Cassava in Asia: Exposing the drivers and trajectories of the hidden ingredient in global supply chains

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Cassava production in Southeast and East Asia

- Introduced to Asia in the late 18th to early 19th Century
- While initially an important food crop, early stages of commercialisation began during the late 19th Century
Diverse cassava production system in Southeast Asia

Share of Southeast Asia’s 3.6 million hectares of cassava

- Viet Nam: 15%
- Indonesia: 28%
- Thailand: 38%
- Cambodia: 10%
- Lao PDR: 2%
- Malaysia: 0%
- Philippines: 6%
- Myanmar: 1%

FAO Stats
Phases of development driven by policy and market changes

Area of cassava in Asia (million ha)

Phase 1 – Post war
Phase 2 – European livestock feed market
Phase 3 – Starch utilisation
Phase 4 – China demand

FAO Stats
Consumption of cassava in Asia (FAO)

Indonesia = 47kg/year

Thailand = 13kg/year

Vietnam = 8kg/year
Rice centric nations of Southeast Asia

![Graph showing kcal/capita/day for different countries with rice consumption highlighted.]

- Wheat and products
- Rice (Milled Equivalent)
- Potatoes and products
- Millet and products
- Maize and products
- Cassava and products
- Beans

FAO Stats
Cassava food value chains in Southeast Asia
Still plays an important role in the upland subsistence oriented livelihoods

Over 306,000 cassava households in Nusa Tenggara Timur – 85% sell no cassava
Remains a hidden ingredient in global supply chains

- Cassava still has a reputation of being grown as a secondary refuge crop grown by poor upland farmers
- Little appreciation of its modern application, with consumers unaware of their consumption and interactions with cassava starch
- Historically, a low priority of national governments
- Largely off the donor radar
- Limited private sector investment beyond the processing industry
Population, economic growth and demand in Asia
Rising incomes in Asia and changing consumer preferences
Not an “economic inferior” good

- Livestock feed
- Paper industry and glues
- Textiles
- Sweeteners
- Processed food sector
- Pharmaceuticals
- Alcohol
- Bioplastics
- Biofuel

Desirable functional traits:
Meat products, sauces, frozen foods, dairy products, noodles
- High viscosity, firm and elastic texture
- Freeze thaw stability.
- Provide short texture and reduce water separation
- Smooth texture and paste clarity
- Prevent cracking, good freeze thaw
- Smooth and improve mouth feel

Cost competitive compared to substitutes?
- Maize, sorghum, sugarcane, potatoes, etc
- Oil
Growing demand for protein in Asia

China, mainland

Vietnam

Kg/capita/year

FAO Stats
Multi-billion dollar export industry

Value of exports (Billion USD)

<table>
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<th>Year</th>
<th>Cassava (fresh and dried)</th>
<th>Cassava Starch</th>
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Comtrade
Thailand cassava domestic and export utilisation (million tons)

Cassava Roots (40.76)
- Cassava chips and pellets (17.19) 42%
  - Domestic (1.13) 3%
  - Export (16.06) 39%
- Cassava starch (21.81) 54%
  - Domestic (5.88) 14%
  - Export (15.93) 39%
- Ethanol (1.76) 4%
  - Domestic (1.76) 4%

78% exported

Source: TTTA
Impact of policies on orientation of cassava trade

Impact Quantity (million tons)


Import value (billion USD)


Eastern Asia
South-Eastern Asia
Western Europe
World

CIAT
FAO Stats
Trade in cassava (fresh and dried 2013)

China – 89%

Thailand – 1.3 billion USD

Vietnam – 387 million USD

Value reported by exporter (USD)
Value reported by importer (USD)
Cross-border trade and investment

Cassava Area (thousand ha)

- Cambodia
- Lao PDR
- Myanmar

G. Smith
Globally the most widely traded starch

Export Value (Billion USD)

- Manioc (cassava) starch
- Maize (corn) starch
- Potato starch
- Wheat starch
- Other starches

Comtrade

G.Smith
Trade in cassava starch (2013)

