



7th DIGITAL NEWSLETTER



BRESOV partners at the 5th Annual Meeting at the UNICT

It is time to bid farewell...

The BRESOV project has officially come to an end, and after 5 years of hard and exciting work, it is time to draw conclusions.

The BRESOV project would like to thank the European Commission's H2020 programme for funding this great project which conducted research for the development of organic agriculture with specific focus on three economically significant crops: broccoli, green bean and tomato.

We would also like to thank all the partners for their proactive participation and invaluable contribution to the achieved results, which include the development of new resilient cultivars and crops with improved organoleptic and nutritional qualities, as well as the creation of advanced tools to control the sanitary quality of organic broccoli, snap bean and tomato seed lots.

Professor Ferdinando Branca, BRESOV project coordinator, summarised the project results and shared his personal take on the project in his farewell note:

“The 5th annual meeting which took place from the 27th to the 28th April 2023 in Catania, followed by the BRESOV Final Conference from 29th to 31st in Agrigento, demonstrated that the Consortium of the project partners have shown great collaboration efforts reaching the foreseen goals of the Grant Agreement 774244 of the EU project.

Within the lifetime of the project, more than 2500 accessions of broccoli, snap bean, and tomato have been genotyped and phenotyped providing important information related to the QTLs, genes, and SNPs of interest for the crop resistance to biotic and abiotic stresses, controlling and mitigating their effects, and increasing the organoleptic and nutraceutical traits of the products. The genes, SSRs and the SNPs are of great interest for the marker assisted selection (MAS) of the three crops speeding up the organic breeding programs.

The elite breeding lines of broccoli, snap bean, and tomato will be the basis for the next new organic cultivars that will support the achievement of the EU Green Deal target to increase organically managed farmland to 25% by 2030.

For the three crops researched within the project, the protocols for producing high amount and quality of organic seeds have been improved, individuating promising data regarding sowing, crop density and organic nutrition. Some microbial consortia and natural compounds that have been evaluated by seed priming and soil drenching reduced the incidence and severity for several diseases. The multi-location trials provided additional indications about the most promising cultivars of broccoli, snap bean and tomato evaluated in several EU countries and beyond.

I have been very lucky to have had good colleagues and friends to develop all the tasks of the BRESOV project with a view to supporting the agroecological transition from the farm to the fork of the EU Green Deal. All the BRESOV Work Package, Tasks and Crop Group leaders have supported me in reaching all the deliverables submitted and the outcomes provided.

Many thanks to all the BRESOV partners, stakeholders and EU officers to have offered us the opportunity to learn a lot and enlarge our knowledge of organic breeding and farming! We hope that our project outputs will contribute significantly towards developing context-specific climate-resilient organic production systems in the face of the imminent climate change scenarios!”

*Sincerely,
Prof. Ferdinando Branca*

And before we bid farewell, we would like to share with you the developments within the project during last months.

Spotlight

5th Annual Progress Meeting

The last BRESOV Annual Progress Meeting took place on 27-28 March 2023 at the University of Catania and featured presentations of the latest results since the last annual meeting in Valencia and remaining activities of all work packages and crop groups.

On the first day partners focused on the achievements in the pre-breeding work package which looks at the broadening of the genetic bases of tomato, snap bean and brassica, promoting the use of crop wild relatives, landraces and gene discovery, as well as plant breeding work package, looking at the development of populations, advanced breeding lines and improved genetic material for European organic agriculture. Crop group sessions also took place outlining main achievements and remaining activities. Project partners also presented the progress achieved for high quality organic seed production and multi-site evaluation of pre-breeding lines on-farm. Communication, dissemination, training and exploitation was also discussed, followed by the report on Winter School Sicily that took place in December 2022.

On the second day, partners had crop group break-out sessions to discuss publications and deliverables, which was followed by an open exchange with BRESOV Scientific Advisory Board (SAB) Member Sandra Goritschnig (ECPGR). Partners have also presented and discussed final Key Exploitable Results (KERs) and Exploitation roadmap and had an open discussion with IP expert Szonja Csörgő (Euroseeds) on questions regarding sharing results ownership/exploitation.



BRESOV partners at the 5th Annual Meeting at the UNICT

Final Conference of the BRESOV project in Agrigento, Italy, 28-31 March 2023



The results of the 5-year work of BRESOV were presented to the scientific community at the Final Conference entitled "The Improvement of the Broccoli, Snap Bean and Tomato organic farming by Exploiting their Biodiversity: the results of the H2020 BRESOV project" that took place in Agrigento, Sicily and was organised by project coordinator University of Catania.

The first day of the conference featured several presentations by high-level invited speakers from the University of Catania, the Italian Society for Horticultural Science (SOI), the Institute of BioEconomy (IBE-CNR), Agriculture and Forest Council of the Sicilian Region, DG AGRI's Unit for Organics and FAO.

Further on, 3 crop group sessions took place - brassica, snap bean and tomato, each one of them having an invited keynote speaker from University of Warwick (UK), Oregon State

University (USA) and INRAe respectively.

The second day of the conference started with the Organic Farming session where Euroseeds' Amelie Detterbeck spoke about improving seed production for organic farming.

The next session focused on organoleptic, nutritive and nutraceutical traits of brassica, snap bean and tomato.

