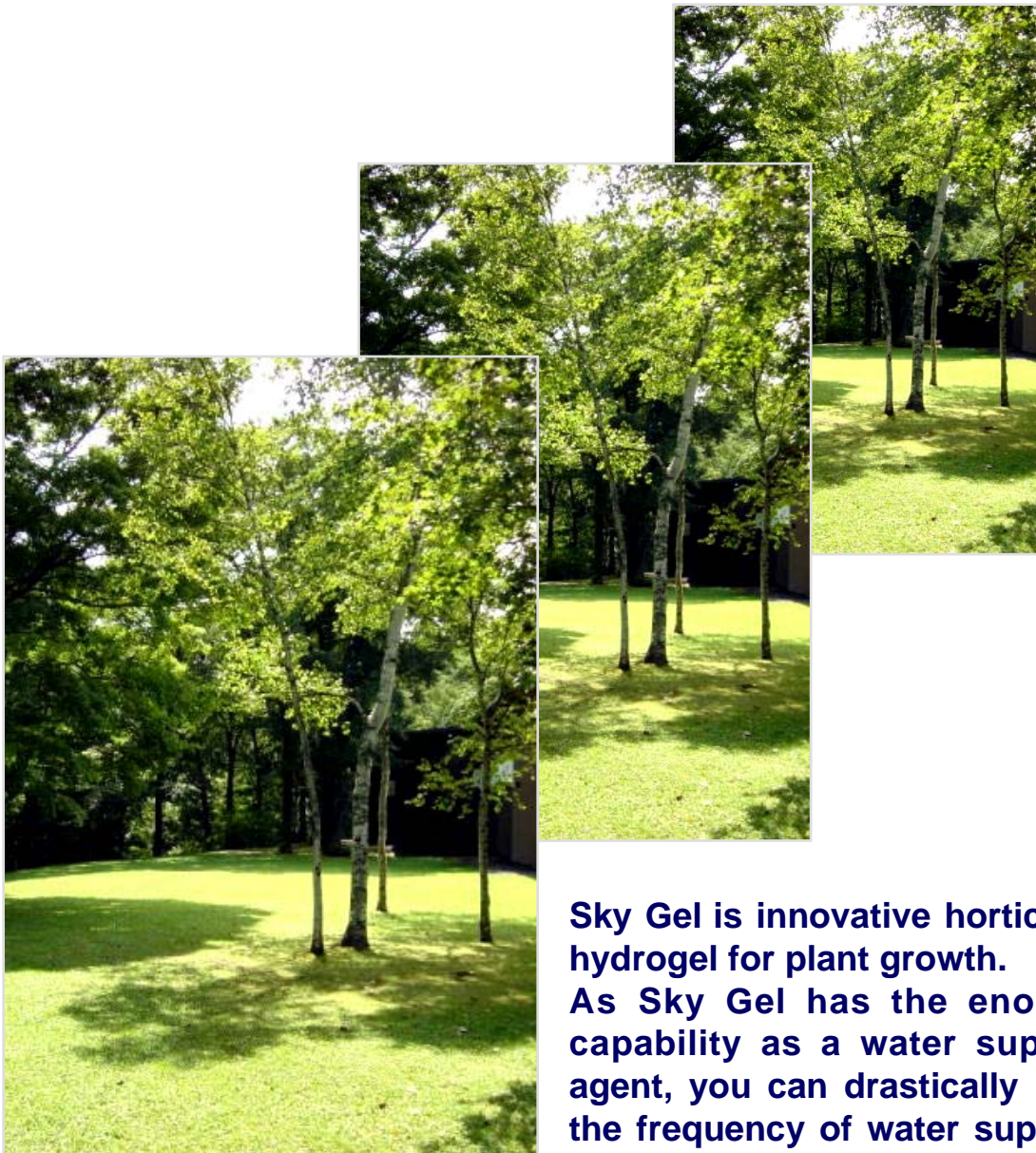


SkyGel



Sky Gel is innovative horticultural hydrogel for plant growth.

As Sky Gel has the enormous capability as a water supplying agent, you can drastically reduce the frequency of water supplying. Sky Gel is much effective for roof and slope planting.

Property of SkyGel

Current products “SAP”

The current horticultural hydrogels are made from SAP which has been used for paper diapers, sanitary napkins, etc. And various products using SAP have been developed and commercialized. Although, in case **SAP is added to soil at high concentration, it disturbs the germination and growth of the plants.** Its reason had been thought that as SAP had too much high capability of charging water, it absorbs water from plants.

Launch of SkyGel

We investigated and found the reason for the growth inhibition by the current horticultural hydrogels (SAP) was adsorbing the calcium ion which was essential for plant growth and releasing the sodium ion which was harmful for plants.

