agriges

Nema 300 WW

+ safety

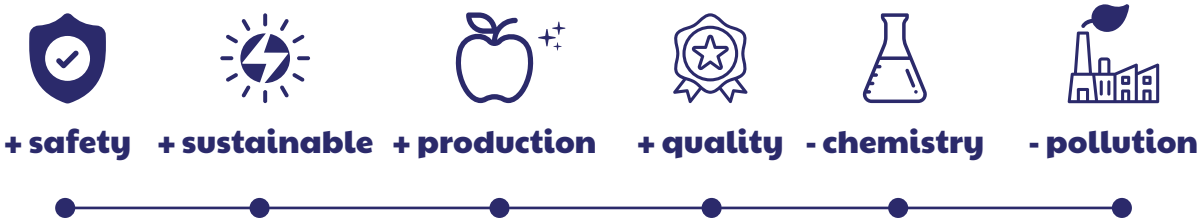
+ root

+ production

Green Path

Produce more and produce healthy!

Green Path is Agriges' answer to the new challenges of modern agriculture. The project core is to develop technical means that allow achieving abundant productions, sustainable from an environmental point of view and safe for food: produce more and produce in a healthy way. The project involves the collaboration of Agriges with research institutes, experimental centres, universities, cooperatives and farms to develop products that maximize crops, thereby reducing the use of potentially polluting chemicals.



New problematics in fruit growing and horticulture: Soil fatigue

Soil health is an aspect of primary importance to support agricultural production of high quality and quantity. The excessive use of mineral fertilizers, deep soil tillage, irrational irrigations but above all replanting and monoculture generate a series of negative symptoms for the crop with inevitable repercussions on the productivity of agricultural crops and on the quality of the fruits defined with the expression **soil fatigue.**

Agriges has for years gained the certainty that in the case of tired soils, where the optimal conditions have been created for the proliferation not only of soil pathogens jointly responsible for soil fatigue but also for the transmission of phytopathogenic agents very harmful to the plant, it is of fundamental importance is to restore **the root growth** interrupted by stress factors, stimulating the production by the plant of a new radical hair and inducing it to fortify the cortical tissues, in order to make the root system less susceptible to any further stress.

Why Nema 300 WW?

Nema 300 WW promotes the root growth, in such a way that the crop quickly recovers the damaged tissue.

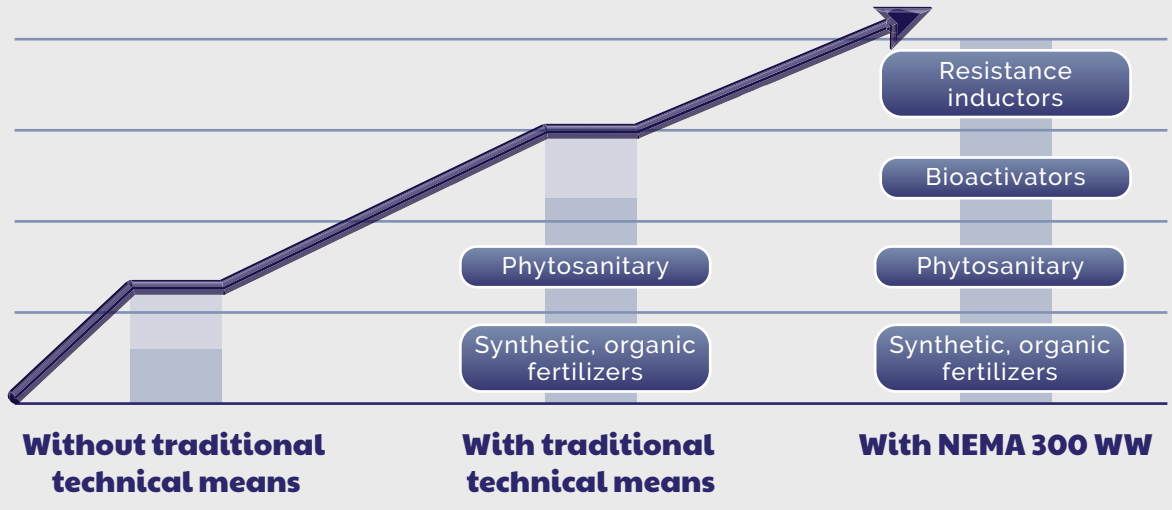
reactivates radical growth interrupted by stressors

