



Artificial Intelligence-Based Automatic Growth Measurement Device

Manage digital crop cultivation in smart farms through analysis/ diagnosis of crop growth and environmental data based on artificial intelligence, predicting crop growth and development.

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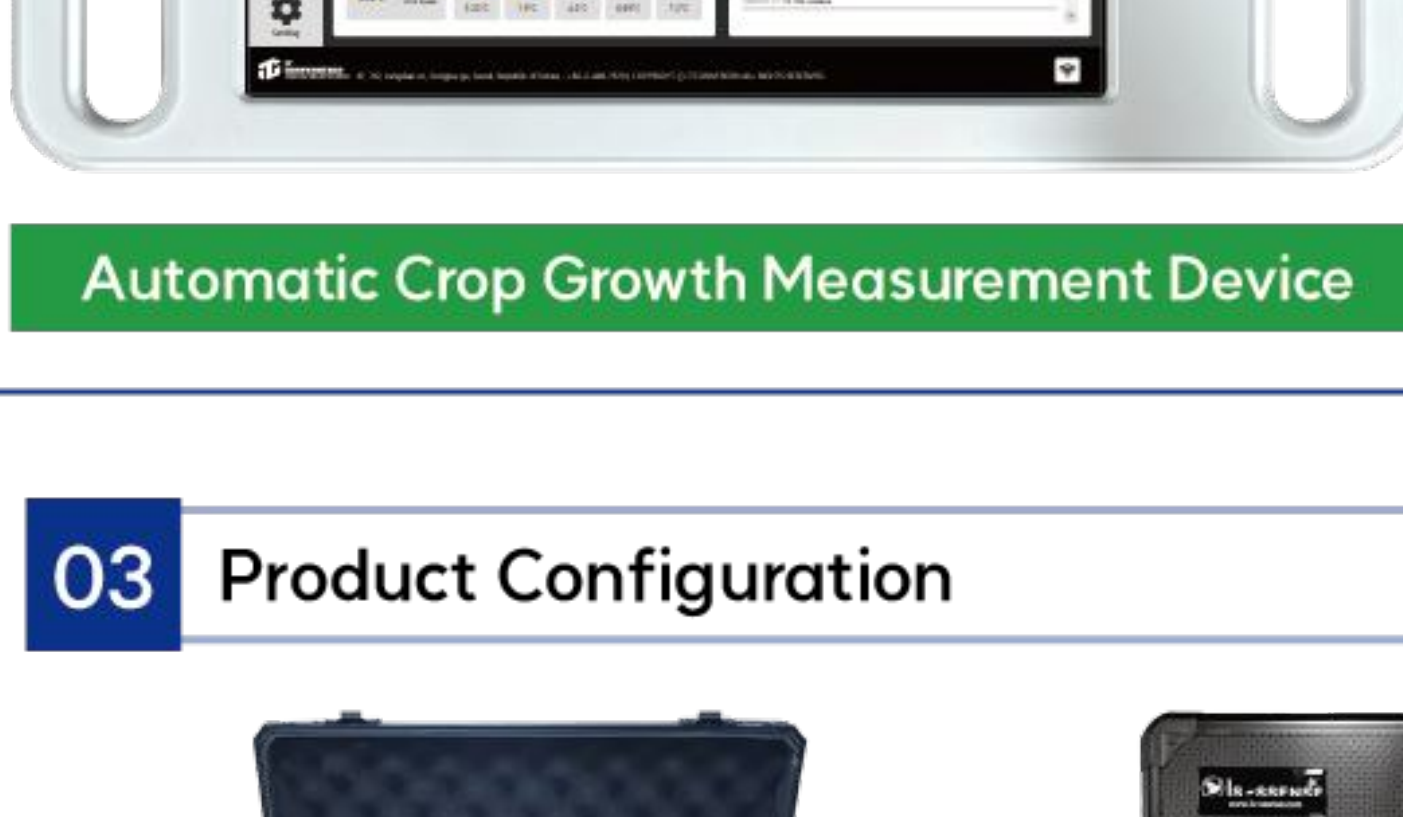
01 Product Description

Artificial Intelligence-Based Automatic Crop Growth Measurement Device

Identifying crop organs from RGB image data through deep learning and matching with depth sensor values to measure crop organ growth and simultaneously acquiring temperatures of targeted crop organs through a thermal imaging camera.

Target Crops	Automatically Measured Crops: Tomato, Paprika, Melon, Strawberry, Cucumber, Onion, Cucumber Seedling, Pepper Seedling, Watermelon Seedling
	Manually Measured Crops: All crops in open field and facility cultivation can be measured
Automatic Measurement Parts of Crops	Leaf length, leaf width, number of leaves, leaf temperature, node length, node thickness, node temperature, fruit length, fruit width, fruit temperature, number of fruits, number of flowers, growth point length, growth point thickness, growth point temperature

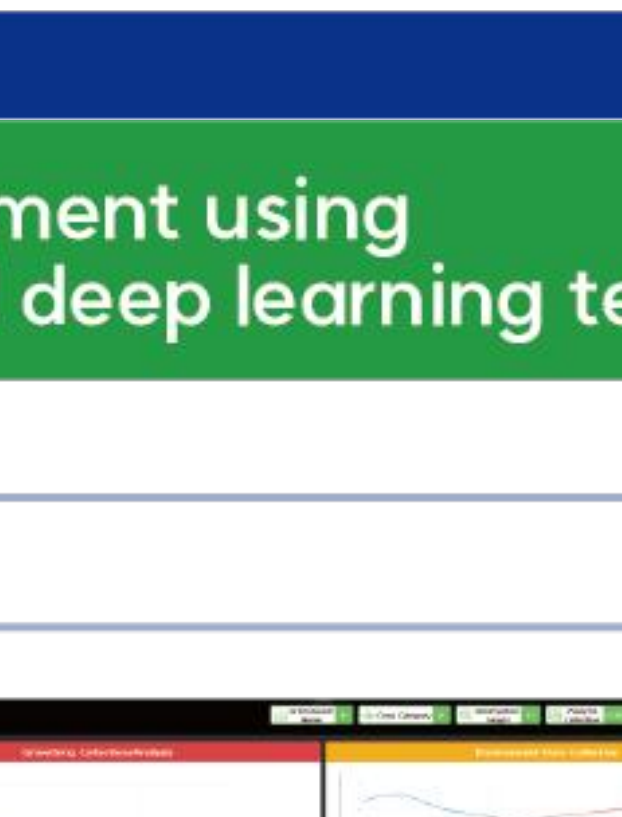
02 Product Specifications



Automatic Crop Growth Measurement Device

Classification	Configuration	Specifications
H/W	Depth Camera	Resolution: 1920 X 1080 (30FPS)
	Thermal Imaging Camera	Temperature: 10°C ~150
Main Processor	HDD	SSD128GB, eMMC 64GB
	RAM	4GB
S/W	CPU	Dual core Intel Pentium Gold 6500Y
	Resolution	1920 X 1280 (220PPI)
Windows11/Linux		Image Analysis S/W
Automatic Growth Measurement for Each Growth Indicator		Time-Series Data Analysis
Depth, RGB, Thermal Imaging Camera		

