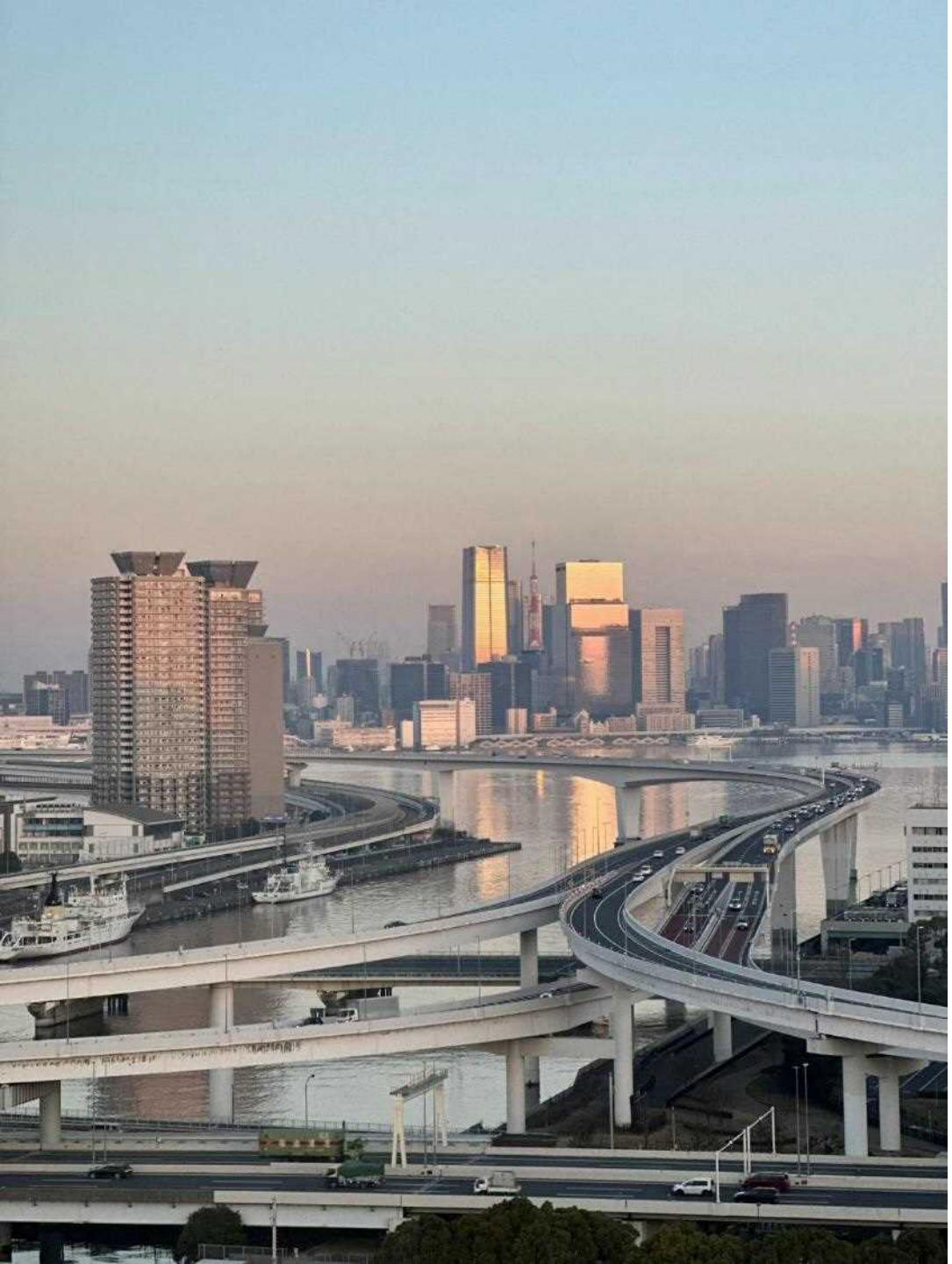
東京バクテリアラボ
TOKYO BACTERIA LABO

Taiyo Yuka Co., Ltd.

～TOKYO8～　Change the future of agriculture with microbial abilities

TOKYO BACTERIA LABO　Yoichi Harikai

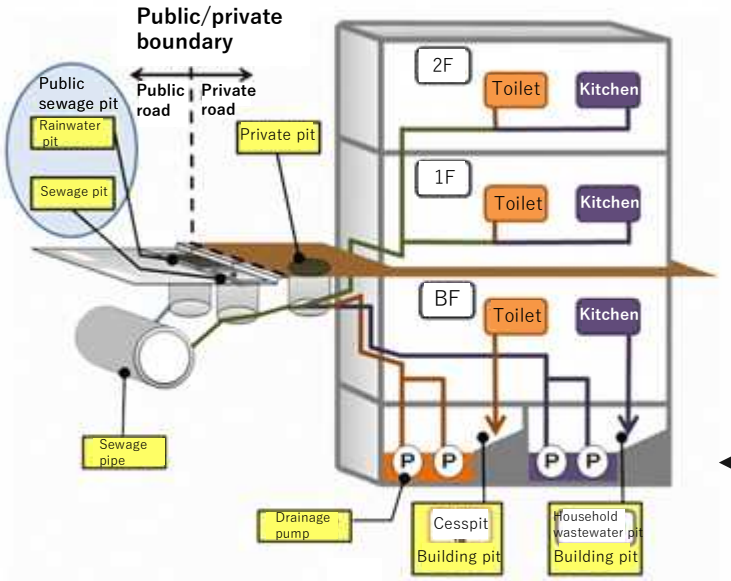


Upcycling of organic materials

9,400 office buildings in Tokyo's 23 wards

Reference: https://soken.xymax.co.jp/2025/01/15/2501-stock_pyramid_2025/

180,000 tons of sludge generated annually



(出典) 東京都下水道局公式ホームページより

Sludge coming from underground shopping centers!

