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**CUTTING-EDGE TECHNOLOGIES
IN AGRICULTURAL MECHANIZATION
IN VIET NAM**

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I. General Introduction of VSAGE

Vietnam Society of Agricultural Engineering (VSAGE):

- ✓ Established on February 12, 1993.
- ✓ When founded had 131 members. Now has over 1000 members
- ✓ There are: 10 Sub-Societies; 2 Centers; Rural Industry Magazine; Electronic Information page Editorial Board

Main activities:

- ❖ Participate in proposals to the Government in promulgating policies to encourage the development of agricultural mechanization:
- ❖ Consult on selection of important industries for being included in industrialization content.
- ❖ Critically consult on selecting, evaluating, and accepting research topics of Ministry of Agriculture and Environment and related ministries and branches.
- ❖ Develop and compile national standards for agricultural mechanical and electrical industry and food industry.
- ❖ Directly organize and implement a number of projects ...
- ❖ Transfer agricultural machines and processing machines to farmers in remote areas.
- ❖ Organize training classes: train new technology knowledge for vocational teachers and directly teach farmers how to use agricultural machines and equipment.
- ❖ Organize seminars and participate in trade fairs and exhibitions

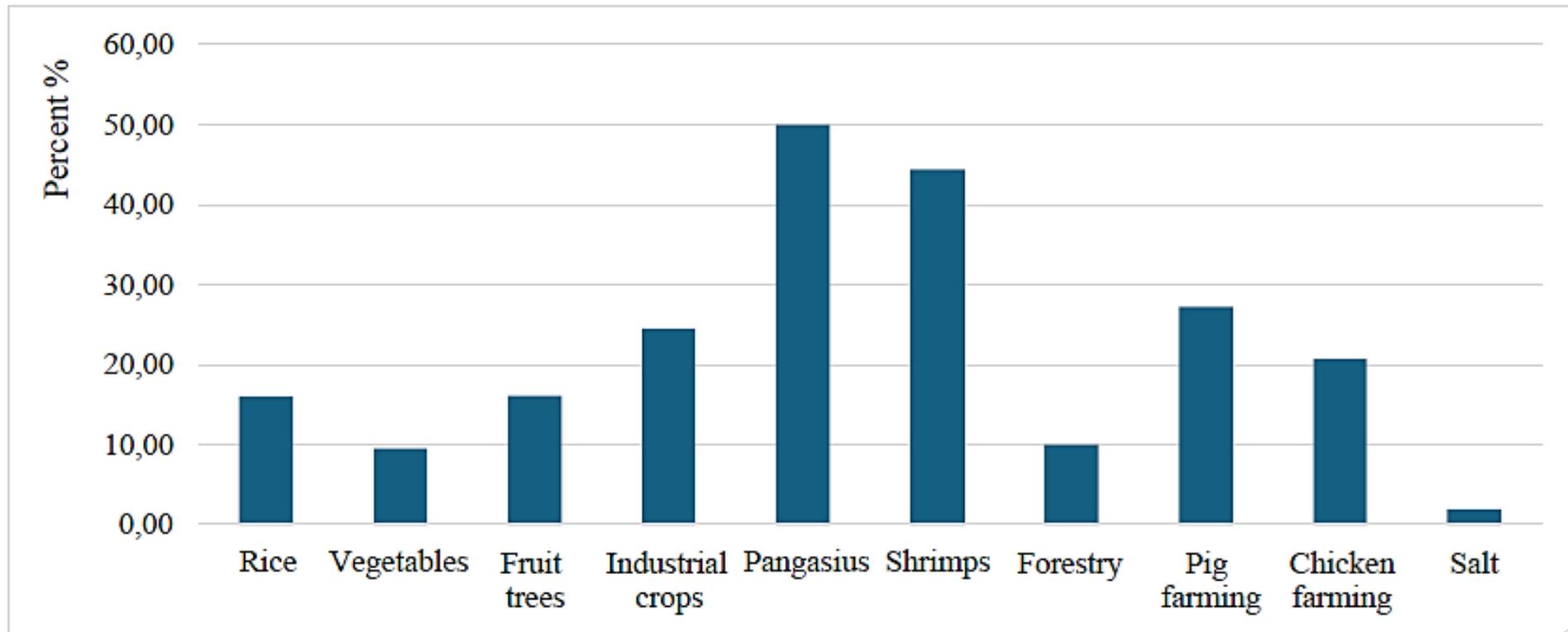
II. General overview of agricultural mechanization in Viet Nam

1. Currently general mechanization status

- In Viet Nam, the level of agricultural mechanization is low compared to other countries in the region. In some stages, the level of mechanization is high but not comprehensive, such as tillage, caring for rice and sugarcane and rice harvesting. The level is even further lower for transplanting of rice, caring for fruit trees, and harvesting of sugarcane and coffee.
- Recently, the average farm power availability has been estimated to be around 3.3 HP/ha of cultivated land across the country.

