GoodBerry

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Improving the stability of high-quality traits of berry in different environments and cultivation systems for the benefit of European farmers and consumers

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Editorial

In recent years, consumer demand for fresh berries outside the main production season has increased significantly. Strategically important berries for the EU market, such as strawberries, raspberries or blackcurrant, are grown in Europe itself, but demand is much higher than European production capacity allows and the market relies on imports from developing countries to fill the gap.

In order to strengthen the competitiveness of European berry production, and to ensure high fruit quality – despite varying local cultivation and climate conditions across Europe – novel tools and cultivation techniques are needed.

Against this backdrop, the project GoodBerry "Improving the stability of high-quality traits of berry in different environments and cultivation systems for the benefit of European farmers and consumers" aims to further improve our knowledge of the procedures that facilitate and accelerate the development of well-accepted, desirable and high-quality berry fruits – even under non-favourable growth conditions such as high temperatures.

GoodBerry is based on the development of an integrative, multi-scale strategy to identify new molecular factors, such as metabolites, genes, alleles and loci, ensuring the capacity to maintain high yield performance and high fruit quality under extreme environmental conditions. In addition, the application of cutting-edge genomic and metabolomics based approaches deliver holistic solutions addressing the challenges of increasing productivity efficiency, crop resilience and food quality in the light of climate changes.

The GoodBerry consortium comprises 19 partner institutions from academia and innovative SMEs active in the berry-breeding sector located in Europe, China and Chile.

Our first newsletter portrays Dr Sonia Osorio, coordinator of this interdisciplinary, collaborative project and introduces the GoodBerry consortium as whole. Events and dissemination highlights of the project's initial year are depicted.

The newsletter will be published annually and will contain up to date information on the project progress, on project output and events as well as on topics related to GoodBerry.

Enjoy reading!

Interview with GoodBerry coordinator Dr Sonia Osorio

Dr Sonia Osorio from the Universidad de Málaga and coordinator of the EU funded research project Goodberry gives insights into the project research activities and illustrates the need for improved berry production in the light of climate change. Sonia reflects on the main outcomes expected and how the European berry production and markets will benefit from the project results, explaining the effects of new berry fruit genotypes & cultivation techniques and depicting the necessity for new tools identifying plant-genotype response under different environmental conditions.

How does Europe benefit from GoodBerry?

The quality of fruit and yield are considered to be an extremely complex matter and depend on many factors. It is difficult to define objectively what fruit quality is since it changes during fruit maturation. Moreover, consumer acceptance is related to specific perceived aspects such as appearance, fruit shape and/or colour.

Organoleptic attributes like texture, sweetness and acidity combined with aroma and flavour are also important as well as health benefits, which are becoming even more ingrained into the consumer consciousness and are therefore also perceived as a required quality attribute.

It is now abundantly clear that climate change will inevitably impact the growth conditions of berry plants in different ways across various European regions and climatic zones. The research in GoodBerry is focused on improving berry production and fruit nutritional quality under climatic change scenarios, and thereby making production more controllable and resilient.

The challenges of GoodBerry are to determine the variability of these health quality traits across target fruits and impacting factors - geographic locations, cultivations strategies, temperature, etc.

The impact of the project on the European berry production and the European market will be guaranteed by a set of well-defined, standardized, and integrated research activities developed for the three berries - strawberry, raspberry and blackcurrant.

The multidisciplinary work plan in GoodBerry is combined with a multilevel structure of key processes related to berry productivity under contrasting climate which will lead to a better knowledge of complex plant-environment interactions. GoodBerry develops new types of planting materials along with innovative technologies for tunnels and production systems so that profitable production will be ensured even under a changing climate. Thus, the competitiveness of the European berry production of fresh and locally processed fruits will be increased ultimately.

Within GoodBerry, we emphasize the reliability and cost-effectiveness of methods under different climatic and cultivation conditions to reduce the environmental impact. New genotypes and cultivation techniques developed will have an effect on costs, labour hours or returns, based on quality and quantity during production. In addition, new genotypes with high quality transferred to local cultivation systems and markets will lead to fresh and processed products.

Plant and fruit phenotyping tools have the important use of identifying plant adaptability and capacity to changing climatic conditions and to different cultivation systems.

In GoodBerry, new tools to identify plant-genotype response under different environmental conditions will be determined improving the berry production cycle – from nursery to final fruit. Thereby, regional impacts of enhanced germplasm will be maximised, both in terms of cropping ability and diversity of regional agronomic requirements, such as pest and disease issues and consumer preferences.

