

# PRODUCT DATA SHEET

Product: **Sanbio® VITAL**

## DESCRIPTION

VITAL is a premium liquid concentrated immunity activator and growth stimulant used in fertigation for root recovery, stress control and increase of productivity of all crops. VITAL with its powerful formulation acts in the plant cells and by that it triggers the defensive and vegetative processes in the plant. VITAL increases the tolerance and resistance towards environmental and pathological stress by activating the whole plant physiological system. VITAL activates the metabolism that results in enhanced development of root system, shoots, leaves, fruits, improved mobilization and assimilation of nutrients, vegetative growth, early flowering and maturation, improved fruit quality and long storage life.

## MAIN ADVANTAGES

The advantages of **VITAL** are:

- Improving crop yield, quality and storage parameters
- Increasing environmental stress tolerance
- Higher resistance against infections and pests
- Biological root repair
- Enhancement of soil fertility
- Better utilization of nutrients and water
- Better growth under extreme conditions.

## COMPOSITION

Activated\*) composition containing: Water, Nitrogen, Magnesium Sulphate Heptahydrate (MgSO<sub>4</sub>·7H<sub>2</sub>O), Algae extract (Ascophyllum nodosum), Yucca extract (Yucca Schidigera)  
\*) processed by SANBIO Biocatalytic Stimulation Technology

## DECLARATION

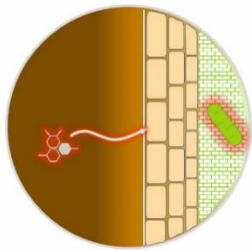
Organic-mineral fertilizer N+K<sub>2</sub>O (4.5+2.9) // Biostimulant // Activator

## MODE OF ACTION

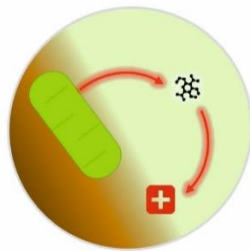
VITAL combines the core functions in one product:

1. plant nutrition
2. growth stimulation
3. stress control
4. natural crop protection.

The effectiveness of the ferti-activator VITAL in liquid form is based on the activation by the SANBIO Biocatalytical Stimulation Technology. The mechanism of **electrical stimulation of plant cells** makes the difference of VITAL versus conventional products acting on chemical mechanisms only.



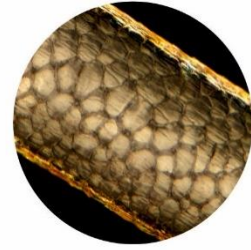
Stimulation of plant cells



Generation of biopolymer



Recovery of roots



Formation of new barrier

**RAPID ACTION.** The powerful formulation leads to an instant adsorption through the roots and fast transport into the plant cells. There, VITAL is triggering the defensive and vegetative processes.

**GROWTH CONTROL.** The activation of whole plant physiological system boosting the excretion of phytohormones (Gibberellin, Cytokinin, Auxin, Ethylene, Phytoalexin). These catalysts intensifying metabolic processes and enhancing vegetative growth.

**ROOT REPAIR.** The production of Phytoalexin leads to lignin synthesis and generation of Ethylen. As a result, biopolymers are created, which forming stronger cell walls and structure of roots. The coverage of damaged root areas creates a new natural physical barrier. By that the roots are repaired and plant can recover from parasitic damages (e.g. Nematode).

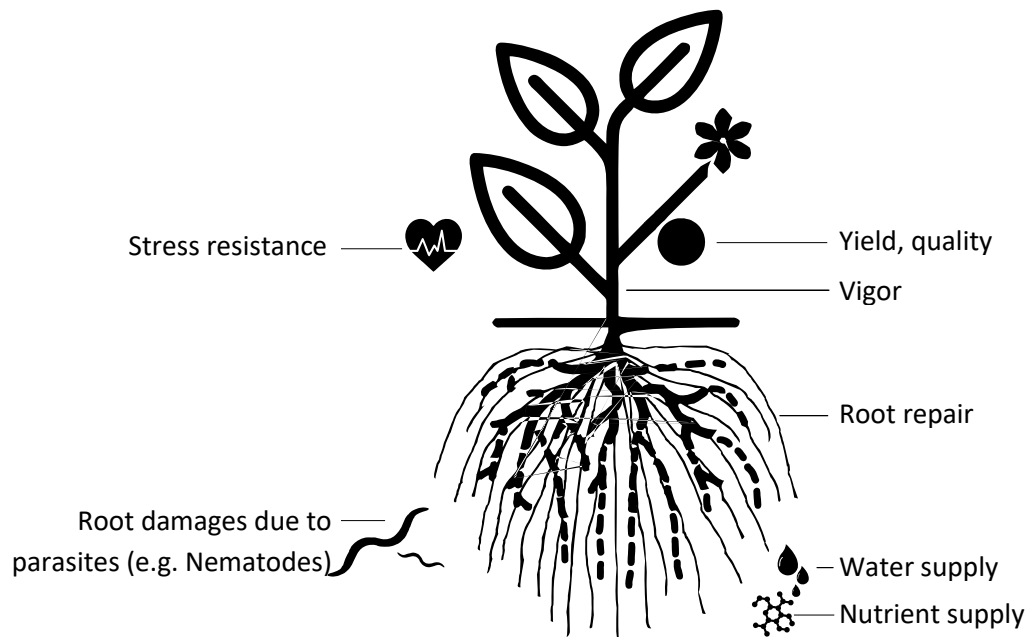
**FULL ACCESS.** The rapid and significant development of root mass ensures good access, transport and assimilation of essential nutrients, elements and water. Optimal nutrition can save artificial fertilizer and water.