Sustainable Supply Chain

東京バクテリアラボ
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07｜Better quality of consumption

05｜Higher agricultural productivity Alternatives to hemical fertilizer

03｜Sludge harmless treatment Resource recycling plant

01｜ Sludge from cities

06｜Organic produce Food security

04｜Resource recycling botanical activator Production of TOKYO8

02｜Facility maintenance Sludge removal

Increased yields with TOKYO8

Fukuoka Prefecture JA, a mountainous farm

Control **TOKYO8**

Control 336kg/10a **TOKYO8 450kg/10a**

The effect of TOKYO8 against diseases

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Southern Kyushu, tobacco

Brown spot disease (caused by a kind of Fusarium) found on a farm

Using Tokyo8

Soil improvement to control diseases

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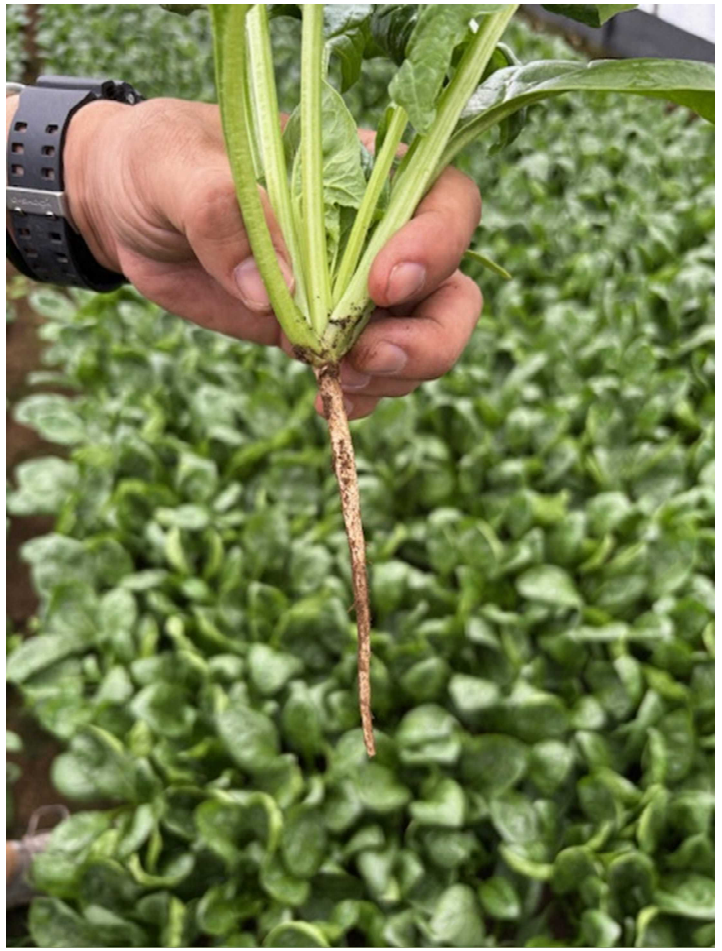
Tochigi Prefecture, spinach, summer

Comparison area

Using TOKYO8



TOKYO8 spinach roots

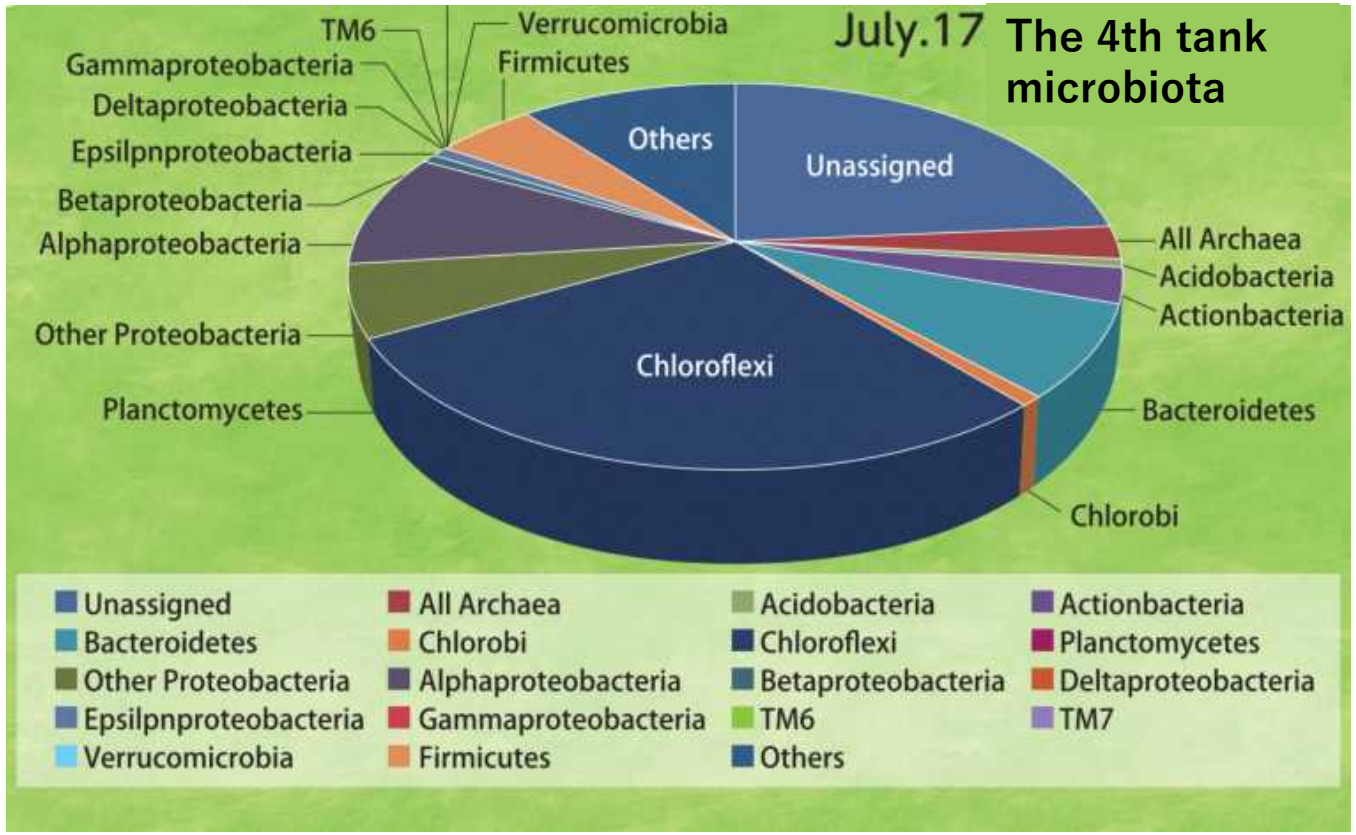
A TOKYO8 user becomes the No. 1 local producer per tan!

