

Proposal of Fermented and Detoxified Sulfur Fertilizer

2023. 02



Prologue

This proposal introduces a solution for problems aroused in the circumstance where global environmental pollution (especially soil contamination) and climate change demand change in agricultural industry.

Instability of fluctuation in the price of fertilizers, **which changes rapidly by external environment**, is degrading the safety of agricultural industry, **and degradation in productivity** is also revealed due to acidification of soil.

Aging and lack of working population in rural regions caused by urbanization, **which is suffered by all countries around the world**, are demanding improvement of agricultural productivity.

We' re aware of the fact that agricultural policy in Sri Lanka is changing and developing wisely in line with the above circumstance. Korea is also thinking about the same issue, and promoting change in production methods of agricultural products as a solution for this issue.

Using the fermented sulfur liquefied fertilizer (product name: JIPYEONG) produced by our company **would allow soil improvement, prevention of diseases and pests, increase in productivity, and quality improvement**. We hope that the agricultural industry will become sustainable in the future as well, and desperately wish for it to be an opportunity for achieving the sustainability in Sri Lanka.



1

Chap.

“Transition into future agriculture, there is the fermented and detoxified sulfur on its way.”

Fermented and detoxified sulfur

Chap 1. Fermented and detoxified sulfur

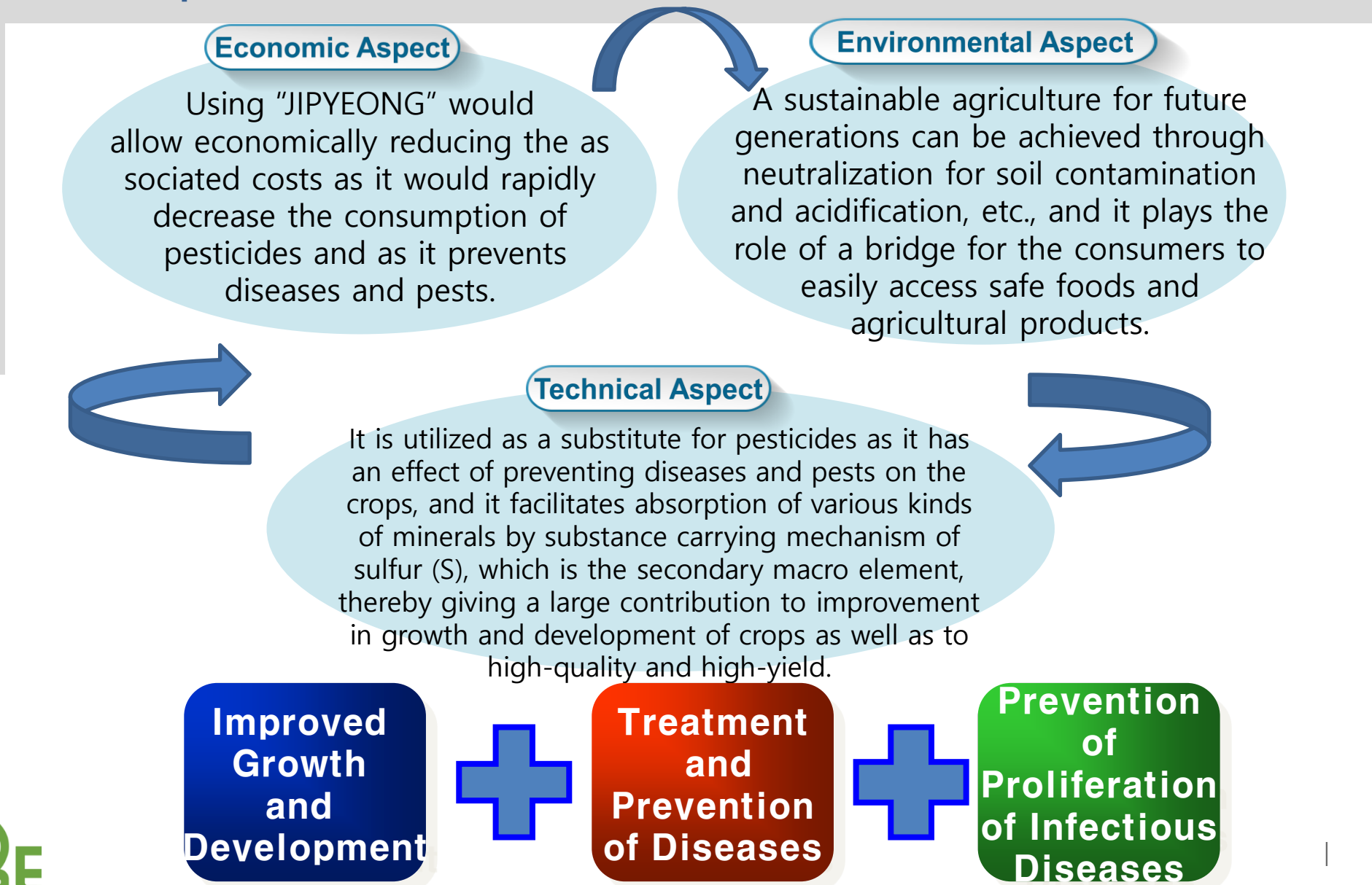
1-1. Anticipated Effects of Fermented and Detoxified Sulfur

