

## Unique 'Crop Drone Sensing x AI Image Analysis' Technology presented at the Tokyo Institute of Technology Super Smart Society Promotion Forum

At the "Super Smart Society Promotion Forum" held at Tokyo Institute of Technology on September 26, 2023, Nileworks showcased its unique technology of "Crop Drone Sensing x AI Image Analysis." Here is a summary of the key points from the presentation:

### Participation in the Super Smart Society Promotion Consortium:

Tokyo Institute of Technology has established the "Super Smart Society Promotion Consortium" to realize Society 5.0. Nileworks actively participates in this consortium, contributing to the advancement of smart agriculture.

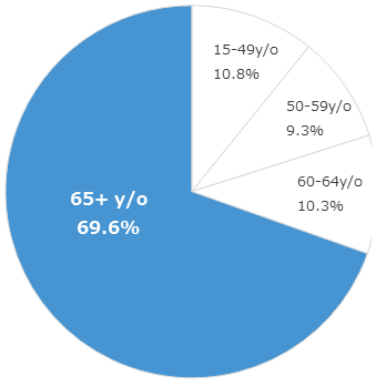


### Towards Sustainable Agriculture:

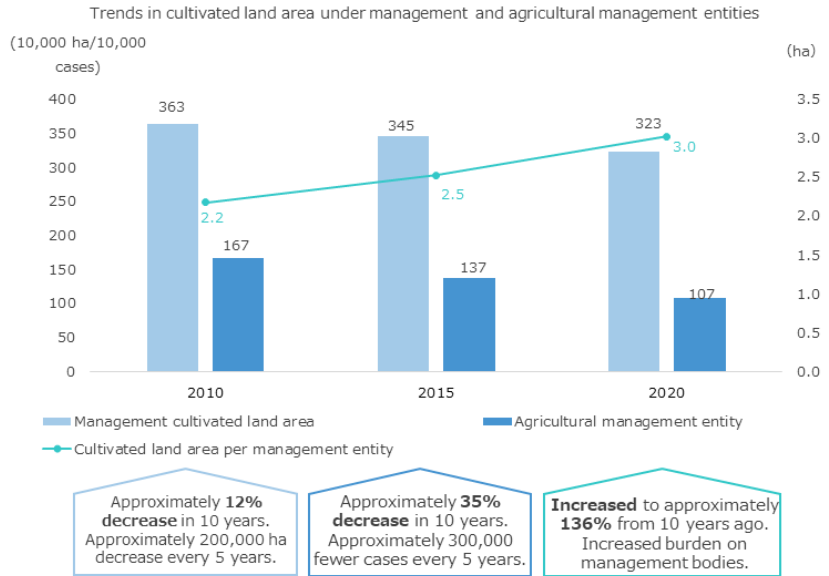
With approximately 70% of current agricultural practitioners in Japan being 65 years or older, the sustainability of the farming workforce is a significant concern. Nileworks addresses this challenge by leveraging its unique crop drone sensing and AI image analysis technologies to quantitatively analyze crop growth and diseases. By innovating cultivation management methods, Nileworks contributes to labor reduction and economic improvement in agriculture, aiming to resolve the pressing issues in the industry.

Approximately 70% are over 65 years old  
Aging population/lack of successors

Number of key agricultural workers by age group (privately operated entities)



## Decrease in number of farmers Intensification of farmland and expansion of agricultural corporations



Source: 2020 Agriculture and Forestry Census (Ministry of Agriculture, Forestry and Fisheries)

