Happy-style Approach to Agricultural Challenges:

Business Model, Product, and Technology Development
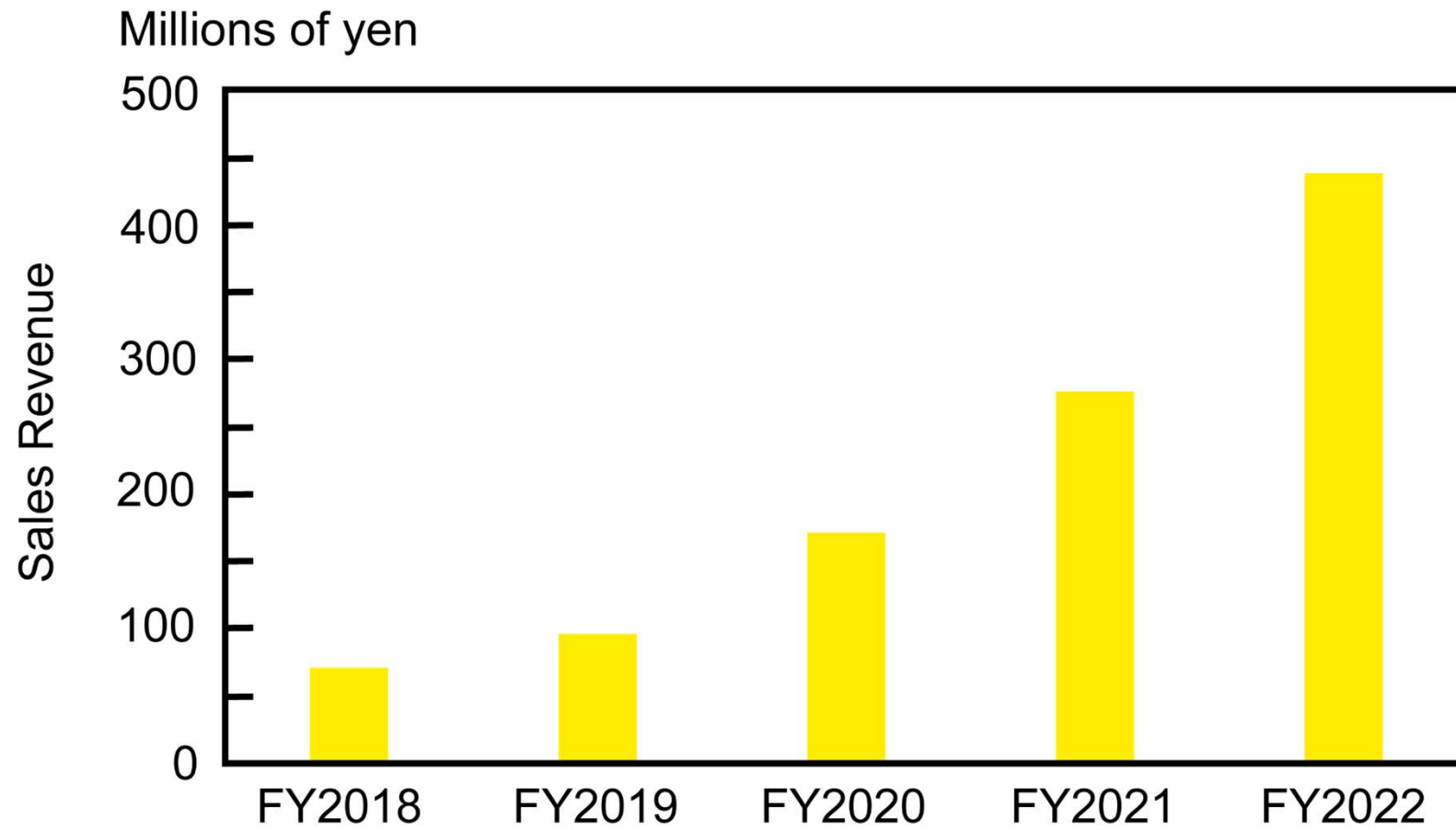
Yuki Furuta

