taiwan, Middle East
- Mangosteen
  - China, Hong Kong, Singapore, Malaysia, India, Middle East
- Salacca
  - China, Malaysia, Singapore
- Pineapple
  - South Korea, Iran, Middle East

**DOMESTIC**
- Convenience Stores
- Supermarket
- Fruit Specialty Stores

CONCLUSION

- Implementation of GAP requires :
  - price incentives (export/modern market)
  - Intensive guidance
- GAP implementation closely related with “other factors” (institution, supply chain & market)

THANK YOU
Smallholder organizations, quality improvement and credit availability to enhance smallholder contribution to value addition along the tropical fruits value chain - Philippine experience

LORNA E. HERRADURA, Ph.D
BPI, Philippines

Major fruits in the Philippines:

- Predominantly grown in large commercial plantations:
  - Banana
  - Pineapple

- Predominantly grown in small farms:
  - Calamansi
  - Mango

Volume of Production of Major Fruits in the Phil.

- Food manufacturing
  - food and beverage processing
    - most dominant industry in Philippine manufacturing (40% of total output)
- Significant increase in demand for processed fruits
  - changes in today’s lifestyle
  - growing concern on health and healthy food products
  - dietary preference
  - improvement in socio-economic status

Companies of mango processors:
- Single proprietors (common among micro, cottage and small industries)
  - Luzon - 17
  - Visayas - 11
  - Mindanao - 4
- Large local companies
  - San Miguel Corporation
  - RFM Corporation
  - Universal Robina Corporation


Philippine tropical fruits used for processing:
- Banana
- Pineapple
- Mango
- Calamansi
- Papaya
- Guava
- Guyabano
- Mandarin
- Pummelo
- Durian

Value adding of tropical fruits:
- Juice/ pures - banana, pineapple, mango, calamansi (lime), papaya, guava, soursop (guayabano) and mandarin
- Jams
- Marmalades
- Pastilles
- Wines
- Dried fruits
- Flour and powder (banana)
- Alcohol or beer (banana)

Processed mango - one of the country’s export winners
- Carabao variety - usually used for processing
  - mango puree
  - juice
  - dried mangoes
  - concentrates
  - frozen mangoes
  - glaze
  - edible parts
  - mango in brine
  - mango preserves

Processed mango
- global demand has been increasing
  - dried mangoes, mango puree
  - dried mangoes – accounted for 84% of total export value of dried fruits

Production – 47,232 mt/yr
  - export - 13%
  - domestic market - 87%
**Philippine Processed Mango Industry Supply Chain**

Input Suppliers \( \rightarrow \) Grower/Sprayer \( \rightarrow \) Processors

Credit Windows

Exporters
Retail/Supermarkets
Institutional Buyers

Source: Digal and Concepcion, 2004

**Formation of smallholder organizations:**

- industry clustering of the Department of Trade and Industry
- agribusiness enterprise support program of the Department of Agriculture
  - encouraged the formation of industry associations and cooperatives
  - for institutional development and capacity building

**Councils**

e.g. Regional industry development councils of major commodities

- Regional Mango Industry Development Council
- Philippine Mango Development Council
  - mango is one of the priority crops under the High Value Crops Law
  - supported by the major programs (MAKAMASA) of the Department of Agriculture

**Associations, Cooperatives, Confederation, Foundation**

- private - led
  - to address industry concerns
  - lobby for government action or intervention and assistance
  - meet volume requirements and negotiate for prices

- Mango Producers Exporters Association and the other mango cooperatives
- Mango Producers and Exporters Confederation (MPEC)

**Options for quality improvement**

- Technical assistance/market and R&D support, congresses and symposia
- Preparation of IEC (information, education and communication) materials on production, post harvest and hot water treatment (HWT) at the exporters’ and traders’ level
Government institutions

- Department of Agriculture
  - Bureau of Agricultural Research (BAR)
    - The National Technology Commercialization Program (NTCP) e.g. fruit wines
  - Bureau of Plant Industry (BPI) and Agricultural Training Institute (ATI)
    - capacity building programs for good agricultural practice (GAP)

- PCARRD - Mango Information Network (MIN)
  - provision of information relevant to mango production (production, prices, government policies)
  - technomarts through regional consortiums

- State Colleges and Universities – provision of info

- Special government programs – USAID program (GEMZ)

Government institutions

- Department of Science and Technology (DOST)
  - Industrial Technology and Development Institute (ITDI)
    - Small enterprise technology upgrading program (SETUP) – provision of technology

    - technology needs assessment, innovation systems support, manpower training, consultancy and technical advisory services, product standards and testing, packaging and labeling, database management and info system, linkages and networking

