Efficacy Report

02/20/2019

Study Title : Efficacy of "NanoGraphene Fertilizer-BOOSTER" strawberry cultivation test

Product Identity : Graphene, nano calcium , nano magnesium , nano iron

Data Requirements : Proof of stimulating growth on strawberry

Author : sang-cheol Lee_ Researcher at Smartnano Co., Ltd.

Study completion date : 01/31/2019

Testing Facility
Hyeong-jin Yang Strawberry Farm, Chuncheon-si, Gangwon-do, South korea

Laboratory Project Number : ER 005

GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT

SUBMITTER : Dr. Jong-tae Lee [Smartnano Co., Ltd.]

(Signature) _____ Date: 1/31/2019_____
Typed Name : Sang-cheol Lee
Title : Director

Research Director : Hyeong-jin Yang [Nanoagtech Co., Ltd.]
(Signature) _____ Date: 1/31/2019_____
Typed Name : Hyeong-jin Yang
Title : Farming specialist

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A. EFFICACY STUDY SUMMARY

STUDY TITLE: Efficacy of "NanoGraphene Fertilizer-BOOSTER" strawberry cultivation test

LABORATORY PROJECT #: ER 005

TESTING FACILITY: Hyeong-jin Yang Strawberry Farm, Chuncheon-si, Gangwon-do, South korea

STUDY DATES:

STUDY INITIATION DATE: (12/01/2018)
STUDY COMPLETION DATE: (01/31/2019)

TEST SUBSTANCE:

DESCRIPTION: Dilute 1 bottle of 500ml BOOSTER 1,000 times in water and apply foliar application to an area of 3,300m^2
INGREDIENT: Graphene G4: 0.75g, nano Ca&Mg: 0.6g, nano Fe : 0.15g
DILUTION: Dilute 1,000 times with general groundwater and apply by foliar fertilization

TEST CONDITIONS:

WATER: Groundwater, hardness: 1,000 mg/L or less
CONTACT TIME : (Not used)
TEMPERATURE : **15℃ ~ 25℃ (59°F ~ 77°F)**

TEST RESULTS :

Control results :

1. Strawberries became plump and vibrant within 1-2 days after fertilization .
2. Gray mold disappeared and sales increased due to increased size and sugar content.

Conclusion :

1. Temperature is absolutely essential for nutritional/reproductive growth under low temperature conditions in winter, and the ability to overcome low temperatures is good.
2. It is effective in strengthening immunity against cold damage, pests, etc.

Photos at Testing Facility

Gray mold disappeared and sales increased due to increased big size and sugar content.

B. QUALITY ASSURANCE STATEMENT

Study Title: Efficacy of "NanoGraphene Fertilizer-BOOSTER" strawberry cultivation test

Study #: Project Number: ER 005

Quality assurance audits of this study were conducted and reported to management and the study director as listed below:

(signature) _____ DATE: 01/31/2019_____
Typed Name: Lib Kim
Director of Quality Assurance

C. STUDY REPORT

STUDY TITLE : Efficacy of "NanoGraphene Fertilizer-BOOSTER" strawberry cultivation test

TEST FACILITY : Hyeong-jin Yang Strawberry Farm, Chuncheon-si, Gangwon-do, South korea

TEST SUBSTANCE IDENTIFICATION

TEST SUBSTANCE NAME: (Graphene: Cas No:1034343-98-0, Nano Calcium Magnesium hydroxide : Cas No: 39445-23-3, Nano iron hydroxide : Cas No: 11113-66-9)

① Graphene G4: Cas No: 1034343-98-0; Graphene Layer - Median of single layer ranging from 1 to 5 layer; Graphene size - median size of 20nm, Glycerin-based

② Nano Calcium & Magnesium hydroxide: Cas No : 39445-23-3; median size of 5nm

③ Nano iron hydroxide: Cas No: 11113-66-9; median size of 10nm

DESCRIPTION OF TEST SUBSTANCE

: 'BOOSTER': It is a transparent gold-color liquid fertilizer manufactured by mixing highly concentrated Graphene G4 with nano calcium & magnesium hydroxide, and nano iron hydroxide.
It can be stored at room temperature for 2 years and is supplied in various containers from 500ml to 20kg.

