ZERYA®

guarantee

of

healthy

food

TABLE OF CONTENTS

INTRODUCTION

ZERYA®, is a **Spanish project** with a rapid expansion at European and global level that responds to a technical reality in the horticultural production, **sustainable and free from pesticide residues,** providing a **differentiating feature** important to these products versus those that generate other agricultural models existing and emerging at this time. It's a production system based on **research and development** in ongoing improvement, and where the implementation phase is carried out through the company's technical department, assisted if necessary by specialists trained in these techniques. It is therefore staff who have a **multidisciplinary, knowledge** geared towards production of **different fruit and vegetable products** with special concern for the consumer's **health** and at the same time by the **sustainability,** care for the **environment,** and with **guarantee of supply and continuity.**

The **transfer of knowledge** from Zerya® to the **technicians and companies registered,** is fully articulated and regulated, so it is updated through the research implemented by the brand itself, and the regular meetings of the committees, so such knowledge may effectively reach our **daily agricultural production** in its various facets: fertilization, statistical data, phytopathology control, analytical control, etc., in order to give the consumer a product free from pesticide residues, **but from conventional origin, not organic or "bio",** because unlike this production system, **the use of inputs of chemical origin is permitted and regulated.**

In recent years, Spanish Agriculture is undergoing lots of changes to meet the **demands of consumers** based on improvements in food security, sustainable production and environmentally safe, and at the same time, **ensuring the availability of agricultural quality and continuously** in time.

In relation to this demand of the food chain, a research project started in the year 1999 aimed initially to the uninterrupted production of free from pesticide residues produce (peppers), **regarding as above the target, any sample where the analytical determination is equal to or greater than the limit of detection,** by setting this value as 0.01 mg/kg according to Regulation EU 396/2005, considering the exceptions that can be found by the technic limitation in some active substances, whose detection limit is higher.

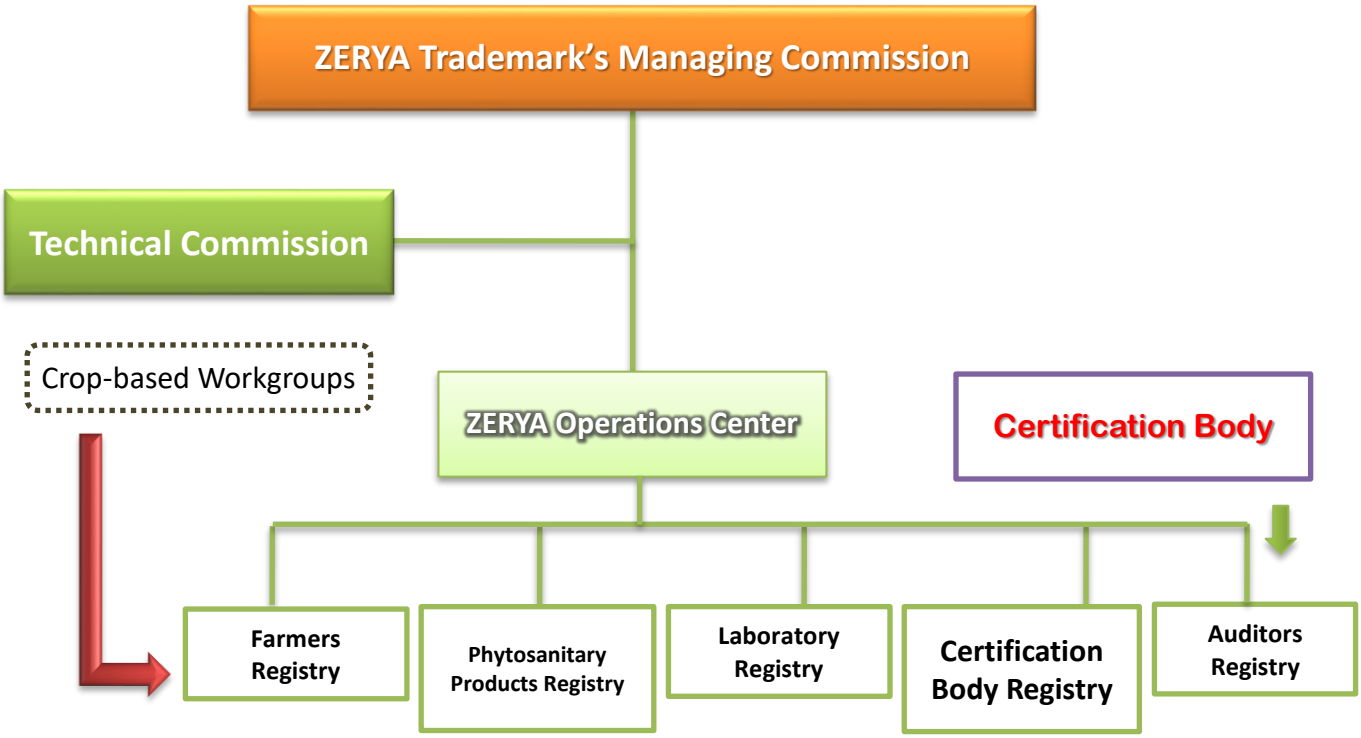
The research project **started in the horticultural production** by selecting a group of companies whose technical department and business philosophy was oriented to the **production without pesticide residues,** or a gradual reduction of these, so in a period of seven years we have a solid and continuous production of different horticultural species: lettuce (Iceberg, Roman, Baby, etc.), Endive (smooth and curly), specialties (Lollo, Batavia, Salanova), spinach, baby leaf, arugula, tomato, cucumber, zucchini, peppers, berries, etc. Parallel to the development in the horticultural sector in 2002 we initiatied, within the research group, the studies for **production without pesticide residues in fruit (trees) and citrus,** allowed us to develop protocols of various species and we currently count with a **Life+ Project** intended to develop, promote and market pesticide residue-free stone fruit in four years which begun in 2013. The project is led by the **University of Zaragoza** plus other **7 companies in Spain and the Netherlands,** it has a budget that exceeds 3 million euros and will be funded by the European Council with 1.4 million euros.

