

Agricultural Mechanization in Thailand



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UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

CSAM



OVERVIEW

- Since 1960s, rapid and extensive mechanization through locally-adapted, locally-made, small-scale machinery
- First wave . affordable, small-scale, power-intensive, multipurpose machines, owned and operated by smallholders
 - “ Axial-flow low-lift pumps
 - “ 2WT for paddy and dry land cultivation, transport, powering other machines
- Second wave . larger, control-intensive, specific purpose machines, owned/operated by large farmers/contractors
 - “ Threshers
 - “ Combine harvesters





DEVELOPMENT AND SUPPLY OF MACHINERY

- “ Many small-medium enterprises and a few large firms
- “ Small engineering workshops of 4-5 workers in 50 m²
- “ Freely copied and adapted imported machinery
- “ Close proximity to rice farmers in Central Plain
- “ Large firms with 100+ workers also sprang up in industrial provinces north of Bangkok
- “ Close communication with public-sector engineers who shared designs
- “ Otherwise very little policy support





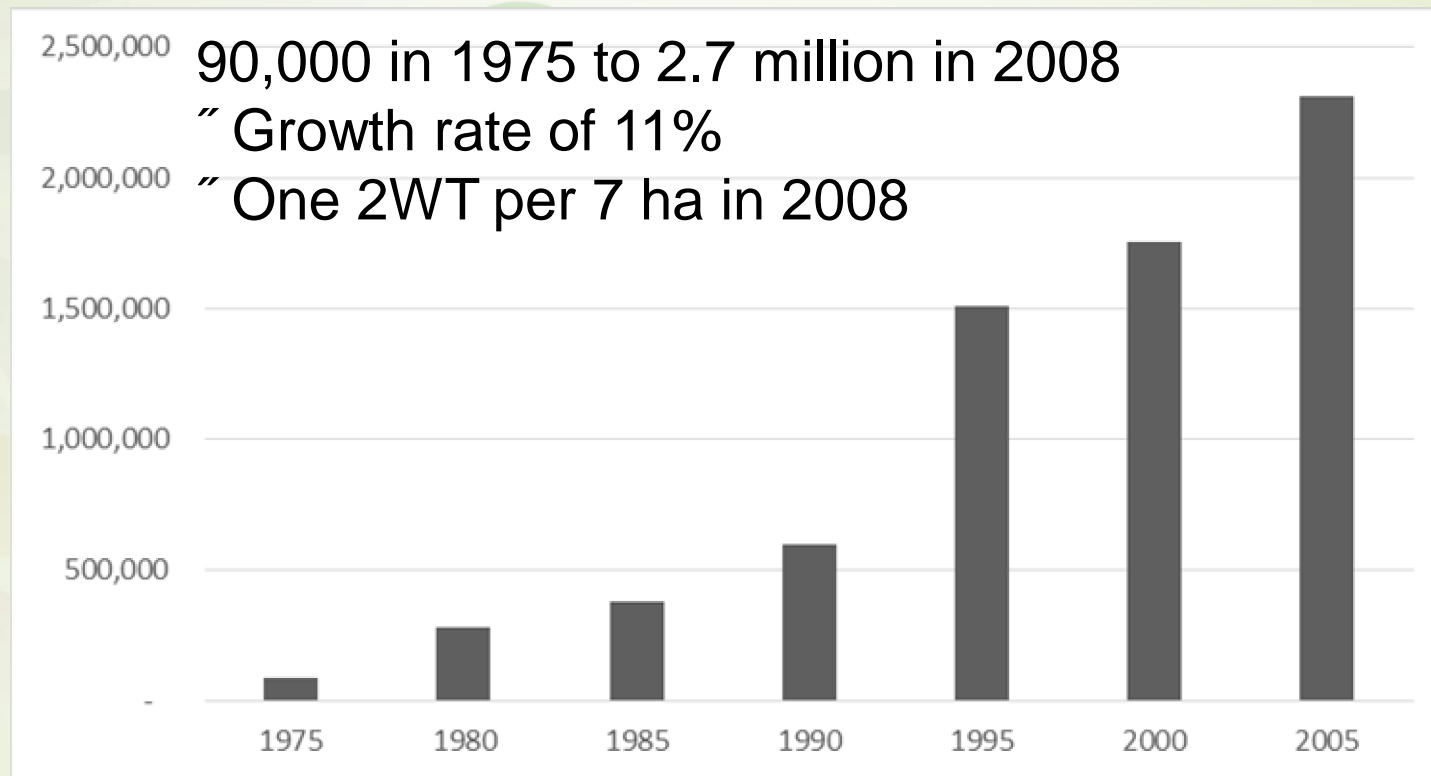


Figure 2. Number of two-wheeled tractors in Thailand, 1975-2000
(estimated from Chancellor 1983; Coxhead and Plangpraphan 1998; Thepent 2000, 2015)

THRESHERS AND COMBINE HARVESTERS

- Development of power threshers in late 1970s