An increasing share of berries being produced in Europe will contribute to a more sustainable food consumption in the future since longer, unsustainable transport distances are reduced.

What are the main outcomes expected from the consortium?

GoodBerry will significantly advance the present state-of-the-art in the following areas:

- **New cultivation techniques and development of adaptation strategies to climate changes.** GoodBerry emphasizes the development of new and advanced technology and intellectual property to increase sustainable availability of fresh fruit with high yield and quality under the full range of climate change scenarios.

- **Development of molecular tools to support an enhancement of berry breeding.** To develop berry production for future needs, it is important to study plant growth, fruit formation and cultivation techniques in different European regions. Experiencing different climates, supports the adaptation of production systems to changing climatic conditions.

- The **knowledge and tools created will support productivity and stability** of the agricultural sector in Europe but also beyond Europe since the GoodBerry initiative also includes partners located in third countries - Chile and China.

- **Economic viability** as overall the outcome of the GoodBerry project will be used in multiple ways and will feed into different user communities including researches, berry breeders and producers, as well as consumers.

What is your expertise and role in the consortium?

I am the coordinator of GoodBerry, a research and innovation project that focuses on the improvement of strategically important berry fruit crops.

My challenging role as coordinator in GoodBerry is bringing together and further enhancing the collaboration between an outstanding group of scientists and berry breeders with varying, complementary backgrounds, ensuring that research activities are optimally aligned and accomplishing deliverables in time.

The research focus in our lab lies on molecular, metabolomics and genetic analysis of fruit ripening and postharvest. We are investigating the regulation of ripening and postharvest using strawberry as a model.

Experimental approaches include, i) isolation of candidate ripening regulatory genes based on expression pattern or relationship to ripening-related signal transduction systems, and functional analysis in transgenic plants, as well as ii) development and utilization of tools for functional genomics.

Dr Sonia Osorio, Universidad de Málaga, GoodBerry coordinator

The GoodBerry Consortium at a Glance

Universidad de Málaga (UMA)

The Universidad de Málaga (UMA) and the Consejo Superior de Investigaciones Científicas (CSIC) provide a joint research center, the Instituto of Hortifruticultura Subtropical y Mediterránea La Mayora" (IHSM). IHSM aims to promote state of the art research and innovation in subtropical and Mediterranean horticulture, and to strengthen the productive sector through knowledge transfer, technological training and expert advice.

Within the GoodBerry project, UMA

- coordinates the project;
- is responsible for the scientific project management;
- contributes to several tasks, such as the transcriptome and metabolites analysis related to fruit quality, the development of molecular markers for MAS (marker-assisted selection).

Technische Universität München (TUM)

The Technische Universität München (TUM) has earned a high international reputation that is apparent from research collaborations with more than 140 partner universities, and involvement in more than 100 EU projects, 500 projects financed by the German Federal Ministry of Science and 20 special research programs financed by the German Research Society (DFG). The TUM group 'Biotechnology of Natural Products' has concentrated on investigating plant physiology using chemical-analytical, biochemical and molecular biological methods.

Within the GoodBerry project, TUMs tasks are

- to perform the analysis of allergens;
- to create the polyphenol profiles of fruits produced by the F1-genotypes.

Norwegian Institute of Bioeconomy Research (NIBIO)

The Norwegian Institute of Bioeconomy Research (NIBIO) is owned by the Norwegian Ministry of Agriculture and Food as an administrative agency with special authorization and its own supervisory board. NIBIO contributes to food security and safety as well as sustainable resource management through research and knowledge production.

Within the GoodBerry project, NIBIO will

- identify management practices for the optimisation and exploitation of yield potential in different environments;
- investigate interactions between genotype x environment x management practices concerning plant development and fungal diseases.

Università Politecnica delle Marche (UPM)

The Department of Agricultural, Food and Environmental Sciences (D3A) of the Università Politecnica delle Marche (UPM) was founded in 2012 as the new teaching and research structure combining activities of the former Faculty of Agriculture and related departments. The department carries out scientific research in different areas, and especially the highly qualified research group - focused on studying the effects of genetic, physiological and cultivation factors for increasing berry adaptation and defining berry quality, nutritional quality and nutraceutical value of berry fruit.

