Nº4 / OCTOBER 2023

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BIOSTIMULANTS!

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USE OF DRONES IN BIOSTIMULANT APPLICATION

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SPECIAL

BIOSTIMULANTS CLUB

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SERGOMIL® L60

Neoestim

ONE OF A KIND

SERGOMIL® L60 is a biostimulant product formulated with saccharide derivatives as acid monomers and with copper as a trace element, which play a role in inducing plant vigour, growth and development.

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OCTOBER 23

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RENOV® SUPER 6 is a biostimulant based on a consortium of 6 plant growth promoting rhizobacteria based on *Bacillus subtilis*, *Bacillus pumilus*, *Bacillus siamensis*, *Bacillus amyloliquefaciens*, *Bacillus megaterium* and *Pseudomonas fluorescens*.

servalesa®

MAS RAIZ®+

Biostimulants

STIMULATES THE DEVELOPMENT OF THE ROOT SYSTEM

Biostimulants

Exploring the next wave of growth opportunities

It is well known that **the agriculture of the future** that has been announced and promoted by many stakeholders for the last decades is already a reality and has become **the agriculture of today.** Whilst many consumers are demanding "clean and sustainable", official institutions are already regulating in this direction, but it is true that the speed of changes is uneven among countries, but the tendency observed seems to confirm that the impact is global.

Given this context the main supermarkets chains (following of course multiple studies on consumer needs and trends) are waving any risks and directly demanding residue-free and environmentally respectful food to meet consumers needs (also framed and as a differential element in different marketing campaigns to associate the brand with these values).

Therefore, how is the supply chain affected by this?

Of course, there is a need for adaptation to meet the demand but there is one main character in this story that plays the most important role: the farmer. Whilst consumers expose an eternal list of demands, farmers are many times forced to adapt themselves to the "current situation" to assure their survival. At Servalesa our objective remains to support farmer by developing technology to assure a safe, sustainable, and the most important, profitable harvest using biostimulants.

It is difficult to generalise the exact level of the impacts because it depends on the crop in question, the specific biostimulant product, the original state of the soil, how well managed crops already are and several other factors. However, minimum yield increases related to biostimulant use are reported at 5-10%.

Biostimulants are able to increase nutrient use efficiency so that farmers receive a better return on their investment. This includes making use of nutrients in the soil that might not otherwise be available to plants, for example by solubilizing phosphorus into plant-available forms, fixing atmospheric nitrogen or chelating iron forms through siderophores. These nutrient use improvements reduce nutrient losses and the related environmental impacts. The link between good nutrition and high yields is well established.

Biostimulants also contribute improve the tolerance to abiotic stresses such as drought, extreme temperatures, salinity, and flooding better. Such harsh growing conditions can reduce yields as crops divert energy into stress responses. In the absence of biostimulants, stress may even kill the plant. By helping plants to cope better in the face of stress, biostimulants help ensure that yields are higher than they would be without this "biological insurance". Although it is not their primary reason for use, making plants more vigorous in the face of abiotic stresses is likely to make them less vulnerable to disease in the same way that you are less likely to fall ill if you eat a healthy, balanced diet.

Both the improved use of nutrients and stress tolerance enhance quality of output. Improved yield and quality both influence farmer profitability.

Most market analysts report that the European biostimulants market accounts for roughly half of the global market. Estimates of the value of the European market range around USD 1.5-2 billion in 2022. (*Market Date Forecast*, *Market and Markets and Dunham Trimmer*). The compound annual growth rate (CAGR) reported is 10-12%.

There are many factors supporting the growth in the use of biostimulants in the EU:

1. The biostimulants industry has developed new innovative technologies targeting specific agronomical needs, attracting farmers and new customers.

2. Biostimulant use is spreading from some pioneer countries to a wider number, both within Europe and the rest of the world.

3. Biostimulant products were initially used primarily in organic production and on high-value fruit and vegetable crops. They are increasingly being introduced in extensive/broadacre crops.

4. Recent high and volatile prices for conventional inputs like fertilisers have created incentives for farmers to optimise the efficiency of input use. (example of urea roller-coaster price slalom).

5. As mentioned in the first part of the article, in response to consumer demands for healthy food products with minimal environmental impacts (and related policies) growers are looking for ways to use synthetic chemicals and mineral fertilisers more efficiently and effectively.

6. Biostimulants are increasingly seen to improve the return on their investment in other inputs and to respond to consumer demands for "softer" agricultural practices.

Overall, we can conclude saying that biostimulant are part of the answer to many of the challenges that we are facing in the near future. With the use of biostimulants we are supporting the production of healthy food production with minimal environmental impact, we are improving the return of the investment of conventional inputs, reducing the volatility of prices of conventional tools (therefore, providing stability to the market) and, all in all, improving yield increases of 5 – 10%.

This is already a reality in the European marketing, were biostimulants are leading products and other key agricultural regions in the world are, more and more, aware of the importance of the use of biostimulants.

Biostimulants are, with no doubt, a growth opportunity in agriculture.

Mr. Pascual Bauset

Marketing Manager
Servalesa

Thinking about bioestimulation in a global context

In the Agro Business and concretely in Biostimulants framework we have presence the evolving of the market situation for these products during the past years, in a worldwide context the habitual flow of tendencies and regulation have their origin in the "old World", Europe, and from there (here) it has jump to América, Latam and NothAmerica, and the other three continents.

The aim of purchasing a better agriculture, based on technology for the production and safety for the population has bring us terms like non-residue, zero-residue derived from organic farming, with the horizon objective of meeting global goals.

Firstly, the Regulation parameters where the reduction or ban of several active substances from chemical origin must be balanced with the other objective, which is to feed the global population that recently has reached the scary digit of 8.500.000 human beings.

The Regulatory framework, let's speak about it in a global way, although the idiosyncrasy of each country and their regulations and the different calendarization depending on the continent, with the flux above mentioned, push the market to have a crop management strategy without chemical synthesis products, this is what have open the eyes to the farmers and pay more attention to other tools to help the health of their crops based in different strategies, and this is where the key word appears, BIOSTIMULATION.

