

Next Generation type Kochi New Greenhouse Horticulture Systems

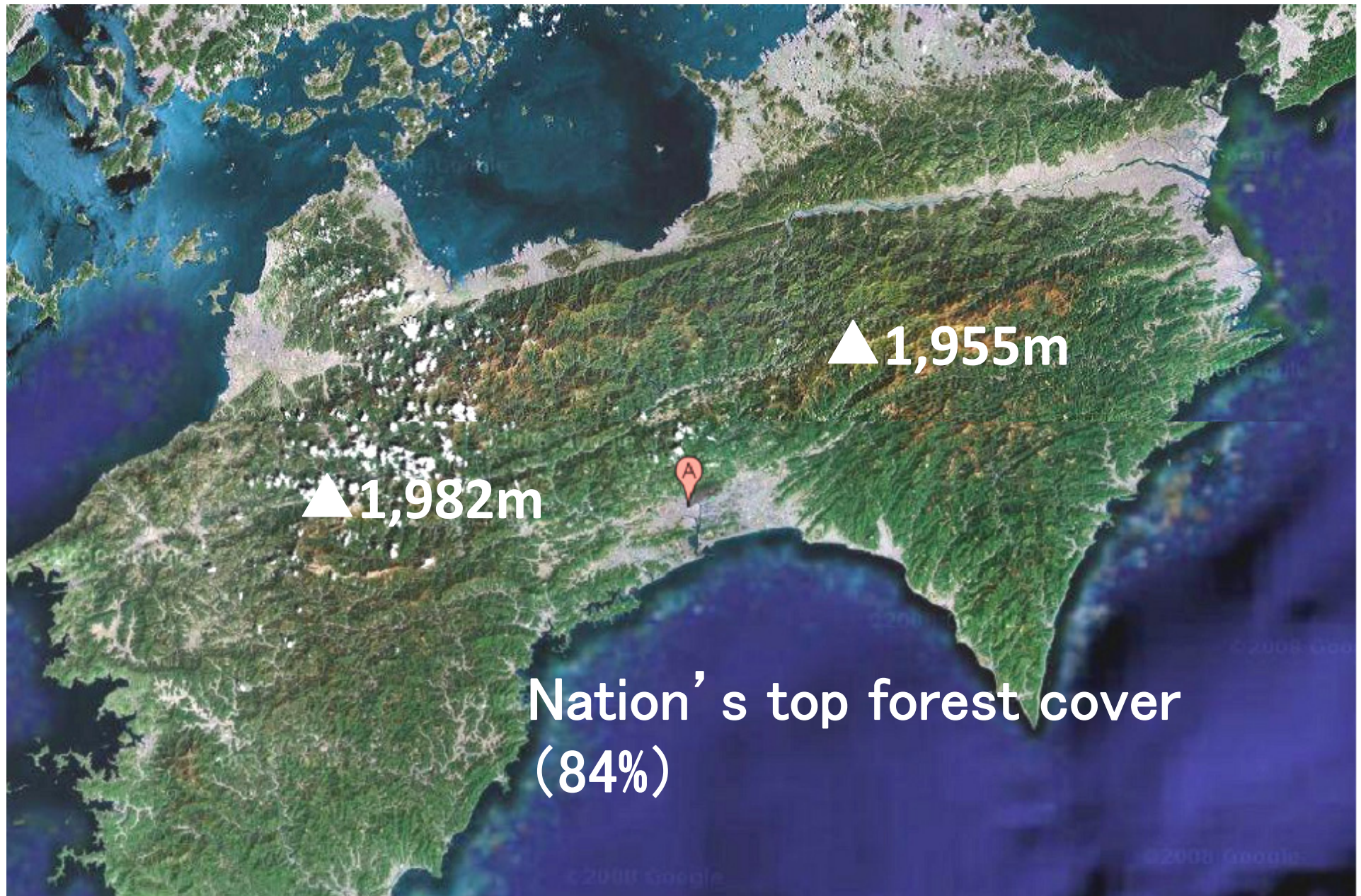


Hisashi Matsugi, Deputy Director Next Generation Horticulture Promotion Office, Department of Agricultural Development, Kochi Prefectural Government