In the afternoon, 3 Key Exploitable Results (KERs) of the project were presented by KER leaders, and it was followed by a round table entitled "Vegetable Organic production in Europe and its perspectives", chaired by Amelie Detterbeck. For this round table, experts of the whole value chain were invited to discuss about their experiences in the organic vegetable sector, the bottlenecks they encounter in increasing the organic vegetable production in Europe and how the BRESOV project results can help in solving these challenges.



On the third day, the conference participants paid a visit to a field of the Terre del Barone organic farm in the Valley of Temples, Agrigento, where BRESOV field trials took place and where the work is focused on participatory organic breeding and farming of vegetable crops populations, as well as the Garden of Kolymbethra to explore the Greek agroecological approach.



This international event provided a platform to present the results and allowed for fruitful discussion and networking.





Visit the project's [social media](#) for a more detailed overview of the event.

BRESOV project featured in the latest CORDIS Results Pack



On 13 December, the EU Commission published its latest Results Pack "Agroecology: research for resilient, sustainable, climate-, eco-system- and social-friendly farming systems".

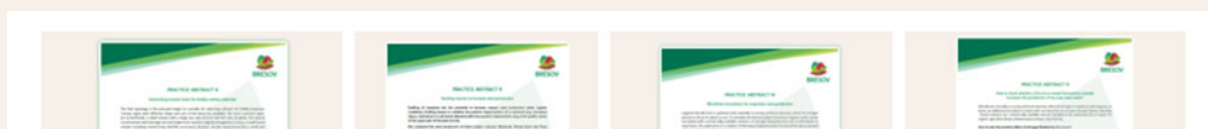
CORDIS Results Packs are multilingual collections of up-to-date articles that focus on a specific theme, bringing you results that you can apply in your domain.

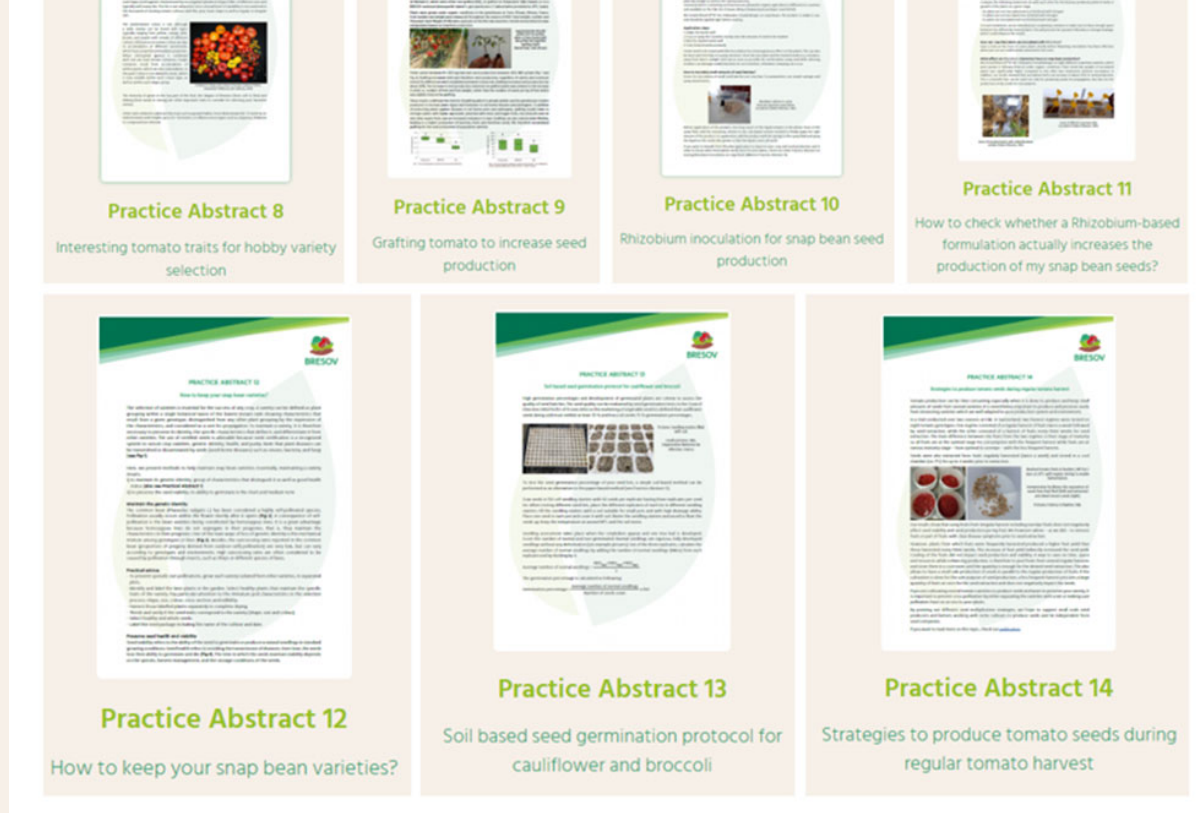
The EU has set ambitious targets for the agricultural sector. Not only do Europe's farmers need to ensure a reliable supply of high-quality food – fruit, vegetables, nuts, cereals and animal products – and non-food products at competitive prices, they must also deliver on the environmental commitments of the EU Green Deal and Farm to Fork strategy.

The Results Pack on Agroecology presents 14 EU-funded research projects that are helping to shape the future of farming. These projects are contributing to an increased understanding of the practical implementation of agroecological practices, along with their environmental, climate, economic and social benefits. By sharing these successes, the EU Commission hopes to inspire and mobilise stakeholders to work together to scale up this important research area. This Results Pack on Agroecology highlights a broad range of EU-funded research and innovation activities, and showcases a variety of ways in which agroecology can support sustainable agriculture and environmental protection.