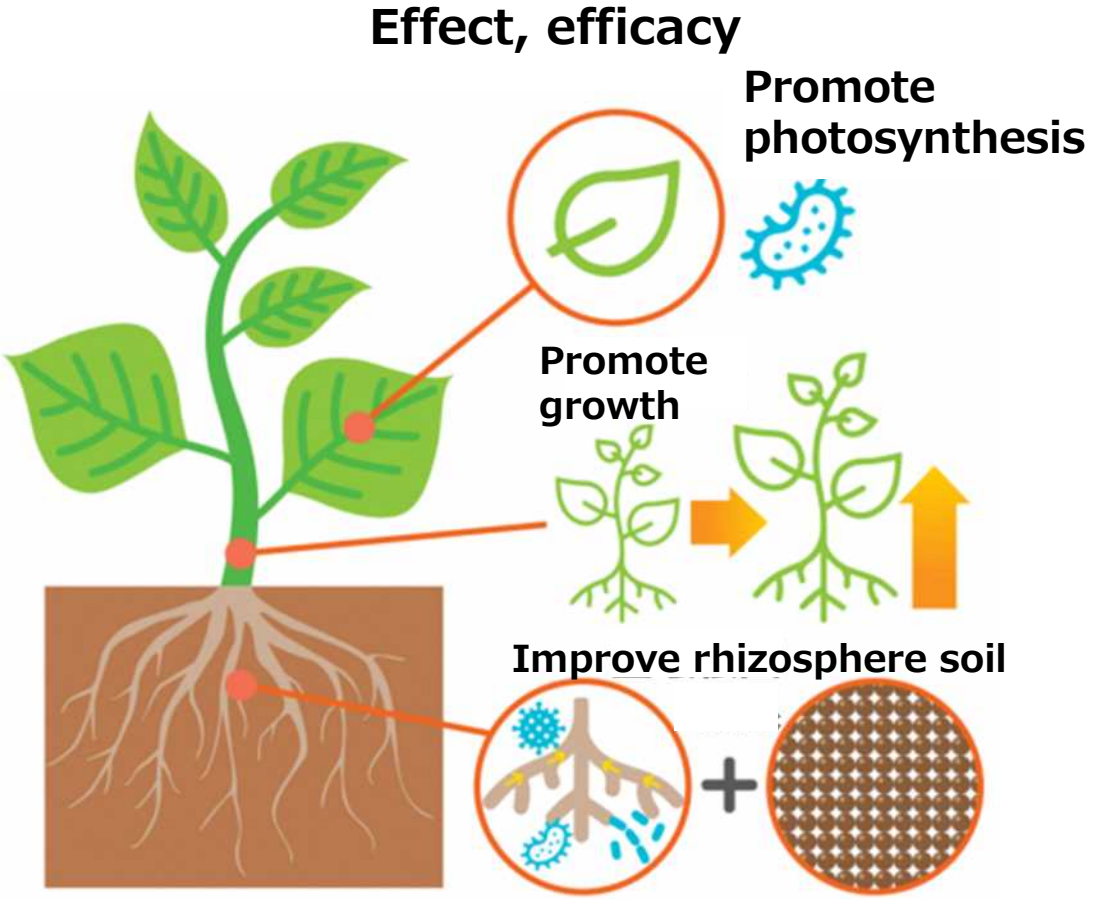
Minamifurano, Hokkaido
Cherry tomato

Yield
8.245 t /10a

Local producer
Ranked first among
120 farmers

TOKYO8 is a unique microbial botanical activator made up of more than 1,500 kinds of microbes.