    - provision of Food Safety Trainings such as Good Manufacturing Practices (GMP) and Hazard Analysis Critical Control Points (HACCP)

Setting up of product grades and standards
- facilitate disposal for trading

  - Bureau of Product Standards (BPS)

    - dried mangoes – grading
      - sulfur dioxide residue
      - moisture content
      - packaging
      - labeling

    - mango puree – grading
      - general requirements (total soluble solids, titrable acidity and microbial count)
      - sampling
      - methods of analysis
      - labeling

Processors - follow buyer standards
- ensure acceptability in the export market

- US - no sugar, artificial preservatives and food coloring
- Germany and Netherlands – sulfite levels less than 500 ppm
- Japan – sulfite levels not more than 5 ppm

- Small irrigation facilities by local govt units (LGU) and special projects (e.g. MRDP)

- Address issues on logistics
  - Shipping through roll on-roll off (RORO) technology
    - improves inter-island shipment
  - lessen transport cost and fruit quality deterioration
  - Direct farm-to-market linkage (OPWHT)

Source: Digal and Concepcion, 2004; Brown et al., 2006, Socio-Economics SOA and AB Series No. 8/2008.
**Options for credit availability**

- credit facilities and windows

Agricultural Credit Policy Council (ACPC) – Innovative Financing Scheme (IFS) Special Agricultural Financing Window

- tasked by DA to review all credit facilities available to growers, processors and exporters
- tasked to create a policy environment that will encourage more participation of formal banking institutions in lending to the agriculture sector

**Self reliant team (SRT) program**

- Composed of 3-15 members residing in the same barangay and involved in the same project
- Finance the working capital or production requirements of farmers, fisher folks and “agripreneurs”
- Loan can be production activities, processing, packaging, manufacturing etc.
- P 50,000 loan/member payable within 3 yrs

**Usual partners:**

- DA-Quedan and Rural Credit Guarantee Corporation (Quedancor) and other specialized government banks
- Self reliant team (SRT) program
  - Collateral-free credit scheme grounded on strong credit values
  - Harnessed by continuing training and skills development program

**Informal lenders**

- Input suppliers
  - provide inputs for the farmer and purchase the mangoes through contract buying
- Contract growing
  - agriculture-based company transfers farm production technology to local independent farmers or farmer’s groups

Source: Dipal and Concepcion, 2004; Dipal 2005
Minimizing Post Harvest Losses and Enhancing Farmers Role in the Value Chain of Tropical Fruits

International Tropical Fruits Network Workshop
Bandung, October 27 - 28, 2010

Market Opportunity
- Super markets have grown at a rate of over 20% a year for the past ten years
- Shift in big cities from only buying produce at small wet markets to supermarkets or as a combination of both
- Requirements in the cities have increased dramatically with urbanization: Consumers require a wider range of choices and quality
- Imported fruit makes up approximately 80% percent of all fruit sold in supermarkets

Constraints
- Taste and Preferences toward high quality fruits – but with premium price
- Low purchasing power – only cities and urban dwellings
- Income growing – demand growing
- Wet markets are not dynamic

Constraints (cont’ed)
- Pre-Harvest/Production/processing
  - Difficulty in accessing inputs such as high quality seeds
  - Lack of access to credit
  - Unreliable fruit production at small markets
  - Small farms
  - Excessive use of pesticides
  - Improper farm management and GAP
- Harvest
  - Harvesting at improper maturity and time
  - Harvesting methods: Free from breaks, burns, spoth, rot, decay
- Post-Harvest
  - Lack of packaging and storage facilities
  - Poor harvesting and handling
  - Poor transport facilities throughout the value chain
  - Poor transportation
- Institutional
  - Lack of market information and marketing systems at the farm gate
  - Limited working relationship between farmers and buyers
  - Weak banking system
  - Non-competitive agricultural credit

AMARTA’s Strategy
- Market-driven project: Shifting major distribution and consumption along the value chain
  - Major market distribution and consumption centers (Sunda, Madura, Java, Sumatra, Maluku, Sulawesi)
- Fruits
  1. Bananas in East Java, which will affect 100 farmers.
  2. Citrus in Bali, which will affect several hundred farmers.
  3. Mangos in Java, which will affect 500 farmers.
  4. Pineapples in West Java, which will affect several thousand farmers.
  5. Bananas in North Sumatra, which will affect 1,400 farmers.
  6. Citrus in North Sumatra, which will affect several thousand farmers.
  7. Pineapples in North Sumatra, which will affect several thousand farmers.