Within the GoodBerry project, UPM is responsible for

- phenotyping of strawberry segregating population;
- quantification of bulk parameters related to fruit quality and ring testing;
- quantification of folates in the berries population;
- sensory analysis on strawberry population grown in Ancona (Italy);
- regulating flower induction and growth cessation by temperature, light and fertilizer in strawberry cultivars;
- studying the breaking of dormancy in strawberry cultivars.

Instituto de Investigación y Formación Agraria y Pesquera (IFAPA)

The Andalusian Institute of Agrarian and Fishing Research and Training (IFAPA) is an Administrative Agency of the Andalusian Government, integrating a network of 18 research and training centres, existing for over 40 years. The institute's mission is to contribute to the modernization of agriculture, fisheries and food of Andalusia and improving its competitiveness through research, innovation, technology transfer and training.

Within the GoodBerry project, IFAPA contributes to

- genotyping and phenotyping of segregating population;
- quantification of ascorbic acid in the strawberry population and QTL mapping for vitamin C;
- the development of molecular markers useful for Marker Assisted Selection (MAS);
- strawberry fruit sensory analysis.

Instytut Ogrodnictwa (INHORT)

Instytut Ogrodnictwa (INHORT), the Research Institute of Horticulture in Skierniewice, Poland is a governmental R&D organization supervised by the Ministry of Science and Higher Education and the Ministry of Agriculture and Rural Development. Its research programme covers all areas related to fruit, vegetable, ornamental plant and bee sciences.

Within the GoodBerry project, INHORT fulfills tasks in

- phenotyping of established cultivars of strawberry, raspberry and blackcurrant for trials related to flower initiation and dormancy;
- transcriptome analyses for the established cultivars of blackcurrant;
- phenotyping of strawberry segregating population;
- regulating flower initiation and growth cessation of strawberry cultivars by temperature, N-fertilizer and water stress;
- studies on breaking of dormancy and chilling requirements of strawberry cultivars;
- sensory analysis and internal quality of strawberry fruit.

Rheinisch-Westfälische Technische Hochschule Aachen (RWTH AACHEN)

RWTH Aachen University was established in 1870 and is divided into 9 faculties. The Institute for Botany and Molecular Genetics is chaired by Prof. Björn Usadel, whose group focuses on Plant Cell Walls, database design and implementation, and high throughput data analysis and visualization.

Within the GoodBerry project, RWTH AACHEN

- leads data analysis and integration;
- establishes and maintains the GoodBerry database;
- adds visualization and interaction capabilities to the database allowing direct access to the data;
- will safeguard data availability;
- is responsible for a data analysis across species, meta-data analysis and data integration.

Institut National de la Recherche Agronomique (INRA)

The joint research unit UMR1332 Fruit Biology and Pathology of the Institut National de la Recherche Agronomique (INRA) and the University of Bordeaux was created in 2011. Research efforts are carried out in early fruit development, from floral initiation to mature fruit and the elaboration of fleshy fruit quality. Besides this topic, the study of non-cultivable plant pathogens and their interactions with their host plants or vectors and the study of adapting fruit species to climate change are developed as well.

Within the GoodBerry project, INRA is involved in

- phenotypical and molecular analyses of established cultivars of strawberry for trials related to flower induction/initiation;
- the study of the effect of nitrogen application on floral initiation timing by using tray plants in nursery;
- a genetic/genomics approach to identify genetic/molecular control of developmental and fruit quality traits specific or not to different environments and tested management practices.

Hochschule Geisenheim University (HGU)

Hochschule Geisenheim University (HGU) is a public higher education establishment located in Hesse, Germany. The curriculum and research activities of HGU encompass the areas of Viticulture, Enology, International Wine Business, Beverage Technology, Horticulture and Landscape Architecture.

Within the GoodBerry project, HGU will

- grow and phenotype established cultivars of strawberry, raspberry and blackcurrant for trials related to flower initiation and dormancy;
- prepare RNA extraction of appropriate organs;
- be co-responsible (together with SG and RWTH AACHEN) for a genetic/genomic approach by NGS analyses to identify the genetic/molecular background of floral initiation and dormancy control in strawberry and raspberry;
- perform fruit analyses including secondary metabolisms for strawberry and raspberry.

James Hutton Institute (JHI)

The James Hutton Institute (JHI) is the premier UK crop and environ¬ment institute (~680 staff/120 PhD students) engaged to deliver evidence-based solutions to the global challenges facing land and natural resource use, both now and in the future.