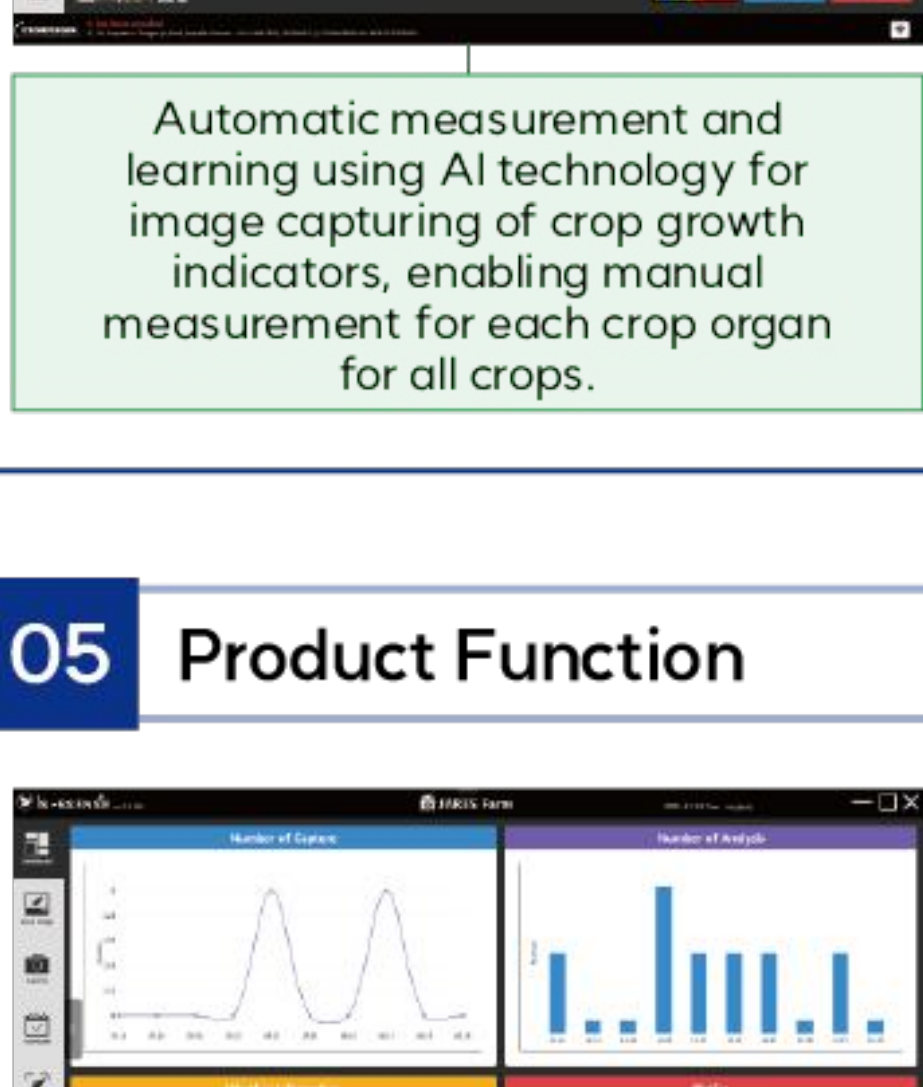
03 Product Configuration



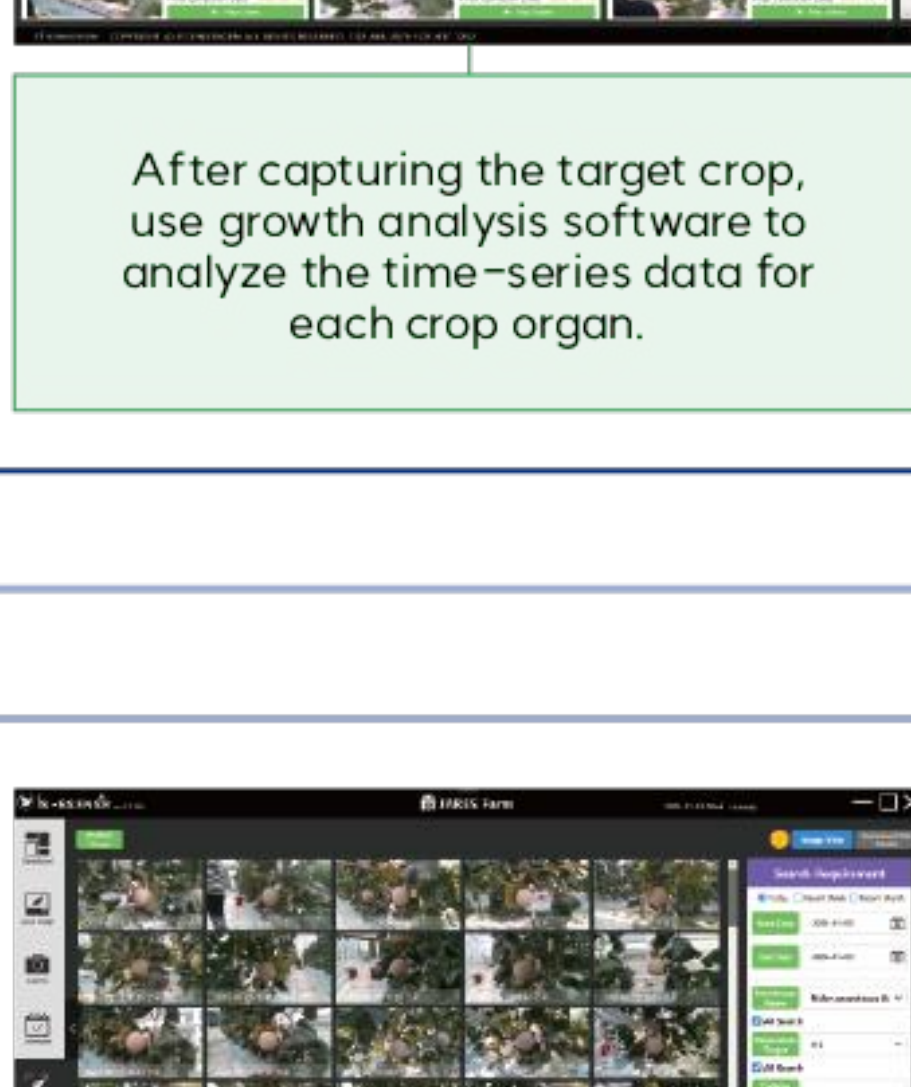
[Components]
• Product Box
• Automatic Measurement Device
• Keyboard & Mouse
• Tripod

