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Terrao-Farming

Excellent Fertilizer for Plants

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Terrao-series

From seedlings to fruits !

our products grow healthy and prevent disease.

Terrao-sil

New technology silicic acid !

Ortho Silicic Acid 2.8%

Terrao-pure

Eco-friendly disinfectant

Non-toxic disinfectant with pesticide-free

- Increase production: prevent dehiscent fruit and reduce internodes
- Tissue strengthening: root fixation / pest resistance / improvement of storage
- Increase fertilizer absorption: increase sugar content / increase photosynthesis
- Convenient to use: irrigation with fertilizer / foliar fertilization

- Soil disinfection : Soil nematode / soil mold control
- Foliar disinfection : Mold/virus control from air
- Pesticide-free ingredients / No tolerance
- Root establishment : Increase of fine roots by supplying active oxygen
- Fertilizer / pesticide / electrodeposition agent mixed use
- Increases the effect time of pesticides when mixing pesticides / sterilization pesticides

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Terrao-sil

Excellent Fertilizer for Plants

About Terrao-sil

Terrao-Sil is a special liquid orthosilicic acid that is very effective and easy to use. Orthosilicic acid is very important for optimal plant health. It is especially effective for young crops. This is associated with increased production.

Acid-stabilized orthosilicic acids are small groups of silicic acid molecules suspended in solution.The structural formula of acidic orthosilicic acid is SiOH4, and OH (oxygen and hydrogen) gives water solubility and is quickly absorbed by plants. This is how weakly acidic silicic acid is quickly supplied to plant tissues!

We recommend using it with our other product, Terrao-pure. The amazing bactericidal effect of Terrao-pure increases the effectiveness of Terrao-sil. I am sure you will be satisfied with this amazing product.

Mechanism Terrao-sil

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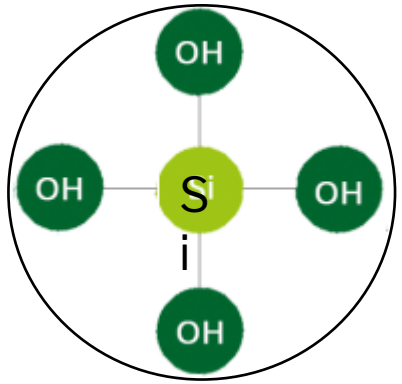
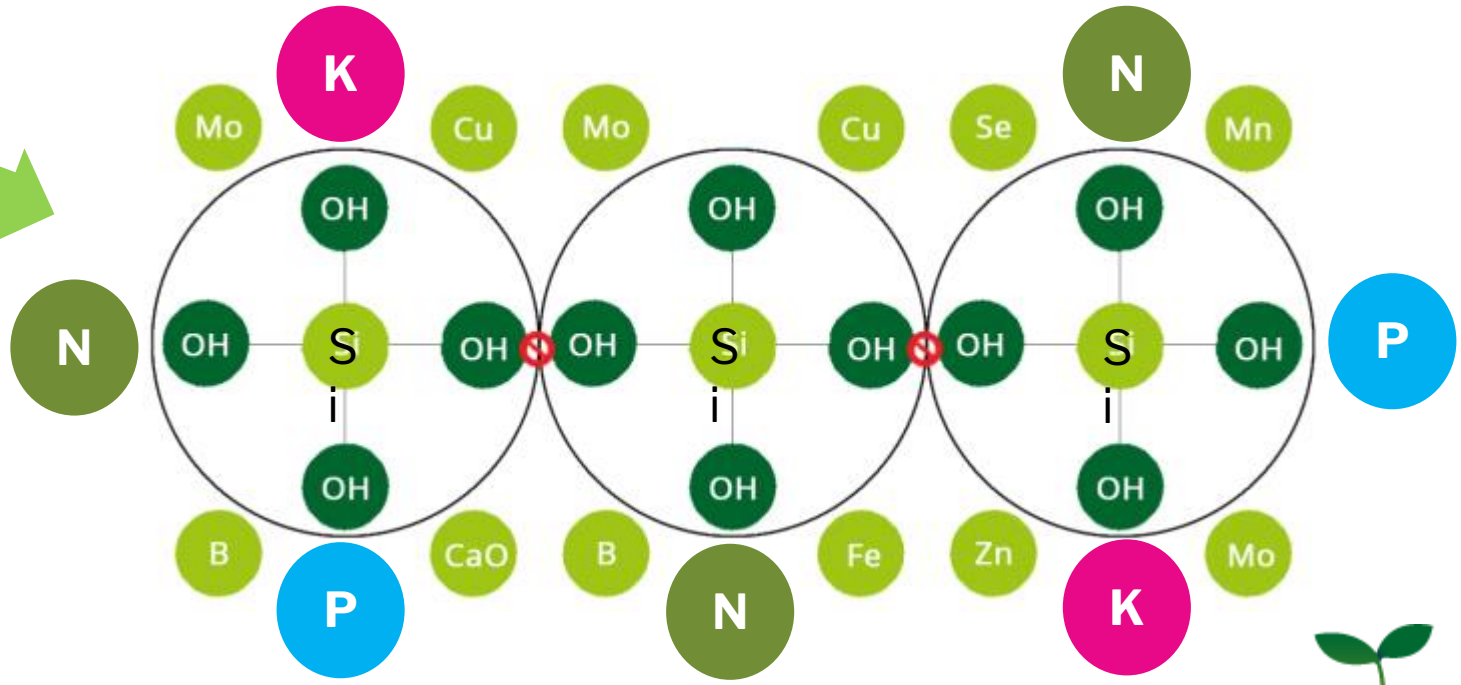
TERRAO-SIL



