



JUNGWAN B-F

P R O D U C T S

C A T A L O G U E



**Johnider V2,
We recommend an innovative
plant virus control solution
to sustain plant life.**



JOHNIDER V2

Johnider V2 is the representative brand of JungWan B-F.

CEO Greeting

JungWan Welcomes you,

When you encounter any problem due to virus, etc while growing the crops,

JungWan B-F is also the fastest way to resolve such problem.

We believe that all the people concerned in the world visit our website every day and are obtaining lots of information and they will also continue to do so.

JungWan B-F concentrates on the virus causing the biggest problem

in cultivating the crops and plans to provide as much information

as possible if they are things to help farmers to resolve the virus.

If you need any help to resolve the virus, please feel free to click www.agrovirus.com.

We would be very happy if we can give you

any help you to resolve your problems.

Thank you.



Foliar application



Seed treatment



Soil drench

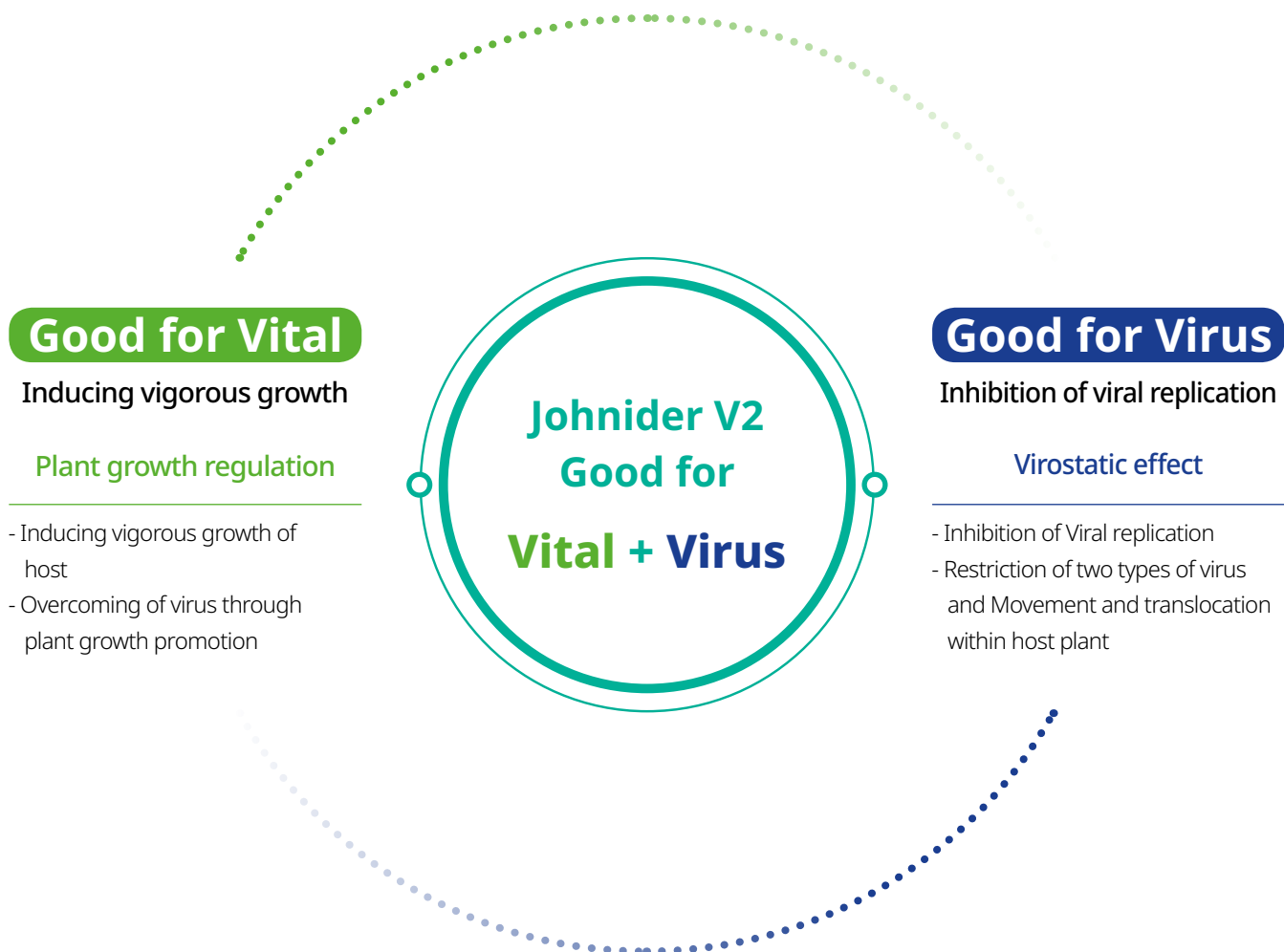
FA
SEI
SOD

What's "Johnider"

"Johnider" means "Good" as their own dialect Andong, Gyeongbuk province of South Korea

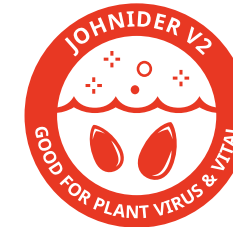
Johnider V2 is initial of Vital and Virus and refers to simultaneous application on 2 places
-one place for growth and development of plant and the other place to prevent plant virus
and to stop the spread of the same, and also means providing double effect by two times upgrade.

Therefore, Johnider V2 means "Good for Vital and Virus".



Johnider V2 Products

Good for plant Vital and plant Virus



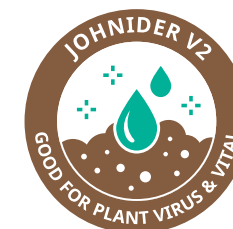
Johnider V2 SEI

Seed treatment



Johnider V2 FA

Foliar Application



Johnider V2 SOD

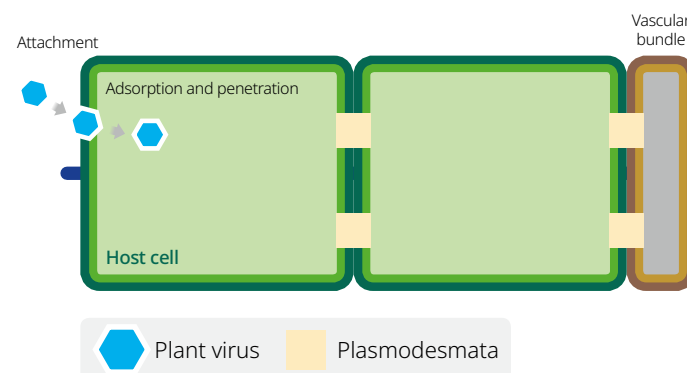
Soil drench

Plant Virus Life Cycle and Infection Process

To understand our products, consumers need to comprehend the life cycle of a common plant virus. The figure below is a very simple schematic of the process in which a plant virus penetrates into a plant body and infects the entire plant on a cellular level.