Automatic crop measurement using crop image collection and deep learning technology

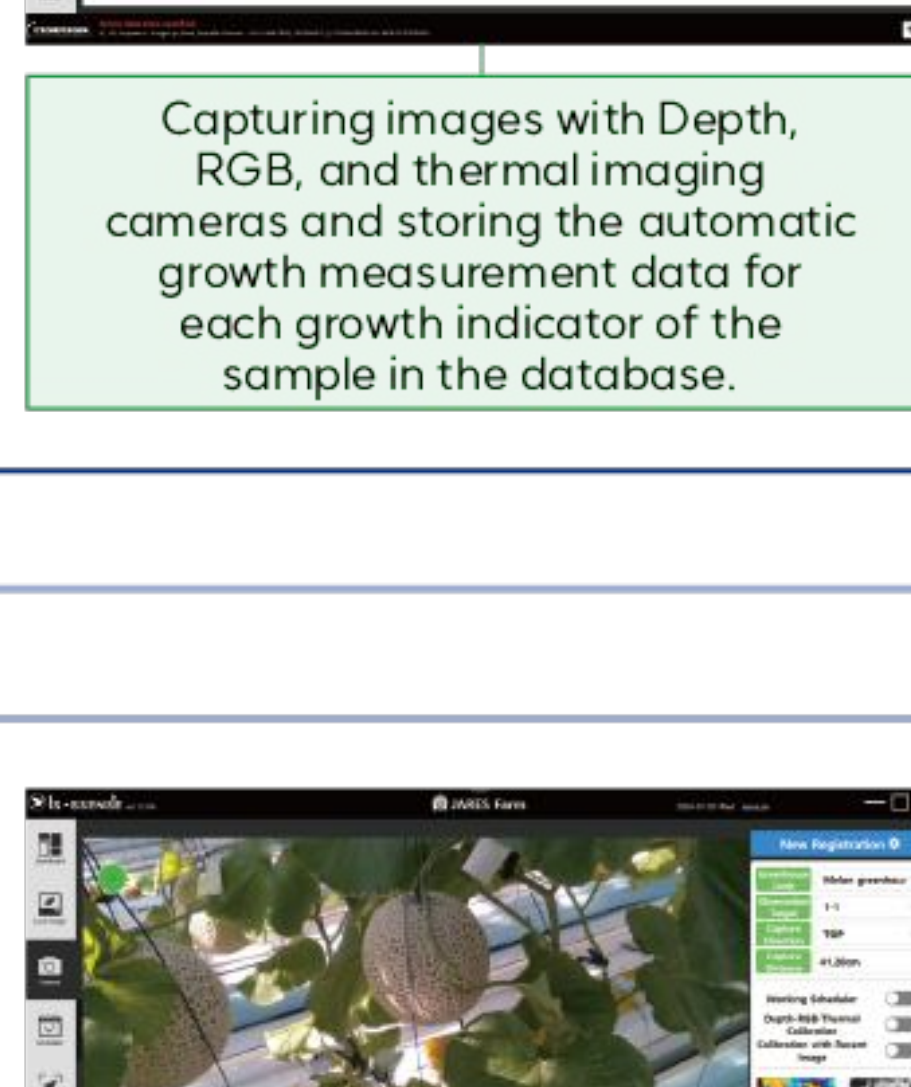
04 Product Features



Automatic measurement and learning using AI technology for image capturing of crop growth indicators, enabling manual measurement for each crop organ for all crops.

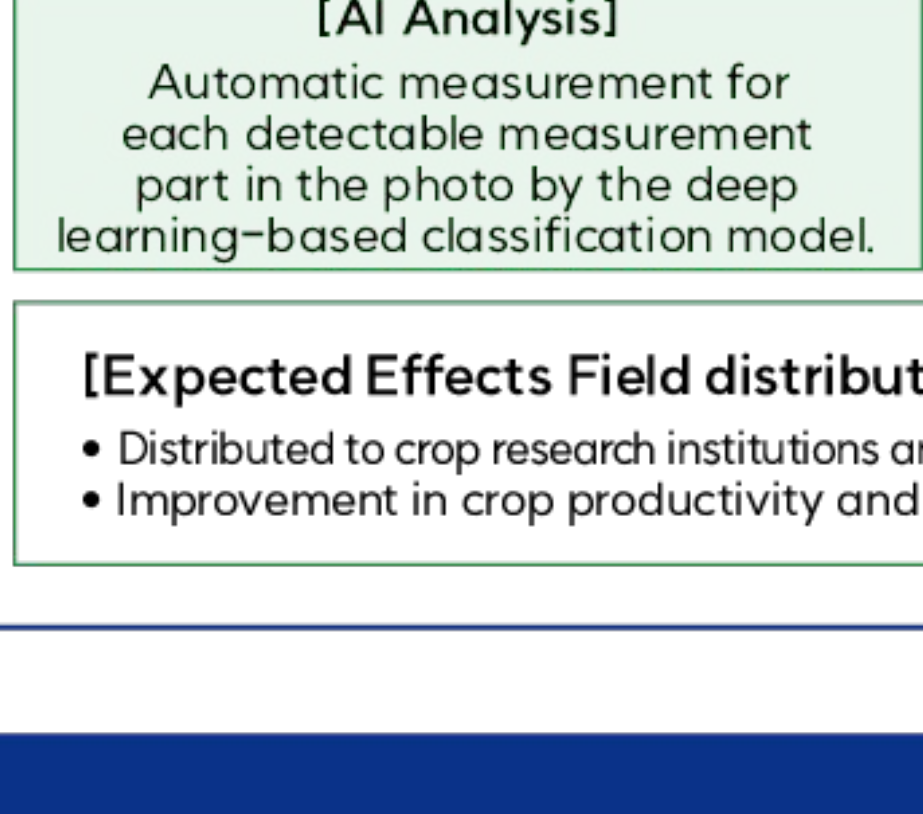


After capturing the target crop, use growth analysis software to analyze the time-series data for each crop organ.