increases the endogenous resistance of the plant to adversity

stimulates the plant to thicken the cortical root tissue

The production potential of the root system in tired soils

Nema 300 WW induces the plant to best express its physiological potential. In fact, as can be seen from the graph below, traditional technical means are ineffective in combating stress on the root systems.



Active components

The special formulation of Nema 300 WW, developed at the Agriges Research and Development laboratories, is 100% natural and consists of vegetable oils and rare medicinal essences, suitably selected and which allow the product to perform an **auxin-like** action intense and long lasting. This exclusive composition allows the plant to respond vigorously and energetically to stress, especially if radical. In addition, Nema 300 WW alerts the plant's self-defence system (SAR, SIR) against the most common radical stress agents.

Component	Action	Effect on the plant
FATTY ACIDS	Fatty acids are signal molecules, involved in biotic and abiotic stress-related responses (A. Kachroo and P. Kachroo, 2009). Furthermore, recent studies have shown that during the rooting process the content of some fatty acids increases exponentially for use by the roots at this stage (H. Cheikhrouhou et al., 2015). Finally, the fatty acids of Nema 300 WW improve the product's ability to distribute itself around the roots, promoting a homogeneous diffusion of the nutrient solution and a more complete coverage of the treated areas.	
ALKALOIDS AND DITERPENES	Alkaloids are secondary metabolites used by plants as compounds that improve the natural resistance of plants (Vilariño and Ravetta 2008; Matsuura and Fett-Neto 2013). It has also been seen how these compounds improve the efficiency of the root system by allowing greater absorption of nutrients.	
PHENOLS AND TANNINS	Phenols and tannins are secondary metabolites involved in various capacities in the response of plants to numerous stressors (Hammerschmidt, 2005; Witzell and Martín, 2008; Chong et al., 2009) (Barbehenn & Constabel, 2011). They can stimulate endogenous resistance responses or acting as activators against various adversities.	
GLUCOSINOLATES	Once in the soil and in contact with water, a bio-hydrolysis process is activated which, starting from glucosinolates, releases powerful antioxidants, actively involved in the responses against the main stress agents.	

Experimental results

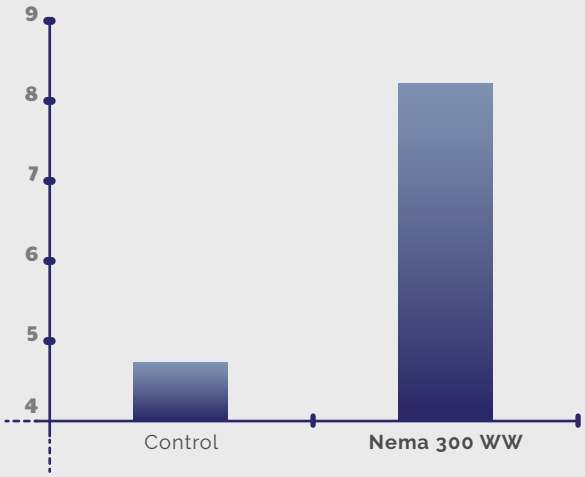
The FTS (Agriges Field Technical Service) group has conducted numerous field tests, testing the Nema 300 WW in different regions of the world. Nema 300 WW has also been tested within the European research project BIOFECTOR, in which Agriges was the only Italian SME partner. The tests were conducted on various crops of agricultural interest with the aim of verifying the influence of Nema 300 WW on root development (auxin-like activity) and on the nutritional status of the plant (SPAD index).

