

The 11th Member Meeting of the Regional Council of Agricultural Machinery Associations in Asia and the Pacific
(ReCAMA)

THAILAND CUTTING-EDGE TECHNOLOGIES IN AGRICULTURAL MECHANIZATION

25 OCTOBER 2025, WUHAN, P.R.CHINA



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President

**Thai Society of Agricultural Engineering
(TSAE)**



25 October 2025



**Thai Society of
Agricultural Engineering
(TSAE):
Non-Profit organization
dedicated to enhancing
agricultural success
across Thailand**

- **VISION:** ENHANCING AGRICULTURE THROUGH ENGINEERING EXCELLENCE
- **MISSION:** Fostering innovation through collaboration between researching, manufacturers, and end-users to advance agricultural technology nationwide
- **Key Credentials:**
 - Thai Industry Standard Institute - appointed standards developing organization
 - Ministry of Financial: Industrial Consultant list
 - Council of Engineers: Certified Unit for Professional Agricultural Engineers
 - 30+ years of research publication (TSAE Journal)
 - International partnerships with AAAE, ACABE, CAAMM, CAMA, CAMDA, CSAM, DLG, ReCAMA



TSAE: MEMBER, NETWORK AND ACTIVITY

MEMBER

Ordinary Members

people who working in the field of agricultural engineering



Honorary Members

individuals/experts who are invited by the Association's Executive Committee

Associate Members

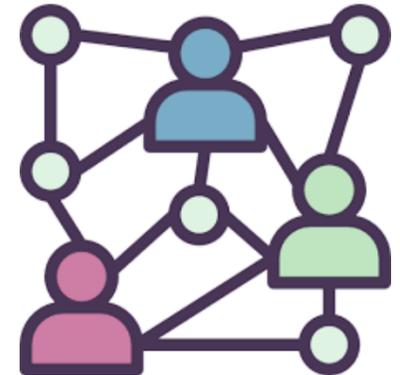
University students or college students

Corporate Members

companies, limited partnerships, associations, cooperatives, farmer group

COLLABORATIONS:

- 22 UNIVERSITY NETWORKS
- FEDERATION OF THAI INDUSTRY



ACTIVITIES

- ANNUAL NATIONAL & INTERNATIONAL CONFERENCES
- TRAINING COURSES
- JOURNAL

AGRICULTURAL MACHANIZATION IN THAILAND

Agriculture

- 22 million Ha. of Agricultural area
- 68% is for rice, field crops and fruits
- 10 % of GDP

Agri. Machinery

- Market size of USD 2 billion in 2020
- growth rate ~ 3.9%
- Tractor Market size was ~55,112 units in 2024
- growth rate ~ 4.12%





Key Growth Drivers



Labor shortage



New generation farmer



Government support driving farmers to adopt modern technologies to boost yield per area and lower labor expenses



Current mechanization rate is only 30% compared to over 90% in developed countries



Good infrastructure ready for Cutting-Edge Technology; Internet, Electricity, Petroleum station, Road

CURRENT STATUS OF AGRICULTURAL MECHANIZATION

- **The four-wheel tractors (50-90 HP) and combine harvester (100-200 HP) are in general use**
- **The custom hiring service system is the normal way of Agriculture for decades; soil preparation, planting, plant protection, harvesting**
- **New business models transform to agriculture sectors; Online registration, Online training, Online marketing etc.**



STATUS OF CUTTING-EDGE TECHNOLOGIES



Existing policies promoting R&D and applications



Key milestones



Current R&D



Applications

RELATED
POLICY
/
NATIONAL
PLAN

Agriculture 4.0

- **A main policy to drive cutting-edge agricultural mechanization technology in Thailand.**
- **Purpose to drive economic advancement in the agricultural sector through a value-based economy powered by innovation — by promoting smart farming, smart agribusinesses, ag-tech startups, and the development of a high-skilled agricultural workforce**

The 13th National Economic and Social Development Plan (2023–2027)