Ortho silicic acid

Various fertilizer ingredient carrier



Ortho silicic acid characteristic

1. Biological and therapeutic effects of ortho-silicic acid and some ortho-silicic acid-releasing compounds: New perspectives for therapy.

PubMed

JurkiÄ‡, Lela Munjas; Cepanec, Ivica; PaveliÄ‡, Sandra KraljeviÄ‡; PaveliÄ‡, KreÅ¡imir

2013-01-08

Silicon (Si) is the most abundant element present in the Earth's crust besides oxygen. However, the exact biological roles of silicon remain unknown. Moreover, the ortho-silicic acid (H4SiO4), as a major form of bioavailable silicon for both humans and animals, has not been given adequate attention so far. Silicon has already been associated with bone mineralization, collagen synthesis, skin, hair and nails health atherosclerosis, Alzheimer disease, immune system enhancement, and with some other disorders or pharmacological effects. Beside the ortho-silicic acid and its stabilized formulations such as choline chloride-stabilized ortho-silicic acid and sodium or potassium silicates (e.g. M2SiO3; M= Na,K), the most important sources that release ortho-silicic acid as a bioavailable form of silicon are: colloidal silicic acid (hydrated silica gel), silica gel (amorphous silicon dioxide), and zeolites. Although all these compounds are characterized by substantial water insolubility, they release small, but significant, equilibrium concentration of ortho-silicic acid (H4SiO4) in contact with water and physiological fluids. Even though certain pharmacological effects of these compounds might be attributed to specific structural characteristics that result in profound adsorption and absorption properties, they all exhibit similar pharmacological profiles readily comparable to ortho-silicic acid effects. The most unusual ortho-silicic acid-releasing agents are certain types of zeolites, a class of aluminosilicates with well described ion(cation)-exchange properties. Numerous biological activities of some types of zeolites documented so far might probably be attributable to the ortho-silicic acid-releasing property. In this review, we therefore discuss biological and potential therapeutic effects of ortho-silicic acid and ortho-silicic acid -releasing silicon compounds as its major natural sources.

KOREA (1)

USA / EU (about 20)

Ortho silicic acid papers 1.

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Google 학술검색 | orthosilicic acid palm yield | 로그인

학술자료 — 검색결과 약 272개 (0.06초) — 내 프로필 — 내 서재

모든 날짜
2023 년부터
2022 년부터
2019 년부터
기간 설정...

관련도별 정렬
날짜별 정렬

모든 언어
한국어 웹

모든 유형
검토 자료

☐ 특허 포함
☐ 서지정보 포함

알림 만들기

[PDF] Improvement of water and nutrient efficiencies oil **palm** through bio-silicic **acid** application — [PDF] semanticscholar.org
PTBG Agro, JMR No, KB Melawai - Menara Perkebunan, 2021 - pdfs.semanticscholar.org
... one of the most important factors in oil **palm cultivation**. Oil **palm** is a commodity that is quite ... solution in the form of mono silicic **acid**, also called **orthosilicic acid** (H4SiO4) (Zargar et al., ...
☆ 저장 인용 2회 인용 관련 학술자료 전체 7개의 버전 »

Application of bio-silicic **acid** to improve **yield** and fertilizer efficiency of paddy on tidal swamp land — [PDF] iribb.org
DN KALBUADI, LP SANTI, DH GOENADI... - Menara ..., 2020 - mp.iribb.org
... **orthosilicic acid** (H4SiO4) enriched with selected Sisolubilizing fungi, formulated as 4-gram tableted Si fertilizer (BioSilAc) on tidal swamp land soil to improve **yield** ... highest rice **yield** in ...
☆ 저장 인용 1회 인용 관련 학술자료 전체 5개의 버전 »