With Bioestimulation, market is substituting traditional tools and products, not only for crop protection also for traditional fertilization which is also a big charge for the health of the soil, the base of everything, for Bio stimulation in its different scopes, microorganism, non-chemical origin active substances which have elicitor effect and helps the farmers to deal with the critic phases of the different crops.

Strategies starting from the initial phenological stages of the crop to the harvest where the biostimulant products have a key protagonist for the vegetal development and the growth of the fruits and vegetables for a better quality and yields in all kind of crops, not only in the high profit ones.

Mr. Alfredo Camps

International sales Manager
Servalesa

This is also something to take into account, we are not talking about Biostimulation for "special" crops, one of the goals achieves it he possibility of offer solutions to all kind of crops, like extensive ones, where applying biostimulant products some years ago was something inconceivable, but with the limitations mentioned and the aim of a more sustainable way of producing are possible nowadays.

An extra challenge, moreover pandemic situations that has affect the all the planet, is the meteorological changes we are facing, the climate change is something more than real, what it was an alert few years ago. Droughts, extreme temperatures, heavy rains are common situations that the crops face during all the season year by year producing an abiotic stress that also need to be faced with the biostimulation solutions.

On this scenario and facing this challenge with no hesitation, Servalesa is multiplying their efforts to offer tools and solutions to all the network we are giving service nowadays, in five continents and over 40 countries, after the magnificent effort done for over 40 years since this company started its activity.

Focusing in Biostimulations the strategy is clear and we are investing in the European Regulatory parameters which are the base for the rest of countries, registering our products in UE 2019/1009, UNE and CE standards.

This provides our network the confidence necessary to focus in the evolution and developing of their crops based in technology, quality and food safety.

Our aim is to grow and have presence in all the countries of the five continents we already have save our first steps and offer our biostimulant base solutions to all the markets.

If the global framework sets the base for the next steps, let's adapt to it with our tools, for sure we will find solutions.

SERGOMIL® L60 AND TEMPLARIO® PLUS

Servalesa's citrus skin improvement strategy in Australia

In order to determine the final quality of the citrus harvest, optimal management in the last stages of the crop cycle, starting with the colour change, is essential. Therefore, a strategy focused on improving the preservation and protection of the peel can have a direct effect on the final value and profitability of the crop for the farmer.

However, the ideal scenario includes not only the interests of the farmer, but also those of the marketing companies. These aim to provide supermarket chains with products that meet consumer expectations and needs based on consumer trends. And it is precisely these trends that are a fundamental aspect influencing the entire supply chain, as they push all actors to continuously adapt. ***Innova Market*** Insights, in its presentation of the main trends in the food industry for the year 2022, states: *"personal health and sustainability have proven to be strong drivers of consumer choice"; "personal and societal values are increasingly important as they become intertwined with purchasing decisions".*

Returning to citriculture, there is a clear need to be able to produce fruit on the basis of sustainable and healthy standards that also have an adequate shelf life to guarantee their commercialisation in the different markets of interest. The challenge is to do this on the basis of agronomic practices that result in zero-waste harvests and that influence the many aspects surrounding cultivation (pre-harvest), subsequent processing and conservation (post-harvest). And all of this is compounded by the restriction and/or prohibition of the use of some tools such as phytosanitary products which, until recently, allowed this task to be completed successfully.

In order to meet this challenge, Servalesa proposes to introduce the use of biostimulants as complements to conventional tools in zero-waste management strategies, thus enhancing the stimulation-protection binomial. The concept of the aforementioned plant protection products revolves around plant health. Biostimulants are based on the improvement and regulation of physiological and biological processes of crops and biochemistry to optimise and improve crop yield and quality.

In the specific case of citriculture, and thanks to the study carried out by Servalesa, there is evidence that the combined use of the biostimulants **SERGOMIL® L60** and **TEMPLARIO® PLUS** improves the quality of the peel of the fruit, reinforcing its firmness, preventing its weakening and mitigating senescence. In this way, the fruits are prepared for post-harvest life.

SERGOMIL® L60

Neoestim

SERGOMIL® L60 is a biostimulant based on a liquid formulation composed of sucrose derivatives and complexed copper.
Servalesa, thanks to a study carried out at the Zaidín Experimental Station (CSIC), has confirmed the action method of **SERGOMIL® L60**. It is based on the ability to increase copper levels inside the plant (by promoting the synthesis of key enzymes), optimise the photosynthesis process and reduce various physiopathologies linked to copper deficiency. However, one of the most important characteristics of **SERGOMIL® L60's** action method is its ability to activate the metabolic pathways associated with lignin synthesis, reinforcing the cell wall of plant structures and thus improving fruit firmness. Finally, the conformation study tested the ability of **SERGOMIL® L60** to activate the synthesis of PR proteins dependent on the salicylic acid pathway.

TEMPLARIO® PLUS

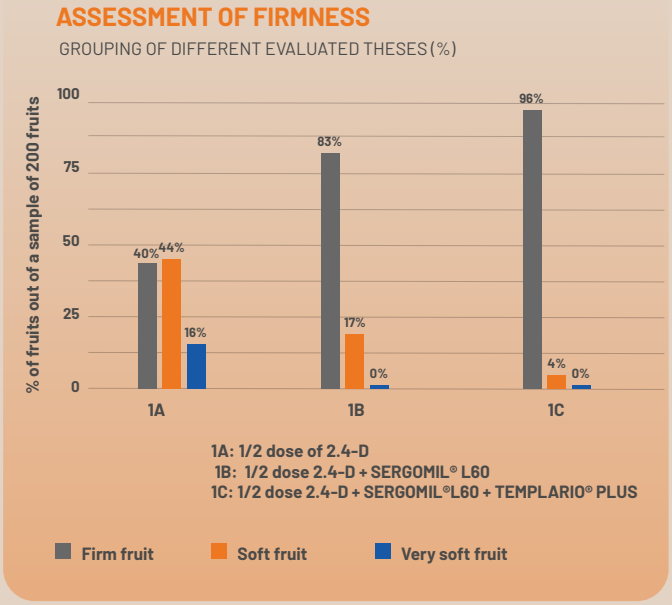
Neoestim

TEMPLARIO® PLUS is a biostimulant based on a liquid formulation consisting of unsaturated organic acids, potassium and carboxylic acids.
The action method of **TEMPLARIO® PLUS** is based on its ability to reduce oxidative stress and mitigate abiotic stress conditions that may affect the cell wall due to excess moisture.