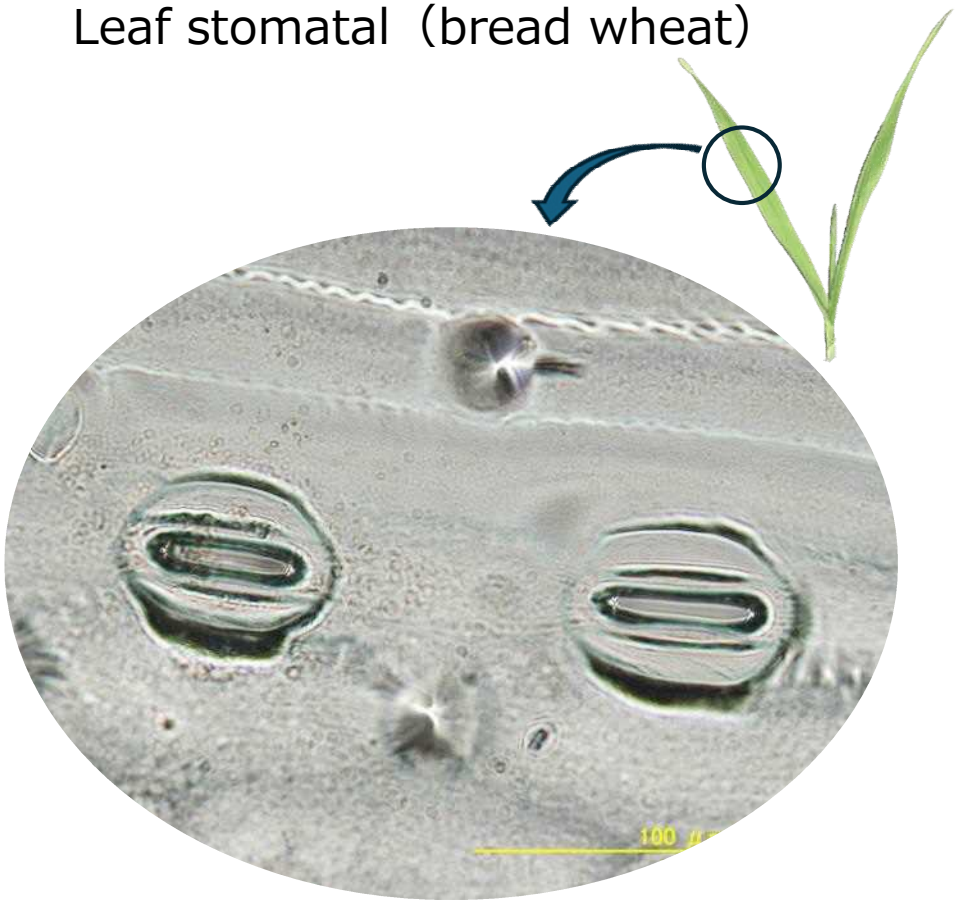


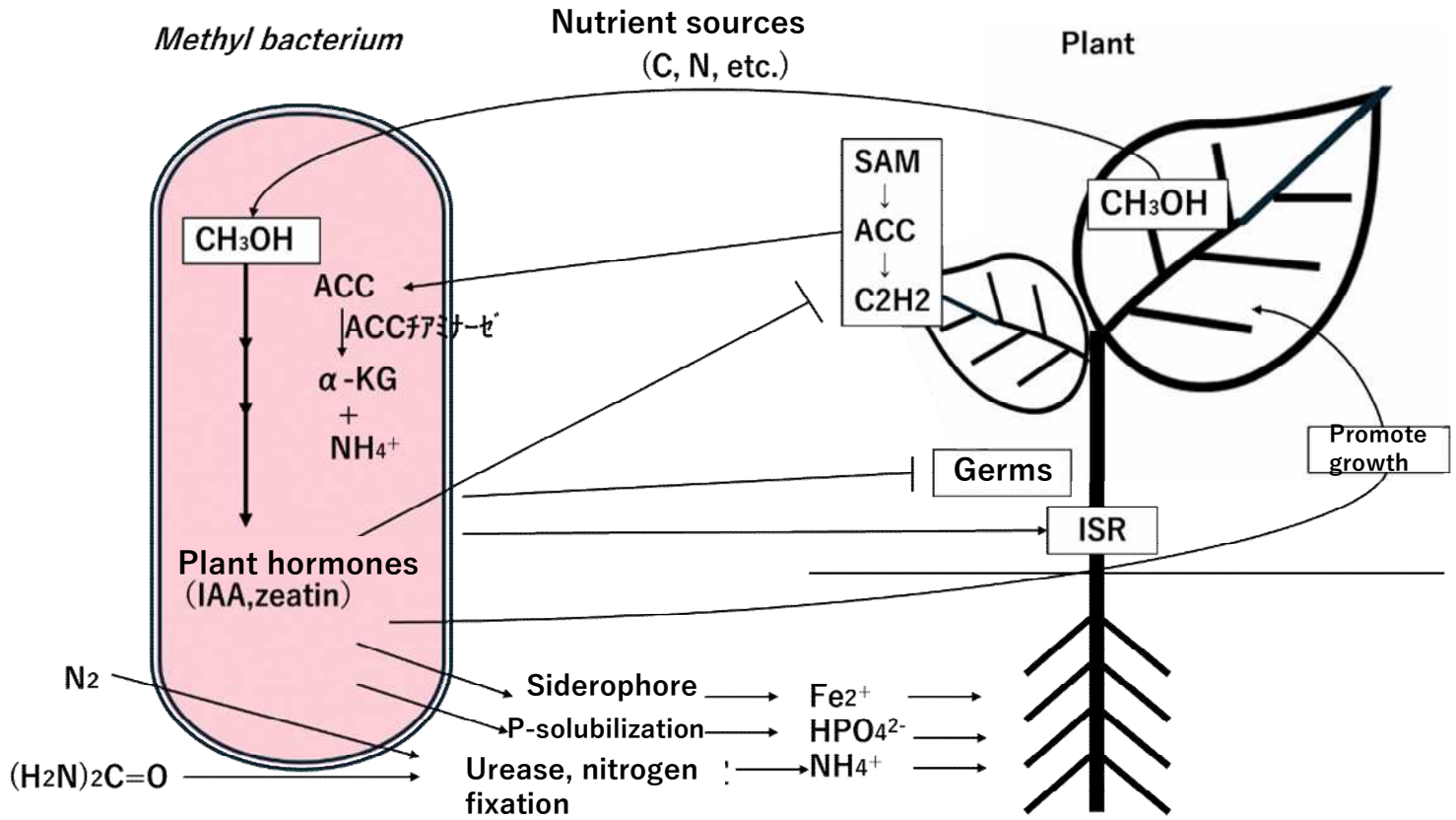
葉圏での微生物の影響

Effects of micro-organisms on foliar surfaces

パンコムギの気孔

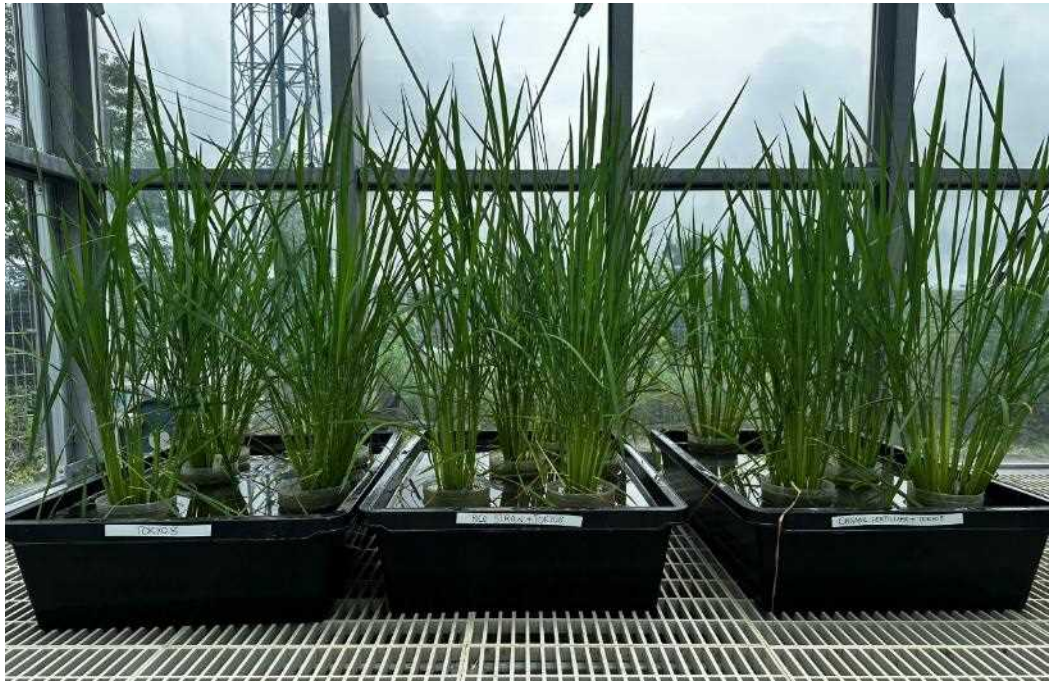