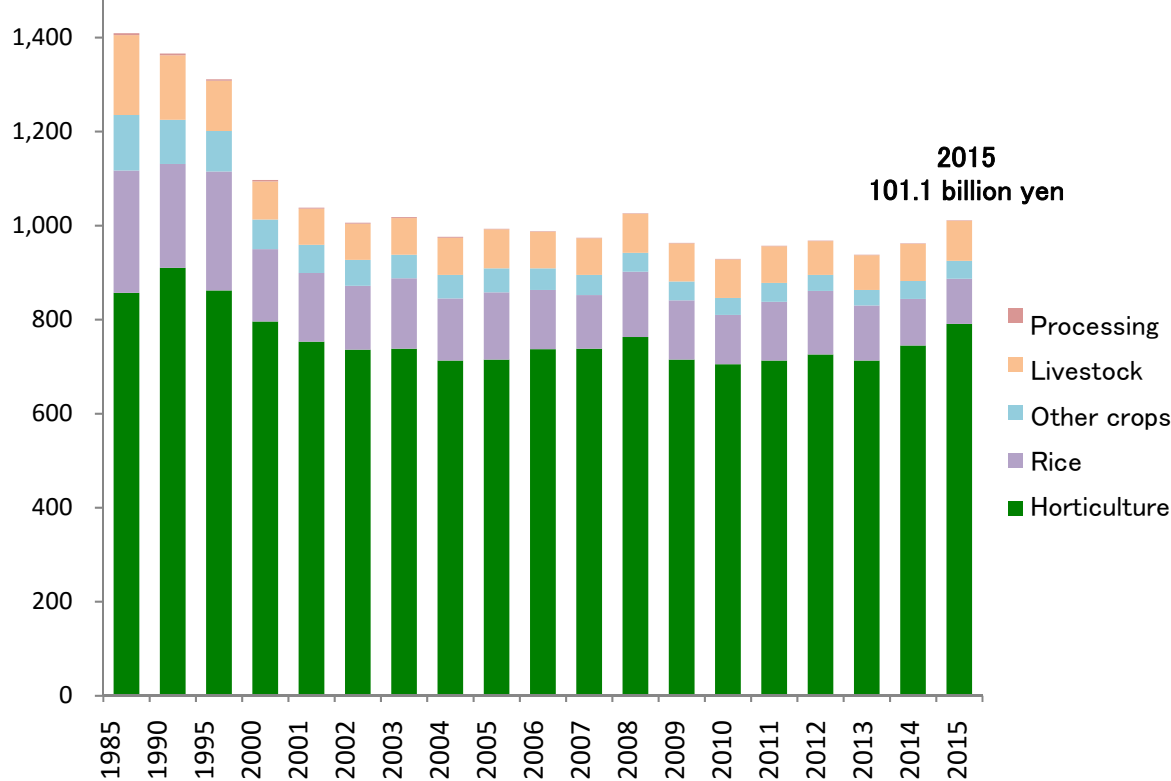
Why horticulture in Kochi?



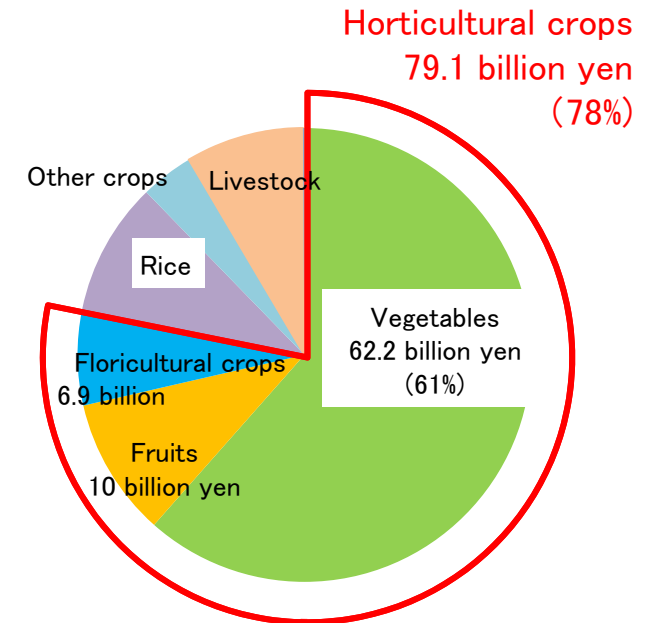


Agricultural output and issues in Kochi prefecture

○ Kochi prefecture's agricultural output is on a downward trend



○ Horticultural crops account for 78% of agricultural output (2015)



As the area of greenhouses decreases, efforts such as securing leaders of greenhouse horticulture and improving yield are important to maintain and improve agricultural output.

The total output in 2015 was valued at 101.1 billion of which approx. 78% (79.1 billion yen) was generated by horticultural crops (mostly greenhouse horticulture).



Further selection and concentration among horticultural crops!

Nationwide



Land-extensive farming, heavyweight vegetables, unit price: low

Vegetables produced in Kochi in large volumes



Burdonsome, lightweight, unit price: high

No.1 in production volume

Only 1

Others



Eggplant



Chinese chive



Ginger



Yuzu citrus fruit



Lilies (No.2)



Mioga ginger



Shishito (small green pepper)



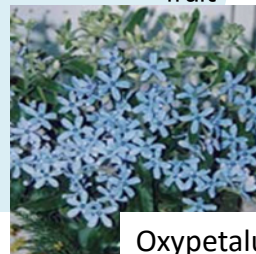
Eggplant black beauty



Buntan citrus fruit



Gloriosa



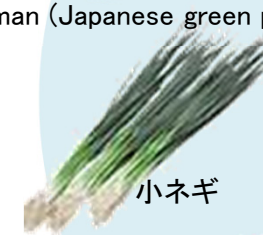
Oxypetalum



Piman (Japanese green pepper)