AMARTA’s Areas of Interventions
1. Farmers Role: Pre-harvest and Harvest
   - Facilitate improvements in production
     - Provide planting material (tissue culture)
     - Provide extension materials and information for GAP and SOP and effective substitutes for prominent commercial pesticides
     - Introduce new technology: double row for bananas; SOP for citrus
   - Provide technical assistance to key producers
   - Introduce proper harvesting technique
II. Farmers and Distributors
Role: Post Harvest Handling and Linkage to Market

- Provide technical assistance and technology interventions to intermediaries
- Facilitate investment in packing and shipping facilities for high value horticulture
- Facilitate the availability of inputs for packing materials

*Helping Indonesia to Grow*

III. Institutional: Establish and engage Regional Agribusiness Competitiveness Alliance (RACA) to Assist with Advocacy
Facilitate stimulation of enabling agribusiness environment

- Established RACA in both provinces. Composed of champions, stakeholders, in West Java work closely with UNPAD while in North Sumatra with Santosa.
- Activities:
  - Train agribusiness members on packing, handling, communication skills, transportation and logistics, sales, marketing.
  - Formalized RACA structure and operational procedures of managing, engaging and mobilizing stakeholders.
  - Awareness workshops of all stakeholders to exchange discussed views on agribusiness conditions and prepared solutions.
  - Facilitate market penetration
  - Rationales:
    - Improve the local wholesale markets of Pasar Barat
    - Improve food math.
    - Access to capital.
    - Collaborate with local trading community and farmers to identify practical ways of making this market and Sub Kretol market viable.

*Helping Indonesia to Grow*

CASE 1: Banana in Deli Serdang

- On-farm: tissue culture planting materials; double row; GAP and SOP; good harvesting technique
- Post-harvest: packing house; storage, collection, sorting, grading facility
- Marketing: collaborate with distributor; arrangement with Carrefour
- Institutional: 150 farmers groups and forming one RACA

*Helping Indonesia to Grow*

CASE 2: Citrus in Karo

- On-farm: GAP and SOP; good harvesting technique
- Post-harvest: sorting, grading facility
- Marketing: collaborate with distributors to Jakarta, Batam, and Riau
- Institutional: 200 farmers groups and forming one RACA

*Helping Indonesia to Grow*

CASE 3: Strawberry in West Java

- On-farm: Provide planting materials; GAP and SOP; good harvesting techniques
- Post-harvest: packing house; collection, sorting, grading facility; pre-cooling; cold storage in collaboration with Local Agric. Office
- Marketing: collaborate with high end supermarkets in Bandung area; branding - “red ripe strawberry”
- Institutional: working with about 11 farmers groups
  
  Note: It was a very profitable operation but stop in 2009 because of un-available of seeds

*Helping Indonesia to Grow*

CASE 4: Pineapple – MD2 in West Java

- On-farm: Provide planting materials – MD2 variety; GAP and SOP; good harvesting techniques
- Post-harvest: packing house; collection, sorting, grading facility; pre-cooling; cold storage in collaboration with Local Agric. Office
- Marketing: collaborate with high end supermarkets in Bandung area
- Institutional: working with about 2 farmers groups; universities; local Gov. office of Agric.

*Helping Indonesia to Grow*
CASE 5: Work With Local Government Facilitating the Operation of the Merek JTA Facility

Facilitate the expansion and market access for the Citrus and Pineapple industry as well as other fruits and vegetables by developing the Merek JTA packing facility. AMARTA proposes to:

- Provide technical assistance for pack house design.
- Provide a grant for development of Cold Storage.
- Provide a grant for packing and grading equipment.
- Provide technical assistance for citrus and pineapple production packing, processing, and marketing.
- Provide technical assistance for development of greenhouse industries for both fruit/vegetables and cut flowers.
- Provide a grant for a sample greenhouse operation for production of fruit/vegetables and flowers.

*“Helping Indonesia to Grow”*

Some Figures: Outcome and Impact

- Improvement in Technology farming and post harvest: 4,152 ha
- Number of active farmer groups: 330
- Increase in produce sold to the market: Banana 87%, Citrus 60%
- Number of newly introduced technology: 53
- Number of new private-public partnership formed: 4

*“Helping Indonesia to Grow”*

Thank you
Terimakasih

*“Helping Indonesia to Grow”*
Improving the value chain and linking the market for fruit growers in Bangladesh


Professor of Horticulture
Bangladesh Agricultural University (BAU)
Mymensingh 2202, Bangladesh
* Intercooperation, “BAU-GPC-CIRH”

Bangladesh

- Bangladesh is an agricultural country lying between 20°34’ to 26°38’ N latitude, and 88°01’ to 92°41’ E longitude
- It enjoys sub-tropical monsoon climate
- The country has a total area of 1,47,570 square kilometers with the population of about 140 million
- Agriculture contributes for 32 percent of its gross domestic product (BBS, 2008).

