

A NEW OUTLOOK FOR CASSAVA IN THAILAND

-KEYNOTE ADDRESS-

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Discovering during the 1960s, that low cost “cassava chips” could be utilized as “grain substitute” in the European feed industry, the export of cassava chips and pellets from Thailand to Europe grew rapidly from zero to 7 million tonnes, until both sides agreed to limit the export to 5.5 million tonnes per annum at a low tariff of 6%. To meet this lucrative export demand, production of fresh cassava roots increased by increasing the growing areas, mainly by moving from the Eastern sea coast (Zone 7) to the Northeastern region (Zones 2, 3, 4, 5 in **Figure 1**). Huge storage and transportation facilities were also developed to support the export of cassava chips, and later pellets.

While enjoying the export to EU at a premium price, exports to other countries as well as the domestic utilization of cassava were very limited. The industry became dependent on “one product to one market”. To control the export so as not to exceed the agreed upon 5.5 million tonnes per annum, the government regulated the cassava trade. In addition, to support the farmers’ demand for higher root prices the government initiated various forms of interventions and price support schemes.

Ironically, the management of the export quota became one of the “innovative management technologies”

The European Commission’s Common Agricultural Policy Reform in the early 1990s signaled the danger of the “one product to one market” approach. Considering the diminishing competitiveness of Thai cassava in EU markets, the future of the cassava industry looked bleak. In order to survive, alternatives had to be found and new strategies had to be undertaken. A three-pronged strategy was agreed upon:

- Improve Thailand’s competitiveness by reducing the cost of root production through introduction and planting of new high-yield and high-starch varieties.
- Develop new and competitive products, capitalizing on the lower cost of roots.
- Create a “Fund” to finance the endeavor, circumventing the bureaucracy by establishing an independent non-governmental organization to carry out the task.

In 1993, a “special fund” of US\$ 30 million was established, and the Thai Tapioca Development Institute (TTDI) Foundation was formed. Two high-yield varieties, KU 50 and Rayong 5, were selected and multiplied at TTDI’s 300 ha Research and Training Center in Huay Bong, Nakhon Ratchasima province. Subsequently, stems of these new varieties were distributed free of charge to farmers, who also received basic training to

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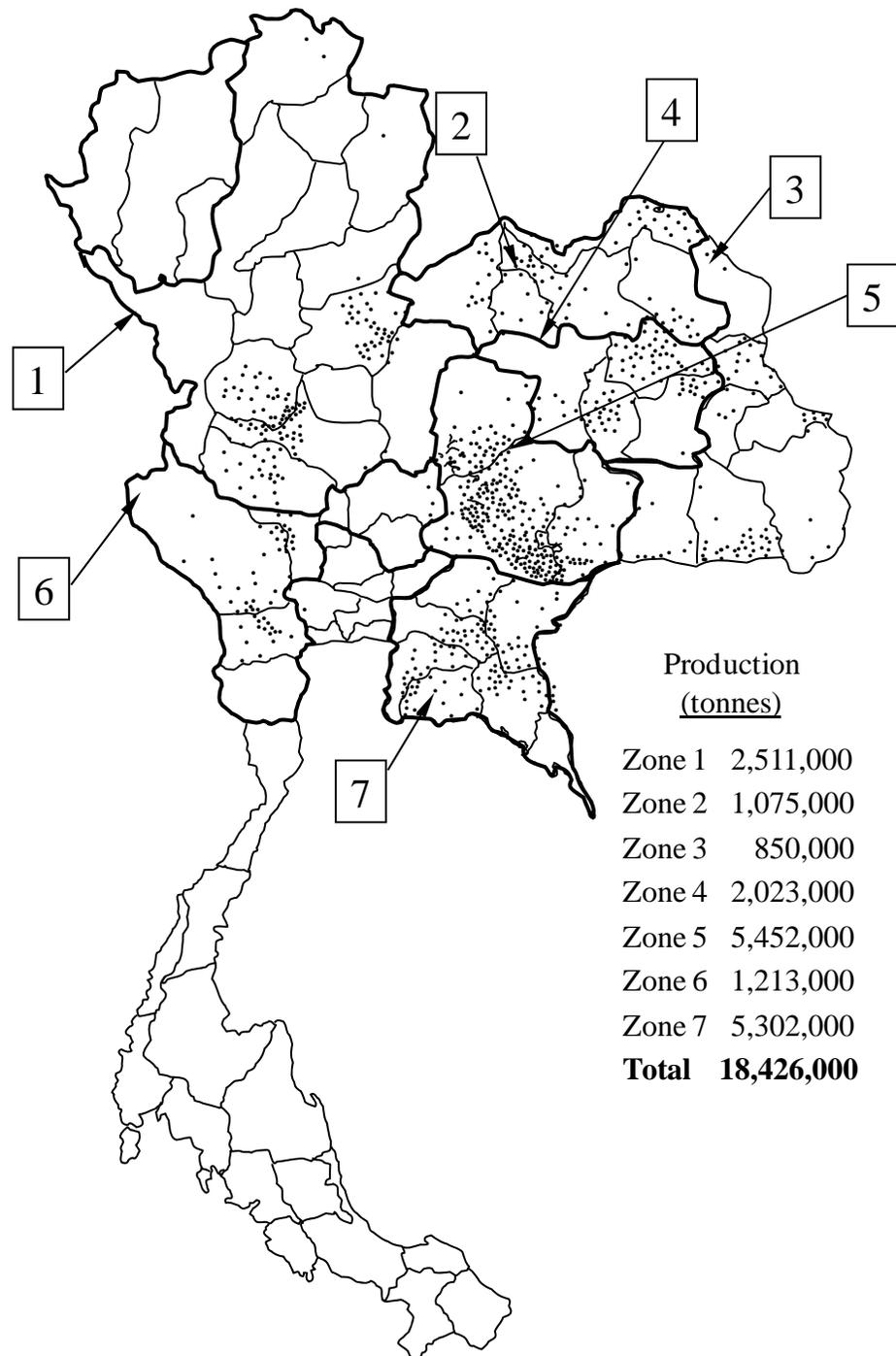


