



# Sumitomo Chemical's Approaches for Regenerative Agriculture

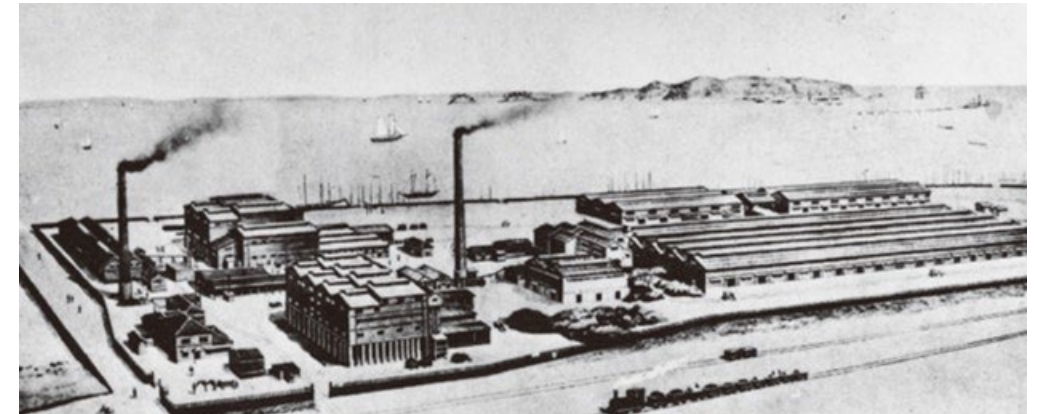
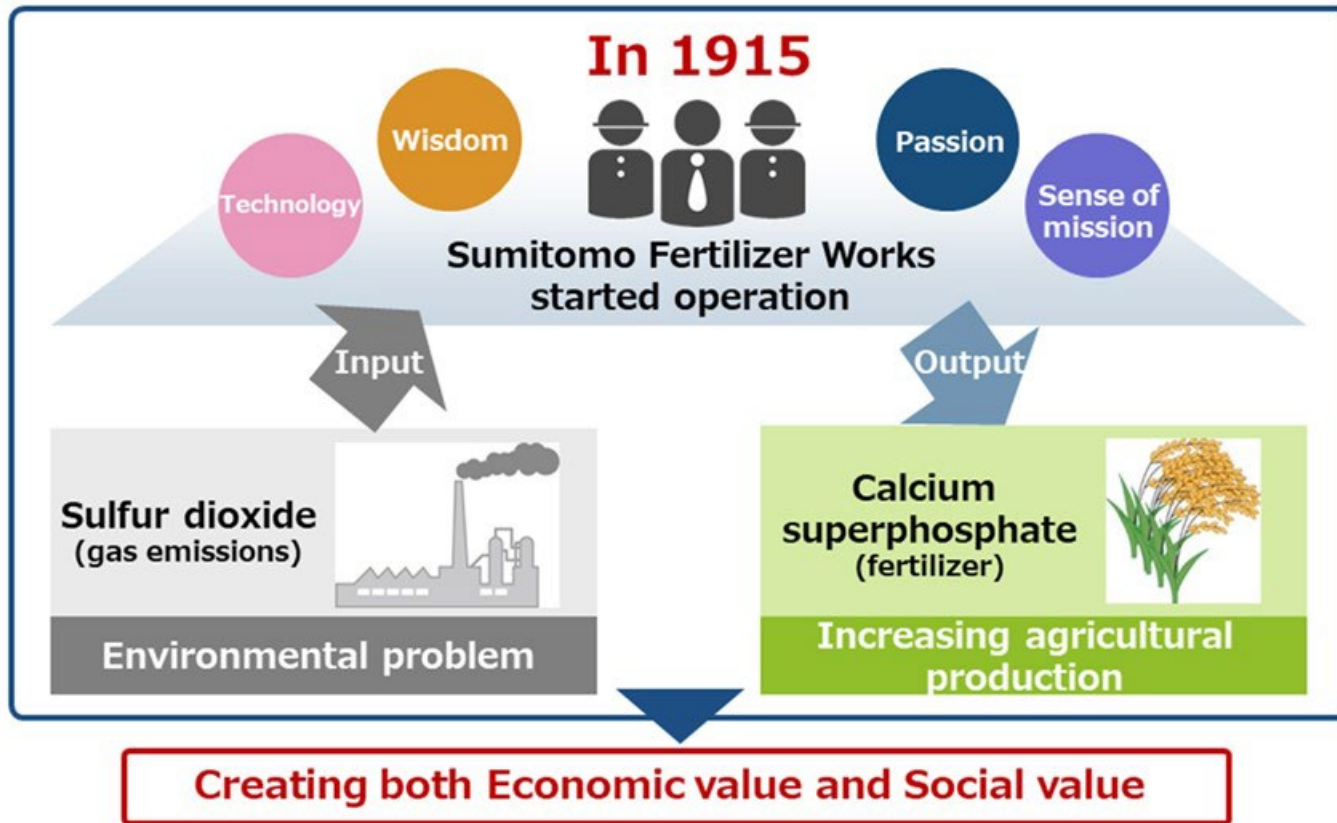
Nobuaki Mito