To demonstrate the effectiveness of this strategy, Servalesa has carried out numerous trials to show that the application of **SERGOMIL® L60** and **TEMPLARIO® PLUS** helps to improve fruit firmness and reduce the number of rotten fruit due to cell wall reinforcement.

Test

The trial was conducted in Dareton, NSW (Australia). The Washington Navel variety was treated with the aim of improving peel firmness and reducing the dose of synthetic auxins.



agreya™ Sustainable Agriculture

Mr. Danny Thornton

General Manager - Agreva

Beneficial effects of the use of BIOCROP® L45 on different crops in Portugal

As part of a strategy focused on the use of zero residue products, which contribute greatly to a more sustainable agriculture and to an increasingly demanding market, consumers are more and more concerned about health. Servalesa has promoted alternative solutions that are less damaging to soils and crops, and more environmentally friendly.

In recent years, a wide range of substances have emerged that develop and optimised plant development in critical moments of the crop cycle, such as Servalesa's **BIOCROP® L45**.

Use of BIOCROP® L45 in plant nutrition

Besides having an effect as a biostimulant,**BIOCROP® L45**, is also an important source of nutrients for the plant.

Its composition

- Seaweed extract
- Micronutrients: boron, iron, manganese, zinc, copper and molybdenum
- Mannitol

Agronomic efficacy

- An incentive for plant development: action at all stages of cell multiplication
- Better resistance to climatic stress
- Better assimilation of nutrients

Observations on the physiological effects of using **BIOCROP® L45** algae in Portugal.

Fruit growing

- Less russetting (action of gibberellins)
- Russeting on Golden and Gala apples
- Optimized conservation post-harvest
- Greater resistance to climatic agents
- Improved orchard health

Viticulture

- Better setting of the grape berries
- Better homogenisation of berry size (less berries of different sizes)
- Better weight of grape berries
- Increased rachis elongation
- Higher polyphenol (anthocyanin) content

Fruit growing

- Optimized conservation post-harvest
- Greater resistance to climatic agents
- Improved orchard health

Cherry

1st application:
At sprouting, to stimulate good vegetative development

2nd application:
At the beginning and at the end of flowering, to better homogenise the commercial size of the cherry

3rd and 4th application:
During cherry growth, to better homogenise the commercial size of the fruit

Mr. Ulisses Matos
Sales Manager Portugal
Servalesa

SERVALESA & AGROBANK:

A strong partnership in Turkey for more than two decades

SERGOMAX® L90: a key biostimulant

In terms of agricultural lands, Turkey is also one of the largest countries in the world. About 35.5% of the country are arable lands and 15% consists of forests. The cultivated land is around 23,7 million hectares and around 18.4% of the cultivated land is irrigated. Vegetable products account for 76% of total agricultural production. Fruits and field crops make up the most of vegetable products, wheat being the leading crop. Turkey is the world's biggest producer of hazelnuts, figs, apricots and raisins, the 4th biggest producer of fresh vegetables and grapes, the 6th biggest producer of tobacco, the 8th biggest producer of wheat, and the 10th biggest producer of cotton. Tea is also large produced and exported. Furthermore, olive tree production has enjoyed a significant growth lately.

AGROBANK has been a reference company in Turkey for the last two decades. Since the beginning of its activity AGROBANK has had clear that sustainable agriculture would be the future and Servalesa has played a significant role within the concept that AGROBANK has been developing since its inception. Today the relationship between AGROBANK and Servalesa remains stronger than ever and both entities are sure to be prepared for the future of agriculture.

AGROBANK has been accumulating experience in the Turkish market by listening to every dealer and farmer, and ha become an specialist in plant nutrition, biostimulants and biocontrol strategies, contributing to a clean, safe and sustainable agriculture.

Key products like **SERGOMIL® L60**, **BIOCROP® L45**, **SERGOMAX® L90** and **FOSFONIN®** have been in the core of the strategy and are today well recognised brands.

SERGOMAX® L90: multifunctional product to promote quality harvest

SERGOMAX® L90 is, according to AGROBANK, one of the most efficient products in the Servalesa portfolio. Formulated with complexing agents, trace elements and aluminium lignosulphonate, it has space in multiple applications across many crops in many moments of the crop cycle, especially in critical moments of the crop cycle when the crop is exposed to factors that might have straight impact in the harvest.

Properties of **SERGOMAX® L90**:

1. Promotes cell division
2. Acts like activator
3. Regenerates conducting vessels
4. Prevents critical moments throughout the crop cycle.

SERGOMAX® L90 is applied in a wide range of crops: vegetables (tomato, eggplant, zucchini, cucumber, watermelon, melon), stone fruits, pome fruits, grapes, citrus.

In the beginning of the season is especially recommended for stone fruits and grapes, to break the dormancy evenly with the application of **SERGOMAX® L90** at a double rate. After pruning, it is also recommended to enhance a fast healing of wounds that might represent an infection spot.

SERGOMAX® L90 is complementary with **SERGOMIL® L60**, especially when critical moments might affect to the root. With both products we will conduct a "vascularization" application, to assure the normal function of conducting vessels and sap flow, regenerating these if it was necessary.

MR. SÜLEYMAN SIVIS

Sales and Technical manager
Agrobank

BIOVIDA®

Promoting transparent and sustainable agriculture in Chile

BIOVIDA® is an advanced agricultural solution with a complex mode of action. Its most important effects include crop bio-stimulation and improvement in their quality, activation of the acquired resistance system, stimulation of vegetative development, promotion of secondary root and root hair growth, and extension of the crop's shelf life. These characteristics make it a highly useful product in sustainable agriculture, allowing for increased profitability throughout the value chain.