Improved black soybean performances grown on selected highly weathered soils by using bio-nano-**ortho silicic acid** — [PDF] iop.org
DH Goenadi, LP Santi, A Dariah, Y Barus... - ... Series: Earth and ..., 2019 - iopscience.iop.org
... -**ortho silicic acid** (OSA) originated from locally mineral enriched with silica-solubilizing microbes to improve **yield**... of oil **palm** seedlings [13], growth and **yield** of mature oil **palm** in Central ...
☆ 저장 인용 2회 인용 관련 학술자료 전체 6개의 버전

Ortho Silicic Acid: A Novel Approach to Enhance Plant Nutrition and Quality in Fodder Maize — [PDF] researchsquare.com

Ortho silicic acid papers 2.

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Kor. J. Hort. Sci. Technol. 30(1):21-26, 2012 DOI http://dx.doi.org/10.7235/hort.2012.11090

Silicon Application on Standard Chrysanthemum Alleviates Damages Induced by Disease and Aphid Insect

Kyeong Jin Jeong[1], Young Shin Chon[1], Su Hyeon Ha[1], Hyun Kyung Kang[2], and Jae Gill Yun[1*]

[1]*Department of Horticultural Science, Gyeongnam National University of Science and Technology, Jinju 660-758, Korea*
[2]*Department of Environmental Landscape Architecture, Sangmyung University, Seoul 110-743, Korea*

Abstract. To elucidate the role of silicon in biotic stress such as pests and diseases, standard chrysanthemum was grown in pots filled with soil without application of pesticide and fungicide. Si treatment was largely composed of three groups: K_2SiO_3 (50, 100, and 200 mg·L^{-1}), three brands of silicate fertilizer (SiF1, SiF2, and SiF3) and tap water as a control. Si sources were constantly drenched into pots for 14 weeks. Application high concentration K_2SiO_3 (200 mg·L^{-1}) and three commercial Si fertilizers for 14 weeks improved growth parameters such as plant height and the number of leaves. In the assessment of disease after 4 weeks of Si treatment, percentage of infected leaves was not significantly different from that of control. After 14 weeks of Si treatment, however, the infected leaves were significantly reduced with a 20-50% decrease in high concentration (200 mg·L^{-1}) of potassium silicate and all commercial silicate fertilizers. Colonies of aphid insect (*Macrosiphoniellas anborni*) were also reduced in Si-treated chrysanthemum, showing 40-57% lower than those of control plants. Accumulation of silicon (approximately 5.4-7.1 mg·g^{-1} dry weight) in shoots of the plants was higher in Si-supplemented chrysanthemum compared to control plants (3.3 mg·g^{-1} dry weight). These results indicate that using potassium silicate or silicate fertilizer may be a useful for management of disease and aphid insect in soil-cultivated chrysanthemum.

Additional key words: beneficial effects, biotic stress, potassium silicate, silicate fertilizer, soil cultivations

Introduction

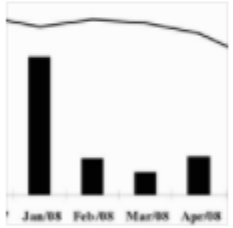
Silicon (Si) is one of the most beneficial elements for several plants although it is not considered as an essential plant nutrient. Silicon deposits in the leaves, stems, and hulls in the form of amorphous silica gel ($SiO_2 \cdot nH_2O$) and soluble silicic acid ($SiOH_4$) (Epstein, 1999). In monocotyledon, several plants were demonstrated to be improved in production, disease resistance and abiotic stress tolerance by Si supplement (Ma et al., 2001; Savant et al., 1996). Especially, rice (*Oryza sativa* L.) is well known to most effectively accumulate Si stresses have been observed in a wide variety of plant species (Ma et al., 2001; Richmond and Sussman, 2003).

Greenhouse production of floricultural crops mainly uses soilless substrates, which have limited amounts of plant-available Si compared to mineral soils (Voogta and Sonnevelda, 2001). With the change to soilless growing media in the horticultural industry, the role of Si in horticultural crops became apparent. Generally, hydroponics using water or soilless substrates has been used as a valuable technique for the studies on the effect of Si on plant, which makes it possible to produce silicon-deprived plants because they

KOREA (1)

Abstract and Figures

This study aimed to evaluate the effect of Si (stabilized silicic acid, Silamol (R)) leaf application on mineral nutrition and yield in upland rice and corn crops. The treatments were the control (without Si) and Si foliar split spraying using 2 L ha(-1) of the Silamol (R) commercial product, with 0.8% soluble Si as concentrated stabilized silicic acid. Silicon leaf application increased the concentrations of K, Ca and Si in rice and corn leaves, the number of panicles per m(2) of rice and the number of grains per ear of corn; accordingly, the Si leaf application provided a higher grain yield in both crops.