In pip fruit and citrus there is sufficient expertise to produce them under the same conditions and efforts are aimed to collaborate primarily with **baby & infant food industry** as in this sector all the products used must meet the requirement of having less than 0.01 ppm of any detectable pesticide residue.

Once the participating partners got a critical production volume we moved towards the **stage of communicating to the food chain** the new product obtained, based on this degree of differentiation, producing a great receptivity on their part. At this stage the necessity of having a distinctive feature of this product without pesticide residues was proposed, based on the development of a differentiation label, this is when the **Zerya® trademark** was born.

ZERYA® is not just a brand, but an **agricultural production system based on obtaining pesticide residue-free fruits and vegetables** and safeguarding basic principles such as: lower demand for inputs, lower energy consumption and emissions of GHG, greater control over key microbiological aspects of food security and integration with the environment assuring the sustainability of the farming system.

Since it was developed as a brand, it was intended to establish the production system in a structure where all the food chain sector participate, so there were two key figures for operation: the **Brand management committee** (who involves representatives of consumers, retail chains, manufacturers of chemicals and biological, environmental, producers and representatives of the brand) and the technical committees for crops or **sector workgroups.**



ZERYA brand operation scheme®

WHAT IS ZERYA®?

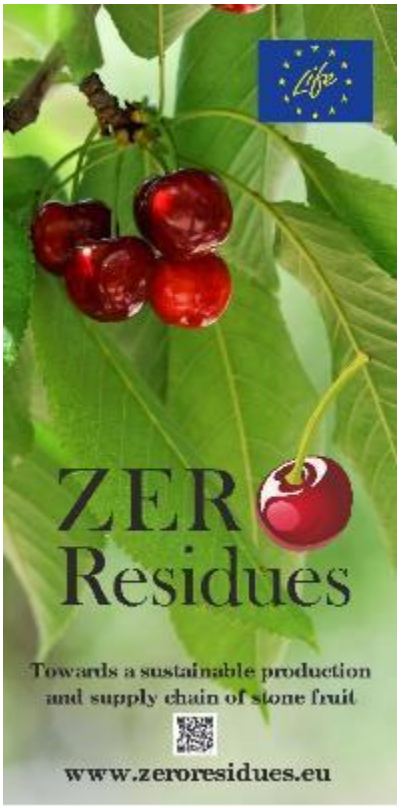
ZERYA®, is a Spanish private brand, created by experts from the agricultural sector, directed by a Management Committee and fed back by the technical commissions.