We succeeded the development of SkyGel on the basis of SAP; the absorption of calcium ion is significantly reduced, keeping its high capability of absorbing water.



Photo: Comparison study for the germination of white radish sprouts

Mebiol Inc. (Sky Gel) **A** (Horticultural hydrogels(SAP) commercialized by others) **B** **C**

Available at more than 1w/v%

When SAP were mixed to the soil at high concentration such as 1.0 w/v%, the germination and growth of radish and cucumber were very poor.

On the contrary, the excellent effect was shown at SkyGel.

<p>SkyGel</p> <p>concentration: 1w/v%</p> <p>current horticultural hydrogels (SAP)</p> <p>concentration: 1w/v%</p>		
	<p>potting compost</p>	<p>sand of a river</p>

Plant Growth
SkyGel
⊙
current products (SAP)
×

*1w/v% = 10g of dry hydrogels / 1L of soil

Practical use of SkyGel

■ Cultivating crops

It is said that only 5% of water supplied to the plants by rainfall or watering is used for its growth, the rest of 95% runs off. Because the plants take too long time to absorb water and the water retentivity of the soil is not enough. It is wasteful, "Mottainai," that water is not used effectively in these days when aquatic resources are rapidly lost under the global warming.

SkyGel raises the water retentivity of soil and improves efficiency of intake water of the plants.

SkyGel is mixed to several kinds of soil for plant cultivation in Japan. It is favorable that water retentivity improves and enables to reduce the frequency of watering.

Sky Gel is also used for the soil of our system, "Hymec / Imec," which we developed and launched for producing high sugar content tomato. It facilitates its production.



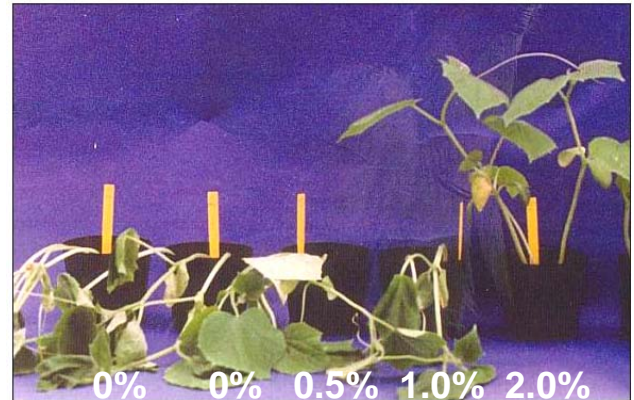
■ Cultivating plants which are weak to drying-resistant

- No water to seedlings of cucumber for 3days in summer -

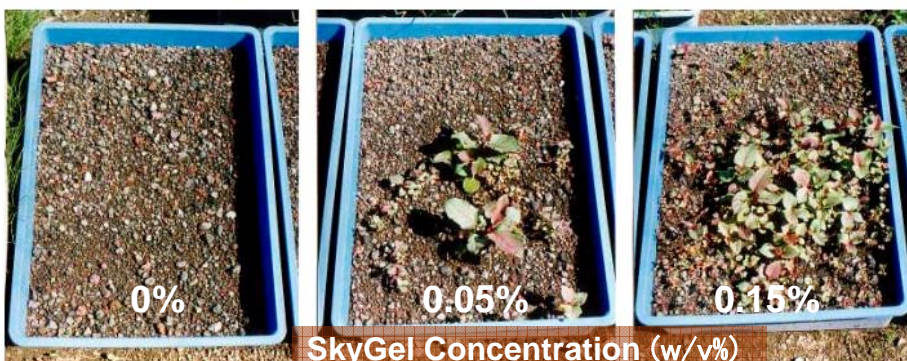
In case of other conventional products, it disturbs the growth of the plants at only 0.1w/v%. Therefore, the current products cannot be used under the dry conditions.

As for SkyGel, since it doesn't obstruct the growth even at high concentration (more than 0.1w/v%), we can use it for non drying-resistant plants under the extremely dry conditions.

For the study, we cultivated the seedlings of cucumber which were very weak to the dry condition on soils which have some different concentrations of SkyGel. Then, they were left under the extremely dry condition; in summer, water was not given at all for 3days. As a result, it was revealed that the one which was added 2.0w/v% of SkyGel keeps the seedling from wilting.



SkyGel Concentration (w/v%)



SkyGel Concentration (w/v%)

For the field test, we seeded the Japanede knotweed on the slope of Mt. Fuji in the mid of May and observed in the mid of Nov.

As a result, the growth of the plant was encouraged according to the increase of the concentration.