Figure 1. Cassava growing areas and production in seven agro-ecological zones of Thailand in 1998. Each dot represent 1,000 ha

Source: Dept. Agric. Extension, 1998.

increase the crop's productivity. Over time, the farmers' interest in changing to high yielding cassava varieties grew and government agencies responded to this increasing demand for planting material of new cassava varieties. From a small beginning and within ten years, new varieties are now planted in 99% of the cassava-growing areas of about 1 million ha. The most popular variety is KU 50, which is planting in about 63% of the total area.

The new varieties made possible some fundamental changes in the cassava sector and further strengthened the already strong position of the Thai cassava industry in the world market. Numerous value-added products have been developed and commercialized, and the markets have continuously diversified (**Table 1** and **2**).

Table 1. Recent structural changes in cassava production and utilization in Thailand.

<ul style="list-style-type: none"> - Change to high yield-varieties completed - Strong farmer interest to increase productivity: new varieties and improved cultivation techniques - Yield increases to 17.0 t/ha <ul style="list-style-type: none"> -ex farm cost has decreased -starch content has increased - Starch factories pay higher prices for roots - Structural shifts in processing <ul style="list-style-type: none"> -from chips/pellets to starch and starch derivatives -from feed to industrial-based products - >50% utilization of fresh roots for production of 2.5 million tonnes of starch = 11 million tonnes of fresh roots
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Table 2. Recent changes in cassava processing and marketing in Thailand.

<ul style="list-style-type: none"> - Revival of chip production for the Chinese market - Ten new cassava starch factories under construction in 2001 with a capacity to produce 2,700 tonnes starch/day = 4 million tonnes of roots a year - Total 72 starch factories with a capacity to use 16.8 million tonnes of roots or 90% of production - New usage: eight ethanol factories approved; expected to use 4 million tonnes of roots by 2004 - Continue expansion of starch derivative facilities: maltose, dextrine, dextrose, glucose, sorbitol, modified starch etc., especially production of ethanol and alcohol
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The average cassava yield in Thailand has increased from 13.8 t/ha in 1994 to 17.0 t/ha in 2002, while the starch content increased from 24% to 27%. The cost of production per tonne of cassava roots decreased despite the increasing costs of production per hectare. Root production declined by 12% from 19.1 to 16.8 million tonnes even though the planted area decreased by 28% from 1.38 to 0.99 million ha. Higher starch content, better quality roots, and ample raw material supply at a reasonable price have made Thai cassava starch very competitive, while domestic demand for native starch grew to 1.0 million tonnes and export volumes reached 1.5 million tonnes in 2002 (**Table 3**).

