

Agriculture × Digital: Passing on the Professional Techniques of Seasoned Farmers to the Next Generation!

Saga Prefecture



Background

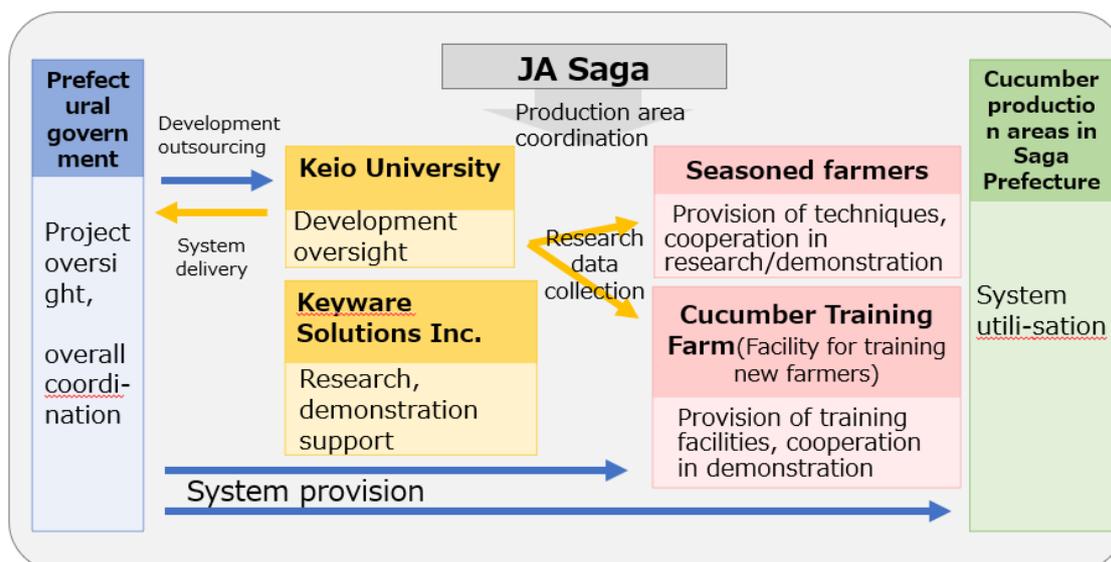
In Saga Prefecture, as declining birth rates and an ageing population lead to a shrinking farming population, there are growing concerns over the potential decline of farming areas and increased instability in agricultural supply due to the loss of techniques developed by seasoned farmers over the years. These professional techniques often rely on experience and intuition and thus require many years to acquire.

Objectives

To improve productivity and expand production areas by visualising (digitising) the techniques of one of the largest greenhouse cucumber growers (seasoned farmers) in Japan and, based on that data, develop a system for passing on those professional techniques to the next generation.

Project Outline

- (1) Development of a learning system (FY2019 to 2021)
 - 1) Identification and analysis of professional techniques: In order to visualise the ideas of seasoned farmers and share them with new farmers, we divided the agricultural process into three phases: 'status assessment', 'judgement' and 'work'. We then measured the results of the status assessment that seasoned farmers make from farm and crop conditions, as well as the judgements they make based on those results, and then defined the professional techniques through comparative analysis with the trainees' observations.
 - 2) Collection of professional technique-related data: Converting the judgement criteria used by seasoned farmers into data via videos, images and text.



Project promotion structure

3) Development of a learning system utilising the collected data

(2) System evaluation and verification (FY2021)

1) Verification of the system's effects on learning (Match rate of crop growth assessment by seasoned farmers and trainees)

Before using the learning system: 44%

After a two-week learning period: 69% (1.6 times higher)

- The system improved the agricultural trainees' state assessment skills in a short period of time.

2) Results of the system user questionnaire

Satisfaction: 100% (users polled: 7 demonstration participants)

- We received positive feedback from the users, such as 'You can only experience real cucumber farming twice a year, but the learning system allows you to go over it again and again' and 'My perspective on cucumbers and their cultivation has changed'.

(3) Utilisation of the learning system (FY2022 onwards)

- To implement the system in Saga's agricultural production areas, we have deployed dedicated tablets equipped with the learning system app, along with personnel to manage them, to a local agricultural promotion centre.