1-2. Improved Growth and Development

1-3. Treatment and Prevention of Diseases, and

Prevention of Proliferation of Infectious Diseases

1-1. Anticipated Effects of Fermented and Detoxified Sulfur



1-2. Improved Growth and Development



As a result of conducting a test on approximately 600 different kinds of major crops in China for the past 10 years, it clearly revealed an increase in production by more than 85%.

Increase in production was more clearly revealed for rice, fruits, tea leaves, soybean, sugar cane, sweet potatoes, and corns, etc. (increase in production, which is 20% higher than the conventional effect)



Using a reasonable fermented sulfur fertilizer would allow an increase in the content of original components possessed by each agricultural product.

10 - 27% increase in crude protein content in rice and wheat, and 6.6% increase in amino acid content in tea leaves.

Improved fruit quality (sweetness and size) and 1.5 times increase in retention period.



It performs neutralization on soil contamination and acidification, etc. caused by using chemical fertilizers.

1-3. Treatment and Prevention of Diseases, and Prevention of Proliferation of Infectious Diseases

- Average increase in production by **15 - 30%**
- **Prevention and treatment effects for various types of diseases and pests**
- Quality improvement and extension of expiration date
- Soil improvement
- **Neutralization of pesticide components in soil**
- Major effects in rust and bacterial leaf blight

Rice – damping-off, Bakanae disease, bacterial leaf blight, sheath blight, leaf blast, and false smut

Cucumber – downy mildew, powdery mildew, and thrips

Onion – Sclerotium cepivorum, downy mildew, and bacterial soft rot

Garlic – Sclerotium cepivorum, and bacterial soft rot

Tomato – leaf mold, and Bemisia tabaci

Grape – powdery mildew

Strawberry – cotton aphid, two spotted spider mite, and gray mold rot

Apple – Marssonina blotch, and Anthracnose

Cases of Treatment

BEFORE

AFTER

Bakanae disease



Bacterial leaf blight



Downy mildew



Chap. 2 “NONGBUEH proposes this for sustainable agriculture in the future”

Company and Product Introduction

Chap 2. Company and Product Introduction

2-1. Manufacturing Process

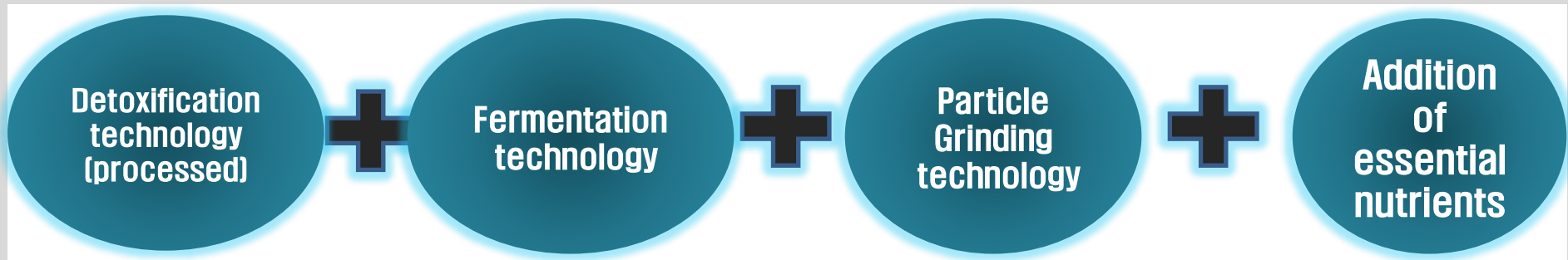
2-2. Difference with General Detoxified Sulfur

2-3. NONGBUEH Company Overview

2-4. Product Introduction

2-5. How to Use

2-1. Manufacturing Process



*Although the Methyl sulfonylmethane most widely being used today has lower toxicity level, its effective value is low as it has a lower content of sulfur (33%), and is vulnerable against heat, and has a larger particle size.