Within the GoodBerry project, JHI is following the tasks of

- establishment and phenotypic evaluation of elite cultivars of Rubus and Ribes with differing environmental responses;
- comparing developmental traits with data from similar trials from other locations;
- analyzing the fruit quality components including total and specific anthocyanins, in Ribes samples from all relevant partners.

Proefcentrum Hoogstraten (PH)

Research Centre Hoogstraten is specialized in the cultivation of strawberry, tomato and pepper in glasshouses and the strawberry cultivation in open air. Practical and demonstrative research in these cultures delivers information and answers to questions raised by professional horticultural companies and growers.

Within the GoodBerry project, PH is mainly involved in

- identifying management practices for optimisation and exploitation of yield potential in different environments;
- testing strawberry genotypes for flower induction and growth cessation under different conditions;
- investigating the regulation of dormancy in strawberry plants;
- testing innovative strategies to control diseases.

Pontificia Universidad Católica de Chile (PUC)

The Faculty of Agriculture and Forestry at the Catholic University of Chile (PUC) has a long history of agricultural research, significantly contributing to the agricultural development in Chile.

Within the GoodBerry project, PUC contributes to several tasks, such as

- the development of harmonized protocols;
- the evaluation of established cultivars of strawberry and raspberry;
- the regulation of flower induction and growth cessation by temperature, light and fertilizer;
- the regulation of dormancy release and bud break;
- physiological and physical means to reduce infections of fungi: Effect of cultivar and drought stress on the susceptibility of strawberry plants to charcoal rot (M. phaseolina);
- the quantification of bulk parameters related to fruit quality of established cultivars and breeding progenies.

Ciref Création Variétale Fraises Fruits Rouges (Ciref)

Ciref is a French grower association, involved in strawberries and soft fruits varietal breeding. The main goals of Ciref are to offer and develop new strawberry varieties which correspond to French producers' needs and to create tools in order to accelerate the process of selection. For this purpose, Ciref is involved in research programs to study strawberry genetics and to identify interesting molecular markers in strong connection with the Institut National de la Recherche Agronomique (INRA).

Within the GoodBerry project, Ciref is responsible for

- the cultivation, observation and phenotyping of strawberry and raspberry cultivars;
- managing the sampling and some fruit analysis;
- genotyping and QTL mapping.

Hansabred GmbH & Co. KG (Hansabred)

In 2008, Hansabred GmbH & Co. KG was founded as a European strawberry breeding and research company. The shareholders are four widely known European companies: Kraege Beerenpflanzen (Germany), Vissers (Netherlands), R. W. Walpole Strawberry Plants Ltd. (UK) and Plantas de Navarra, S.A. (Spain).

Within the GoodBerry project, Hansabred

- is involved in horticultural activities, studies of plant health and plant pathology, environmental analysis, fruit sampling and analysis, yield and sensory evaluations;
- provides the F1 model population as a cross-breeding of two very distinct cultivars maintained as backup in a core collection parallel to the population on the field.

Sant'Orsola Società Cooperativa Agricola (Sant'Orsola)

Sant'Orsola Società Cooperativa Agricola (Sant'Orsola) is a producer organiza-tion specialised in production and marketing of strawberries and various types of berries. The main research focus lies on breeding programmes of rasp¬berries, evaluation of new genotypes on blueberries, blackberries and strawberries, experimental field and plastic for soilless cultivation and different mineral nutrition recipes.

Within the GoodBerry project, Sant'Orsola contributes to several tasks, such as

- increasing yield by identifying and applying good combinations of genotype and management practice for optimal flower induction;
- dormancy breaking in strawberry and raspberry in a range of environments.

Viveros California, S.L. (VICA)

Viveros California, S.L. (VICA) is one of the most outstanding berry plant nurseries in Europe. The company belongs to the MEDINA GROUP, a role model in the Spanish food sector, with over 50 years of experience. VICA has participated in numerous R&D projects at national and international level.

Within the GoodBerry project, VICA is mainly involved in

- acclimatizing the in-vitro plants for partners and sending them to respective partner institutions at the required planting date;
- performing an experiment on the productivity of propagation (stolon production) as an important horticultural trait.

Beijing Academy of Agriculture and Forestry Sciences (BAAFS)

Beijing Academy of Agriculture and Forestry Sciences (BAAFS) is a local agricultural academy supported by the Beijing government. The Institute of Forestry and Pomology of BAAFS is well-known in China for research on germplasm resources, genetic & breeding and cultivation of strawberry and other fruits usually planted in northern China.