Cucumber



小ネギ



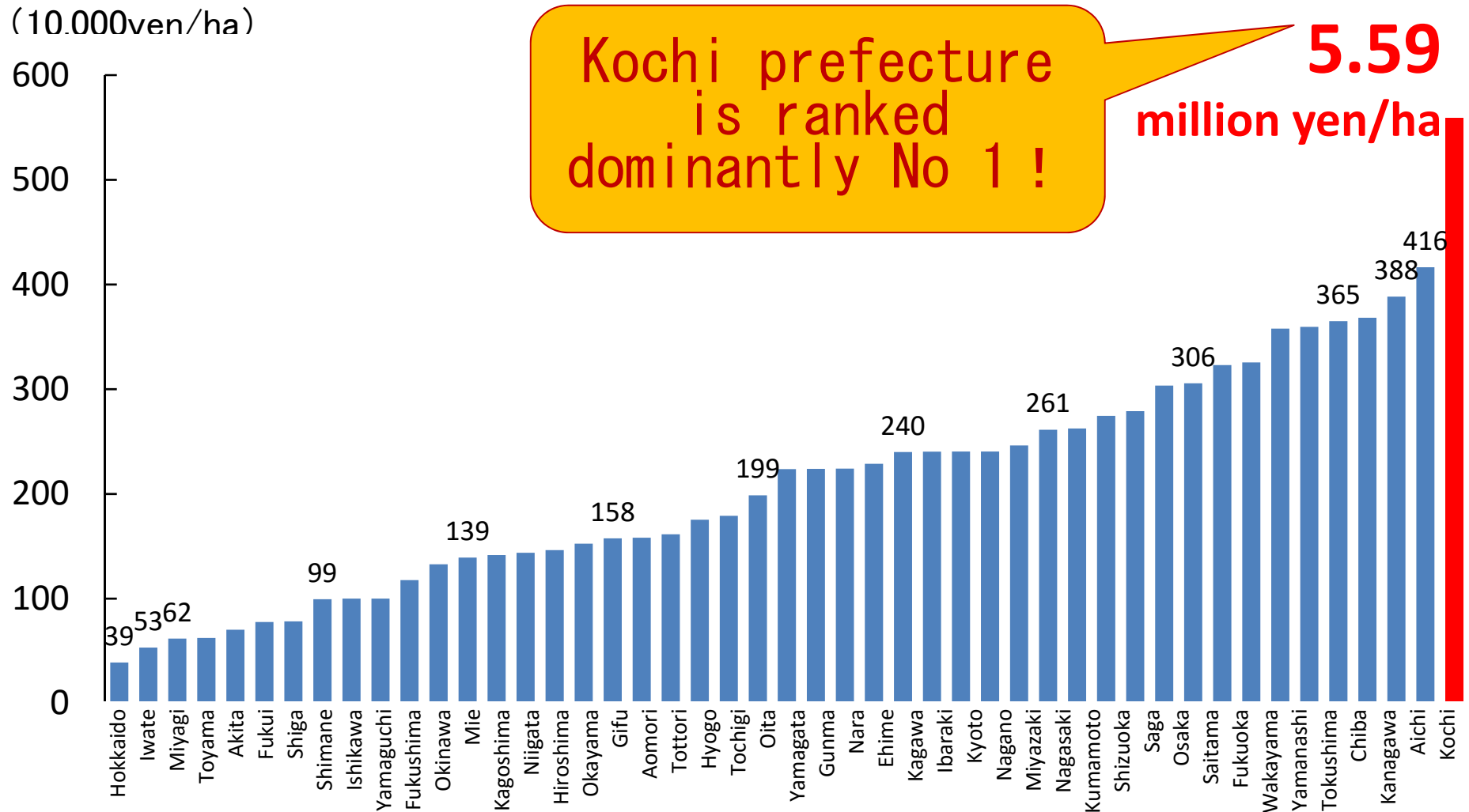
Melon



Tomatoes with a high sugar content



As a result, horticulture productivity in Kochi ranked dominantly No 1 !



Kochi prefecture is ranked dominantly No 1 !