*Although mineral sulfur has a higher content of sulfur (98%), excellent efficacy, and the price is inexpensive, it has to go through detoxification process due to its strong toxicity.

*Although the level of processing for conventional sulfur was at 70%, the company has carried out a research and development for successfully reducing toxicity to harmless level while maintaining the efficacy of mineral sulfur as it is.

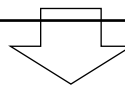
*It has established a new paradigm in fertilizer market (overcoming resistance) through securing an eco-friendly detoxification technology based on using radish, catalyst, and fermentation.

*The surface area was maximized by utilizing the particle grinding technology, and excellent product efficacy was achieved by optimizing the infiltration rate.

- **A perfect detoxification technology was developed through a development process of about 10 years.**
- **Based on a combination of traditional detoxification method and scientific mechanism, we have successfully developed a detoxification technology for mineral sulfur, which satisfies stability, efficiency, and economic feasibility!**
- **Nitrogen, water-soluble kali, boron, and zinc, which are essential elements for plants, were added.**

2-1. Manufacturing Process

Fermentation and detoxification process	1. Warehousing of washed radishes	
	2. Fragmentation of radishes and extraction of radish juice	Crusher / extractor
	3. Injection of sulfur/fermentation catalyst in radish juice, and stirring	Stirrer (2.5 tons)
	4. Detoxification followed by water break and drying of sulfur mixed in the radish juice	Dehydrator / dryer
	5. Nano conversion (1,000mesh) of dried sulfur and IBC filling	Nano devices



Mixing Filling Process	1. Warehousing of IBC	
	2. Dilution of radish juice and injection of secondary fermentation catalyst	Stirrer (6 tons)
	3. Addition of nitrogen, zinc, kali, and boron	Filler / labeler
	4. Bottle filling / labeling and packing	
	5. Container loading and shipping	

2-2. Difference with general detoxified sulfur

	JIPYEONG	General detoxified sulfur
Detoxification method	Fermentation and detoxification that utilize radish juice	Detoxification is performed by using heavy metals such as mercury, cadmium, lead, and water from soil, etc.
Fertilizer Manufacturing Process	Organification of the Fertilizer based on the fermentation technology utilizing radish juice	Mineral state
Detoxification efficiency	High detoxification efficiency	Low detoxification efficiency
Particle size	3 μm	10~40 μm

- 99.9% extraction of sulfur through a desulfurization system
- Fermentation process of extracted sulfur and radish juice (fermentation for 24 - 36 hours)
- Low temperature drying of sulfur + radish juice fermented sulfur (48 hours)
- Powder blasting of dried sulfur for 36 hours
- Addition of nitrogen, zinc, kali, and boron

“Toxic elements of sulfur are removed as the sulfur is fermented and subject to ultra-nano conversion, and its beneficial components are maximized while the [whole quantity of sulfur] is reduced.”

AT Analysis Center Co., Ltd.

Analysis Sheet

Client: NONGSUNG CO., LTD. 8078-85-00000

Address: 75, Opyong-ro, Euicheon-si, Gyeonggi-do, Republic of Korea

Sample Name: JIPYEONG

Reception Date: 25th-August-2022 Reception No: 2022-08-029

Analysis result

Ingredient(%)	Content	Result
Total N(%)	18.0	18.38
Water-soluble K ₂ O(%)	1.0	1.34
Water-soluble B ₂ O ₃ (%)	-	0.086
Water-soluble Zn(%)	-	0.071
Total S(%)	-	2.40
Thiocyanate(%)	-	Not detected
As(%)	-	Not detected
Nitrous acid(%)	-	Not detected
Biuret N(%)	-	Not detected
Sulfamic acid(%)	-	Not detected
As (mg/kg)	0.1	Not detected
Cd (mg/kg)	0.1	Not detected
Pb (mg/kg)	0.1	Not detected
Cr (mg/kg)	3.0	Not detected
Hg (mg/kg)	0.1	Not detected