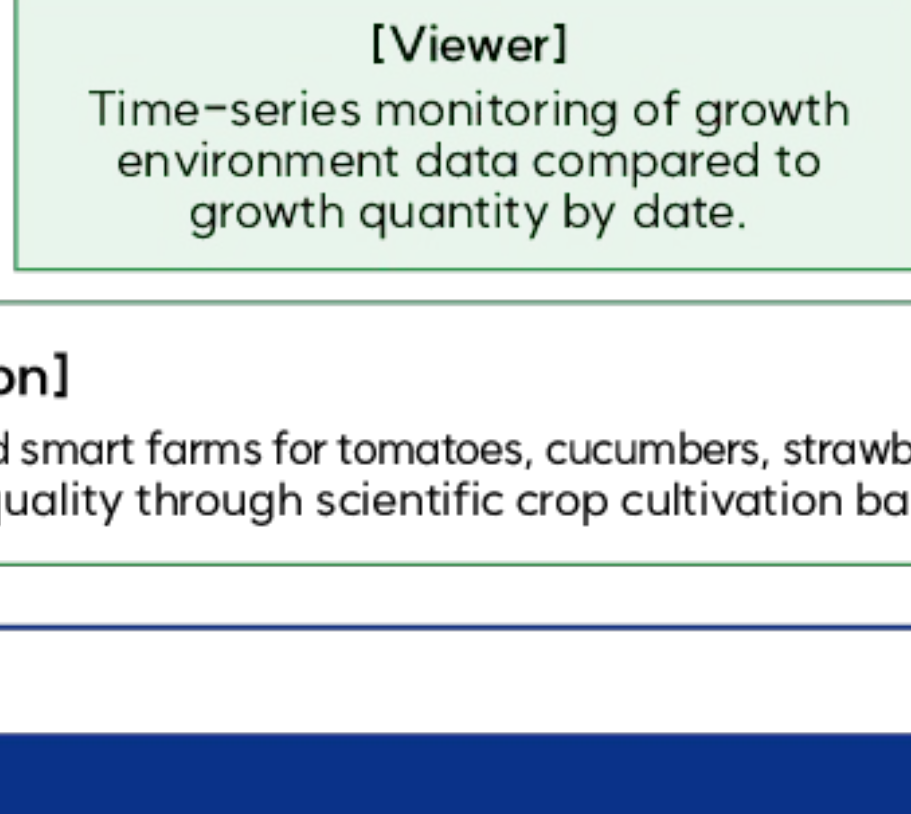


Capturing images with Depth, RGB, and thermal imaging cameras and storing the automatic growth measurement data for each growth indicator of the sample in the database.

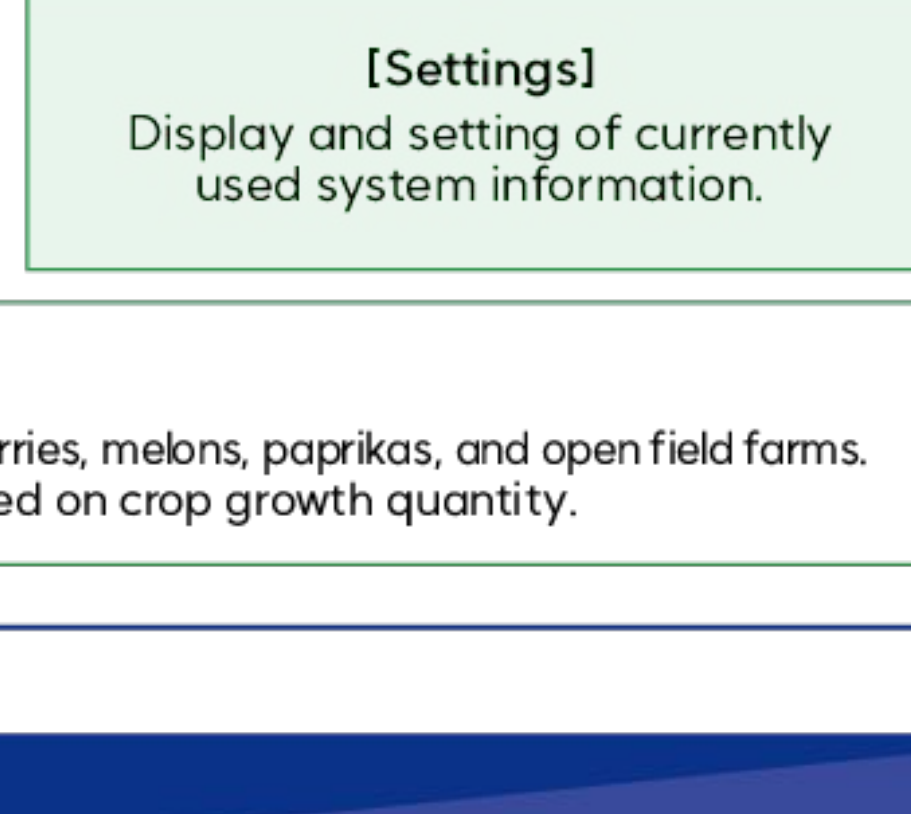
05 Product Function



[Dashboard]
Functions to check information such as AI analysis count, image shooting count, current farm weather information.



[Image]
Load and monitor local shooting images.



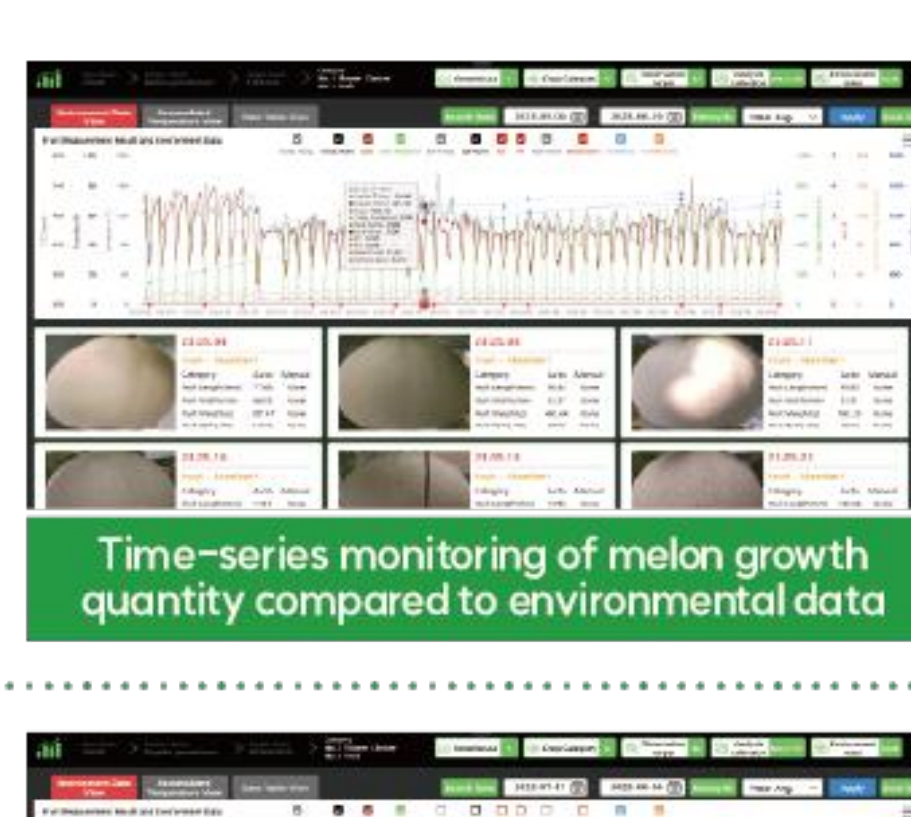
[Camera]
Simultaneous crop shooting with the RGB camera, Depth camera, and thermal imaging camera on the back of the device.