Hence Zerya® is a system of agricultural production, based on the use of **plant protection products of chemical and biological origin** (including also the use of auxiliary fauna and biotechnological control), whose ultimate goal is to obtain a pesticide residue-free fruit and vegetable product **with continuity and quality throughout the year.** To reach this objective, it is necessary to put emphasis on two aspects: the first and fundamental, technical crop management, since this type of production requires a highly skilled technician and, secondly, the rational use of pesticides both chemical and biological, to get a fruit and vegetable product free from damage caused by pests and diseases, and at the same time, free from pesticide residues.

Zerya® has an **Administrative Center,** who is responsible of managing the correct registration of producers, agricultural laboratories, pesticides of chemical and biological origin, and finally the operators control system. The whole Zerya® quality management system is audited by an independent certification body for the correct use of the trade mark, so that the **fruit and vegetable product that reaches the market with the label is really is free from pesticide residues.**

The work of Zerya® is increasingly relevant as it was revealed by becoming Finalist at the **Sustainability Champions Awards 2013** organized by the British Corporation 2degrees Network. These awards recognize individuals and teams behind the initiatives, which have been pioneers in good practices, promotion of sustainability in companies and bringing value to the organizations. **Zerya was nominated in the category of "Supply Chain Management" for the encouragement of sustainable production.** The winners were announced in July 2013.

It's worth mentioning that in the 12 categories of that edition, **Zerya was the only Spanish company that was among the finalists and the only project directed entirely to agricultural production.** Finally, Zerya became third finalist for best sustainable initiative only behind two enormous projects both powered by industry leaders as they were the initiatives presented by UNILEVER and ASDA. That gives an idea of the perception that 2degrees Network members got from the proposal sent by Zerya.



However, that has not been the only milestone marked by Zerya in 2013, we also joined a consortium who became awarded with a **LIFE project** to develop a protocol for the production of sustainable and pesticide residue-free stone fruit. Eight institutions and companies, 7 of them Spanish and 1 Dutch, form the Consortium and which the **University of Zaragoza** leads. The project, which will have a duration of 4 years - July 2013 to June of 2017 - and a budget of close to 3.5 million of euros, places Zerya at the forefront of the research and development of technology for sustainable agricultural production. The works are already underway and all advances and information that the project is generating as well as details of participation and missions of each of the partners can be found on the website of the project **www.zeroresidues.eu**.

Moreover, in 2013 Zerya® has set up a training program in collaboration with the Polytechnic University of Cartagena and Ideagro through the portal www.agrodocentia.com with which is being consolidated as a reference in the modernization and sustainability of agriculture. In its first edition, training course has surpassed all expectations by doubling the number of anticipated students revealing training needs in different regions such as Murcia and Almeria, as well as the producer of strawberries in Huelva region. By 2017, the course has been celebrated eight times, in Huelva (twice), Murcia, Almeria, Granada, Zaragoza, Badajoz and Seville. With these training programmes, Zerya® is highlighting the importance and the need of trained technicians for the management of the system of production without residues.

In 2015, ZERYA joined the JuiceCSR platform (www.juicecsr.eu) and joined the "Apples Europe" working group that studies and analyzes the sustainability of apple supply for industry in Europe in its main areas namely Poland. The group covers all aspects related to sustainability, regulatory, social and environmental.

Later in 2016 ZERYA was appointed collaborator representing Spain in the Study Group "Assessment of neonicotinoids in European agriculture. A project for the evaluation of alternatives to the Neonicotinoids" funded by the Triodos Foundation to be delivered in 2017 to the European Commission, this group is analyzing the situation of these plant protection products in Spain, Germany, United Kingdom and the Netherlands.

In the same way ZERYA has been part of the Committee for Elaboration of the standard CfP (Crops for Processes) developed by GlobalG.A.P. published and in force from September 2016. This regulation is specific for agricultural products that are not consumed fresh and that are necessarily subject to a process of further transformation.