Happy Quality Co.,Ltd.
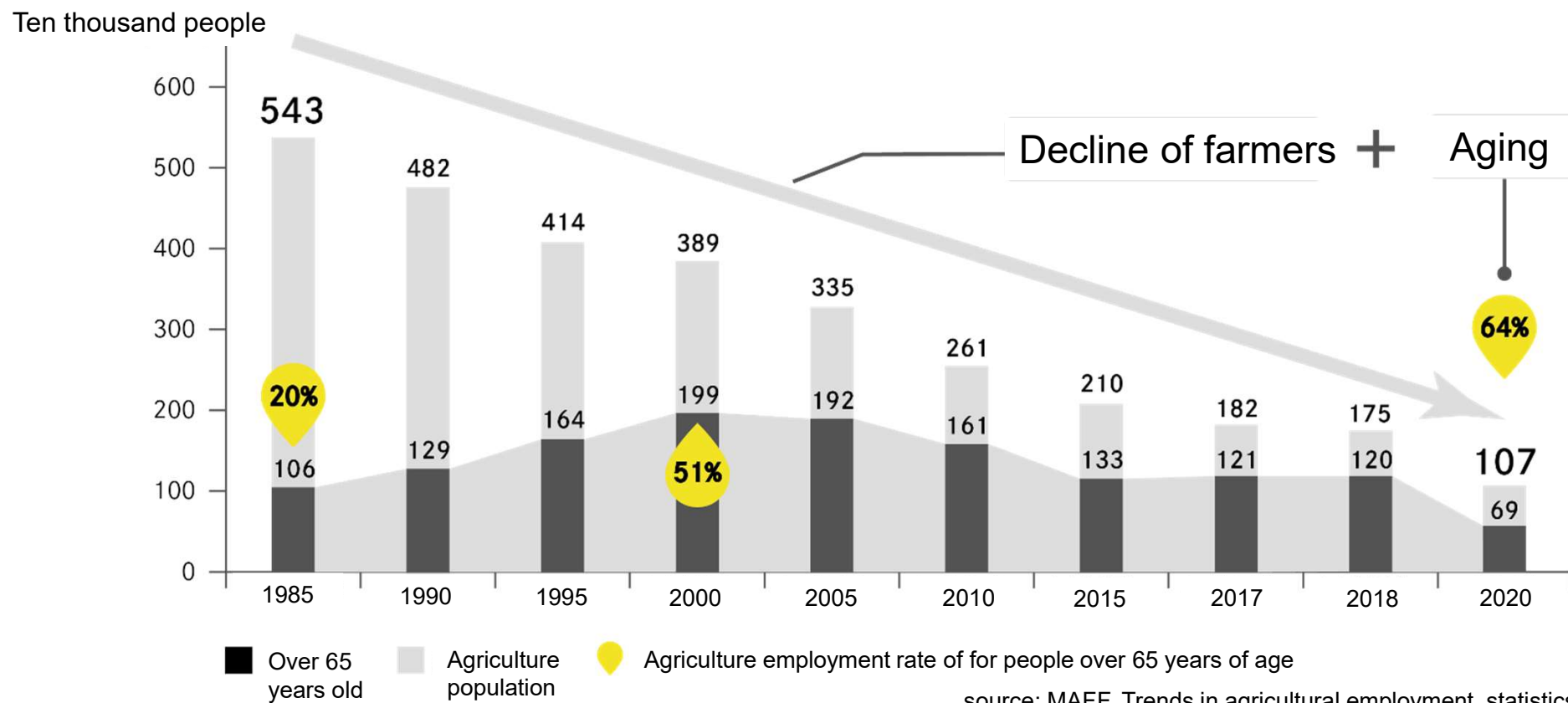
Yuki Furuta

Happy Quality Co.,Ltd.