Senior Managing Executive Officer,  
President of Health & Crop Sciences Sector  
Sumitomo Chemical Co., Ltd.



# Origin of Sumitomo Chemical

Sumitomo Chemical has its origins in the Sumitomo Fertilizer Manufactory, which was founded to resolve the air pollution problems created by Sumitomo's copper smelting operation at the Besshi Copper Mine (Ehime, Japan) by removing the sulfur from the copper ore, which was the cause of the pollution, and using it to manufacture fertilizer.



# Five Business Sectors of Sumitomo Chemical



Essential Chemicals & Plastics

Energy & Functional Materials

IT-related Chemicals

Health & Crop Sciences

Pharmaceuticals

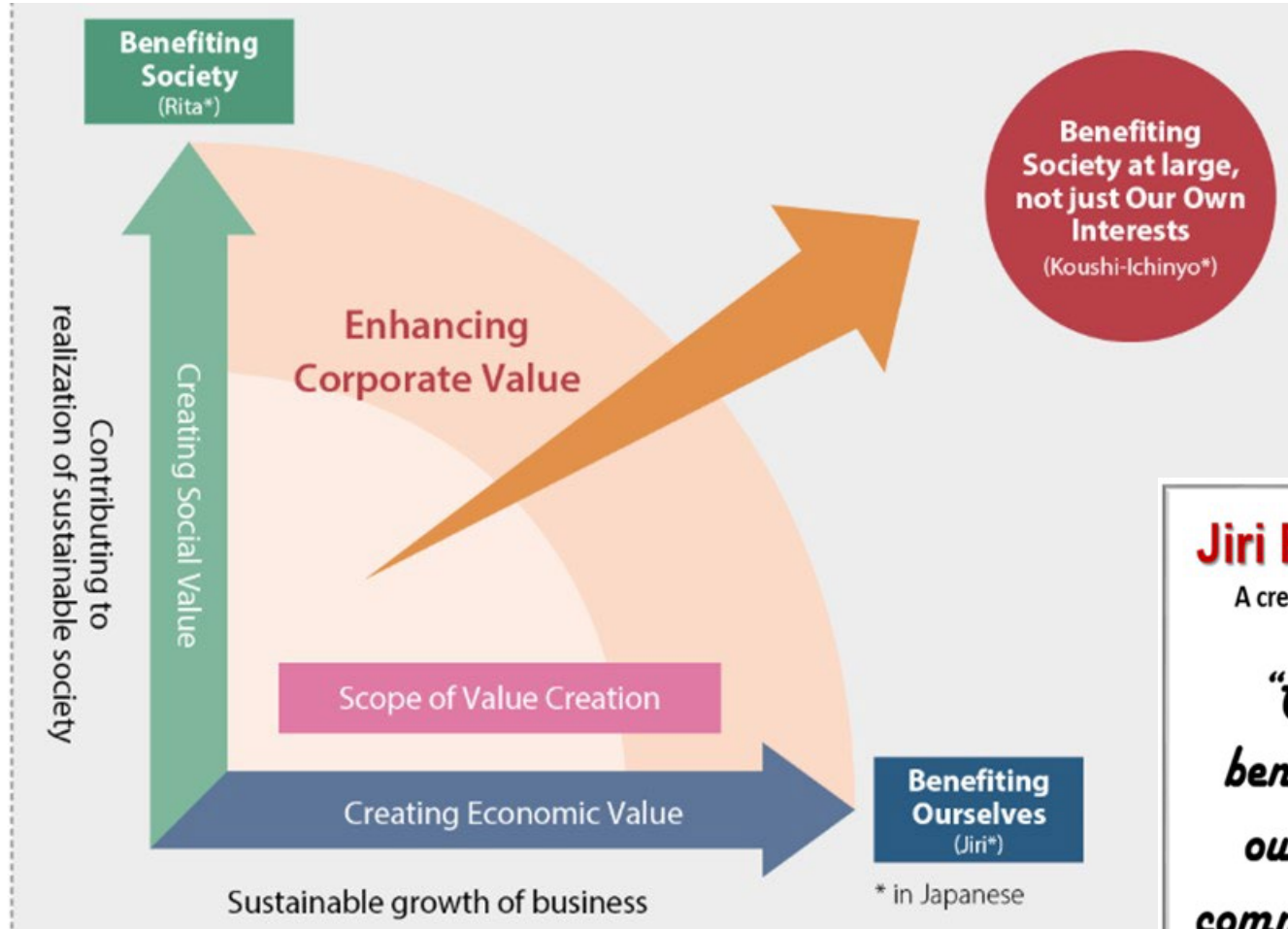


# Sumitomo Values

自利利他(Jiri-rita) 公私一如(Koushi-ichinyo)



Statue of Masatomo Sumitomo.  
(Source: Sumitomo Historical Archives)

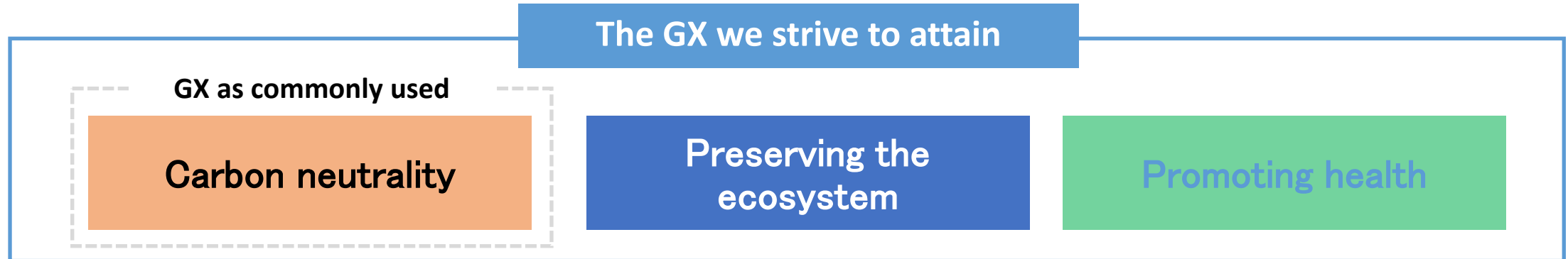


**Jiri Rita Koushi-ichinyo**  
A credo of the Sumitomo's Business Spirit

*"Our business must benefit society, not just our interests but also communities and society."*

# Sumitomo Chemical's Green Transformation: GX

Contribute to solving society's challenges through our business activities by advancing GX in a broad sense



**Society's challenges that we endeavor to solve**



## Environment

**Recover the environment and achieve a world where humans and nature co-exist**



## Healthcare

**Secure healthy lifestyles for people throughout the world**



## Food

**Secure stable food supply and achieve harmony with the environment**



## ICT

**Achieve an inclusive society leveraging ICT**

# Long-Term Vision for the Health & Crop Sciences Sector



# Basic Strategy for AgroSolutions

Sumitomo Chemical has two major product lines “**Crop Protection Chemicals**” and “**Biorationals**” for its AgroSolutions Business.