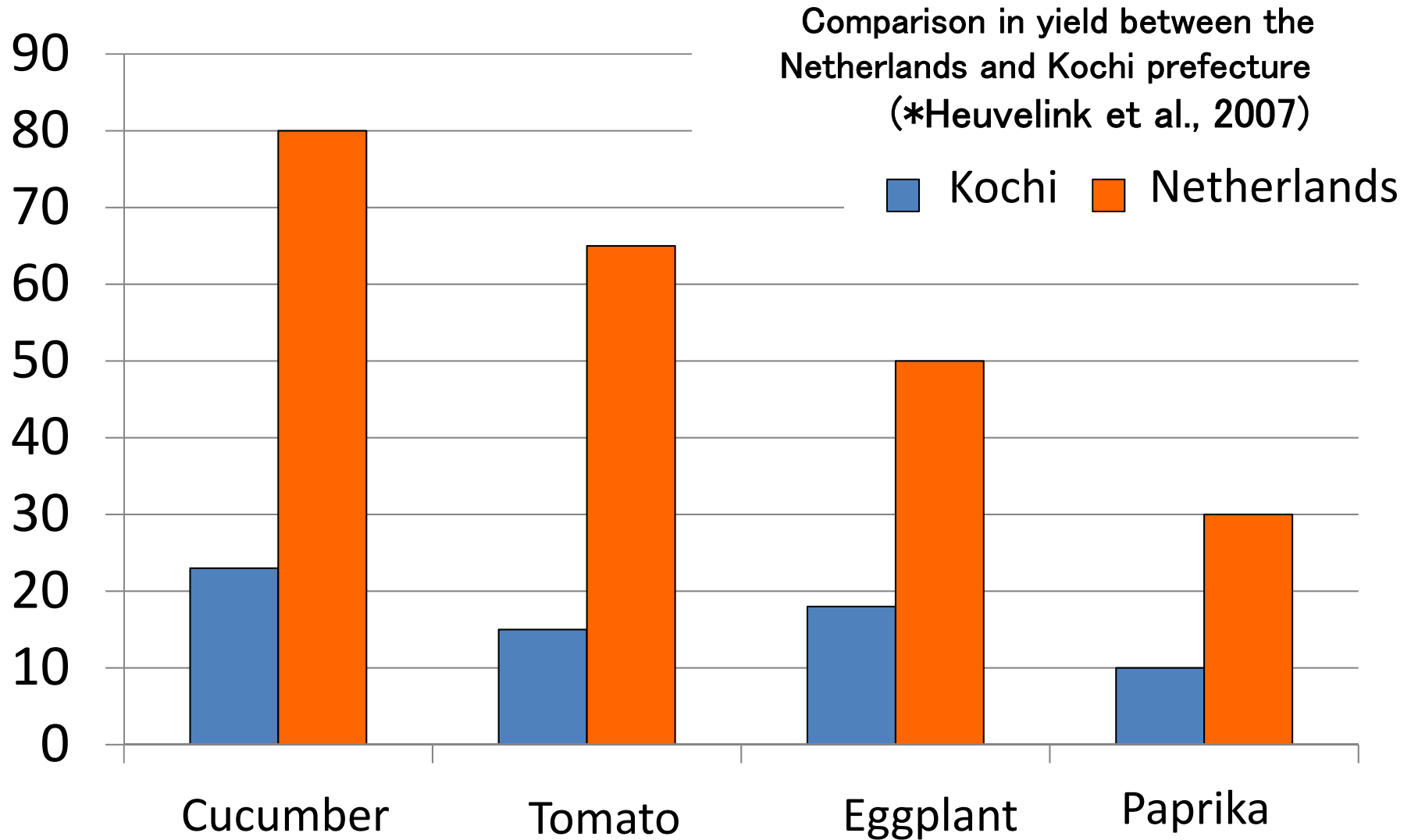
5.59 million yen/ha

(Agricultural output per prefecture per hectare of cultivation area)

※ The values of agricultural output were calculated from the “agricultural production statistics” by excluding data for rice, livestock and processed agricultural products. The values of cultivated area were calculated by excluding data for rice. (Source: Ministry of Agriculture, Forestry and Fisheries)



Kochi is ranked No. 1 in Japan, but globally...



Yields in the Netherlands are **2-3 times higher** than those in Kochi



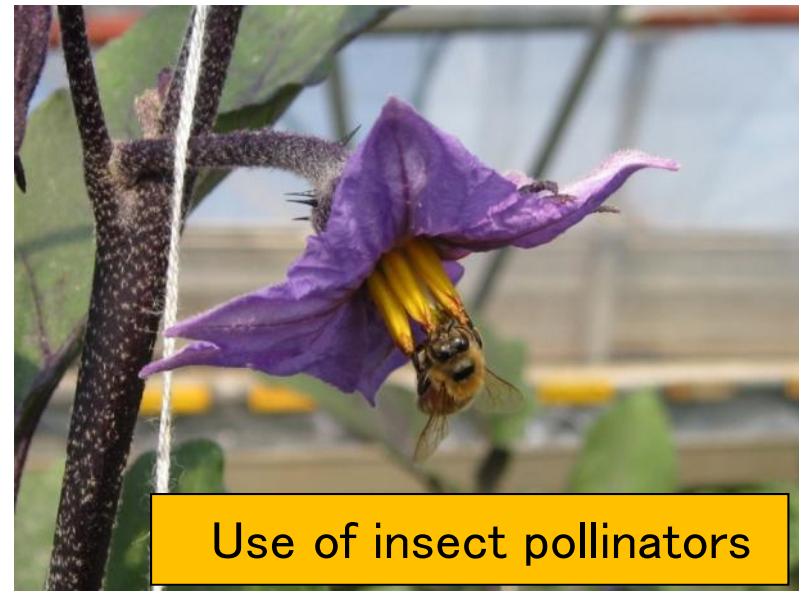
Lean from the Netherlands! – Connections in the past



