



## **DOF PRODUCT GUIDE**

From Soil Management To Nutrition Management



*Dream of Farmer*

*Dream of Fertilizer*

*Dream of Future*





# DOF's Dream

Greetings,

This is Donggil Jang, CEO of DOF, one of general fertilizer company in Korea.

It has been more than 20 years since DOF initiated the business in 1994.

During those days, agriculture in Korea was in the process of conversion; from paddy crops to horticultural, from fields to hydroponic system, and from labor to automatic machines.

DOF introduced hydroponic fertilizers which were unprecedented before, mainly dealing with it and achieved a title as a hydroponic fertilizer expert. DOF has constantly got developed by trying a variety of unprecedented items and attempts in Korea. DOF has always come through such brand-new opportunities, by giving advices of T.E. application in crop growth, applying SiO<sub>2</sub> in paddy crops to prevent lodging, and developing specialty fertilizers composed of seaweed extracts and amino acids for plant nutrition.

Moreover, around 2008, DOF began to cooperate with YARA, one of the biggest international fertilizer companies to lead the market of premium compound fertilizers in Korea. Also, DOF contributed to improving and expanding eco-friendly cultivation by safe agrochemicals and specialty fertilizers to comply with customers' demands of natural farming.

Heading for the best crop management company in the world

DOF contributes to the world for growers' well-being and to the protection of environment and life, keeping company's name as 'DREAM OF FARMER'.

Based on technical knowledge accumulated for more than 20 years, DOF keeps developing practical, innovative growing methods, and various agricultural materials to improve agricultural circumstances in Korea and to be the best crop management company in the world.

All members of DOF continue to figure out agricultural issues on site to solve root causes, which leads to better agricultural circumstances.

Sincerely,

**Donggil Jang**  
CEO



# History

## 1994~1999

- 1994 DONGSEONG Corporation was established
- 1997 Started Import and supply chain of horticultural fertilizers in Korea
- 1999 Launched fertilizers for drip irrigation and functional nutrient fertilizers  
Converted into limited company



Head Office & 1st factory

## 2000~

- 2000 Developed anti-falling products for rice for the first time in Korea
- 2001 Developed products against phytophthora blight, bacterial wilt, root rot disease for the first time in Korea
- 2002 Changed company name into DOF Ltd.(For the meaning of Dream of Future, Farmer...)
- 2003 Developed high calcium and micronutrients fertilizers
- 2005 Launched organic fertilizers
- 2007 Launched biological pesticides
- 2008 Started supplying YARA' s Premium Compound Fertilizer
- 2009 Acquired ISO9001, 14001
- 2010 Established DOF Ltd, Agricultural Cultivation Laboratory
- 2011 Received a commendation for social contribution activity
- 2013 2nd Factory has been in operation
- 2014 Launched water-soluble NK Ca fertilizer
- 2015 Launched slow-releasing coated fertilizer for paddy crops
- 2016 DOF Academy Hall was built
- 2017 Established a joint venture in China
- 2018 Launched new eco-friendly pest control products
- 2019 Vietnam, Thailand, Myanmar, Kuwait exclusive distributor agreement
- 2020 China Southern, Northern exclusive distributor Agreement  
DOF 's 5 New Technology patent applications
- 2021 Acquired venture company certification



2nd factory



Crop cultivation Lab. and Technical support Building



Academy Hall

# Institutes

## Crop Cultivation Institute



DOF Crop Cultivation Institute tries to spread scientific growing methods such as analysis of soil, crop, area, which is different from traditional methods that have been done via only grower's experiences.

Low input-high efficiency seminars and consulting on cultivation, DOF tries to provide comprehensive technical advices.



- R & D
- Consulting on cultivation
- Advices on cultivation
- Technical seminars
- Water analysis and advices on water-tank recipes

DOF Crop Cultivation Institute cooperates with some agricultural institutes abroad for technical information. By practical field trials and educations, DOF tries to enhance Korean agricultural development.

## Crop Cultivation Institute R & D

Research experts with various field experiences perform technical tests and field trials to develop high-quality products, cooperating with R & D research institutes abroad in order to expand our R & D boundary in order to contribute to spreading advanced, innovative technology and achieving growers' better profits.








## Crop Cultivation Institute Consulting Activities















Consulting on cultivation is conducted based on DOF's accumulated experiences and technical analysis data by applying growers' comments on site and advanced agricultural technology in order to implement practical performance in the fields.



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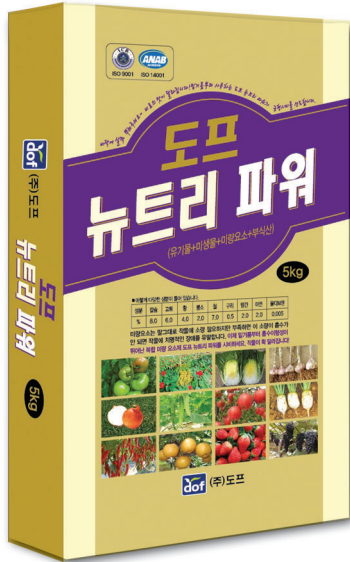


**Base Dressing &  
Top Dressing  
Fertilizer**



Byword of Micronutrients for Basal Application to Horticultural and Fruit Crops

# 「 DOF NUTRI POWER 」



## A few words from farmers using DOF NUTRI POWER

- Ginseng  
Yellow disease was reduced and root development was good.
- Pepper  
The end was not soft and it was strong against anthracnose
- Peach  
The drop-out rate was reduced and the tissue was dense.
- Strawberry  
The roots are sturdy and the pedicel is well raised.
- Radish  
The flesh was crunchy and hard and weighed a lot.
- Pear  
It was strong in cold weather, and made big flower and nourished well.  
The number of deformed fruit also decreased and the standard fruit ratio was high.
- Apple  
The leaves were crisp even after harvest without falling leaves.  
The formation of flower buds was vigorous.

## What is DOF NUTRI POWER?

Crops need a small amount of micronutrients, but if micronutrients are insufficient, they will cause fatal growth disorders. Now, try basal application of DOF NUTRI POWER, complex micronutrient solution, from basal application. Balanced basal application changes the crops greatly.

The first fertilizer containing 9 elements including 6 micronutrients in Korea

PRODUCT	Ca	Mg	S	B	Fe	Cu	Mn	Zn	Mo
I	10	6	5	2,5	4	0,5	2	2,5	0,005
II	15	10	5	1,3	2	0,3	1	1,2	0,002

## Characteristics

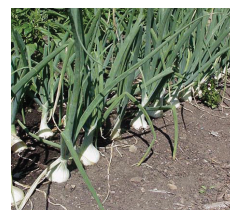
1. DOF NUTRI POWER is designed to fertilize all micronutrients needed for soil and plants at once.
2. It is a neutral fertilizer that is made safe and perfect for any type of soil and plant. It is oil-coated, slow-releasing fertilizer whose effect will last more than 90 days.
3. It can be mixed with compost, chemical fertilizer, organic fertilizer and other pesticide.

## Effects

1. It induces healthy growth through comprehensive basal application of nutrients and improves nutrient supply efficiency by fertilizer synergism.
2. It prevents the various physiological disorders that occur in crop cultivation in a repeated cultivation land and improves the resistance.
3. Balanced nutrients management makes the crop healthy and resistant to environmental stress and disease.
4. It promotes the absorption and movement of nutrients and strengthens Vigority.
5. It improves the fruit quality and quantity

## How to Use

Crop	Dosage	Application Method	Effects
Fruits and vegetables	7,5Kg/10a	Application to a ridge or Soil incorporation	Development of fine roots, prevention of end softness, improvement of storage
Fruits	10Kg/10a	Surface application	Promotion of cold resistance, healthy flowering, fading, and standard form fruits production
Leafy vegetables	5Kg/10a	Drip irrigation	Improved marketability, increased weight, and reduced softness symptom
Bulbs and tubers	7,5Kg/10a	Application to a ridge or Soil incorporation	Improved storage, bulb stiffness, weight increase and eating quality improvement
Special crops such as ginseng	3Kg/10a	Top-Dressing	Prevention of root rot, yellowing, and early maturing



# 「 ONE PRO 」



## ONE PRO 220



## ONE PRO 952



## ONE PRO 952



## What is ONE PRO ?

ONE PRO is a control release fertilizer coated with a polymer. Once fertilized, the fertilizing effect appears for a long time and is fertilizer that lasts for 100 days. It supplies nutrients stably during the initial growth as well as throughout the growing season. Crop nutrition can be done efficiently and has a big advantage in reducing labor.

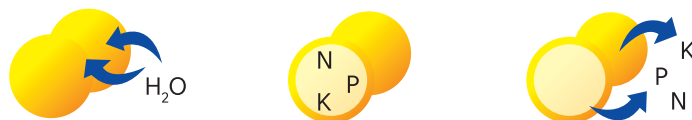
### Features and effects

1. In addition to nitrogen, both phosphorus and potassium components are coated with a polymer.
2. After fertilizing, general fertilizer dissolves a lot of nutrients at first, and then decreases, but this product is supplied at a constant level for 100 days from the beginning. Cultivation for high quality harvesting is possible without excess or shortage of nutrients until the late stage of crop growth.
3. It is economical because the efficiency of fertilizer use can reduce the consumption of fertilizer per unit area and the labor force due to fertilizer application.
4. It is eco-friendly because it can reduce soil pollution caused by salt concentration and reduce water pollution.
5. The fertilizer is hard and there is no powder, so the work is easy and the machine spray is possible.
6. It can be used for various crops such as rice crops, root vegetables, fruit vegetables, and leafy vegetables depending on the nutrition.

### Contents & How to Use

PRODUCT	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	Target crop	Usage (ha)	Method
ONE PRO 220	22	12	10	Rice	500kg	Soil mixing after fertilizer application
ONE PRO 952	19	15	12	For root vegetables such as garlic and onion	900kg	
ONE PRO 707	17	10	17	For vegetables, peppers, cucumbers and tomatoes	900kg	
ONE PRO 500	25	10	10	For leafy vegetables such as cabbage and lettuce	900kg	
ONE PRO 113	11	11	23	sweet potato	600kg	

### How it Works



1. Moisture penetrates into the coating
2. Slowly dissolve the fertilizer in the coating
3. Elution outside the coating of dissolved fertilizer.

# 「NK-CALMA」



(15-0-15+12CaO+2MgO)



## What is NK-CALMA ?

It is a state-of-the-art fertilizer containing calcium and magnesium in nitrate nitrogen potassium fertilizer. The raw material of this fertilizer is 100% water-soluble, and drenching and foliar application are possible. It is effective within 24 hours. It is the only granular fertilizer in Korea that contains water-soluble calcium and magnesium.

### Characteristics and Effects

1. It is 100% water-soluble particle type, and it is a product that combines soil basal application and drenching application.
2. It is made of 100% nitrate nitrogen and is absorbed quickly regardless of environment and time.
3. No matter how dry or cold the weather is, it will be effective and the nutrition supply of the crops will appear immediately.
4. High-quality calcium and magnesium can be supplied stably through the roots.
5. It is effective in crop growth and fruit hypertrophy.
6. It improves disease resistance, storage and climate adaptability, so that it can make crops healthy.
7. It is a preventive fertilizer for physiological disorders which are easy to occur after the middle of growing period such as roots aging, foliage rash, fruit tip rot, tissue softening, and hollow phenomenon.
8. It increases the chlorophyll content of crops to prevent sulfidation and to make the leaves become green and fresh.
9. It helps the tissues to be compact and fruits and bulbs to be firm to create the best marketability.

### Contents

Ingredient	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	CaO	MgO
Contents(%)	15	0	15	12	2

### How to Use

Crops	Application Timing	Dosage	Frequency	Application Method
Fruits and vegetables such as chili	After red pepper bears berries	15kg/10a	2 ~ 4 times	Soil application
Leafy vegetables such as cabbage	Late application after 25 days of planting	15kg/10a	1 ~ 2 times	Soil application
Bulbs and tubers such as onion and garlic	From the end of February to the end of March after basal application	15kg/10a	Once	Soil application
Fruits such as apple, pear, grapefruit and peach	Before bagging; After and before rainy season	15kg/10a	Once	Soil application
Strawberry, tomato, chili, cucumber, watermelon, pumpkin, and melon, etc.	From fruiting to harvest season	5kg/10a	Every 3 ~ 7 days	Drenching application

### Cautions

1. Increase or decrease the dosage depending on the growth of crops.
2. After use, keep the remaining product completely sealed away from direct sunlight and moisture.
3. As a granular fertilizer, it requires some stirring for dissolution.
4. In case of crops are exposed to a large amount of the fertilizer, please shake it out to avoid any damage on leaves.



# 「 DOL LIME 」



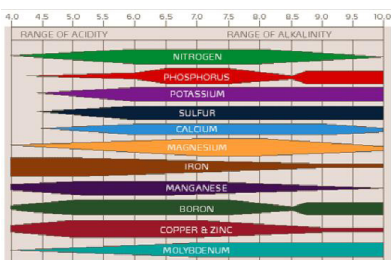
Treated

Untreated



Treated

Untreated



## What is DOL LIME?

– A natural CaO–MgO fertilizer to neutralize acid soil

Process : Mining–Crushing(100mesh)–Granulation(2–5mm)–Drying–Screening–Packing  
 Contents : CaO 25%, MgO 14% , Alkalinity 51%

## Characteristics and Effects

1. Granules granulated with fine powders are easily disintegrated to penetrate into soil
2. High alkalinity neutralizes acid soil into the optimal condition for crop cultivation
3. Prevent physiological damages from poor absorption and soil salinity
4. High–concentrated CaO and MgO strengthen plant cells to improve the generation of chlorophyll
5. Excellent work–efficiency in machine/hand works without dusts

## How to Use

1. It is required to measure alkalinity to adjust soil acidity before application of CaO–MgO fertilizer
2. Despite of the same pH index, dosage depends on soil condition, plough layer, etc.
3. Given alkalinity, at least 2 weeks are required after the application of other fertilizers such as ammonium sulphate, ammonium nitrate, superphosphate, fused super phosphate, chicken manure due to reduction of efficacy
4. Soil incorporation is required before cultivation
5. Excessive dosage per one time might cause the solidification of soil. It is recommended to use no more than 300kgs per one time for 1,000m<sup>2</sup>
6. After adjustment to proper pH index, there is no need to use every year, and 50kgs per 3~4years are enough

## Dosage

To increase pH 1.0 of soil from 30cm below

pH	Degree	Dosage (kg/1,000m <sup>2</sup> )
6.6–7.0	Neutral	60kg
6.0–6.5	Slightly acid	60–120kg
5.5–6.0	Acid	120–240kg
Below 5.5	Extremely acid	More than 250kg

- Soil pH control is essential for crop nutrition
- Optimal pH for crop growth is around 6.5

## What happens from acid soil?

- Poor absorption of N, P, K Ca, and Mg
- Mo deficiency – Fixed N in plants
- Aluminum Intoxication – Fixed P in plants
- Mn intoxication – Withering of old leaves
- Poor microbial activities in soil – Destruction of eco–system.
- pH 6~7 is optimal, earthworms cannot survive below pH 4

## Reason of Acid Soil

- H<sup>+</sup> ion occurs during unfermented organic matters' decomposition
- H<sup>+</sup> ion occurs During ammonium(urea, ammonium sulphate, ammonium nitrate, ammonium phosphate) s conversion into nitrate
- H<sup>+</sup> ion occurs when roots absorb cations from Ca, K, Mg, etc.
- When elements such as N, Cl, S are leached by moisture





Granular Silicate Fertilizer for Soil Conditioning

# 「 GRANULE-SI 」



## What is Silicate Fertilizer?

SiO<sub>2</sub> is a natural material for soil conditioning and a natural supplement for crops. Paddy crops such as rice need a lot of silicic acid rather than nitrogen to stabilize the growth, and horticultural crops need silicic acid for resistance against various diseases

### Content

SiO<sub>2</sub> 25%, MgO 2%, CaO 30%, Alkalinity 40%

### Features and Effects

1. An alkaline granular fertilizer which contains SiO<sub>2</sub>, MgO, CaO for soil conditioning
2. SiO<sub>2</sub> strengthens plant cells to prevent lodging and diseases by improving the resistance
3. Alkalinity is guaranteed at least 40%, which enhances the crop quality by neutralizing acid-soil and supplying CaO
4. Given rices' demands for SiO<sub>2</sub> during the growing period, it is especially effective for growth management
5. Applicable for fruits, horticultural crops, soil conditioning, and microbial activities

### How to Use (1,000m<sup>2</sup>)

Crop	Dosage	Timing	Remarks
Rice(Paddy)	About 200kg	During ploughing	For acid soil, paddy field short of SiO <sub>2</sub> (Below 130ppm)
Fruit, Horticultural crops	About 100kg	Before planting	Deficiency of CaO/MgO, and volcanic area
Lawn	About 200kg	Before shoot growth	Purpose of prevention of stamping and diseases



### Cautions

1. Dosage is based on the demand of nitrogen of common cultivation area, and should be adjusted depending on cultivation area, soil condition, and crop growth stage
2. Due to a potential of gas damage in greenhouses or mixing with organic/compost fertilizers, it is required to use 7~10 days before seeding/planting
3. Keeping it away from humidity and sealed after use

A black and white photograph of a man in a white lab coat and glasses, looking down at a tray of small plants in a greenhouse. A large blue diagonal graphic is overlaid on the image, containing the text 'dof >>>' and 'Bio Stimulators'.

dof >>>

Bio Stimulators



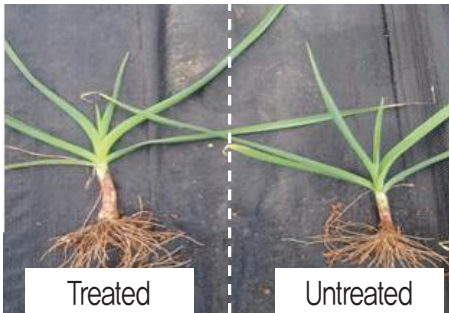
# Seed Nutrient – A Good Source of Nutrition for Seeds

## 「SEED FEED」



### GUARANTEED ANALYSIS

B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%



### Characteristics and Effects

1. This product provides nutrition to seeds through the seed priming technology.
2. Providing sufficient nutrition to seeds is important for their sprouting and growth.
3. The product can be used easily on various types of seeds, including grains such as rice, bean, maize, wheat, or barley, as well as garlic or potato, etc.
4. The well-balanced nutrition for the seeds and superb absorption is the unique merit of this product.