Mission

Bringing the "Happiness Quality" to Everyone

Issues in Agriculture

Ten thousand people

	1985	1990	1995	2000	2005	2010	2015	2017	2018	2020
Agriculture population	543	482	414	389	335	261	210	182	175	107
Over 65 years old	106	129	164	199	192	161	133	121	120	69
Agriculture employment rate	20%			51%						64%

Decline of farmers + Aging

■ Over 65 years old   ▨ Agriculture population   🔻 Agriculture employment rate of for people over 65 years of age

source: MAFF, Trends in agricultural employment, statistics

Decline in the number of farmers and aging of population

	%
Low income	20
Unskilled	16
Lack of equipment money	12
Labor shortage	10
Lack of working capital	9
Not enough farmland	6
Cultivation planning is not going well	6
Sales are not going as planned	4
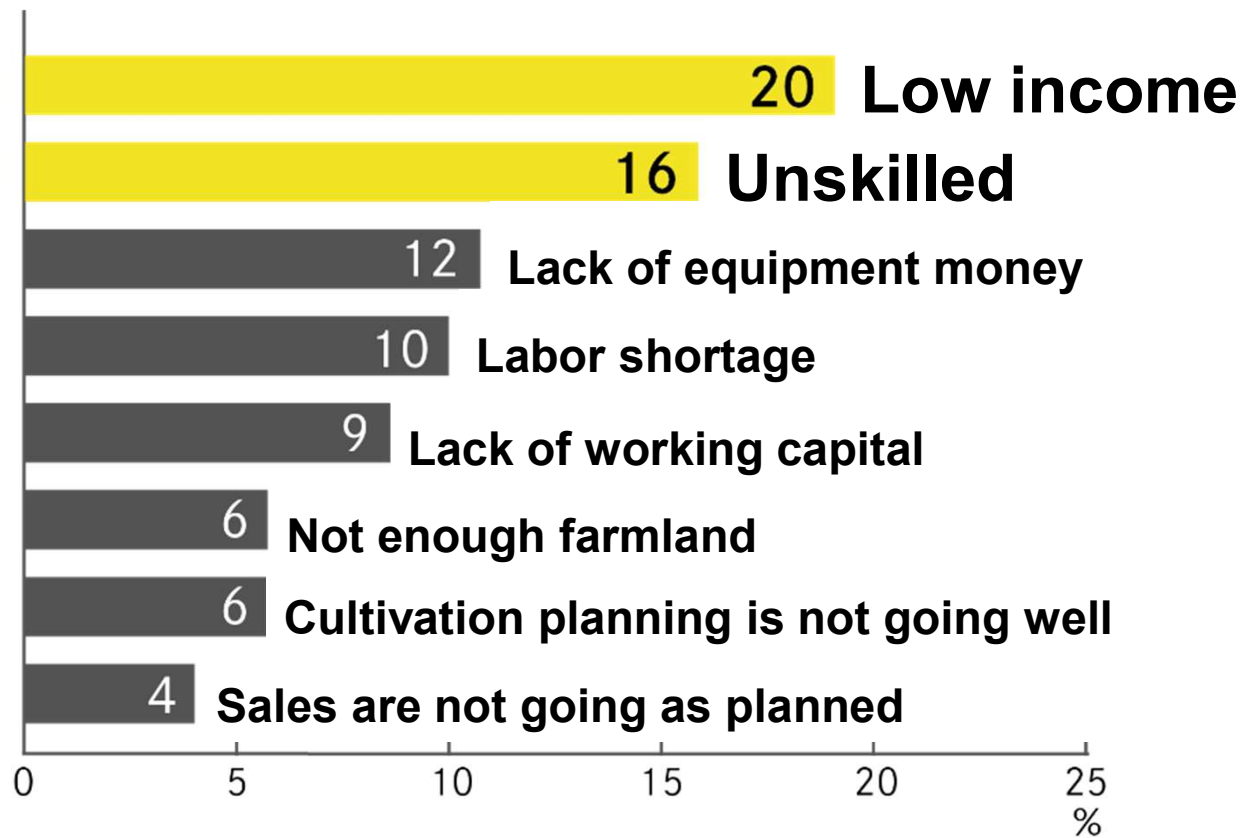
source: MAFF 2019 food, agriculture, and rural trends