Leaf stomatal（bread wheat)



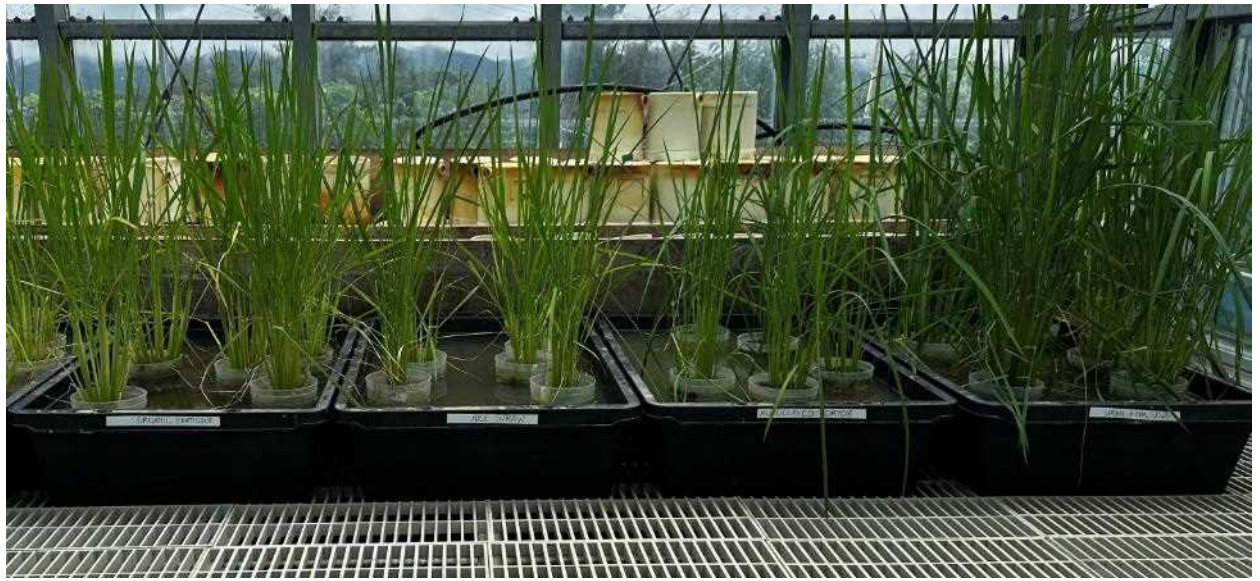


Faculty of Agriculture, Niigata University, Kariwa Village, Advanced Agro-Biotechnology Research Center