Monthly total rainfall (▌) and...

Figures - uploaded by Gustavo Spadotti Amaral Castro Author content

Content may be subject to copyright.

USA / EU (about 20)

OSA analysis

■ Rating agency : Seoul National University

1. Method : Si NMR
2. Result : Ortho silicic acid (OSA) 2.8% (Min)

Ortho silicic acid : 2.8%

Test Analysis Report

Applicant	Department	HKCHEM (HANKOOK CHEMICAL INDUSTRIAL CO.)		
	Professor in Charge		Researcher	JAE-WON CHOI
	Phone Number	82-31-532-8222	Fax	82-31-531-8222
	Application Number	04_500solidnmr_20150921_1	Analysis Period	2015-09-21 ~ 2015-09-21
	Sample	orthosilicic acid	The Number of Samples	1

Contents

^{29}Si MAS NMR

The result of ^{29}Si structual analysis : orthosilicic acid

The content of orthosilicic acid : ≥ 3%

Manager	Yoon-Joo Ko (Sign)	Phone Number	82-2-880-5823

This Report is an analysis result of samples the applicant provided.
You cannot use this for purpose of advertising or legal means.

We report results of analysis as above.

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Terrao-pure

Soil / leaf excellent disinfectant

About Terrao-pure

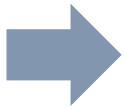
Terrao-pure is a powerful, highly effective, broad-spectrum disinfectant that is both stable and safe. Terrao-pure performs excellent soil disinfection and leaf disinfection. In particular, soil disinfection is effective in preventing diseases and pests. This reduces the incidence of the disease by more than 50%. All crops, from young crops to fruit trees, require soil disinfection. This reduces pesticide use.

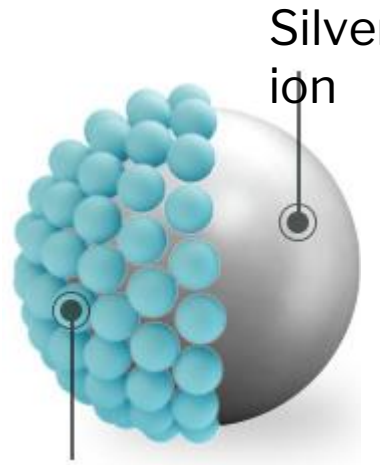
Terrao-pure is a solution of Hydrogen Peroxide (H2O2) which is stabilised using a proprietary ionic silver based chemistry. When correctly applied to water, air or any surface, Terrao-pure will disinfect through an oxidisation process and continue to safely provide excellent residual performance.

We recommend use with our Terrao-sil. Cell tissue strengthened through Terrao-sil is the best method for healthy plant growth along with the disinfecting effect of Terrao-pure.

Mechanism Terrao-pure

TERRAO-PURE





- A large amount of hydrogen peroxide molecules are collected by the cations of the silver ion.
- Hydrogen peroxide trapped in silver ions has a high concentration and is not easily decomposed.

Terrao-sil Sterilization

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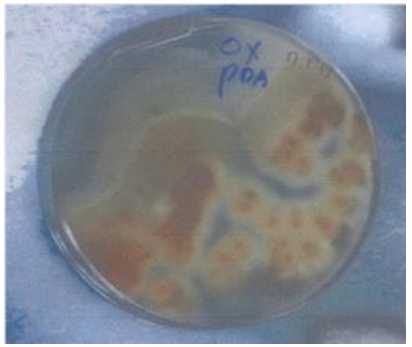
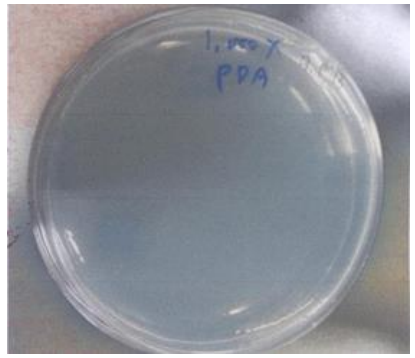
■ Object : Common bacteria test (140-times diluted)

	Sterilization (%)
Salmonella bacteria	99.9
Pneumonia bacillus	99.9
MRSA	99.9
E. coli	99.9
glaucoma bacterium	99.9
staphylococcus aureus	99.9

■ Object : Anthrax bacteria test



Control untreated with TERRAO-PURE



Treated with 140-times diluted

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Orthosilicic acid 2.8%

Terrao-sil

Dosage & Caution & Usage

Terrao Series is a brand of eco-friendly plant supplements developed by HKCHEM. Terrao-Sil is an acidic silicate fertilizer composed of orthosilicic acid, which promotes the growth of crops and improves resistance to pests. With Terrao-Sil, you can manage your crops healthily and safely.

