

# Agriculture

PRODUCTS, STUDIES, AND FIELD TESTS



**catalysis**

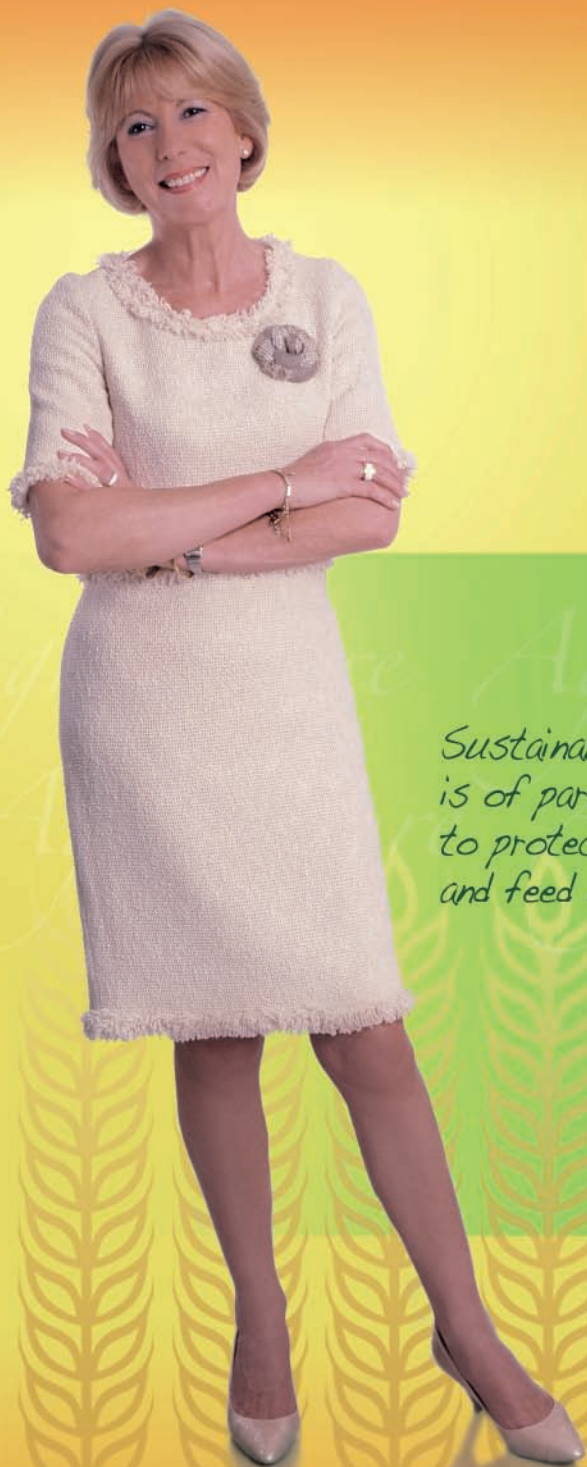
AGROVETERINARY DIVISION

Innovative Technology  
at the service of agriculture

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*Sustainable agriculture  
is of paramount importance  
to protect our planet  
and feed its growing population.*