Undoubtedly, **BIOVIDA®** stands out for several qualities, but there are three aspects that make it unique in the market and deserve special attention. These aspects are as follows:

• **Stress Resistance**
BIOVIDA® enables the plant to cope with abiotiallows the plant to face abiotic stress situations. By increasing the production of hydrolytic enzymes such as Chitin and other PR proteins, plants can better withstand adverse conditions such as drought, high temperatures, and other stressful factors.

• **Improves Calcium Mobility**
BIOVIDA® enhances calcium mobility in plants by stimulating the synthesis of transport proteins and ion channels. These proteins facilitate efficient calcium transport through plant cells and tissues. Adequate calcium transport strengthens cell structure, increases tissue resistance, and contributes to the optimal development of crops, thus improving their health and performance.

• **Prolongation of Post-Harvest Life**
The biostimulating action during the vegetative cycle extends to the post-harvest stage. By strengthening plant defenses and maintaining the integrity of their tissues, the product reduces deterioration caused by pathogens and prolongs the shelf life of fruits after harvest. This translates into reduced losses and preservation of quality during storage and transportation.

In summary, **BIOVIDA®** is a cutting-edge agricultural solution that offers unparalleled benefits in the market. With these unique qualities, it positions itself as an essential tool for enhancing productivity, quality, and sustainability in modern agriculture. Trusting in BIOVIDA® is a guaranteed success for farmers.

Mr. Julio Besoain

Director General Soland
Asesor Técnico Comercial Chile y Perú Servalesa

Firmness and Outstanding Performance

In the context of cherry production in Chile, **BIOVIDA®** emerges as a cutting-edge solution, addressing the crucial post-harvest soft fruit challenge. Across various geographical regions, this product has demonstrated its effectiveness, leaving a significant impact on harvest results, particularly in the strength of fruits.

The technical application of three doses of **BIOVIDA®**, starting in the yellowish colour stage and repeating every 15 days, has proven effective. By reinforcing crops against post-harvest stress and improving calcium mobility, this strategy achieves a substantial extension of product lyfe cicle.

The results are reflected in the reduction of damaged fruits and the obtaining of firmer and more turgid fruits at the time of harvest. These achievements directly translate into an 8% increase in export percentages. In addition to boosting producer profitability, they solidify their position in the international market.

The constant success of **BIOVIDA®** opens new doors and challenges, such as evaluating the duration of greener pedicels in cherry trees. This promises a promising future for the industry.

Strategic Alliance between Copeval and Servalesa: innovation, sustainability and traceability.

The strategic alliance between Copeval and Servalesa highlights the best of both companies, expanding benefits for farmers and consumers.

With over six decades of experience, Copeval stands out for its product diversity and excellent service. Its 24 branches ensure an comprehensive coverage, and its Prime Express service optimizes the delivery of over 50,000 products.

Servalesa, present in more than 40 countries and with over 45 bio-stimulants in its catalog, contributes its expertise in agricultural technology. Its Integral Biosolutions Model adapts to various crop management strategies. Its In-House Manufacturing Model guarantees high-quality standards.

This alliance emphasizes their commitment to traceability and quality standards. Copeval tracks the processes of its products to ensure reliability. Servalesa backs its excellence with an In-House Manufacturing Model based on its extensive experience.

This collaboration combines Copeval's supply chain experience with Servalesa's technological expertise. Together, they offer unique resources, services, and solutions that promote productivity, sustainability, and quality in the agricultural chain. A synergy that promises a more efficient and transparent agricultural future in Chile.

Successful Experiences:

SERGOMIL® L60 and agriculture in Brazil

Servalesa has in its DNA the tireless search for solutions through innovation and technology always supported by sustainability. It was with this development model that Servalesa brought to Brazil the exclusive product **SERGOMIL® L60**, a unique systemic copper in the Brazilian market.

Our experience with **SERGOMIL® L60** in Brazil has been very satisfactory and we have a very promising path for the future. This product brought us a **very strategic support** tool for agriculture, based on enhancing the effect of conventional applications through the activation of the metabolism of the crops.

By using **SERGOMIL® 60** on crops, we will promote and build a stronger plant with a much more efficient response to stress, as the product can stimulate plants to produce organic compounds in response (PR proteins), making the crop develop in an optimal way. A stronger plant is likely to utilise better nutritional resources, thereby increasing the possibility of better expressing its productive potential.

In tests carried out on Servalesa customers, it was observed that the areas with **SERGOMIL® L60** were more efficient, promoting a **better foliar area**, thus having more foliar area index for photosynthesis, with a better energy production, culminating in **better reproduction and structuring of production**.

In the soybean crop (Glycine max L.), it was shown that the use of **SERGOMIL® L60** as a biostimulant, oriented the plant towards a better structural development, where a better root development was observed, which favours the absorption of water and nutrients. The amount of green and viable leaves was also higher compared to the treatments without the use of **SERGOMIL® 60**, which greatly favours photosynthesis, these structural factors will provide a better setting and grain filling, as observed in the field.

In the areas where **SERGOMIL® L60** was applied in association with systemic fungicides, plant was better developed (linked to **SERGOMIL® L60** effect) and disease control was efficient (linked to the effect of fungicides), resulting in **fully developed plants**, more efficient in the production of photoassimilates and more productive.

We have also been able to observe these effects in other crops. One example was in the cultivation of grapes, where it was found that plants were stronger, due to the efficiency in critical moments of the crop cycle when using **SERGOMIL® L60**, this allowed the grapes to have a better accumulation of sugars, in other words, a higher brix degree, due to a **higher foliar area index.**

SERGOMIL® L60 is an effective tool in critical moments of the crop cycle through stimulation of the metabolism, in a clean, efficient and, above all, sustainable way.

Mr. João Guilherme Batista Hess

Agricultural engineer
Servalesa

SERVALESA BIOSTIMULANTS DEVELOPMENT IN GREECE

Elanco Hellas established in the Greek Agricultural market since 1976, distributing products from certain multinational companies in the sector of Crop Protection, Arable crop Seeds, Vegetable Seeds & Animal Health –Nutrition.

Today Elanco Hellas operates through an organization of almost 100 employees in four sectors mentioned above.

Elanco Hellas and Servalesa agreed to cooperate in the Greek market since the beginning of 2023.

Since then, 10 products – Servalesa's Biostimulants have been introduced, in the market through a new concept based on the technical support to every dealer and farmer.