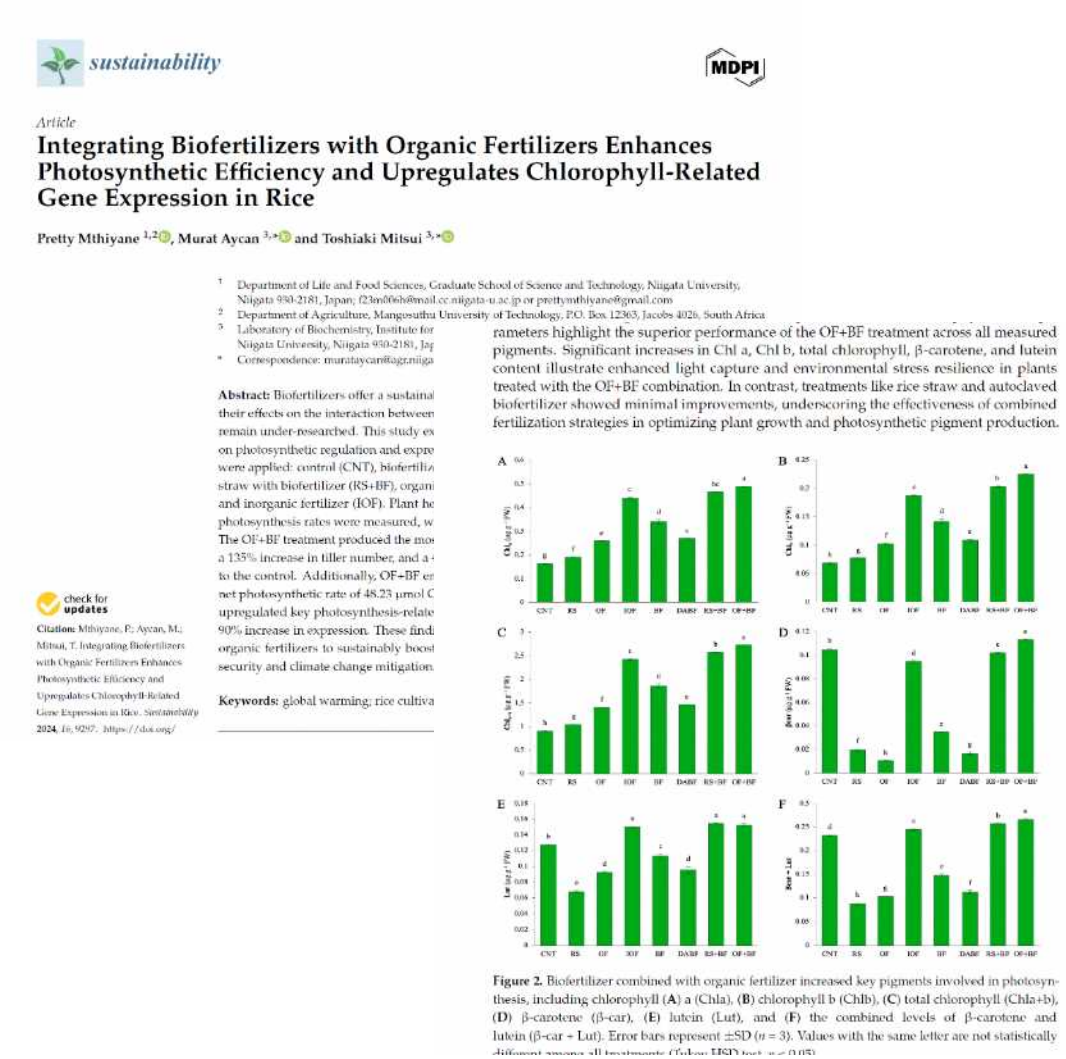
Using TOKYO8



Control **Chemical fertilizer**



Niigata University's research on rice



sustainability

MDPI

Article

Integrating Biofertilizers with Organic Fertilizers Enhances Photosynthetic Efficiency and Upregulates Chlorophyll-Related Gene Expression in Rice

Pretty Mthiyane [1,2], Murat Aycan [3,*] and Toshiaki Mitsui [3,*]

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[2] Department of Agriculture, Mangosuthu University of Technology, P.O. Box 12363, Jacobs 4026, South Africa
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Abstract: Biofertilizers offer a sustainal... their effects on the interaction between... remain under-researched. This study ex... on photosynthetic regulation and expre... were applied: control (CNT), biofertiliz... straw with biofertilizer (RS+BF), organi... and inorganic fertilizer (IOF). Plant he... photosynthesis rates were measured, w... The OF+BF treatment produced the mos... a 135% increase in tiller number, and a ... to the control. Additionally, OF+BF en... net photosynthetic rate of 48.23 µmol C... upregulated key photosynthesis-relate... 90% increase in expression. These findi... organic fertilizers to sustainably boost... security and climate change mitigation.

Keywords: global warming; rice cultiva...

check for updates

Citation: Mthiyane, P.; Aycan, M.; Mitsui, T. Integrating Biofertilizers with Organic Fertilizers Enhances Photosynthetic Efficiency and Upregulates Chlorophyll-Related Gene Expression in Rice. *Sustainability* **2024**, *16*, 9297. https://doi.org/...

rameters highlight the superior performance of the OF+BF treatment across all measured pigments. Significant increases in Chl a, Chl b, total chlorophyll, β-carotene, and lutein content illustrate enhanced light capture and environmental stress resilience in plants treated with the OF+BF combination. In contrast, treatments like rice straw and autoclaved biofertilizer showed minimal improvements, underscoring the effectiveness of combined fertilization strategies in optimizing plant growth and photosynthetic pigment production.

Figure 2. Biofertilizer combined with organic fertilizer increased key pigments involved in photosynthesis, including chlorophyll (**A**) a (Chla), (**B**) chlorophyll b (Chlb), (**C**) total chlorophyll (Chla+b), (**D**) β-carotene (β-car), (**E**) lutein (Lut), and (**F**) the combined levels of β-carotene and lutein (β-car + Lut). Error bars represent ±SD ($n = 3$). Values with the same letter are not statistically different among all treatments (Tukey HSD test, $p < 0.05$).

