The 11th ASIAN-AUSTRALASIAN CONFFERENCE ON PRECISION AGRICULTURE (ACPA 11)
October 14-16, 2025 | Chiayi, TAIWAN

SPEAKER BIODATA FORM

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Brief career highlights (less than 250 words):
Doctor Sakae Shibusawa is a professor emeritus of Tokyo University of Agriculture and Technology, a council member of Science Council of Japan and Director General of Science Council of Asia. Now he belongs to Kyoto Women's University as a professor contract. His work has being focused on community-based precision agriculture in collaboration with farmers, industries and administration sectors, as well as with scientist and engineers. He is a founder of Asian Conference on Precision Agriculture (ACPA) and has been contributed to manage the Asia-Australasian Conference on Precision Agriculture (ACPA) since 2005. His research interests include real-time soil sensing, foods and waste supply chain, and bottom-up learning groups of farmers. He edited the book “Precision Agriculture” (in Japanese) in 2004, followed by pushing many projects on precision agriculture and smart farming in Japan and in the world. He is now working on the government project on the interoperability of data in the food supply chains, and some recovering projects from the damages by Fukushima Nuclear Plant Explosion at the East-Japan Earthquake 2011.3.11. Farm assurance of good agricultural practices (GAP) with precision agriculture is also his important business as Chair of National Technical Working Group (NTWG), GLOBAL G.A.P. He graduated from Hokkaido University in 1976, and then the graduate school of Kyoto University in 1979 and got Doctor Degree in 1984. He got the job in Ishikawa Prefectural College in 1981, and then moved to Hokkaido University, Shimane University, and then Tokyo University of Agriculture and Technology in 1993.

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A NEW PARADIGM OF DATADRIVEN AGRIFOOD SYSTEMS

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ABSTRACT

"Data-driven agrifood systems" is issued as a new standard terminology of smart farming from the international organization for standardization (ISO), and it has also focused on the needs of small/medium enterprises of farming. Data management scheme has changed the context of decision making on received style of good agricultural practices. Farmers and stakeholders should re-watch the system changes with emerging technologies. Farm management sustainable and community-based should be re-thought in the spaces of land-farmer-business and technology-policy-management.

Keywords: Smart farming, Innovation, Decision, Community, Data management

INTRODUCTION

The objectives of this paper are to describe the features of Datadriven Agrifood Systems a standard of smart farming promoted by the international organization of standardization, and to explore its impact to the small and medium farmers in Asian countries..

DATADRIVEN AGRIFOOD SYSTEMS

Agrifood systems include both agriculture and food systems as shown in Fig.1 (SAG-SF Report, 2023). Smart farming activities are standardized as "Datadriven Agrifood Systems" with wider meaning by the International Organization for Standardization (ISO). Its definition says that smart farming is data-driven, principled decision making in agricultural and food value chains occurring as multi-objective optimization in the context of global volatility, uncertainty, complexity and ambiguity.

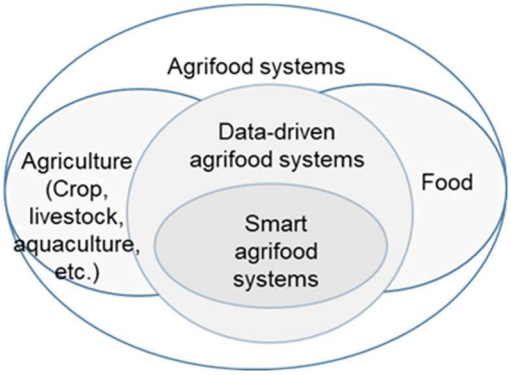

Fig. 1. Structure of agrifood systems (SAG-SF Report, 2023).

Decisions are keywords and good agricultural practices are generally accepted, while the scope includes many items and targets such as agrisemantics. livestock activities, urban farming, and farm management information systems (ISO TC347, 2023).

DECISION MAKING LAYERS

Farmers' decision can be expressed on at least three layers of farmwork operation, technology management, and strategy/concept creation as shown in Fig. 2 (Shibusawa 2004, 2023). Some works on crop and field can be substituted by machines or out-sourcing labors if it is embedded in routine actions. How to use technology needs reasonable advice of professionals under constraints. The concept/strategy have to be created by the activity of farmers own. When focusing on the farmers' decision, the farmer handles these data on different layers across the farming systems with some standards or ways of thinking. Data sharing activity is a fundamental item for working together in a local community but the time-trend says the decrease in population, that is, hundreds of farmers are cultivating the lands now and then in near future a small number of farmers have to do it. If a farm data repository is correctly organized, they can manage the land and landscapes received. That is why farmer centric data repository should be encouraged. It is not for short-range business models.

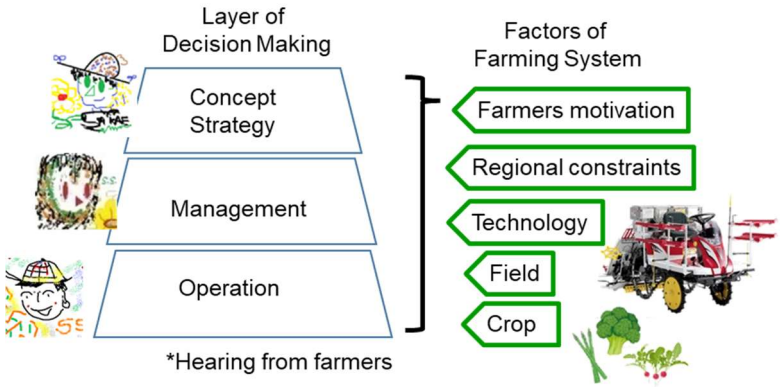

Fig. 2. Layers of decision making and factors of farming system.

CONCLUSIONS

Decision is a key phrase of smart farming, and the strategy for data management is a crucial issue for smart farming. To standardize the smart farming as datadriven agrifood systems is inevitable. A new data subject could be a local community of small farmers.

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