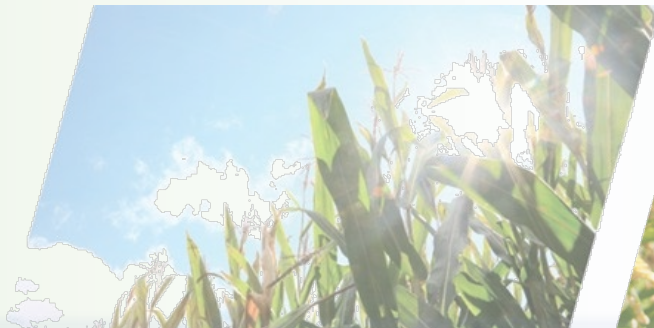
## Technologies with Crop Protection Chemicals

Conventional chemicals having  
safe and reliable profiles

## AgroSolutions

## Technologies with Biorationals

Naturally-derived microbial crop protection,  
plant growth regulators, and biostimulant technologies

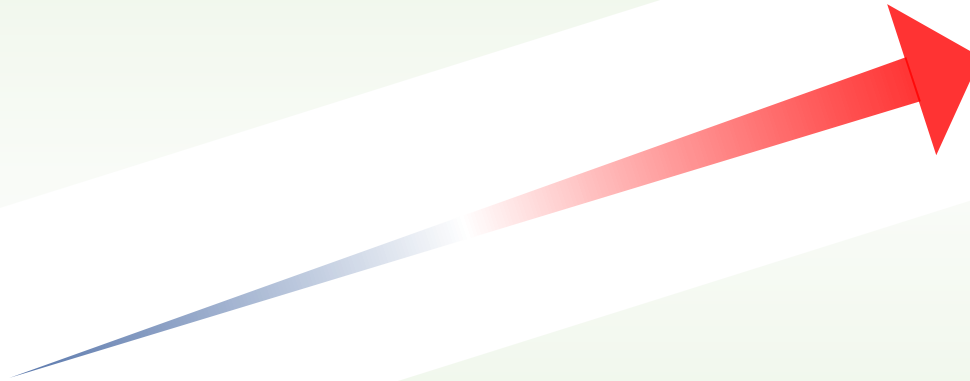
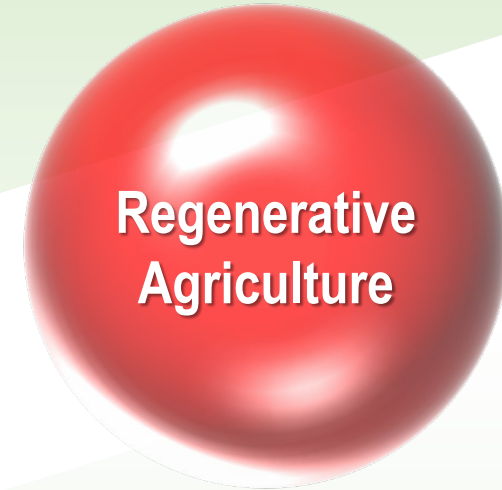
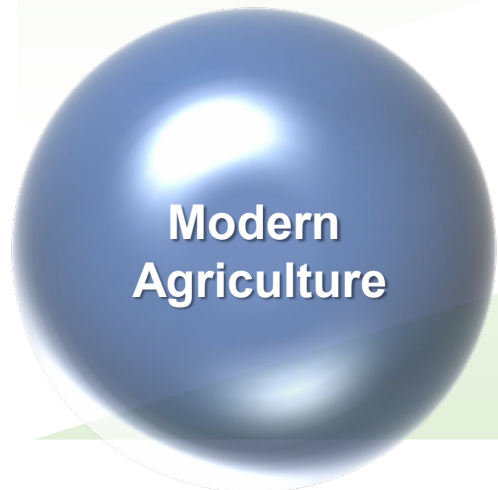


To develop, commercialize and promote both product lines to contribute Regenerative Agriculture

# For Regenerative Agriculture

Modern agriculture has contributed to supply foods and grains to feed growing global populations through developments of various latest technologies like nutrition inputs, cultivar, pesticides and so on.