Goal:

Check the **auxin-like** activity by measuring the formation and length of new roots on cuttings (hypocotyls) of green bean plants, produced from seed. The test saw the application of Nema 300 WW compared to a Control treated only with water.

Results

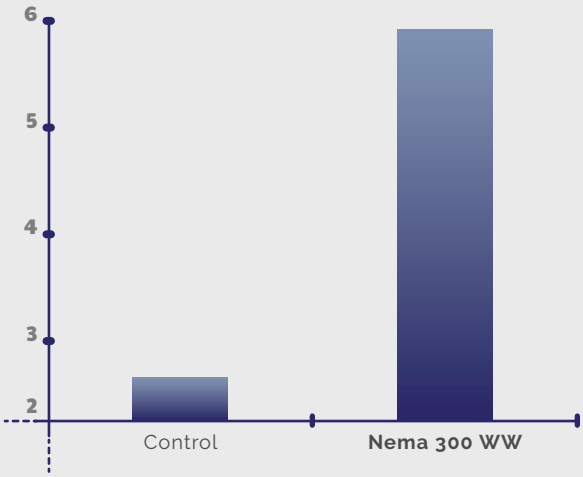
Number of roots per plant



Compared to the control, the bean hypocotyls treated with Nema 300 WW produced more roots per plant, on average 7.7 compared to the control (4.1).

Plants treated with Nema 300 WW showed an average root length more than double the average length compared to the untreated.

Length (mm) of the primary root



The effects that derive directly from a more efficient root system are:

- Better **resistance to water stress**
- Greater **absorption of water and nutrients**
- High **quantity and quality production**

Control

Nema 300 WW

Goal:

Evaluate the **nutritional status** of the plant estimated through the SPAD index. The test was conducted on two "Merlot" vineyards located in the Euganean Hills in the province of Padua, planted in 2000 with a 2.5 x 0.8 m planting layout. From the pre-flowering to the harvest, several readings of the SPAD colour index were made. The SPAD index estimates the chlorophyll content in the leaf and, consequently, that of essential nutritional elements (particularly nitrogen). The test saw the comparison of 2 THESES:

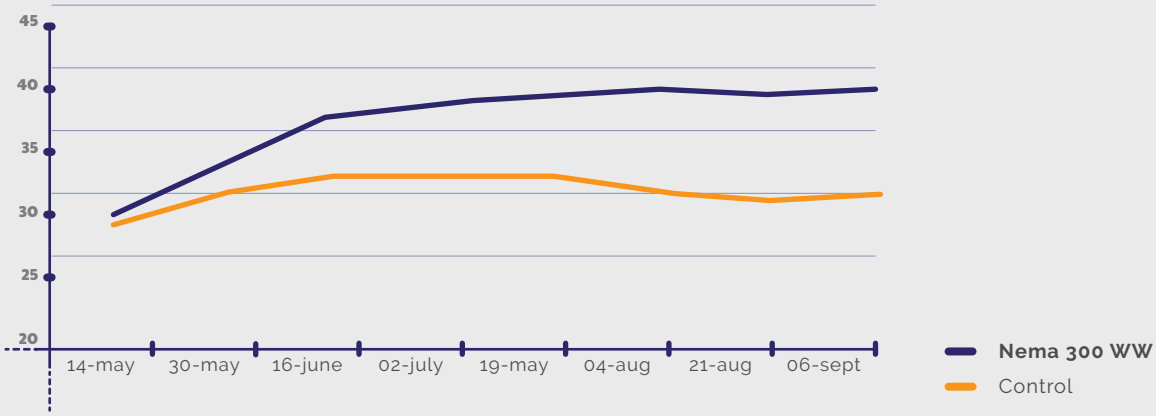
- **Control** (untreated)
- **Nema 300 WW** (25 l/ha on awakening))