*Josette Decaux*  
General Manager

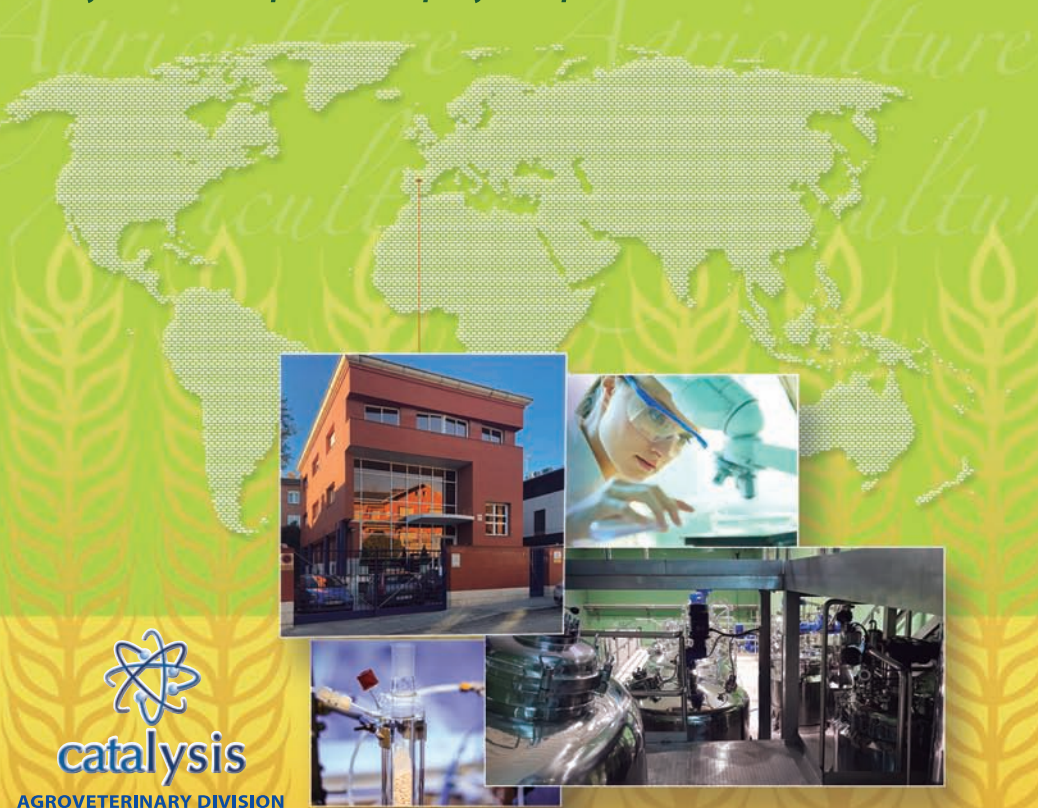
At **Catalysis Agroveterinary Division** we have developed **VIUSID® agro**, a **PLANT GROWTH ENHANCER** with specific amino acids, vitamins, and minerals that produce significant improvements in the quality and performance of crops.

The objective of our research in the agricultural sector is to discover harmless treatments to improve the productivity and health status of crops while respecting the environment.

**The secret of the high effectiveness of our products lies in the biocatalytic process of MOLECULAR ACTIVATION TECHNOLOGY developed by Catalysis.** By this process, the natural ingredients present in the products increase their biological activity without suffering any alteration in their chemical structure.

Our laboratories are equipped with the most advanced technologies under "**Good Handling Practices**" and are subject to stricter controls than the European Union imposes on all manufacturers within their borders.

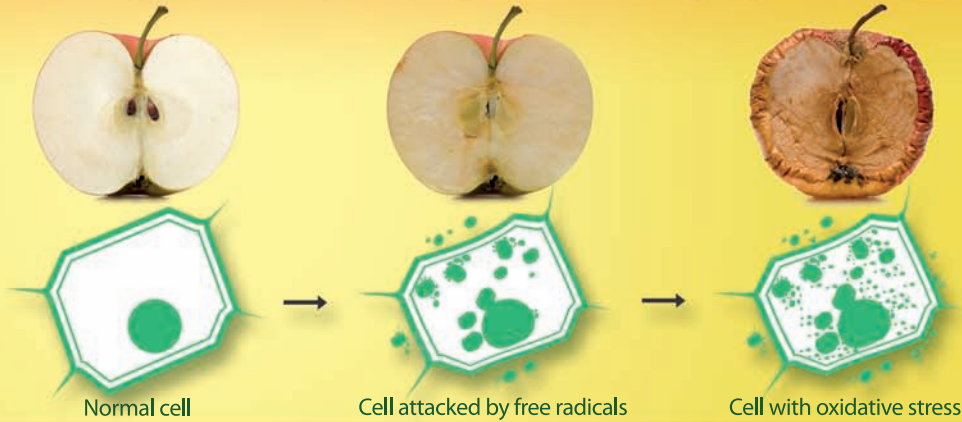
**Catalysis, S.L. is a Spanish company with presence in over 80 countries**