1

Plant virus enters a plant cell via various vectors

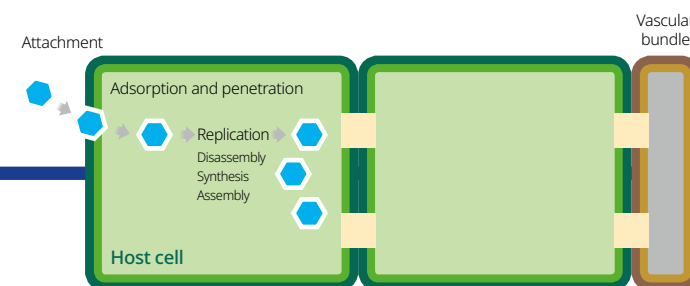


Plant virus enters the cell through a wound site induced either mechanically or by an insect vector.

Attachment-Adsorption-Penetration.

2

Viral replication in host cell

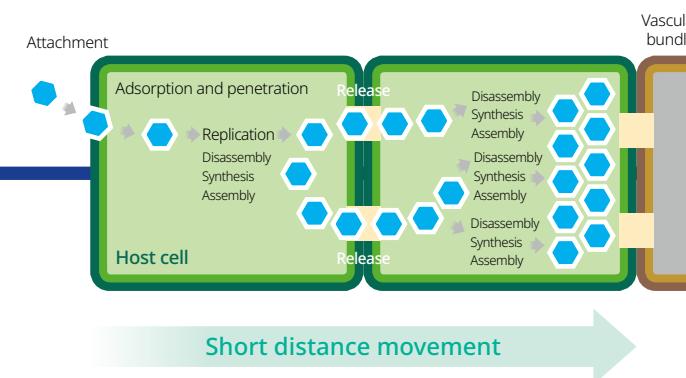


The virus uses the host replication system.

Disassembly-Synthesis-Assembly.

3

Short distance movement
(cell to cell movement)



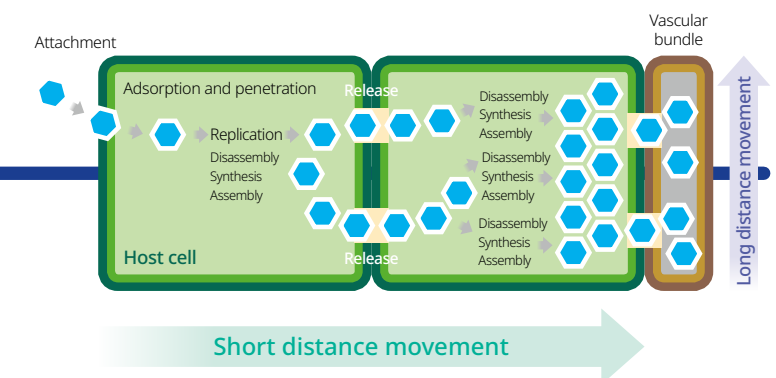
Local infection.

Cell to cell movement via plasmodesmata.

Plant virus particles spread to non-infected adjacent cells by cell to cell (local) movement until reaching the vascular system of the plant.

4

Long distance movement



Systemic infection.

During systemic infections, plant viruses move long distances through the plant vascular system.

Johnider V2 FA

Foliar application



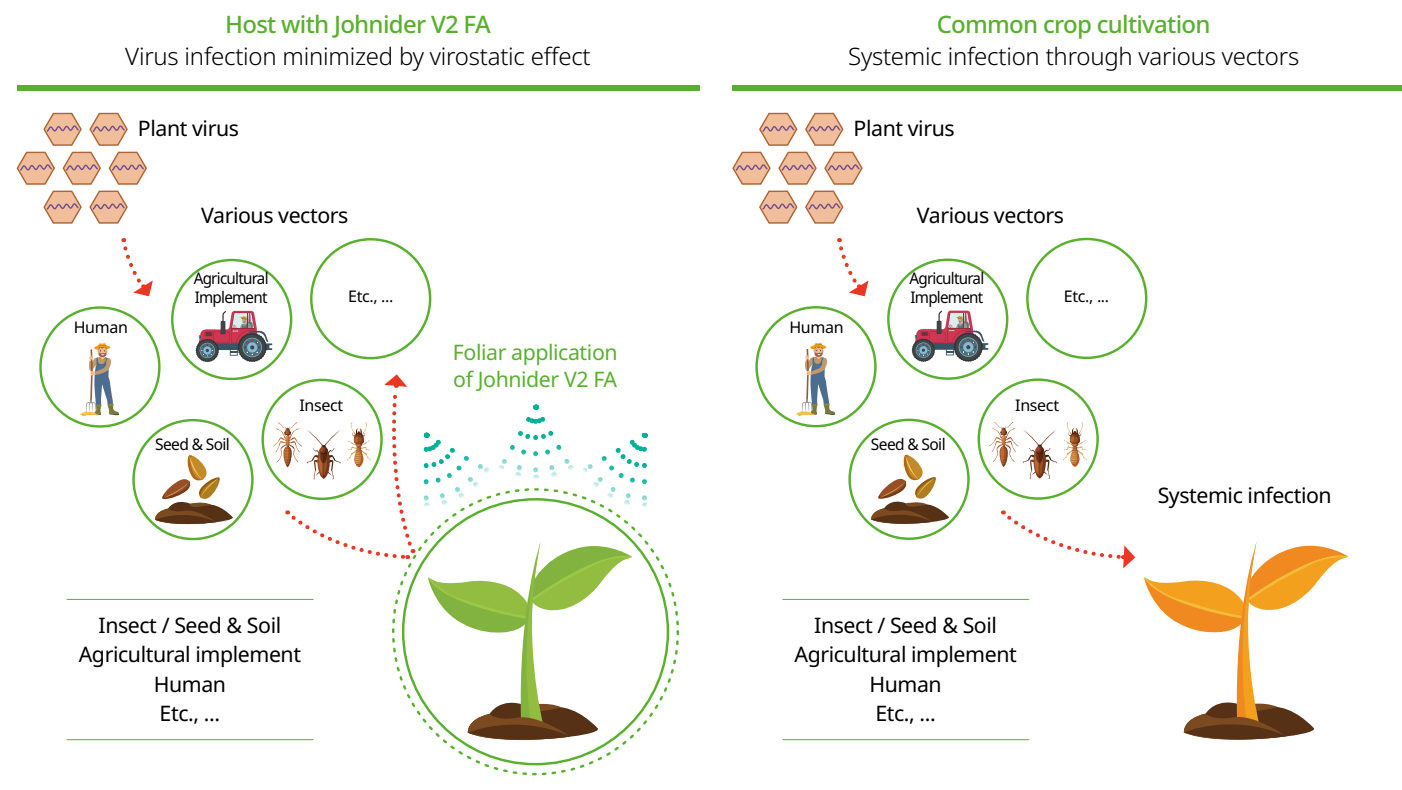
- Johnider V2 FA is intended for foliar application.
- Johnider V2 FA provides effective results of inhibiting the most of plant virus symptoms and preventing the spread of the plant virus.

I. Product characteristics

I Plant virus inhibition

- Johnider V2 FA inhibits virus activity and dissemination when crops grown in various plantations are infected with vector, by various mediators, and spread. We call this mechanism of action "virostatic".

※ Virostatic : Able to inhibit viral replication, which can be resumed when the virostatic agent is removed.