Table 3. Production, domestic utilization and export of Thai cassava in 2002.

	Dry products (tonnes)	Fresh root equivalent	
		(tonnes)	(%)
Root production		18,430,000	97
Domestic utilization		5,600,000	30
-Chips/Pellets	500,000	1,100,000	
-Starch	1,000,000	4,500,000	
Export		13,350,000	70
-Chips/Pellets	3,000,000	6,600,000	
-Starch	1,500,000	6,750,000	
Total utilization and export			
-Chips/Pellets	3,500,000	7,700,000	41
-Starch	2,500,000	11,250,000	59
		18,950,000	100

While the export of cassava pellets to the EU decreased from 5.5 million tonnes in the late 1980s to 1.4 million tonnes in 2002, China's imports of cassava chips increased rapidly from nearly zero to 1.6 million tonnes. This practically compensated for the reduced exports to the EU market. The domestic utilization of cassava chips also improved to about 500,000 tonnes per year. Export of cassava starch increased at the rate of 10% per year, while domestic consumption surged to about 1.0 million tonnes and is still expanding at a rate of 10% per year. Many new and modern starch factories are being built, and production capacity will increase markedly, reaching 4 million tonnes.

At present, the market structure is well balanced with exports to Asian countries 50%, to the EU 20% and domestic use 30%.

Thus, against many odds, the Thai cassava industry has survived by quickly adapting to changing realities and is now strong and competitive. The future outlook, both in the medium- and the long-term, looks quite bright (**Tables 4-7**).

Table 4. Future outlook for cassava production in Thailand.

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- No new marginal land available for area expansion
 - Competition for land use among three crops: cassava, sugarcane and maize
 - Production costs per tonne have decreased, due to higher yields through the use of new varieties and improved cultivation techniques
 - Harvesting and transportation costs have increased
 - Short-term target yield of 3 t/rai or 18.75 t/ha.
 - Medium-term (3-5 year) target yield of 5 t/rai or 31 t/ha
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Table 5. Future outlook for cassava processing in Thailand.**Short-term (2-3 years):**

- Starch production will reach 3 million tonnes = 13 million tonnes of fresh roots in 2005

Medium-term (3-5 years):

- Ethanol and alcohol production will consume 4-8 million tonnes fresh roots/year
 - Continued expansion of production of modified starch and starch derivatives
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Table 6. Future outlook for the cassava industry in Thailand.**Short-term outlook**

- Strong demand for chips from China at 2,000,000 tonnes/year at a higher price than FOB to the EC
- Starch exports will continue to expand world-wide, especially in Asia

Medium-term outlook

- Great potential for expansion of starch exports to China
 - Ethanol production from cassava would reduce Thailand's dependency on exports, with >50% utilized domestically
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Table 7. New government policies relating to the Thai cassava sector.

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- Will maintain high price of roots for farmers through various intervention schemes
 - Support and promote export of cassava products through:
 - Increased market access: WTO, AFTA, FREE TRADE AGREEMENTS
 - Export promotion activities
 - No export controls, minimum regulations
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However, there are three areas that could affect the future of the Thai cassava industry:

- No additional land is available for area expansion, leading to strong competition for land between cassava, sugarcane and maize.
- Shortage of labor and higher wages could hamper future cassava root production.
- It is government policy to increase the income of farmers. Its price intervention schemes could increase the root price to a level that would induce “farmers to grow more, but users to buy less”.

We may conclude that, like the case of oil, the era of cheap cassava products is over.

Rethinking the future of the cassava industry, it is fair to say that the cassava industry has a strong potential to develop further. However, new areas of development must be explored, developed and undertaken, such as:

- Mechanization of root production
- Improvement of farm management
- Cost reduction through the planting of early-maturing varieties resulting in greater spread of harvesting times and longer operating periods of starch factories
- Development of new varieties suitable for specific end-uses
- Development of new usage, such as ethanol and bio-degradable plastics.