Fig. 1. Share of domestic crop sector

Major Fruits of Bangladesh

Late Summer

Fig. 2. Present consumption status of different Horticultural products
Major quick growing fruits

Minor Fruits of Bangladesh

Late Summer

Minor Fruits

National fruits of Bangladesh

• Nutrition Fruits and nutritional food security

The crucial gap stays: Micronutrients – the 'hidden hunger'

Deficiency in vitamins & minerals = MICRONUTRIENT DEFICIENCY

Deficiency in calories = HUNGER

Excess of calories = OVERCONSUMPTION


> 0.83 billion underweight (5% in Bangladesh)

0.3-0.5 billion undernourished (15% in Bangladesh)

> 2.3 billion overweight (12% in Bangladesh)
Jackfruit-the national fruit of Bangladesh

Nutritional status of jackfruits

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Pulp (ripe-fresh)</th>
<th>Seeds (fresh)</th>
<th>Seeds (dried)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories (kcal)</td>
<td>64</td>
<td>4.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Moisture (%)</td>
<td>72.0-77.2</td>
<td>51.6-57.7</td>
<td></td>
</tr>
<tr>
<td>Protein (g)</td>
<td>1.3-1.9</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Fat (g)</td>
<td>0.1-0.3</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Carbohydrates (g)</td>
<td>18.0-25.4</td>
<td>18.4</td>
<td></td>
</tr>
<tr>
<td>Fiber (g)</td>
<td>1.0-1.1</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Ash (g)</td>
<td>0.8-1.0</td>
<td>1.25-1.50</td>
<td>2.90%</td>
</tr>
<tr>
<td>Calcium (mg)</td>
<td>22</td>
<td>0.05-0.53</td>
<td>0.18%</td>
</tr>
<tr>
<td>Phosphorus (mg)</td>
<td>98</td>
<td>0.13-0.21</td>
<td>0.54%</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>0.5</td>
<td>0.002-0.12</td>
<td>0.005%</td>
</tr>
<tr>
<td>Sodium (mg)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium (mg)</td>
<td>407</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vitamin A (IU)</td>
<td>540</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thiamine (mg)</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicotin (mg)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ascorbic Acid (mg)</td>
<td>8-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Value added products from jackfruits

- Jam
- Jelly
- Pickles
- Leather
- Chips

Fruit and its different parts

Products

- Papadam
- chips
- fresh

Products
**Product**
- Leather
- chips

**Products**
- chips
- bulb in sugar syrup
- bulb in vinegar
- jam

**Products**
- leather in special pack

**Nutrition and Poverty alleviation**
- Staple food
- Income generation
- Employment
- Marketing
- Socioeconomic uplift
- Fodder
- Agroforestry

**Employment and income generation**

**Causes of loss**

1. **Metabolic changes**
   - Respiration
     - \( \text{Sugar} + \alpha_2 \rightarrow \text{CO}_2 + \text{H}_2 + \text{Heat} \)
   - Ethylene production
     - \( \text{C}_2\text{H}_4 \) (Ripening hormone)

2. **Mechanical injuries**
   - Improper harvesting
   - Bruising during post harvest handling
   - Favours water loss
   - Favours decay
Harvesting is done in two ways

1. Mango fruits are harvested by Hand-picked
2. Mango fruits are plucked with harvested Collector

Two Serious Post-harvest Diseases

- Anthracnose
- Stem end rot

- Hot water treatments of mango at 55°C for 5-10 minutes
- Conventional methods used for Hot water Treatment

Stem end Rot  Anthracnose

Mango Packaging

- Padi Straw
- Bamboo basket

Packaging materials
Horticultural Export Development Foundation, in short Hortex, is registered under Companies Act of 1913 as an Association not for profit, for export development of horticultural crops from Bangladesh.

Hortex does not directly get involved in either production or export. It works through the private sector and NGOs and provides them technical assistance and all sorts of support services required. Hortex involves in development, promotion and marketing of exportable horticultural produces, particularly high-value non-traditional crops to high-price non-conventional international markets.

It has developed a model zone for export-oriented fruit production and a variety of other crops for export and assists in marketing of these crops to the upper segment of the EU, Middle East and South East Asian markets and elsewhere.

It has also successfully introduced baby pineapple year-round and undertook development programmes for frozen vegetables, ornamental plants, particularly Chinese palm and orchid cut flowers for export.