Use of natural enemies



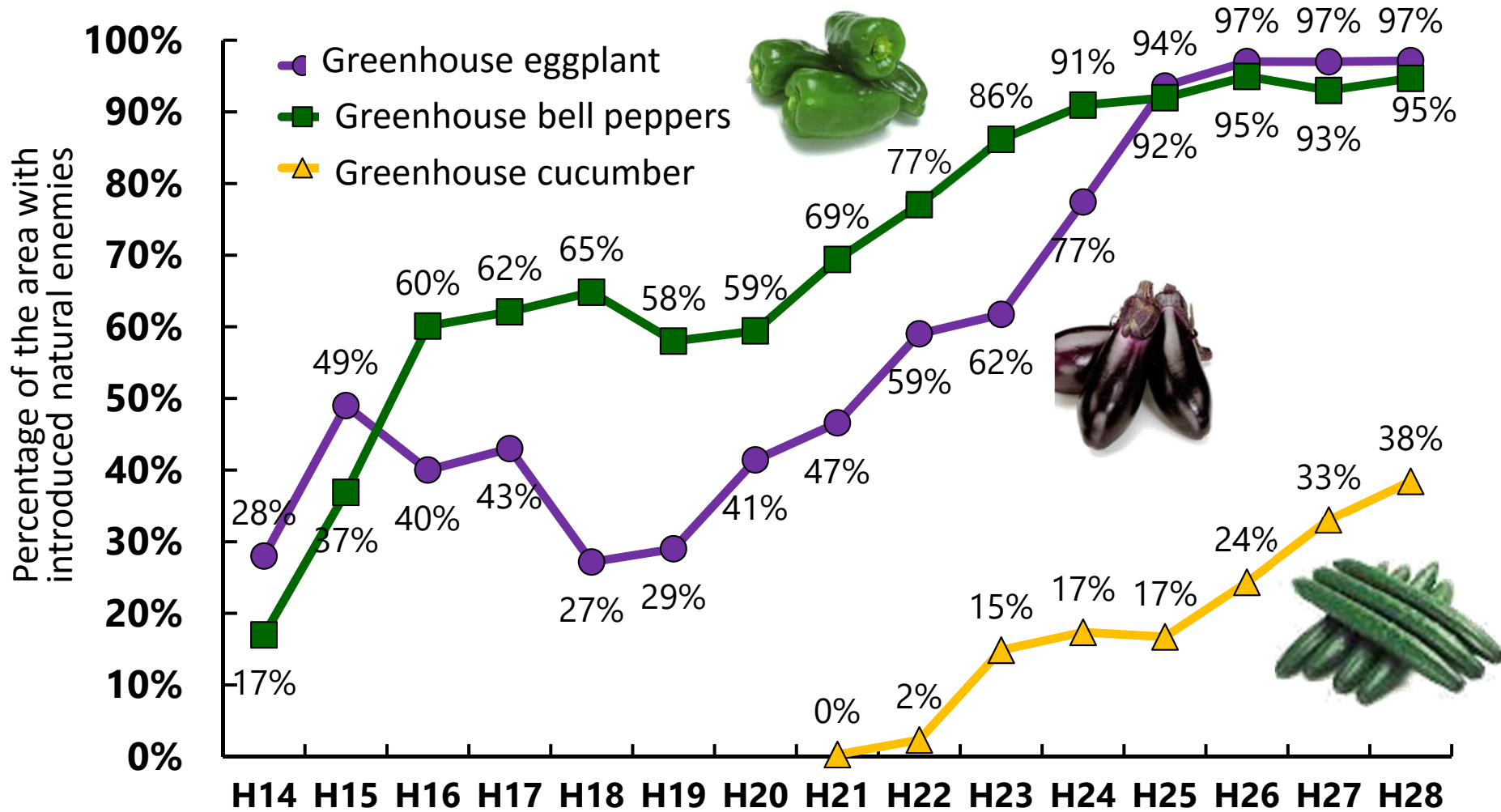
Import of lily bulbs



Use of insect pollinators



Lean from the Netherlands! – Connections in the past



Changes in percentage of the area with introduced natural enemies in major fruit vegetables in Kochi prefecture

Note) Compiled by the Environmental Agriculture Promotion Division, Department of Agricultural Development, Kochi Prefectural Government (The numbers indicate the fiscal years of compilation.)



Horticulture Friendship Agreement with Westalnd Municipality in the Netherlands



18 November 2009

Left: Mayor Sjaak van der Tak

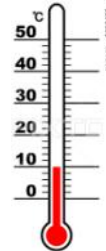
Right: Governor Masanao Ozaki



First, know the conditions of your greenhouse !

Japan's agriculture in the past

- Management mainly on temperature
- Depend on experience & intuition



Agriculture in the Netherlands

Complete optimal data management

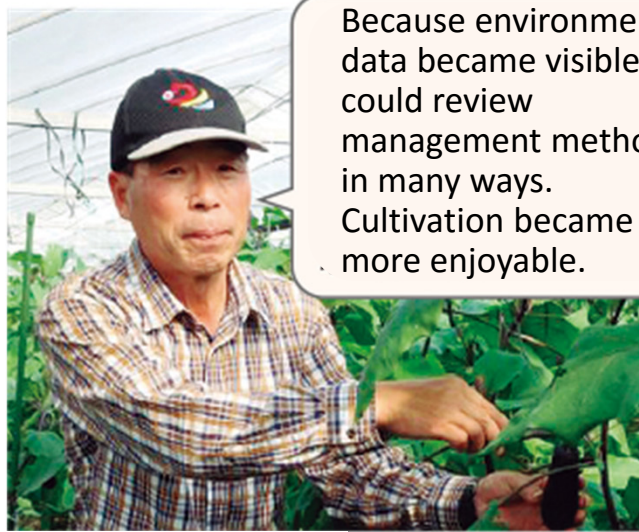
Nacl/T	19.2	18.9	20.1	20.3	21.2	20.1	19.3
RU cm	80	75	70	71	75	82	84
CO ₂ day	830	923	710	987	808	886	743
Gift l/m	0.97	0.97	1.06	1.11	1.06	1.01	0.97
Drain l/m	0.21	0.21	0.35	0.29	0.22	0.30	0.18
Drain l/m	4.44	4.44	4.47	4.41	4.36	4.30	4.24
Drain l/m	2.40	4.25	4.65	3.62	10.81	7.39	9.71

Management in the future

- Control Temperature, Humidity & CO₂ in an integrated manner according to plant vigor & amount of solar radiation (climate control)
- Visualization of data, observation & review!