By adding SkyGel to the steep sandy slope, rainwater has been smoothly absorbed or released, especially in summer, the plants has been kept from withering.

■ Achievements of slope planting – more than 670,000m²-

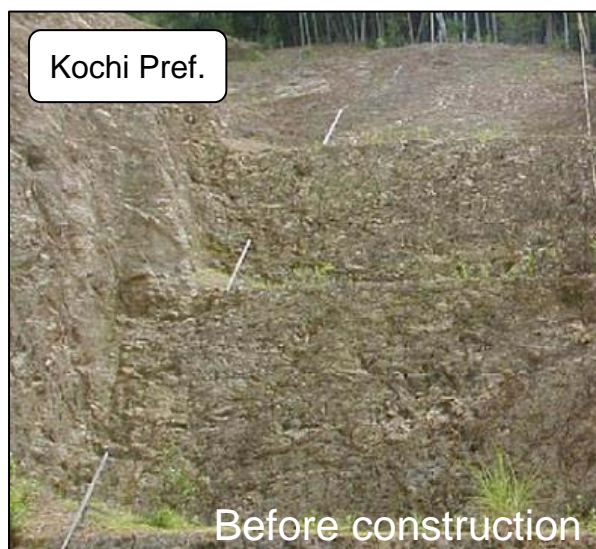
More than 140,000m² in the Kyushu district, more than each 100,000m² in the Shikoku district, the Hokuriku area, Okinawa Prefecture were constructed by using SkyGel (Apr., 2007).

We would continue to contribute to slope planting by the stable construction achievement.

Slope planting TOP5 in Japan
1. Kyushu
2. Shikoku
3. Hokuriku
4. Okinawa
5. Tohoku



The actual construction method (mortar splaying method) of a green stabilizing agent made of SkyGel(α -Green[®])



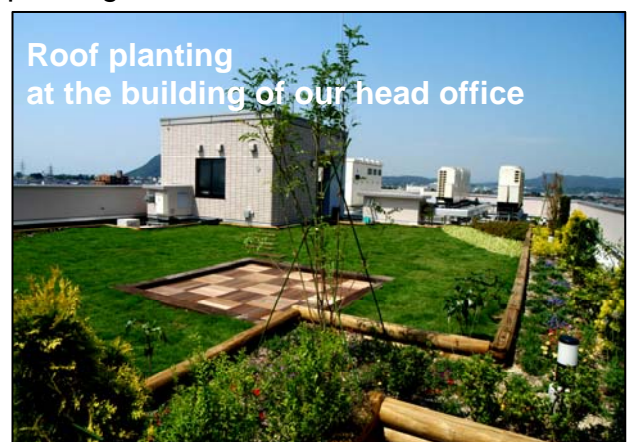
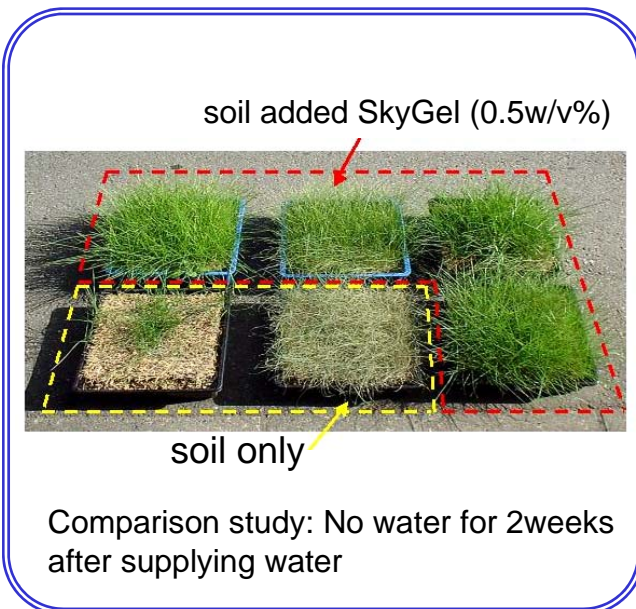
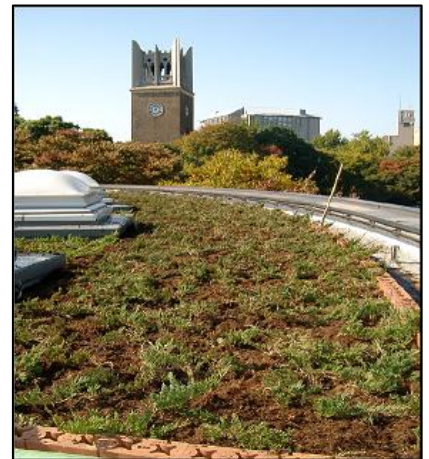
Roof Planting, Gardening

It is the duty to set the roof plantings to restrain “Heat Island Phenomena” at large cities in Japan.