Within the GoodBerry project, BAAFS' role is to

- test its own established cultivars in 3 locations in China with different climates;
- follow the phenotyping protocols established;
- analyze sugar metabolism and photosynthesis differences among different flavour genotypes;
- analyze the interaction between sink and source of strawberry plant.

Sistemas Genómicos S.L. (SG

In 1998 Sistemas Genómicos (SG) was founded, the first Spanish firm and one of the first in Europe, to specialize in DNA sequencing.

As SG has broad experience in massive sequencing, its main tasks in the GoodBerry project are

- to analyze the whole transcriptome in different stages of berries using New Generation Sequencing techniques;
- to carry out the RNA-seq analysis using New Generation Sequencing techniques;
- to analyze gene expression in flower initiation and dormancy and fruit quality;
- to participate in the collaboration of data integration.

European Research and Project Office GmbH (Eurice)

Founded in the year 2000, the European Research and Project Office GmbH (Eurice) provides comprehensive support services for the planning, initiation, and implementation of large international collaborative projects. Eurice has been involved in EU-Framework Programmes since FP4 and has been supporting researchers in over 250 EU funded projects to date.

Within the GoodBerry project, Eurice

- supports the coordinator in all aspects of project management including administrative, legal and financial matters, to ensure a smooth project implementation;
- supports innovation-related activities such as dissemination and exploitation of results to maximize project impact.

Berry News Corner

Berry experiments at Norwegian Institute of Bioeconomy Research

Ultraviolet radiation at 250 to 290 nm is effective in controlling powdery mildew. However, treatments need to take place during night-time to avoid blue light and UV-A that repair some of the damage to the powdery mildew DNA made by lower UV frequencies. In collaboration with the Norwegian University of Life Sciences, the Norwegian Institute of Bioeconomy Research (NIBIO) has built a robotic unit that is adapted to table top production of strawberry. Results from trials with night-time treatments in autumn 2016 gave 80 % reduction in powdery mildew compared to non-treated plants. Further experiments with the robotic unit will take place in spring 2017. In collabora¬tion with Cornell University, University of Florida and Rensselaer Polytechnic Institute in the US, a tractor-driven unit with UV-lamps was constructed in autumn 2016 and is currently (December 2016 – March 2017) being tested in open field organic production of strawberry in Florida. Results are not available from the trials yet, but the strawberry plants seemed to tolerate relatively high doses of UV, more than needed to avoid development of powdery mildew.

Fertilization and temperature during flower induction were studied in red raspberry cv. Glen Ample. The stages of floral development were identified by scanning electron microscopy. Drupelet numbers decreased with temperature but not the withdrawal of fertilization. A positive correlation was revealed between fruit weight and drupelet numbers. Increased femaleness might be mediated by changes in gibberellin activity.

Growth analysis of young strawberry plants was performed in controlled environments. Linear regressions of the natural log described the growth changes with time. Relative growth rate (RGR) increased linearly with temperature and was enhanced by long days. Increases in RGR were driven by combined increases in net assimilation rate (NAR) and leaf area ratio (LAR). Vegetative growth and flowering were inversely affected by the environmental factors.

Field characterization of berries in Chile

The field characterization of strawberry and raspberry cultivars has already started in Chile. Evaluations related to floral induction and latency are performed currently in both species using harmonized protocols developed within the GoodBerry project. The first essay on the effect of cultivation and drought on the susceptibility of strawberry plants to charcoal rot is in a final stage of evaluation.

Berry Events & Highlights

GoodBerry kick-off meeting in Málaga

The GoodBerry Consortium

Hosted by the coordinating institution Universidad de Málaga, the GoodBerry partners successfully launched the project at the kick-off meeting from 14-15 April 2016. The meeting was a perfect opportunity for the consortium members to come together for the first time and to lay the foundation for a good cooperation in the four years ahead. After a round of introductions, Dr Sonia Osorio, scientific coordinator of the GoodBerry project, gave an overview of the objectives and the GoodBerry work plan. The work package leaders provided detailed information on the scientific work as well as a presentation on administrative, contractual and financial issues in Horizon 2020. This was complemented by targeted discussions of the next steps towards future planning.