More detailed information can be found [here](#).

3rd set of practice abstracts





In November 2022 BRESOV published the third set of practice abstracts which explores the following topics:

- **Interesting tomato traits for hobby variety selection** – an overview of common tomato typology to consider for selecting cultivars for hobby purposes;
- **Grafting tomato to increase seed production** - examples of how grafting can contribute to increased tomato seed production, plant resistance to soil borne diseases and pathogens, higher agronomic potential and extended plant lifetime;
- **Strategies to produce tomato seeds during regular tomato harvest** - different seed multiplication strategies to produce and preserve seeds of tomato varieties;
- **Rhizobium inoculation for snap bean seed production and How to check whether a Rhizobium-based formulation actually increases the production of my snap bean seeds?** - step-by-step guidelines on how to inoculate snap bean seeds with a solution of nitrogen-fixing bacteria – Rhizobium, and how to test its positive effect on plants;
- **How to keep your snap bean varieties?** – an overview of methods and practical advice to help maintain the genetic identity, seed health and viability of snap bean;
- **Soil based seed germination protocol for cauliflower and broccoli** - how to test seed germination percentage of seed lots by using a simple soil-based method as an alternative to the paper-based method;

The practice abstracts released by the BRESOV project are available on the [BRESOV website](https://bresov.eu/).

Results of the BRESOV survey on the use of alternative fertilisers and microorganism formulations in crop production featured by EIP-AGRI



Farmers feedback on the use of alternative fertilisers and microorganisms

Geographical scope	European Union
Keywords	Pest / disease control pesticide Plant production and horticulture

In the framework of the BRESOV project, partners [The Research Institute of Organic Agriculture \(FiBL\)](#) and [Itaka Crop Solution \(ITAKA\)](#) developed a survey on the use of alternative fertilisers and microorganism formulations in crop production. This was a next step to broaden the experience after previous BRESOV trials, testing a commercial formulation of microorganisms under normal and water stress conditions in the lab and in production conditions, did not show a significant effect on crop performance. The aim of the survey, which was available in English, French, German, Italian and Spanish, was to collect information on the use and the experience of practitioners with microorganism formulations, as well as with alternative fertilisers. The 42 respondents originated from all over Europe with a majority coming from the Mediterranean and central Europe (79%), mainly Switzerland and Italy. 69% of the survey participants were farmers, 81% working in organic agriculture and mostly (49%) producing vegetables. The survey covered areas such as information about the farm (farming system, crops/livestock), the use of natural, alternative or recycled fertilisers, as well as microorganism formulations, their type, the crops they were used on and the main reason behind their use. Participants were also asked whether they were satisfied with their use, if they recommended them and whether they had additional needs that were not currently covered. The questions of the survey were technical and related to what they effectively did on their farms. It showed that most respondents had a good understanding of the technical aspects, used alternative fertilisers (compost (40%) and manure (40%) being the main alternative fertilisers used by the farmers responding to the survey), as well as microorganisms and in general recommended their use.

One of the survey authors Joelle Herforth-Rahmé (FiBL) said: “Our work has shown that there is interest of stakeholders to use alternative fertilisers and microorganism formulations in their production. Alternatives such as compost are broadly used in organic agriculture. The use of alternative fertilisers is recommended by farmers, and in our trials it has led, in the case of compost, to crop production results comparable to the use of commercial fertilisers.”

The results of the survey go hand in hand with the European Commission’s action plan for the development of organic production where organic farmers need to limit the use of fertilisers, herbicides and pesticides to achieve the reduction in fertiliser use of at least 20% and in pesticide use of 50% by 2030, as part of the Farm to Fork strategy. The survey provides testimonials on the use of alternative fertilisers as well as microorganism formulations and shows that farmers are aware of a necessary evolution of production systems and that it is possible to reduce the dependence on chemicals. This will contribute to the EU Green Deal objectives of building sustainable food systems, ensuring food security and safety, as well as protecting biodiversity and soil health.

Visit [BRESOV website](#) for more detailed results of this survey.

Exploitation of BRESOV results: Creating impact and benefit for society

During the last five years, BRESOV partners have intensively worked to improve the competitiveness of broccoli, snap bean and tomato in organic production systems. Besides their work in the fields and laboratories, the BRESOV partners have developed roadmaps with the goal to progress the project results and to create outputs that can be used by stakeholders. With the use of BRESOV project results, the goal is to create long-term impact in the organic breeding sector.

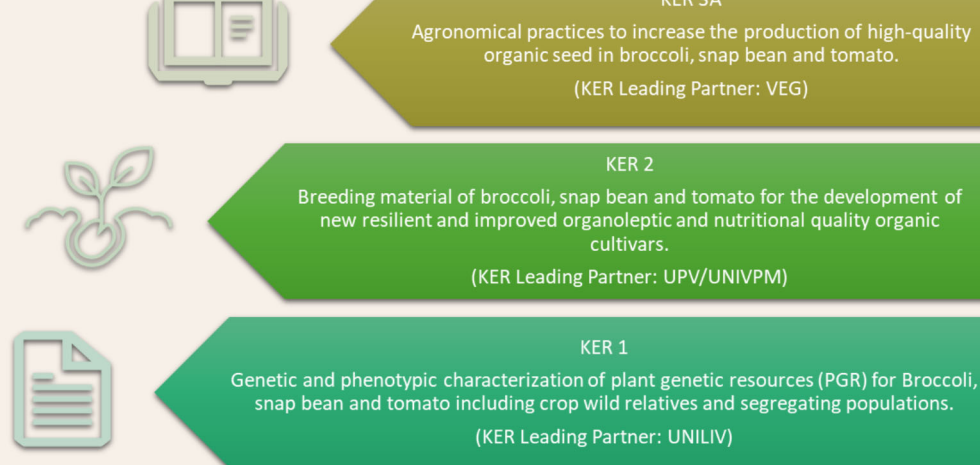
Three main key exploitable results (KERs) were identified by the project partners:



KER 3B

Tools and products to control the sanitary quality of organic broccoli, snap bean and tomato seed lots.