Concerns of new and prospective farmers

Issues
Focused on New and Prospective Farmers

- Lower incomes

- Unskilled growing techniques

Happy-style Approach

Agriculture model

Product

R&D

Happy-style Approach

Agriculture model ⊕

Product ⊕

R&D ⊕

Happy-style
Market-in Agricultural Business Model

Distributors

Farmers

Whole Purchase

Whole Sales

Cultivation Techniques
and Technologies

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Happy-style Approach

Agriculture model

Product

R&D

Products

Hapitoma

Realizing functional labeling with GABA and lycopene in Japan

Sugar content ranging from 6 to 10 degrees

Quality assurance by inspecting all product

Doctor Melon

A low-potassium melon

Especially for people with kidney diseases

Method	Types	Number of Crop	Crop Rotation [per year]	Area	Unit Price Income [yen/kg]	Sales per 1 year [millions of yen]	Income per 1 year [millions of yen]
General Farmers	Large Tomato	3,000	1	30 a	241	12.99	6.0
	Small Tomato	3,000	1	30 a	276	8.56	3.0
Our Farmers	Medium Tomato	4,500	4	30 a	600	20.23	8.21 to 12.00

Happy-style Approach

Agriculture model

Product

R&D

Rock wool cultivation technology

Small amount of medium without soil. Make it easier to avoid risks such as disease and allows for more hygienic cultivation management.

AI automatic irrigation technology

Control of watering using AI technology to provide appropriate water stress without withering the plants.

Digital twin remote cultivation guidance system

Remotely monitor the environment in the cultivation house with a digital twin of the house and plants created based on information from a 3D scanner.

Near-infrared sensor total volume measurement technology

Technology enabling visualization of the quality of agricultural products. the sugar content and lycopene content of Hapitoma

Stomatal aperture measurement AI technology

Joint research with Nagoya University. Technology enabling easy measurement of stomatal aperture

Virtual Plant / Plant growth simulation

Predict real-world tomato greenhouse condition changes with big data. Environmental data can be acquired to identify the conditions.

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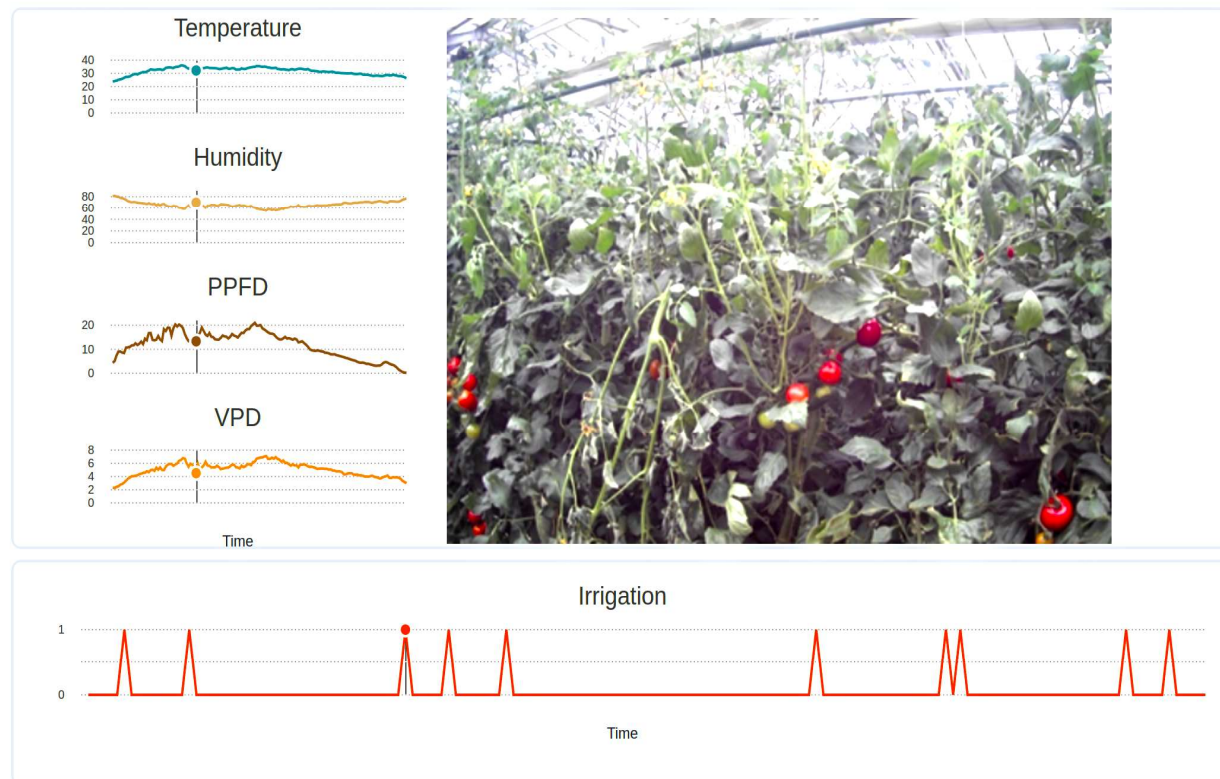
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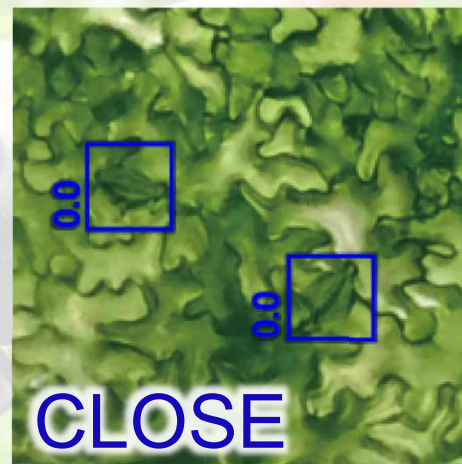
Near-infrared sensor total volume