### Main Active Ingredients

- Cytokinin (as kinetin) 0.004%, Microbial metabolic product

### How to Use

- Rice seeds or other grains: Prepare a diluted solution by adding 100ml of the product to 100L of water. Then, soak 100kg of seeds for 24 hours. (May be used during insecticide disinfection.)
- Seed garlic or other bulbs: Prepare a diluted solution by adding 20ml of the product to 20L of water. Then, soak 20kg of seed bulbs for five hours. (May be used during insecticide disinfection)

### Cautions

1. This product is for preparing seeds only. Please contact us first if you intend to use the product on crops.
2. This product can be used along with insecticides. When used together, observe the soaking time requirement for the insecticide.
3. This product contains chelate fertilizer of slight acidity and cannot be used on organic crops.
4. If you have any doubt, please contact us or run a small-sized test.





# 「 THE ROOTS 」



## GUARANTEED ANALYSIS

Total-N	1.5%
P <sub>2</sub> O <sub>5</sub>	3.0%
K <sub>2</sub> O	2.5%
Zn	0.3%
B <sub>2</sub> O <sub>3</sub>	0.6%

## What is THE ROOTS?

The Roots is the best rooting compound mixed with seaweed extract which is a natural plant-activating agent and humic acid which is effective for soil fertility and proliferation of microbes and amino acid which promotes crop growth. It is a hidden card for a long-term high yield.

### Main active ingredients

Seaweed extract (Ascophyllum Nodosum) 4%, Amino acid 5%, Humic acid 8%, Fulvic acid 7% and chelate minerals

### Characteristics and Effects

1. It is the finest rooting compound which contains three major ingredients of plant nutrients such as seaweed extract, humic acid and amino acid.
2. With improved adaptability to the environment, it keeps the vitality of roots in low temperatures, high temperatures, drought and other bad climate.
3. It regains the vitality of the roots when the roots are damaged or lacking in absorption due to the accumulation of soil salinity.
4. It will help crops to regenerate their roots when roots become weak due to the toxicity of fertilizers and pesticides.
5. If you do not see any fine root due to the influence of temperature, it activate(s) the physiological function and help(s) the development of the fine roots.
6. In case of continuous fruit bearing crops with severe body aches after the initial harvest, it helps stable growth and enables a long term high yield.
7. It is able to produce good quality agricultural products by foliage spraying or drenching the leaves when crops are weakened due to inundation damage or replant failure, damage of pest and root damage due to rainy weather.

### How to use

Crop	Method	
	Foliage application	Drenching application
Red pepper, water melon, oriental melon, cucumber, strawberry, radish, lettuce, spinach, onion, green onion, garlic, cabbage, potato and carrot etc.	2 ~ 3 times of application after dilution of 500 ~ 1000 times	Drenching application of 2 liters per 10a
Fruits such as apple, pear, grape, Korean wild grape, mandarin, peach, kiwi fruit, and blue berry Flower, garden tree, and other crops		

Picture of THE ROOTS of red pepper



Comparison of each treatment zone at 35 days after planting

Picture of THE ROOTS of strawberry



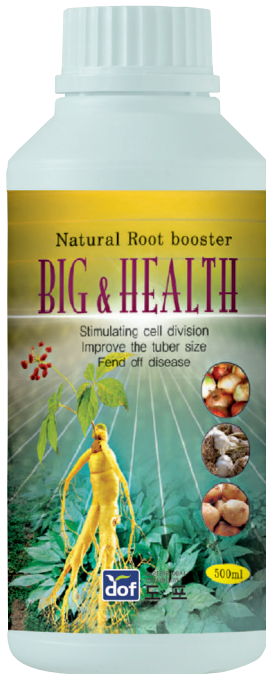
Comparison of each treatment zone at 35 days after planting

During the cultivation, after three times of drenching of one bottle of 2L of the-roots to 13a at intervals of seven days for 3 times, and then the growth of the root was very active and the power was improved.



# Root Growth Enhancer – Improving Cell Divisions of Bulbs

## BIG&HEALTH



### GUARANTEED ANALYSIS

B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%

### Comparison of Harvest Volume

The harvest performance of 6-year-old ginseng after treating with BIG&HEALTH showed that the treated plants suffered from almost no disease and the yield was considerably better



In the case of potatoes, the result of comparison between the treated plants and untreated plants showed that the yield from a single plant was 20% higher with the treated group, where the development of the bulbs was superb and consistent.



## What is BIG&HEALTH?

Big & Health is an injection type, root cell division enhancer based on fermented *Ascophyllum Nodosum* extracts and fluvic acid. The product protects the bulbs from diseases, enhances the growth of rootlets, and helps the development of the bulbs and fruits.

### Main Active Ingredients

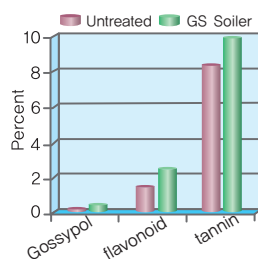
Cytokinin (as kinetin) 0.002%, Fermented *Ascophyllum Nodosum* extracts 13%, fluvic acid 3%, and other physiological activity 1%

### Characteristics and Effects

- The product helps generation of the self-induced resistant substances to enhance the roots resistance against diseases.

#### Comparison data of inductance resistance substances generation

(Increased density of gossypol, tannin and flavonoid)



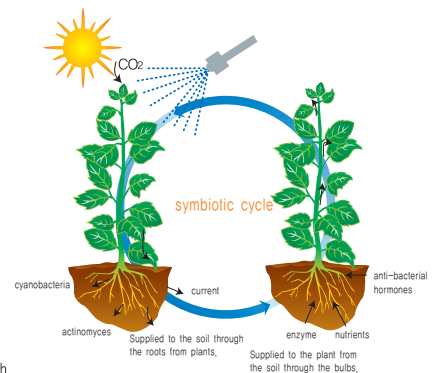
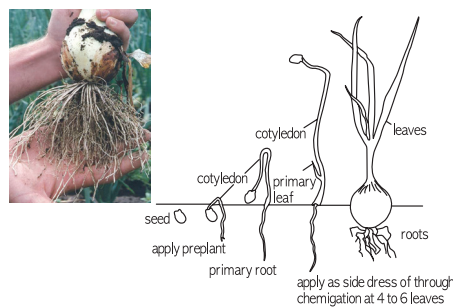
These values show how strong the plant's resistance against disease is. The more inductance substance, the healthier the plant is.

#### Comparison of the root of tomato plants



- Application of BIG & Health will energize the growth of root and help nutrient supply to accelerate cell division, promoting growth of fruits and bulbs.

### Application of BIG & Health results in higher activities of roots and better nutrition absorption.



### How to Use

Crop	Application Timing	Method	Dosage
Strawberry, tomato, watermelon, cucumber, pepper, and other shrub fruits	Two to three times immediately after planting or during the fruit development phase	Fertigation	500ml/ 330 – 660 m <sup>2</sup>
Onion, garlic, carrot, and potato, etc.	Immediately after planting or during the bulb development phase	Drip irrigation	500ml/ 330 – 660m <sup>2</sup>
Ginseng or <i>Platycodon grandiflorum</i>	Upon sprouting	Drip irrigation	500ml/ 330 – 660m <sup>2</sup>

# 「 BULB UP 」



## What is BULB UP?

BULB UP is a product that enhances the development of bulb by stimulating the growth of the underground part of the plant, containing *Ascophyllum Nodosum* extracts and special development enhancers to increase metabolism of the roots.

### Main Active Ingredients

Seaweed extract (*Ascophyllum Nodosum*) 10%, Amino acid 10%

### Characteristics and Effects

1. The product, based on a mixture of seaweed extracts and special ingredients for development enhancers, activates the growth points and facilitates cell division to reinforce bulb development.
2. If the roots are weak and development is hindered, the product accelerates metabolism to facilitate the growth of new roots and help the development of bulb.
3. The product relocates the nutrition from the surface parts to the underground parts to facilitate later-stage bulb development.
4. The product activates microorganisms in the soil and enhances the physical properties to help the growth of roots and absorption of nutrients.

### GUARANTEED ANALYSIS

Total-N	1.5%
P <sub>2</sub> O <sub>5</sub>	6.5%
K <sub>2</sub> O	4.0%
B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%

### How to Use

Target crops	Application Timing	Method
Garlic	1~3 times, 7 to 10-day intervals, from immediately before the sprouting of the stem	Dilute to 1:500 ~ 1:1000. Foliar application or fertigation
Onion	1~3 times, 7 to 10-day intervals, from 45 days before harvesting	
Sweet potato	1~3 times, 7 to 10-day intervals, from 45 days before harvesting	
Potato	1~3 times, 7 to 10-day intervals, around the time of flowering	
Radish	1~3 times, from 30 ~ 45 days before harvesting	
Carrot	1~3 times, from 30 ~ 45 days before harvesting	
Ginseng	1~3 times, 7 to 10-day intervals, during the bulb development period from June	
Ginger	1~3 times, 7 to 10-day intervals, from 45 days before harvesting (bulb development)	
Chinese yam, <i>Platycodon grandiflorum</i> , <i>Codonopsis lanceolata</i> or other herbal plants	1~3 times, 7 to 10-day intervals, from July during bulb development	
Other crops	During the initial phase of development, 1~3 times	

### Comparison of Bulb Sizes



The crops fertilized with the product showed differences not only in numbers but also in shapes, showing that the product can enhance not only the volume but also the value of the harvest.



Untreated

In the case of radishes, the crops fertilized with the product did not show a significant difference in terms of product values. But, the size was bigger by around 5%.



Treated

In the case of onions, the crops fertilized with the product showed an increase in the size and weight, by more than 10%.



# Cell Division and Development Enhancer

# GS-BIG



### Main Active Ingredients

Cytokinin (as kinetin) 0.004%, Fermented Ascophyllum Nodosum extracts 20%, physiological activity enhancers 1%

## What is GS-BIG?

The primary factor that determines the development of fruits is cell division. The extent of cell division decides the growth of the plant, foliage volume, development of roots, number and size of fruits, their qualities, and storage performance.

GS-BIG contains fermented extracts of a seaweed called Ascophyllum Nodosum. Charged with rich plant growth modulators, the product facilitates cell division, growth, and development to enhance product values.

## Effects

Treating the crops with GS-BIG will result in a difference in the form of tissues and cell growth, and the growth of the plant will never be the same. The stalks of the fruits will be longer, and the ovary will develop more consistently.

After using the product, the energy of the plant will be concentrated on flowering. New sprouts will come, the flower will blossom, and new leaves will come out, while the fruits develop. Also, the product will make your crop more resistant against low temperature.

Using the product will result in other benefits, such as maturing, maintenance of freshness, and more. To maintain such benefits until harvesting, the product should be applied on the right timing. And, a sufficient amount of water and nutrients should be provided to keep up with the development of the cells. Especially, softening of the fruit will decrease if calcium is applied at the earlier stage of fruit set.

## How to Use for Different Crops

(foliar application, 500ml/500 L)–Timely application is essential!

### Pear



Initial application—immediately before flowering



2nd application—full blossom



3rd application—after flower drop

### Apple



Initial application—immediately before flowering



2nd application—flowers in the center at full blossom



3rd application—after fruit set

### Grapes



Initial application—before flowering



2nd application—soon after full blossom



3rd application—after fruit set

### Peach, Japanese apricot, apricot, and other tree fruits:

Initial application immediately before flowering, 2nd application after flower drop, 3rd application during fruit set period

Korean melon: 1st immediately before the first flower, 2nd immediately after fruit set, 3rd 10~14 days after secondary processing. Apply the product once again within seven days after the first harvesting for continued harvesting

Watermelon: 1st immediately before flowering, 2nd immediately after fruit set, For cucumber, pumpkin, or other plants of the same species, 1st application when the second or third female flower blossoms. Apply in every 10 days to maximize the harvest volume.

Tomato: 1st application when there are six leaves, 2nd when the 1st flower opens by 30%. Apply in every 10 days to maximize the harvest volume.

Pepper and eggplant: 1st when the 1st flower opens by 30%. Then, apply 2~3 times in 14-day intervals.

Onion and garlic: 1st application when there are 4 to 6 leaves, 2nd application in around 15 days.

Ginseng: 1st application during the foliage period, 2nd before flowering

Carrot, potato, and sweet potato: 1st application up tuber formation, 2nd in 10~14 days

Radish, ginger, and garlic: 1st application when there are two to three leaves, 2nd upon bulb setting.

**NEW 「BIG-GRA」**



**Active Components**

L-Tryptophan	1.8%
Vitamin & Organic acid	4.5%
Chelate agents	1.3%
Zn+B+Mo	2.1%
Plants extracted	3.9%
Polysaccharide	72.0%
Plant-based size enhancer enzyme	

**Features and effects**

1. This product is a fruit cell expansion agent for producing high-quality fruits.
2. It is a product made with functional substances essential for fruit cell expansion without using any chemical synthesis hormones, promoting the absorption and movement of nutrients and inducing cell growth.
3. It supplies nutrients necessary for cell activity as a product used from the early to late hypertrophy after the time before and after flowering when cell division is most active.
4. If there is a problem with growth due to climate environmental stress, such as hot and dry climate or over-humidity caused by rainy season, this product becomes an energy source to increase stress resistance and help stable fruit obesity.
5. Fruit grows normally without any side effects, whether it is hollow, easily soft, or tasteless, and it is rather hard and has a better storage and taste as nutrients are enough supplied.

**How to use**

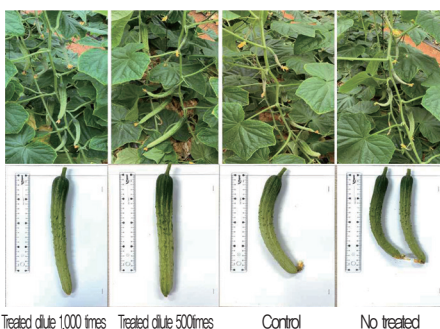
Crops	Period of use	Dosage	Number of use	Remark
fruit trees such as apples, pears, grapes, peaches, plums, persimmons, etc	From 1st early cell expansion stage ~ late cell expansion stage	Dilute 1,000times (500g/500L)	2~3 times	After fertilization in 15days, interval of 15days from 1st use, 1~2 times
Strawberries, peppers, cucumbers, tomatoes, pumpkins, eggplants, watermelons, melons, and other fruits and vegetables	After fruiting in 10 days ~ late Auxesis stage	1,000 times (500g/500L)	2~3 times	Irrigation or foliar application

**Cautions**

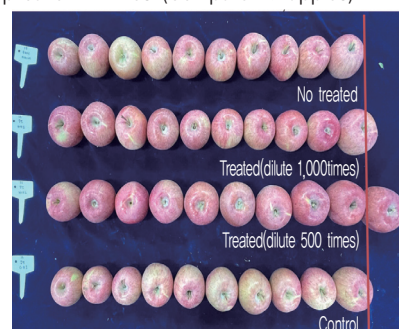
1. Do not use it for bulbs such as garlic and onions. Cell division is activated and there is a risk of staking.
2. This product is used for fruit trees and fruits and vegetables, so you can use it safely without any special danger from fruiting to auxesis.
3. It can be mixed with pesticides or nutritional supplements, but small-scale tests are recommended.
4. For dilution drainage, observe the recommended concentration 500 times.

**Test by cucumber (Apr.2022) after fruiting 1st foliar application**

Test by cucumber (Apr.2022) after fruiting 1st foliar application



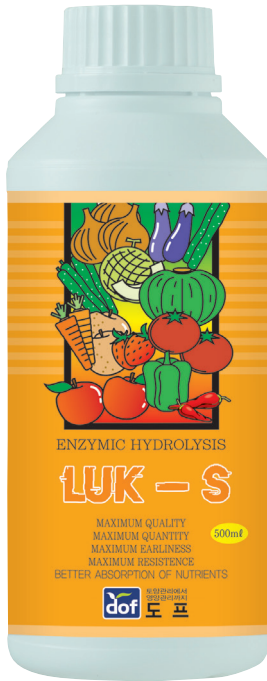
Test by apple(Oct.2022), after fruiting, cell expansion stage foliar application 2 times (Compare 10 apples)





High-Quality Amino Acid for Comprehensive Crop Management

# 「 LUK-S 」



## What is LUK-S?

It is a product made by complete fermentation of animal blood, bone meal, feather meal and etc. with enzymes. It is very effective in relieving nutrients supply, various deficiency symptom, and physiological disorders of plants. This product doesn't only function as a fertilizer, but also plays a role in synthesizing high-quality protein in the plant body. Therefore, it is a good quality protein that is the basis of cell formation and cell division and growth is accelerated and the plant becomes healthy.

## Characteristics and Effects

- Density is stabilized and plant vitality is gained.
- It helps to cope with various stresses caused by environmental problems (cold weather damage, freezing weather damage and lack of sunshine etc.).
- The balanced supplying of nutrients stabilizes the growth of the crops and improves the commerciality of fruits.

## How to use

Soil Drenching: Drenching 1 liter / 10a every 2-3 weeks after planting.  
Foliar Application: Fertilize 500-1000 times when strong vitality is required for all crops.

## Cautions

- 1) It can be mixed with pesticides and fertilizers in general but avoid mixing with Bordeaux solution and lime sulfur mixture
- 2) When mixing with calcium, please use the calcium concentration as low as possible.
- 3) Be careful not to get into mouth or eyes while using.

## GUARANTEED ANALYSIS

Free Amino Acid	20%
B <sub>2</sub> O <sub>3</sub>	2.0%
Zn	1.6%



3 times of foliar fertilization at 1000 times in seedling raising stage



Treatment group



Control group



Control group



No treatment group

Gas-damaged cucumber after planting



No treatment group



1000 times twice foliar fertilization



A high concentration of amino acid which combined animal based and plant based raw material.

# NEW AMI65



## About AMI65

It is a high-concentration amino acid newly developed by Dof and is used to improve plant vitality and resistance to environmental stress.

Amino acids are the basis of protein synthesis and are essential nutrients for the metabolic activation and growth of plants.