2. Current status of synchronous mechanization in agriculture - according to the chain link *(Source: Survey results of 63 provinces/cities, 2024)*

Percentage of area with synchronized mechanization (%)



III. Status of cutting-edge technologies in agricultural mechanization in Vietnam

1. Existing policies promoting R&D and applications of cutting-edge technologies in agricultural mechanization:

- Industry restructuring
- High technology
- Sustainable rural agriculture strategy
- Mechanical engineering
- Reducing post-harvest losses
- Attracting investment in agriculture
- Strategy for developing agricultural mechanization and processing of agricultural, forestry and fishery products by 2030.
- **Developing and implementing the Project to promote synchronous mechanization in agriculture.**

2. Key milestones of cutting-edge technologies in agricultural mechanization

- ✓ Increase the rate of engine equipment
- ✓ Increase the rate of machine application in many stages of the production process.
- ✓ Reduce labor, reduce production costs and increase profits
- ✓ Increase the rate of application of high-tech agriculture in production.
- ✓ The mechanical engineering industry serving agricultural mechanization has had positive changes.
- ✓ Initially, proactively research and develop domestic agricultural machinery production.

3. Key challenges and constraints faced with the R&D and application of cutting-edge technologies

- Agricultural mechanization is still low and not comprehensive, not uniform among sectors and regions.
- The level of agricultural machinery equipment is still backward, reflected in most small-capacity tillage machines, old technology, only suitable for small scale.
- The level of power equipment for agriculture in the whole country is still low compared to other countries in the region and Asia.
- Most of the machinery and equipment serving agriculture still have to be imported, about 70% of it.

4. Proposals to address such challenges and constraints

- ✓ Effectively deploy existing mechanisms and policies. Especially policies to support mechanization, promote the application of synchronous mechanization.
- ✓ Focus on investment in science and technology research
- ✓ Increase the scale of small-scale, fragmented production to concentrated
- ✓ Synchronize infrastructure
- ✓ Increase the number of production chains.
- ✓ Form organizations to provide synchronous CGH services
- ✓ Improve labor quality, pay special attention to machine operators; provide thorough training on labor safety

IV. Cases or good practices of cutting-edge technologies in agricultural mechanization

Currently, Vietnam is focusing on investing in mechanization to serve some key crops with high export value and concentrated growing areas: corn, banana, pineapple, onion, garlic,... (land preparation has been 100% mechanized).

Mechanization of some stages of banana cultivation on a concentrated scale:
Equipment to support harvesting and transporting banana bunches from the harvesting site to the processing factory in the field. Post-harvest banana stem, leaf and root processing machine



IV. Cases or good practices of cutting-edge technologies in agricultural mechanization

Synchronized mechanization of corn production on a scale of less than 50 hectares in the northern mountainous provinces (from land preparation, planting, care, to harvesting and small-scale preservation)

Sowing, bedding, fertilizing machine (0.2 ha/h); Corn care machine (hoeing, fertilizing and spraying pesticides) 0.2 ha/h; Corn harvester (2 rows) capacity 0.3-0.4 ha/h; Corn harvester (2 rows) capacity 0.3-0.4 ha/h



IV. Cases or good practices of cutting-edge technologies in agricultural mechanization

Synchronized mechanization of onion and garlic production to serve concentrated production areas in Vietnam

Combined planter with row-till and fertilizer application, yield 0.2ha

The row-tiller can cut the stems and leaves and collect the bulbs into the container, yield 0.2 ha/h.



V. Conclusion

5.1. Advantages

- Policies and guidelines of the Party and State of Vietnam on prioritizing the development of synchronous mechanization
- Production scale is gradually increasing
- Forming many production and business chains according to the value chain to promote synchronous mechanization

5.2. Opportunities

- ▶ Opportunities to import and take advantage of technological achievements
- ▶ Many types of new machinery and technological equipment
- ▶ Vietnam has the opportunity to skip many development steps to approach automation.
- ▶ The trend of rapid shift of agricultural labor

V. Conclusion

5.3. Challenges

- Climate change
- Rapidly changing technology
- Excessive dependence on imported machinery
- Agricultural production is less attractive to enterprises