One dedicated product specialist, having many years of experience in plant nutrient, with additional Servalesa technical support, started to build the fame and the status of the products.

After eight months of hard work with many trials, promotional demos, presentation, door to door meetings and a lot of material promos, the experience seems very qualitative showing the first commercial results.

We refer below to some of the most important observations we have done in the field, introducing the Servalesa products.

servalesa®

SERGOMIL® L60

This product is a stable mix of Copper with low pH.

SERGOMIL® L60 applied though root irrigation to potatoes. Potatoes was very vigor and presented very good resistance to critical moments of the crop cycle. Also, spraying applications made on olives, showing nice results as clean leaves and very good strength.

SERGOMAX® L90 & ADIMEL®+

SERGOMAX® L90 is a solution of metals' Complex including Copper, manganese and zinc.

ADIMEL® + is a systemic solution of molecular forms of Mn and Zn.
Those products applied, both in tank mix, on potatoes through spraying application. Potatoes showed vigor and very good resistance critical moments.

Another spraying application with **SERGOMAX® L90** & **ADIMEL® +** made on vines. Vines showed very clean leaves and bunches and exceptional strength.

SIDEFUN®

SIDEFUN® is a solution of unsaturated organic acids in form of potassium salts.

SIDEFUN® applied on tomatoes for development of the fruit quality. Observed improvement on fruit cohesion and harvest earliness.

QUALIFUN®

QUALIFUN® is solution of nitrogen and sulfur in SO3 form. **QUALIFUN®** applied on tomatoes and promoted the plant and fruit resistance to high temperatures (abiotic stress) and good development thanks to the supply of sulfur.

K-VITRUM®

K-VITRUM® is a solution of potassium and silicon in SiO2 form.

K-VITRUM® applied on onions the period of bulb development.Onions faced successfully high temperatures of that period, also, the bulb grown faster than other onion crop besides.

Another application done on Pears, at the period of fruit development, with clean fruits and increase of fruit size.

HORMOSER® FLOW

HORMOSER® FLOW is solution of nitrogen, phosphorous and micronutrients in order plants to avoid nutrient deficiency.

The application made through root irrigation on watermelon, the period of fruit formation and observed increase to the number and size of fruits after this application.

BIOVIDA®

BIOVIDA® is a solution of amino-acids of natural orientation, having as base, glycine, and monomers of amino-sugars.

The spaying application mad on table grapes, with nice results. Observed bigger bunches and crunchy grapes, with exceptional resistance to transport abroad.

Our company continues to work with products not referred in this article, **MAS RAIZ® +**, and **OLIVO PLUS®** following the same strategy of technical promo.

ΕΛΛΗΝΚΟ ΕΛΛΑΣ

Elanco Hellas believes that in due course this results will be capitalized and establish Servalesa as a reference company of biostimulants in Greece.

BIOSTIMULANTS WOW!!!!

Mr. Thanasis Athanasios Panagos

Marketing Ag-Chem & Operations Manager
Elanco Hellas SACI

BIOSTIMULANTS
for the future of China

China, a big agricultural country endowed with rich agricultural resources, has a long history of farming and the tradition of intensive cultivation as well as a huge rural population.

The Chinese government has always placed high priority on the development of agriculture. Since 1978, China has carried out step by step the policy of reform and opening, bringing along a quickened pace in agricultural reform and development. Particularly, in recent years the government has abided by giving priority to the work on agriculture, rural areas, and farmers.

China has succeeded in producing one fourth of world's grain and feeding one fifth of world's population with less than 10 percent of world arable land, which is great achievement in pursuit of food and nutrition security not only in China but also in the world. Currently, China ranks first in the world in terms of the production of cereals, cotton, fruits, and vegetables.

Thanks to the great importance attached to opening agriculture to the outside world, China has increasingly closer links with other countries in this field. Now, the country has built up agricultural exchange and cooperation relations with some major international agricultural and financing organizations as well as more than 140 countries.

Besides of social challenges, such as the migration of people from farming sites to developed cities and the reorganization from small farms to large-scale farming, technology has been the key word to understand the evolution of the Chinese agriculture in the last decades. A 2023 report by the Virginia Tech College of Agriculture and Life Science counters Cai, saying that Chinese agricultural productivity has increased at a "phenomenal" pace since 1978, when Beijing embarked on major economic reforms.

With new technologies such as artificial intelligence and big data, smart agriculture is expected to bring about essential changes to traditional agriculture in China. Precision agriculture can reduce labour costs, save water, fertilizers, and pesticides, and avoid or reduce unnecessary decision-making errors. China has included smart or precision agriculture into its N° 1 Central Document since 2012. So far, demonstration bases for smart agriculture have been built in 13 areas including Beijing, Heilongjiang province and the Xinjiang autonomous region.

Precision irrigation for instance, drip irrigation under mulchcan greatly reduce costs and increase the efficiency of water and fertilizer use. The technique is particularly important in Xinjiang, where more than 80 percent of the country's cotton is produced. By increasing soil temperature, storing water, and controlling diseases, the technique has improved water and fertilizer utilization while also improving cotton quality. The technique can reduce agricultural inputs by 35 percent on average and increase cotton production by 30 percent, according to China Science Communication.

Other technologies for precision agriculture such as plant protection drones and harvesting robots can also save resources and costs, increasing farmers' incomes and reducing their economic losses caused by natural disasters.

Improving yield is, of course, a high priority for all the people involved in agriculture in China but sustainability and food security is an increasingly important concern for the Chinese consumers and biostimulants represent a group of technologies which can give an efficient answer to many challenges that farmers currently face.

BIOCROP®L45 and FEEDSER®: key biostimulants from Servalesa in the Chinese market

When XIAN EAGLE started working more than 5 years ago now the view was totally aligned with Servalesa. Sustainability, food security and profit for farmers was a priority for both companies. Furthermore, the biostimulant product segment was (and still is) and opportunity for business and not only from a trade point of view but for the convenient fit of these technological products in traditional agricultural strategies that would bring and improvement of the yield for farmers.