## Advanced Crop Phenotyping Technology for Agricultural Innovation and Smart Agriculture Acceleration:

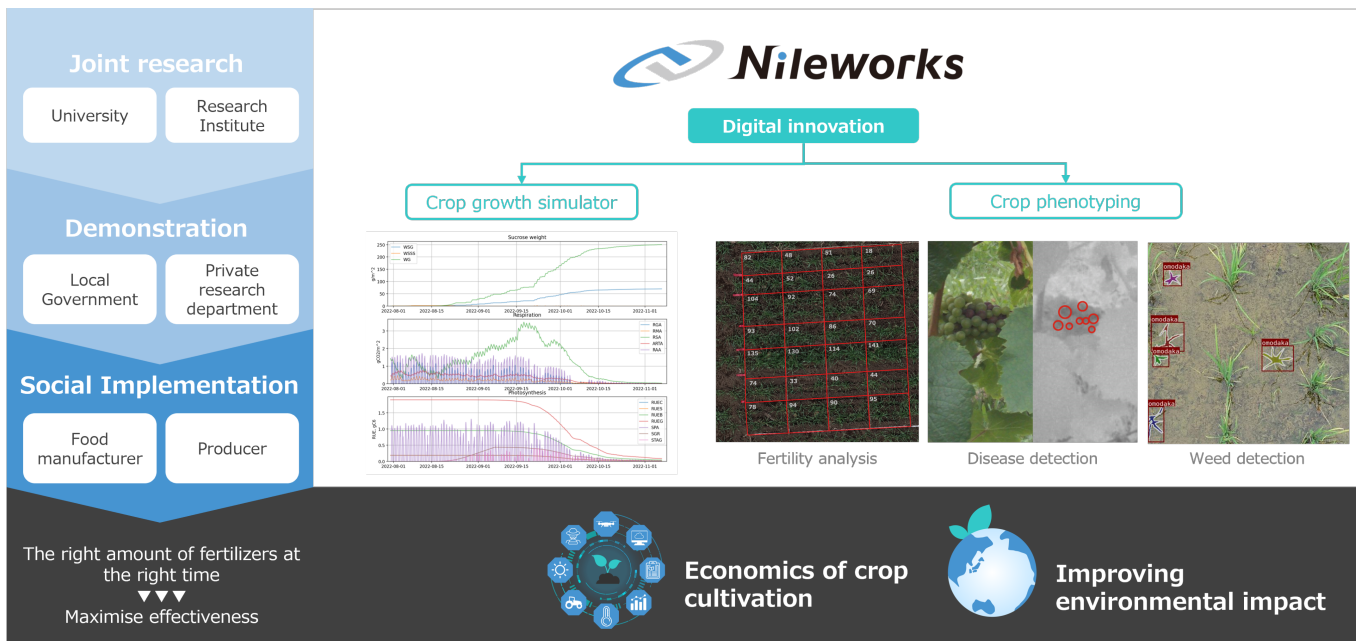
Nileworks has developed phenotyping technology using drone sensing and image analysis as its core. The technology efficiently and in high resolution quantitatively measures crop traits. The system utilizes optimal camera systems and path generation systems, allowing mobility like sensing drones to autonomously navigate and observe vast agricultural areas quickly and in detail. The analysis of captured images covers a wide range of crop needs, from measuring the growth conditions of grains and vegetables to detecting diseases. Nileworks provides these technologies to the consortium, enabling its members to explore new possibilities in agriculture and achieve sustainable smart farming.



[Left Photo]: Tokyo Institute of Technology's experimental farm/ [Center Photo]: Proximity sensing by drone / [Right Photo]: (Analysis Example) Estimation of the number of stems of crops

## Nileworks' Vision for Agriculture:

Nileworks aims to achieve sustainable agriculture, focusing on the economic viability and environmental impact of crop cultivation. Their approach involves making "timely and appropriate" decisions—injecting the right amount of agricultural materials (fertilizers, pesticides, etc.) at the appropriate stages of crop growth to maximize effectiveness. Supporting this approach is their technology, consisting of a digital twin encompassing crop growth simulation (prediction) and crop phenotyping (current analysis). Nileworks collaborates with partners and advances societal implementation.



### ■ References

Overview of the 8th Super Smart Society Promotion Forum - Agricultural Reengineering for a Super Smart Society:

<https://www.sss.e.titech.ac.jp/event/sss-promotion-forum-20230926/>

Overview of Tokyo Tech Super Smart Society Promotion Consortium:

<https://www.sss.e.titech.ac.jp/about/>

Introduction Page of Nileworks for the "Innovation TOKYO Project" by the Tokyo Metropolitan Bureau of Industrial and Labor Affairs:

[https://mirai-innovation.metro.tokyo.lg.jp/project/detail\\_r1\\_1/](https://mirai-innovation.metro.tokyo.lg.jp/project/detail_r1_1/)

### ■ Company overview:

Established : January 2015

Address: 1-4-3 Kanda Nishikicho, Chiyoda- ku , Tokyo

Representative: Yasuhiro Kojima, President and Representative Director

Business details: Development, manufacture, and sales of agricultural drones / Technology development and service provision in digital agriculture and agricultural Digital Innovation / Provision of agricultural work matching services

URL: <https://www.nileworks.co.jp/en>



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