(KER Leading Partner: VEG)



KER 1 relates to the genetic and phenotypic characterization of plant genetic resources (PGR) for broccoli, snap bean and tomato including crop wild relatives and segregating populations. The BRESOV project will provide genotypic and phenotypic data on large structured collections, which provide a rich source of variation in resilience/tolerances, organoleptic quality and phytochemical variation. The data will allow breeders, farmers and growers to select relevant sources of interesting traits from different kind of materials (crop wild relatives, landraces, heterogeneous material and improved lines). The results can further be interesting for research and gene banks.

If you would like to receive more information, please contact: Dr Peter Glen Walley, University of Liverpool, peter.walley@liverpool.ac.uk

KER 2 relates to the breeding activities conducted in the project. It includes pre-breeding and breeding material of broccoli, snap bean and tomato for the development of new resilient and improved organoleptic and nutritional quality organic cultivars. A specific focus lay hereby on developing improved versions of landraces with new resistance to diseases, the identification and selection of already available materials, and development of new varieties adapted to organic production and low-input conditions. The materials include improved landraces, heterogeneous material and hybrids in different stages of development. The results and material may especially be interesting for small-scale and medium scale breeders, farmers producing for organic and/or local markets, organic shops and amateur gardeners. The materials may also be of potential interest for other non-organic niches.

If you would like to receive more information, please contact: Elena Bitocchi & Jaime Prohens, Università Politecnica delle Marche & Universitat Politècnica de València, e.bitocchi@staff.univpm.it & jprohens@btc.upv.es.

KER3 focuses on agronomic practices to increase the production of high-quality organic seed and advanced tools to control the sanitary quality of organic broccoli, snap bean and tomato seed lots. To increase the quantity and quality of seeds produced under organic conditions, the BRESOV project will provide guidelines for the production of high-quality organic seeds, including a list of agronomic factors easy to put in place and compliant with organics rules to increase seed production and seed quality (germination). Several practice abstracts were already provided throughout the project and will be completed by a video explaining the main agronomic factors, which positively affected the seed production in the BRESOV trials. Next to the agronomic practices identified, tools and products to control the sanitary quality of organic seed lots will be provided. These include protocols for molecular detection methods (PCR-based) to detect seed-borne pathogens directly in seed lots. In addition, products for seed treatment that are compliant with organic production rules will be recommended to users. Breeding companies, seed producers, seed resellers, vegetable producers and farmers/farmer organizations can benefit from these results.

If you would like to receive more information, please contact: Sarah Danan, Vegenov, danan@vegenov.com

Latest News

Where has the BRESOV team been?

In the last 6 months of the project, BRESOV was showcased at various events, including **scientific conferences, congresses, exhibitions, workshops, and seminars** addressing various types of audiences.

Here are the highlights from some of them:



*Presentations of BRESOV partners UNICT and FiBL at the **The International Horticultural Congress 2022**.*

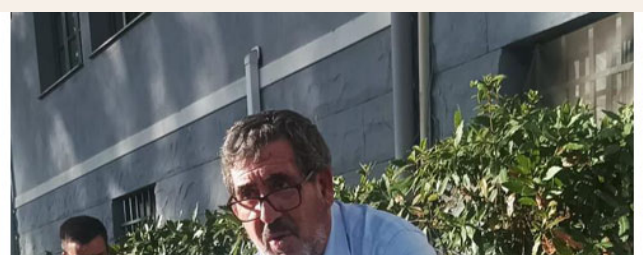




*BRESOV poster presented at the **GPZ German plant breeding conference** in Düsseldorf.*



*Presentation of the project results at the **Euroseeds 2022 Congress** and raising awareness of the project at the Euroseeds booth.*





***AgroSchoolExpo 2022** of the Sicilian Network of Social Farms, where UNICT showed the production of organic broccoli, exploiting the nutraceutical proprieties of Sicilian landraces, and of their novel food such as sprouts, microgreens and baby leaves, in the framework of BRESOV project.*



> ISHS Young Minds Award winner summaries

Below is a selection of research summaries from winners of ISHS Young Minds Awards for best oral and poster presentations at ISHS symposia. To view other exciting research summaries by other winners, please visit www.ishs.org/young-minds-award.

Seed treatments for the control of *Colletotrichum lindemuthianum* and *Pseudomonas savastanoi* pv. *phaseolicola* in organic production of bean: establishing test prerequisites



> Carlo Gamper Cardinali

The poor quality of organic seeds due to pathogen contamination is a main challenge for the development of organic farming. In conventional agriculture, chemical seed treatments can effectively manage this issue. In organic agriculture, however, only limited seed treatments are available. The goal of our project was to evaluate seed treatments compatible with organic farming against two bean diseases, anthracnose caused by the fungi *Colletotrichum lindemuthianum* and halo-blight caused by the bacteria *Pseudomonas savastanoi* pv. *phaseolicola*.