[AI Analysis]
Automatic measurement for each detectable measurement part in the photo by the deep learning-based classification model.



[Viewer]
Time-series monitoring of growth environment data compared to growth quantity by date.



[Settings]
Display and setting of currently used system information.

[Expected Effects Field distribution]

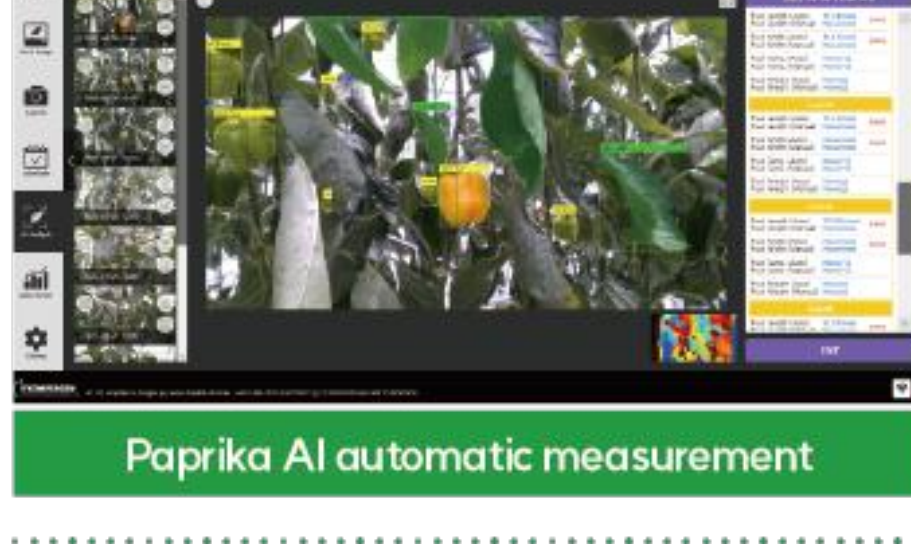
- Distributed to crop research institutions and smart farms for tomatoes, cucumbers, strawberries, melons, paprikas, and open field farms.
- Improvement in crop productivity and quality through scientific crop cultivation based on crop growth quantity.