However, modern agriculture has several negative aspects such as soil erosion, GHG emission, impact on biodiversity, and water system contamination.



It is time to change the system for regenerative agriculture. We need to further improve productivities, but also to have sustainable cropping system, which contribute to carbon neutrality, biodiversity, soil health and cleaner water system.

**Sumitomo Chemical is now working for Regenerative Agriculture.**



# Case Examples of What We Have To Tackle



Photo from U.S. Department of Agriculture homepage

Soil erosion is one of serious concerns for continuity of agriculture.

One of examples is Dust Bowl that greatly damaged the ecology and agriculture of the American and Canadian prairies in 20<sup>th</sup> century. There are several measures in recent days, but agricultural lands are still losing its soil health.

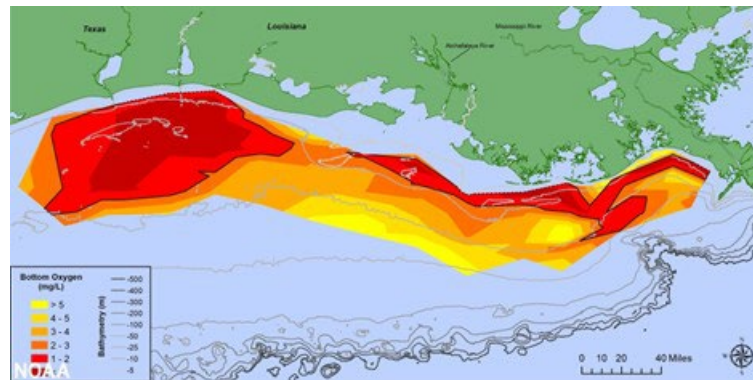
## Soil Erosion

## Water Contamination

Contamination of water system including ground water, river and ocean is a serious problem, to which agriculture contributes. Run-off of nutrients and chemicals cause various issue in water system.

Dead Zone in Mexican gulf is one of examples. Inflow of nutrients into the gulf triggers algae blooms that choke off oxygen in water and make dead zone that the life cannot survive.

Soil health may mitigate this issue.



July 25-31, 2021. (LUMCON/NOAA)

Around **20%** of GHG is from agriculture and forestry

**37bnMT** GHG (equal to CO<sub>2</sub>) as total

Global crop productions emit several GHGs like CO<sub>2</sub> through agricultural operations, N<sub>2</sub>O by oxidation of nitrogen, and CH<sub>4</sub> from paddy rice fields.

Even though, crops absorb CO<sub>2</sub> through their photosynthesis, carbohydrates that are produced by plants, can be oxidized again if the soil cannot retain organic carbon in its structure.

## GHG emission

# Approaches for Nature Positive in AgroSolutions

Develop safer Crop Protection Chemicals that provides better productivity minimizing the impact on environment

Develop and expand Biorational portfolio

Develop and expand safer use patterns of AgroSolutions materials like seed treatment and other efficient spays