I Induction of plant growth promotsion

- Johnider V2 FA induces normal expression of original characteristics that crops cannot express.
- Johnider V2 FA is a high-functioning activating agent that regulates the overall balance of crops. The product provides tremendous functional effect on rooting, flowering, ripening, and sugar content by strengthening crops' self-defense function against harmful substances.

※ This product does not contain growth hormone.

II. Effects of Johnider V2 FA on the inhibition of plant virus

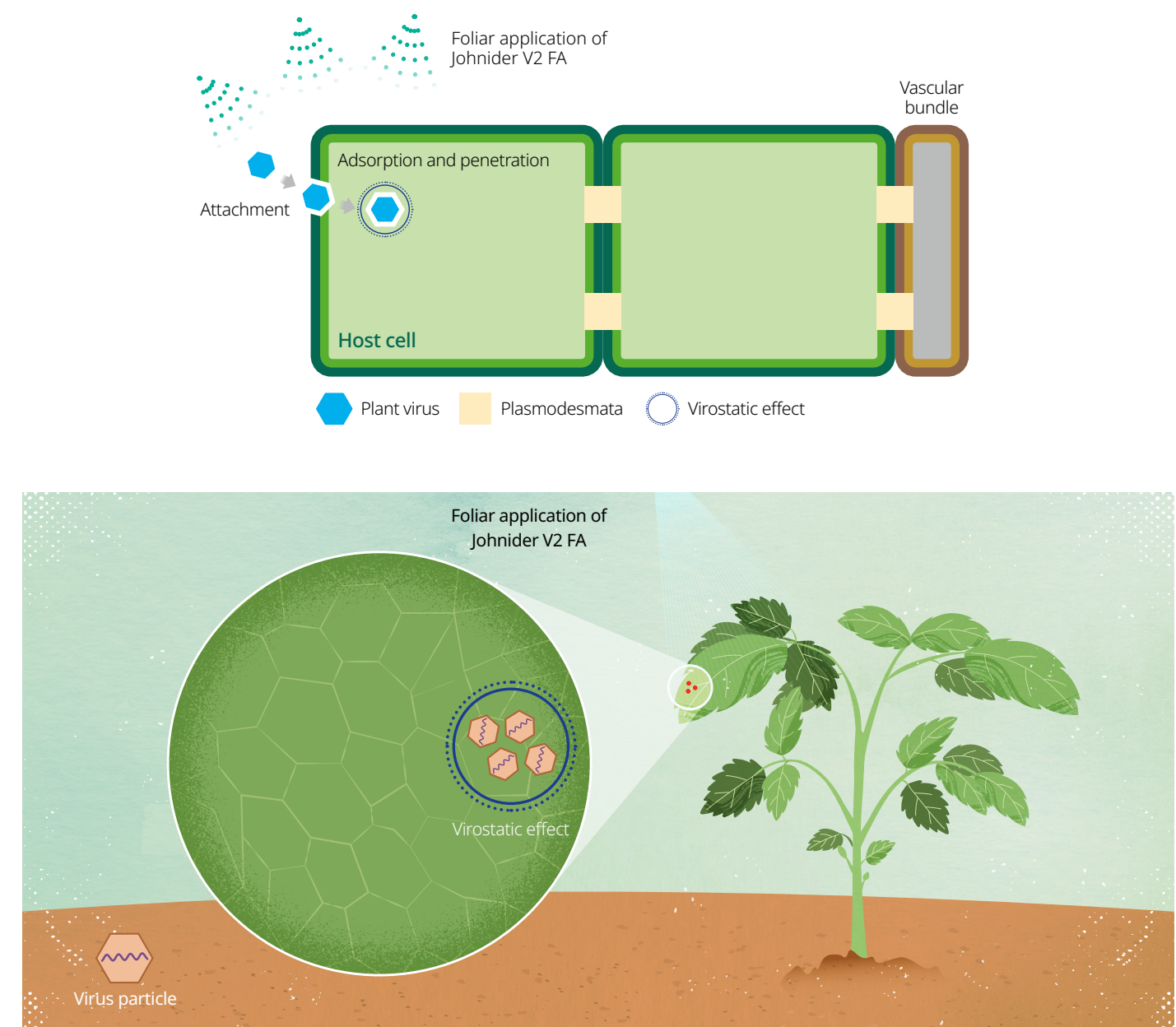
- Johnider V2 FA is a product inhibition the movement and infection of virus to the healthy plant by temporarily stopping the activity of virus infecting the cell in the plant body (virostatic effect) and then by inhibiting short and long distance movement.
- In other words, the product is intended to get the virus not to spread from contagions plant to healthy plant.
- Additionally, Johnider V2 counteracts against the plant virus by strengthening the plant, and gets the crops to overcome the virus by accelerating the growth of crops.

I When a plant is infected with a virus and local infection develop

When sprayed with Johnider V2 FA

Virostatic effect causes immediate cessation of viral activity, preventing local infections from developing into systemic infection.