When growing crops, normal growth is sometimes difficult due to environmental factors such as low temperature, insufficient sunlight, too high temperature, too dry, root damage, and weakness.

In addition, even in a normal growth environment, additional amino acid supply is needed when the crops themselves are poor or growth changes such as planting time, flowering, and fruiting period.

'AMI65' will help you manage your crops with superior effects.

### Active Components

Total Amino Acid content	65%
Free Amino Acid	40%
Peptide Amino Acid	25%

### Features and effects

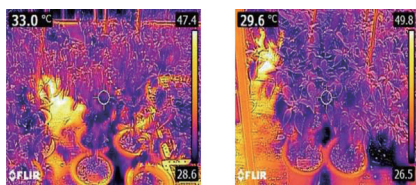
1. This product contains the best high concentration amino acid made by mixing animal and plant based ingredients.
2. In order to prevent destruction of tryptophan, the auxin precursor, it contains all 18 or more essential amino acids without destruction of nutrients by mixing and adopting an acid and enzyme hydrolysis method suitable for the raw material.
3. It is a high concentration amino acid consisting of an ideal ratio of free amino acids and peptides. And the absorption is very fast and show a visible effect.
4. With vigorous growth, you can see with your eyes the occurrence of shooting, the amount of flowering, and the health of the leaves.
5. Plant metabolic activity is raised by improving photosynthesis ability.
6. It makes very high resistance capacity to various stresses caused by high temperature, low temperature, salt, wind, and weakness.
7. The development of new roots and fine roots and freckles at the same time, which have lost vitality due to aging, are greatly helpful in recovering the force of water as well as obtaining a large number of harvesting.

Each diluted 1,000times by foliar application



Control (Other Amino Acid products)      Treated (AMI65)

Taking a photo of leaves by thermal imaging camera inside of the greenhouse temperature as 44°C



Control (Other Amino Acid products)      Treated (AMI65)

### How to use

Crops	Application Period	Dosage (Standards)	Method
Fruit and vegetables such as strawberry, cucumber, tomato, pumpkin, chili, watermelon, melon, etc	Raising seedling, Root promoting, Before & After flowering, Fruiting period, cell expansion stage, Weak in growth, Various stress caused	dilute in 1000times (1ml/1L WATER)	Each every growth step 1 time or when stress caused, 2-3 times intervals of 7days by foliar application
Leaf & root vegetables such as lettuce, perilla leaves, cabbage, garlic, onions, potatoes, and sweet potatoes			
Fruit trees such as grapes, pears, apples, peaches, tangerines, sweet persimmons, etc			
Ginseng, bellflower, boxthorn and etc.			

\* Drenching 1L/10a 2times intervals of 5-7days

### Cautions

1. It can be mixed with compound fertilizer for irrigation or calcium. It helps the absorption of plant.
2. If the water energy seems to weak, raise amount of use. If the water energy seems to better, reducing amount of use.
3. It is a high concentration of amino acid product. If you use higher concentration more than suggested, can be occur the inhibition of plant growth.
4. It have a high viscosity due to high concentration of amino acid. While storage, please be careful not too low temperature. If it seems to high viscosity, please raise temperature to makes easy to use.





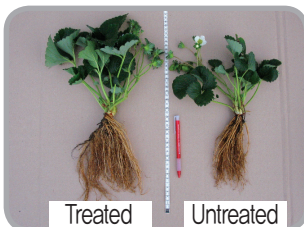
General Plant Vigor Enhancer

# 「 SEAWEED-F 」



## How to Use SEAWEED-F

SEAWEED-F is a natural plant vigor enhancer that is absorbed by the core of the plant directly. While not being an artificial hormone, the product boots growth of the plant and makes it healthier. Foliar application, or applying the product to fully soak the root will result in higher plant vigor and root growth, so that the plant may absorb more water and nutrient, become healthier, and yield more harvests.



Control/SEAWEED-F/Control/Untreated

## What is SEAWEED-F?

The product is a natural seaweed extract liquid, which is manufactured by heating and pressuring *Ascophyllum Nodosum* of at least 4-year-old from the coast line of Norway (which is a perfect environment for seaweeds to grow). The product has a large amount of active substances such as plant hormones, betaine, beta1-3 glucan, and more, as well as the essential minerals and amino-acids for plant growth.

## Main Active Ingredients

*Ascophyllum Nodosum* extracts 35%

## Effects of SEAWEED-F

- 1 **Reduced damages in cold temperature or frosts**  
Making plants more resistant to cold/frost damages that occur in early spring or late autumn.
- 2 **Increased fruit sizes and numbers**  
Stimulating cell division of plants, and increasing the size and number of fruits by providing the energy and nutrients for growth
- 3 **Accelerating flowering and fruit set**  
The flowers are larger and healthier and stay open longer, leading to successful fruit set.
- 4 **Enhancing plant vigor**  
Keeping plant vigor that easily weakens during the peak of growth season or harvest seasons, allowing continuous harvest or earlier harvests.
- 5 **Improvement of plant immune system**  
Stronger resistance against diseases due to enhanced self-defense inducing substances
- 6 **Better environmental adaptation**  
Maintaining plant vigor in hard conditions such as high temperature, low temperature, drought, high humidity etc

## Application Method

For foliar application: Dilute to 1:500 to 1:1000, Apply in 7 to 10-day intervals.

For fertigation: Apply in every 10 days, 500ml/330 - 660 m<sup>2</sup>

For apple, pear, grapes, and peach, etc.: When the buds sprout, full blossom, after fruit set, development, before and after the rainy season, and maturing period

For mandarin orange: 3 to 4 days before flowering, flower drop, after fruit set, and 6 weeks before harvesting.

Strawberry: First flowering after planting, 10 days after flowering, before and after harvesting. Apply repeatedly in every 21 days.

Watermelon, cucumber, and melon: Apply from the flowering of female flowers till fruit set, in every seven days for two times. Then, apply repeatedly in every 14 days.

Tomato, pepper, paprika, and eggplant: After the plant grows to 15 ~ 20cm, first flowering, and apply repeatedly in every 14 days.

Rubus coreanus and Schisandraceae: Before flowering, after full blossom, after fruit set

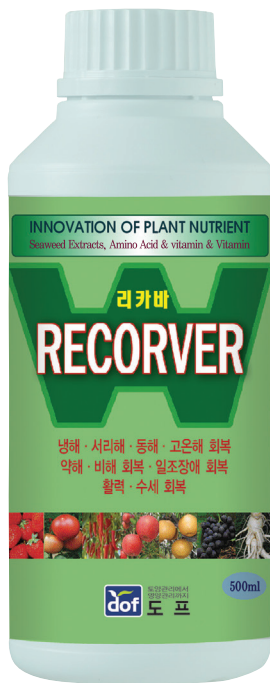
Onion, potato, sweet potato, and garlic: When there are four to six leaves, bulb setting, bulb development





Environmental Stress Regulator

# 「RECORVER」



## What is recorver?

It is a liquid type product which is mainly composed of Seaweed extracts, Amino acid and vitamins and it is highly effective. It is an innovative plant vitality agent that quickly solves the stress of plants due to the influence of climate and environment.

### Main Active Ingredients

Ascophyllum Nodosum extracts 6%, Amino acid 30%, Vitamin 10%

### Characteristics and Effects

1. It promotes the metabolism of plants and improves resistance to weather conditions even in irregular weather and poor weather conditions.
2. It quickly solves plants stress due to various weather disasters such as the damages of cold weather, frost, freezing weather, low temperature, high temperature, high wind and hail.
3. RECORVER acts as an energy source when carbon assimilation is difficult due to poor photosynthesis caused by insufficient sunshine.
4. It plays a role of restorative for crops which are suffering from stress such as damage from agricultural chemicals and fertilizers
5. It reduces pesticide toxicity and absorbs chemicals well with pesticides on crops that are always lacking in vitality due to damage by diseases and insects.
6. When converting from nutrition growth to reproductive growth, plants require a lot of energy and RECORVER serves as an important energy source.
7. It supplies essential nutrients to energy sources for flowering, fertilization, fruiting, budding and the production of new cells.

### GUARANTEED ANALYSIS

Total-N	3.5%
K <sub>2</sub> O	1.0%
B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%

Growth status of strawberry damaged by cold weather after 3 times foliar fertilization at intervals of 7days with 500-1000 times-diluted RECORVER



Before treatment

After treatment

### How to use

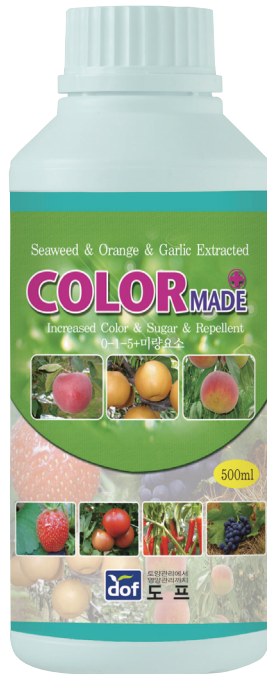
Crops	Application Method	Frequency
Fruits such as apple, pear, persimmon, and peach	Dilute from 500 to 1000 times and Foliar application (20ml ~ 40ml/20L)	2 ~ 3 times application at intervals of 7-10days during fruiting season, before and after flowering, fruit bearing and when the amount of photosynthesis is insufficient,
Fruits and vegetables such as red pepper, tomato, cucumber, strawberry, and water melon		2~3 times application at intervals of 7-10days after planting, when 1 flower bloom, at the maximum harvest time, when the power falls
Vegetables such as onion, garlic, green onion, cabbage, and radish		2-3 times application at intervals of 1-2 weeks from the growing season
Ginseng, bellflower, herb, etc.		2-3 times application at intervals of 1-2 weeks from the growing season
Grains such as rice and bean		2 times at intervals of 7-10 days in seedling raising stage and before and after sprouting
Grass		application of 2-3 times at intervals of 2-3 weeks when the shoots come up in the spring, and before and after summer rainy season





Natural Coloring and Sugar Contents Enhancer

# 「 COLOR MADE 」



## What is COLOR MADE?

Each plant has a green pigment called chlorophyll, a red color pigment called anthocyanin and an orange pigment called carotene. These pigments are involved with each other to produce color. These pigments are expressed by light, temperature and sugar. The most important thing among them is light, even UV rays to decide the coloration of fruit. However, light and temperature are bound to be conditioned in the natural domain, but the sugar's factors can make a difference depending on the effort. After cell division, it is necessary to minimize the loss of sugar consumed by photo-stimulation in the body by maximizing photosynthesis. The intake of nitrate and ammonia nitrogen into the plant at the harvest time consumes the organic acid that is made with the sugar to produce amino acids which makes it difficult to improve coloration and sugar content up.

### Main Active Ingredients

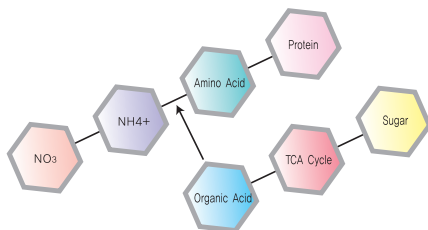
Garlic Extract 5%, Seaweed Extract 14%, Polysaccharide 12%, Methionine 2%

### Effects

- 1) When you use it to express the unique pigment of fruit, the red becomes clearer and the green becomes darker.
- 2) It improves marketability when increased sugar content and early harvest are needed.
- 3) If you use it when the fruit is not colored smoothly due to inclement weather, lack of sunshine, it will help quick coloring.
- 4) When you use it when the coloring is uneven and density is weak due to the large amount of water to be transported, it helps coloring by recovering density.
- 5) The unique fragrance of the product reduces the damage caused by algae and pests that are common in the harvest season.

### GUARANTEED ANALYSIS

K <sub>2</sub> O	4.5%
B <sub>2</sub> O <sub>3</sub>	2.6%
Zn	0.6%



The coloring usually starts 6 weeks before harvest and starch begins to turn into sugar. At this time, mixed fertilizer of calcium and coloring agent is effective to enhance the storage stability and prevent sugar loss.

### How to use

Crops	Application Timing	Dosage	Remarks
Fruits such as apple, pear, grape, peach, cherry, Omija, bokbunja, audi, jujube, etc.	Use when coloring starts (Should use it at the beginning stage of coloring)	Foliar fertilization of 1000 times (20ML / 20L water) can be used up to 500 times depending on the case. Based on the product amount, 500ML is applied to 19.8a~33.05a.	Second fertilization after 7 ~ 14 days after the first fertilization, third fertilization after 7 ~ 10 days after the second fertilization. It is also good to use a mixture of calcium agent and micronutrients
Fruits and vegetables such as tomato, cucumber, strawberry, oriental melon, red pepper, pumpkin, eggplant, and watermelon			

#### 1 Sugar enhancement effect of strawberry

Treatment criteria	Sugar level(Brix)
Non-treatment area	12.2
Product of C company	12.9
500 times of COLOR MADE	13.6
1000 times of COLOR MADE	13.3

The difference in sugar content in the treated and untreated areas is about 10%.

#### 2 Strawberry coloring effect when COLOR MADE fertilization is done.



Before treat



After 5 day



Coloring enhancers containing patented substances that enhance the accumulation of natural anthocyanin

**NEW**

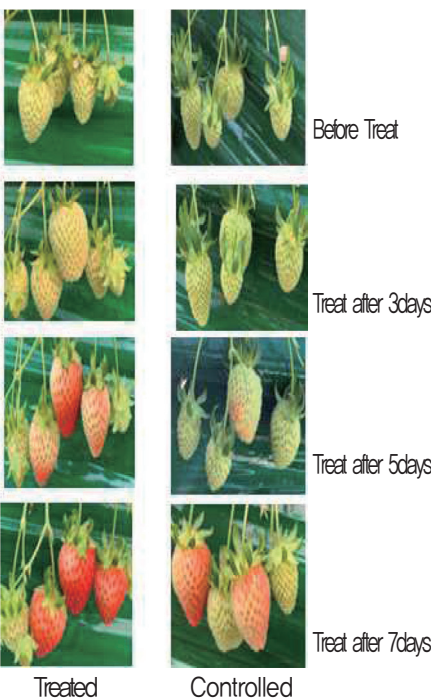
# SUGAR&COLOR-LX



## Active Components

S17	1.47%
L-Methionine	3.0%
Plant extract components	0.8%
Polysaccharide	60%
Organic Acid	1.2%
Plant-based coloring enhancer enzyme	

Feb, 2022 Strawberries coloring test (Sugar&Color-LX dilute 1,000times using 1time)



## About SUGAR&COLOR-LX

This product is made by technology transfer of new substances that increase antioxidant flavonoid to crops developed by the Department of Biomaterial Engineering of the National Institute of Agricultural Sciences in Korea

A new substance named S17 was transferred to our company in 2020 and collaborated with a biomaterial engineering team for two years to find that this substance increases the production of antioxidant flavonoid, including anthocyanin pigment, in various fruits and vegetables, and completed a joint patent application in June, 2022.

\* Methods for enhancing the flavonoid content of plants through the treatment of low molecular sulfur compounds (10-2022-0072847)

Based on S17 ingredients, Sugar&Color-LX is made by mixing various functional materials that have effects on fruit coloring.

## Features and effects

1. Anthocyanin, a red natural pigment contained in fruits and flowers, is a substance that plays an important role in determining the quality of fruit and flowers. And this product enhances the expression and accumulation of anthocyanin in crops.
2. The accumulation of anthocyanin in all crops such as leaf vegetables, fruit vegetables, and fruit trees is the same, so it has the advantage of being not used only in specific crops but being widely applied to all kind of crops.
3. In addition to anthocyanin, various antioxidant flavonoids essential for crops are increased, which slows the aging of late crops and helps stable growth.
4. This product is also effective in enhancing the sugar content and disease resistance of fruits.
5. When using artificial coloring agent, you can use it with confidence because it helps express and accumulate crop-specific natural pigments without causing problems such as storage problems, sugar degradation, and controversy over harmfulness to the human body.

## How to use

Crops	Time of Use	Dosage	Number of Use	Remark
fruits such as apples, grapes, peaches, tangerines, Five-flavor magnolia vine etc	Begining of coloring	dilute 1000times (1L/1,000L)	2times intervals of 7days	
	before 10days from Harvesting(the last irrigation before and after)	dilute 500 times (1L/500L)	1time	
fruit vegetables such as tomatoes, strawberries, watermelons, eggplants, melons, peppers, etc	after cell expansion stage (For continuous fruiting plants after each flower cluster cell expansion stage)	dilute 1000times (1L/1,000L)	2times intervals of 7days	Foliar Application
		1L/10a	2times intervals of 7days	Irrigation
red lettuce, romaine, and other leafy vegetables	Leave's color is not shown normal	dilute 1000times (1L/1,000L)	2times intervals of 7days	Foliar Application or irrigation

## Cautions

- 1) Observe the dilution multiples of 500 to 1000 times and do not use them in strong concentrations. Strong concentrations produce color quickly, but the fruit may not grow well.
- 2) It is more effective if you combine foliar and irrigation application.
- 3) The fertilizer needed for crop growth should be supplied appropriately to suit the growth of the corresponding crop.
- 4) It can be mixed with pesticides or other nutritional supplements, but small-scale tests are recommended.





Innovative Plant Nutrition Supplying Agent Based on Physiology

# 「 NO-OVERGROWTH 」



Insecticide of D Company



NO-OVERGROWTH



S Company



Untreated

The spreading of the seeding shows the level of growth

## What is NO - OVERGROWTH?

NO-OVERGROWTH a product composed of concentrated natural extracts, designed to temporary but powerful stress attack to restore balance in nutrition, preventing overgrowth.