# Oxidative stress

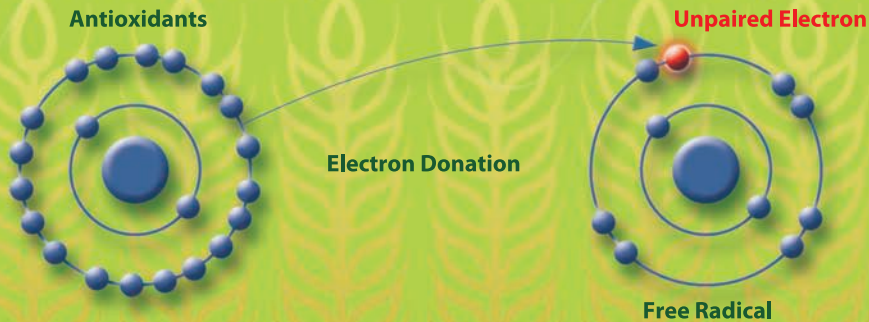
damages the cells, causing premature aging and disease



Our products are formulated with the benefit of activated molecules.



1. Increased biological activity.
2. Lower concentrations of active ingredients required.
3. Synergistic effects of antioxidants.
4. Fast action.
5. No side effects.



**MOLECULAR ACTIVATION TECHNOLOGY** is essential and necessary to increase biological activity and thus obtain the greatest effectiveness in the treatment of diseases that directly or indirectly produce free radicals.

# Agriculture

## VIUSID<sup>®</sup> agro



**highly effective product**  
plant growth enhancer



**VIUSID® agro** *activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals*

**what is it?**

*A natural product that promotes and activates the cellular metabolism of plants increasing their productivity*

**VIUSID® agro** is applied in very low concentrations and used for the improvement of plant growth to that leads to more quantity and better quality of fruits per plant.

**VIUSID® agro** is an antioxidant and cell protector that improves the synthesis of primary and secondary metabolites, promoting better plant development and greater protection against diseases.

**natural product**

can be used both under traditional  
and organic systems

**VIUSID® agro improves the productivity of crops**

- Improves assimilation of nutrients and microelements by the roots.
- Increases the effectiveness of fertilizers.
- Invigorates roots, stalks, flowers, and leaves with more pigmentation, nectar, and fruits.

**VIUSID® agro** is marketed in containers with 150 ml, 1, 5, and 25 litres of solution to be diluted in water for foliar systems or fertigation.

**can be applied in foliar systems  
or through ground fertigation**

**helps the plant recover  
from damage due to the work of each crop**



**plants better withstand  
the inclement weather**

**crops more resistant  
to pests and diseases**

**eliminates the harmful effects  
of pesticides products**



# VIUSID<sup>®</sup> agro

activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals

how does it work?



in seeds

- Interrupts dormancy.
- Improves germination.



in leaves

- Improves photosynthesis and photorespiration.



in flowers

- Induces flowering.
- Inhibits flower fall.
- Improves flower setting.

**increases**  
agricultural production  
per cultivated area



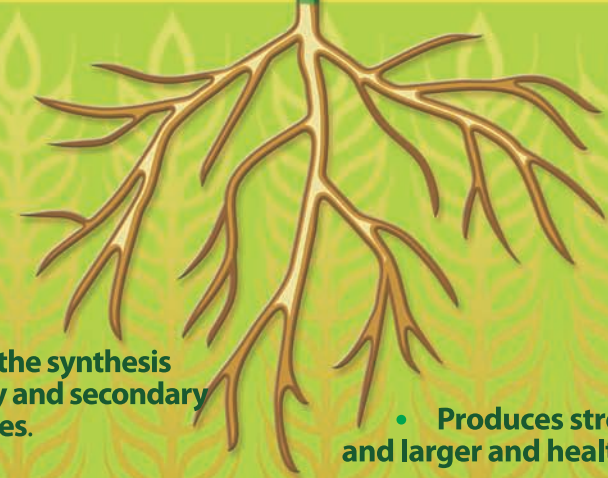
in fruits

- Accelerates the ripening of fruit.
- Accentuates the morphological properties.



- Thicker and longer stems.

- Optimizes plant growth and development.



- Increases the synthesis of primary and secondary metabolites.

- Produces stronger roots and larger and healthier tubers.