Crop Shooting and AI Measurement

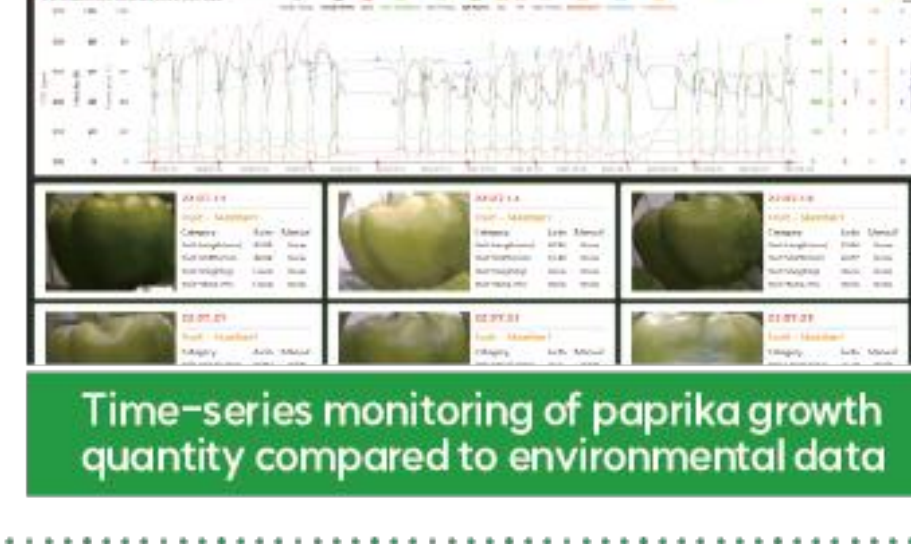
Fruit Vegetables



Melon shooting



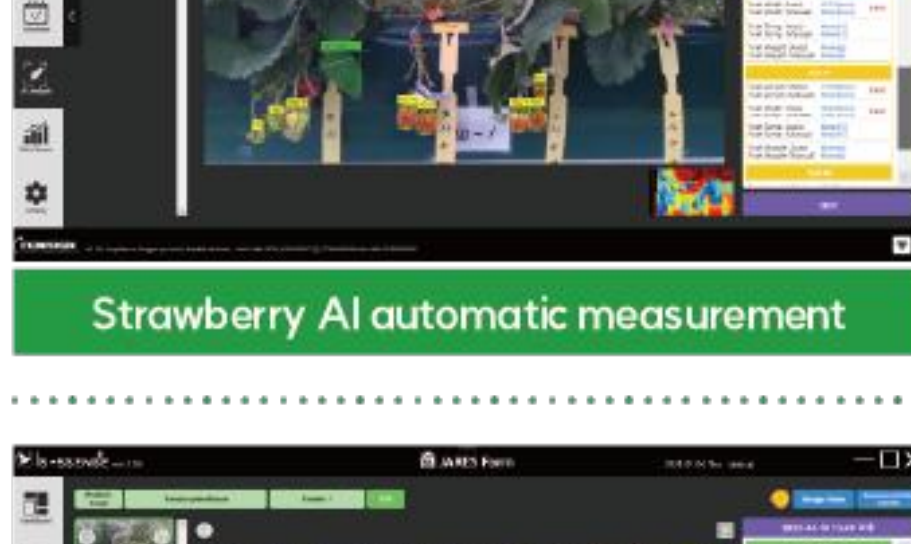
Melon AI automatic measurement



Time-series monitoring of melon growth quantity compared to environmental data



Paprika shooting



Paprika AI automatic measurement



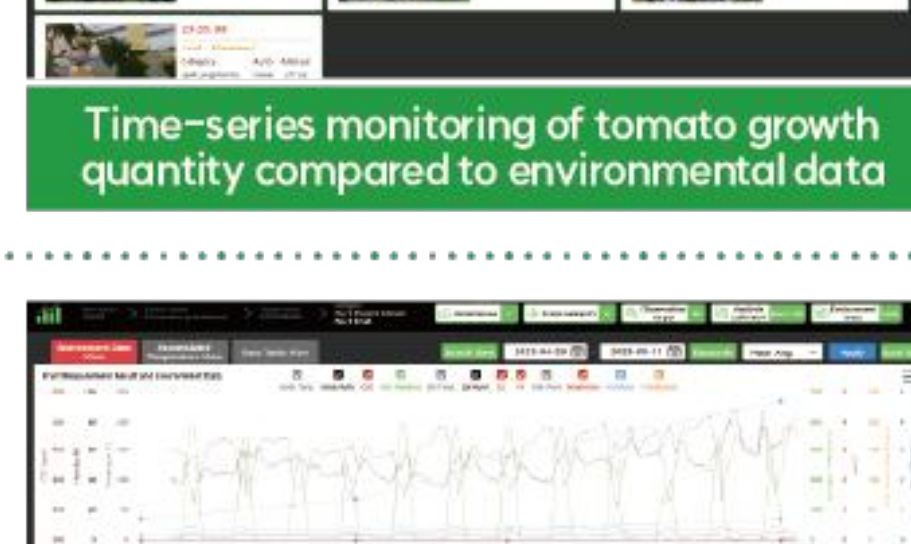
Time-series monitoring of paprika growth quantity compared to environmental data



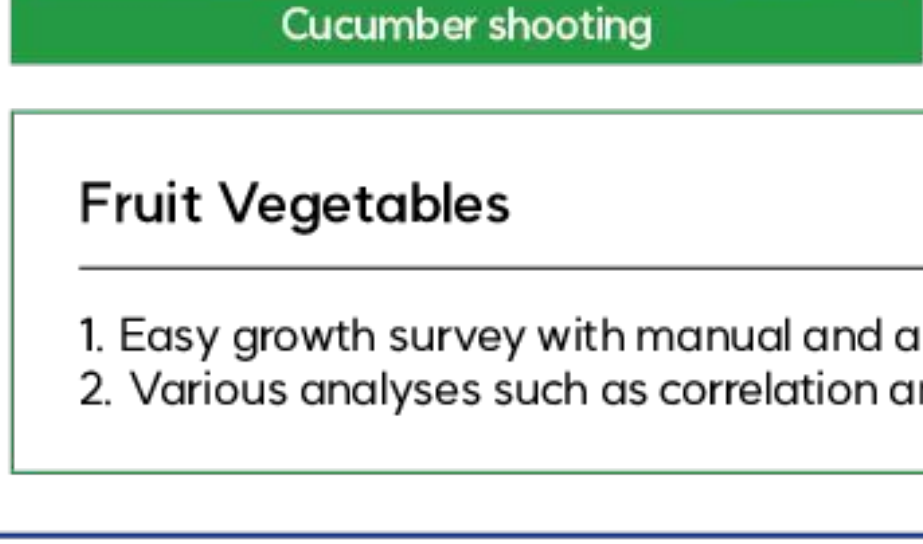
Strawberry shooting



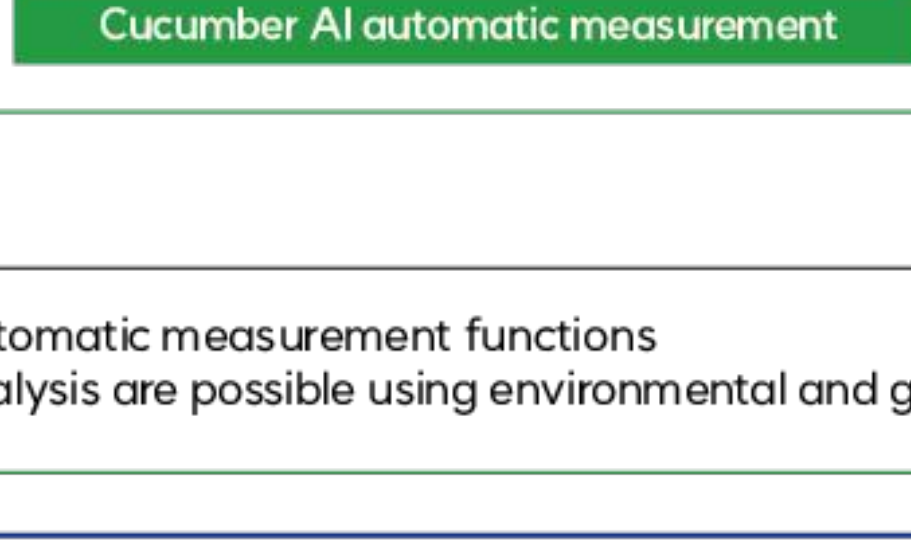
Strawberry AI automatic measurement



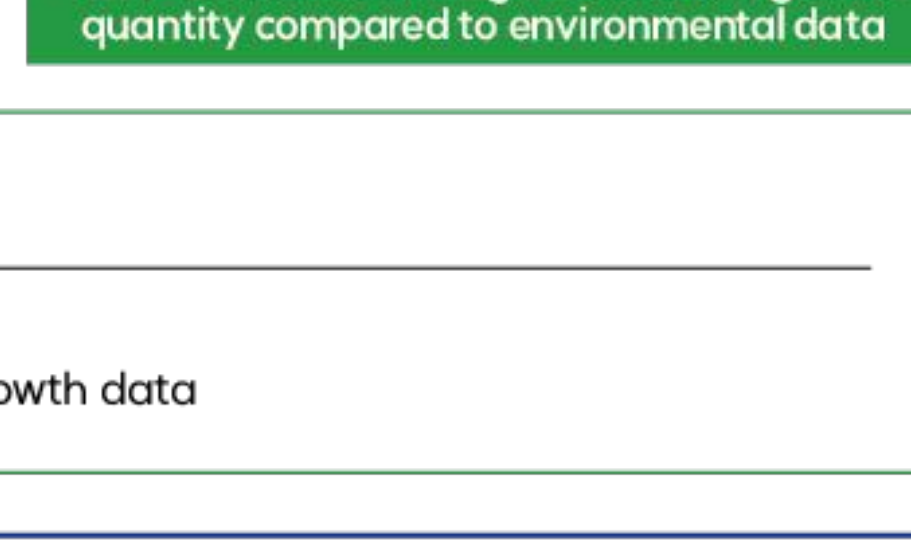
Time-series monitoring of strawberry growth quantity compared to environmental data