With Johnider V2 FA : Local infection



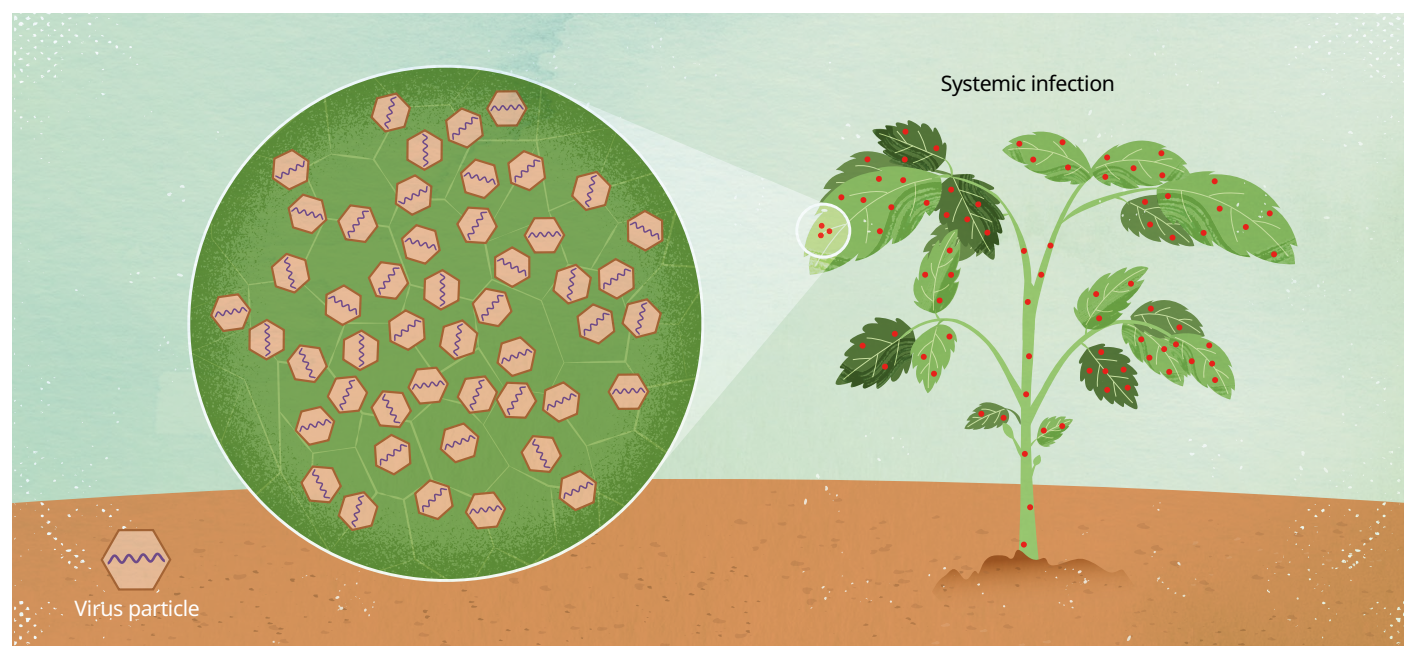
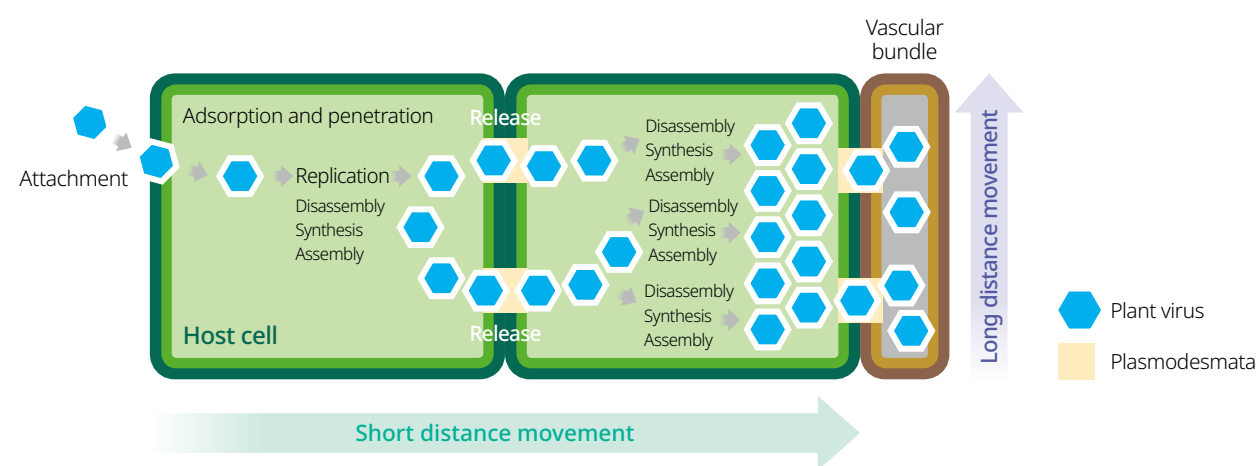
Johnider V2 FA Foliar application

I When a plant is infected with a virus and local infection develop

General cases

Plants infected with host cells go through several stages and spread to create systemic infection.

Without Johnider V2 FA (Host with no difense) : Systemic infection



III. Johnider V2 FA applicable crops

The product is applicable to all crops, but when using on crops other than Cucurbitaceae crops and Solanaceae crops, be sure to contact our headquarters or the place of purchase for advice.

IV. Use period for Johnider V2 FA

Johnider V2 FA is recommended for use 5-7 days after transplanting crops germinated from seeds in the cultivated field. If the product is used after incidence of a virus, the effort and cost to contain the virus will be more than doubled.

V. The best time to use Johnider V2 FA

The best time to apply the product is in the early morning when (leaf) stoma opens on a clear day.



• Usage precaution for Johnider V2 FA

- When using the product in a small amount, the container must shake well before use and store in a cool, dark place out of reach of children. Ensure the lid is securely closed.
- If you use a small amount out of container, you may see different results with each application.
- Use the opened product as soon as possible as the content may solidify.

• The interval time for using Johnider V2 FA

- When using Johnider V2 FA, the period of temporary inhibition of virus activity varies depending on the condition of crops, but it is about 3-10 days.
 - Therefore, Johnider V2 FA must be reapplied at least 5-7 days after.
 - As this process is repeated, the virus spreads at a slower rate, resulting in vigorous plant growth that better resists viral infection.
 - For viruses infected by insect vectors, the vectors must be controlled.
- When using a combined application of pesticide and Johnider V2 FA together, make sure that there is no abnormality in the crops after pre-testing.

• How to use Johnider V2 FA

1) Application / Ha : Our product is not intended on ha basis, but based on the amount of water for foliar application per ha.

2) Method of application

Our products are intended to dilute in water at a ratio of 1:500 and then intended for foliar application.

Only a lightly dredge of product-diluted water on the crop may not be helpful.

You should dredge enough product-diluted water on the crop to gain the fast and great effect (High volume low pressure).

So, determine the amount of water required for foliar spray to the crop.

(For your information, we apply foliar application with about 500 liters of water in case of cucumber cultivated in Greenhouse with area of 3,300m2.)

- If you use the product to prevent the infection with virus : Please apply foliar application every 7 days after transplanting.
- If you use the product to prevent spread when already was infected with virus : After foliar application three time every 3~4 days, apply additional foliar application every 7 days watching the condition of crop.

• HVLP (High Volume Low Pressure)

As for High Volume Low Pressure, we need to interpret it means we use lots of amount of water using low pressure at the time of foliar application.

Using small amount of water at high pressure causes damage to the crop or fruit, while using small amount of water decreases the effect of our product.

Therefore, please use it adjusting the pressure of pump when using the sprayer being used now.

Johnider V2 SEI

Seed treatment



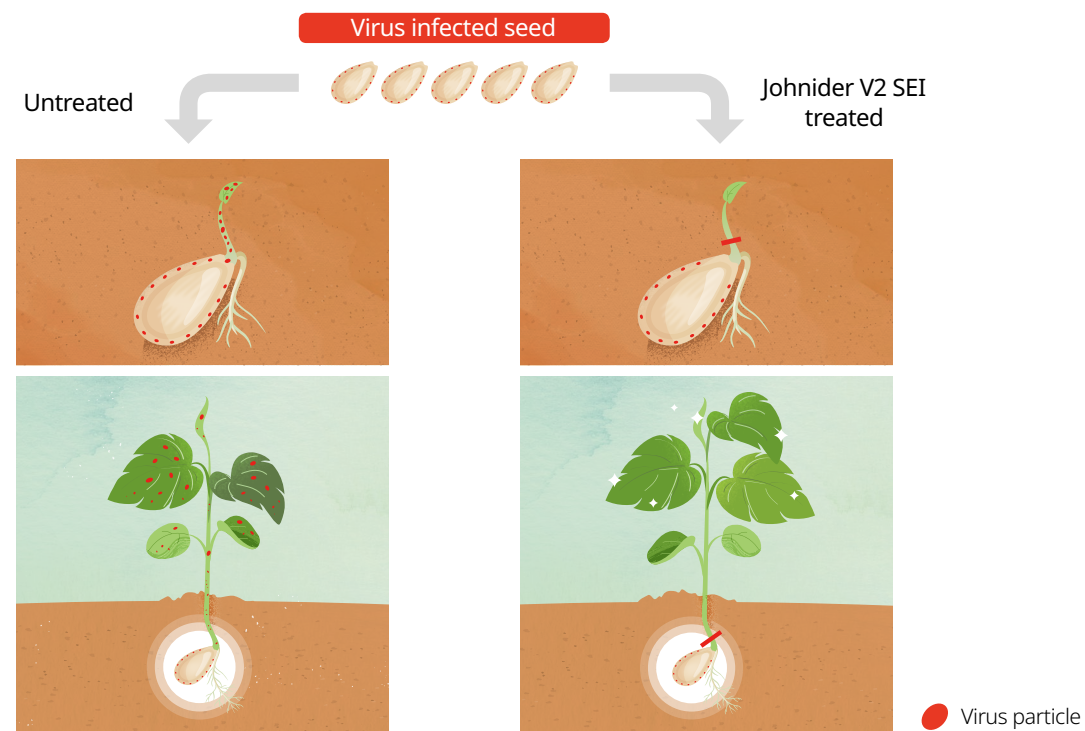
- Johnider V2 SEI dramatically decreases the rate of seed transmission, which is the primary infection source of virus transmission.
- Johnider V2 SEI is a product used for immersing seeds.
- The method that can be free of phytopathogenic virus is to do seed treatment.
Because the seed treatment is a great help to prevent the secondary virus infection, it is one of processes essential for the cultivation.
If this process goes by, you will be able to meet healthier seedling.