 - “ Blueprints released for commercial production (AED, IRRI)
 - “ Self-propelled Thai thresher developed (2 t/hr), ideal for contractors
 - “ By 2000, 88% of rice farmers used a power thresher

- “ Development of combine harvesters in late 1980s
 - “ Local firms made small, track-type rice combine harvesters, 0.4-0.9 ha/hr
 - “ By 2000, 35% of rice farms used combine harvesters
 - “ By 2013, 28% of all farms and 54% of rice farms used combine harvesters, 97% through a contractor





KASET PHATTANA



KASET PHATTANA



POWERFUL WELLKNOWN DIESEL ENGINE

- 6 - Cylinder with 5900 cc. displacement volume
- Maximum rated gross power 120 bhp. at 2500 rpm.
- Maximum torque 389 Newton-metre at 1400rpm.

FULLY HYDROSTATIC TRANSMISSION SYSTEM

- Double separated hydraulic pump and planetary gear drive units
- Manoeuvre rapidly, without time - wasting clutch stamping , gear changing and braking
- Maximum travelling speed about 6 km./hr. both forward and reverse



PLANETARY GEARS

HIGH QUALITY
PARTS
AND
COMPONENTS



CUTTERS AND GUARDS



UNDER CARRIAGE



**COMBINE HARVESTER
KASET PHATANA**

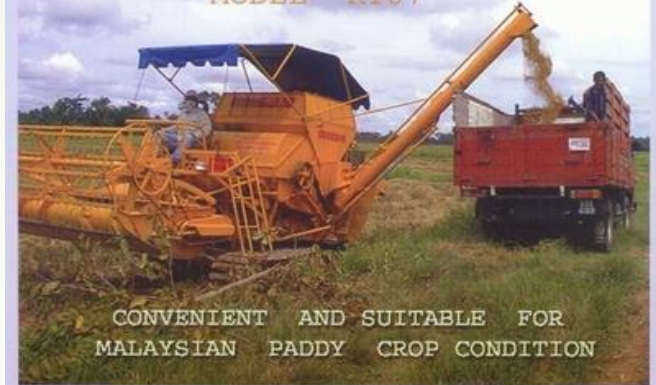
• HIGH POWER SERIES



FOR ALL PADDY CROP CONDITIONS

KASET PHATTANA COMBINE HARVESTER WAS HONORABLY AWARDED BY THE MINISTRY OF SCIENCE TECHNOLOGY AND ENVIRONMENT OF THAILAND FOR ITS BEST INVENTION IN 1995.

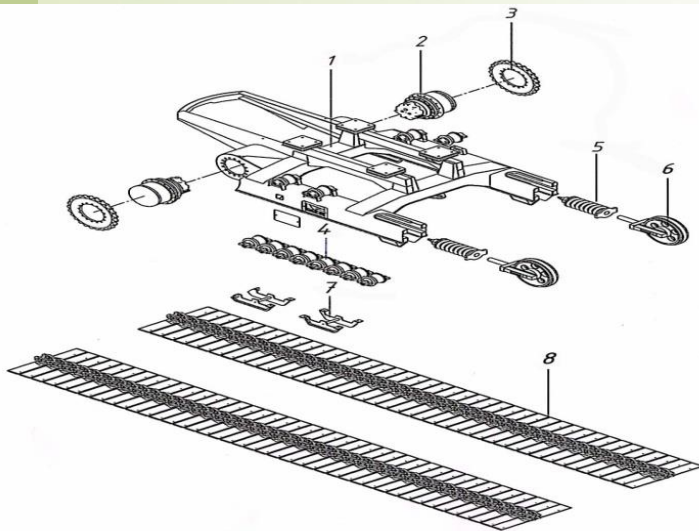
**KASET PHATTANA COMBINE HARVESTER
MODEL KT07**