An article by Pretty Mthiyane from the Faculty of Agriculture, and others

➤https://www.mdpi.com/2071-1050/16/21/9297/pdf

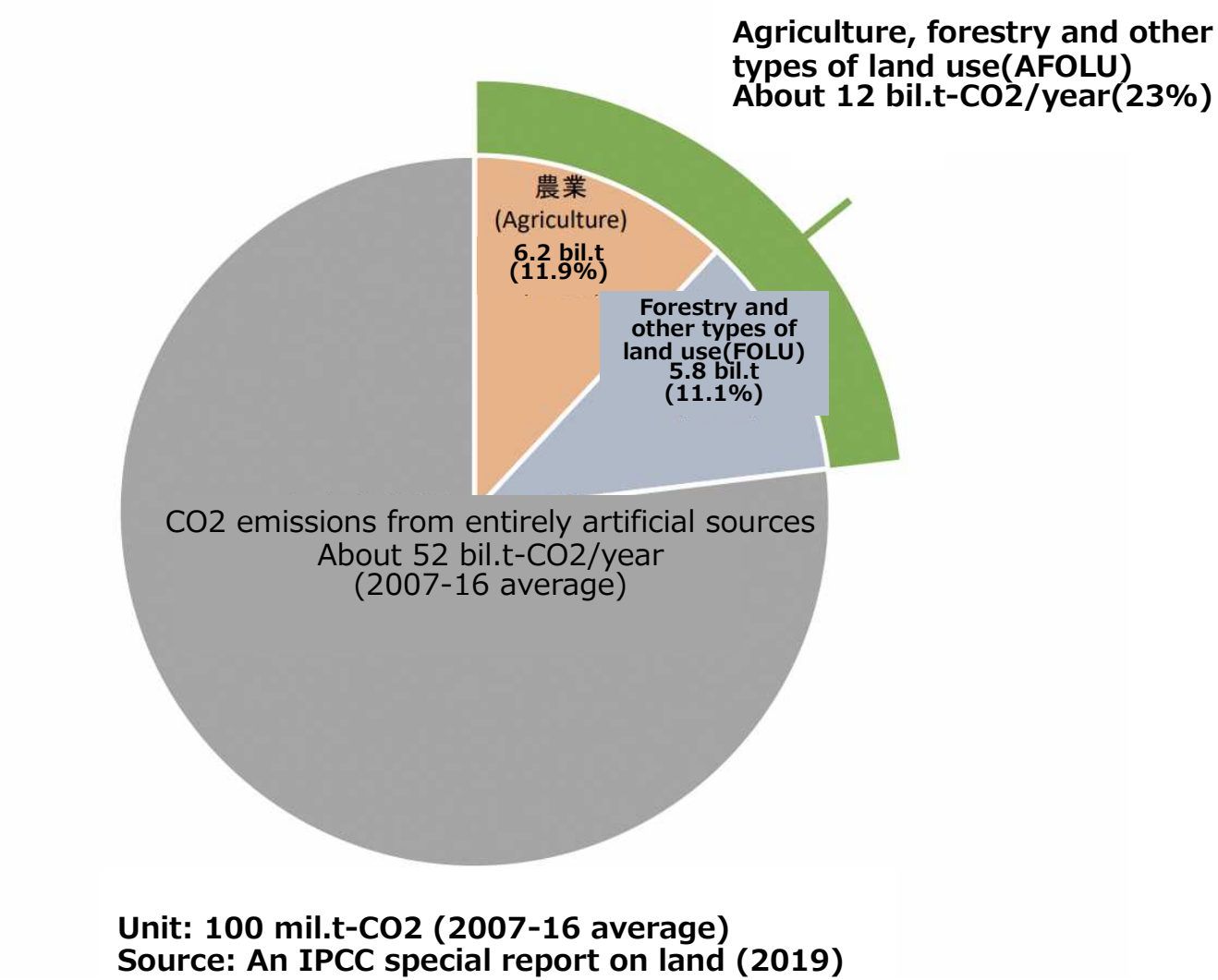
Integrating biofertilizers (TOKYO8) with organic fertilizers substantially enhances the growth and photosynthetic ability of rice.

This could contribute to:

(1) the development of sustainable agriculture
(2) the improvement of food security
(3) the mitigation of climate change

Microbial approach

GHG emissions from the global agriculture and forestry industry



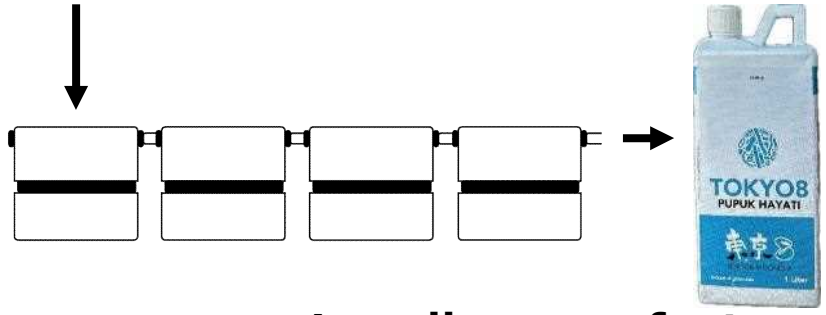
Unit: 100 mil.t-CO2 (2007-16 average)
Source: An IPCC special report on land (2019)

What is overseas manufacturing FC?