Because sourcing seed with adequate and homogenous natural pathogen infection is difficult, seed inoculation methods were established to obtain high infection rates. For *C. lindemuthianum*, a satisfactory infection rate for the seed treatment investigation was only obtained when seeds were scarified prior to inoculation in a spore suspension. After pathogen inoculation, pathogen detection and quantification tests were performed. We confirmed the efficacy of the incubation method for *C. lindemuthianum* detection established by the International Seed Testing Association. Moreover, we tested molecular detection methods, which required DNA extraction from bean seeds. We initially encountered difficulties when isolating DNA from bean seeds. We used a DNA extraction kit with a reduced sample amount with increased lysis level. This technique allowed us to molecularly detect *C. lindemuthianum* in infected and inoculated bean seeds.

The effect of the seed treatments on the germination of the seeds was evaluated in pathogen-free seeds of 'Maxi' bean. No statistical difference was observed between treatments and the negative control (not treated), however, when working on scarified seeds, the acetic acid treatment, one microbi-

al formulation treatment, and the chemical treatment (used as control) decreased germination. Our study indicated that several challenges restrain the development of seed treatments in organic bean production, from obtaining seeds with adequate pathogen infection to pathogen detection. The next steps of our research will be to fine-tune the detection and quantification of seed borne pathogens in treated seed lots and finally to validate successful treatments on naturally infected seeds.

This research is supported by the project BRESOV (bresov.eu) funded by EU H2020 under grant agreement No 774244.

Carlo Gamper Cardinali won the ISHS Young Minds Award for the best oral presentation at the International Symposium on Quality Seeds and Transplants for Horticultural Crops and Restorative Species at IHC2022 in France in August 2022.

> Contact

Carlo Gamper Cardinali, Department of Crop Sciences, Research Institute of Organic Agriculture (FiBL), Ackerstrasse 113, Postfach 219, 5070 Frick, Switzerland, e-mail: carlo.gampercarnali@fibl.org

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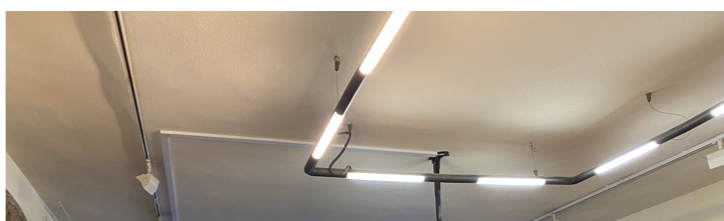


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Summary for the prize of the ISHS Young Minds Awards for best oral presentation at the Symposium on Quality seeds and Transplants for horticultural crops and restorative species, Angers, France.





Presentation by JJ Ferreira, SERIDA, mentioning the project at the I National Congress of Legumes in Asturias.



JORNADA PRESENTACIÓN PROYECTOS EUROPEOS DE INNOVACIÓN EN EL MEDIO RURAL

23 de febrero de 2023 – Salón de Actos Edificio EASMU – OVIEDO

- 9:30 h. Inauguración – Presentación de la Jornada
- Consejero del Medio Rural y Cohesión Territorial: D. Alejandro Jesús Calvo Rodríguez.
 - Consejero de Ciencia: D. Borja Sánchez García.
- 10:00 h. LIFE DIVAQUA – Instituto de Hidráulica de Cantabria.
- 10:20 h. LIFE BEARS WITH FUTURE y LIFE Human Bear COEX - Fundación Oso Pardo.
- 10:40 h. LIFE CORREDORES IBÉRICOS POR EL QUEBRANTAHUESOS - Fundación Quebrantahuesos.
- 11:00 h. COMFOR SUDOE. Gestión integrada e inteligente de bosques complejos y plantaciones mixtas del SUDOE - Universidad de Oviedo.
- 11:20 h. Pausa – café
- 11:50 h. INTERREG EUROPE: 3F GREEN MODEL. Future Food & Forestry models towards the value chain adaptation to the Green Deal and Circular Economy - Desarrollo de Estrategias Exteriores (DEX).
- 12:10 h. HORIZON 2022. WATSON (Miel) Y ALLIANCE (Faba) - ASINCAR.
- 12:30 h. LIFE CARBON FARMING. Desarrollo e implementación de un mecanismo de financiación basado en la reducción de emisiones de carbono en sistemas combinados de ganadería y agricultura europeos - SERIDA.
- 12:50 h. LIFE SILFORE. Hacia la conservación y gestión de los sistemas agroforestales como territorios de alto valor natural y sociocultural - SERIDA.
- 13:10 h. PRIMA ADVAGROMED. ADVanced AGROecological approaches based on the integration of insect farming with local field practices in MEDiterranean countries - SERIDA.
- 13:30 h. HORIZON 2020 BRESOV e INCREASE. Intelligent Collections of food-Legume Genetic Resources for European Agrofood Systems - SERIDA.
- 13:50 h. HORIZON 2020 InnOBreed. El cultivo y los usos innovadores de la fruta ecológica - SERIDA.
- 14:10 h. Cierre de las Jornadas
- Director del Medio Natural y Planificación Rural: D. David Villar García.
 - Directora Gerente del SERIDA: Dña. Mamen Oliván García.

The Conference for the Presentation of EU Innovation Projects in Rural Environment in Asturias where SERIDA talked about their contribution to BRESOV.