#### **FERTILITY AND NUTRITION.**

The net positive charge on molecules in VITAL allow it to act as a chelating agent. Nutrients and minerals are hold in the soil, thus increasing their availability.

**STRONG AND VITAL.** VITAL is equipped with a stress control system. The activation of immune system on cellular level (immune response) enhances the tolerance towards abiotic stress factors and resistance towards biotic stress factors. The plant is able to adapt herself to disorders (soil toxicity, salinity) and unfavourable conditions (heat, cold, frost, drought, flood). The integrated biological protection system reduces the impact of fungal infections, pathogens and pest attack. As a result, a profitable growth is possible even under extreme conditions, loss can be minimized. VITAL works systemically, preventively and curatively with associated natural mechanisms.

**QUICKER. UPPER. BETTER.** VITAL repairs damaged roots, accelerates the plant vigor (early flowering, ripening, harvest), and increases the yield significantly. The fruits show improved quality (appearance, sugar content, taste) and storage parameter (shelf time, stability).



## COMPOSITION

Parameter	Unit	Result
Water	% w/w	40.0
Algae / seaweed extract ( <i>Acophyllum nodosum</i> )	% w/w	26.0
Yucca extract ( <i>Yucca schidigera</i> )	% w/w	26.0
Nitrogen	% w/w	4.5
Magnesium sulphate heptahydrate ( $MgSO_4 \cdot 7H_2O$ ) calculated as $MgSO_4$	% w/w	3.5

## PHYSICO-CHEMICAL PARAMETERS

Parameter	Unit	Result
Appearance	-	Slightly viscous liquid
Color	-	brown
Odour	-	Slight vinegar
Dry matter	% w/w	26.1
Organic dry matter OS	% w/w	19.4
pH value	at 20.7°C	5.5
Salinity	g/l OS	59.1
Solubility in water	%	miscible
Density at 20°C	kg/m <sup>3</sup>	1,095
Viscosity at 20°C	cPS	50-100

## NUTRIENTS

Parameter	Unit	Result
Total nitrogen TN	% w/w	4.5
→ thereof: Nitric N	% w/w	1.5
→ thereof: Ammonical N	% w/w	1.5
→ thereof: Amine N	% w/w	1.5

## ELEMENTS

Parameter	Unit	Result
Calcium oxide CaO	% w/w	0.240
Iron Fe	% w/w	0.010
Potassium oxide K <sub>2</sub> O	% w/w	2.900
Magnesium oxide MgO	% w/w	0.100
Phosphorus oxide P <sub>2</sub> O <sub>5</sub>	% w/w	0.240
Sulphur trioxide SO <sub>3</sub>	% w/w	0.699

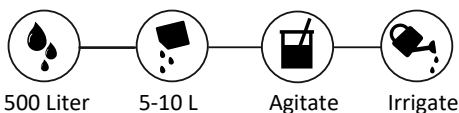
## DIRECTIONS OF USE

VITAL is designed for use in the cultivation of all types of agricultural and horticultural crops.

## FERTIGATION:

Crops	Application time	Single rate
<b>Soil-grown agricultural crops</b> Cereals, Pulses, Vegetables and Melons, Fruits, Nuts, Oilseeds, Sugars and Starches, Fibres, Beverages, Narcotics, Spices, Condiments, Rubber Forages, Green and Green leaf manure, Lawns	First application should be done in the early growth period (tillering, 3-5 leaves visible, stem elongation). Subsequent applications can be done optional during the shoot phase until end of flowering phase.	5—10 L/ha
<b>Substrate</b>	Prior sowing	2 L/m <sup>3</sup>

**OPTIMAL WORKING SOLUTION:** Fill tank with 500 Liters of water. Add 5-10 L of VITAL. Agitate well. The working solution should be applied promptly. Maintain agitation throughout the fertigation process.



**OPTIMAL NUMBER OF TREATMENTS:** 1-2.

**FERTIGATION:** Use working solution with total application rate of 500L/ha. Apply onto ground close to the plant. Wait at least 14 days between two applications.

**ROOT SOAK:** Bare roots from trees or plants can be soaked in a working solution of 1% before plant out.

**SOIL DRENCH:** Apply soil drench around the root base of trees and plants or seedbeds in a 0.5-1% working solution.

**SEED PRIMING:** Soak seeds for 24 hours in a working solution of 10% with a total application rate of 5L/100kgs seed at room temperature. Re-dry prior sowing. Seeds must be sown within 1–2 days after priming.

**COMPATIBILITY:** Mixing with most fertilizers and plant protection chemicals is possible. Do NOT mix with alkaline agrochemicals (pH value >7). It is recommended to conduct a small mixing test before use.

### STORAGE

Store cool and dry. Temperature range +5...40°C. Protect from sunlight and frost.



### SAFETY

Read SDS carefully.

Keep out of reach of children and animals.

Wear protection gloves and eye protection.

Avoid breathing dust/mist/spray.

Wash with water thoroughly after handling.



### PACKAGE

1 L bottle

10L can

### SHELF TIME

24 months in unopened packages. Opened packages should be stored tightly closed.

### COUNTRY OF ORIGIN

Federal Republic of Germany

### PRODUCER

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[www.sanbio.eu](http://www.sanbio.eu)

<https://www.youtube.com/channel/UCcP8e0Ev1wGnI93x44IGfMg>

**LEGAL STATEMENT:** Certain statements may not be applicable in all geographical regions. Product associated claims may differ based on government requirements. Product composition and availability may vary by country. Please contact SANBOS GmbH for further information.

**OTHER INFORMATION**

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