For example, the authorities of the Tokyo metropolitan declare that they will set 1,200ha of roof plantings by 2015.

During the daytime of midsummer, the temperature of the roof surface of buildings achieves 70 degrees C. Despite that, it is hard to do the maintenance such as sprinkling water. Consequently, it becomes much harsh condition for plants growth. Although it needs to sprinkle water every day to the soil without hydrogel, the soil including Sky Gel does not need to sprinkle water for 2 weeks even in midsummer.

From 2000 to 2003, we set 30 units of roof plantings in Tokyo and the excellent effects were observed.



Roof planting at the building of our head office

<Lawn>

Concentration: 0.5w/v%

Thickness of the soil: 10cm

<Shrub>

Concentration: 0.5w/v%

Thickness of the soil: 30cm

Gardening



The soil which added SkyGel can reduce the frequency of supplying water. It is much effective for retaining water while you're traveling or dry season.

Features of SkyGel

■ High retentivity of water

The retentivity of water of SkyGel is 100 times of its weight; **1g of SkyGel can absorb and hold 100mL of water.**

■ Safety

Sky Gel is made from Crosslinked copolymer of acrylic acid and sodium acrylic acid same as SAP which is used for disposable diapers and sanitary napkins. Therefore, Sky Gel is safe.

As Sky Gel is gradually decomposed in the soil, it is **the ecological** and we can use it without worry.

■ Adoptability

Sky Gel can be used **with many kinds of fertilizers such as liquid type, granulated type and gradually effective type, or most kinds of agricultural chemicals and herbicide.**

■ Durability of effect

The effect of Sky Gel is maintained 2-3 years (It depends on the conditions of soil or the environment). Unused Sky Gel can be preserved for 10 years.

■ Natural decomposition

Because Sky Gel mixed with soil is gradually decomposed by ultraviolet rays and the microorganism, etc. and becomes carbon dioxide and water, it is **possible to be disposed** of same as normal soil.

Directions for using SkyGel

■ How to use

1. **Let SkyGel absorb water / liquid fertilizer of 30-75 times of the weight at dry conditions.**
2. **After the gel absorbs water and swells enough, please mix it uniformly to the soil.**

■ Standard amount of use (for reference)

Proper quantity of Sky Gel is about 0.1 – 0.5 w/v% (before absorbing water) of soil.

* It differs according to the conditions of the soil and the weather, etc.

Ex.) Concentration of SkyGel: 0.3w/v%

Swell: by 50 times of water

Flowerpot	Diameter	Volume of soil	Weight at dry powder	After swelling (50 times)
(1)	18cm	2L	6 g	300 mL
(2)	24cm	5L	15 g	750 mL
(3)	30cm	8L	24 g	1,200 mL

Ex.) Concentration of SkyGel: As the below

Swell: by 50 times of water

Object	Area Depth	Weight at dry powder	After swelling (50 times)
Tree	1m ² 100cm	1 - 5 kg (0.1 - 0.5%)	50 - 250 L
Lawn	1m ² 10cm	500 g (0.5%)	25 L
Soil for agriculture (for Imec tomato)	1m ² 2cm	20 - 40 g (0.1 - 0.2 %)	1 - 2 L

■ Notice

- * Please let SkyGel absorb water / liquid fertilizer and swell enough, and mix it to the soil uniformly.
- * Please don't mix too much amount. If you use the gel too much, the air layer cannot be kept in the soil.
- * In case you use the gel at a dry condition, you need the special care as follows;
 - Mixing the gel to the soil uniformly.
 - The soil has some water retentivity.
 - Don't compress the soil after mixing the gel.
- * If SkyGel absorbing water appears on the surface of the soil, it becomes ineffective since the gel is resolved by the sun and drained by water or rain.
- * Please store SkyGel, avoiding direct sunlight.
- * SkyGel is not edible. Please keep it away from children.
- * Since the dry powder is apt to be scattered in the air, please take care not to inhale or enter to your eyes.
- * In case SkyGel enter to your eye, please wash it away by water more than 15 minutes and have a doctor check.
- If you inhale or swallow the product, please have a doctor check immediately.

Package of SkyGel



SkyGel

NET: 15Kgs/bag

Powder (Granularity),
Average particle: 0.4mm



Patents regarding Sky Gel

Patents regarding SkyGel were applied for to many countries, and some of them have already been acquired;

Ex.) US Patent No. 6,286,254B1
 No. 6,615,539B1



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