### Main Active Ingredients

Plant extracts 6%, Other Ingredients

### Characteristics and Effects

1. The product is mainly based on natural plant extracts.
2. By restoring the balance in growth at an earlier stage, the product prevents and suppresses overgrowth or over-fruiting.
3. Plants that are well managed in earlier stages grow healthier and more resistant against diseases.
4. For plants where a balance in growth between the underground part and the surface part is required, the product boots the growth in the underground part.
5. The product accelerates bulb setting for cabbages or radishes, while helping the crops to growth vigorously and healthily.
6. The color of the leaves gets more vivid, and the freshness is improved, enhancing the product values.
7. The internodes become shorter and the stems become thicker, making the plant more resistant to lodging

### How to Use

Crops	Application Timing	Dosage	Frequency
Sesame, Japonica hara, cabbage, radish, eolgali, lettuce, pak choi, or other leaf vegetables	When there are signs of overgrowth in an earlier stage of growth	Dilute to 1:1000 ~ 1:2000. (10~20ml per 20L of water)	4 to 10-day intervals, 2~3 times.
Pepper, tomato, strawberry, cucumber, or other shrub fruits	Nitrogen excess or other environmental factors that may result in overgrowth	Dilute to 1:1000 ~ 1:2000. (10~20ml per 20L of water)	4 to 10-day intervals, 2~3 times.
Garlic, onion, potato, or other bulbs	Excessive growth of the surface part	Dilute to 1:1000 ~ 1:2000. (10~20ml per 20L of water)	4 to 10-day intervals, 2~3 times.
Ginseng and other crops	Excessive growth of the surface part	Dilute to 1:1000 ~ 1:2000. (10~20ml per 20L of water)	4 to 10-day intervals, 2~3 times.



\*Image of tomato samples of 35 days old.  
From left,  
Insecticide of D company  
NO-OVERGROWTH  
S company product  
Untreated

\*Insecticide diluted to 1:25000, applied three times  
NO-OVERGROWTH diluted to 1:1000, applied three times  
N company product diluted to 1:1000, applied three times  
(While not as effective as an insecticide, the effect is still noteworthy.)



New concept of plant protection product by preventing low temperature damage in cold weather

**NEW** 「 **COLD ZERO** 」



**Active Components**

Organic acid	6%
Activated Vitamin	37%
Water soluble potassium	0.5%
Water soluble calcium	0.3%
Amino acid	3%

**About COLD ZERO**

It is not easy to recover if it causes fatal damage to crops such as cold snap in spring or frost damage in late autumn. In the case of a low temperature disorder or the freezing damage, it cannot be revived, and even if it recovers, it is difficult to expect a normal harvest.

Prevention is the best way.

It should be managed so that potassium, a component that directly affects stomatal opening and transpiration, temperature resistance, is sufficiently accumulated in the body, and resistance to dry and low-temperature environmental stress should be increase.

COLD ZERO is a new product developed by DOF to prevent low-temperature damage, and it is quickly absorbed by acrylic organic acids and plants that suppress moisture evaporation in low-temperature and dry environments to enhance the cold resistance of plants.

**Features and effects**

1. COLD ZERO is a product that is pre-actively handled for effective prevention and response to repeated freezing damage in every year.
2. Low temperature damage mainly occurs when crops are exposed to low temperature for a certain period of time in a dry state. It increases low temperature resistance by recognizing the stress response early on and inducing stress resistance.
3. Active vitamins protect epidermal cells at low temperatures and are involved in protein metabolism.
4. Promote potassium absorption to increase potassium concentration in the body and increase the control function of stomatal opening and transpiration.

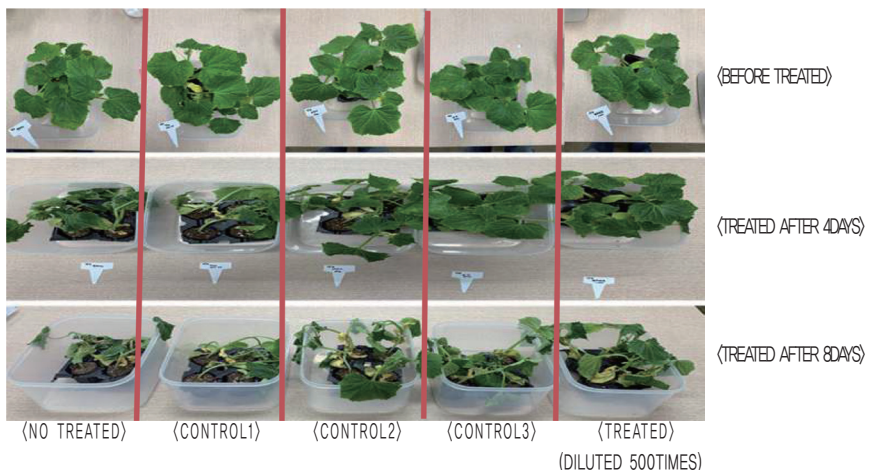
**How to use**

1. If damage is expected due to low temperature, dilute it 500 times and spray it on the leaves.
2. Resistance develops in 3-4 days after fertilization and is effective for 7 - 8 days after treatment.
3. It can be used in combination with plant nutritional supplements such as amino acids, flowering control agents, and trace elements.
4. In case of additional spraying after one application, it is recommended to do it interval within 7 - 10 days.
5. There are no special restrictions on crops, and you can use all growth period.

**Cautions**

1. Please use it before low temperature damage occurs, if you have been damaged, we recommend our cold damage recovery agent 'RECOVER'.
2. It can be mixed with pesticides, but we recommend you to use it after a small test.

Observe changes after exposing cucumber seedlings to refrigerating facilities where temperature is maintained at 1-4°C under the same conditions



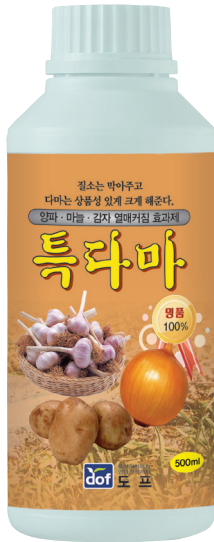
Result : The treatment area remains in leaf condition until 8 days have elapsed.





Bulb Development Improver

# 「 BIG BULB 」



## What is BIG BULB?

During the bulb development phase, which is a critical time for the growth of onion, garlic, and potato roots, the product helps relocation of nutrients from beyond the surface to the bulbs.

### Main Active Ingredients

Chelate agents 2%, B+Zn+Mo 10%, Polysaccharide 23%

### Characteristics and Effects

1. BIG BULB is an environmentally-friendly special agent that uses the essential nutrients for root developments to prevent absorption of nitrogen during the bulb development phase and moves the nutrients to the underground in an efficient manner to maximize accumulation of nutrition in the roots, contributing to the development of larger bulbs and promotion of root growth.
2. This product can be used when the plant is overgrowth during the bulb development phase or the root is not absorbing nutrients due to interference with the functioning of the root to make bulbs larger.
3. The product suppresses the action of nitrogen and regulates the carbon-nitrogen ratio to achieve a balance between the root and the parts above.
4. The product protects the crops from disorders caused by excessive nitrogen such as weakened resistance, environmental stress, poor storage

### GUARANTEED ANALYSIS

B <sub>2</sub> O <sub>3</sub>	25%
Zn	0.1%
Mo	0.0005%

### Time of Application and Method

Crops	Application Timing	Application Method
Garlic	1~3 times, 7 to 10-day intervals, from 30 days before harvest	Foliar application after diluting to 1:1000 (20ml/20L)
Onion	1~3 times, 7 to 10-day intervals, from 30 days before harvest	
Potato	1~3 times, 7 to 10-day intervals, from 30 days before harvest	
Sweet potato	1~3 times, 7 to 10-day intervals, from 45 days before harvest	
Radish	1~3 times, from 30 to 45 days before harvest	
Carrot	1~3 times, from 30 to 45 days before harvest	
Ginseng	1~3 times, 7 to 10-day intervals, during the bulb development phase from June	
Ginger	45 days before harvest (bulb development phase), in every seven days, 1~3 times	
Chinese yam, Platycodon grandiflorum, Codonopsis lanceolate, and other herbal plants	Bulb development period after July, 7 to 10-day intervals, 1~3 times	
Other crops	7 to 10-day intervals, from 30 days before harvest, 1~3 times	

### Cautions

1. The product can be used along with insecticides, sterilizers, and fertilizers. But, do not use with alkali products.
2. During the growth period, this product may slow down growth due to suppression of nitrogen. Time your application.
3. Do not dilute more than 1:1000. Do not use more than three times.

### Bulb Development Comparison

A comparison of the onion, garlic, and potato harvest clearly shows that the application of the product resulted in around 10% or more increase in the harvest volume.



# 「 NUMBER ONE 」



## Characteristics and Effects

1. This product is a mixture of seaweed extract, nucleus acid, and vitamins, specially designed for helping fruit fertilization, fruit set, development, and quality enhancement.
2. The product will provide functional effects at critical points of growth, such as flowering, fertilization, fruit set, and development that cannot be experienced with normal fertilizers.
3. The product can be absorbed into the plants rapidly, showing immediate effect in physiological disorders and poor growth. By energizing the cells of a plant, it accelerates root development, fertilization, fruit set, and development.
4. The use of this product can result in the maximum effects when sufficient water and nutrients are provided along with it. Do not skip your regular fertilizers.

## GUARANTEED ANALYSIS

P <sub>2</sub> O <sub>5</sub>	12%
K <sub>2</sub> O	20%
B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%

## Main Active Ingredients

Seaweed Extract 10%, Polysaccharide 5%

## How to Use

Crops	Application Timing	Dilution and Dosage	Frequency
Watermelon, Korean melon, tomato, cucumber, pepper, melon, eggplant, pumpkin, strawberry, and other shrub fruits	From flowering to fruit development	1:1000, 500ml/500L	7 to 10-day intervals, 2 ~3 times, foliar application
Apple, pear, grapes, mandarin orange, peach, plum, persimmon, Schisandraceae, blueberry, and other tree fruits	From flowering to fruit development	1:1000, 500ml/500L	7 to 10-day intervals, 2 ~3 times, foliar application
Onion, garlic, leek, Cabbage, radish, and other vegetables	From sprouting	1:1000, 500ml/500L	7 to 10-day intervals, 2 ~3 times, foliar application
Ginseng, Platycodon grandiflorum, and other special crops	From sprouting	1:1000, 500ml/500L	7 to 10-day intervals, 2 ~3 times, foliar application



Treated

Untreated



Treated

Untreated

## Cautions

1. The product can be used with other insecticide, fertilizers, and micro nutrients, except for those with higher pH. We recommend you test the product over a small area before a full application.
2. Keep the product away from direct sunlight. Avoid contacting the product in the eyes or skin.
3. Do not overdose. Stick to the user instruction.



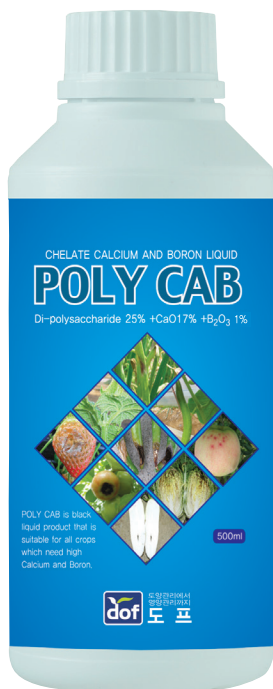




Deficiency  
Amendments



# POLY-CAB



## What is POLY-CAB?

POLY-CAB is a product containing 25% of polysaccharide and high concentration of calcium and boron chelate. It quickly regenerates the vitality of the plant. It is a physiological disorder caused by calcium and boron. – End softness of red pepper, growing point disorder of cucumber, inner softness of cabbage, browning of radish, softness of strawberry etc. It is a calcium agent that prevents the rottenness of the fruit and the burning of the tip of the leaf and flower end.

### Main Active Ingredients

polysaccharide 25%

### Characteristics and Effects

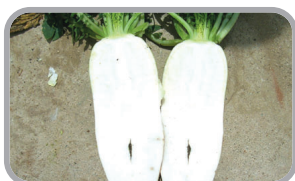
1. It is a polysaccharide, a plant energy source, which quickly regenerates the plant's vitality and quickly relieves physiological disorders with high concentrations of calcium chelate and boron.
2. It prevents the decay of the fruit and tip-burn of the leaf such as the end of the red pepper, the growth point disorder of the cucumber, the deformed fruits, the softness of the navel of the tomato, the inner cabbage softness, the browning of the radish and the softness of strawberry.
3. The role of calcium and boron in flowering, fruiting, hypertrophy and maturing is very important. The Poly Cab can supply calcium and boron to the desired part of the plant to activate flowers and growth points, prevent the loss of sugar in fruits, so that it can help tasty and firm fruits in harvest.

### GUARANTEED ANALYSIS

CaO 17.0%      B<sub>2</sub>O<sub>3</sub> 1.0%

### How to use

Crops	Application Timing	Dilution Rate	Frequency	Methods
Fruits and berries	Flowering season	1000 times	Once	Foliar fertilization
	Young fruiting season	1000 times	Twice at intervals of 10 days	
	After and before rainy season	800~1000 times	Once	
	Coloring season	800~1000 times	Twice at intervals of 10 days	
Fruits and vegetables	Seeding raising season	1000 times	Once	When drenching 1.5L/10a Periodical application at intervals of 10 days
	Flowering season	1000 times	Once	
	Young fruiting season	800~1000 times	Twice at intervals of 10 days	
	Coloring season	800~1000 times	Twice at intervals of 10 days	
Bulbs	After budding	800~1000 times	Three times at intervals of 10 days	Use with pesticides
Allium vegetables	When leaf growth is strong and 4 weeks before harvest	1000 times	Once or twice at intervals of ten days	Foliar application, Drenching basal application
Special crops such as ginseng	Beginning of budding	2000 times	Twice at intervals of 10 days	Foliar fertilization
	Bulb enlargement period	1000 times	Twice at intervals of 10 days	



# 「 CALSTAR GOLD 」

## What is CALSTAR GOLD?

Calcium is a component that does not absorb and migrate more than any nutrient, so calcium deficiency is frequently present. Cal-Star-Gold is a common calcium agent used to quickly relieve nutrition disorder.



CaO ..... 17%  
 B<sub>2</sub>O<sub>3</sub> ..... 0.5%  
 Amino acid ..... 3%  
 Chelate agent ..... 1%

### Characteristics and Effects

1. High-concentration and high-quality liquid calcium agent formulated with micronutrients such as amino acids, organic acids, boron and molybdenum for rapid absorption and migration from the leaves.
2. It absorbs calcium quickly and smoothly moves the calcium to a place where cell division is vigorous, thus it helps preventing calcium deficiency. For example, it is very effective for the prevention and resolution of rottenness of navel of tomatoes and red peppers, watery oriental melon, loss of shoulders of cucumber, inner browning of apple, dehiscent fruit of grape, softness of cabbage, decay of lettuce, Rotten inside core of onion and garlic.
3. Cal-Star-Gold Solution strengthens cell membranes and strengthens crops. It improves fruit quality through prevention of dehiscent fruit, improvement of storage, keeping freshness and etc.

### How to use

Crops	Application Timing	Dosage (per/20 L)	Frequency
Chinese cabbage, radish, onion, cabbage, crown daisy, sweet potato, garlic, and ginseng	Seeding raising period	20ml	When necessary
	Highest growth period	25-35ml	2~3 times at intervals of 7 days
Red pepper, tomato, cucumber, melon, pumpkin, egg plant	Seeding raising period	20ml	When necessary
	Highest growth period	25-35ml	2~4 times at intervals of 7 days
Pear, apple, grape, persimmon, peach, plum, and mandarin	Fruitlet Period	20-25ml	2~3 times at intervals of 7 days
	Enlargement period	30-40ml	2~3 times at intervals of 7 days
	Fruiting period	30-40ml	1~2 times at intervals of 7 days





## Calcium & Magnesium

# 「LIQUID NITCAL & CALMAG」



### Characteristics and Effects

1. This product is a high-quality calcium, magnesium agent to help maximize the absorption nutrients.
2. The product provides high-density calcium as well as magnesium to resolve physiological disorders of the crops promptly. Especially, this product will be the most effective when used as a calcium source for fruits in fruit set phase for crops such as pear or apple, etc.
3. It prevents and helps the plant recover from dry leaves or dry tips of flowers, as well as decaying of the fruits.
4. This product provides boron and calcium to the desired parts of the plant to activate the growth points and flowers, while preventing sugar loss of fruits to make them taste better.
5. The nitrogen and magnesium, as well as nitrogen, that are supplied with calcium are made from high quality materials to yield the highest absorption rate and fast effects, while maximizing absorption of calcium.

### How to Use

Target crops	Application Method
Tree fruits including apple, pear, peach, grapes, or mandarin orange	All developmental phases 1:1000 (20ml/20L) Every 10 days Foliar application
Strawberry, pepper, tomato, watermelon, melon, zucchini, cucumber, and other shrub fruits	
Onion, garlic, potato, leek, radish, cabbage, lettuce, and other vegetables	
Ginseng, Platycodon grandiflorum, and other crops	

### Cautions

1. Foliar application can be more effective when performed in early morning or late in the afternoon.
2. Shake well as there may be deposits in the container.
3. Do not mix with phosphoric or sulfuric substances. However, immediate uses can be allowed when the mixture is diluted to a low density.