FiBL

C. G. Cardinali, J. Herforth-Rahmé
Departement für Nutzpflanzenwissenschaften, Forschungsinstitut für biologischen Landbau FiBL
Schweiz

Herausforderungen bei der Entwicklung von Saatgutbehandlungen gegen *Colletotrichum lindemuthianum* im biologischen Anbau von Bohnen

1. Sorte-Pathogen-Kombinationen



Prüfung der Kompatibilität verschiedener *C. lindemuthianum*-Stämme mit verschiedenen Bohnensorten.

Abb.1: *C. lindemuthianum* CS31 (Foto: Carlo Gamper, FiBL).

Ergebnis: Die Sorte-Pathogen-Kombinationen wurden validiert, da wir durch Blattinokulation kranke Pflanzen erhielten.



Abb.2: Bohnensorten validiert. (Foto: Carlo Gamper, FiBL).

3. Detektion von Pathogenen

- Molekulare Techniken:

2. Saatgut mit Infektion

- Natürlich infiziertes Saatgut

Schwierige Beschaffung von Saatgut mit angemessener genügend höher Infektionsrate und in ausreichender Menge

- Künstlich beimpftes Saatgut:

Es wurden zwei Methoden zur Inokulation von Saatgut getestet: zum einen durch Eintauchen von gesundem Saatgut in eine Sporensuspension des Erregers¹ und zum anderen durch direkten Kontakt des Saatguts mit dem wachsenden Pilz in einer Petrischale².

Ergebnis: Die Samenschale verhindert die Keimung der Sporen. Das Saatgut muss geritzt werden.



Saatgut enthält viele Verbindungen, die die DNA-Isolierung und die nachfolgenden Verfahren effektiv stören.

Ergebnis: Der molekulare Nachweis von *C. lindemuthianum* gelang nur bei einer reduzierten Probenmenge.

• Saatgut-Inkubationsverfahren:

Optimale Umweltbedingungen sind für die Krankheitsentwicklung erforderlich.

Ergebnis: die ISTA-Methode³ zum Nachweis von *C. lindemuthianum* in Bohnsamen war erfolgreich in der Bestimmung der Sameninfektionsrate.

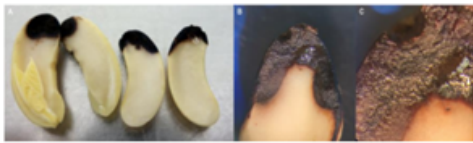


Abb.4: Unbeschädigte Samen mit Symptomen von *C. lindemuthianum* nach der ISTA-Methode. (Foto: Carlo Gamber, FiBL).

Schlussfolgerungen

- Um eine angemessene Infektionsrate zu erreichen, musste das Saatgut geritzt werden. Dies kann jedoch die Wirkung einiger Behandlungen verstärken oder die Keimung beeinträchtigen, so dass die potenzielle Wirkung auf intaktes Saatgut überschätzt wird.
- Für den Nachweis von *C. lindemuthianum* im Saatgut kann eine Kombination aus Inkubationsmethoden und molekularer Diagnose verwendet werden, um die Wirkung von Testmethoden zur Saatgutbehandlung zu beurteilen.

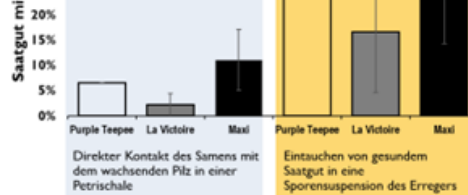


Abb.3: MittelwertSE des Prozentsatzes der Samen mit *C. lindemuthianum*-Symptomen bei Bohnsorten mit zwei Inokulationsmethoden

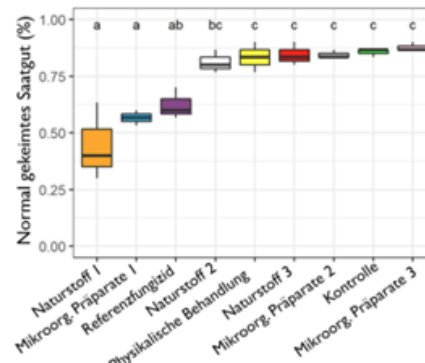


Abb.5: Auswirkung von Saatgutbehandlungen auf die Keimung von geritztem Saatgut der Sorte Maxi.

Referenzen

- 1 BRESOV, Deliverable No. D4.1 Review of the detection tools for seed-borne pathogens and the seed treatments that are applicable in organic seed production [Internet]. 2019.
- 2 Machado J da C, Oliveira JA de, Vieira M das GGC, Alves M de C. Uso da restrição hídrica na inoculação de fungos em sementes de algodoeiro. Revista Brasileira de Sementes. 2004;26(1):62-7
- 3ISTA. Validated Seed Health Testing Methods. In: International Rules for Seed Testing. 2022. p. 345

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Projektpartner

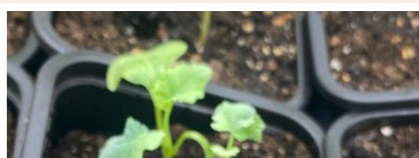


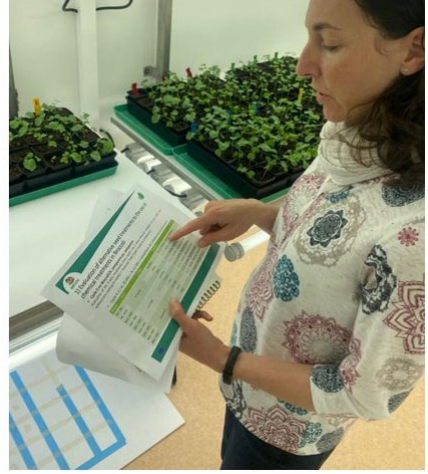
Presentation of a poster in German at the **16. Wissenschaftstagung Ökologischer Landbau** "16th Scientific Conference on Organic Farming" in Frick, Switzerland.