I . Intended use of Johnider V2 SEI

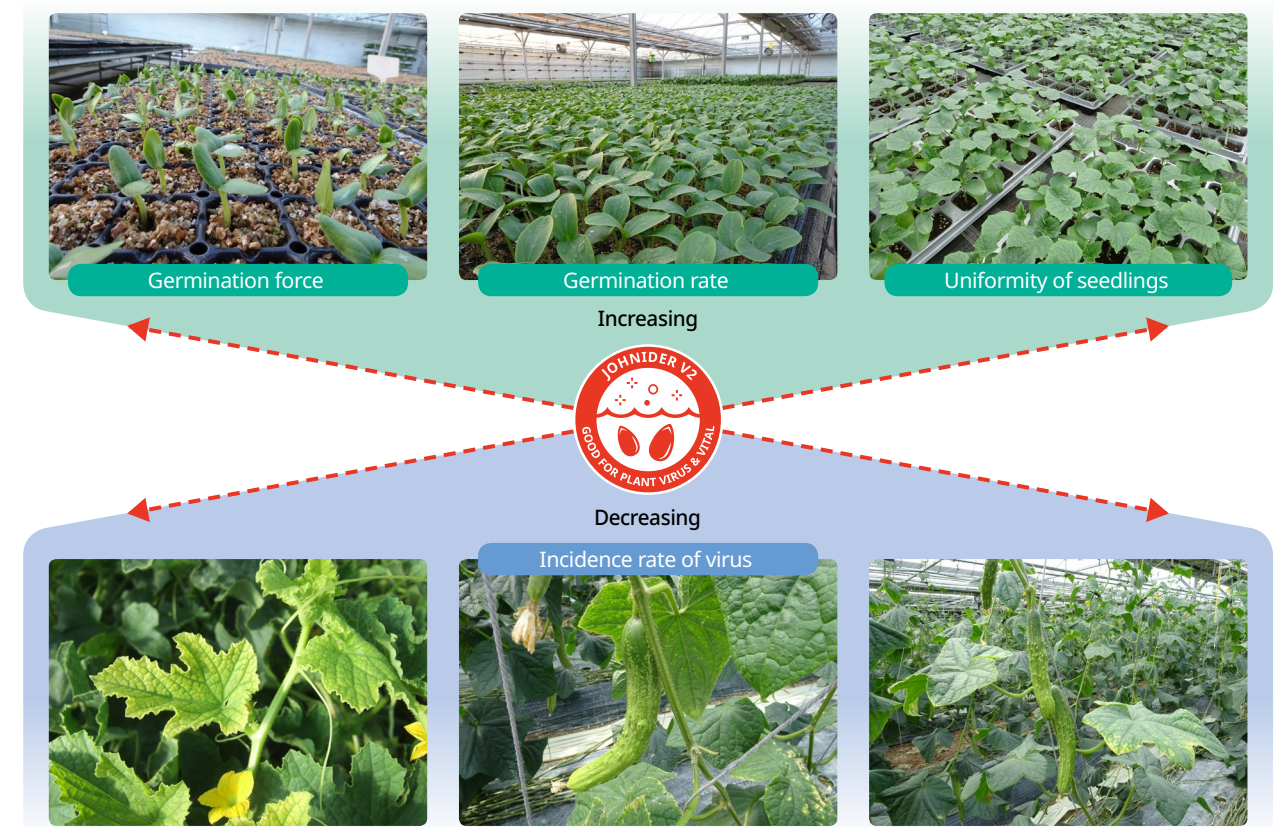
- Johnider V2 SEI is made to inhibit the incidence of seed-borne virus that occurs in seeds.
In particular, the product targets the Tobamovirus genus (e.g. CGMMV, ToBRFV etc.) that occurs in Cucurbitaceae crops and Solanaceae crops.
- It is a product that can significantly inhibit the incidence of seed-borne virus by immersion only once and sowing under the given conditions.
- This is not a vaccine, but functions like a vaccine.

II. Key features and benefits

- Johnider V2 SEI inhibits expression of seed-borne viruses infecting seeds of Cucurbitaceae crops and Solanaceae crops from germination.



- In general, if seeds are contaminated with a seed-borne virus, seedlings are infected at the time of germination. When immersed in Johnider V2 SEI, normal, seedlings not infectious by viruses are produced upon germination.
- When seedlings germinated from seeds immersed in Johnider V2 SEI are cultivated, the incidence rate of seed-borne virus is lowered and the germination force, germination rate, and uniformity of seedlings are improved.