### GUARANTEED ANALYSIS

Contents	NITCAL	CALMAG
N	10%	5%
K <sub>2</sub> O	1%	0
CaO	15%	14%
MgO	1%	5%
B <sub>2</sub> O <sub>3</sub>	0.2%	0.1%
Amino acid	3%	3%



Treated

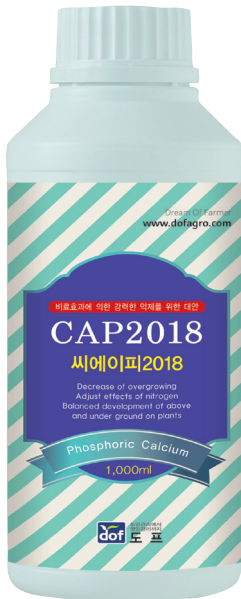
Untreated



Treated

Untreated

# 「 CAP2018 」



## What is CAP2018?

CAP2018 contains a high level of phosphoric acids and calcium, providing anti-excessive shoot growth and nitrogen regulating efficacy. This product can be used to prevent overgrowth, and to promote coloring and sugar content

### GUARANTEED ANALYSIS

N	4%
P <sub>2</sub> O <sub>5</sub>	10%
K <sub>2</sub> O	3%
CaO	8%
B <sub>2</sub> O <sub>3</sub>	0,05%
Mo	0,0005%

### Characteristics and Effects

1. When there is a concern of excessive shoot growth, overgrowth due to excessive nitrogen, the product prevents overgrowth of the surface part compared to the underground part and contributes to the yield of healthier crops.
2. Use the product during the maturing period to enhance maturity and sweetness, while also improving storage performance.
3. The leaves of leaf vegetables will growth thicker, and the tissue denser, preventing sagging of the plant during summer and enhancing resistance against diseases.
4. When used on bulb vegetables, the sizes and storage performance of the bulbs will improve, as well as their numbers

### How to Use

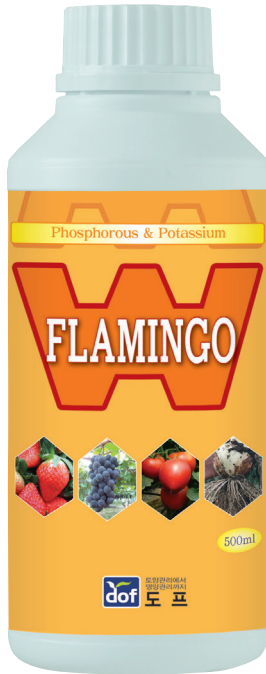
Crops	Application Timing	Dosage (per 20L)	Frequency
Apple, pear, grapes, peach, persimmons, and mandarin orange, etc.	Fruit set	40ml	1~3 times
	Before and after the rainy season		1~3 times
	Maturing period		1~3 times
Pepper, strawberry, watermelon, tomato, cucumber, and pumpkin, etc.	All development phases after taking root	20 ~ 40ml	2~3 times
Garlic, onion, ginger, carrot, and potato, etc.	Bulb setting	40ml	1 ~ 2 times
	Bulb development	40ml	
Ginseng, Platycodon grandiflorum, etc.	Before the rainy season	20 ~ 40ml	2 times
	Bulb development	20 ~ 40ml	2 times
Lawn and other crops	Overgrowth or summer season	20 ~ 40ml	2 ~ 3 times





Composed of Polysaccharide + P<sub>2</sub>O<sub>5</sub> + K<sub>2</sub>O

# FLAMINGO



## What is FLAMINGO?

FLAMINGO is a high-density liquid potassium agent containing polysaccharide and high density phosphoric acid. The product provides the necessary nutrients for flowering as well as root growth during the earlier stage of growth, while helping to mature and sweetness enhancement in the harvesting season. This product is an essential item to ensure a larger fruit size.

### Contents

PRODUCT	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	CaO	B <sub>2</sub> O <sub>3</sub>	Mo	Vitamin	Polysaccharide
FLAMINGO	1	20	5	1.5	0.05	0.0005	0.02	12

### Characteristics and Effects

1. FLAMINGO facilitates differentiation of the flower buds and contains materials that assists flowering and fruits setting, in addition to Polysaccharide and essential micro nutrients, etc.
2. The product assists root taking after planting and enlarges the bulbs of garlic, onion, potato, and other bulbs and tubers.
3. The product provides the essential nutrients for flowering of tree fruits, helping flowering and increasing fertilization ratio. For shrub fruits, the product assists continuous flower budding.
4. The product is good for even maturing of the fruits during the maturing phase and enhances the fruit sizes, making them more valuable as products.

### How to Use

Crops	Target Crops	Dosage	Application Method
Tree fruits	Apple, pear, peach, grapes, and mandarin orange, etc.	40ml/20L	Foliar application, in every 7 to 14 days
Rice	Rice, etc.		2~3 times per cropping season
Leaf vegetables	Cabbage, lettuce, and spinach, etc.	20-40ml/20L	7 to 10-day intervals, foliar application
Shrub fruits	Watermelon, Korean melon, Tomato, cucumber, pepper, melon, strawberry, eggplant, and pumpkin, etc.		
Bulbs and tubes, and other crops	Potato, sweet potato, onion, garlic, leek, radish, ginseng, Astragalus membranaceus, Codonopsis lanceolata, tobacco, and lawn, etc.		

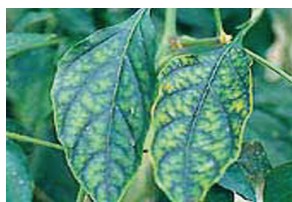


# GS-MAG



## GUARANTEED ANALYSIS

MgO	10%
Fe	0.1%
B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%



## What is GS-MAG?

A product based on Polysaccharide and magnesia. This product is a liquid magnesium agent containing physiological enhancer.

- Phosphorylation, enzyme activation
- Facilitates formation of chlorophylls,
- Enhances photosynthesis capacity,
- Increases resistance against pathogens,
- Prevents yellow leaves and leaf loss.

## Main Active Ingredients

Polysaccharide 5%, Amino acid 5%

## Functions of Magnesium

- Magnesium is a component of chlorophyll,
- Helps mobility of phosphoric acid,
- Helps synthesis of fat,

## Symptoms of Magnesium Deficiency

When magnesium, the building block of chlorophyll, is insufficient, deposition of nutrient through photosynthesis does not occur.

- The areas between the tips and veins of older leaves turn yellow,
- Lack of leaves begins to appear around fruits,
- Sometimes, the veins or petioles turn purple,

## How to Use

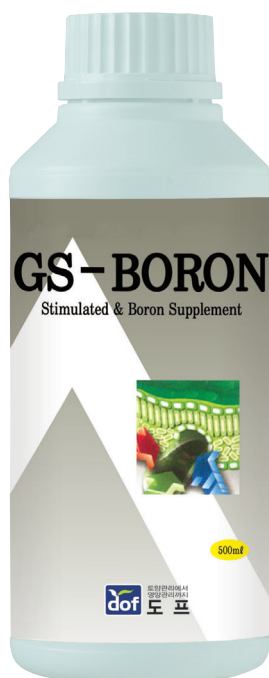
500ml/250L (1:500 solution)

## Comparison of chlorophyll between magnesium sulfite and GS-MAG (cucumber)

Treatment criteria	Chlorophyll contents (SPAD)	Comparison rate (%)
Non-treatment	33.7	-
Treated with magnesium sulfite (twice)	36.1	Up by 9.3%
Treated with GS-MAG (twice)	41.3	Up by 22%

Both magnesium sulfite and GS-MAG can prevent magnesium insufficiency. However, if you want to resolve an existing insufficiency, it is more effective to use GS-MAG.

# GS-BORON



## GUARANTEED ANALYSIS

B <sub>2</sub> O <sub>3</sub>	6.0%
Fe	0.1%
Mo	0.0005%



## What is GS-BORON?

- Strengthens the growth point and suberization
- Restores growth point disorders,
- Accelerates flower bud differentiation,
- Reduces defect rate in fruit crops
- Stabilization of plant vigor
- Prevents leaf suberization
- Facilitates sugar absorption and mobility

## Main Active Ingredients

Polysaccharide 7%, Seaweed Extracts 3%, Amino acid 5%,

## How to Use

Dilute to 500ml/500L Apply 2 to 3 times in seven-day intervals

## Functions of Boron

- Helps cell division and fertilization, while suppressing absorption of ammonia, potassium, and calcium.
- Helps generation of RNA by regulating and facilitating synthesis of various nucleus acid bases.

## Symptoms of Boron Deficiency

- The primary growth points cease to function or even the growth points in the roots begin to wither
- Young fruits may end up sterile.
- Petiole suberization may happen.
- The center of the stem turns black.
- Sap come out of the fruits, along with signs of suberization in some cases.
- The inside of petiole is stained with block spots or brown cracks that run vertically or horizontally.

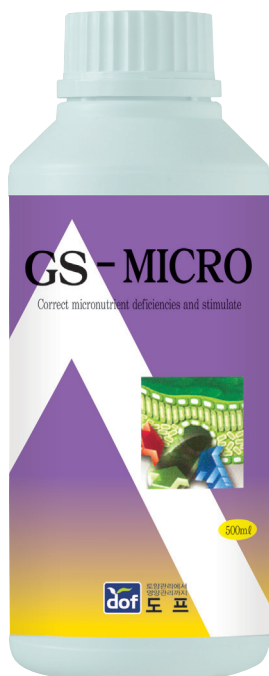
## Boron, borax (Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub>) and boric acid (H<sub>3</sub>BO<sub>3</sub>)

Boron is one of the key micro nutrients for a plant to grow. Borax and boric acid are the fertilizers used to provide boron to plants, Boron is absorbed as boric acids by plants, while borax is a type of boric compounds, made by adding soda to boric acid. Then, what is the best choice to supply boron, boric acid or borax?

The choice between boric acid and borax is dependent on acidity. Borax is an alkali product, with a pH of 9, while boric acid is slightly acidic with a pH of 5. If you desire an alkali state, you can use borax, or boric acid, if you want acidity. The content of water-soluble boron is 56% in boric acid and 48% in borax. Therefore, as for the dose, you may need to increase the dose by 12% when you use borax to match the dose in boric acid.



# 「 GS-MICRO 」



### Active Ingredients

Substance	Contents (%)	Substance	Contents (%)
Polysaccharide	2	B <sub>2</sub> O <sub>3</sub>	1.2
Seaweed Extract	10	Zn	1.5
SO <sub>4</sub>	3	Cu	0.05
MgO	2.1	Mn	1
Fe	3.6	Mo	0.0005



## What is GS-MICRO?

It is a physiological activity booster based on the seaweed extracts chelated micro nutrients.

### Characteristics and Effects

- Solves the physiological issues by joining the substance from seaweed extract with micro nutrients.
- Solves to issues at the same time, by addressing micro nutrients insufficiency and plant physiological activity boosting.
- Addresses poor sprouting, yellowing, growth point disorders, and self-topping.
- Further synergies when used with calcium agents, growth enhancers, and maturing agents.

### How to use

Dilute to 500ml / 400L and apply two to three times at any time during the growth phase.

## The Importance of Micronutrients

The micro nutrients are required in very small amounts, such as several dozens to hundreds of grams per /1000m<sup>2</sup> area. However, they are still essential in the actions of enzymes or hormones inside a plant. However, oversupplying them can also cause disorders, while insufficiency of them may result in poor growth. It is a delicate matter to stay within this window to keep the plants sufficiently and appropriately supplied. Abnormal growth of a plant may be caused by a disease, pests, and excessive or insufficient nutrition. Especially, an excess or insufficiency of micro nutrients can be a leading cause of physiological disorders due to nutrition or hormone issues. Farmers should use caution about this matter, as when they happen, it is not easy to identify the cause.

Recently, the importance of these micro nutrients is widely recognized, and application of agents containing them is increasing. However, by their nature, these micro nutrients may bond with other elements and become insoluble, and, their absorption can be hindered when they are exposed to light or heat, as well. Therefore, as they are less stable compared to a large quantity element fertilizer, it is important to select a product that is well-designed to help their absorption.

Some of the well-known products include those stabilized through chelate processing or made of ingredients with a large organic acid content, such as seaweed extract.

### Commonly Identified Issues Caused by Micro Nutrients Insufficiency

- Boron: Poor root growth, auxin imbalance, poor mobility of sugar into the fruit, and suberization of fruit peels
- Zinc: Poor stem and leaf growth, reduced activities due to poor protein nucleus-acid synthesis, poor auxin functioning, and defective cell membranes, etc.
- Manganese: Poor mobility of energy, disease, reduced resistance against lower temperature, etc., poor regulating function of auxin
- Copper: Poorer regulating function of hormones that control the maturity period of the plant
- Molybdenum: Poorer regulating performance of hormones such as auxin. Weakened anti-oxidation actions
- Iron: Poor chlorophyll growth, poor generation of enzymes that are related to respiration.





Nano-Silicic Acid agent

# 「 BIO - SIL 」



Results of measuring areas fallen in the whole area to verify the effectiveness of the fallen prevention (First fertilization when 5 segments are produced, second fertilization after 20 days after heading-1000 times-diluted Bio-Sil)

Category	Treatment area	Non-treatment area (39.6a)
lodging area	Not discovered	About 8,25a



Treatment area



Non-treatment area

## Metabolism of silicon in plants

In case of aquatic flowers and plants such as rice, silicon is recognized as an essential element. In case of rice, lack of silicon causes necrosis or forgery in the leaf after the growth and consequently the yield is greatly reduced. The nutrient requirements of the growing plant are relatively low, but requires a large amount of silicon in the reproductive system. Silicon is also found to be essential elements for tomatoes and cucumbers. In case of crops such as tomatoes and cucumbers, The lack of silicon causes little effect on the flowering stage. However, after the flowering period, it can cause deficient of leaf growth interfere in the action of water and even disturb fruit bearing. In particular, fertilization of silicon is used to prevent diseases such as powdery mildew on cucumber and amber and it is used to increase firmness and hardness by the fertilization of silicon.

## GUARANTEED ANALYSIS

Ingredients	SiO <sub>2</sub>	B <sub>2</sub> O <sub>3</sub>	Mo
Contents(%)	17%	0.05%	0.0005%

## Characteristics and Effects

- Bio-Sil stimulates stem and leaf silting and strengthens the tissue to increase resistance to various disorders.
- It increases the cell strength of the endothelial cell wall and alleviates water stress and alleviates wilting.
- It is good for parasitic leaf of cucumber and lodging protecting of rice, green onion and red pepper. Increasing resistance of strawberry, lettuce, and thickening leaves of watermelon, oriental melon and rose. It is also very good for crops with poor resistance.
- It is effective to prevent lodging caused by excessiveness of nitrogen.
- It is stable in pH, easily absorbed into crops, does not have excess trouble, is a colloid type product which can do foliar fertilization and absorbs quickly.

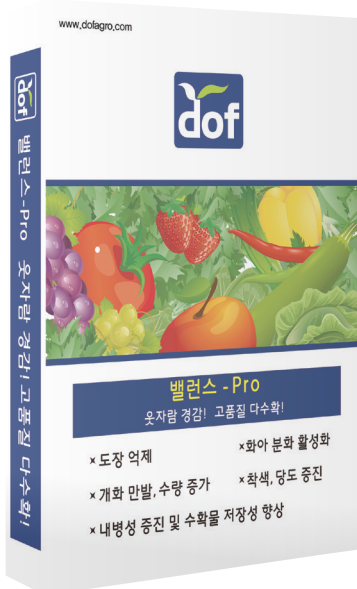
## How to use

Crops	Application Timing	Dosage	Frequency
All crops	When the leaves should be stiff, When the leaves are sagged at the time of high temperature, When fungal disease is severe	500 ~ 1000 times (20 ~ 40 ML / 20L)	Foliar application 2-3times at intervals of 7days

## Cautions

- Shake well before use.
- Store between 5 °C and 30 °C. Do not store below 0 °C.
- Avoid mixing with calcium agent and it is possible to mix it with water soluble fertilizer.
- It is possible to mix it with pesticides or fertilizers, but it is recommended to test at small area for with special products.

# 「BALANCE PRO I, II」



## What is BALANCE PRO?

BALANCE PRO is a product for supplying calcium phosphate at the same time by preventing phosphoric acid and calcium from reacting.

This product prevents overgrowth and strengthens tissues, helping to grow healthy crops. Phosphoric acid and calcium are not easily chemically soluble, but BALANCE PRO is 100% water soluble, so they can be absorbed quickly and safely used in crops without any signs or damage.

## GUARANTEED ANALYSIS

PRODUCT	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	CaO	Fe (EDTA)	B <sub>2</sub> O <sub>3</sub>
BALANCE PRO - I	0	38	1	25	0.7	5.6
BALANCE PRO- II	0	42	10	24	0.1	1.6

## Features and effects

1. This product is deeply involved in the synthesis and migration of sugars, fats, and proteins, which have large leaves and stimulate the production of flowers and fruits. In particular, the natural fine color of the fruit enhances the marketability and helps the early harvest.
2. Makes cell membrane strong and firm, protecting crops from invading pathogens and developing its own disease resistance.
3. Prevents falling fruits, prevents premature aging of fruits and leaves, and improves shelf life.
4. It improves the resistance to frost and drought and improves the taste and quality of fruits and vegetables.
5. Helps to floral initiation and improve flowering and fruiting rate.
6. This product helps the normal growth by making the roots and stems strong by balanced nutrition supply for summer heat, lack of sunshine and excessive nitrogen.



## How to use

Target Crops	Application Timing	Dosage (Foliar Application)
Fruits such as apples, pears, peaches, grapes and citrus fruits	Flowering season, floral initiation, coloring	dilution to 0.1%, 2.5kg/ha
Fruits vegetables such as pepper, strawberry, cucumber, tomato, watermelon	Early stage of growth, Overgrowth occurs, Maturing stage	dilution to 0.1%, 1.5kg/ha
Leafy vegetables like cabbage, cabbage, lettuce, spinach	Early growth, Head time	dilution to 0.1~0.2%, 1.5kg~2kg/ha
Bulbs such as onions, garlic, potatoes, sweet potatoes	Bulb formation period, growing season, maturity	dilution to 0.1~0.2%, 1.5kg~2.5kg/ha
Special crops such as ginseng	Early growth, Over growth, Maturing stage	dilution to 0.1%, 1.5kg/ha

## Features and effects

1. When using, dissolve this preparation sufficiently in a small amount of water, and then spray it by diluting it to an appropriate concentration according to the crop condition.
2. Incompatible with sulfur and alkaline agents. In case of doubt about mixed availability, please use after small area test.
3. In the case of fruit trees, avoid using them when they are young.
4. If abnormal conditions such as high temperature and drought persist, use at 2000 times or more.

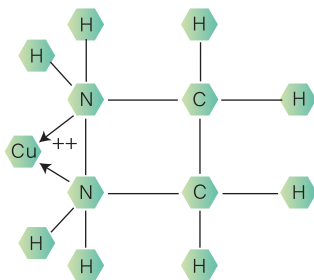


# Chelated-Micronutrients with Vitamin

## 「 COMBI I , II , III 」

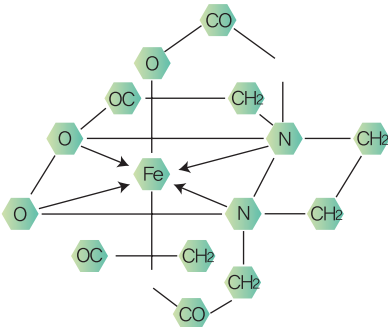


### An example of a chelate group



Ethylenediamine is joined by copper to form a chelate group. The arrow shows a coordination bond.