Develop product and technology to conserve soil and water

Minimize impact on environment throughout supply chain of products

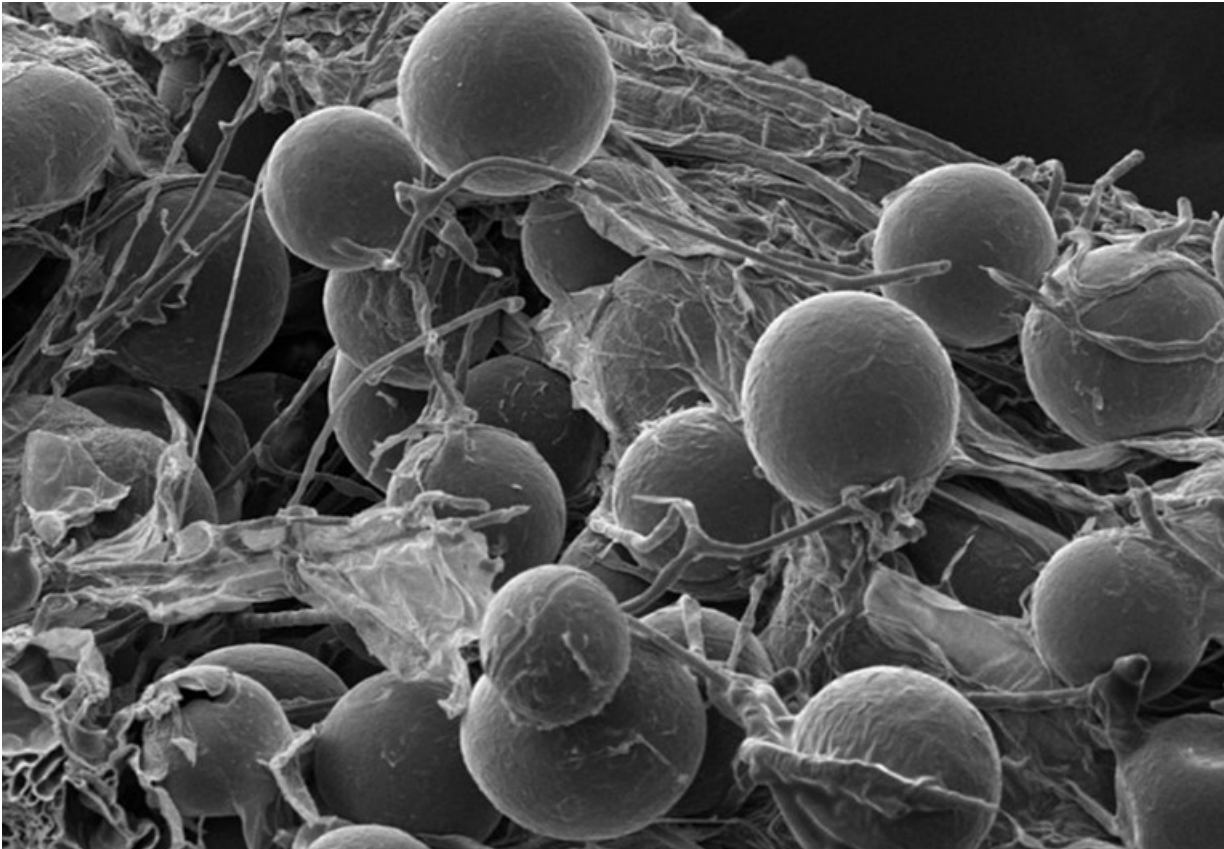


# Soil Health: A Base of Sustainable Agriculture



**Soil** is a foundation of agriculture, at the same time, it is a foundation of life of earth. Sumitomo Chemical is actively working for developing and promoting products, which contribute to **long term soil health**.

# Arbuscular Mycorrhizal Fungi (AMF)



Arbuscular mycorrhiza (AMF) is a type of fungi that lives in a symbiotic relationship with plant roots. They receive carbohydrates from the host plants, and their hyphae help water and nutrient absorption for the host plants.

AMFs improve soil health by improving its physical, chemical, and biological health and also work for carbon sequestration.

Sumitomo Chemical's MycoApply<sup>®</sup> technology is comprised of multiple species of arbuscular mycorrhizal fungi (AMF) selected to enhance plant productivity and soil health in agriculture and horticulture.