TERRAO-SIL Usages & Caution

■ Leaf application : 1kg /3,300 – 16,500m² / 2~4 treatment per cycle

1. Fill spray tank with clean water
2. Add Terrao-sil (dilute 1,000)
3. Mix
4. Add other compatible Nutrients and plant protection products (Terrao-pure) & Mix
5. Use spray solution within 2-3 hours of mixing - Do not spray in direct sunlight

	Application	Dosage	Area	Amount of water used	Dilute	Treatment / Applications
Field crops	Leaf application	1kg	3,300 m²	1,000kg	X 1,000	• From the time when plants grow rapidly • every 10 days • 3~4 applications
Fruit			6,600m²	1,000kg	X 1,000	• From the fruit setting to the harvest • Every 2weeks • 4~5 applications
Rice / Wheat	Air control	1kg	5,000m²	10kg	X 10	• At the grains of rices need a lot of water • Every 10 days • 2 applications

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TERRAO-SIL Usages & Caution

■ Root application : 1kg/660 ~ 1,320m² / treatment every 7-10 days
Main Tank / Sub Tank / Venturi System applied.

1. Fill stock tank with Clean Water
2. Add Terrao-sil (dilute 1,000) & Mix - Only make enough stock for 1 application
3. Add other compatible plant protection products to stock tank (Terrao-pure)
4. Use stock solution within 2-3 hours of mixing - Best result are achieved by an application that remains in the rootzone for the longest time.

	Application	Dosage	Area	Amount of water used	Dilute	Treatment / Applications
Field crops	Root application	1kg	660 m²	1,000kg	X 1,000	• From the time when plants grow rapidly • every 10 days • 3~4 applications
Fruit			1,320m²	1,000kg	X 1,000	• From the fruit setting to the harvest • Every 2weeks • 4~5 applications

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Eco-friendly disinfectant

High efficiency

Terrao-pure

Dosage & Caution & Usage

Therao series is an eco-friendly botanical supplement brand developed by HKCHEM. Terrao-pure is a powerful disinfectant. The most suitable disinfectant for disinfection of soil and leaves, it prevents all diseases, especially through soil disinfection. It is an eco-friendly product that decomposes into water and oxygen, so you can manage your crops effectively.

TERRAO-PURE Usages & Caution

■ Leaf application : 1kg /3,300 – 16,500m² / 2~4 treatment per cycle

1. Fill spray tank with clean water
2. Add Terrao-pure (dilute 1,000)
3. Mix
4. Add other compatible Nutrients and plant protection products (Terrao-sil) & Mix
5. Use spray solution within 2-3 hours of mixing - Do not spray in direct sunlight

	Application	Dosage	Area	Amount of water used	Dilute	Treatment / Applications
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For Seedlings

Disease prevention

Terrao-sil / Terrao-pure

Terrao-farming method is a new concept farming method that fundamentally prevents diseases. Terrao-Sil and Terrao-pure prevent diseases and increase production through soil disinfection and cell tissue strengthening. With the Terrao-Series, you can manage your crops in a healthy and safe way.

Disease prevention

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■ **At seedling : Seedlings are brought into contact with new soil.**
The seedlings need to adapt to the new environment to be healthy.

■ **New soil factors :**

Harmful factors	
Pests	Soil nematodes / Eggs of overwintering pests
Germs	Harmful mold/virus/bacteria (Ex : Anthrax / Powdery mildew / Gray mold rot / Mosaic disease / Root blight / Stem blight)
Saline soil	Impeding water absorption