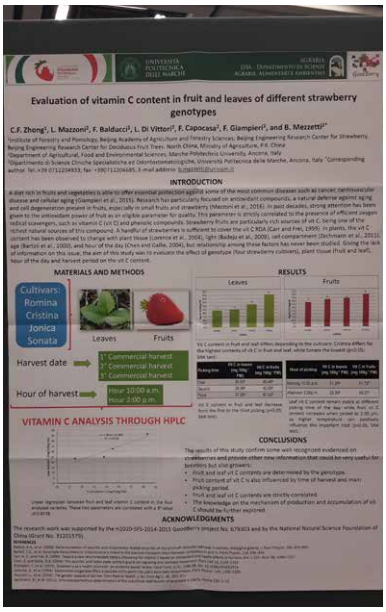
Impressions from the GoodBerry kick-off meeting

GoodBerry at the 8th International Strawberry Symposium

From 13-17 August 2016, GoodBerry partners were prominently presented at the 8th International Strawberry Symposium in Québec City, Canada. The Symposium gathered all those involved in the research of strawberry and development of the strawberry industry worldwide. Over the last few years, strawberry production has rapidly expanded globally, owing to the application of strict scientific principles and introduction of innovative management practices. In line with new challenges that lie ahead, the symposium addressed such topics as new breeding advancements, sustainability and safety of production, new cultural management techniques, harvesting efficiency, new marketing strategy, new diseases and pest control, and health benefits of strawberry.

GoodBerry partners contributed to the symposium as participants, in the form of oral presentations & in chairing sessions as well as poster sessions disseminating the project´s aims and overall structure.

Impressions from the 8th International Strawberry Symposium

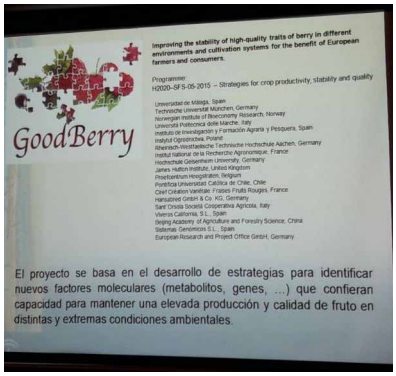


Macfrut 2016

Prof. Bruno Mezzetti from the Università Politecnica delle Marche (UPM) and partner of GoodBerry introduced and presented the project at the Macfrut 2016 on 14 September in Rimini, Italy.

Macfrut is a leading trade fair for professionals working in the fruit and vegetable sector all over Europe. About 1,000 exhibitors showcased their products attracting 38,000 professional visitors, an ideal platform to increase the projects' visibility.

GoodBerry follows new technological trends & possibilities in plant biology



In the frame of the agro fair „Tendencias de Mejora Genética en Producción Hortofrutícola", Dr Carmen Soria Navarro from the Instituto de Investigación y Formación Agraria y Pesquera (IFAPA) gave a presentation on the topic of R&D tools to improve strawberry and introduced the GoodBerry project.

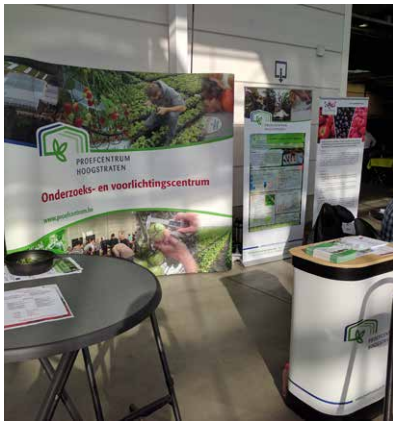
The fair, which took place on 15 September 2016 in Huelva, Spain, was organized by Biovegen, SUCA and Cajamar and provided a platform. for new technological trends in plant biology. The meeting also aimed at increasing collaborations between private actor R&D activities and public research centers

PERIFEL 2016

PERIFEL, the fruit and vegetable exhibition, took place on 08 September 2016 in the Aquitaine region in France, where Philippe Chartier from Ciref Création Variétale Fraises Fruits Rouges (Ciref) and GoodBerry partner presented the project.

The one-day event was attended by more than 500 students, professionals and officials and included plot and equipment demonstrations, conference sessions and an exhibition of 70 suppliers.

International Strawberry Fair Hoogstraten



GoodBerry partner Proefcentrum Hoogstraten (PH) participated at the International Mechanisation and Demonstration Fair Hoogstraten on 24 September 2016 in Merle, Belgium. During the demonstrative event, suppliers specialised in strawberry cultivation had the opportunity to exhibit and demonstrate their products and technologies.