FUNDAMENTS FOR THE ESTABLISHMENT OF ZERYA®

Zerya® is based on four fundamental pillars listed here below in order of importance:

1. Initial and continuous training of the technicians or technical department responsible for the production, in the management system referred as: **Zerya Technician.**
2. The study of chemical plant protection products on the market, which we incorporate in a positive list referred as: **Zerya Chemicals.**
3. The study of biological plant protection products on the market, including the useful fauna, which we include in a recommendation list referred as: **Zerya Biologicals.**
4. The **multi-residue analysis laboratory,** to provide guarantee in the analytical results obtained, since this is they also perform sampling in the field from the traceability data.

Once defined the basis to develop the Zerya® system, here is the breakdown of each:

The ffigure of the **Zerya Technician** is essential for the development, establishment and continuity of the Zerya® production in an agricultural company, as it is a person skilled in the following ways:

a) Knowledge about the use of the mark: **fruit and vegetable product of high food security.**

b) Good handling of the triangle formed by < plant material - soil - fertilization >, since the balance of these three factors is essential to mitigate or prevent the development of some pests and/or diseases.

c) Training in the recognition of pests and diseases, since they are changing constantly due to globalization and the climatic change, the emergence of new phytopathological problems, as well as changes in their patterns of behavior. That is why, together with the recognition of these, it is relevant to understand and sketch predictive tools of pests and diseases, in order to be able to detect the problem as early as possible, so they can reduce the effects of pests and diseases in crops, as well as increasing the efficiency of control over these with plant protection products available to us.

d) Intensification in the knowledge of chemical fungicides and insecticides recalling their different chemical groups, how they act, and handling them to **prevent resistances**. Also in biological products formulated from: micro-organisms, plant extracts, etc., knowing how they act in time and efficiency, as well as their limitations and their possible incompatibilities of mixtures and phytotoxicity. Training in new techniques of control based on the use of pheromones (mass trapping and/or sexual confusion) and biological

control, bearing in mind that the interest of these techniques will be remarked by the crop concerned, the pest required to control, etc.

e) Training in the degradation of chemical and biological products in the soil, considering that it will depend on various factors ranging from temperature to the number of repetitions of the formula, light radiation, etc., so that we can obtain a pesticide residue-free fruit and vegetable product, **with commercial quality and using the plant protection products** available.

At the same time, together with continuous training and the transfer of information from the results of R+D conducted by Zerya®, we proceed to study the different chemical formulas as as well biological that are available commercially to select the so-called **Zerya Chemicals,** and **Zerya Biologicals.** For a formula to be considered in these lists it must meet a series of requirements which are described below:

For a plant protection product of chemical origin to be considered as **Zerya Chemical**, it has to meet the following parameters:

a) Efficiency greater than or equal to 70%.
b) Ease to use, in terms of mixtures with other formulas, phytotoxicity that can cause, etc.
c) Degradation capacity within the crop cycle, as cases have been observed where a formula with a single application at the beginning of the crop has not degraded completely, therefore such formula shall not be considered as a Zerya Chemical.

For a plant protection product of biological origin to be considered as a **Zerya Biological,** It has to meet the following requirements:

a) Uniformity in the formulation and composition thereof.
b) They are subjected to a multi-residue analysis to determine if they have some concealed or tainted chemical component that alters its initial purpose. The origin of the sample can vary, since it may come from an end Distributor, that the same manufacturer or Packager.
c) They are subjected to a test of efficacy in the laboratory, on the pest or disease suitable for the formula.
d) If they pass efficiency in laboratory tests, then they have to perform efficiency tests in field, in normal conditions and on the same crop for which it is intended.
e) Ease to use, in terms of mixtures with other formulas, possible phytotoxicities, etc.

Therefore, all those formulas, both chemical and biological that meet each of these requirements may be part of the lists of approved Zerya® products. Prior to its inclusion in the listings, these documents are presented to the Technical Committee of the crop for review and study, and finally they determine their inclusion in the lists of Zerya® products.

When the harvest time arrives, an approved laboratory is in charge of drawing or supervising the sampling at the certified producers. Sampling is never made by the production company. The sampling methodology is regulated by Zerya®, depending on the level of risk in that plot where the crop is located since sampling is intended to also detect the residues caused by cross contamination as well as for producer's own treatments, i.e. residues which can come to us by drifts of adjoining parcels, or by mismanagement of production techniques. Once representative sampling of the plot is collected, the analysis is done with the appropriate methodology and shall be deemed as positive any result that is equal to or greater than 0.01 mg/kg of active material, detected in the harvested product.