CHEMICAL CHARACTERIZATION:

BOOSTER

: We added a high concentration of Graphene G4 and nano calcium, nano magnesium and nano iron as described above the "test substance name". These are our proprietary materials. Graphene has inherent functions of being a drug delivery system, catalyst and having a chelating effect. Therefore, it delivers a high concentration of molecular-sized nano calcium, nano magnesium, nano iron and other essential trace elements to growing points within plants throughout a plant's growth cycle.

STUDY OBJECTIVE: By overcoming physiological obstacles, we reduce the use of chemical fertilizers, increase immunity, strengthen cell walls, and confirm increased production.

TEST METHOD: Cultivation test conducted according to general farming methods

D. STUDY MATERIALS TEST METHOD

PREPARATION OF TEST SUBSTANCE
Dilute 500ml of 'BOOSTER' 1,000 times with water and apply foliar application to 3,300m^2 of cropland using a sprayer.

PREPARATION OF TEST SYSTEM/STRAINS
Use a 100 liter plastic container for 1,000-fold dilution.

EXPOSURE CONDITIONS
Dilute 500ml of BOOSTER 1,000 times with water and apply foliar application to 3,300 m^2 of land twice a month, 4 times in total.

TEST SYSTEM RECOVERY
BOOSTER is consumed naturally through foliar application, so there is no need for system restoration.

PROTOCOL CHANGES

'BOOSTER' is diluted 1,000 times with water applied for to 3,300m^2 cropland twice a month. If calcium deficiency occurs due to high temperature, additional foliar application maybe performed, so there is no change in the protocol.

PROTOCOL DEVIATIONS
If the plant's nutrient movement is not good due to high temperatures, additional foliar application of 'BOOSTER' is necessary. Other than that, there is no reason to change the protocol.

E. CONTROLS

PREPARATION OF CONTROL(S)
Testing was conducted by dividing the area into areas where fertilizer was applied and areas where fertilizer was not applied.

F. STUDY ACCEPTANCE CRITERIA

STUDY REQUIREMENTS
Dilute 500ml of BOOSTER 1,000 times in water and apply foliarly to 3,300m^2 of land.

G. DATA ANALYSIS

CALCULATIONS

The treatment effect is calculated by measuring the number of gray mold clusters on strawberries harvested in areas where fertilizer was applied and in areas where fertilizer was not applied.

STATISTICAL ANALYSIS

Statistical analysis was conducted by summing the quality and yield based on 3,300m^2 rather than analyzing each strawberry.

H. STUDY RETENTION

Data Retention

Prepare and preserve research reports.

Specimen Retention

Testing facility is permanent. However, agricultural products are not preserved. Therefore, they are replaced with photos and reports.

I. STUDY RESULTS

1. Increased sales by curing gray mold and increasing sugar content and size.
2. An increase in production of approximately 30% was confirmed.
3. The crops are larger and tastier.
4. 'BOOSTER' prevents hardening of leaves and promotes healthier growth.
5. Absorption of calcium and trace elements enhances immunity and improves overall health of plants.

J. STUDY CONCLUSION

BOOSTER promotes the healthy growth of plants and increases resistance to diseases by maximizing the movement of nano calcium, nano magnesium, nano iron and other trace elements precisely and continuously. It is a comprehensive bioactive plant agent that helps plants overcome various physiological disorders under adverse growing conditions. Taste of plants and productivity of plant growth are also increased with BOOSTER.

REPORT SUBMITTED BY:

(Signature) _____ Date: 01/31/2019 _____
Typed Name : Sang-cheol Lee
Title : Director

Appendix 1. Photos at Testing Facility