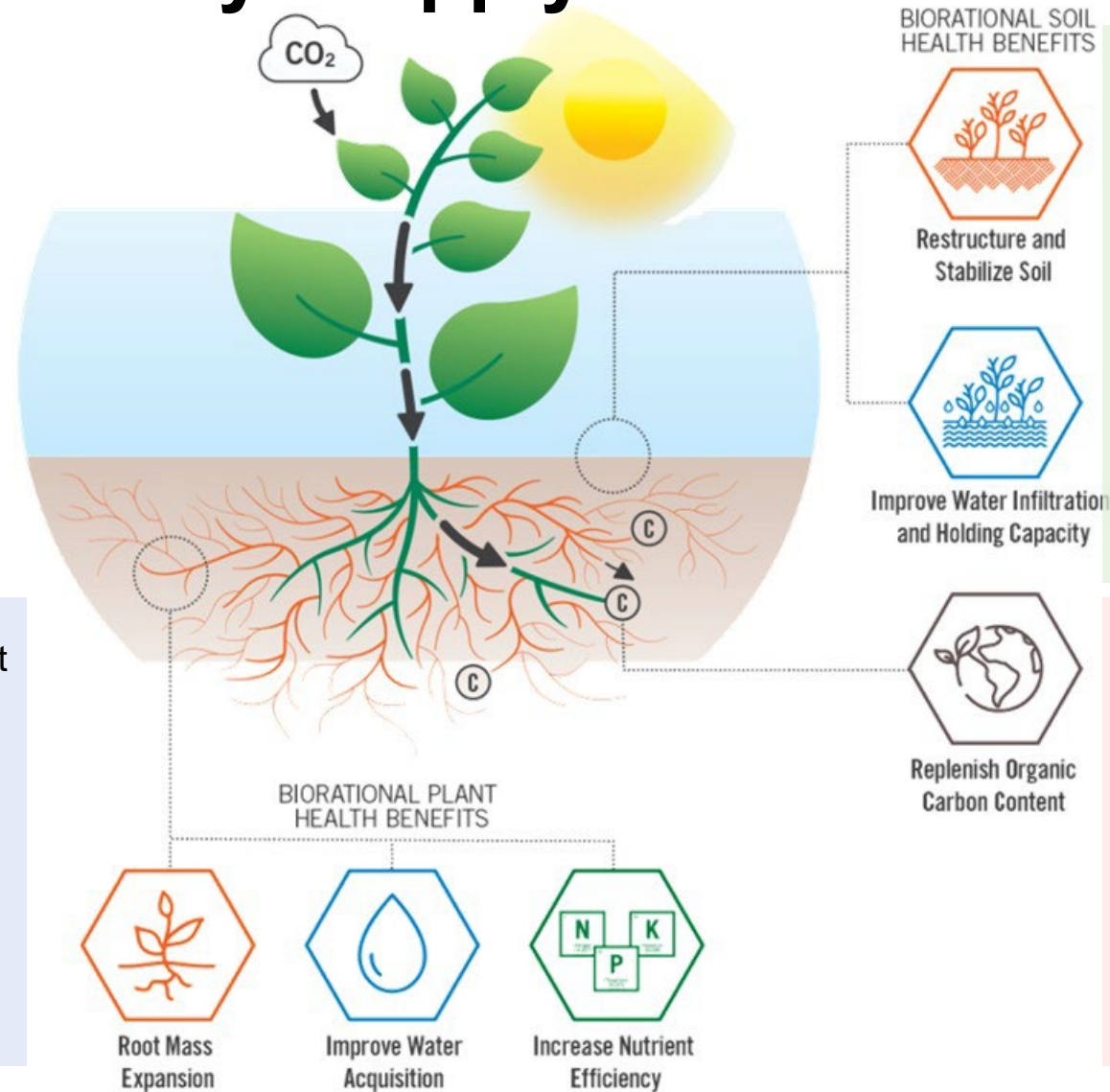


# Various Benefits of MycoApply®



Product series based on arbuscular mycorrhiza

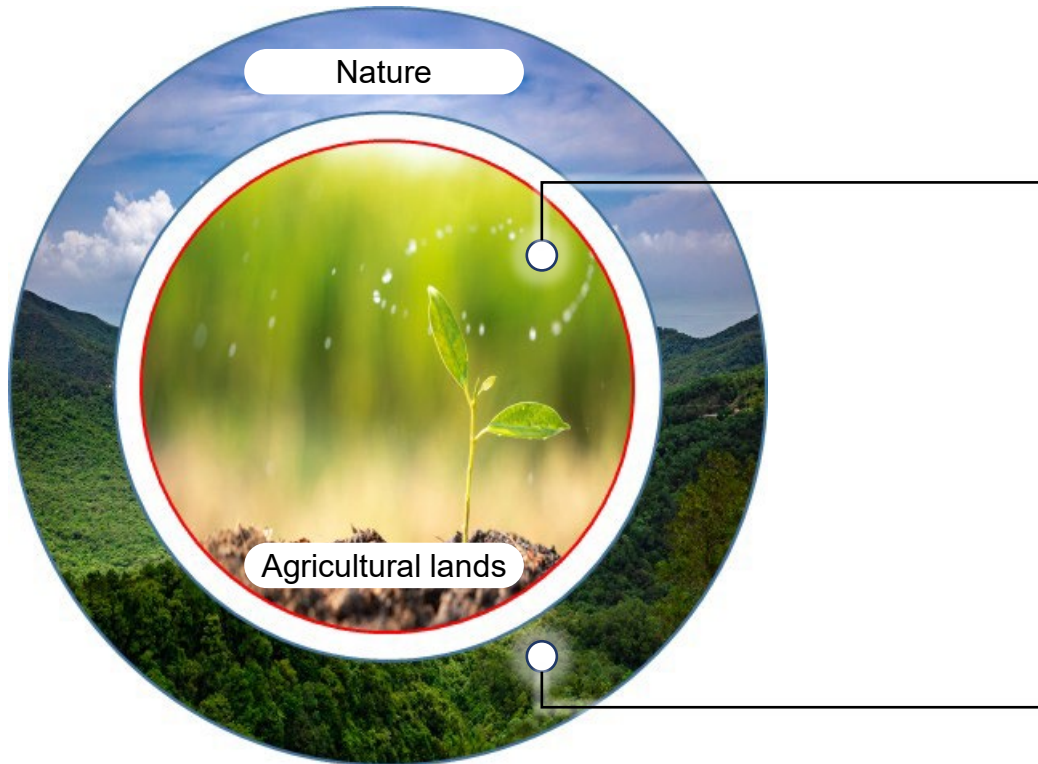
- Symbiosis between AMF and plant help in following aspects.
  - ✓ Root mass expansion
  - ✓ Improved water acquisition
  - ✓ Nutrient uptake efficiency
- Through those benefits as above, MycoApply® provides better yields and harvest quality.



- MycoApply benefits to improve long term soil health through restructuring aggregate of soil.
- Then it helps to improve water infiltration and holding capacity.
- It also enrich soil microbiota.
- They are benefits not only in farmlands but also entire water systems.

- AMF improves photosynthesis by plant, and it receives carbohydrates from the plant. A part of carbohydrates are stored in soil in stable way, and it increases content of organic carbon in the soil. This is **Carbon Sequestration**.

# Summary



## **Sustain agricultural land for continuous food productions**

Sumitomo Chemical's approaches to provide several solutions to sustain agricultural land with safer Crop Protection Chemicals and Biorationals keeping high productivities.

They benefit to enrich soil microbiota, and it is a foundation to keep long term soil health. We leave healthy land for the next generations.

## **Make positive impact on Natural Resources**

Sumitomo Chemical' approaches in AgroSolutions are not only for agricultural lands. They will benefit to improve natural recovery of environment.

Right inputs in agricultural lands help for cleaner water system, and reducing GHG.

**We make continuous efforts for Nature Positive through various business activities of Sumitomo Chemical.**



***Thank You!***