CONVENIENT AND SUITABLE FOR
MALAYSIAN PADDY CROP CONDITION

EV-TECHNOLOGY (M) SDN BHD
NO. 58, STADIUM SULTAN MOHD. IV,
15200 KOTA BHARU, KELANTAN,
MALAYSIA
TEL/FAX . 09-7485405

QUALITY:RELIABILITY: RESPONSIBILITY











GROWTH OF MACHINERY PRODUCTION AND EXPORTS

- In 2009 there were 1,607 machinery production businesses and 1,192 repair and maintenance businesses
- “ Exports of agricultural machinery increased more than five times from 2009 to 2014 to USD 0.79 billion
- “ Most important export - 2WTs
- “ Major export destinations - Cambodia, Myanmar, Indonesia, and Saudi Arabia

The background features a light green gradient. On the left side, there is a decorative graphic consisting of a large, pale yellow sunburst with rays extending towards the center. Scattered around and overlapping the sunburst are several semi-transparent circles in various colors, including shades of green, orange, and blue. The text is centered horizontally and positioned in the upper-middle part of the slide.

EXPLAINING PATTERN OF MECHANISATION

DEMAND SIDE

Agriculture dominated by small-medium landholdings (3 ha)
growing rice and field crops

Axial-flow pumps saved labour and facilitated irrigation

Expansion of irrigation and double-cropping of rice in Central
Plain created labour bottleneck in land preparation

Production for domestic and export markets (elastic demand)

Industrialization led to rural-urban migration

Rapid fertility decline added to rural labour shortage

Mechanization driven by farmer demand for small-scale :suitable
and affordable machines

SUPPLY SIDE

Capacity of small and medium engineering workshops to develop, produce and repair suitable and affordable machines for farmers (pumps, 2WT)

Emergence of larger firms producing single-cylinder engines, locally adapted threshers, harvesters, small 4WT, implements

Informal interaction with farmers and agricultural engineers

Policy environment supportive of smallholder agriculture (e.g., credit), agribusiness, and manufacturing

Mechanization driven by small-scale domestic industry able to freely adapt generic technology to develop suitable and affordable machines for farmers

NATIONAL AGRICULTURAL MACHINERY PLAN

In 1979, the National Committee for Agricultural Mechanization was established to formulate a policy and strategy, which was approved by Cabinet in 1985.

The strategies involved collaboration between public and private sectors in research and development, standardization of machinery to enable certification, training of farmers and manufacturing workers, and facilitating long-term credit for farmers and machinery businesses

NATIONAL AGRICULTURAL MACHINERY PLAN

The Tenth and Eleventh Plans (spanning 2007-2016) made a significant shift to the notion of a sufficiency economy+, emphasizing sustainable agriculture, food security, bio-energy production, energy efficiency, and environmentally appropriate technologies, but none of these emphases has been interpreted or applied in a way to affect ongoing developments in mechanization.

NATIONAL AGRICULTURAL MACHINERY PLAN

The 12th National Plan (spanning 2017-2021) is to reduce production costs and increase income for farmers.

The strategies id to pushing large-scale rice farming, insisting that the model will help cut production costs, improving rice quality and ensuring higher earnings for farmers.

In addition, machinery rings plan to set up which a grouping of farmers and others involved in agriculture. Machinery rings will support this policy that with common investments and mutual aid the managing process of the individual farm should become more efficient and reduce production cost.

CONCLUSION

Mechanization is widespread on both irrigated and rainfed croplands, for rice and field crops (sugarcane, cassava, maize), due to scarcity and cost of labour

Domestic manufacturing started with local inventions and adaptations in response to farmer demand

Small machines (2WT, small harvesters) have spread even though farm size is relatively large cf. other Asian countries

Smallholders have benefited by owning multipurpose machines or hiring machinery services

Mechanization largely driven by private sector, with timely sharing of blueprints and prototypes by public sector