■ **Solution :**

유해요인	solution
Pests	Soil disinfection For soil irrigation
Germs	
Saline soil	Saline soil decomposition / Healthy root tissue

preventative farming

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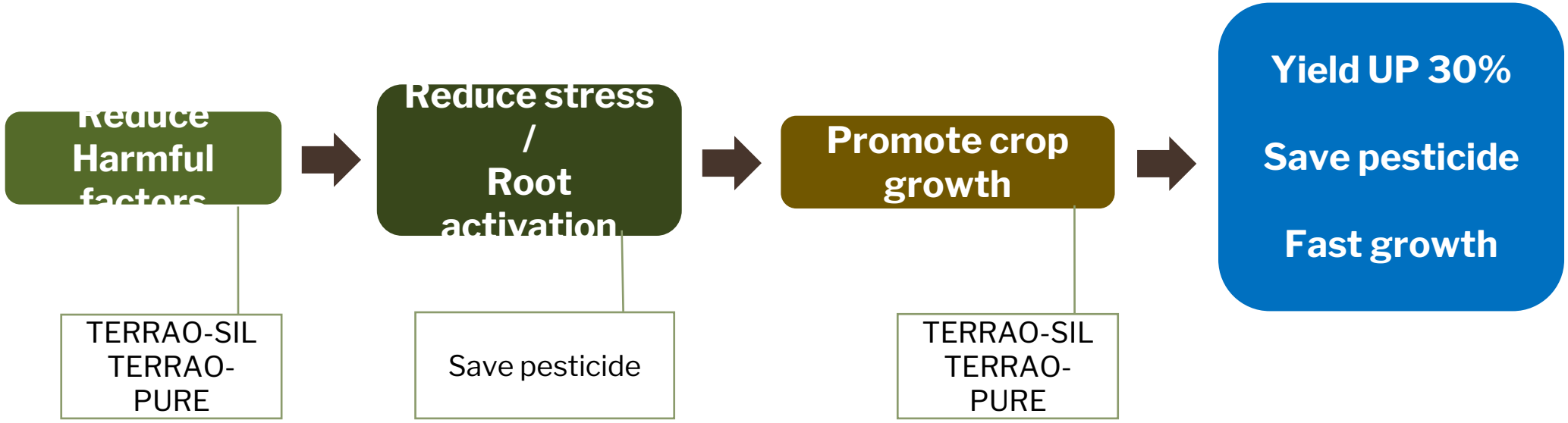
pesticide savings



Effects of Terrao

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1. Strengthening the roots

seedling loss 0%
Accelerates root growth and enhances absorption

2. Prevention of fruit drop

Fruit split 0%
Enlarge the fruit
Increased coloration
Improved firmness, increace brix and calcium levels.

Effects of Terrao

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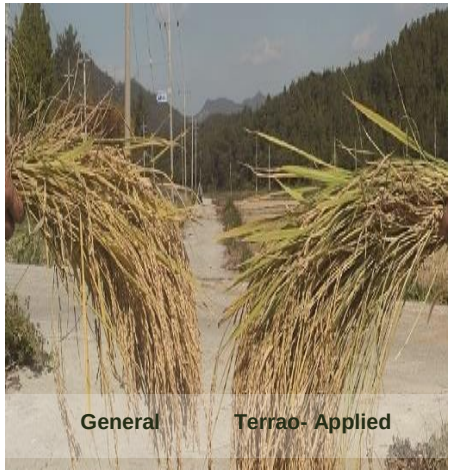
3. Increase in yield

Increases
absorption
of nutrients 30%



4. Strengthening of cellular tissues

Improves uptake, absorption and utilization of nutrients

Terrao

Effects of Terrao

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5. Homogeneous sizing

Improved firmness,
Better coloring and conservation

6. Weather resistance

Drought damage prevention
Freezing damage prevention
Controls of transpiration

7. Decrease of blight / damage by insects

Reduced incidence of Powdery Mildew
Increase biotic stress resistance

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Strengthening the roots

Roots

Date. 07. 2019 , Jeollanam-do

General

Terrao Applied

Terrao

Increase in yield

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Onion farm Date. 04. 2017 , Jeollanam-do

Tomato farm Date. 04. 2017 , Jeollabuk-do

Terrao-farming

Examples

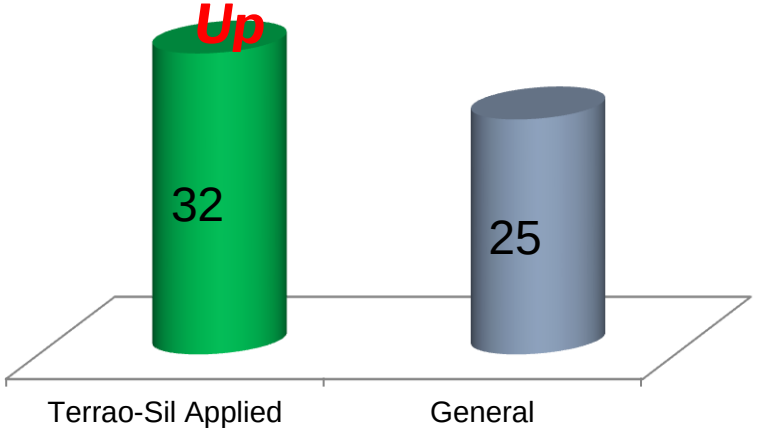
Technology research Field crop Trial Reports