**VIUSID<sup>®</sup> agro** acts upon stems and fruit growth, early flowering and harvesting, skin consistency, fruit setting and falling, as well as the lengthening of peduncles in crops treated with it.



# VIUSID<sup>®</sup> agro

activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals

## its effect on plant growth

*Can be applied at all stages of plant growth*

- In preparation of **premium seeds** to increase their germination power.
  - To generate **seedlings more resistant to transplantation**.
    - To strengthen the **ability to adapt to the environment** in which they develop.
    - In the vegetative development of the shoots since it **produces elongation and multiplication of the vegetal cells**.
    - **To prevent or overcome stress processes** due to both physical and chemical factors.

improves  
the plant's ability  
to synthesize  
**primary metabolites**

increases the productivity of crops

helps  
by activating  
the genetic potential  
of each organism







protects plants against pests,  
diseases, and adverse weather conditions  
improves crop health

**VIUSID® agro** activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals  
its phytosanitary activity

*Stimulates the plant's natural defences*

VIUSID® agro helps to strengthen plants and stimulate the synthesis of secondary metabolites for a better natural protection against diseases.

VIUSID® agro reduces cellular damage thanks to its antioxidant capacity.

The application of VIUSID® agro on plants has:

- Systemic action.
- Expression of antimicrobial proteins and phytoalexins.
- Antioxidant action on tissue.
- Healing effect.

**enhancer of treatments**  
against fungi and bacteria

**Agronomic benefits of VIUSID® agro:**

- Improves plant health status.
- Prevents the appearance of diseases.
- Greater efficiency of the associated treatments, better synergy.
- Reduces waste from pesticide treatments.
- Increases the post-harvest shelf life of fruit and vegetables.
- No withdrawal time. Leaves no residue.

can be applied  
to prevent or overcome stress processes  
due to both physical and chemical factors



## field test of chili crop (phytosanitary effect)

### Effect of VIUSID® agro on chili seedlings damaged by virus

For the treatment, **VIUSID® agro** was used in foliar application directly on the plants as follows:

- **Dose**  
Solution of 0,3 ml of **VIUSID® agro** in 1 litre of water.
- **Application**  
Every two days until four doses had been applied.  
The **test lasted 7 days** from the first to the last dose.

## Results and Conclusions

- The improvement is notable for the more damaged seedlings. The more the damage, the better the effect.
- Healthy seedlings remain healthy. In unhealthy seedlings, the disease was contained and their growth corrected.



Damage caused by virus  
(note the damage on the new growth areas)



Improvement in growth areas after  
applying **VIUSID® agro** on chili seedlings

The composition of amino acids and **antioxidant agents** acts at the cytoplasm level of the cells, **reducing the production of oxygen reactive compounds that occur in all diseases**, and preserving the integrity of the cellular level.



# VIUSID<sup>®</sup> agro

activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals

increases post-harvest conservation

*Acts as a powerful natural antioxidant that neutralizes free radicals which intervene in all degenerative processes*

## 1 week more product shelf life

The plants that have been treated with VIUSID<sup>®</sup> agro considerably increase shelf life (useful life of the product), which favours their marketability.

Tomato harvested  
from plant treated with  
VIUSID<sup>®</sup> agro

Tomato harvested  
from plant without treatment



Normal cell



marketable



marketable



Normal cell

1 day



Normal cell



marketable



not marketable



Cell attacked by free radicals

7 days



Cell attacked by free radicals



not marketable



not marketable



Cell with oxidative stress

15 days



# VIUSID<sup>®</sup> agro

activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals

## field test of soya crop

*The effectiveness of VIUSID<sup>®</sup> agro was evaluated based on the morpho-agronomic parameters of soya (Glycine max) crop*