Since the beginning of the relationship between Servalesa and XIAN EAGLE, **BIOCROP®L45** has been a flagship product due to many factors:

1. **BIOCROP® L45** is based on a unique quality formulation superior to other similar products in the market. Stimulation of the plant is instant from the moment after the application.

2. **BIOCROP® L45** fits in many crops and in many moments of application: to avoid abiotic stress, to improve flowering, setting, plant development, fattening. It's a technological tool with a high level of versatility.

3. The efficacy of **BIOCROP® L45** is beyond any expectation.

Moreover, **FEEDSER®** has become a trendy product in the Chinese market lately, the combination of the compounds included in the formulation makes it a unique product. The product has been effective in grain filling (rice and cereals) and obtaining the best of quality in fruits as proven below.

All in all, we can conclude saying that agriculture in China is evolving and that XIAN EAGLE is participating in this change. Thanks to Servalesa's biostimulants we are ready to give answer to the challenges of the future.

MR. LI YUN

Director General Xian Eagle

Balkans,

present and future of sustaina ble agricul ture within a changing model

When 11 years ago we started working in the Balkans, from Croatia to Macedonia looking west and from Croatia to Greece to the south, we never doubted that no matter how much plant physiology was a secondary part of the agronomic interest for professionals and companies from each and every one of the countries that run in that geographical area, We knew that over time it would be key in the development of crops in that geographical region.

Abiotic stress and the loss of many of the assets in the EU market mark the development of agronomic activity in these markets and Servalesa has been a pioneer in developing this concept, as well as a model to be followed by many companies that make up the sector.

In a vast geographical area where extensive, intensive, fruit and vegetable crops are worked in greenhouses, products such as **SERGOMIL® L60, MAS RAIZ®+, QUALIFUN®, SIDEFUN®, PCa2 MAX®, K-VITRUM®, BIOVIDA®** and **ADIMEL®+** are a reference in each.

High value crops such as blueberries, raspberries, strawberries, table grapes and horticultural crops in greenhouse to fruit trees such as apple, citrus and olive grove, are where we are mainly developing our Neostimulant products and rational solutions in concepts such as soil management and regeneration as well as in the maximization of metabolic pathways inside the plant; the improvement in the assimilation of macro elements such as phosphorus and calcium as well as the improvement of the conservation and commercial life of fruits and vegetables in the market, Shelf Life, have given us an advantageous position when it comes to positioning the bulk of our offer.

It is still too early to say that we have achieved it, but, with the opening of the local authorities to the registrations obtained in Europe, we hope in the short term to be able to expand our offer with products such as **K-VITRUM® MAX, FOLSER®, BETASER®** and **FEEDSER®** and to be able to close the cycle within what is the management of crops. The microorganisms will come next to be able to close the whole cycle between aerial part and rhizosphere.

The management of critical moments of the cycle through the management of the metabolic pathways of the plant helping it to increase its photosynthesis and, as a consequence, its chlorophyll levels and their response with the increase of phytoalexins and reactive oxygen species as a defence mechanism are responses that, today, they are well known by the technicians who work with our products and who know that, using these from the beginning of the crop, are reducing the exposure to stress.

The concept of complements of phytosanitary treatments in many cases (especially at the beginning), as well as climate change and the importance of our products in the development of crops activating the different metabolic pathways and optimizing the plant processes of the plant is what makes us have today a privileged situation in the management of our offer in crops. The knowledge of concepts such as elicitors and inductors within the physiological and response activity of the plant has not been easy to develop, today it is a reality well known and developed by our importers in every one of the countries.

The training and management of our technical-commercial offer by the technicians who make up the staff of our importers, as well as large producers and customers of our importers in the Balkans, as well as the

extensive technical development in countless technical meetings on our part is our greatest achievement. Our faith and hope are to be able to count, in a short period of time, through mutual recognition, the desired position with the registrations obtained in the EU that will allow us to focus the Servalesa catalogue with its labels recognized as true tools in front of the great problem that we live today throughout Europe: abiotic stress.

The concept of management and regeneration of the rhizosphere with our line of Neostimulants is the first step in the development of these new concepts in crops. In countries such as Albania, Greece and Croatia, we are already in the expansion phase of the same hoping to be able to develop, in the short term, the lines of biofertilizers and microorganisms as a basis for the future in the regeneration and management of the same.

The hardest phase has already been developed by our importers and by our team in Servalesa who, together with the technicians, agronomists, opinion leaders and large producers in each of these countries, make us think about a promising future for Servalesa in that region; Much work has been developed, many times, the majority, in solitude and in difficult conditions for the development of these new technologies. Now everything is different, and the future is already present.

It has not been easy for them or for us because the concept of knowledge and management of plant physiology and abiotic stress, as I have already said, is something that seemed secondary within the concept of crop development and in many cases even unknown; today all this is changing and Servalesa has a clearly differentiated position in the international market as a pioneer in the management of these concepts and solutions.

Fitopromet, Gor-Mi, Diamond, Harizi, Elanco Agroesfere y Marcoser are our supporters and representatives in these markets, the most important thing for us is that we are their flagship company in this new crop management.

My thanks to each and every one of them for their work and for everything I have learned from each of their countries. I consider myself a privileged for this. The future is in our hands.

Mr. Javier N. Valle
Sales area manager Europe, South East Asia & Canarias Servalesa

SERGOMIL® MARRUECOS

The copper based reference product in Morocco with all Benefits of copper inside of the plant

The use of copper as a fungicide to combat plant diseases has a long tradition. One of its main advantages is the wide spectrum of activity against bacteria, oomycetes, ascomycetes, and basidiomycetes and besides its use as a fungicide, copper is also authorized as a micronutrient fertilizer.
Other favourable agronomic properties of copper include high efficiency under conditions like rain as well as its multi-site mechanism of action that diminishes the risk of development of resistant pathogen strains. Unfortunately, repeated foliar applications of copper-based plant-protection products lead to copper accumulation in the soils and to potentially consequent negative impacts on soil fertility even though studies put the negative effects in perspective.