I Additional effect of Johnider V2 SEI

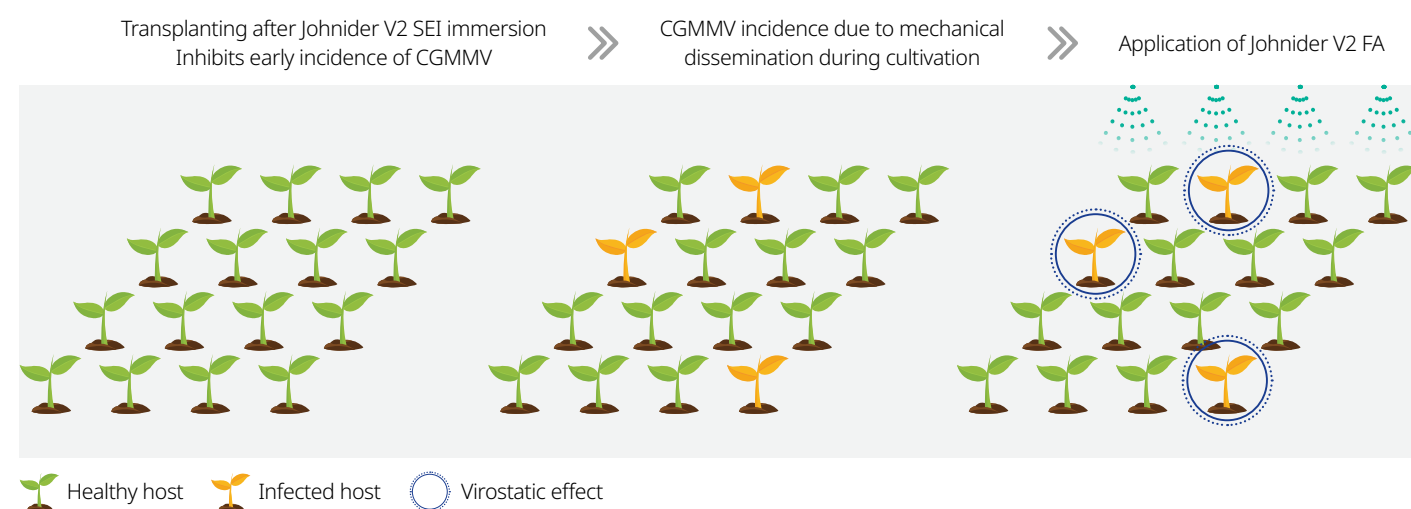
- When Cucurbitaceae crops and seeds are immersed in Johnider V2 SEI, seed-borne viruses can be prevented, and crop growth can be improved crops for better results than before.
- In particular, watermelon and melon may satisfy consumers thanks to their high sugar content.

- Johnider V2 FA is intended to be used in combination with Johnider V2 SEI.

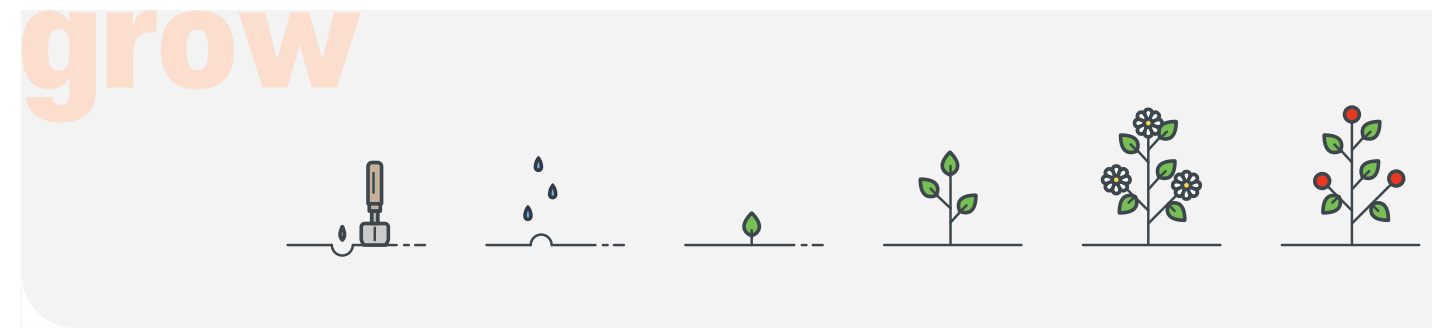
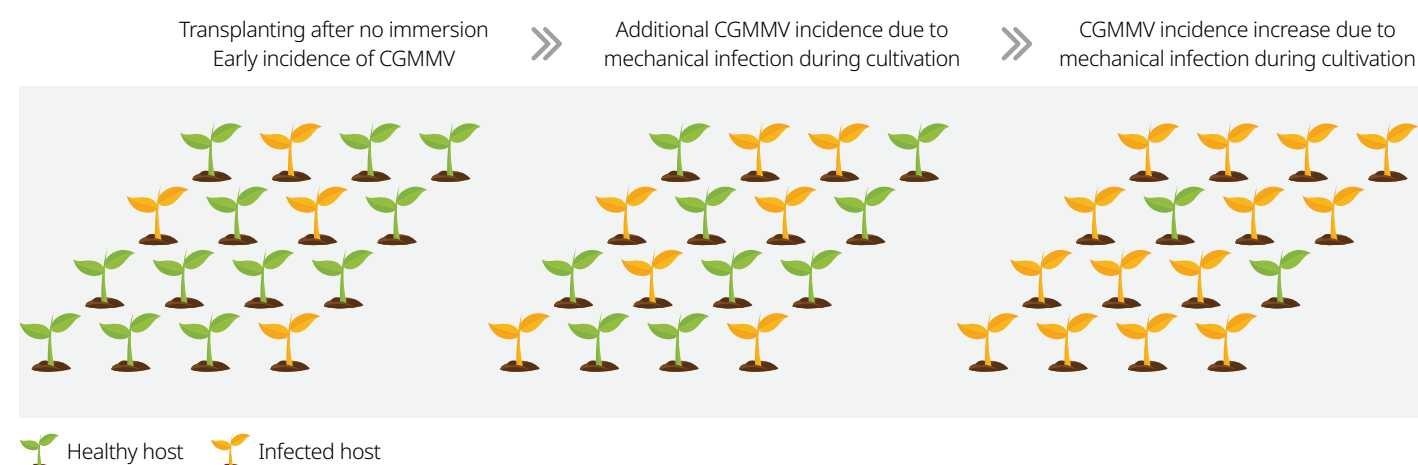
I Example of Cucurbitaceae crops CGMMV Management

- Johnider V2 SEI can dramatically decrease the rate of viral seed transmission.
- However, when seeds of Cucurbitaceae that have been completely immersed in Johnider V2 SEI develop CGMMV, due to mechanical infection during growth in the cultivated field, Johnider V2 FA must be applied to inhibit dissemination.
- When Johnider V2 FA is applied to crops germinated from seeds immersed in Johnider V2 SEI, we highly recommend that you use Johnider V2 FA as crops have characteristics of becoming more resistance to viruses.
- Crops germinated from seeds immersed in Johnider V2 SEI have very high rooting ability, so their power during cultivation is much stronger.

CGMMV incidence pattern when using Johnider V2 SEI and Johnider V2 FA for CGMMV management



CGMMV incidence in case Johnider V2 SEI and Johnider V2 FA are not used



III. How to use Johnider V2 SEI

- If the seeds are immersed in Johnider V2 SEI for seed treatment, there will be very little seed-borne virus including CGMMV infection during cultivation.

• Recommended usage

- When seeds are immersed in Johnider V2 SEI, they are very resistant to CGMMV infection during cultivation.
- However, for greater resistance, use together after immersion of rootstock.
- By grafting rootstock immersed in Johnider V2 SEI, you can achieve superior preventive effects than growing with scion only.
- Johnider V2 SEI is a groundbreaking product that delivers excellent results at a low price.

1. Capacity : 100ml/1(one)Bottle

2. How to use Johnider V2 SEI

- Dilute 100ml of the product in 1,000ml of water to make 1,100ml.
- After soaking the seeds in the diluted 1,100ml, take them out exactly 90 minutes later. (The immersion time is 90 minutes, so keep the correct immersion time.)
- The seeds separated from water should be dried by light wind at room temperature. When they are completely dried, sow and germinate them.