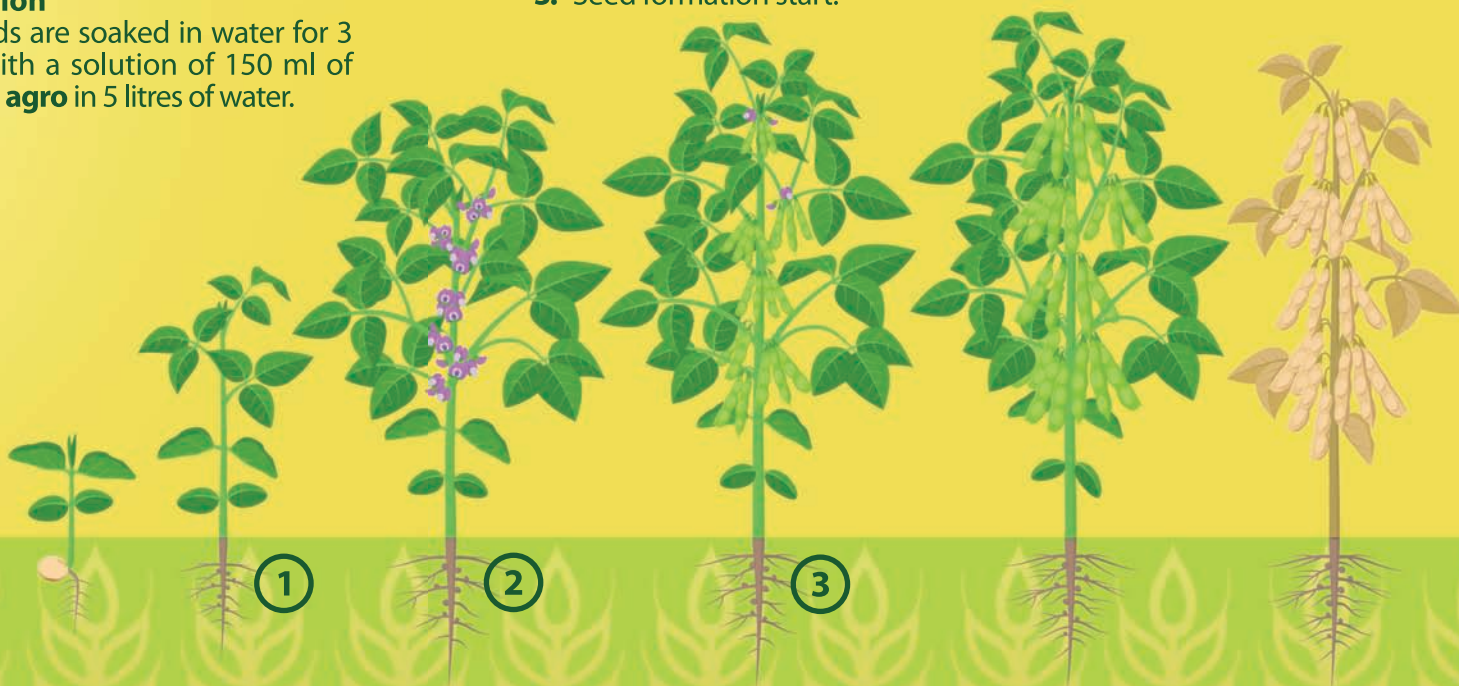
For the test, VIUSID<sup>®</sup> agro application seeds were prepared as follows:

- **Incubation**

The seeds are soaked in water for 3 hours with a solution of 150 ml of VIUSID<sup>®</sup> agro in 5 litres of water.



increases  
**seed fertility**



## Results and Conclusions

average number of legumes per plant

Control	VIUSID <sup>®</sup> agro
31.12	39.27

average amount of seeds per plant

Control	VIUSID <sup>®</sup> agro
72.65	92.65

average weight of 100 seeds

Control	VIUSID <sup>®</sup> agro
13.57 g	15.48 g

## Time and Dose of application

- **Dose of application**

Foliar application with a solution of 200 ml of VIUSID<sup>®</sup> agro per hectare. 2 applications, the second one at 7 days.

- **Time of application**

1. 25 days after the emergency.
2. Beginning of flowering.
3. Seed formation start.





# VIUSID<sup>®</sup> agro

activated glycyrrhizic acid,  
amino acids, vitamins, and minerals

## field test of rice crop

*The effectiveness of VIUSID<sup>®</sup> agro was evaluated based on the morpho-agronomic parameters of rice (*Oryza sativa*) crop*

For the test, VIUSID<sup>®</sup> agro application was divided into 3 stages:

- **Incubation**

The seeds are soaked in water for 6 + 6 hours.