- **is a second-tier strategic plan aimed at "Transforming Thailand" focused on:**
- **Advancing an innovation-driven economy**
- **Developing human capital for the modern world**
- **Promoting an inclusive and just society**
- **The Philosophy of Sufficiency Economy**
- **Resilience (the ability to adapt to change)**
- **The Sustainable Development Goals (SDGs)**
- **The BCG Economic Model (Bio-Circular-Green Economy)**



Ministry of Agriculture and Cooperatives' policies:

"Market-Led, Innovation-Enhanced, Income-Increased" Policy:

Agricultural Machinery Service Network Project

- The community-based agricultural machinery service network. In 2024, the focus is on developing a Sharing Economy system at the local level, enabling farmers to access agricultural machinery without having to invest in purchasing their own equipment.

Promoting Farmers as Service Providers

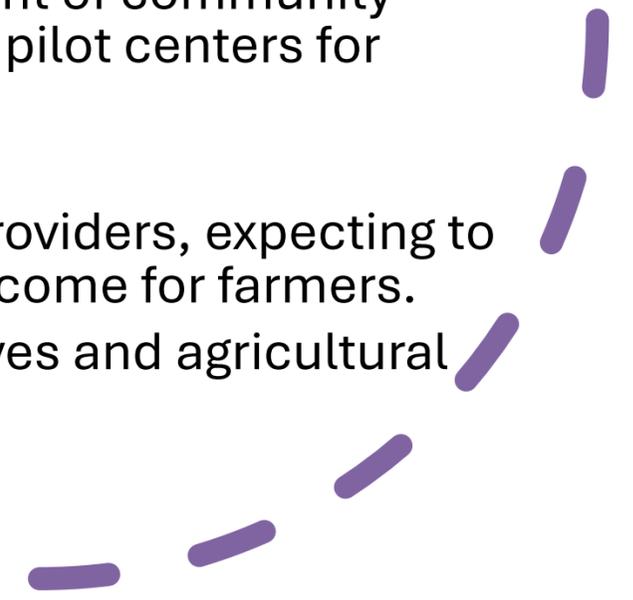
- The policy promotes farmers and farmer institutions to become comprehensive agricultural service providers, owning their own tools and machinery for use on their own land while also providing services with modern technology and innovation to generate supplementary income.

Agricultural Machinery Technology Strategy

- The strategy to promote the use of agricultural machinery to replace labor, reduce production costs, and increase agricultural efficiency in terms of quantity, quality, and time.
- Support is provided through agricultural machinery demonstration services to enhance production efficiency and the establishment of community learning centers for agricultural machinery to serve as pilot centers for learning and service provision.

Service Provider Registration

- To register additional agricultural machinery service providers, expecting to reduce costs for farmers and create supplementary income for farmers.
- These policies align with Collaborative farming initiatives and agricultural area management (Zoning)



Key Milestones of Cutting-edge Tech.

Drone: Sprayer,
Broadcasting

Digital Map/Digital
data

Smart Irrigation

Smart fishery

Smart
Greenhouse/Plant
Factory/livestock

Biomass & Residue
Management tech.

Land Levelling

Auto Guidance /
Auto Steering

Electric Tractor

Robotic Harvester

KEY CHALLENGES AND CONSTRAINTS OF CUTTING-EDGE TECH. in R&D and APTNs

Inadequate in Scientific data/Data platform

Less Precision agriculture mindset

Less opportunity to access Smart equipment's and devices; sensor, controller

Less of support in higher value products productions; fruit, vegetable, fishery

Inadequate in R&D collaborations of researcher, business, government and farmers

Good practices

- Soil Guide application (LDD)
- Smart irrigation system (NECTEC)
- Smart greenhouse system (DOA- AERI)
- Agriculture drone



Conclusion

**Cutting-Edge Technologies in Agricultural Mechanization
: Ensuring a Sustainable farming Future**



Thanks for Your Attention!



<https://www.tsae.asia>