Proefcentrum Hoogstraten displayed activities and represented the GoodBerry project at an exhibition stand.

Technical congress at GoodBerry partner IFAPA

To give insights into their work and recent results, GoodBerry partner Instituto de Investigación y Formación Agraria y Pesquera (IFAPA) organized a technical congress on 30 September 2016 in Huelva, Spain inviting members of the strawberry industry and growing sector.

The GoodBerry project was represented by Dr Iraida Amaya, who introduced the project and gave a talk titled: 'DNA test for the prediction of volatile compounds responsible for aroma in strawberry fruits'. A GoodBerry flyer was disseminated to the audience.

SIVAL Angers 2016 – Plant production trade show

GoodBerry partner Ciref Création Variétale Fraises Fruits Rouges (Ciref) participated at the SIVAL Angers – Plant production trade show.

With nearly 600 exhibitors and 22,000 professional visitors annually, SIVAL is an important trade show in France presenting a comprehensive offering of equipment and services for plant productions.

The event was a perfect opportunity to exhibit activities of the GoodBerry project suppliers.

Upcoming 1st Berry School

1st Berry School on plant genetics & physiology and fruit quality control March 21-24, 2017, University of Málaga, Spain

The first Berry School in Plant genetics and physiology and fruit quality control takes place at the University of Málaga, Spain on March 21-24, 2017 and is addressed at early-stage researchers or young professionals from the berry industry.

Organised in the frame of the GoodBerry project by project partner Instituto de Investigación y Formación Agraria y Pesquera and project coordinator Universidad de Málaga, renowned experts from the consortium will cover a wide range of multidisciplinary topics.

The one-week programme ends with a field trip to Huelva, the main area of strawberry production in Spain.

Overall the Berry School focusses on plant genetics and physiology as well as fruit quality control.

Specific sessions are dedicated to:

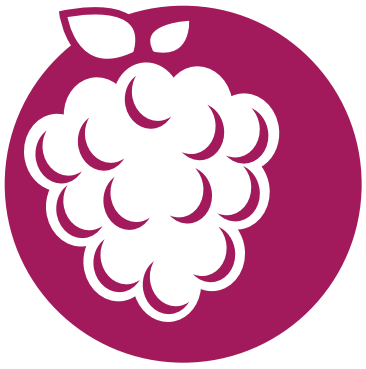
- Improved tools for phenotyping and breeding berries
- Cultivation techniques for yield stability and season extension
- Development of molecular markers for MAS
- Production of high quality berry fruit
- High quality production systems
- Reducing environmental impact

The speakers will thus impart the knowledge and skills required to understand the basics of new tools & cultivation techniques and production of high quality berries and its related systems.

These are needed to maintain high yield performance and high fruit quality under extreme environmental conditions.

By delivering such solutions, the challenges of increasing productivity efficiency, crop resilience and food quality in the light of climate changes can be addressed. The Berry School is one step into this direction.

Please find information on the programme as well as application & fees for the Berry School on our website: www.goodberry-eu.eu/news-events/1st-berry-school-in-malaga



Upcoming Berry Events

Save the date!

Macfrut - Fruit & Veg Professional Show
May 10–12, 2017, Rimini, Italy
www.macfrut.com/en/

3rd International Strawberry Congress
September 06-08, 2017, Antwerp, Belgium
www.iscbelgium.com

PERIFEL 2017
October 05, 2017, Douville, France

FRUIT ATTRACTION 2017
October 18-20, 2017, Madrid, Spain
www.ifema.es/fruitattraction_06

SIVAL Angers
January 16-18, 2018, Angers, France
www.sival-angers.com

FRUIT LOGISTICA 2018
February 07-09, 2018
Berlin, Germany
www.fruitlogistica.de

Macfrut - Fruit & Veg Professional Show
May 2018, Rimini, Italy
www.macfrut.com/en/

XXX. International Horticultural Congress (IHC2018)
August 12-16, 2018, Istanbul, Turkey
www.ihc2018.org/en

XII. Rubus and Ribes Symposium
July 2019, Zurich, Switzerland

9th International Strawberry Symposium
May 03-06, 2020
Rimini, Italy
en.riminipalacongressi.it/strawberry_symposium

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www.goodberry-eu.eu

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