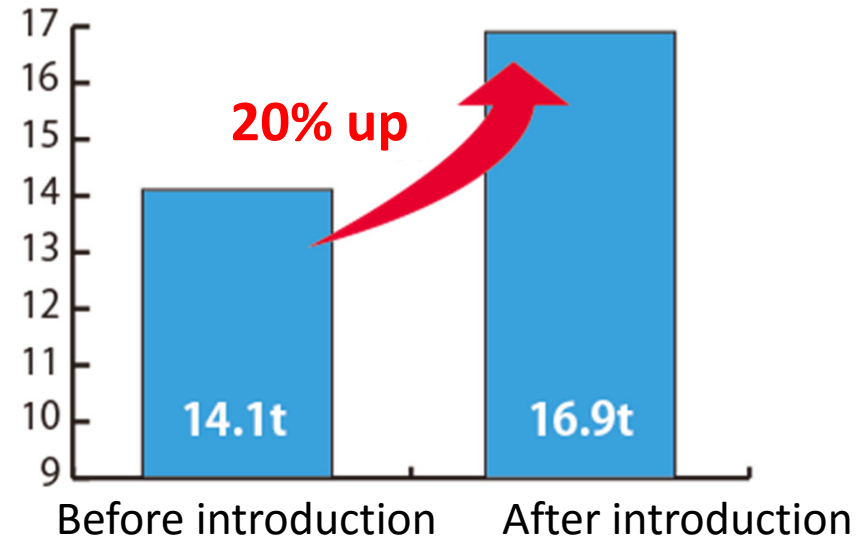
Review daily management practices where possible!



Because environment data became visible, I could review management methods in many ways. Cultivation became more enjoyable.

Mr Ueno, Aki City

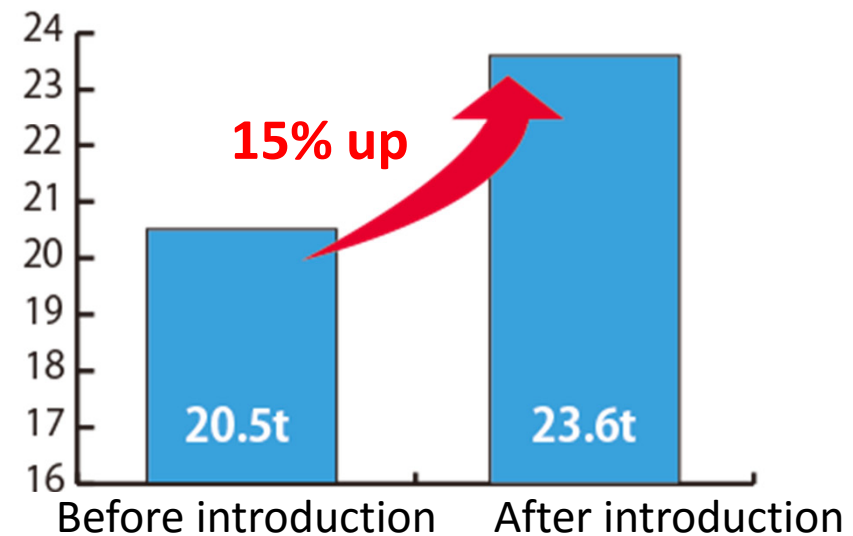
Nov-May Eggplant



I feel a good response after using CO2. I would like to enhance yield by improving technologies.

Mr Murata, Tosa Shimizu City

Nov-May Cucumber





To exploit further potential, introduce next generation greenhouses



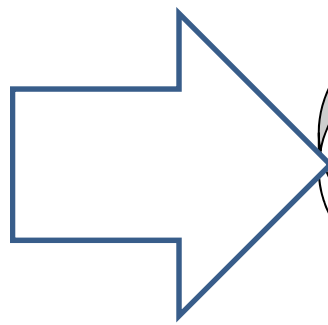
Next generation greenhouse horticulture Kochi prefecture base

Started cultivation of tomatoes in July 2016 on 4.3ha of land !





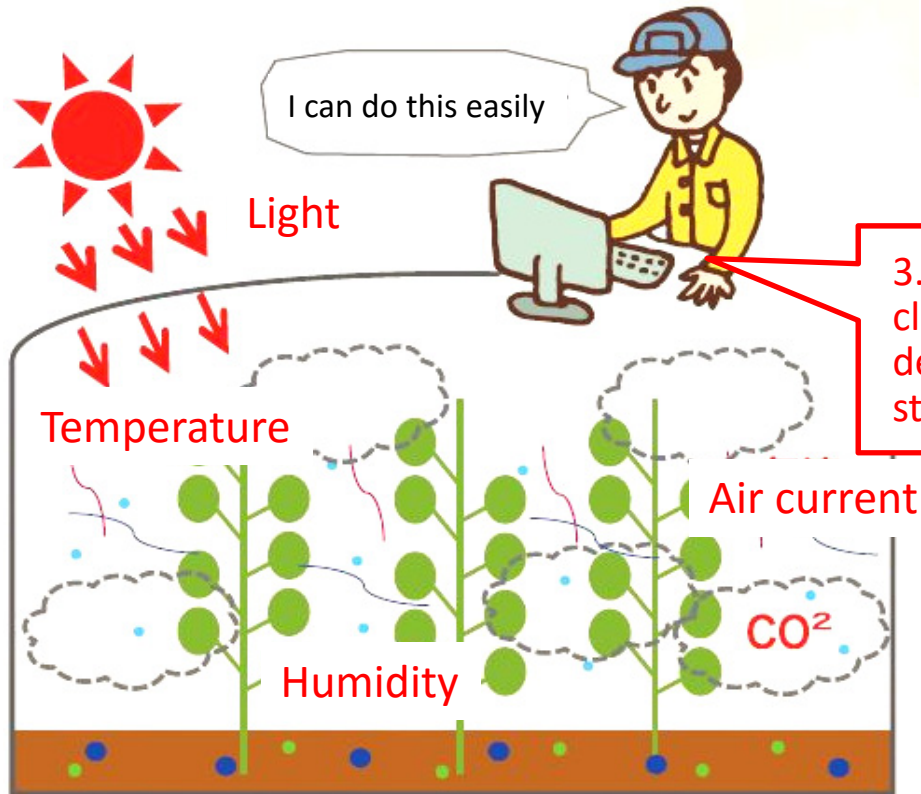
Next generation greenhouses spread in response to crops!