Hortex follows strictly EU and HACCP standards on sowing, irrigation, pest management, harvesting, grading, packaging, transportation and cool chain management all throughout.
Competitive Advantages:

Processing horticultural products are considered as prospective as potential sub-sector having high demand and substantial levels if profit. The sector consists of reasonable number of competitive advantages, which are listed below:

- Favorable climate and suitable soil condition exist in greater Rajasthan for production of good quality standard sized mango, jujube and papaya.
- Cheap available labor.
- Processed food has great market potential.
- Excellent road network development and convenient transport facilities with capital city and other region.
- Export potential in Middle East and Europe.
- Profit margin is high compared to other crops.

Possible Interventions:

1. Farmers including poor and extreme poor have better access to quality inputs for better production.
   - Access to QPM
   - Promotion of environment-friendly inputs
   - Promotion of safe and judicious use of chemical fertilizers and pesticides
2. Farmers adopt improved production and management techniques for fruits production.
   - Promotion of improved technologies and management practices (for producers including orchard owners, SPAs and bami)
   - Homestead improvement, farm, and homestead development
   - Facilitate SPA to organize technical session on mango, papaya, and jujube
   - Introduction of new varieties
3. Farmers have access to profitable markets for better margin.
   - Access to profitable markets at local/national level through better packaging, harvesting and post harvest handling.
   - Development market linkages by exploring potential of more efficient domestic supply chain.
   - Enrolment of SPA in fruit production and marketing.

SWOT Analysis

<table>
<thead>
<tr>
<th>Strength</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Soil and climate condition are suitable for fruit production</td>
<td>• High demand of quality and fresh fruit in</td>
</tr>
<tr>
<td>• Better variety and higher quality of fruits</td>
<td>packaged form, particularly among the</td>
</tr>
<tr>
<td>• Availability of skilled labor</td>
<td>urban households</td>
</tr>
<tr>
<td>• Profit margin is high compared to other crop</td>
<td>• Fruit processing that can be a viable</td>
</tr>
<tr>
<td>• Better quality and higher price</td>
<td>industry having export potential</td>
</tr>
<tr>
<td>• Lower cost of production</td>
<td>• Export potential</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weakness</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of investment fund</td>
<td>• Inadequate and intermittent supply of electricity</td>
</tr>
<tr>
<td>• Lack of awareness among the farmers on safety use of pesticide</td>
<td>• Import of foreign fruits</td>
</tr>
<tr>
<td>• Lack of colorful varieties</td>
<td>• Higher interest rate</td>
</tr>
<tr>
<td>• Access to technical knowledge from Government Research Institute</td>
<td>• Lack of preservation facilities</td>
</tr>
<tr>
<td>• Lack of processing knowledge</td>
<td>• Use of chemicals especially carbonate</td>
</tr>
</tbody>
</table>

Constraints

- Inadequate supply of quality planting material leads to low yields and cheater farmers by leading suppliers.
- Lack of colorful, lucrative variety according to demand of export market.
- Lack of regular bearing fruit (mango lead to less yield).
- Inadequate knowledge on modern production techniques.
- Lack of knowledge on post-harvest techniques and safety norms lead to damage of fruits.
- Lack of knowledge and awareness on packaging system leads to low price and damaged fruits during carrying.
- Over use of pesticide leads to high production cost and also health hazard.
- Access to export market.

Thank you
Empowering of Small Farmers in Markets

By Juejan Tangtermthong
Executive Director

AFMA

- The Agricultural and Food Marketing Association for Asia and the Pacific (AFMA)
- An international non-profit organization based in the FAO Regional Office for Asia and the Pacific (RAP), Bangkok
- Operates under membership contributions, its own activities and financial support from the international agencies.

AFMA’s mandate

- to carry out technical cooperation among food and agricultural marketing institutions of the countries in Asia and the Pacific.

AFMA’s members

What we do

- Study tour
- Projects
- Workshop
- Training
- Publications

Small farmers in markets

- Case studies of small farmers who gain access to high value markets
- Studied in 2007-2008
- By AFMA/FAO
Small farmer
• One farmer or one farmer family for labor and management
• Disadvantages and less competitive

Identifying cases
• Identified from countries in Asia
• Selected for 10 cases
• Including fresh produce, rice, livestock and dairy

Ten Selected Case studies

Study
• Visited farm
• Interviewed farmers and others stakeholders in the chain
• Observed their production until produce was delivered to the market

How they be in the market?

Niche market
Branding
Value added product
Venture
Linking with company
Relationship
Group
Supports

Value adding
• Using processing
  (e.g. juice processing, frozen, meat ball)
• Get certificate
  (e.g. Halal, abattoir license, Global GAP)
Organizing into group
- Helps collect and assemble produce in one place
- Attracts trader or other supports
- a socialize group or group in the same area.

Venture
- Including open up for initiative, information and news
- They try new crop, new products and take it as an opportunity.