29th August 2022

AT Analysis Center

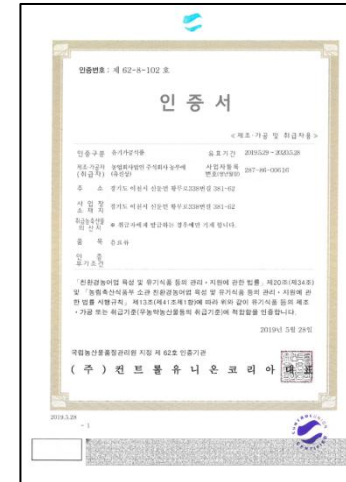
CERTIFICATE BY USA

(Valid from water seal and signature)

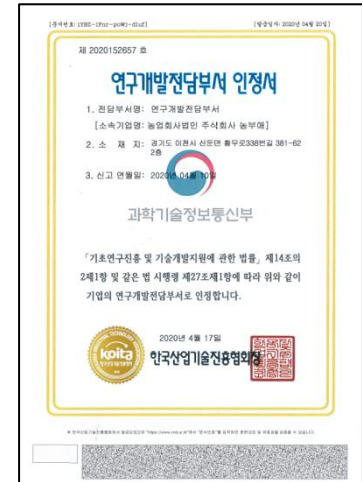
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2-3. NONGBUEH Company Overview

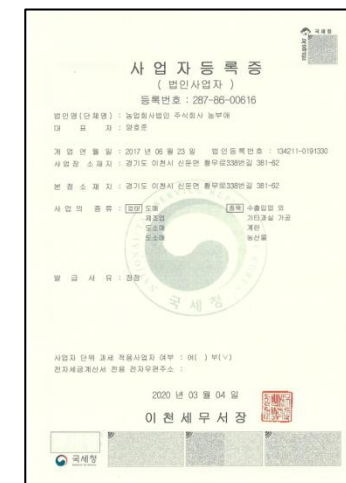
Company name	Agricultural Corporation NONGBUEH Co., Ltd.
CEO	Sun Sim Park
Corporate registration number	287-86-00616
Date of establishment	23 June 2017
Business type	Production of agricultural materials and processed goods such as fruit juice, etc. and distribution of agricultural materials and foods
Company location	381-62, Hwangmu-ro 338beon-gil, Sindun-myeon, Icheon-si, Gyeonggi-do, Republic of Korea
Capital	494 million won
Daily production volume	40 tons of JIPYEONG (40,000 bottles/1L)



(Certificate of Organic Products Manufacturing Facility)



(Certificate of Department in charge of Research and Development)



(Business license)



(Certificate of Patent on Low Temperature and Reduced Pressure Extractor)

2-4. Production Introduction



Product Description

Product Name	JIPYEONG (fermented and detoxified sulfur fertilizer)
Registration number	Official Notice-1-2-114
Net contents	1,000 ml
Material type name	For crop growth
Content %	Sulfur 2, radish juice 77, nitrogen 20 water-soluble kali 0.9, boron 0.05, zinc 0.04
Expiration date	2 years from the manufacturing date
Storage method	To be stored at room temperature

Others

- It has 200 times greater effects than the general processed sulfur (10 - 40 μm) as ultra fine particle grinding of 3 μm is performed on processed sulfur that removed toxic substances.

The surface area is increased by more than 500 times from the general processed sulfur.

- After primary fermentation, the low temperature and reduced pressure technology, which is a patent of NUNGBUEH, is used. Then, ripening and fermentation process is performed at 50 degrees Celsius to maximize organic components of JIPYEONG.

2-5. How to Use

Crops	Seedbed	Growing Period	Harbest Time	nutrition store stage	Effect
Fruit & Vegetables / See flowers/ leaf vegetables/ root vegetables	Dilute 1000 times to 7 days, side-to side ratio.	1,000 times dilution every two weeks Side spray	1,000 times dilution 10 days before harvest Side spray	1,000 times dilution Surface spraying	1. Activation of metabolism leads to the growth of crops. It stimulates growth and boosts the vitality of aging fruit trees. 2. Shorten the harvest time. Increase the cultivation period. The yield is increased by about 20%. 3. The quality of crops (color, sugar level, fragrance, etc.) Raise it up. 4. Causing antimicrobial production of crops, It boosts your immune system. Pathogens and viruses and In diseases such as fungi, It's working very well.
fruit tree	-	1,000 times dilution for a month's time Side spray	1,000 times dilution for a month's time Side spray	1,000 times dilution Surface spraying	
Rice	Dilute 250 times to settle for 3 days.	1,000 times dilution Side spray after 20 days on the road.	When rice plants sprout 1,000 times dilution air spray in the air	-	