2. Wind velocity resistance of 35m/s or more

3. Equipped with climate control device as a standard feature

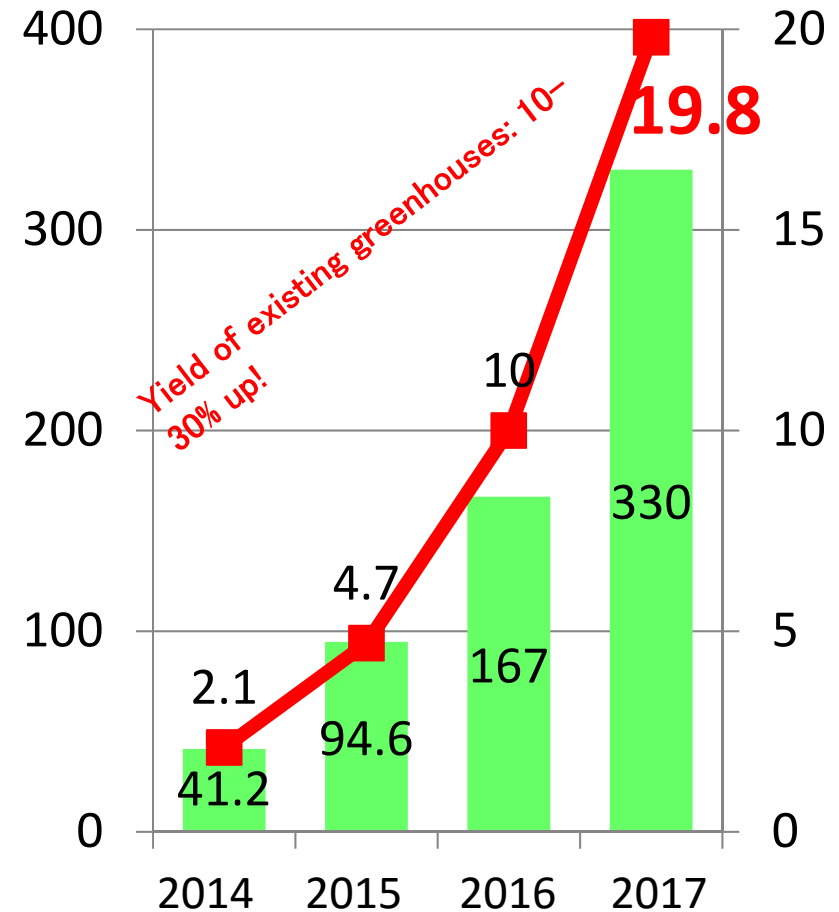
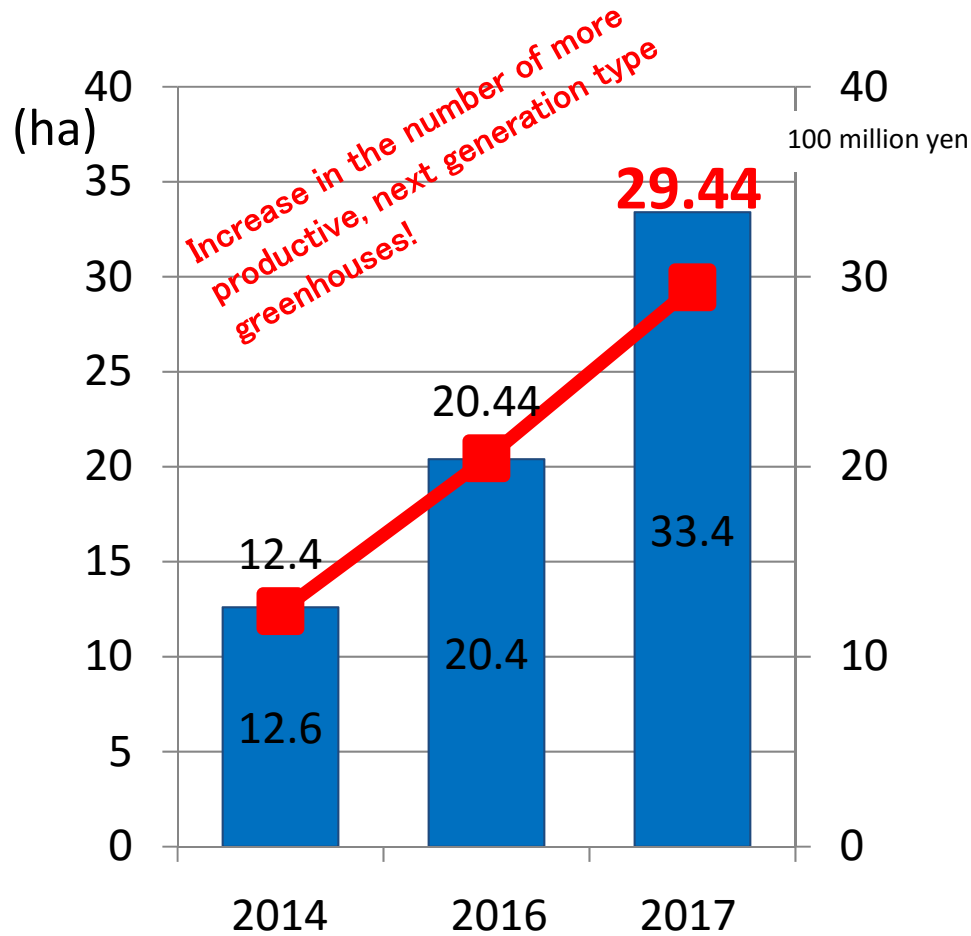
1. Eave height of 2.5m or more