Reduce residues

In order to reduce the quantitative dependency of pesticides Zerya :

1. has been testing and selecting both agrochemicals and bio-pesticides on exact composition, efficiency, residue, appropriate dosage and impact on beneficial fauna, but most important of all, has screened their degradation curves.
2. is training, updating and coaching farmers on early warning systems and measuring thresholds (disease predictive models, pest trends)
3. manages a website to put information and tools for pest monitoring, decision-making and non-chemical measures available to the technicians of member-farmers and consultants.

Product free of detectable residues (<0.01 ppm) is a reality today among Zerya member-farmers.

ZERYA PRODUCT DIFFERENTIATORS®

Although initially Zerya ® was created in order to get products free from residues of plant protection chemicals, it's been demonstrated with the passage of time, that this rational production system brought several differentiators against the normal conventional product, some aspects inherent to the crop system and other to the farm land.

Regarding the aspects of crop system are:

a) **Product free from residues of plant protection chemicals,** corresponding to the philosophy with which was born at the time.
b) **Free from pathogenic microorganisms** (e. coli, Salmonella...), Zerya® proceeded to study the most important elements of risk in microbiological contamination, as they were water, organic matter, operators, etc., acting on them through various research projects. At the same time developing a microbiological protocol that the companies under this type of production must comply with, the elaboration of the protocol involved the participation of all the sectorial workgroups
c) **Post-harvest life**. Various studies are being conducted in order to increase shelf life of the product, a very important aspect in marketing, which have influenced different aspects such as: fertilization, study of biological products or other molecules to be used after harvesting, etc.

As for the aspects of the farm land:

Sustainability. Have set up a total of seven production parameters such as key elements in the environmental production process, measuring them during the production period and studying their evolution over the years, a significant reduction in the emission of CO_2 into the atmosphere, which in some cases becomes higher than 50% compared to the previous production model.

ZERYA® crops consume fewer resources, generate a lower carbon footprint, protect and often improve the biodiversity of the agro-system and therefore are more sustainable.

CURRENT SITUATION OF ZERYA®

In relation to the current situation of Zerya®, we will distinguish three aspects:

a) **ZERYA® Production Farms**, with capacity to supply Zerya product or developing conversion, in practically all Spanish productive areas, and in the most relevant and sensitive crops.

At European level, they are companies with productive capacity in the North of France, and in period conversion in the South. It is in project, initiate the formation of producers in these techniques in Holland, Belgium, England, Italy, in collaboration with retail chains.

b) **Projects and collaborations with chains of distribution,** in this moment Zerya® is part of the project *Concertation Agricole* that is taking place in France together with the companies **Crudi SAS** and **McDonald's**, in order to cultivate all their leafy produce with the Zerya® system.

It is in continuous communication with English, German, Austrian and Swiss, distribution chains as a consultant on sustainability and food security.

c) **Training.** Completion of a course of technical implementation of systems of production without waste in collaboration with UPCT (Polytechnic University of Cartagena). In addition to courses for the dissemination of the mark in technical conferences to which we are invited or in collaboration with retail chains.

Zerya® Quality Assurance

- The cooperation between each technical committee of Zerya® and farmers is an agricultural network focused on knowledge development and dissemination in practice.
- Every farmer has to meet general requirements (Global Gap, etc.) and specific requirements (Zerya® guidelines on training, crop protection, multi-residue testing, monitoring, fertilizing, etc.) to participate.
- Usually new members have to participate in a 12-month pre-certification period, before having the possibilities to get their crops Zerya® certified.
- Zerya® offers the option to farmers to suspend a crop certification (in real time on the website) when necessary.
- Residue reduction scheme directives and drawing unannounced samples allow a reliable control of the types of active ingredients in crop protection. All residue test results can be consulted on line per traceability code.
- Local laboratories near the production regions allow to keep up with the high frequency of sampling required by the Zerya® standard.

www.zerya.org

902.888.261

ZERYA PRODUCCIONES SIN RESIDUOS S.L.

For ZERYA ®, “free from pesticide residues” is that all active matter in an analytical determination is below 0.01 ppm