### An example of a chelate agent



The EDTA captures the Fe atom to form a chelate. This chelate compound is ionized, with one negatively charged electron.

## What is COMBI?

COMBI is a comprehensive micro nutrients agent containing highly concentrated Vitamin. The product, developed with the best chelate technology, provides for fast absorption and mobility on a plant. This is the effect of Vitamin which helps preventing and relieving stress during growth, while helping preventing deformations, and physiological disorders or disturbances of unknown causes, etc. Especially, this product is highly recommended to address the 'yellowing' of ginseng due to insufficiency in iron, poor sprouting, or poor flowering. This product is also highly helpful due to its effects and benefits, as it can provide the micro nutrients before deploying fertilizers, energy during the flowing phase, and catalytic action for nutrients.

## GUARANTEED ANALYSIS

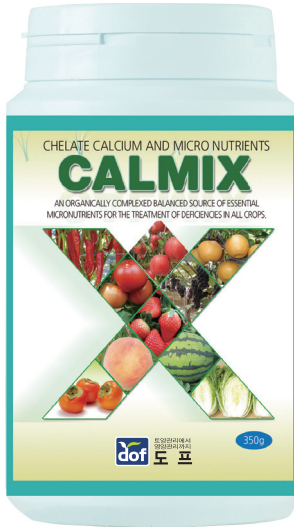
PRODUCT	CaO	MgO	Fe	B <sub>2</sub> O <sub>3</sub>	Mn	Zn	Cu	Mo	Vitamin
COMBI I	0	1,6	6	5	2,1	2,5	0,5	0,003	5
COMBI II	14	1	2,5	2,3	0,9	2,6	0,3	0	3
COMBI III	0	14	2,5	2,8	1,2	2	0,25	0,003	5

Chelate Agents : EDTA, CAC

## How to use

Target crops	Dilution Ratio and Dosage	Frequency
Strawberry, cucumber, tomato, pepper, Korean melon, watermelon, melon, pumpkins and other shrub fruits	1000~2000 times (1~1,5kg/ha)	Can be used over the entire development phases. Apply on leaf surfaces in seven-day intervals.
Apple, pear, grapes, mandarin orange, peach, or other tree fruits		
Cabbage, lettuce, cabbage, or other leaf vegetables		
Special crops such as ginseng, Platycodon grandiflorum or, Codonopsis lanceolata		
Any other crops		

# CALMIX



## What is CALMIX?

To prevent the fruit from decomposing, it is important to provide a sufficient amount of calcium and micro nutrients to the fruits, CALMIX is a product based on a mixture of calcium and micro nutrients in a specially designed process, helping the plants to absorb calcium in a higher speed to protect the fruits from pathogens, prevent decaying, and enhance performance in storage.

### Contents

Substance	Calcium	Magnesium	Sulfur	Iron	Boron
%	14.0	1.0	8.0	2.5	2.3
Substance	Manganese	Zinc	Copper	Vitamin	
%	0.9	2.6	0.3	3.0	

Chelate Agents: EDTA, CAC

### Characteristics and Effects

1. CALMIX is a mixture of chelated calcium and micro nutrients. Designed with a completely different chemical composition compared to existing calcium agents, the product serves as a calcium agent that slows decaying and enhances storage performances as well as a micro nutrients agent.
2. It is not easy to transport calcium and micro nutrients from the leaves to the fruits. CALMIX is designed to speed up this process through chelating.
3. The product enhances calcium absorption during the fruit set period to prevent softening or vulnerability against diseases during the fruit development phase. Also, it supports growth and leaf-color of new plants to prevent physiological disorders due to the shortage of micro nutrients.
4. Apply this product during the maturing phase to make the fruits more solid and sweeter.
5. The reach supply of magnesium and sulfur will help formation of chlorophyll and make the taste of the fruit richer.



### How to Use

Target Crops	Application Timing	Dosage (per every 20L solution)	Frequency
Apple, pear, grapes, peaches, persimmon and other tree fruits	Before flowering	1:1500 ~ 1:2000 (10 ~ 15g) 1:1000 ~ 1:1500 (15-20g)	Once
	Fruit set		Twice, seven days after the first dose
	Fruit development Maturing		Two to three times, in seven to ten-day intervals Twice, in seven to ten-day intervals
Strawberry, tomato, pepper, watermelon, and other shrub fruits	From fruit set on the first flower, over the entire development phase	1:1000 ~ 1:1500 (15-20g)	3 ~ 6 times, 7 to 10-day intervals
Cabbage	From four to six leaves, over the entire development phase	1:1000 ~ 1:1500 (15-20g)	2 to 3 times, 7 to 10-day intervals
Onion, garlic	After sprouting in spring	1:1000 ~ 1:1500 (15-20g)	Twice, 7 to 10-day intervals
	Bulb development phase		Twice, 7 to 10-day intervals
Ginseng	Foliation stage	1:1500 ~ 1:2000 (10 ~ 15g)	Twice, 7 to 10-day intervals
	Before and after the rainy season		Twice, 7 to 10-day intervals





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Special Nutrients



Salt remover for Soil and Hydroponic substrate bed

# 「 SALT DOWN I , II , III 」



## Characteristics and Effects

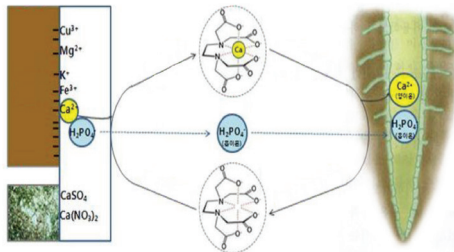
1. It is a product to solve the problem of salt accumulation, an inevitable problem when growing agricultural products in facility houses.
2. It saves labor and cost by using it during cultivation without rest or separate mechanical device.
3. This product separates the salts in which insoluble salts are formed by the combination of cations and anions in the soil or nutrient medium into cations and anions using various chelating agents, and then increases the activity of the roots by using a rooting accelerator. It is a product that allows plants to absorb and anions. (This product is pending a patent in Korea)
4. By mixing vitamin B3, it strengthens plant disease resistance and increases resistance to environmental stress.
5. If necessary, it can be used as a plant vitalizing agent by mixing minerals such as calcium and trace elements as well as seaweed extract, amino acids, and humic acids.

## Main Active Ingredients

SALT DOWN I (Only Soil) – Chelate agents 6.2%, CaO 14%, Plant extract 9%  
 SALT DOWN II (Soil & Hydroponic) – Chelate agents 6.2%, Polyaspartic Acid-k 3%, K-Phytate 1%, Vitamin B3 5%, Seed Extract 0.8%  
 SALT DOWN III (Only Soil) – Chelate agents 10%, Seaweed Extracts 5%, Humic&Fulvic acid 10%

## How to Use

Crops	APPLICATION TIME	DOSE
Cucumber, tomato, strawberry, pepper, eggplant, watermelon, melon, cabbage, lettuce, etc.	When growth is poor due to osmotic stress due to soil salt accumulation	Soil : 50L/1Ha/15,000L (Application 1~2 times per month)
Cucumber, tomato, paprika, strawberry, rose, etc.	When growth is unstable due to poor pH and EC control due to nutrient solution accumulation in the medium	Hydroponic : Diluted with 1% solution in the nutrient solution B tank and fertilized so that it is continuously supplied with the nutrient solution.



Treated Untreated

Comparison of Root Development of Cucumbers

After planting cucumbers in the salt-accumulated soil, total 3times at intervals of 10 days (Dosage : 1L/660m<sup>2</sup>), difference is clear

## Cautions

1. Never use it for any purpose other than agricultural use.
2. Adjust the amount of use or use cycle according to the salt concentration.
3. Since this product is divided into soil cultivation and nutrient solution cultivation, never use soil cultivation products for nutrient cultivation.
4. Use for irrigation and do not use for foliar fertilization.
5. When mixing, keeping the pH below 4 or above 9 reduces the effect by half, so it is recommended to keep the acidity between 5 and 7.

## Changes in soil EC concentration after using SALT-DOWN I

Category	Start	First Input	Second Input	Third Input	Degree of Change
SALT-DOWN	4.62	4.12	3.22	2.76	-1.86
Control	4.32	4.08	3.50	3.11	-1.22
Water	4.74	4.35	4.01	3.85	-0.89

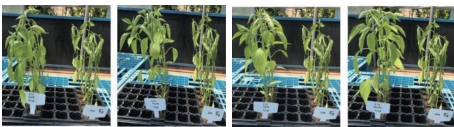


# 「 DSD-1 」

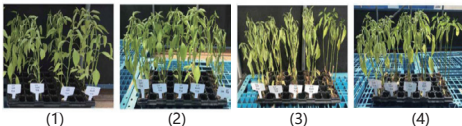


## GUARANTEED ANALYSIS

B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%



3 days after treatment with DSD-1 on pepper seedlings (treated on the left, untreated on the right)



Drought stress and changing growth characteristics for 10 days after DSD-1 treatment on pepper seedlings

(1) Before treatment (2) 24 hours after treatment (3) 7 days after treatment (4) 3 days after rewatering treatment in step (3)

Conclusion: Although water was not supplied to pepper seedlings for 7 days, the leaves fell, but as water was supplied again, growth began to normalize.

## Characteristics and Effects

1. The stress of crops due to lack of moisture is a big risk factor for loss of production. This product is designed to increase the resistance of plants to dryness and osmotic stress.
2. Plants have a system that inhibits the evaporation of moisture by increasing ABA hormones in the case of stress due to lack of moisture, blocking pores.
3. This product increases the viability of plants and contributes to productivity improvement by controlling the opening and closing of pores in drought conditions similar as ABA hormone.
4. ABA hormone inhibits plant growth or promotes aging, but the substance used in this product has an international patent and affects the opening and closing of pores without inhibiting growth or promoting aging. It is similar as the ABA hormone but has a completely different mechanism. This special material was patented in Korea.
5. This product is a microelement fertilizer and acts as a physiological regulator for crops.
6. Reduces stress on crops caused by water shortages, preventing yield reduction and quality degradation.
7. Contributing to water resource management and overcoming environmental problems by using a small amount of water.
8. Increases resistance of crops exposed to osmotic stress due to salt accumulation in the soil and prevents wilt.
9. This product can be used as a functional fertilizer by mixing various types of products such as minerals, seaweed extracts, amino acids, etc. as a raw material by using this product as a raw material.

## Main Active Ingredients

Trans-3-(3-Thienyl)acrylic acid, 2-[(E)-2-Phenylethenyl]benzoic acid

## How to Use

Crops	APPLICATION TIME	DOSE
Chinese cabbage, potato, onion, garlic, lettuce, ginger, carrot, grass, wheat, corn, rice, ginseng, etc.	When severe water shortages are expected due to drought or when water use needs to be reduced.	Dilute 10,000 times to fertilize foliar or drench
Strawberry, cucumber, tomato, pepper, pumpkin, eggplant, etc.	During facility cultivation, Osmotic stress occurs due to salt accumulation	Dilute 10,000 times to fertilize foliar or drench

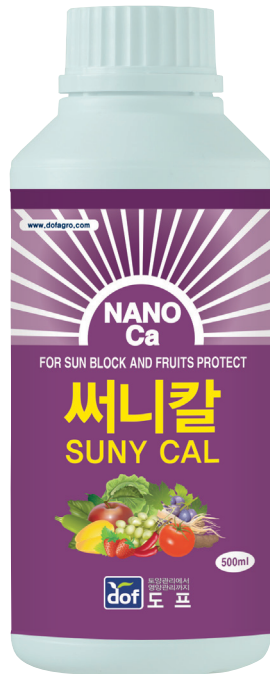
## Cautions

1. Never use it for any purpose other than agricultural use.
2. Observe the dilution factor and do not use it in excessive concentration
3. Be sure to wear protective gear as there is a risk of scattering when spraying.
4. Spray with the wind against your back, and if it gets on your skin or clothes, you must wash it off.



Anti-Sunburn Agent – Protecting fruits from intense ultraviolets

# 「 SUNNY CAL 」



## What is SUNNY CAL?

Intense ultraviolets are harmful not only to human beings but also to fruits. Direct contacts of ultraviolet stimulate transpiration of fruits due to increased temperature of surfaces, becoming vulnerable to bacteria and black/white surfaces. SUNNY CAL is an innovative plant protector which forms a Ca-layer on fruits' surfaces to prevent direct ultraviolets.

### Active Ingredients

Nano-Ca, spreading agent

### GUARANTEED ANALYSIS

CaO 33.0%  
B<sub>2</sub>O<sub>3</sub> 0.05%  
Mo 0.0005%

### Characteristics and Effects

1. Nano-calcium carbonate layers on fruits' surfaces to prevent intense ultraviolets during high-temperature
2. Adhesive Ca and T.E. in the layers are easily absorbed by plants to improve resistance, coloring, sugar content, and storage
3. Symptoms such as water cores, cracks, pithiness of fruits are reduced, and applicable for field crops with various functions
4. Compared to common calcium carbonate, 써니칼 is easy to use, and simply mixed with agrochemicals and fertilizers
5. Contained T.E. such as B, Mo reduce physiological deficiencies from lack of T.E. during fruit enlargement period

### How to Use

To prevent intense ultraviolets from the end of June, apply it at dilution 1:500~1,000 to fruits and leaves (Based on 500ml, 250L~500L diluted solution)

### Cautions

1. Common insecticides and fungicides can be mixed, however it is recommended to make some trials before mixing
2. Do not mix with the products which contain P and S
3. Applicable only in the fields, not for greenhouses
4. Application in early morning or late afternoon is effective
5. This can replace Ca-foliar spraying supplement. It is recommended not to apply excessive Ca to plants additionally

# GLOSTAR



## Characteristics and Effects

1. It is a product to improve the marketability of citrus fruits with antibacterial and anti-inflammatory properties made by mixing polyphenols and herbal oils with pine resin as the main ingredient.
2. Raw materials, including rosin, have antibacterial and anti-insect properties by themselves, and have the function of protecting plants by physically forming a film on the surface of plants.
3. This product is a product made using these characteristics, and it is treated on citrus fruits to form a film on the skin, preventing the growth of pathogen spores and penetration into the crop, reducing spoilage, and significantly increases the shelf life.
4. In addition, the coating film inhibits the evaporation of water, prevents citrus from dying easily, and maintains gloss to make it look shiny and fresh.
5. This product is an eco-friendly citrus protector using natural raw materials such as rosin and plant extracts, protecting crops from rapid climate change and pests and improving marketability. This product is pending a patent in Korea.
6. Freshness can be maintained for about 2 months when citrus fruits are stored at room temperature after harvest.
7. There is no need to extend the shelf life or separate preservation treatment for preservation of marketability.
8. It can be used during cultivation, and it is helpful in controlling citrus diseases and pests, and it prevents rapid moisture change by inhibiting transpiration and reduces heat and wilt.

## GUARANTEED ANALYSIS

B <sub>2</sub> O <sub>3</sub>	0.05%
Mo	0.0005%

## Active Ingredient

Rosin, Polyphenol, Herb Oil, Polyoxyethylene Sorbitan Monooleate

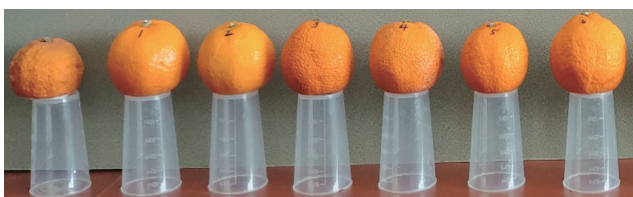
## How to Use

CROPS	APPLICATION TIME	DOSE
Citrus	Growth period after fruiting (Prevention of pests and control of transpiration, prevention of scratches caused by wind)	Dilute to 1000 times and fertilize foliar (Twice every 30 days)
	Just before harvest	Dilute 500~1000 times and spray mainly on fruits
	Final process when washing after harvest (If spraying is not possible just before harvest)	Dilute 1000 times and dry after immersion

## Cautions

1. Mixing with pesticides should not be mixed with pesticides during the harvest season, and it has the advantage of sustaining the effect of pesticides during the growing season, but care must be taken as the pesticide retention period is prolonged. Mixing with fertilizers is possible.
2. Never use it for any purpose other than agricultural use.
3. Be sure to wear protective gear as there is a risk of scattering when spraying. Spray with the wind against your back, and if it gets on your skin or clothes, you must wash it off.

GLODSTAR treatment and control comparison after harvesting citrus fruits (photo after 20 days of spraying)



No treatment from the left, 1000 times of GLOSTAR treatment, 500 times of GLOSTAR treatment, 4 types of control. As a result, the untreated area begins to wrinkle and decay due to evaporation of water on the surface of citrus fruits. GLOSTAR treatment tool maintains the luster of the citrus surface and maintains a state similar to that of harvest. It is also very good compared to other control products.



Natural Permeating Agent for Fast Penetration

# 「 SPEED-UP 」



SPEED-UP is a plant-oil-based, environmentally-friendly product that maximizes the effect of insecticides or nutrients, helping the main substances infiltrate into the plant faster.

## Characteristics and Effects

1. Based on plant-oil, the product is environmentally-friendly and safe to use.
2. When mixed with insecticide, the product reduces imbalance on the interface and helps the agent to infiltrate into the wax layer and chitin layers to accelerate the effects.
3. When mixed with fertilizers, the product creates a condition that is similar to the absorption mechanism, facilitating absorption of the nutrients by the crops.
4. When injected, the product facilitates melting of the potassium deposited in soil and changes the soil structure to enhance drainage and nutrient absorption.
5. Can be mixed with any insecticide or fertilizer.