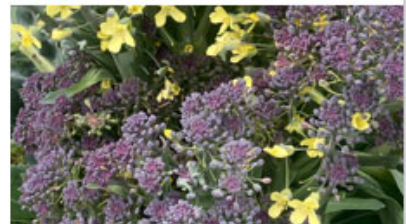
Presentation by Euroseeds' Dr. Nick Vangheluwe of BRESOV key exploitable results and how they could improve competitiveness of vegetable crops in organic production at **COPA COGECRA R&I workshop**, 19 April 2023

News from the lab and the field





Broccoli trials within T4.2 at Vegenov.



UNICT sampling the organic cross pollination populations established by CREA, utilizing the selected Sicilian landraces of broccoli and cauliflower.





Screenshot of the *video*.

As part of the on-farm evaluation for agronomic performances in crop rotation models, P18-ITAKA chose to include beans in the rotation after tomatoes. 3 cultivars have been included and evaluations will be performed until final assessments on marketability.



P9-UNILIV are performing a second Brassica salinity tolerance experiment. This work is designed to explore the stability of observed tolerance in different environments.

The image shows the BolAGDH mapping population growing in a controlled environment at University of Liverpool, UK.

Scientific publications

In the last months, BRESOV project has published several scientific publications:

- Bellucci, E., Benazzo, A., Bitocchi E., Ferreira J.J., Campa A. Papa R. et al.

Selection and adaptive introgression guided the complex evolutionary history of the European common bean

Nature Communications volume 14, Article number: 1908 (2023)

<https://doi.org/10.1038/s41467-023-37332-z>

- Rizzo, Giulio Flavio, Nicolas Al Achkar, Simone Treccarichi, Giuseppe Malgioglio, Matteo Giuseppe Infurna, Sebastian Nigro, Alessandro Tribulato, and Ferdinando Branca.

Use of Bioinoculants Affects Variation in Snap Bean Yield Grown under Deficit Irrigation

Agriculture 13, no. 4, 2023: 865.

<https://doi.org/10.3390/agriculture13040865>

- Rosa Micol-Ponce, Manuel García-Alcázar, Ricardo Lebrón , Carmen Capel, Benito Pineda , Begonia García-Sogo, Juan de Dios Alché, Ana Ortiz-Atienza, Sandra Bretones, Fernando Juan Yuste-Lisbona, Vicente Moreno, Juan Capel and Rafael Lozano

Tomato POLLEN DEFICIENT 2 encodes a G-type lectin receptor kinase required for viable pollen grain formation

Journal of Experimental Botany, Volume 74, Issue 1, 1 January 2023, Pages 178–193,

<https://doi.org/10.1093/jxb/erac419>

- Pasquale Tripodi, Antonietta D'Alessandro and Gianluca Francese

An integrated genomic and biochemical approach to investigate the potentiality of heirloom tomatoes: Breeding resources for food quality and sustainable agriculture

Front. Plant Sci., 04 January 2023 Sec. Technical Advances in Plant Science Volume 13 - 2022

<https://doi.org/10.3389/fpls.2022.1031776>

- Simone Treccarichi, Hajer Ben Ammar, Marwen Amari, Riccardo Cali, Alessandro Tribulato and Ferdinando Branca

Molecular Markers for Detecting Inflorescence Size of Brassica oleracea L. Crops and B. oleracea Complex Species (n = 9) Useful for Breeding of Broccoli (B. oleracea var. italica) and Cauliflower (B. oleracea var. botrytis)

Plants 2023, 12(2), 407

<https://doi.org/10.3390/plants12020407>

- Valeria Menga, Clara Fares, Ana Campa, Juan Jose Ferreira, Elena Bitocchi, Roberto Papa and Romina Beleggia

Variability of Nutritional, Antioxidant, and Textural Traits of a Collection of Snap Beans of Different Colors

Horticulturae 2023, 9(3), 311

<https://doi.org/10.3390/horticulturae9030311>

- Hajer Ben Ammar, Donata Arena, Simone Treccarichi, Maria Concetta Di Bella, Sonia Marghali, Nadia Ficcadenti, Roberto Lo Scalzo and Ferdinando Branca

The Effect of Water Stress on the Glucosinolate Content and Profile: A Comparative Study on Roots and Leaves of Brassica oleracea L. Crops

Agronomy 2023, 13(2), 579

<https://doi.org/10.3390/agronomy13020579>

- Alessandro Scuderi; Giuseppe Timpanaro; Ferdinando Branca; Mariarita Cammarata

Economic and Environmental Sustainability Assessment of an Innovative Organic Broccoli Production Pattern

Agronomy 2023, 13(3), 624

<https://doi.org/10.3390/agronomy13030624>

- Carmen García-Fernández, Maria Jurado, Ana Campa, Creola Brezeanu, Valérie Geffroy, Elena Bitocchi, Roberto Papa and Juan Jose Ferreira

A Core Set of Snap Bean Genotypes Established by Phenotyping a Large Panel Collected in Europe

Plants 2022, 11(5), 577

<https://doi.org/10.3390/plants11050577>

- Fonseca, R., Capel, C., Yuste-Lisbona, F., Quispe, J., Gómez-Martín, C., Lebrón, R., Hackenberg, M., Oliver, J., Angosto, T., Lozano, R., Capel, J.

