



**NATURAL
DEVELOPMENT
GROUP®**

Via Matteotti 159/C
40013 Castel Maggiore - BO
T/F + 39 051 41 21 099

**ndggroup@ndggroup.eu
www.ndggroup.eu**



“The secret of success? Think outside the box and never betray your customer.”

Michele FERRERO

Each one of us has a secret dream. Mine is to be able to live in a healthier environment and to leave to our children a better world. The soul of this thought is embodied by the Natural Development Group®. My idea is to create an Innovative Project at the service of eco-sustainable agriculture respectful of human health and the environment. I have constantly committed myself to this vision, listening to the needs of farmers in order to anticipate the demands of a constantly developing agriculture.

Gianluca MANFREDINI - The founding Chairman

NATURAL DEVELOPMENT GROUP®

is an International Group working dynamically and professionally in the field of nutrition in agriculture, and aims at offering innovative and quality products through the cooperation with research laboratories linked to the most prestigious European Universities. Trust, fairness, transparency, human heritage care, and constant commitment in research are the values in which we believe and on the basis of which we created a committed and reliable team of competent and professional individuals.



The mission of Natural Development Group®
is based on the idea of

**A CONTINUOUS INNOVATION
IN THE ECO-SUSTAINABILITY
OF AGRICULTURAL ACTIVITIES**

Relying on a highly professional scientific committee, organized in a financially stable and independent head office, holder of scientific and industrial know-how, Natural Development Group® is the holder of Patents, active patent applications as well as registered trademarks. Our Group has a global sales network that allows prompt responses and availability for maximum customer satisfaction.



Our products stand out for their

**EFFECTIVENESS,
QUALITY AND SAFETY
FOR HUMAN AND
ENVIRONMENTAL HEALTH**

This confirms the will of Natural Development Group® to invest in scientific research and attention to product quality. Trust in research and innovation led us to create an ambitious project: a free and independent Think-Tank, capable of developing ideas that gave life to growing consensus in the world of agriculture.



VINE-GROWING OF THE FUTURE

A good portion of the European vine-growing sector is facing a deep conversion mainly driven by the new regulatory framework (EC Regulation No. 1107/2009 and EC Directive No. 128/2009) defining the concept of “Good Agronomic Practice”. With these measures, the European Community acknowledged the fact that traditional farming practices are unsustainable in terms of costs connected to environmental damages and human-health.

This radical transformation is leading to an in-depth review of the European Union legislation on integrated and organic productions and, at the same time, the certification agencies are revising their control systems in a restrictive manner to ensure the highest quality standards with the least environmental impact. In the vine-growing sector, particular attention is paid to nutrition strategies and vine protection, also due to the increasing interest of public agencies and the community on the impact of agricultural activities at environment level and on human health.

Therefore, this context demands a reflection on the development of innovative technical means through research and experimentation programs that may enable to implement the new production standards as soon as possible and to get ready on time to face future scenarios, trending towards an eco-sustainable market.