Seeds of cucurbitaceae crops

Immersion for 90min

Sowing and germination



I Caution

- Never wash the soaked seeds in water or immerse them in water diluted with pesticides.
- This is for only once immersion, so do not immerse more than twice.
- To prevent the incidence of seed-borne virus, be sure to immerse and graft the rootstock before transplanting.
- When immersing the seeds, the seeds must never come out of the water.
Please put the seeds in only enough to submerge at least 2cm below the surface of the water.

Johnider V2 SOD

Soil drench



Johnider V2 SOD is intended for soil drench.

Johnider V2 SOD is used to prevent the soil-borne diseases from coming in the plant body as much as possible by forming the infection barrier at the rhizosphere and inhibiting the activities of soli-borne diseases.

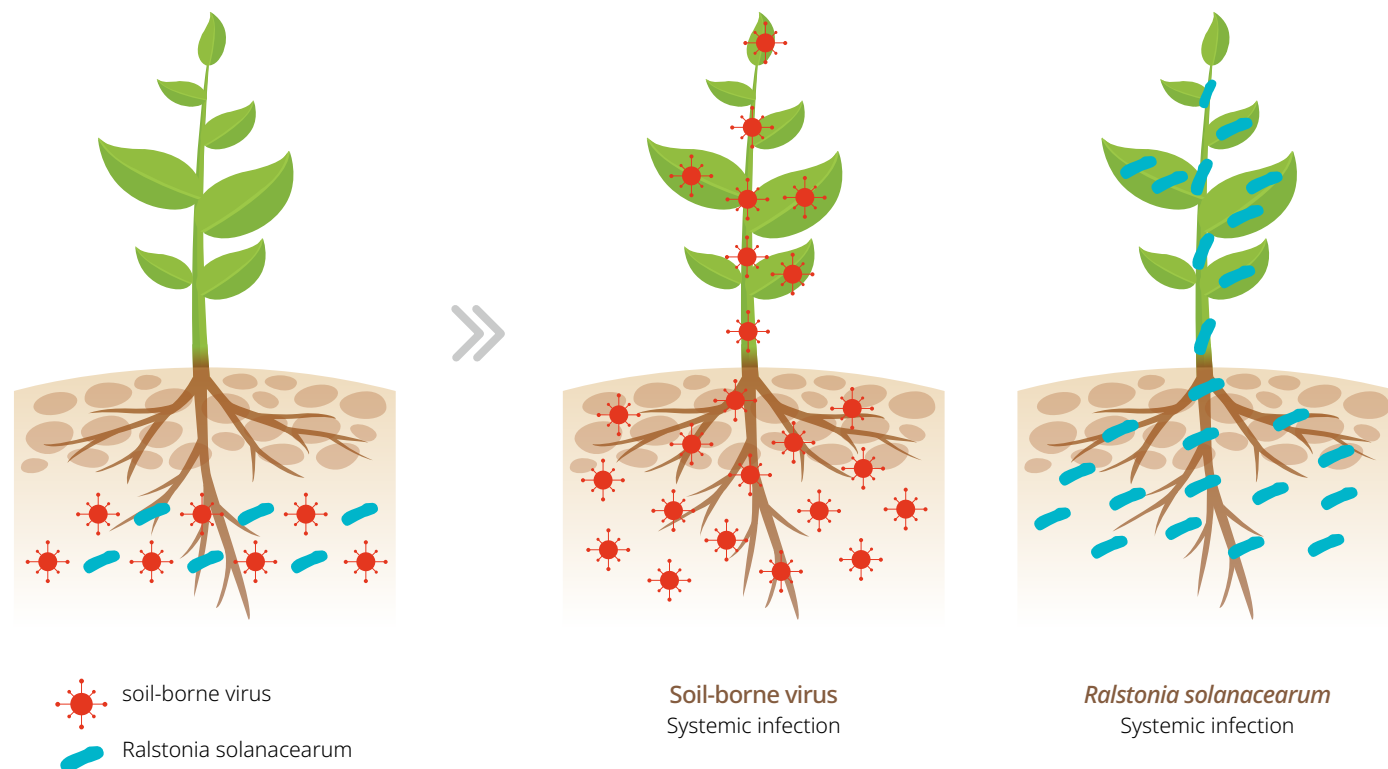
This product is used to prevent the infection with soli-borne diseases from the soil after transplanting, or to get faster speed of growth of the crop than the spreading speed of soli-borne diseases if infected with soli-borne diseases during growth.

※ Soil-borne diseases : Meaning of plant virus and Bacterial wilt by *Ralstonia solanacearum*

I . Intended use of Johnider V2 SOD

- Johnider V2 SOD is exclusively for soil drench and is manufactured to inhibit the activity of the soil-borne virus and bacterial wilt by *Ralstonia solanacearum*.