To incubate seeds for use in 1 hectare, 150 ml of VIUSID<sup>®</sup> agro are required.

- **Seedlings**

The seedbed was watered with a solution of 150 ml of VIUSID<sup>®</sup> agro in 5 litres of water (300 ppm).

At 7 days, 2<sup>nd</sup> application at 300 ppm.

At 14 days, 3<sup>th</sup> application of 300 ppm.  
The seedlings are transplanted on days 19 to 21.

A total of 250 ml of VIUSID<sup>®</sup> agro is used per transplanted hectare.

- **Plants in development**

Watering was made with a solution of VIUSID<sup>®</sup> agro in water at 300 ppm every 14 days.

5 applications will be necessary up to day 82 post transplant.

A total of 960 ml of VIUSID<sup>®</sup> agro is used to grow seeds until transplantation per cultivated hectare.

**better seeds**  
that produce  
**healthier and more**  
**resistant plants,**  
with longer and  
stronger roots  
**and longer stems**



Control

VIUSID<sup>®</sup> agro

## Results and Conclusions

- **Yield**

The hectares treated with VIUSID<sup>®</sup> agro produce an average of **1,900 kg (42%) more rice per cultivated hectare** than the control group.



Control

VIUSID<sup>®</sup> agro

**plants more resistant**  
**to pests,**  
**more uniform**  
and more productive

panicles with  
**a greater number**  
**of grains,**  
higher percentage of filling,  
**and better quality**



**field test of coffee crop**

**Effect of VIUSID<sup>®</sup> agro on the production of coffee  
(*Coffea arabica* L.)**

For the treatment, **VIUSID<sup>®</sup> agro** was used in foliar application directly on the plants as follows:

- **Dose**  
Solution of 200 ml of **VIUSID<sup>®</sup> agro** per hectare.
- **Application**  
The product was applied every 8 days, to the plants before and after the beginning of the flowering period.

**greater number of fruits  
per plant**

**larger equatorial and polar  
diameter of fruits**

**higher yield per plant  
and hectare  
of fresh coffee fruits**

**Results and Conclusions**

• **Yield  
(kg / hectare)**  
**+13%**

• **Fruit size**  
**+60%**



• **Fruits / hectare**  
**+11%**

**VIUSID<sup>®</sup> agro** does not have any toxic effects on the leaves or fruits of the coffee plant, even at the highest doses.



## field test of strawberry crop

*The effectiveness of VIUSID<sup>®</sup> agro was evaluated based on the morpho-agronomic parameters of strawberry (*Fragaria L. fragaria*) crop*

For the test, **VIUSID<sup>®</sup> agro** was used in fertirrigation and foliar application as follows:

- **Dose**  
Solution of 200 ml of **VIUSID<sup>®</sup> agro** per hectare.
- **Application**  
Once a week for 4 weeks.  
The first 3 applications by fertirrigation and, the last week, by foliar application directly on the plants.



healthier crops with  
better-looking,  
larger  
and more uniform fruits

## Results and Conclusions

- **Optimizes the growth and development** of roots, stem and leaves.
- **Best BRIX value.**
- **Longer shelf life.**



improves  
the appearance,  
firmness, size, and weight  
of the fruit



Control



VIUSID<sup>®</sup> agro



# VIUSID<sup>®</sup> agro

activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals

## field test of tomato crop

*The effectiveness of VIUSID<sup>®</sup> agro was evaluated based on the morpho-agronomic parameters of tomato (*Solanum lycopersicum*) crop*

For the test, VIUSID<sup>®</sup> agro application was divided into 3 stages:

- **Incubation**  
To incubate seeds for use in 1 hectare, 150 ml of VIUSID<sup>®</sup> agro are required.
- **Seedlings**  
**The seedbed** was watered with a solution of 150 ml of VIUSID<sup>®</sup> agro in 500 litres of water (300 ppm).  
**At 7 days**, 2<sup>nd</sup> application at 300 ppm.  
**At 14 days**, 3<sup>th</sup> application of 300 ppm.
- **Plants in development**  
These are watered with a solution of 300 ppm of VIUSID<sup>®</sup> agro in water, every 7 days until harvest.