FTS Field Technical Service

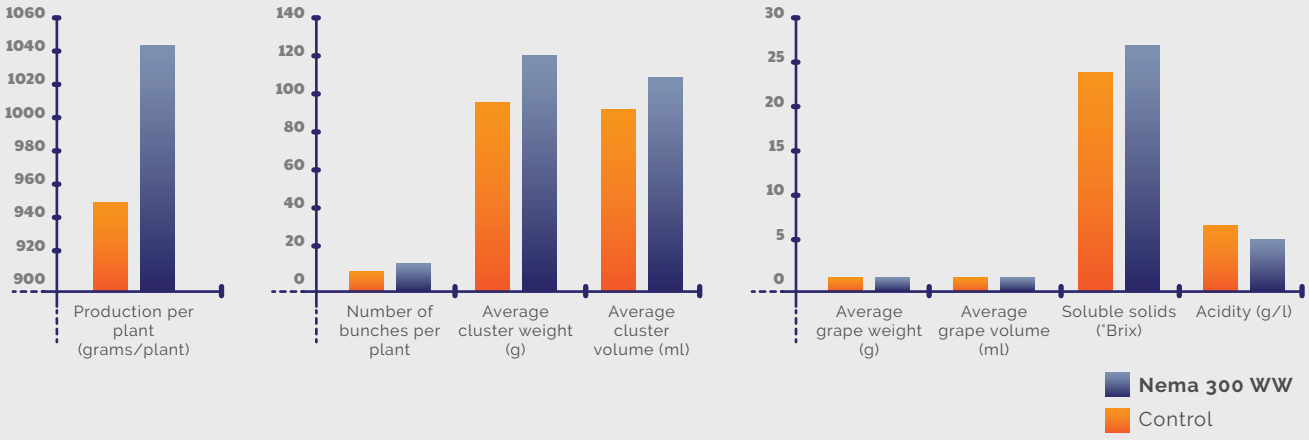
Results

The activity of promoting the growth of the root system, demonstrated in the studies conducted in the BIOFECTOR project, is also confirmed in the results of this test. In fact, plants treated with Nema 300 WW showed higher SPAD values than untreated plants. These differences are statistically significant in almost all the surveys and are most evident in the phenological phases linked to the productivity of the vineyard.

Evolution over time of the SPAD index



At the harvest, the **quantitative** and **qualitative** parameters were assessed: the total production and the production per plant were greater in the theses treated with Nema 300 WW, as well as the application of Nema 300 WW improved the soluble solids content (° Brix) and reduced titratable acidity.



Doses and methods

CROPS	Application in Fertigation	Dose l/ha
TREE CROPS	Starting from early growth stages, repeating the treatment every 10 to 14 days	15-25
TABLE GRAPES AND WINE GRAPES	Starting from early growth stages, repeating the treatment every 10 to 14 days	15-25
HORTICULTURAL CROPS	Starting from early growth stages, repeating the treatment every 10 to 14 days	15-25
INDUSTRIAL CROPS	Starting from early growth stages, repeating the treatment every 10 to 14 days	15-25
ORNAMENTALS	Starting from early growth stages, repeating the treatment every 10 to 14 days	15-25

The above doses are meant to be a merely indicative value and may vary in relation to the soil and climate conditions of each area.

Warnings

In case of mixing with other products it is always advisable to carry out miscibility and compatibility tests on a limited number of plants. Do not mix with products with strong acid reaction, alkaline, sulfur. Shake the container vigorously before use. In case of application with weeding bar, it is necessary to follow the treatment with an abundant irrigation with only water. Do not mix with herbicides. **Nema 300 WW does not have the characteristics of a fertilizer or a crop protection product.**

Formulation
Soluble liquid

Packaging
1 - 5 - 10 - 25 l

Density (T=20°c)
approx. 1240 kg/m^3

pH (sol. 6%)
approx. 9.6

Conductivity (sol. 10%)
approx. 4.5 dS/m

Resistance inductor

Fertigation

AGRIGES srl
Contrada Selva di Sotto Zona Industriale
82035 San Salvatore Telesino (BN) ITALY

TEL. +39 0824 947065
FAX. +39 0824 947442

www.agriges.com
info.contact@agriges.com