For this, the maximum copper quantity allowed in plant protection has been successively restricted in Europe over the last decades and is currently limited by the European plant-protection. Following this coming change, and to decrease the amount of copper per hectare in the EU, Servalesa had developed more than 15 years ago **SERGOMIL® MARRUECOS**, a product based on copper

with a new formulation and much lower concentration of Cu++.

As a partner of Servalesa in Morocco, Univers Horticole launched the development of **SERGOMIL® MARRUECOS** in 2009 first on olives against olive scab (Spilocaea oleagina) in comparison with the standard treatment with oxychloride and hydroxide copper. The results were better than the reference with no side effects on the plant and the operator during the preparation of the spray mixture, while using a low amount of Cu++ per hectare in compliance with the EU regulations to reduce the amount of copper used in agriculture.

Therefore, encouraged by this a great experience on olives, the technical and registration department of Univers Horticole launched the registration of **SERGOMIL® MARRUECOS** as a fungicide on different crops and granted its registration in 2013 with label extensions on: tomatoes, potatoes, and grapes against downy mildew.

Since its launch, **SERGOMIL® MARRUECOS** has earned its reputation as a trusted fungicide registered in Morocco by its effectiveness in combating fungal diseases. As one of the leading plant protection tools in the market, it is helping the growers manage the control of many diseases on different crops without the negative effects of the copper on plants such as phytotoxicity, stopping of the growth and different physiological disorders (ex. *Russeting*) as well.

In addition, following our experience with the use of **SERGOMIL® MARRUECOS**, we discovered the power of its key ingredient- the Chelated Copper. This innovative formulation capitalizes on the potent fungicidal properties of copper while addressing potential challenges associated with traditional copper-based fungicides. **SERGOMIL® MARRUECOS** chelation enhances copper's stability and solubility, allowing it to be efficiently absorbed by plants (systemia) once applied by foliar spray or in drip irrigation, which has been confirmed by several studies. The double application way was tested by trials on the field by big growers in Morocco finding out a high concentration of Cu++ in the new leaves.

Applied by foliar or root systems, this is translocated inside the plant which helps to reduce the primary infections of different diseases such as *Botrytis, Downy mildew, Phytophthora* spp., *Alternaria, Anthracnose*, etc... helping the growers to effectively manage the protection of their production.

Furthermore, we observed a vigour of the plant due to the presence of the Gluconic acid which has the effect of eliciting the strength of the plants. Additionally, **SERGOMIL® MARRUECOS** could be used as a fungicide or biostimulant and fertilizer which allows to the growers to be applied on different crops for zero residue production as well.

In conclusion, **SERGOMIL® MARRUECOS** has emerged as a remarkable product with its registration as an approved fungicide, chelated copper composition and versatile applications for citrus, tomatoes, potatoes, and grapes. This innovative product gives an advanced solution to farmers for the plant and nutrition. As the country's agriculture evolves, **SERGOMIL® MARRUECOS** stands as a symbol of progress, sustainability, and effective crop protection.

Mr. Attaoui Elhoussin

Country Manager Morocco
Servalesa

THE SERVALESA STRATEGY
to improve the color of red apples

In red apples, the color is the main appreciated characteristic of the fruit. This coloration is generated, mainly, due to the accumulation in the fruit of pigments called anthocyanins.

Anthocyanin synthesis is subject to genetic, environmental, and management factors. The genetic is so relevant that an attractive coloration is one of the main objectives of plant breeding programs. On the other hand, among environmental factors, exposure to solar radiation (in quality and quantity) and different temperature ranges are critical to maximize color potential. Regarding management, adequate control of vigor (more illumination of the fruit and greater availability of carbohydrates), as well as a reasoned nutrition, are very important.

The current climatic situation demands the use of techniques to improve color, especially for traditional varieties, among which are: use of reflective mulch, evaporative cooling, green pruning, fruit charge control and the use of biostimulants.

Plant nutrition and fruit coloration

Foliar applications of fertilizers with potassium, calcium, magnesium and zinc have been shown an improvement of the coloration and an increase in the concentration of anthocyanins in apples.

Nitrogen

Excess nitrogen or too late applications will reduce the coloration of red apples. It may be advantageous on green apples.

Potassium

Potassium also increases the anthocyanin content in apples, thus improving the coloration of the fruit. However, supplies have to be balanced with other cations, especially calcium, to avoid an antagonism of potassium over calcium that can lead to quality problems such as bitter pit.

Zinc and Manganese

Zinc helps to improve the color of apple fruits, while Manganese participates in the photosynthesis process and as an enzyme activator, among others..

Magnesium

Magnesium improves the color of the fruit mainly through an increase in the production of carbohydrates, these being the components of the red pigmentation.

Servalesa Solutions

servalesa®

FEEDSER®
Biostimulants

FEEDSER® is a cutting-edge biostimulant with an exclusive formulation composed of glycine-betaine, potassium and calcium complexed by gluconic acid. In addition, the formulation includes selected growth factors.

FEEDSER® has been specifically designed to provide your crops with fruit fattening and grain filling stimulation. Thanks to its composition, crops will also find it easier to overcome situations of extreme abiotic stress (heat, water, salt stress, etc.). This contributes to an optimal fruit size, improving the profitability of the harvest.

CITROMIL®
Biostimulants

CITROMIL® is composed of a solid mixture of magnesium, manganese and zinc. It helps to avoid or prevent abnormalities in chlorophyll function and in carbohydrate and protein biosynthesis.

BIOCROP® L45
Biostimulants

BIOCROP® L45 is an aqueous solution based on microelements and seaweed extracts (*Ascophyllum nodosum*) with good systemicity, so it can be used by fertigation or spraying. Thanks to the *carrier effect* carried out by the algae extracts contained in **BIOCROP® L45**, the transport and assimilation of nutrients is favored, increasing the productivity of fertilizers. In this way, the maximum value is extracted from each one to contribute to the physiological processes that will generate optimum production.

BIOCROP® L45 plays a fundamental role in the development of the crop at each phenological stage as an activator of production, both in quantity and quality.