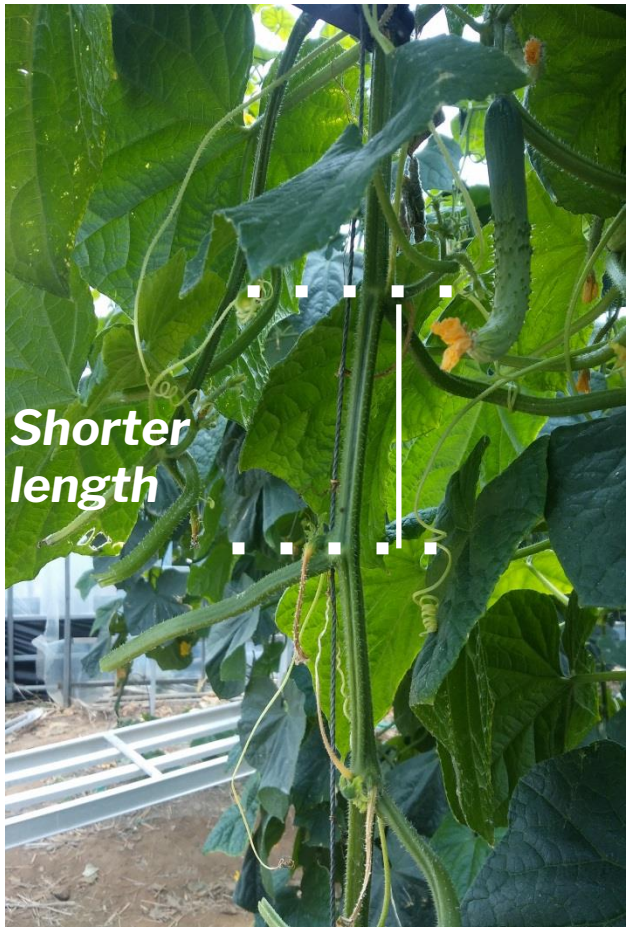
TERRAO-SIL / PURE EFFECT FOR CUCUMBERS

In greenhouse

- **Test condition : Diluted 1,000time, 4 applications (during 1.5 months / Soil Irrigation)**

1. 30% yield up
2. Homogeneous sizing
3. Improved storability





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TERRAO-SIL / PURE EFFECT FOR GRAPES

In greenhouse

- **Test condition : Diluted 1,000time, 3 applications (during 3 months / Soil Irrigation)**

1. The fruits split reduce - 80 %
2. Homogeneous sizing
3. Size up
4. Brix up

Untreated

Treate

Terrao

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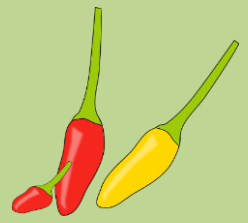
TERRAO-SIL / PURE EFFECT FOR CHILIS

In greenhouse



- **Test condition : Diluted 1,000time, 3 applications (during 2 months / Soil Irrigation)**

1. Shorter joint length – 30% yield up
2. Homogeneous sizing
3. Stronger plant against harmful insects

Result : 30% Volume Up for Chili harvest

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TERRAO-SIL / PURE EFFECT FOR ZUCCHINI

In greenhouse

- **Test condition : Diluted 1,000time, 3 applications (during 2 months / Soil Irrigation)**

1. Shorter joint length – 30% yield up
2. Homogeneous sizing
3. Reduction of soft disease – 50%
4. Improved storability

Terrao

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TERRAO-SIL / PURE EFFECT FOR SWEET POTATOS

on the ground

- **Test condition : Diluted 1000time, 1 applications (Initial Soil Irrigation)**