(Number of workshops held/number of system users (cumulative total))

- FY2022: 10 times, 125 users

- FY2023: 13 times, 166 users

Features and Innovations

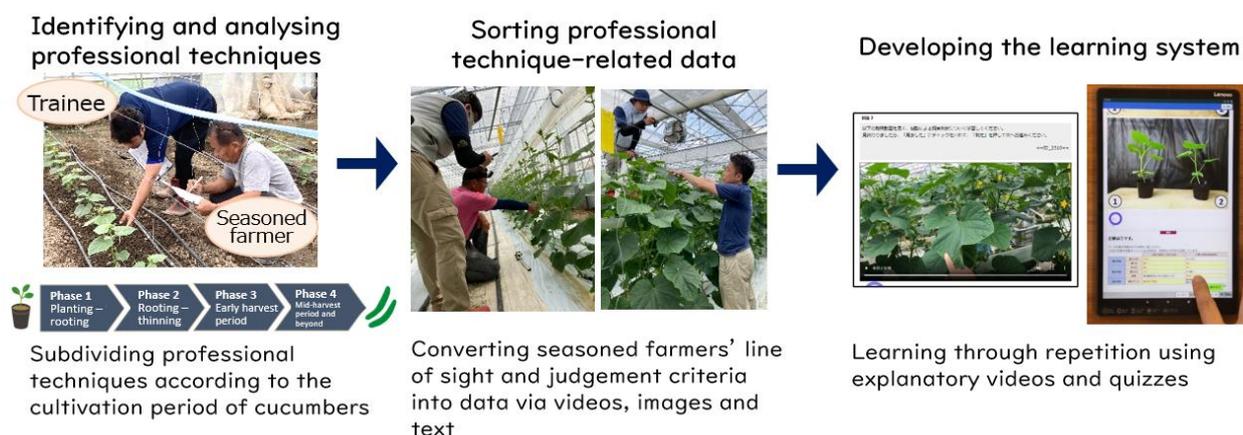
The system developed in this project does not simply represent a standard process manual, but converts the experience-based state assessment and judgement skills of seasoned farmers into easy-to-understand explicit knowledge through digital technology, thereby enabling learners to efficiently acquire situational judgement skills, which were previously considered difficult to convey to others in agricultural contexts.

Amid the decline of the farming population nationwide, the system provides a way to enhance the appeal of agriculture through digitisation and increased profitability, encouraging the next generation to enter the agricultural sector.

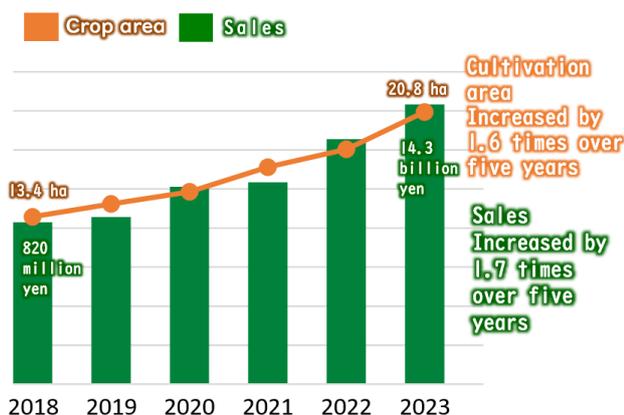
Results of the Project

1) Learning effects of the system (match rate of crop growth assessment by seasoned farmers and trainees): Before using the learning system: 44%. After studying: 69%. Result: Trainees' assessment skills improved by around 1.6 times.

2) Expansion of project demonstration areas (annual cucumber sales): Before project implementation: 820 million yen/year. After project implementation: 1.43 billion yen/year. Result: Sales grew by 1.7 times thanks to the efforts of new farmers who have acquired the professional techniques.



New farmers who have acquired the professional techniques have achieved a yield of 40 tonnes per 10 acres shortly after starting farming, which is one of the top yields in the prefecture. This, in turn, motivates other trainees to take up cucumber farming. In this way, the project is contributing to the sustainable development of cucumber production areas. These trainees include migrants from other parts of Japan. This shows that the prospect of profitable agriculture is helping to enhance the region's appeal.



Trends in production areas (JA Saga Kito District Cucumber Subcommittee)

Issues, Problems and Responses

As the system developed in this project handles seasoned farmers' advanced cultivation techniques (intellectual property), we must ensure that security measures are effective. By deploying dedicated tablets equipped with the learning system app to the agricultural promotion centre in charge of the Kito district and requiring staff be present during system use, we have established an operational structure that achieves system utilisation while protecting intellectual property.

Future Developments (expected effects, project vision and issues)

Moving forward, we intend to promote utilisation of the learning system at other training farms, as well as in seminars for new farmers held throughout the prefecture. We will use the system to promote a cycle throughout Saga Prefecture, whereby young farmers

can engage in highly productive and profitable agriculture by efficiently acquiring professional techniques, and the next generation will see their success and aspire to join the agricultural sector themselves.

Websites for Reference

<https://saga888.jp/>

(Saga Horticultural 888 Movement)

Contact

Division in Charge :

Horticulture and Agriculture Division

Telephone: +81-952-25-7114

Email: engeinousan@pref.saga.lg.jp

Meaning of Technical Terms and Coined Terms Used

- Seasoned producers/seasoned farmers: Individuals who produce high-quality agricultural products with high yields.