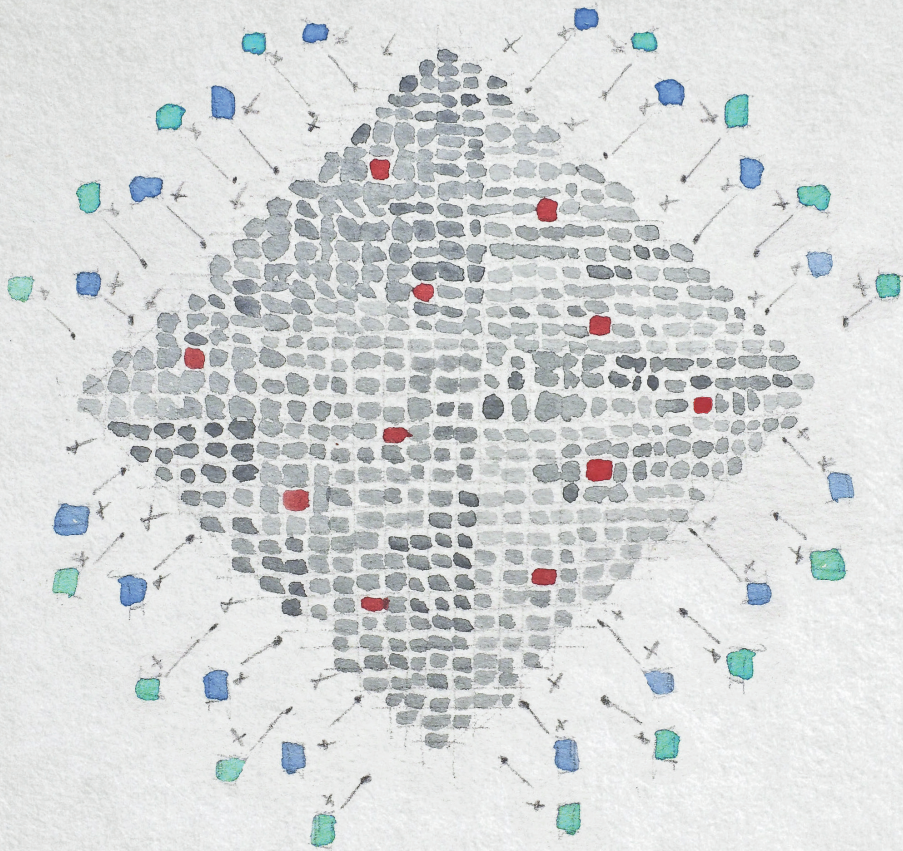


The project is now completed thanks to the close cooperation with prestigious universities such as the the University of Reims (France), the University of Geisenheim (Germany), the University of Florence (Italy), CNR IBIMET, the University of Bologna (Italy) and C.R.E.A. - VE Vine-growing research center - Conegliano (TV), governed by a very active in-house scientific committee, which allows our Group to study more in depth the exceptional functionalities of MICROSAP®, in developing new innovative solutions.

THE VITIBIOSAP® PROJECT

Natural Development Group® patented for use in agriculture a method to synthesize bio-compatible inorganic crystals: MICROSAP®, which constitute the essential matrix of the VITIBIOSAP® fertilizer line.

These are micro-crystalline aggregates that are superficially activated with organic micro-elements and natural extracts so they can be used as innovative dispensers of nutritional substances. This approach belongs to the field of nutraceutics: nutrition and preservation of the physiological status of the plant. The functional element, absorbed by the plant, is involved in a variety of enzymatic processes, promoting good photosynthesis, as well as lignin construction, production and maturity of plant tissues.



- Oli essenziali
- Ioni Rame (Cu)
- Particelle di Calcio (Ca) - Fosfato (PO_4)
- Ioni Potassio (K)
- / Legame Chimico

Diagram showing the bonds existing in a MICROSAP[®] micro crystal externally activated by copper ions.

MICROSAP® ACTIVITY AND FUNCTIONALITY

MICROSAP® crystalline aggregates are micro crystals with micrometric dimensions, which can cover a surface area ranging from 90 to 120 sq.m/g. Therefore, one gram of MICROSAP® has a very large specific surface that can host a huge amount of biologically active molecules, chemically bonded.

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This huge amount of functional molecules enhances activity and biological effectiveness of the VITIBIOSAP® products. For example, calcium plays an important role in cell membrane permeability, cell division and cell stretching (cuticle thickening); while phosphorus is involved in the formation of nucleic acids in the synthesis of proteins, as well as being a component of the cell membrane. The particular structure of MICROSAP® determines the presence of surface charges that allow the formation of a chemical bond between the MICROSAP® micro crystal and the functional element, which in turn becomes more effective if conveyed in this form on the leaf, compared to the effectiveness of the same elements used in a traditional manner.



THE MICROSAP® MICRO CRYSTAL ON THE LEAF

MICROSAP® is homogeneously spread within the micronized water droplet. Thus, a homogeneous distribution of MICROSAP® occurs within the volume of water used in the leaf application and consequently an optimal coverage of the sprayed surface occurs.