changes with big data. Environmental data can be acquired to identify the conditions.

Very Small Amount

6cm×6cm Rock Wool

Near-infrared sensor total volume measurement technology

Technology enabling visualization of the quality of agricultural products. the sugar content and lycopene content of Hapitoma

Quality Assurance by using Sorting Machine

AI automatic irrigation technology

Control of watering using AI technology
to provide appropriate water stress
without withering the plants.

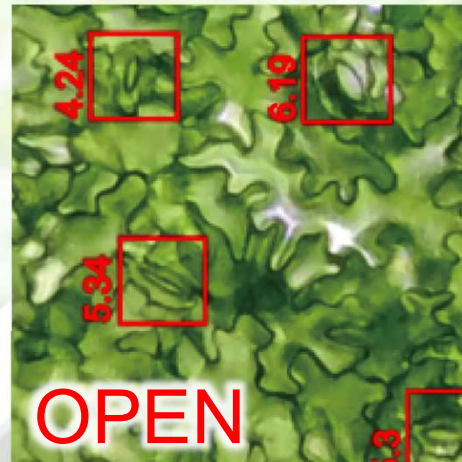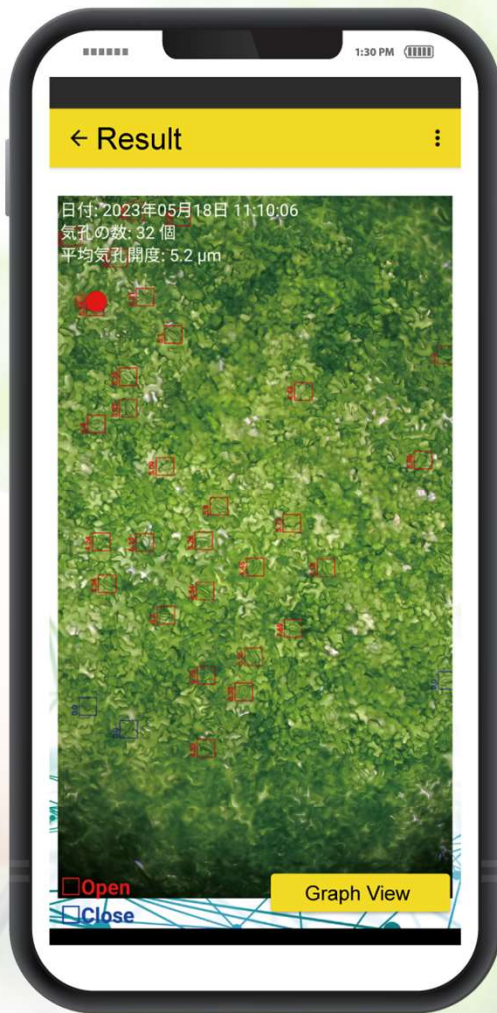## Near-infrared sensor total volume measurement technology

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Remotely monitor the environment in the cultivation house with a digital twin of the house and plants created based on information from a 3D scanner.