< Untreated >

< Terrao

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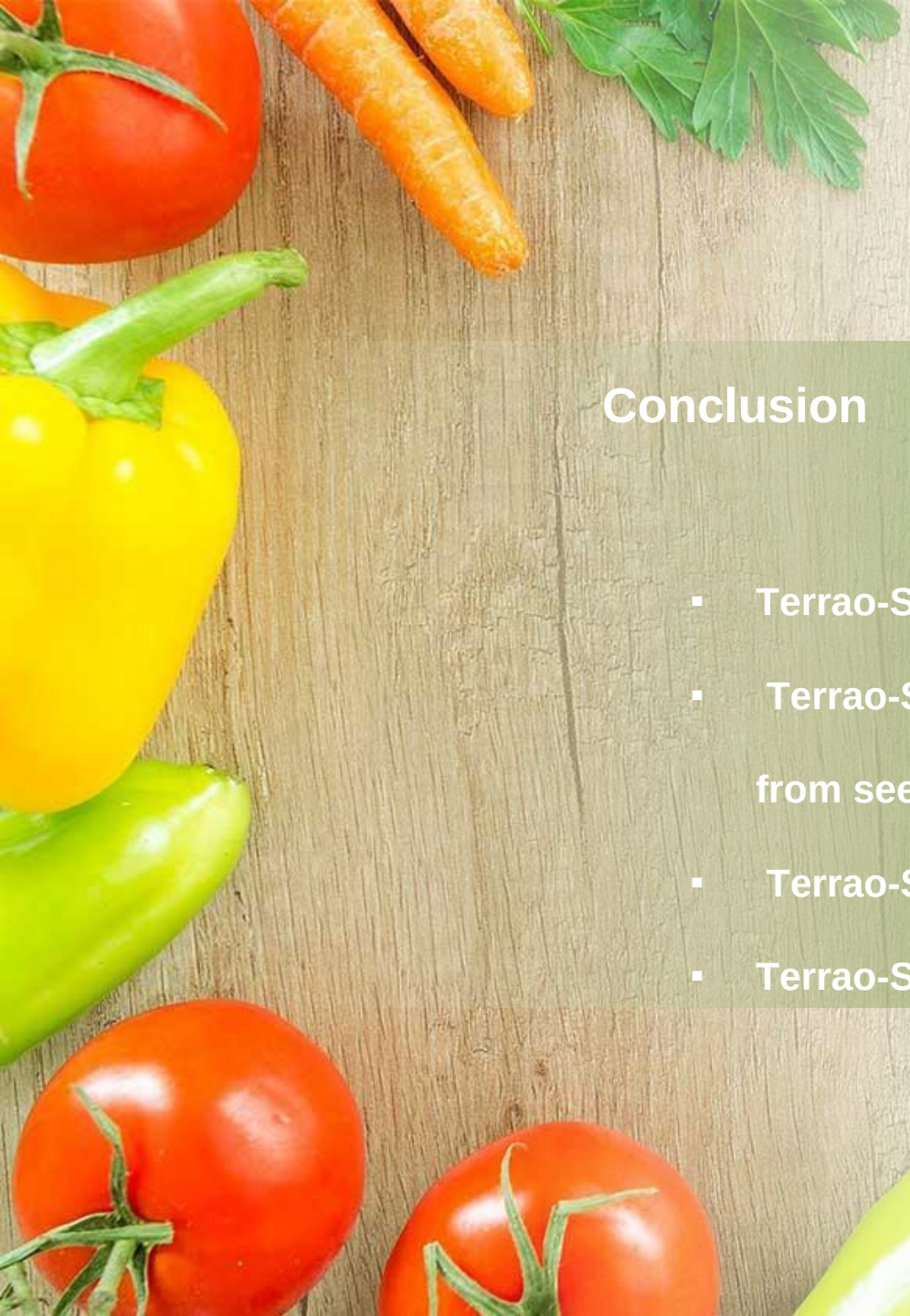
TERRAO-SIL EFFECT FOR RICE

on the ground

- **Test condition : Diluted 10time, 1 applications, TERRAO-SIL 1kg air spray 20,000m²**
  (At the grains of rice need a lot of water, together with the application of herbicides.**)**

1. Decrease in height
2. 40% yield up
3. Improved flavor / savor

Terrao



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Conclusion

- Terrao-Sil / Terrao-Pure increase yield by 30%!
- Terrao-Sil / Terrao-Pure improve plant immunity from pests and diseases from seedling to harvest.
- Terrao-Sil / Terrao-Pure dramatically prevent fruit deterioration.
- Terrao-Sil / Terrao-Pure cut pesticide use and frequency in half.

Terrao

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Thank You

Contact us

HKCHEM, 1007-216, Hoguk-ro, Pocheon-si, Gyeonggi-do, Republic of Korea

■ Tel : +82-31-532-8222 ■ Fax : +82-31-531-8222

■ Web: www.hkchem.co.kr ■ Email : hkchem@hkchem.co.kr

Terrao