Apple Royal Gala Test

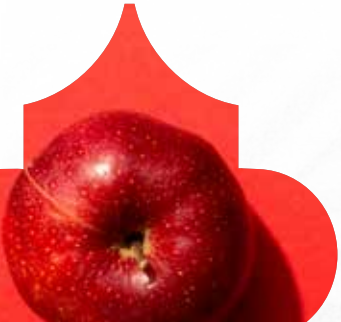
Year: 2023
Crop: Apple
Variety: Royal Gala
Location: Sbeïtla (Tunisia)
Form of application: Foliar

Treatment with FEEDSER®
1st treatment 200 g/hl 30 days before harvesting
2nd treatment 200 g/hl 15 days before harvesting

Treatment with BIOCROP® EXTRA
1st treatment 250 ml/hl one week after fruit setting
2nd treatment 250 m/hl 15 2 weeks after fruit set

Treatment with CITROMIL®
One treatment 250 g/hl 20 days before harvesting

Remark: Treated apples have a better colouring and better firmness than untreated apples.



Mr. Kadri Abbassi

Country Manager Tunisia
Servalesa

Servalesa drone application of biostimulants

It has been more than 10 years since **UAVs (Unmanned Aerial Vehicles)** or drones began to carry out activities in different sectors, with the agricultural sector being one of the sectors most involved in their development.

The first steps of the drone in the agricultural sector were to provide multispectral images that could reveal the state of health of the crop in its entirety, without coming into direct contact, which is what we know as **remote sensing.** The use of multispectral cameras on board drones allows us to collect images in the different bands of the spectrum and thus generate the agronomic indices that are of great importance when making decisions on the state of health of our crops. One of the most widely used agronomic indices is the NDVI (*Normalised Difference Vegetation Index*), which expresses the vegetative vigour of the plant, allowing a temporary evaluation to be made of how the plant is doing and whether it is at the ideal values at every stage of the vegetative cycle. The higher the values of the index, the better the photosynthetic activity of the plant, and we can detect when it is suffering from water stress or pathogen attack if we take a set of time series images during the crop cycle.

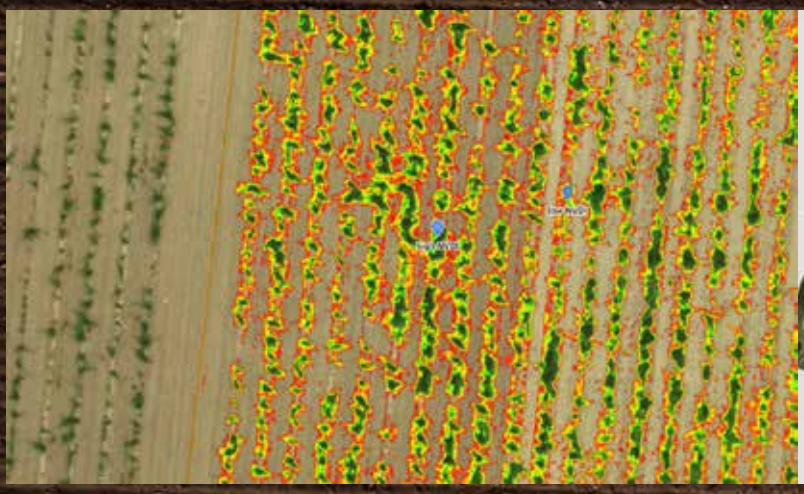


Image 1. Orthophoto drone vineyard

Photo 2. Multispectral imaging drone NDVI index

Servalesa has begun to work with this technology, which makes it possible to determine the vigour of a crop and to zone areas according to their nutritional status. Once the data has been digitised, the biostimulants are also applied by drone in the areas that need them the most, in order to act in a precise manner, dispensing with conventional terrestrial means at stages of the crop that could be difficult. It should be noted that, nowadays, the use of drone application of phytosanitary products is regulated by European legislation, and is prohibited in all countries, except for special authorisations. This creates a great opportunity for biostimulants, which have no restrictions. An opportunity that producers are taking advantage of to be more precise, efficient and adaptable.

This line of work has had a great acceptance among Servalesa distributors, as there are several advantages and benefits that are achieved for producers, such as:

• Being able to apply biostimulant products at critical moments of the crop in the areas where they are most needed and with more precision.

• Being able to reduce the entry of machinery so as not to damage the crop along the line (e.g. in spinach).

• Applying at times of difficult access such as during heavy rains or flooding, or highly irrigated soils that make ground treatment difficult.

Success story

During the 2023 campaign, the Menade winery located in the DO. Rueda proposed to our distributor Servalesa in Castilla y León to carry out the application works with drone covering about 75 hectares, all of them ecological. The problem they had was the large amount of rainfall, which made access with ground machinery impossible, meaning that it was also not possible to carry out the necessary treatments on that date. With the combined skills of the winery's technical department and the Servalesa technicians, it was proposed to carry out a multispectral drone flight in order to view the state of the crop and subsequently carry out the drone application of the necessary products. In this case, the **MILES®** strategy with **SERGOMIL® ECO** was proposed. **MILES®** is a preparation of Equisetum Arvense L., obtained by maceration and subsequent decoction of the aerial part of this plant species, the use of which allows the prevention and control of the incidence and development of numerous fungi-pathogens. The solution was applied to 75 hectares with a T10 Agras DJI equipment with a tank capacity of 10L and a daily working capacity of 30 hectares.

The results were more than positive, both in terms of application response time and leaf distribution, and prevented downy mildew action at the critical moment as identified by the winery.

We face many challenges in agriculture, but there is no doubt that the use of these sustainable and efficient technologies to improve accuracy is of great importance.

Impacts on leaf after application of **MILES® + SERGOMIL® ECO** Servalesa

Mr. Sergio Rodríguez

Northern Zone Delegate
Servalesa


BIOSTIMULANTS
WOW WOW WOW WOW WOW!
servalesa
servalesa
ECO ATTITUDE
FiBL
Our way of thinking and conceiving organic farming
BIOSTIMULANTS
CLUB
FOLSER®
Flowering and swelling
servalesa
FUSVER®
Based on Bacillus Subtilis
Soil regenerator and activator of metabolic pathways at critical crop times
servalesa
SIDEFUN®
NEOESTIM
EVOLVING AGRICULTURE
BIOSTIMULANTS
EVOLVING AGRICULTURE
Evolving
Agriculture
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