Niche market
- non-traditional market
- such as institution buyer, group of buyers or health shop

Network
- Helps to keep farmer in the chain
- They have long relation with company
- They are mentor to other farmers

Focus
- Focus and commitment to their production

Major Factors

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Booma Lat Housewife rice producer group</td>
<td>Thailand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>Sabah Organic Asparagus Farmer Group</td>
<td>Thailand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Hapoteung Village Non-Farmers</td>
<td>Laos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Taubay Village Vegetable Farmers</td>
<td>Laos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Dragon Fruit Farmer in Long An</td>
<td>Vietnam</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>Mao Bi Family Farmer in Yeh Long</td>
<td>Vietnam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>CY vegetable Coop Dairy Farmer in Batangas</td>
<td>Indonesia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>CACVCA Vegetable Farmers Cooperative</td>
<td>Philippines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Carambola (star fruit) grower</td>
<td>Malaysia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>HS Mari cactus Farmer</td>
<td>Malaysia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Empowering small farmers

1. Working with private sectors
   - Customers know them.
   - They provide service and information to customers and farmers.
   - They run business effectively and make it competitive.

2. Avoiding subsidies
   - Provide farmers, buyers, marketers with appropriate services and information
   - Avoid give free inputs, it makes them weak
   - Link them up

Fundamental factor

- Produce good quality, safety produce and meet requirements

*Extension workers should advise farmers of their different options, but they should never tell them what to do.*

*Reproduced from Marketing Extension Guide on Horticultural Marketing © AAO 2002*
A Prospect for China's Potential Market of Tropical Fruit

Professor Yan-Wen Tan
Economy and Management College of South China Agricultural University
2010.10.27

China Tropical Fruit Imports

The top 10 imports of China --- tropical fruits. Year 2008

- Main fruits imported are banana, longan, durian and dragon fruit
- Potential for pineapple, mango and rambutan

1. The Present Situation of Tropical Fruit Trade between China and ASEAN

Import of Banana

- 1.1 Rapid Growth in Fruit Imports of China

Fig. 1 China's import of banana, 2004-2009 unit: thousand MT

Import of Pineapple

- 1.1 Rapid Growth in Fruit Imports of China

Fig. 2 China's import of pineapple, 2004-2009 unit: thousand MT

Import of Longan

- 1.1 Rapid Growth in Fruit Imports of China

Fig. 3 China's import of longan, 2004-2009 unit: thousand MT
1.1 Rapid Growth in Fruit Imports of China

Most of fruits import from ASEAN countries

<table>
<thead>
<tr>
<th>Fruit</th>
<th>Major importing countries and the percentage of total imports from ASEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana</td>
<td>Philippines (41.7%), Thailand (39.4%), Vietnam (5.9%)</td>
</tr>
<tr>
<td>Longan</td>
<td>Thailand (34.6%), Vietnam (31.4%)</td>
</tr>
<tr>
<td>Dragon Fruit</td>
<td>Thailand (100%)</td>
</tr>
<tr>
<td>Cassava</td>
<td>Vietnam (59.5%), Indonesia (10.9%), Philippines (17%)</td>
</tr>
<tr>
<td>Mangosteen</td>
<td>Thailand (39.3%), Indonesia (24.9%), Malaysia (13.3%)</td>
</tr>
<tr>
<td>Lychee</td>
<td>Vietnam (52.0%), Thailand (37.8%)</td>
</tr>
<tr>
<td>Mango</td>
<td>Burma (39.0%), Thailand (35.9%), Philippines (18.5%)</td>
</tr>
<tr>
<td>Pineapple</td>
<td>Philippines (33.6%), Thailand (36.3%)</td>
</tr>
<tr>
<td>Papaya</td>
<td>Malaysia (22.7%), Philippines (47.3%), Thailand (10.6%)</td>
</tr>
</tbody>
</table>

China-decreasing export (fresh fruits)

In contrast with the rapid growth of imports, China’s exports of major tropical fruits have decreased year by year

<table>
<thead>
<tr>
<th>Fruit</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana</td>
<td>5.7</td>
<td>5.2</td>
<td>5.1</td>
<td>5.0</td>
</tr>
<tr>
<td>Longan</td>
<td>9.8</td>
<td>9.5</td>
<td>9.3</td>
<td>9.0</td>
</tr>
</tbody>
</table>

China-Increasing Import (fresh fruits)