Tomato shooting



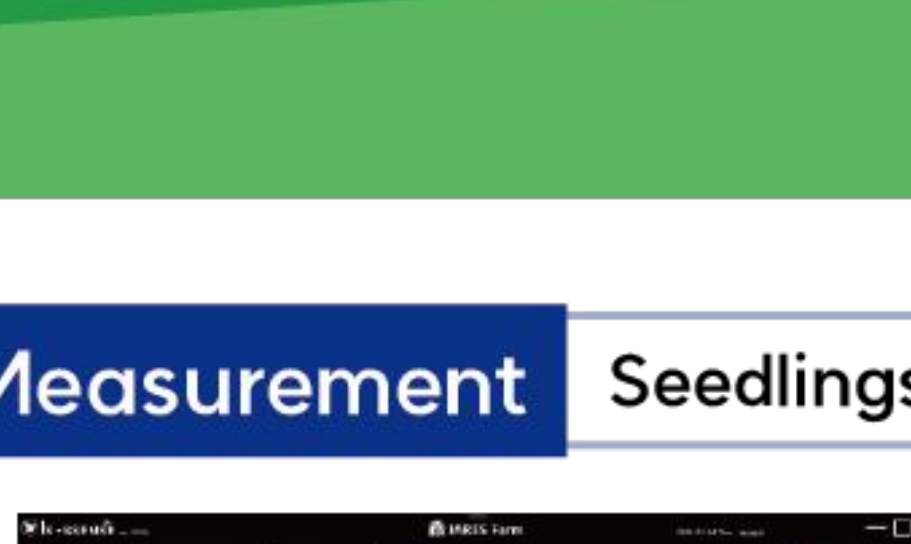
Tomato AI automatic measurement



Time-series monitoring of tomato growth quantity compared to environmental data



Cucumber shooting



Cucumber AI automatic measurement



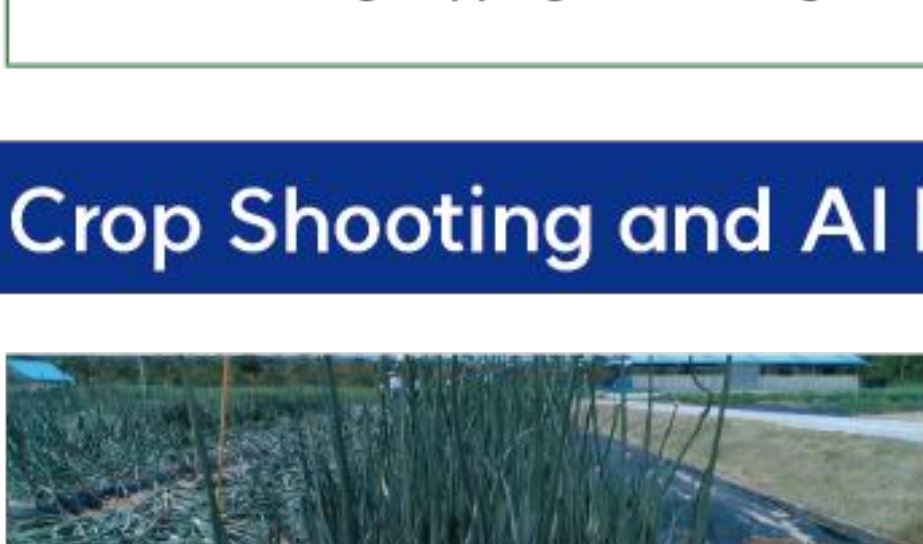
Time-series monitoring of cucumber growth quantity compared to environmental data

Fruit Vegetables

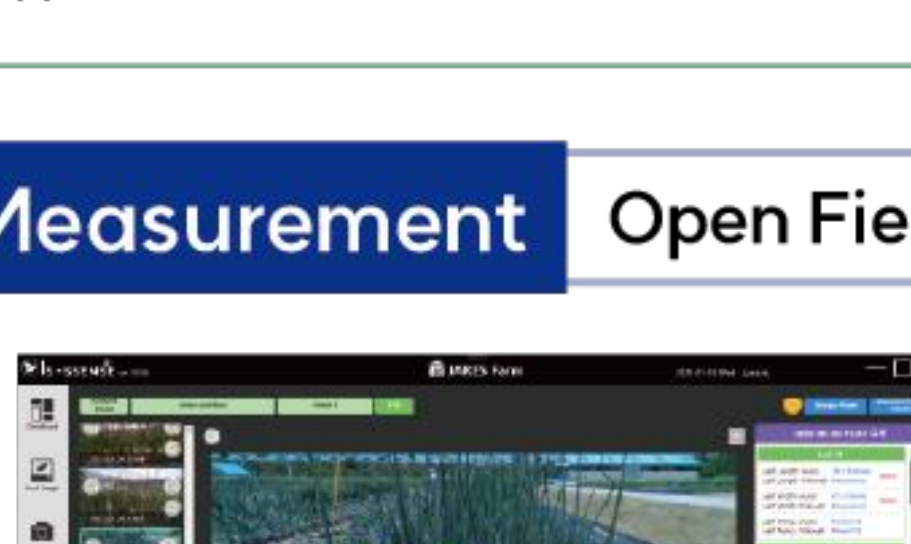
1. Easy growth survey with manual and automatic measurement functions
2. Various analyses such as correlation analysis are possible using environmental and growth data

Crop Shooting and AI Measurement

Seedlings



Pepper (Seedling) shooting



Pepper (Seedling) AI automatic measurement



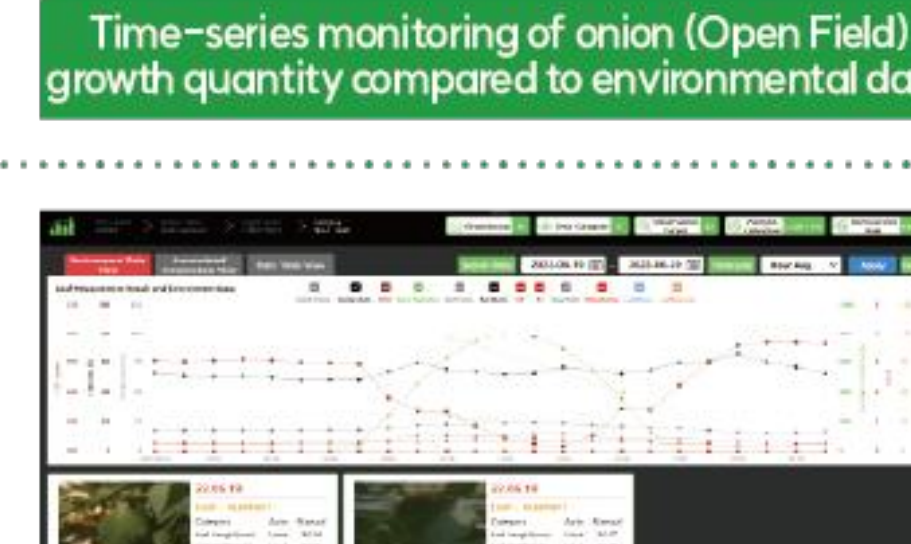
Time-series monitoring of pepper (Seedling) growth quantity compared to environmental data