Overseas local manufacturing FC

FC business trend
Present...5 countries
➤Indonesia...○Fertilizer registration
➤The Philippines
➤Afghanistan
➤Malawi...○Fertilizer registration
➤Mauritania
TICAD9: 10 countries
TICAD10: 50 countriesT

ST from Japan
+
Manufacturing know-how (including quality control)
+
Users' know-how on agriculture



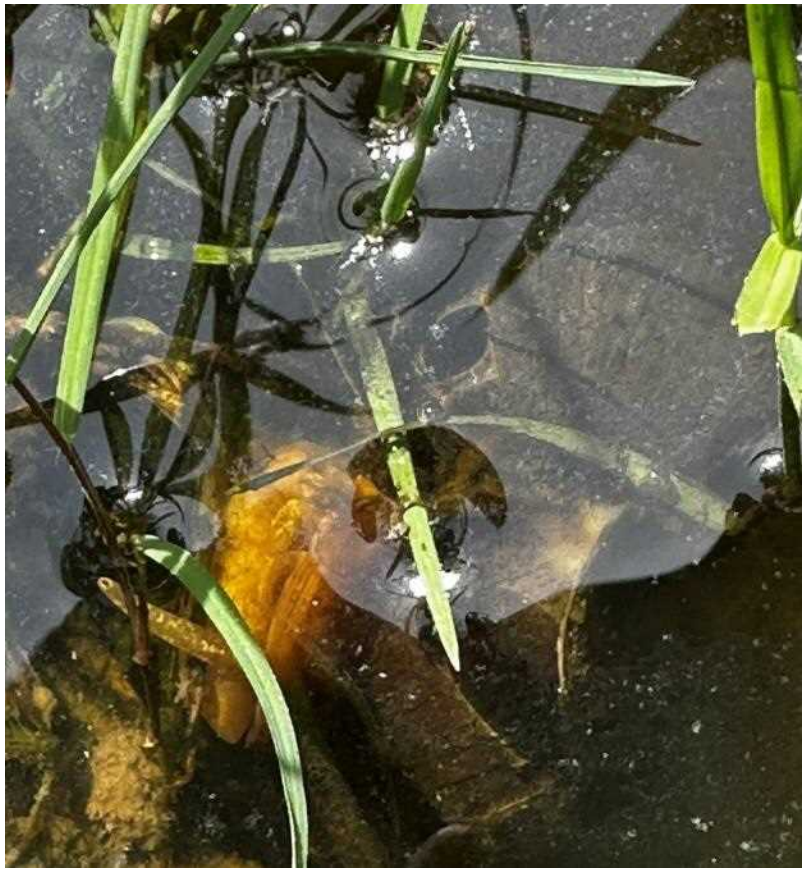
Locally manufactured T8

FC in Indonesia

Target region: West Java

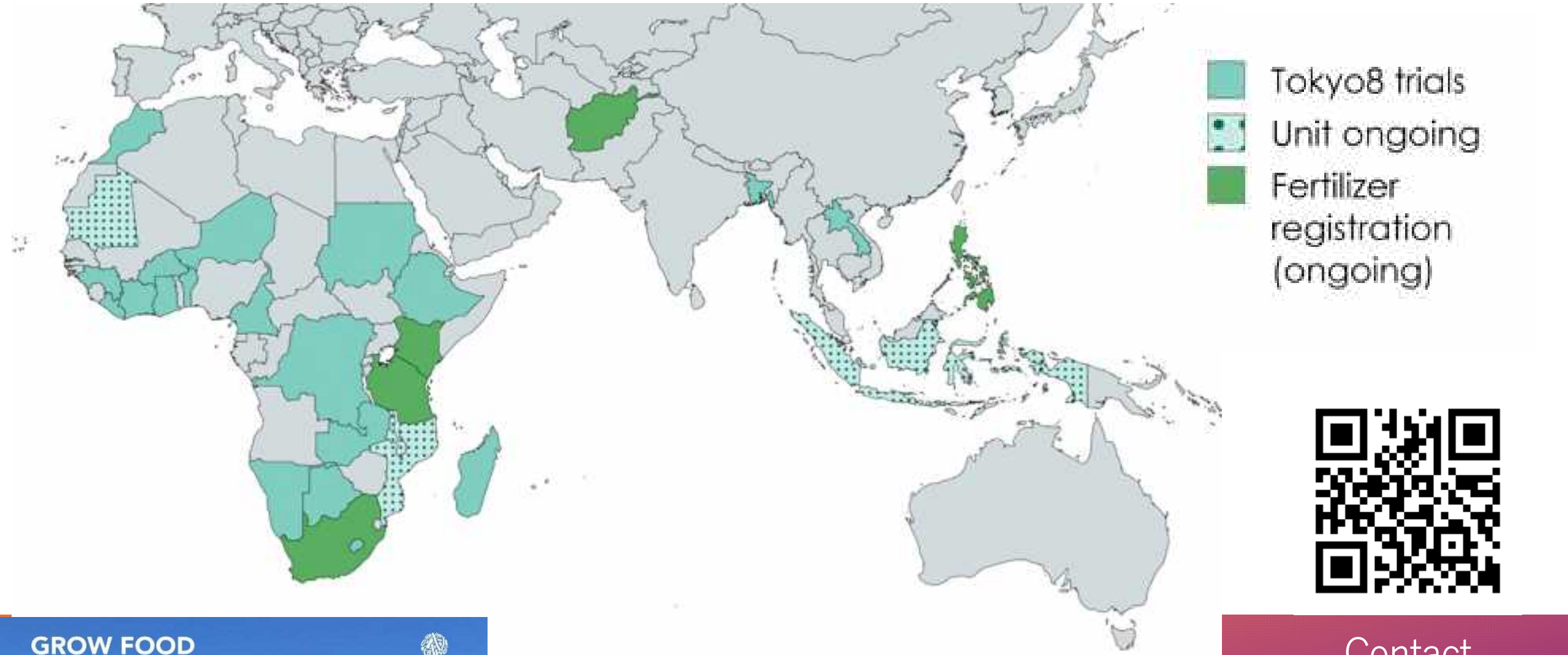
Fertilizer registration: Aug. 9, 2024

Current membership: 50 stores
(as of July 20, 2025)



Restoring contaminated agricultural soils



Contact

TOKYO8 rolled out globally

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