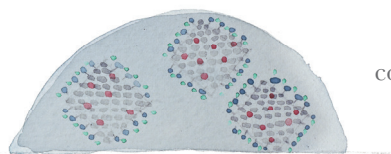


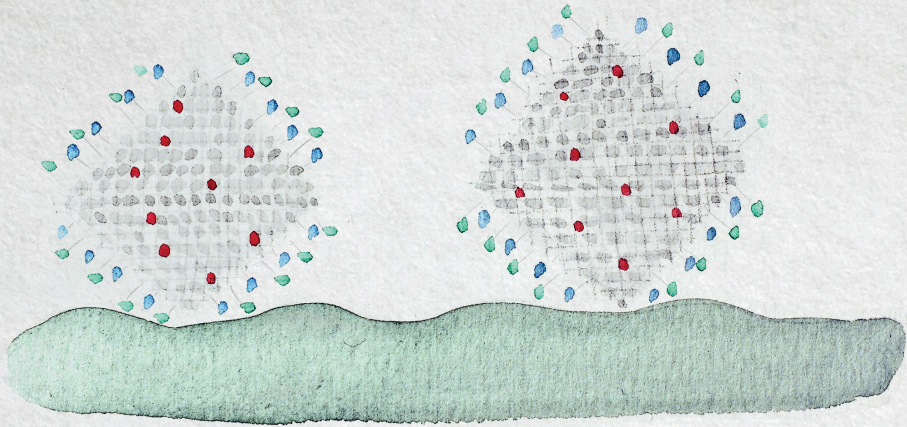
Diagram of a droplet of water containing MICROSAP® externally activated by active molecules.

The image below shows how the Microsap® micro crystals are smaller in size than those of the leaf stoma.

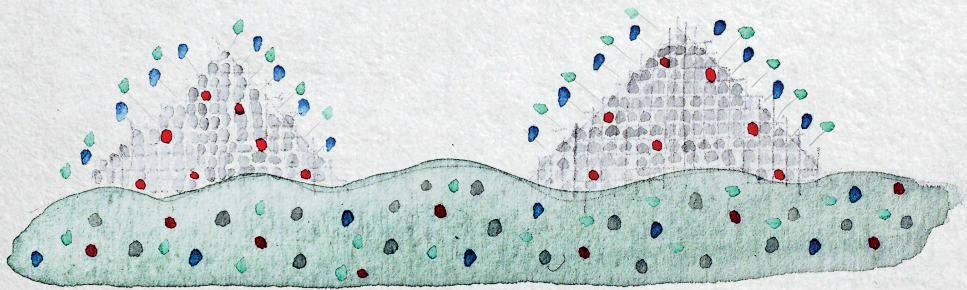


Lower part of the leaf, highlighted are the stomas and the product evenly distributed on the surface.

MICROSAP® ON THE LEAF



Once the Microsap® micro-crystals have been deposited on the leaf surface, they begin to release the nutrients contained therein (such as calcium and potassium) and the biologically active elements.