## How to use

Target crops	Application Timing	Dosage	Frequency
Apple, pear, grapes, peach, and other tree fruits	Foliar application of insecticide or nutrients	1:5000 (4ml/20L)	Every seven days
Strawberry, tomato, watermelon, cucumber, and other shrub fruits			
Onion, garlic, and other bulbs and tubers			
Rice			
Ginseng			

## Main Active Ingredients

Polyoxyethylene isotridecyl ether,  
Polyalkylenoxide methyltrisiloxane

## Test on SPEED-UP' s Drying Rate



10 minutes later



1 hour later

Competitive Product : Water and humic acid solution at dilution rate 1:1000

Mixed with SPEED-UP : Water and humic acid solution at dilution rate 1:1000 + SPEED-UP 1:5000

The plot treated with SPEED-UP-mixed solution showed better drying rate without chemical residues, while the other plot only treated with competitive product showed less drying rate and chemical residues



đof >>>

Water Soluble  
Fertilizer



Water Soluble Fertilizer for Irrigation

# TOP PLANT SERIES

NO Chlorine, Sodium, Heavy metals YES Fast dissolution, EDTA Trace Elements



## TOP PLANT-123 10-20-30+2MgO+TE

High quality plant nutrient for fertigation during maturing

Purpose : Fruit size enhancer during fruit development phase/before coloring Late cultivation for fruit vegetables

Method : fertigation at 1kg/330m<sup>2</sup> (every 3-5days)



## TOP PLANT-111 19-19-19+1.5MgO+TE

High quality plant nutrient for fertigation to help growth balance

Purpose : Balanced growth and vitality control Stimulating crop growth and supplying sufficient nutrients

Method : fertigation at 1kg/330m<sup>2</sup> (every 3-5days)

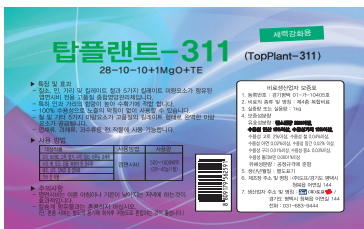


## TOP PLANT-216 12-6-36+1MgO+TE

High quality plant nutrient for fertigation to grow fruit

Purpose : Nutritional composition for growth of fruit and vegetable crops such as tomato and cucumber

Method : fertigation at 1kg/330m<sup>2</sup> (every 3-5days)

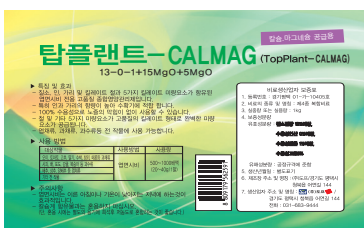


## TOP PLANT-311 28-10-10+1MgO+TE

High quality plant nutrient for fertigation to grow plants

Purpose : Nutrients used to promote plants growth and recover power through nitrogen supply

Method : fertigation at 1kg/330m<sup>2</sup> (every 3-5days)



## TOP PLANT-CALMAG 13-0-1+15CaO+5MgO

High quality plant nutrient for fertigation to health plants

Purpose : It is a nutrient used to improve the health of plants by supplying calcium and magnesium simultaneously,

Method : fertigation at 1kg/330m<sup>2</sup> (every 7-10days)



## TOP PLANT-NUTRI ALL 14-7-22+5CaO+2MgO+TE

High quality plant nutrient for fertigation to health plants

Purpose : Nutritional composition for growth of fruit and vegetable crops such as tomato and cucumber

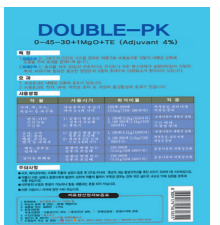
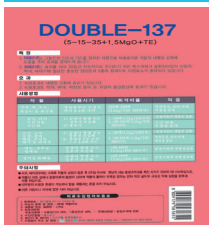
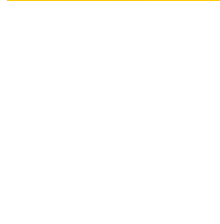
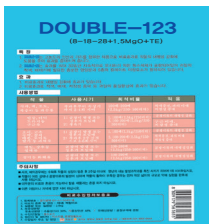
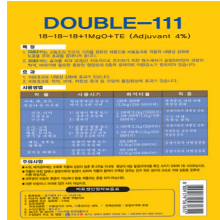
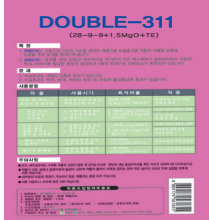
Method : fertigation at 1kg/330m<sup>2</sup> (every 3-5days)



Water Soluble Fertilizer for Foliar Spray

# DOUBLE SERIES

Fast Penetration Excellent Diffusion Improve Sticking



Are you still using general water-soluble fertilizers for foliar application? Absorption of nutrients from the roots and nutrients from the leaves are completely different, Dissolving in water and spraying it on the leaves does not mean that the same effect will be achieved.

Now try using real foliar fertilizer.

The Double Series, which contains water-soluble surfactants, is a different dimension.

Dissolve in water and spray on the leaves to compare with regular fertilizers. By reducing the surface tension, the fertilizer droplets are small, spread evenly, and do not run off the leaves.

It penetrates quickly, dries quickly and takes effect quickly.

## DOUBLE-F Big 5-15-35+1.5MgO+TE (Adjuvant 4%)

High quality plant nutrient for Foliar Spray during maturing

Purpose : Fruit size enhancer during fruit development phase/before coloring Late cultivation for fruit vegetables

Method : Application of foliar dilution to 0,2-0,5%

## DOUBLE-T Balance 19-19-19+1,5MgO+TE (Adjuvant 4%)

High quality plant nutrient for Foliar Spray to help growth balance

Purpose : Balanced growth and vitality control Stimulating crop growth and supplying sufficient nutrients

Method : Application of foliar dilution to 0,2-0,5%

## DOUBLE-N Plus 28-9-9+1,5MgO+TE (Adjuvant 4%)

Fertilizer for growth promotion with high nitrogen content

Purpose: To supply nutrients when the power is weak and the growth is poor, the leaves are yellow due to nitrogen deficiency symptoms and there is no power.

Method : Application of foliar dilution to 0,2-0,5%

## DOUBLE-K Plus 8-18-28+1,5MgO+TE (Adjuvant 4%)

Fertilizer used when the fruit is grown with 1:2:3 N, P2O5, K2O

Purpose: Mainly used for fruit hypertrophy, managing power and supplying nutrients to promote fruit hypertrophy

Method : Application of foliar dilution to 0,2-0,5%

## DOUBLE-PK 0-45-30+1,5MgO+TE (Adjuvant 4%)

High quality plant nutrient for Foliar Spray to supply high concentrations of phosphoric and potassium

Purpose : It is a nutrient used for adjusting the ratio with nitrogen nutrients, enlargement and coloring of fruit, rooting of roots and improvement of flowering and improvement of disease resistance.

Method : Application of foliar dilution to 0,2-0,5%



Blisters remain on both fruit and leaf surfaces when normal water-soluble fertilizers are applied to the leaves.

Apply evenly to the product when treated with a mixture of 111,500 times as much as the amount of the product, fruit and leaf surfaces









Natural Pest  
and Disease  
Controller



Eco-friendly crop protection agent for pest control

# JJB-GOLD



Organic farming Material certified by the Korean government(공시 1-5-069)



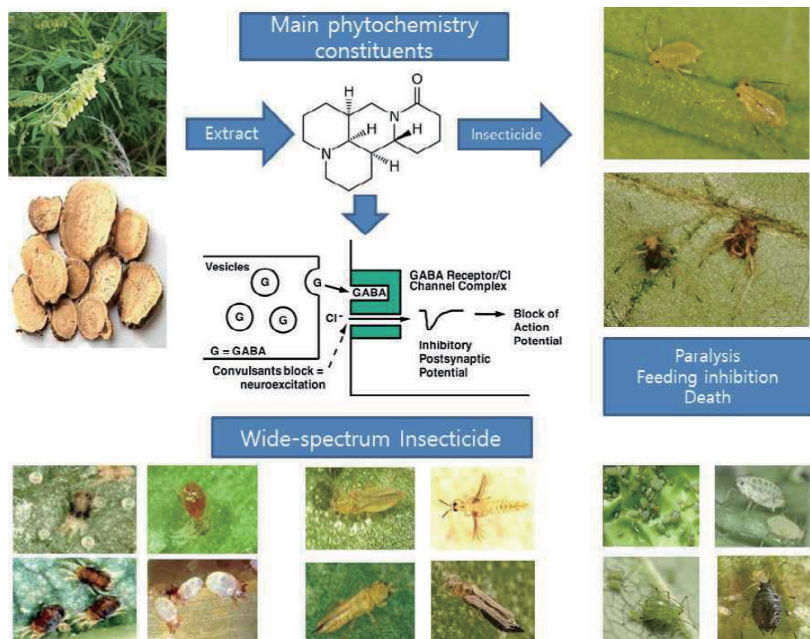
## Features and Effects

1. Manufactured with natural plants containing strong insecticides as the main raw material
2. Excellent safety using as it is extracted using alcohol, the main ingredient of alcohol
3. Purity of extract is high by reducing pressure at low temperature, and it shows high effect even with small amount
4. It is an insecticidal action as contact poison and feeding poison, and its medicinal effect is fast and broad.
5. It has low toxicity to livestock and fish, so it can be used until harvest.
6. It is chemically stable and is a liquid water-soluble product. It is easy to mix with other products such as pesticides and fertilizers.
7. Not only are there no restrictions on the available crops, but there are also various types of pests that can be used as a comprehensive pest control agent for organic farming.
8. Products that manage pests on behalf of chemical pesticides

## Main active ingredients

- Sophora Flavescens Root Extract → Matrine
- Pulsatilla Koreana Extract → Saponin
- Thyme Extract → Thymol
- Herb Extract
- Other surfactants and emulsifiers

## Mechanism of action



## Target crops and applied pests

Target crops	Target Pests	Application Timing	Dosage with 20L water	Area of use with 500ml JJB-GOLD	Interval and frequency of use
CITRUS	CITRUS MITE	Early occurrence (2~3 insects find per leaf)	20ml	2000m <sup>2</sup>	3 times with 7days interval
	YELLOW THRIPS	Early occurrence	20ml	2000m <sup>2</sup>	2 times with 7days interval
APPLE	MITE	Early occurrence (2~3 insects find per leaf)	20ml	2000m <sup>2</sup>	3 times with 7days interval
	APPLE CLEAR-WING MOTH	Early occurrence	20ml	2000m <sup>2</sup>	2 times with 10days interval
PEAR	Spotted MITE	Early occurrence (2~3 insects find per leaf)	20ml	2000m <sup>2</sup>	3 times with 7days interval
GRAPE	MITE	Early occurrence (2~3 insects find per leaf)	20ml	2000m <sup>2</sup>	3 times with 7days interval
	APHID	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval
STRAWBERRY	MITE	Early occurrence (2~3 insects find per leaf)	20ml	3000m <sup>2</sup>	3 times with 7days interval
CUCUMBER	THRIPS	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 7days interval
PEPPER	APHID	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval
	THRIPS	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval
WATER-MELON	MITE	Early occurrence (2~3 insects find per leaf)	20ml	3000m <sup>2</sup>	3 times with 7days interval
EGG PLANT	MITE	Early occurrence (2~3 insects find per leaf)	20ml	3000m <sup>2</sup>	3 times with 7days interval
CABBAGE	DIAMONDBACK MOTH	General occurrence	20ml	3000m <sup>2</sup>	2 times with 7days interval
RICE	RICE LEAFFOLDER	General occurrence	20ml	3000m <sup>2</sup>	2 times with 7days interval
	LEAF HOPPER	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval

## Application Method

- Most of the pests must be controlled at the beginning of their outbreak. Particularly mites have strong reproductive power, so it is difficult to control if the density is high, so if you see 2-3 per leaf, you should spray it immediately. When the density increases, increase the dilution factor up to 500 times and spray it thoroughly.
- Foliage treatment should be done so that the applied amount of the drug is diluted in water and buried sufficiently. (Spray about 200-300L of water per 1000m<sup>2</sup> of fruits and 150-200L of water per 1000m<sup>2</sup> of vegetables)
- Avoid continuous use more than 4 times as it may cause resistance when used continuously.
- The maximum amount used per time is 40ml of this product based on 20L of water.

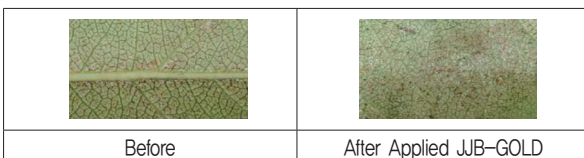
## CAUTION

- If the bees get touched, their activity will decrease, so you should avoid bees active time.
- It is eco-friendly, but should not be drunk or get into the skin or eyes.
- It is a natural plant extract that may cause some precipitation, so it must be shaken.
- It is more effective if you use penetration diffusion agent together. (Mixed use of dope speed up is recommended)

## TEST RESULT

DOF CROP CULTIVATION LABATORY 2008

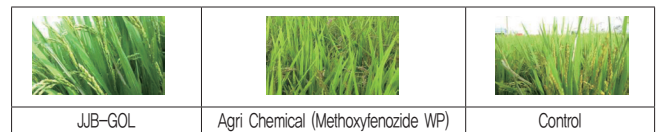
Target Pest	Dosage	Control Value (%) (Check 7day later of 2 applications)			
		Water Melon	Strawberry	Egg Plant	Cucumber
MITES	1000times Dilution 2 times spray	Water	Water	Water	Water



Korea Plants Environmental Research(KPER) 2011

Target Crop: Rice(Chucheong) Target Pest: RICE LEAFFOLDER

Product	Dosage	Damaged Area(%)				Control Value(%) (Check 14day later of 2 applications)
		Sector 1	Sector 2	Sector 3	Average	
JJB-GOLD	1000times Dilution 2 times spray	1,8	1,0	3,0	1,9	70,8
Agri Chemical (Methoxyfenozide WP)	2000times Dilution 2 times spray	1,0	0,5	0,3	0,6	90,8
Control	-	7,3	5,5	6,8	6,5	-





Eco-friendly crop protection agent for pest control

# 「SSR-I (I, II)」

DOF New product for pesticide-free cultivation



1:1000, two applications, seven days after application



Untreated

## Features and Effects

1. Plant extracts are generally known to have anti-repellent properties which safer than chemical synthetic pesticides, but it is expensive and low effective, so they are not easy to use in conventional agriculture.
2. This product is designed to overcome these shortcomings. In other words, it was manufactured to serve as a substitute for chemical synthetic pesticides by increasing pest control and lower prices while maintaining safety.
3. Effects of Synergy of this products are created by combining plant extracts with various organic compounds that are less harmful to the human body. This principle is a patent pending in Korea and is a very unique method.
4. When this product comes into contact with or feeds on pests, it paralyzes the central nerves of the pests or destroys the digestive system, thereby acting as an insecticide and protecting crops.
5. The resistance to pests of this product is significantly lower than that of general chemical synthetic pesticides.
6. Wide selection of crops and pests applied.

## Main active ingredients

Sophora Flavescens Root Extract → Matrine  
 Pulsatilla Koreana Extract → Saponin  
 Eucalyptol Extract  
 Thyme Extract → Thymol  
 Benzoic acid  
 Salicylic acid  
 Benzyl Cinnamate

## Target crops and applied pests// Application Method

Product	Target pests	Target Crops	Application Timing	Dosage
SSR-I (I)	MITES	Citrus, apple, pear, grape, fruit trees	Early occurrence (2~3 insects find per leaf)	2.5L/1Ha/2000L
		strawberry, pepper, cucumber, Fruit vegetables	Early occurrence (2~3 insects find per leaf)	1.5L/1Ha/1000L
	THRIPS	strawberry, pepper	Early occurrence	1.5L/1Ha/1000L
SSR-I (II)	APHIDS	Grape, Cucumber, Strawberry, Melons, Pepper	Early occurrence	2L/1Ha/2000L
	MOTH	Cabbage, Rice, Spring Onion, Pepper	Early occurrence	1.5L/1Ha/1000L
	PLANT HOPPERS	Rice	Early occurrence	1.5L/1Ha/1000L
	TRUE BUGS	Rice	Early occurrence	2L/1Ha/2000L

## CAUTION

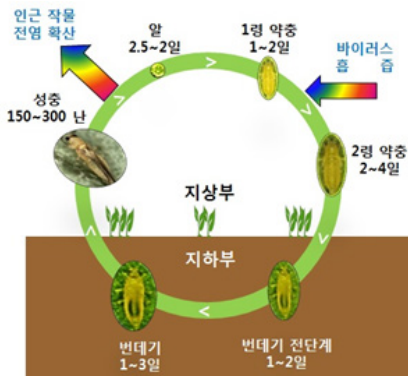
- It can be mixed with pesticides or fertilizers, must proceed after testing on a small area.
- Never use it for any purpose other than agricultural use.
- Be sure to wear protective gear as there is a risk of scattering when spraying.
- Spray with the wind against your back, and if it gets on your skin or clothes, you must wash it off.
- Be sure to shake and mix evenly before using the product.
- The concentration and area of spraying should be adjusted according to the density of the disease.
- It is effective to spray in the afternoon at sunset, avoiding the morning or when the ultraviolet rays are strong.
- After diluting in water, use as soon as possible. If left unattended for a long time, stir before use.
- It can be sprayed with drones or unmanned aerial vehicles.
- When storing, avoid direct sunlight and store in a cool, shady place. (However, do not store below 5°C)
- This product is DOF patented product, so you can claim damages if you make any imitation or similar products.



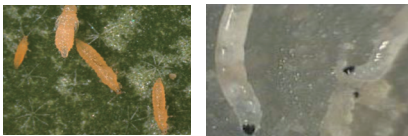
Eco-friendly crop protection agent for pest control

# 「 KILL-KING 」

Soil fertilization



Life cycles of Thrips



Let's start pest management from a comprehensive perspective Different pests have different life cycles.

- Pests which on the ground – Aphids, Mites, Pod worms, Moths, White Fly, etc.
- Pests which on soil and on the ground – Thrips, Root small flies, Leaf miners, etc.
- Pests which lives only in the soil – Root mite, root-knot nematode

In order to control pests such as thrips and root small flies, it is most important to break the life cycle both in the underground and on the ground.

## Features and Effects

1. KILL-KING is a granular product made using natural plant extracts and microorganisms. It is an eco-friendly crop protection agent that prevents soil cultivation of pests by soiling the life history of soil pests through the soil.
2. During the life cycle of pests, it acts on the development process of eggs, larvae, and pupa that survive in the soil, reducing the viability and preventing growth.
3. Plant extracts and microorganisms control pests and activate the roots of crops to prevent crop growth and root failure during planting.
4. It helps to improve the immunity of soil and crops and prevents obstacles that remain in series.