Functional characterization of the tomato HAIRPLUS gene reveals the implication of the epigenome in the control of glandular trichome formation

Horticulture Research, Volume 9, 2022

<https://doi.org/10.1093/hr/uhab015>

- Giuseppe Malgioglio, Giulio Flavio Rizzo, Sebastian Nigro, Vincent Lefebvre du Prey, Joelle Herforth-Rahmé, Vittoria Catara and Ferdinando Branca

Plant-Microbe Interaction in Sustainable Agriculture: The Factors That May Influence the Efficacy of PGPM Application

Sustainability 2022, 14, 2253

<https://doi.org/10.3390/su14042253>

- Pasquale Tripodi, Maria R. Figàs, Fabrizio Leteo, Salvador Soler, María José Díez, Gabriele Campanelli, Teodoro Cardí, Jaime Prohens

Genotypic and Environmental Effects on Morpho-Physiological and Agronomic Performances of a Tomato Diversity Panel in Relation to Nitrogen and Water Stress Under Organic Farming

Frontiers in Plant Science, 13, 2022

<https://doi.org/10.3389/fpls.2022.936596>

- Timpanaro, Branca, Cammarata, Di Bella, Foti, Scuderi

Biodiversity enhancement for sustainability organic seed production of Broccoli (Brassica oleracea var. Italica Plenck)

Sustainability 2022, 14(11), 6417, 2022

<https://doi.org/10.3390/su14116417>

- Hajer Ben Ammar, Valentina Picchi, Donata Arena, Simone Treccarichi, Giulia Bianchi, Roberto Lo Scalzo, Sonia Marghali and Ferdinando Branca

Variation of Bio-Morphometric Traits and Antioxidant Compounds of *Brassica oleracea* L.
Accessions in Relation to Drought Stress
Agronomy 2022, 12(9), 2016
<https://doi.org/10.3390/agronomy12092016>

- Branca, F., Papa, R., Bitocchi, E., Ferreira, J., Cardi, T., Tripodi, P., Lozano, R., Ovesna, J., Sheng, X., Dever, L., Walley, P. and Prohens, J.
Developing new cultivars of broccoli, snap bean, and tomato for resilient, efficient, and sustainable organic vegetable production: preliminary results of the H2020 BRESOV project
Acta Hort. 1355, 81-90.
<https://doi.org/10.17660/ActaHortic.2022.1355.11>

- Arena, D., Treccarichi, S., Di Bella, M.C., Achkar, N., Ben Ammar, H., Picchi, V., Lo Scalzo, R., Amari, M. and Branca, F.
Evaluation of *Brassica oleracea* L. crops and wild relatives for biomorphometric and biochemical characteristics.
Acta Hort. 1355, 71-80.
<https://doi.org/10.17660/ActaHortic.2022.1355.10>



The *Acta Horticulturae* n. 1354 contains all papers of the III International Organic Fruit Symposium and I International Organic Vegetable Symposium organized by the BRESOV project and patronised by the International Society for Horticultural Sciences.

Visit [BRESOV website](https://www.bresov.eu) to consult all scientific publications of the project.

BRESOV through the camera lens

In the months of the project, BRESOV partners have developed a number of video materials showcasing their work:

P16-SERIDA created several videos:

- A video showcasing 20 homozygous families of snap bean in a greenhouse;
- A slideshow showcasing tasting of the pods of the new snap bean genotypes developed within the project;
- A slideshow showcasing preservation of soil health in bean cultivation through sustainable soil management by crop rotation in bean fields with ryegrass;
- A slideshow showcasing preservation of soil health in bean crop through sustainable soil management by using green manure and brassica.

P-02 Euroseeds participated in two interviews for the European Seed magazine:

- An interview with A. Detterbeck and T. Cardi organized during the Euroseeds 2022 Congress where they discuss the project in more detail, including the reason behind it, the results, and whether organic agriculture can feed the planet;
- An interview with A. Detterbeck, where she explains communication, dissemination and exploitation activities as essential parts of research projects, using the concrete example of the BRESOV project.

P-01 UNICT produced:

- A video showcasing the Terra del Barone farm of the Valley of Temples of Agrigento, a stakeholder of BRESOV project, where UNICT has been evaluating the organic heterogeneous materials of broccoli, snap bean and tomato;
- A video from the Terra del Barone farm in Agrigento during developed during the BRESOV Winter School Sicily 2022 featuring project coordinator Prof. Branca, BRESOV partners and stakeholders.

Some key statistics of the project

Website visitors	42.585+	Citations of peer-reviewed publications	465+
Newsletter subscribers	120+	Articles/appearances in the media	60+
Twitter impressions	917.200+	Events	35+ public 75+ scientific
Twitter followers	1.015		40+ addressing breeding sector and farmers
Facebook post reach	89.040+		20+ addressing policy makers
Facebook profile views	4.800+		25+ jointly with EU projects

It is not the end, it is just the beginning!

The BRESOV project is not saying good-bye as the project's significant **results** will live on, and we hope that they will be actively used to contribute to the development of organic agriculture and serve well in the efforts to achieve the goals of the EU Green Deal and its Farm to Fork strategy!

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The BRESOV project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 774244.

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