1.2 Larger Increase in Imports of Major Processed Fruits

<table>
<thead>
<tr>
<th>Fruit</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canned Pineapple</td>
<td>162.9</td>
<td>280.3</td>
<td>281.3</td>
<td>280.7</td>
</tr>
<tr>
<td>Dried Longan Pulp</td>
<td>15461.4</td>
<td>28995.3</td>
<td>28883.2</td>
<td>28729.0</td>
</tr>
<tr>
<td>Ordinary Pineapple Juice</td>
<td>82.3</td>
<td>164.3</td>
<td>164.3</td>
<td>0.07</td>
</tr>
<tr>
<td>Canned Lychee</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.40</td>
</tr>
<tr>
<td>Canned Longan</td>
<td>107.4</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
</tbody>
</table>

China-Import increasing (processed fruits)

1.2 Larger Increase in Imports of Major Processed Fruits

Most of processed fruits import from ASEAN countries

<table>
<thead>
<tr>
<th>Fruit</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canned Pineapple</td>
<td>6781.8</td>
<td>7568.6</td>
<td>7595.2</td>
<td>7581.3</td>
</tr>
<tr>
<td>Canned Longan</td>
<td>93.9</td>
<td>93.9</td>
<td>93.9</td>
<td>93.9</td>
</tr>
<tr>
<td>Baked Longan Pulp</td>
<td>231.96</td>
<td>231.96</td>
<td>231.96</td>
<td>231.96</td>
</tr>
<tr>
<td>Canned Longan</td>
<td>1295.54</td>
<td>1295.54</td>
<td>1295.54</td>
<td>1295.54</td>
</tr>
</tbody>
</table>

China-export is decreasing (processed fruits)

1.2 Larger Increase in Imports of Major Processed Fruits

Some processed fruit products which China had comparative advantages, such as canned pineapple, canned longan, showed declining in export

<table>
<thead>
<tr>
<th>Fruit</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canned Pineapple</td>
<td>7568.6</td>
<td>7568.6</td>
<td>7568.6</td>
<td>7568.6</td>
</tr>
<tr>
<td>Baked Longan Pulp</td>
<td>231.96</td>
<td>231.96</td>
<td>231.96</td>
<td>231.96</td>
</tr>
<tr>
<td>Canned Longan</td>
<td>1295.54</td>
<td>1295.54</td>
<td>1295.54</td>
<td>1295.54</td>
</tr>
</tbody>
</table>

2. The Economic Effects of Tariff-free Trade in Tropical Fruits between China and ASEAN
2.1 Enrich the Consumer Market of Tropical Fruits in China

China's net imports of tropical fruits are growing fast, which reflects from one aspect, Chinese consumers' demand for tropical fruit is increasing day by day. It can be said of China - ASEAN Free Trade Area and the implementation of zero tariff tropical fruit, greatly enriched the Chinese consumer market of tropical fruits, effectively meet Chinese consumers' demand for tropical fruits.

2.2 Improve the economic efficiency of trade

Trade Formation Effect

- Bananas 2004
  - Market share of bananas in China, 2004 unit: MT
  - The market share of bananas in China, 2004 unit: MT

- Lychees 2002
  - Market share of lychees in China, 2002 unit: MT
  - The market share of lychees in China, 2002 unit: MT
3. The potential market for tropical fruits in China

Loosing competitiveness

- 3.1 The Tropical Fruits
  China’s tropical fruits have not international competitiveness because of higher producing cost

<table>
<thead>
<tr>
<th>Year</th>
<th>Banana</th>
<th>Lychee</th>
<th>Durian</th>
<th>Longan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>0.28</td>
<td>0.25</td>
<td>0.59</td>
<td>1.21</td>
</tr>
<tr>
<td>2005</td>
<td>0.22</td>
<td>0.28</td>
<td>0.75</td>
<td>1.35</td>
</tr>
<tr>
<td>2006</td>
<td>0.32</td>
<td>0.30</td>
<td>0.61</td>
<td>0.90</td>
</tr>
<tr>
<td>2007</td>
<td>0.32</td>
<td>0.34</td>
<td>0.76</td>
<td>0.87</td>
</tr>
<tr>
<td>2008</td>
<td>0.45</td>
<td>0.38</td>
<td>1.21</td>
<td>0.55</td>
</tr>
<tr>
<td>2009</td>
<td>0.51</td>
<td>0.26</td>
<td>1.19</td>
<td>0.56</td>
</tr>
</tbody>
</table>

- 3.2 Processed Tropical Fruits
  China has a certain comparative advantage in some processed tropical fruit products, such as canned pineapple, ordinary pineapple juice, canned lychee, canned longan