Cucumber (Seedling) shooting



Cucumber (Seedling) AI automatic measurement



Time-series monitoring of cucumber (Seedling) growth quantity compared to environmental data

Seedlings

1. Detection of germination rate in seedling trays through image analysis
2. Classification of normal and abnormal seedlings using automatically measured growth data (leaf length, leaf width, plant height)
3. Determining shipping time through the appearance of flower buds

Crop Shooting and AI Measurement

Open Field



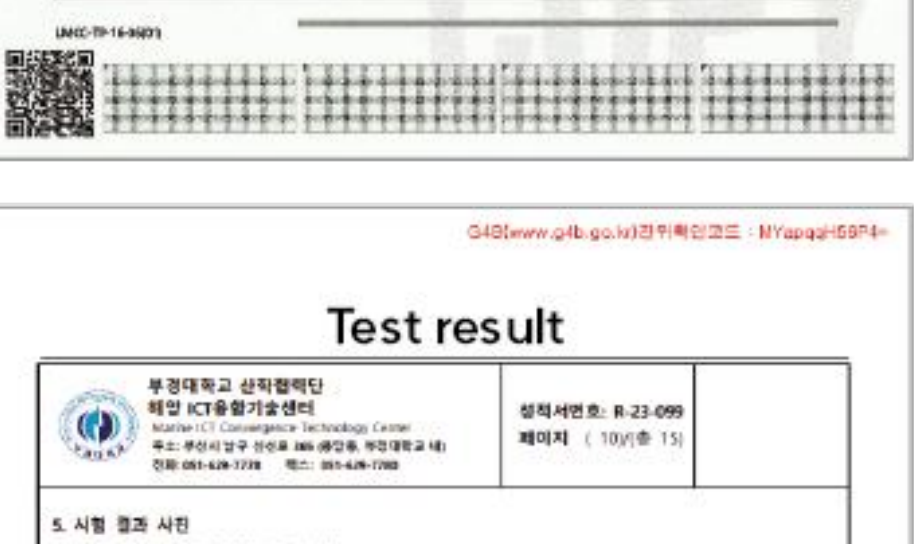
Onion (Open Field) shooting



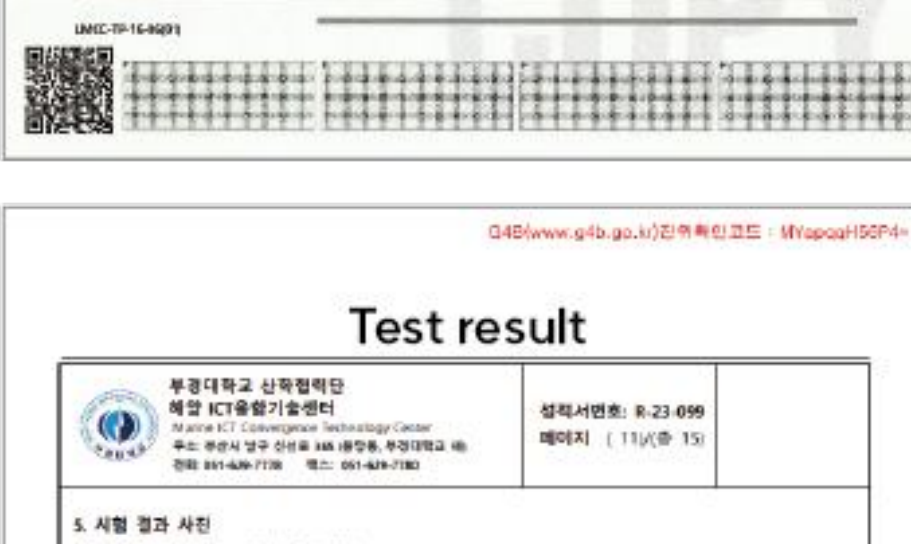
Onion (Open Field) AI automatic measurement



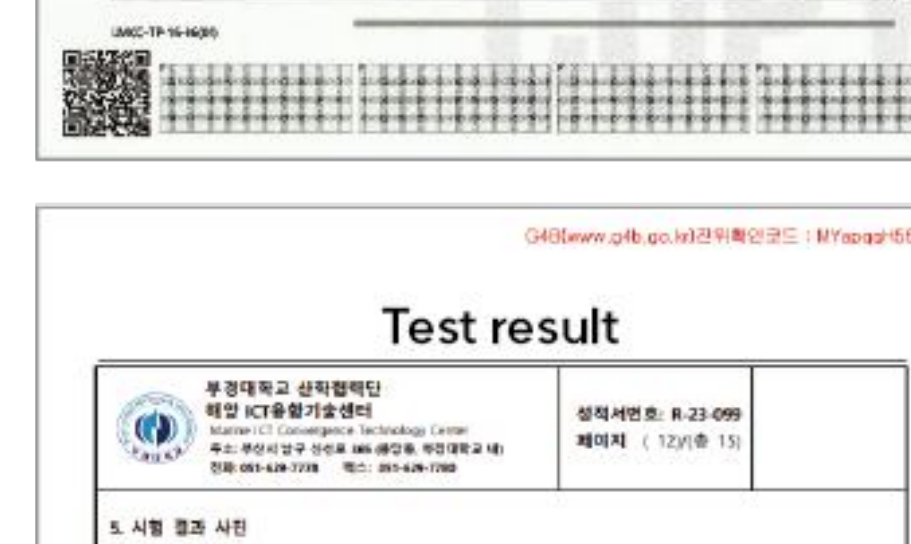
Time-series monitoring of onion (Open Field) growth quantity compared to environmental data



Pepper (Open Field) shooting



Pepper (Open Field) AI automatic measurement



Time-series monitoring of pepper (Open Field) growth quantity compared to environmental data

Open Field

1. Easy growth survey with manual and automatic measurement functions
2. Determining harvest time using crop-specific growth data

IS-SSENSE Test Certificate