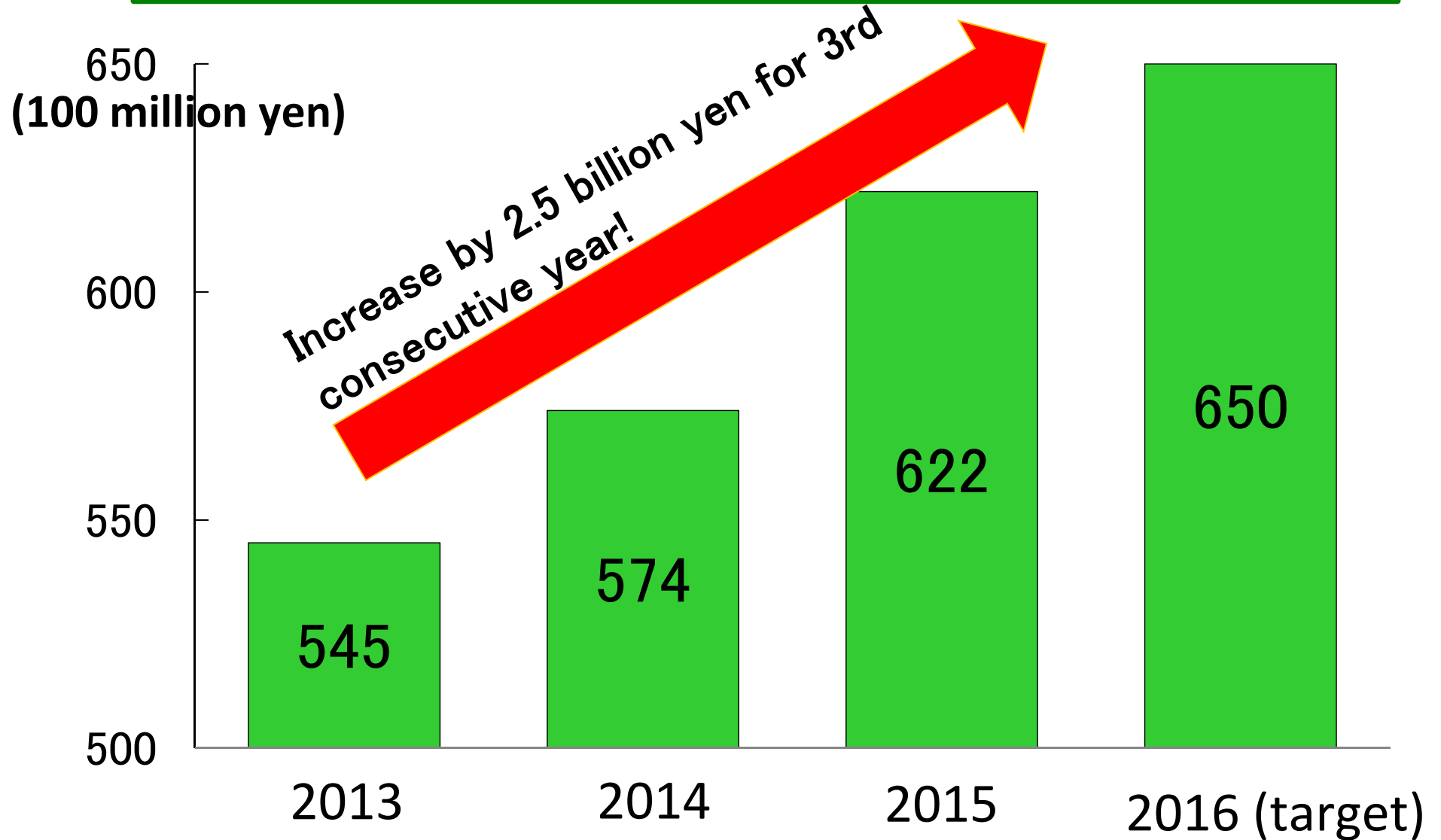
Next-generation greenhouses to be introduced to all crops, all farm households in all regions of the prefecture

- **Area with installed** new next generation type greenhouses and **targeted sales**
- **Area existing greenhouses with introduced** climate control technologies and **targeted sales growth**





Increasing trend of production value of Kochi vegetables



Value of production of vegetables in Kochi prefecture

We cultivate the future
agriculture

農業の未来を
耕すぜよ。



Thank you for
your attention