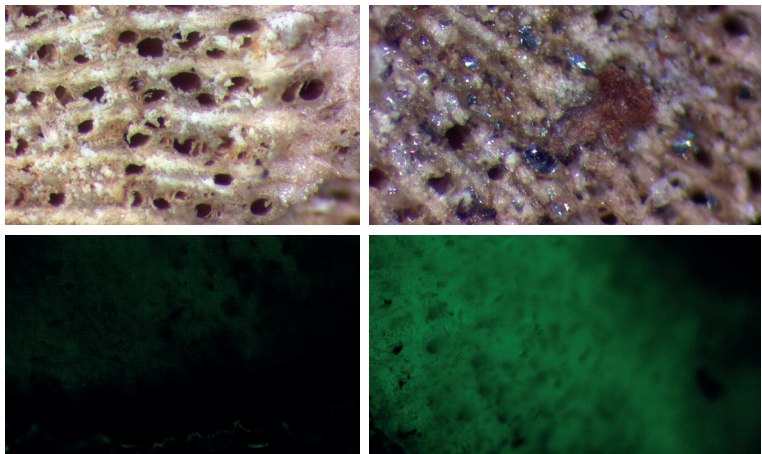


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|--|---------------------|
| ■ Ioni Rame (Cu) | ■ Oli essenziali |
| ■ Particelle di Calcio (Ca) - Fosforo (PO ₄) | ■ Ioni Potassio (K) |
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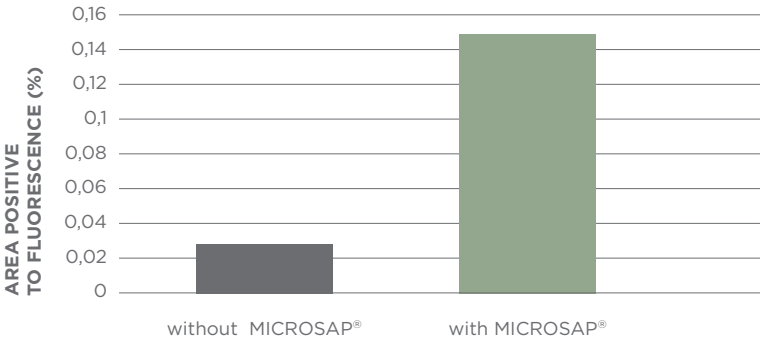
Diagram of the transfer action of the microelements contained in MICROSAP® on the surface.

MICROSAP® does not require gripping or binding agents to adhere to the leaf surface. In fact, thanks to its high surface area, morphological irregularity, and remarkable external electrostatic activity can grip the leaf surface. Field tests related to leaf surface analysis through microscopy demonstrated the presence of MICROSAP® on the leaf, even after several days from leaf application, unlike traditional technical means, which, in the absence of gripping agents, are easily washed away by rain or dew.

Presence of MICROSAP® in the wood.
Stereomicroscopic observation test of a cross section.



Area between exchange and medulla, positive to the fluorescence of the substance associated to MICROSAP® on one year old vines in a controlled environment and wood treated.





micro-elements



natural extracts



MICRO SAP®



THE VITIBIOSAP® INNOVATIVE FERTILIZER LINE FOR A SUSTAINABLE AGRICULTURE

VITIBIOSAP® fertilizers are authorized for use in organic farming and represent an unparalleled innovation in the agricultural sector. The range of VITIBIOSAP® products is a cutting-edge tool in the nutrition strategy of plants, paying particular attention to the protection of human and environmental health.

VITIBIOSAP® products are absorbed by the leaves and trunk, reaching up to the conductive tissues, thus strengthening the natural immune defense of the plant and also stimulating natural resistance to various phytopathologies. Several natural extracts contribute to reinvigorate damaged tissues and enrich the plant with vital nutrients thus improving nutritional status and promoting optimal growth.



THE INNOVATIVE LINE OF VITIBIOSAP® FERTILIZERS

The leaf fertilizers of the VITIBIOSAP® product line contain natural extracts combined with innovative solutions of copper, zinc and MICROSAP® micro-crystals, which bind the substances giving the products high leaf-coverage capability.

The unique formulation method and remarkable chemical purity of the products enhance the function of the active principles and stimulate the plant, reinforcing its defenses against stress caused by fungal and bacterial attacks.

THE VITIBIOSAP® FERTILIZER LINE

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THE VIVARIUM® LINE



THE HORTUM® LINE



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**NATURAL
DEVELOPMENT
GROUP®**

**AN INNOVATIVE
PROJECT
DEDICATED
TO THE MASTERS
OF THE EARTH
CAREFUL
AND AWARE
OF THE QUALITY
OF ITS FRUITS**

**WE DO NOT
INHERIT
THE EARTH
FROM OUR
PARENTS
BUT WE ARE
GRANTED IT
AS A LOAN FOR
OUR CHILDREN**

(ancient Masai saying, Kenya)