## Main active ingredients

- Sophora Flavescens Root Extract → Matrine
- Neem oil
- Saponin
- Bacillus

## Application Method

Target Pests	Target Crops	Application Timing	Dosage	Application Method
Thrips Root small Fly, Leaf miner	Cucumber, Pepper, Strawberry, Pumpkin, Egg plant, Watermelon, melon, Spring onion, Chives, Lettuce, Onion, Garlic, Cabbage, etc	Before or After trans planting	3KG/600m <sup>2</sup>	Plot spread Or Mix with Soil

## Caution

1. This formulation is intended for soil spraying, so do not dilute it with water.
2. Wear protective equipment when spraying and wash thoroughly with soapy water after spraying.
3. Do not mix with acidic or alkaline agricultural materials.
4. Supply water after soil treatment to settle and activate microorganisms.

## Preventing pest damage during KILL-KING treatment

Treatment



No treatment



Untreated unit : Pest damage occurs from around 20 days after planting. There is no pest damage in the KILL-KING treatment unit.





CROP PROTECTION AGENT FOR DISEASES

# 「MOLD OUT」



Organic farming Material certified  
by the Korean government  
(공시 1-4-024)



Treatment 1000 times twice after the occurrence of pepper anthrax,



No treatment after red pepper anthrax

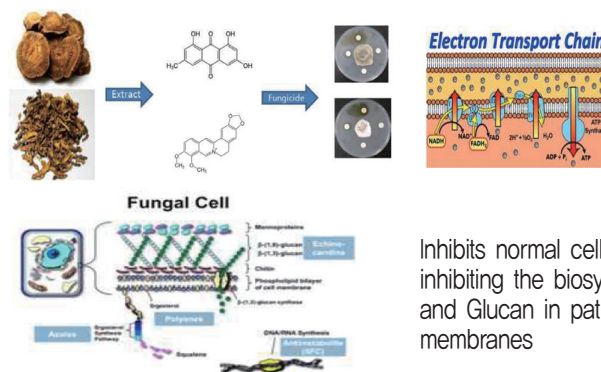
## Features and Effects

1. Manufactured using natural plants with strong antibacterial ingredients as main ingredients.
2. Excellent safety as it is extracted using alcohol, the main ingredient of alcohol.
3. The purity of the extract is high by reducing the pressure at low temperature, and the effect is high even in small amounts.
4. By inhibiting spore germination and formation and inhibiting the growth of mycelium, both preventive and therapeutic effects are exhibited.
5. Less risk of emergence of new resistant bacteria as it does not induce resistance during continuous use.
6. It has very low toxicity to livestock and fish, so it can be used until harvest.
7. It is chemically stable and is a liquid water-soluble product. It is easy to mix with other products such as pesticides and fertilizers.
8. Available crops are not restricted and can be used as a comprehensive pest control agent for organic farming as it can be used against various pathogens.

## Main active ingredients

Rheum Palmatum Root Extract →emodin, physcion and quinone kinds  
Coptis Chinensis Root Extract →Berberin, Coptisine  
Thyme Extract →Thymol  
Herb Extract  
Other surfactants and emulsifiers

## Mechanism of action



## CAUTION

1. Eco-friendly, but should not be drunk or get into the skin or eyes.
2. As natural plant extracts may cause sedimentation, be sure to shake.
3. It is more effective if you use penetration diffusion agent together.  
(Mixed DOF Speed Up is recommended)
4. Avoid spraying when direct sunlight is strong during high temperatures and spray in the late afternoon. (Due to the nature of the product, there may be a decrease in the efficacy of the drug due to photolysis, so spraying in the late afternoon is effective)

### Target crops and applied pests // Application Method

Target crops	Target Pests	Application Timing	Dosage with 20L water	Area of use with 500ml MOLD OUT	Interval and frequency of use
CITRUS	GREY MOLD	Early occurrence	20ml	2000m <sup>2</sup>	3 times with 10days interval
	ANTHRAX	Early occurrence	20ml	2000m <sup>2</sup>	2 times with 10days interval
	SPOT ANTHRACNOSE	Early occurrence	20ml	2000m <sup>2</sup>	3 times with 15days interval
APPLE	ANTHRAX	Early occurrence	20ml	2000m <sup>2</sup>	2 times with 10days interval
GRAPE	GREY MOLD	Early occurrence	20ml	3000m <sup>2</sup>	3 times with 10days interval
PERSIMMON	CIRCULAR LEAF SPOT	Early occurrence	20ml	2000m <sup>2</sup>	2 times with 10days interval
STRAWBERRY	ANTHRAX	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval
	POWDERY MILDEW	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval
CUCUMBER	DOWNY MILDEW	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval
	POWDERY MILDEW	Early occurrence	20ml	3000m <sup>2</sup>	3 times with 10days interval
PEPPER	ANTHRAX	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval
WATER MELON	BLACK ROT	Early occurrence	20ml	3000m <sup>2</sup>	3 times with 10days interval
TOMATO	POWDERY MILDEW	Early occurrence	20ml	3000m <sup>2</sup>	3 times with 10days interval
GARLIC	BROWN ROT	Early occurrence	20ml	3000m <sup>2</sup>	3 times with 10days interval
ONION	BROWN ROT	Early occurrence	20ml	3000m <sup>2</sup>	3 times with 10days interval
RICE	RICE BLASTER	Early occurrence	20ml	3000m <sup>2</sup>	2 times with 10days interval

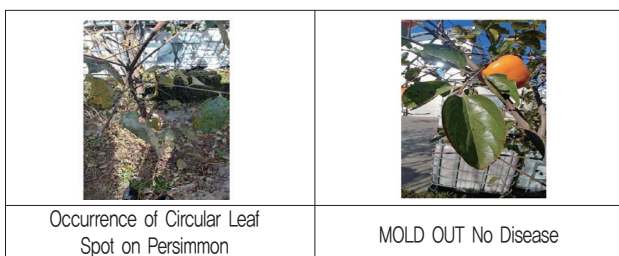
1. Most diseases must be controlled at the beginning of the outbreak, and prevention-oriented spraying is effective before the germs are visible. If the density is high, dilute to 500 times the concentration and drench it.
2. Foliage treatment should be done so that the applied amount of the drug is diluted in water and buried sufficiently.  
(Spray about 200–300L of water per 1000m<sup>2</sup> of fruits and 150–200L of water per 1000m<sup>2</sup> of vegetables)  
Since this product does not have a penetrating effect, it must be in direct contact with germs, so it must be spread evenly.
3. Spray scleroderma, vine blight, wilt disease, etc. so that the chemical is injected into the area that is in direct contact with the soil.
4. The maximum amount used per time is 40ml of this product based on 20L of water.

### TEST RESULT

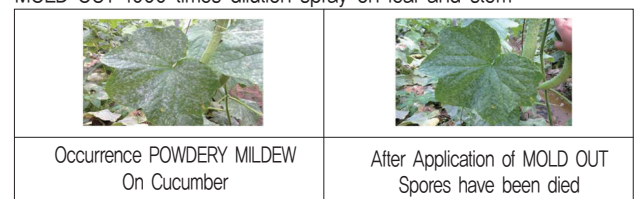
In a comparative test of antimicrobial activity against various pathogens, MOLD OUT shows strong antibacterial activity.



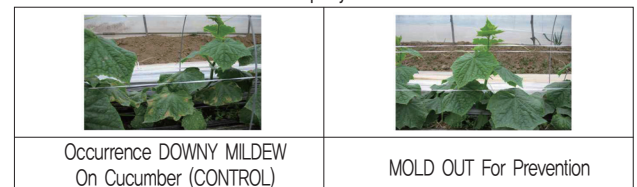
### DOF CROP CULTIVATION LABATORY 2018



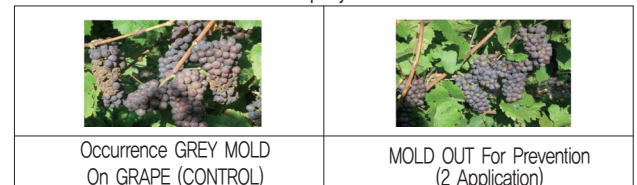
Cucumber, Powdery Mildew  
MOLD OUT 1000 times dilution spray on leaf and stem



Cucumber, Downy Mildew  
MOLD OUT 1000 times dilution spray on leaf and stem



Grape, Grey Mold  
MOLD OUT 1000 times dilution spray on leaf and stem





Eco-friendly crop protection agent for controlling harmful bacteria

# 「SSR-ALL & SSR-SOIL」

DOF new product for pesticide-free cultivation



## Features and Effects

1. It is a product made by synthesizing organic acids with plant extracts and inorganic compounds with antibacterial properties.
2. Conventional products used to replace chemically synthesized pesticides are mostly products made with separate plant extracts or inorganic compounds such as copper, but this product is made by synthesizing plant extracts and inorganic compounds as chelates to have more powerful sterilization power, lost. This principle is pending a patent in Korea.
3. This product has direct sterilization by inhibiting the respiration of pathogens and inhibiting the enzyme action.
4. bacteria and fungi make a film is formed to prevent the penetration of foreign substances.  
This product contains an appropriate penetration and diffusion agent to easily penetrate this film.
5. Application of these products can be used in various fields and pests because it has a wide range of pathogen and less resistance to pathogenic bacteria.
6. This product has sufficient effect to replace chemical synthetic pesticides.

## Main active ingredients

Copper hydroxide,  
Zinc hydroxide  
Rheum Palmatum Root Extract →emodin, physcion and quinone kinds  
Coptis Chinensis Root Extract →Berberin, Coptisine  
Chelate agent  
Other Surfactants, Emulsifiers and Dispersing agent

## Target crops and applied pests // Application Method

PRODUCT	Target Disease	Target Crops	Application Timing	Dosage
SSR-ALL	GREY MOLD	Citrus, Grape, Peach , etc	Early Occurrence spray on leaf and stem	2.5L/1Ha/2000L
		Cucumber, Strawberry, Pepper, Tomato, Ginseng, etc	Early Occurrence spray on leaf and stem	1.5L/1Ha/1000L
	ANTHRAX	Apple, Grape, etc	Early Occurrence spray on leaf and stem	2.5L/1Ha/2000L
		Pepper, Water melon, Strawberry, Ginseng, etc	Early Occurrence spray on leaf and stem	1.5L/1Ha/1000L
	DOWNY MILDEW	Cucumber, Onion, etc	Early Occurrence spray on leaf and stem	1.5L/1Ha/1000L
	CIRCULAR LEAF SPOT	Persimmon	Early Occurrence spray on leaf and stem	2L/1Ha/2000L
RICE BLASTER	Rice	Early Occurrence spray on leaf and stem	1.5L/1Ha/1000L	
SSR-SOIL	FUSARIUM	Water melon, Melon, Pepper, Tomato, Lettuce, Radish, etc	Early Occurrence Irrigation	10L/1Ha
	BROWN ROT	Garlic, Onion, Spring onion	Early Occurrence Irrigation	5L/1Ha
	VERTICILLIUM WILT	Tomato, Pepper	Early Occurrence Irrigation	10L/1Ha
	Chlorosis	Water melon	Early Occurrence Irrigation	7.5L/1Ha

## Caution

- It can be mixed with pesticides or fertilizers, must proceed after testing on a small area.
- Never use it for any purpose other than agricultural use.
- Be sure to wear protective gear as there is a risk of scattering when spraying.
- Spray with the wind against your back, and if it gets on your skin or clothes, you must wash it off.
- Be sure to shake and mix evenly before using the product.
- The concentration and area of spraying should be adjusted according to the density of the disease.
- It is effective to spray in the afternoon at sunset, avoiding the morning or when the ultraviolet rays are strong.
- After diluting in water, use as soon as possible. If left unattended for a long time, stir before use.
- It can be sprayed with drones or unmanned aerial vehicles.
- When storing, avoid direct sunlight and store in a cool, shady place. (However, do not store below 5°C)
- This product is DOF patented product, so you can claim damages if you make any imitation or similar products.



# 「 PHOSPO 」



### Main active ingredients

Phosphorous acid 24%

Salicylic acid 3,2%

## What is PHOSPO?

PHOSPO's main ingredient is phosphorous acid, which is effective in preventing and curing infectious diseases. The product also contains copper for disinfection properties since its launching in 1999, making it the origin of all phosphorous acid agents in the market.

### GUARANTEED ANALYSIS

Contents	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	B <sub>2</sub> O <sub>3</sub>	Zn	Cu	Mn	Mo
(%)	0	15	18	0,04	0,004	0,004	0,0005	0,0005

### Characteristics and Effects

1. A specially designed phosphorous acid agent to prevent the phosphoric acid from getting insoluble. Due to the increased absorption properties, it is possible to be relocated between the surface part and the underground part.
2. The product enhances the immune system of the plants to reduce the occurrence of diseases, while enhancing the resistance against diseases in leavers and roots.
3. Protects the plants from various harmful substances in soil.
4. Facilitates the growth of roots, without causing overgrowth due to lack of nitrogen.
5. An environmentally-friendly product that can be used safely.

### How to Use

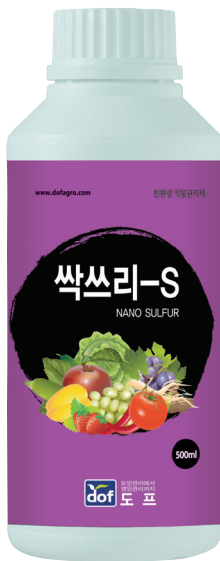
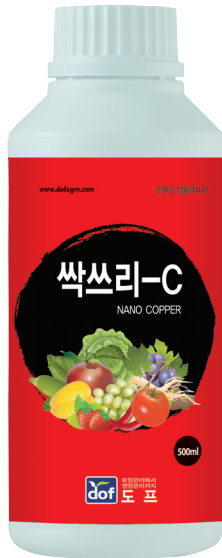
Target crops	Application methods	Dilution and Dosage	Frequency
Pepper, tomato, cucumber, and watermelon, onion, garlic, ginseng, and potato, etc.	Foliar application	40ml/20L (1:500)	Every five to seven days, 2-3 times
	Fertigation	1L/330 - 660 m <sup>2</sup>	Every five to seven days, 2-3 times



Treated

Treated Untreated

# 「 SSR-CS 」



Germicidal power of copper and sulfur has been proven for a long time and has been widely used worldwide. However, damage due to them frequently occurred and there have been serious side effects such as a lot of weakness and even corrosion of pipes and vinyl.

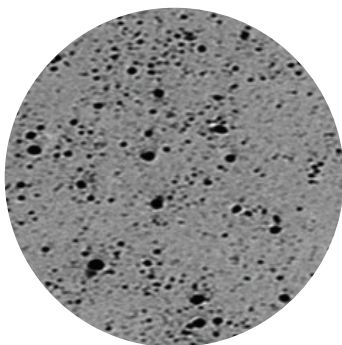
▶Can we use copper and sulfur safely and effectively?

The answer is to make nanoparticles (nano). If we make germicidal copper and sulfur ultra-fine nano-sized, the effect is enhanced and the side effects are eliminated.

Characteristics and advantages of SSR-C (Nano Copper) and SSR-S (Nano Sulfur)

1. It is about 2–3 nanometers in size which is smaller than bacteria or fungus, thus maximizing sterilizing power. In addition, copper and sulfur which are known to be incompatible with each other, It can be used safely and can increase the disinfection effect.
2. It induces the photocatalyst to the plant and increases the photosynthesis. This is because of the sterilization process using conventional pesticides, there is a feeling that the crops are stressed and the leaves become hardened. After SSR-C (nano copper) and SSR-S (nano sulfur) treatment, diseases are cured and crops begin to breathe life.
3. It is effective for specific diseases or specific crops and it can be applied in a wide range and comprehensive manner and enabling rapid control of abnormal symptoms without diagnosing the exact pathogenesis. (Apply to bacterial, fungal diseases, etc.)
4. It is very safe for humans and animals and there is no worry of residual pesticides. It can be harvested right after controlling.

SSR-C electronic microscope photography



2–3 nano size on the average



# 「 SSR-CS 」



## How to use (Mixing with Permeating Agent is recommended)

Target Crops	Target Disease	Foliar Application			Drenching Application
		Ciffarelli sprayer	Fog	Power Spray	
Cucumber, pumpkin, oriental melon, watermelon and melon	White powder, downy mildew, etc.	Dilute SSR-C 100 ml and SSR-S 100ml with water 20L / Application to 6,6a (2 times of spray at intervals of 3 ~ 5 days)	Dilute SSR-C 150 ml and SSR-S 150ml with water 20L / application to 9,9a (2 times of spray at intervals of 3 ~ 5 days)	Dilute SSR-C 500 ml and SSR-S 500ml with water 500L / application to 26,4a, (2 times of spray at intervals of 3 ~ 5 days)	Dilute SSR-C 500 ml and SSR-S 500ml / application to 6,6a (2 times of spray at intervals of 3 ~ 5 days)
Strawberry	White powder, anthracite, gray mold				
Tomato, red pepper, and egg plant	Leaf mold, gray mold, white powder, anthracnose, plague, verticillium wilt				
Onion, garlic, and green onion	Leaf blight, downy mildew, rust, and fungal disease				
Chives	Fungal disease				
Peach	Bacterial shot hole				
Omija	White powder				
Odi	Brown rot				
Apple	Anthracnose, russetting				
Flowers such as rose and hydrangea	White powder, Fungi				
Perilla leaf and others	Germ and fungi				
Kiwi	Canker				

### Cautions

- When applying to greenhouse crops, start fertilization early in the morning or late afternoon.
- Hold bees in the beehive and then start fertilization.

## Cases of applied crops

### ▼ Cucumber white powdery



### ▼ Pumpkin white powdery



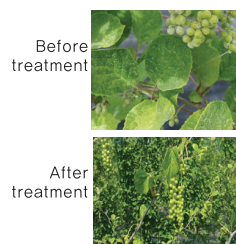
### ▼ Chives mold



### ▼ Garlic leaf blight



### ▼ Schisandra



### ▼ Oriental melon





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*Dream of Farmer*

*Dream of Fertilizer*

*Dream of Future*



Dream of Farmer



**DOF Ltd.**

144, Eoyeon-gil, Cheongbuk-eup, Pyeongtaek-si, Gyeonggi-do, Republic of Korea

Tel +82-31-683-2444(Rep.) Fax +82-31-683-5444(Rep.)

www.dofagro.com E-mail: dof ltd.intl@gmail.com