<table>
<thead>
<tr>
<th>Year</th>
<th>Canned Pineapple</th>
<th>Ordinary Pineapple</th>
<th>Canned Lychee</th>
<th>Canned Longan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>7700.49</td>
<td>1622.95</td>
<td>7583.20</td>
<td>83.33</td>
</tr>
<tr>
<td>2005</td>
<td>7208.65</td>
<td>1563.45</td>
<td>8481.32</td>
<td>90.86</td>
</tr>
<tr>
<td>2006</td>
<td>6409.49</td>
<td>1628.27</td>
<td>8332.19</td>
<td>88.62</td>
</tr>
<tr>
<td>2007</td>
<td>8064.66</td>
<td>1697.85</td>
<td>90.62</td>
<td>94.00</td>
</tr>
<tr>
<td>2008</td>
<td>5766.34</td>
<td>5562.77</td>
<td>5787.99</td>
<td>56.77</td>
</tr>
<tr>
<td>2009</td>
<td>6462.56</td>
<td>5787.99</td>
<td>5677.35</td>
<td>54.96</td>
</tr>
</tbody>
</table>

Export- marginal growth
Import-faster growth

- 2.3 Led to the trade deficit between China and ASEAN

<table>
<thead>
<tr>
<th>Item</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>0.67</td>
<td>0.11</td>
<td>0.13</td>
<td>0.14</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Tropical Fruits Export</td>
<td>2.89</td>
<td>3.09</td>
<td>3.44</td>
<td>4.46</td>
<td>5.58</td>
<td>6.49</td>
</tr>
<tr>
<td>Deficit</td>
<td>2.81</td>
<td>1.90</td>
<td>3.31</td>
<td>4.52</td>
<td>5.43</td>
<td>6.25</td>
</tr>
<tr>
<td>Export</td>
<td>429</td>
<td>554</td>
<td>713</td>
<td>842</td>
<td>1041</td>
<td>1063</td>
</tr>
<tr>
<td>Total Amount</td>
<td>626</td>
<td>750</td>
<td>895</td>
<td>1084</td>
<td>1173</td>
<td>1076</td>
</tr>
<tr>
<td>Deficit</td>
<td>201</td>
<td>196</td>
<td>182</td>
<td>142</td>
<td>29</td>
<td>4</td>
</tr>
</tbody>
</table>

- 2.2 Improve the economic efficiency of trade
  Trade Diversion Effect

14000, 37.84%

- from Thailand
- from Vietnam

Fig. 15 The market share of Lychee in China, 2009 (unit: MT)
### 3.2 Processed Tropical Fruits

However, compared with ASEAN countries, China has not been competitive in processed tropical fruit.

<table>
<thead>
<tr>
<th>Year</th>
<th>Canched Pineapple Export</th>
<th>Ordinary Pineapple Juice Export</th>
<th>Canched Lychee Export</th>
<th>Canched Longan Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>261.80</td>
<td>1628.23</td>
<td>304.00</td>
<td>37.22</td>
</tr>
<tr>
<td>2005</td>
<td>353.25</td>
<td>2813.00</td>
<td>68.00</td>
<td>80.00</td>
</tr>
<tr>
<td>2006</td>
<td>328.76</td>
<td>2613.00</td>
<td>8.80</td>
<td>97.97</td>
</tr>
<tr>
<td>2007</td>
<td>232.45</td>
<td>2914.00</td>
<td>48.40</td>
<td>156.50</td>
</tr>
<tr>
<td>2008</td>
<td>305.60</td>
<td>2717.00</td>
<td>89.00</td>
<td>225.00</td>
</tr>
<tr>
<td>2009</td>
<td>403.35</td>
<td>4674.00</td>
<td>262.50</td>
<td>455.18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Dried Longan Pulp Export</th>
<th>Concentrated Pineapple Juice Export</th>
<th>Canned</th>
<th>Mango Juice Export</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>256.60</td>
<td>5464.75</td>
<td>5.08</td>
<td>44.97</td>
</tr>
<tr>
<td>2005</td>
<td>199.85</td>
<td>4154.82</td>
<td>58.81</td>
<td>262.16</td>
</tr>
<tr>
<td>2006</td>
<td>182.99</td>
<td>18625.57</td>
<td>55.04</td>
<td>265.45</td>
</tr>
<tr>
<td>2007</td>
<td>199.82</td>
<td>80997.60</td>
<td>65.25</td>
<td>1605.89</td>
</tr>
<tr>
<td>2008</td>
<td>165.45</td>
<td>7816.72</td>
<td>57.28</td>
<td>1465.87</td>
</tr>
<tr>
<td>2009</td>
<td>151.53</td>
<td>113415.45</td>
<td>109.23</td>
<td>2413.40</td>
</tr>
</tbody>
</table>

### Conclusion

This study indicates that China’s demand for tropical fruit and correlative processed products has been increasing since the establishment of Free Trade Area between China and ASEAN, because of the disadvantages in China’s tropical fruit. Therefore, the potential market of tropical fruit and correlative processed products is huge and unpredictable.