Thailand – 1.14 billion USD

- 1st - 61%
- Vietnam – 707 million USD
- Cambodia 1.1m Export

- 2nd - 5.8%
- Vietnam
- Indonesia 27.4m Export 107.2m Import

Value reported by exporter (USD): 1,940m USD
Value reported by importer (USD): 1,327m USD
Growth in export of Thai native and modified starch starch

Source: TTSA
Utilisation of starch in Thailand and China

Thai Domestic use of cassava starch
- Tapioca Pearls: 4%
- Modified Starch: 10%
- Whole Salers: 13%
- Monosodium Gultamate (MSG): 18%
- Paper: 7%
- Textile: 1%
- Other: 3%

Sweeteners: 44%

Chinese use of all starch
- Starch: 46%
- Other amino acids: 1%
- Lysine: 5%
- Food: 8%
- Lactic acid: 1%
- Citric Acid: 7%
- Polyol: 2%
- Modified Starch: 7%
- Sugar-hol: 5%

Source: TTTA

Source: Jin Shu-ren
Has it been too good to be true?: Impact of grain policy
Who has been doing well?
Farmers when connected to competitive value chains

![Graph showing price index for Cassava Starch and Cassava Roots (Factory gate) in Central Highlands Vietnam from Jan-12 to Sep-15.](image)
Falling global prices in alternative land uses

Price Index (Jan 2010 = 100)

- Palm oil
- Maize
- Sugar, world
- Rubber, SGP/MYS

WorldBank PinkSheets
Cassava following the correction in maize prices

![Graph showing price trends of various commodities over time]

- **Thai Tapioca (USD/t)**
- **Maize price (USD/t)**
- **US Corn (FOB GULF)**
- **US Corn + Freight +VAT**
- **DaLian (China) Nearby Futures**
- **Thai Tapioca (FOB Bangkok)**

 destacando a correção recente nos preços de milho.}

Farmers load their trailers with harvested cassava last year in Banteay Meanchey province. © Heng Chivoan

**Lacklustre prices, competition dampen cassava exports**
Who has been doing it tough?

- Small-scale labor intensive starch processors have found it difficult to compete for raw material unless they have a niche market
  - E.g. Small-scale processors in Cambodia closed as they struggled to compete for roots

- Large processors of raw material, but not linked to Chinese market
  - E.g. Biofuel industry in Vietnam

- Deep processors depending on cassava starch, but competing against maize based products
  - E.g. Glucose, sorbitol producers

- Limited utilisation in domestic livestock sector
Tapioca starch versus corn starch

- Starch Price (USD/t)
- Difference
- Corn starch, Midwest
- Tapioca Starch (Super High-Grade) Bangkok

USDA, TTTA
Productivity will be critical for maintaining competitiveness: particularly with current freight costs.

Currently less than $25 USD/t bulk freight from the US to China.

- **US Maize Grain Yield**
- **Thai Maize Grain Yield**
- **Thailand cassava Root Yield**

FAO Stats
Private sector engagement

• Evaluate and stimulate adoption of existing technologies
  • Different incentive to invest in some value chains, eg. Cassava starch versus cassava chip trade
  • Some technologies provide less ability to capture the returns on investment, eg. Variety dissemination versus soil conservation
  • Competition for feedstock and ability to capture returns on investment
• Collective action and lobby for government support for the industry
  • Cassava association and regional learning alliances a good start
• Invest in R&D to lift starch yield potential and functional traits?

Factory and traders conducting variety assessment with researcher – North Sumatra, Indonesia

Factory experimenting with cassava varieties and management to produce raw material throughout season, Central Highlands, Vietnam
Public sector support

- Private sector involvement not a panacea
- Recognise that there are treats to productivity on the horizon that need public sector leadership
  - Land degradation
  - Emerging pests and diseases in Asia
- Opportunity for national governments to deliver both improve rural livelihoods for smallholders and economic development
  - Conditions for inclusive development
- Be proactive rather than let the trajectory of the cassava sector oscillate based on developments in substitute commodities
- Strengthen linkages and partnerships between research, industry, governments and farmers