OPEN

CLOSE

- Live stomata imaging
- AI enhanced analysis
- Easy for anyone to use
- No need to cut leaves
- No need to take back to lab

without withering the plants.

Technology enabling easy

Digital twin remote cultivation guidance system

Remotely monitor the environment in the cultivation house with a digital twin of the house and plants created based on information from a 3D scanner.

Virtual Plant / Plant growth simulation

Predict real-world tomato greenhouse condition changes with big data. Environmental data can be acquired to identify the conditions.

Modeling and Digital Twin

Making Model of the Plants

Point Cloud

3D laser scanner, etc

Manual Adjust

Integrating

左

前
後
左
右
上
下

収録

● 収録開始

動画を保存しました。
Video_2021-12-09_16-40-31.mp4

フォルダを開く　閉じる

Motion_2021-12-04_16-29-50

Motion_2021-12-04_16-30-19

Motion_2021-12-09_16-33-05

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Digital Twin
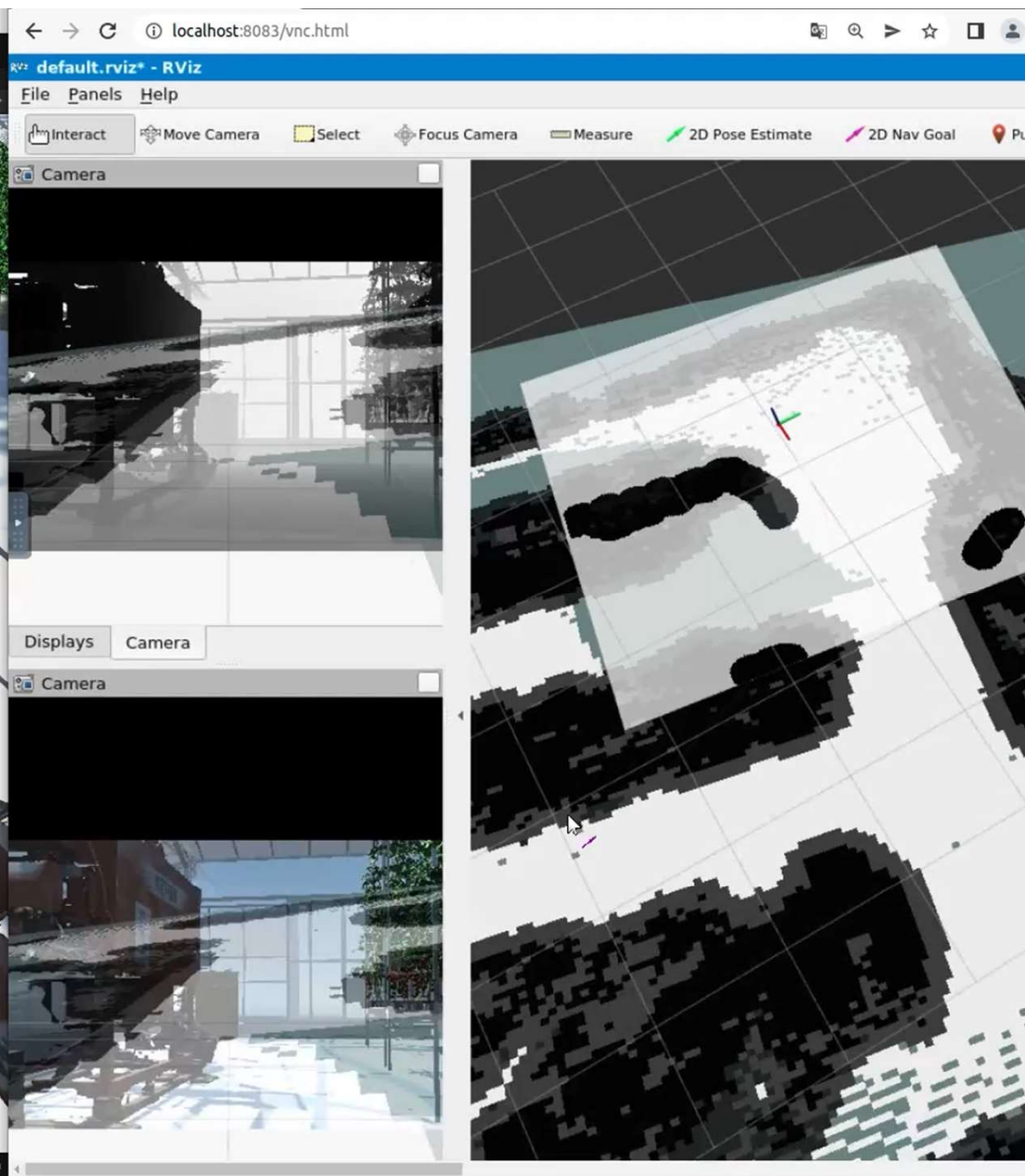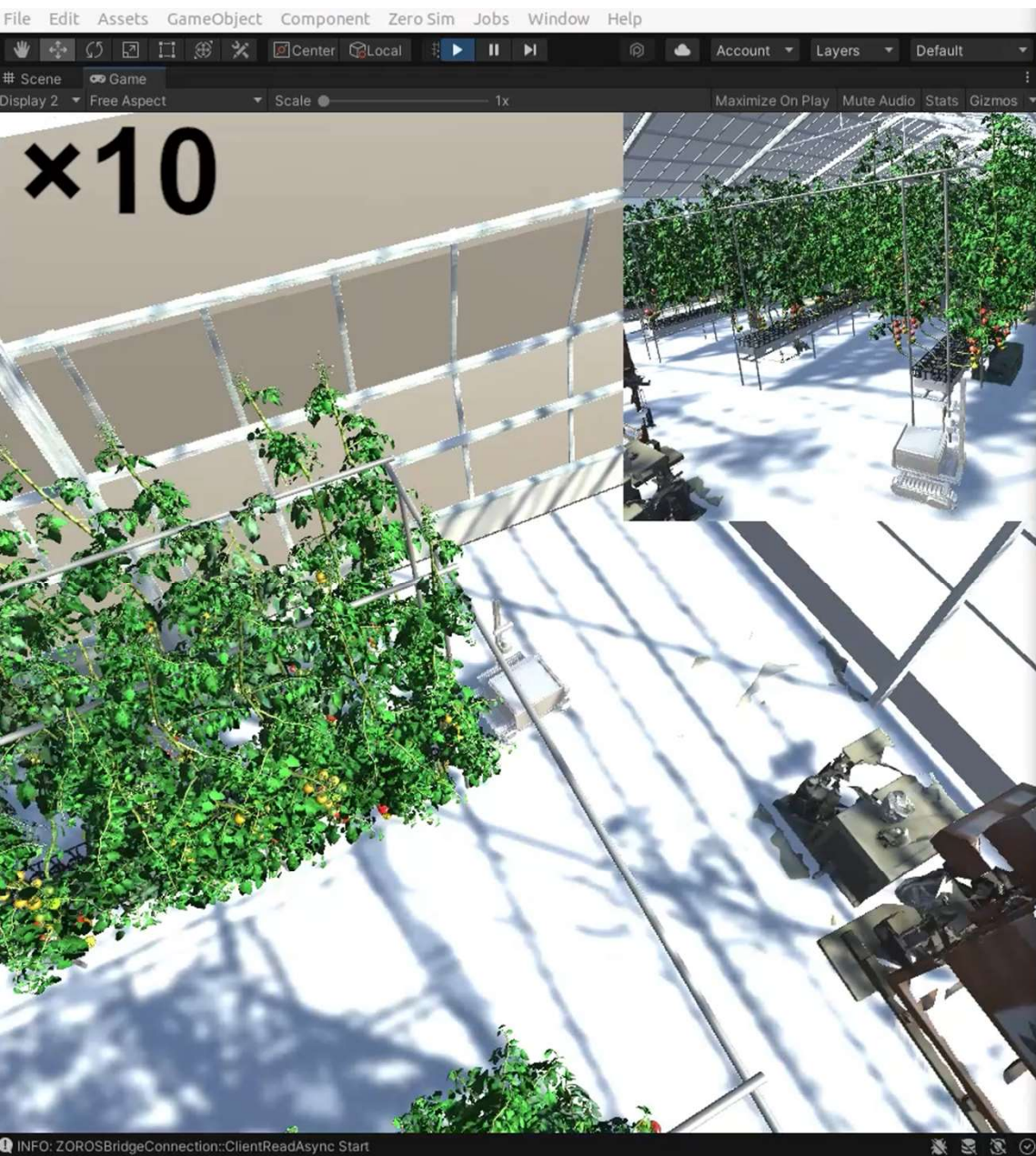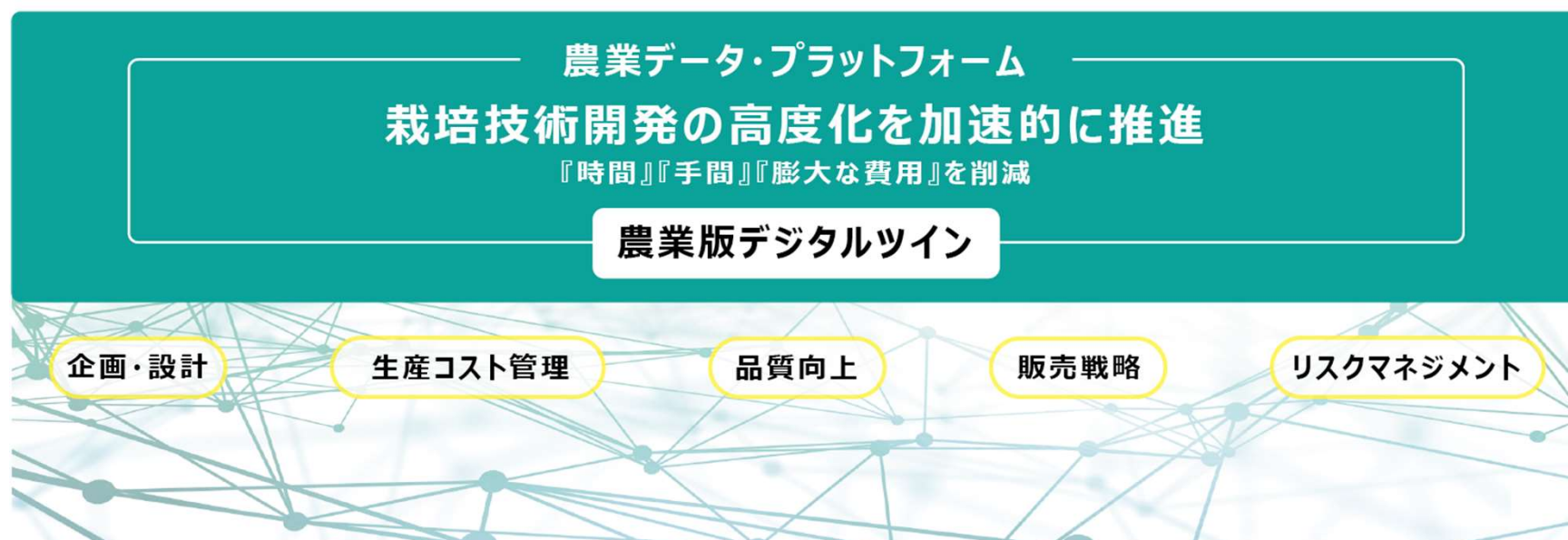# Application to Educational Contents

Digital Twin
Robotics and Computer Vision

Digital Farm

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世界各地の環境値

生育環境を再現

生育予測モデル

収量予測

生きた教師データを活用する、本物のデータドリブン農業の実現を目指す

農業データ・プラットフォーム

栽培技術開発の高度化を加速的に推進

『時間』『手間』『膨大な費用』を削減

農業版デジタルツイン

企画・設計　生産コスト管理　品質向上　販売戦略　リスクマネジメント

Happy-style Approach

Collaboration

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