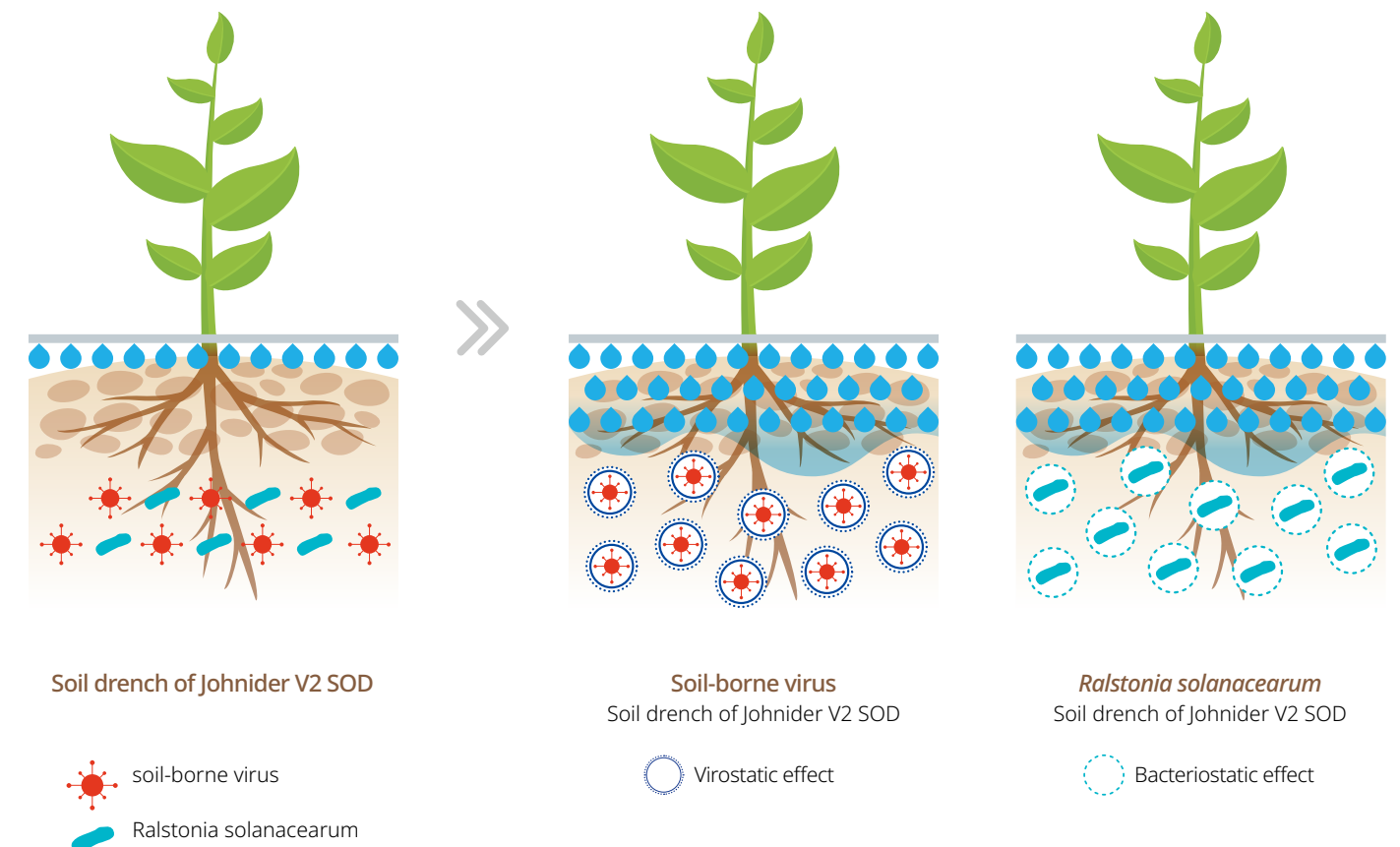
Johnider V2 SOD untreated



II. Johnider V2 SOD action process

- When the main component of Johnider V2 SOD is absorbed into the soil, it inactivates viruses and bacteria (bacterial wilt by *Ralstonia solanacearum*) existing in the soil to prevent plant infection.
- In order to inactivate soil-borne virus and bacteria (bacterial wilt by *Ralstonia solanacearum*), the main components contained in Johnider V2 SOD must play a perfect static role in the soil.
- Johnider V2 SOD can be utilized as it solves the water repellency problem that tends to occur in soil cultivation, improves the physical properties of soil, and induces uniform penetration of liquid (water) and crop protection agents.
- Using this principle, it is possible to statically stop soil-borne virus and bacteria (bacterial wilt by *Ralstonia solanacearum*) in the root zone by allowing fertilizers or rop protection agents transported in water to penetrate simultaneously without wastage.

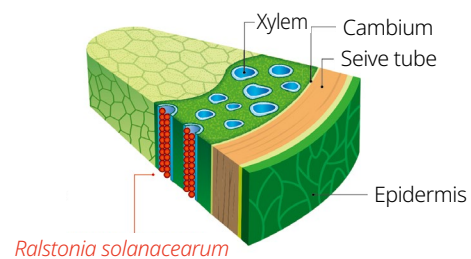
Johnider V2 SOD treated



Johnider V2 SOD Soil drench**III. Effect of Johnider V2 SOD**

- Johnider V2 SOD is more effective at inhibiting activity of bacterial wilt by *Ralstonia solanacearum* than inactivating soil-borne viruses.
- In addition to the function of the the Johnider V2 SOD component that statically controls soil-borne disease, bacterial wilt by *Ralstonia solanacearum*, water and nutrients can be absorbed into a vascular bundle damaged by bacterial wilt, which can completely change the growth environment of crops.
- This is because it increases the biostimulating activity of rhizosphere, the absorption function of roots is increased, and intake of nutrients necessary for growth is promoted.

Johnider V2 SOD untreated



Untreated test plot

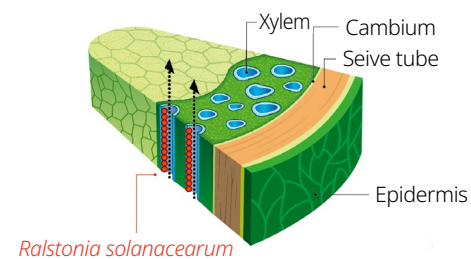


Typical withering caused by Bacterial wilt

Tomato stem longitudinal section

Browning vessel caused by *Ralstonia solanacearum*

Johnider V2 SOD treated



Johnider V2 SOD treated test plot



Normal growth obtained with no withering

Tomato stem longitudinal section

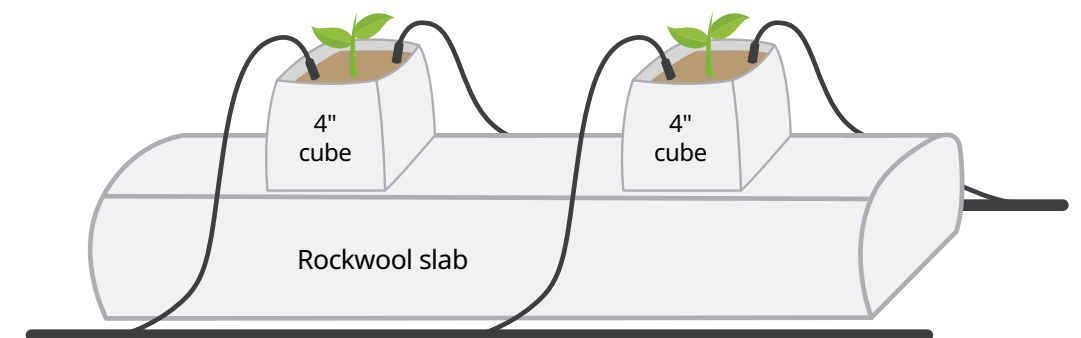


Normal vessel growth obtained

IV. How to Use of Johnider V2 SOD

- Based on 1ℓ (Possible to mix with fertilizer or soil nutrient.)
- Crop available for : Horticultural crops
 - Open field soil culture : Have a drench using enough water at 1,650m³/1ℓ.
 - Greenhouse soil culture : Have a drench using enough water at 1,650m³/1ℓ.
 - Greenhouse Hydroponic (water culture)
 - Inject (deep, drench) Johnider V2 0.2mℓ per Rookwool 4" 1 Cube (Slab) using enough water.
 - » Slab size : 20cm×7.5cm×100cm (7.9"× 3"× 39.4")
 - » Cube size : 4"

0.2ml of Johnider V2 SOD

**• How to use Johnider V2 SOD at single use**

- How to use to prevent virus (for maintenance): After 3 consecutive use every 3-5 days after transplanting, use the product continuously every 10 days. However, if sign of infection with virus appears during cultivation, immediately do foliage spray of Johnider V2 FA and drench the product three times every 3 days again.
- How to use after infection with virus: Use the product 5 times every 3 days and then adjust using the product within 7 days depending upon the condition of crop. If you use Johnider V2 FA and Johnider V2 SOD together, you can gain the definite virus preventive effect with virostatic effect.

• How to prevent using Johnider V2 SOD and Johnider V2 FA at the same time after transplanting

- Additionally use Johnider V2 FA fitting how to use Johnider V2 SOD for prevention from the date after transplanting.

Thank you so much for your great interest in Jungwan B-F.
Please contact us to the following email, if you have queries about our products and their application methods.
antiagrovirus@gmail.com

JUNGWAN B-F PRODUCTS CATALOGUE