## Results and Conclusions

- **Yield**  
Increased agricultural yield per cultivated hectare  
**of up to 38%.**
- **Fruits per plant**  
Increased number of fruits per plant of  
**up to 30%.**
- **Weight of fruit**  
The average weight of the fruits increased by  
**up to 26%.**





# VIUSID<sup>®</sup> agro

activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals

## field test of cantaloupe crop

### Effect of VIUSID<sup>®</sup> agro on the production of cantaloupe (*Cucumis melo* L.)

For the treatment, VIUSID<sup>®</sup> agro was used in foliar application directly on the plants as follows:

- **Dose**  
Solution of 200 ml of VIUSID<sup>®</sup> agro per hectare.
- **Application**  
After the first day of the transplant, 1 application of VIUSID<sup>®</sup> agro every 3 or 4 days during the first month and 1 application of VIUSID<sup>®</sup> agro per week during the second month.

**greater weight and size  
of fruits**

## Results and Conclusions

**better yield  
per hectare**



VIUSID<sup>®</sup> agro  
is a wise investment  
to increase the productivity  
of cantaloupe crops.

**best Brix value**

**greater number of fruits  
per plant**





**VIUSID<sup>®</sup> agro**

activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals

field test of banana crop

*Effect of VIUSID<sup>®</sup> agro on the production of banana  
(Musa paradisiaca)*

For the treatment, **VIUSID<sup>®</sup> agro** was used in foliar application directly on the plants as follows:

- **Application and Dose**

Weekly applications with 200 ml of **VIUSID<sup>®</sup> agro** per hectare, or applications every two weeks with 400 ml of **VIUSID<sup>®</sup> agro** per hectare until the end of the harvest.

**more flowers  
per plant**

**better growth and development  
of the plant**

**increased banana production  
on stalks in terms of quantity and weight**

## Results and Conclusions

**more homogeneity  
and better fruit appearance**



**better yield  
per hectare**





# VIUSID®

your professional  
home gardener

garden

**VIUSID® garden** activated glycyrrhizinic acid,  
amino acids, vitamins, and minerals  
what is it?

***A natural product that promotes and activates the cellular metabolism of plants increasing their productivity and their properties***

**VIUSID® garden** is applied in very low concentrations and used for the improvement of plant growth to that leads to more quantity and better quality of flowers or fruits per plant.

**VIUSID® garden** is an antioxidant and cell protector that improves the synthesis of primary and secondary metabolites, promoting better plant development and greater protection against climate and disease challenges. Speeds up recovery of plants, shrubberies & trees after pruning.

**VIUSID® garden** remarkably improves germination rates whatever you want to start growing at your own place: avocados, tomatoes, lettuces, onions, garlics, strawberries, apples, etc.

**get a higher**  
number of flowers,  
more aroma and essence

**VIUSID® garden increases:**

- Sweetness of fruits.
- Number of leaves.
- Roots development.

**VIUSID® garden** is marketed in containers with 150 ml of solution to be diluted in water for foliar systems or fertigation.





## Application in Chrysanthemum

### Standard dosage:

**0.6 ml per litre of water** to apply, spray leaves and/or water the plants, **VIUSID® garden** diluted in water at indicated rate, once a week. In case of challenge double the rate.

- **15%**  
Increase in number of flowers better stem development
- **Increases size and vigour**



**fresh and longer**

- **12 %**  
Increase in number of leaves
- **Improves pigmentation and aroma**
- **5-7 more days**  
Widely extend freshness and shelf-life

## Application in Anthurium

### Standard dosage:

**0.6 ml per litre of water** to apply, spray leaves and/or water the plants, **VIUSID® garden** diluted in water at indicated rate, once a week. In case of challenge double the rate.

- **26.6%**  
Increase in number of leaves per plant in 3 months
- **16.9 %**  
Bigger length (cm) of the petiole of the last emerged leaf
- **13.4 %**  
More flowers along 7 months-old plants
- **23 %**  
Bigger distance between the lobes (cm) of the last emerged leaf
- **Improves pigmentation and aroma**  
freshness and shelf life

**extra vigour**

