



Virtigation evaluates new biocontrol tools against potential pandemics in horticultural crops.

- "Integrated Pest Management Strategies for the Control of Greenhouse Horticultural Viruses" has brought together Andalusian agents and researchers from the European project at Tecnova.
- Several solutions have been proposed to enhance the protection of horticultural crops in Europe and the Mediterranean basin from emerging viral diseases.

Almería, February 29, 2024 – The facilities of TECNOVA in PITA hosted a crucial technical workshop on February 22, 2024, for the international project VIRTIGATION - which involves 25 partners from 12 countries - where promising **were presented in integrated pest and vector management strategies** for emerging viruses in greenhouse horticulture, aiming to apply sustainable management methods to mitigate these viruses.

VIRTIGATION aims to protect **horticultural crops** in Northern Europe and the Mediterranean Basin by developing bio-based solutions to combat emerging viral diseases caused by the **begomovirus ToLCNDV** (Tomato leaf curl New Delhi Virus), transmitted by whiteflies, and the **tobamovirus ToBRFV** (Tomato brown rugose fruit virus), mechanically transmitted.

As an alternative to traditional chemical control methods, several trials conducted by VIRTIGATION have demonstrated that **the natural insecticides developed** during the project for combating whiteflies are more effective than existing commercial products on the market, such as conventional pesticides, with the added advantage of having fewer harmful effects on beneficial insects. The significant pressure exerted on whiteflies by the predator *Nesidiocoris tenuis*, known as "Nesi," is noteworthy. However, its biocontrol activity is compromised by the use of incompatible products, thus underscoring the importance of employing benign products against beneficial insects for successful integrated pest management."

Trials conducted on solarization, a substrate decontamination method, have demonstrated its effectiveness in eradicating viruses similar to the tobamovirus ToBRFV (Tobacco Mosaic Virus, TMV). Additionally, maintaining plant residues (roots and fallen leaves) in the growing medium during the solarization process increases its efficacy, as their decomposition contributes to the rise in temperature. Solarization has proven to be an effective method for disinfecting growing media, showing a potential path for disinfecting plant material and enhancing the efficiency of solarization techniques. This could also contribute to the recycling of plant waste and support circular economy efforts.



According to the survey results conducted during the project with farmers regarding their strategies for controlling **whitefly** populations (the vector insect of the begomovirus **ToLCNDV**), 88% of farmers utilize biological control aided by natural enemies. The majority combine it with products compatible with beneficial fauna, although these strategies do not always yield completely satisfactory results for farmers. Hence, the importance of having developed new formulations of natural origin with promising efficacy after the initial years of work and project development in VIRTIGATION.

The conference 'Integrated Pest Management Strategies for Controlling Viruses in Greenhouse Horticulture' provided an opportunity for researchers from Andalusia involved in the Virtigation project to share their innovative advances in this field with stakeholders and companies in the sector, enabling these key actors to become acquainted with these findings and provide feedback.

In addition to the presented results, the conference served as a forum for discussion among project partners and involved stakeholders (farmers, technicians, seed company representatives, biological control companies, etc.), representing a valuable opportunity for both parties. For industry stakeholders, it allowed them to engage in the project and gain firsthand insight into some of the results and solutions developed during the project. For the partners, it provided direct feedback from the sector regarding the conducted studies.

The main objective of the Virtigation project, funded by the EU, is to **provide practical information to the agricultural value chain**, especially in the implementation of integrated pest management strategies to control viruses such as ToBRFV and ToLCNDV in horticultural greenhouses.

The challenge is to raise awareness that pandemics not only affect human health, as there are new highly aggressive viruses spreading through greenhouses and fields worldwide. To combat these viruses, producers typically use pesticides, thereby exposing farmers and consumers to harmful active substances. To date, there are only a limited number of environmentally friendly solutions available on the market, placing horticultural product value chains at risk.

The session addressed three main focus areas with room for discussion among all stakeholders. The first focused on the Bio-rational Control of Whiteflies, presenting survey results from greenhouse vegetable crop farmers regarding the control strategy used for whitefly (*Bemisia tabaci*) populations. The second discussed the Evaluation of the Effectiveness of New Natural Insecticides developed during the project for Whitefly Population Control, presenting results on the effects produced on populations of this pest, its predatory and parasitoid enemies, and the pollination activity of bumblebees. The third session focused on the Validation and Optimization of Solarization Methods, presenting results obtained from solarization trials aimed at eradicating the Tobacco Mosaic Virus (TMV), both with and without the presence of plant material in the growing medium.

Virtigation: Collaboration for Global Solutions

The VIRTIGATION project, launched in September 2021, addresses significant losses caused by viral diseases in horticultural crops. With a focus on biological solutions, the project aims to reduce harvest losses by 80% when infection by these viruses occurs and decrease or eliminate the use of phytosanitary products in controlling emerging viral diseases.



VIRTIGATION brings together some of the most renowned universities, industries, research organizations, technology providers, agricultural extension services, and SMEs worldwide, involving 25 partners from 12 countries: Belgium, Spain, Luxembourg, UK, Italy, Netherlands, France, Germany, Austria, Israel, Morocco, and India. It is coordinated by the Department of Biosystems at the Catholic University of Leuven (Belgium).

The project has a duration of four years (2021-2025) and is funded with approximately 7 million euros. From the Spanish side, four institutions from Andalusia and one from Catalonia are participating in the project. As the project surpasses its midpoint, promising results are beginning to emerge, both for the scientific community and for the agro-industry and society as a whole, as it affects some of the most widespread crops in the world: tomato, cucumber, melon, and zucchini. The Andalusian Agency for Agricultural and Fisheries Management (AGAPA), belonging to the Ministry of Agriculture, Fisheries, Water, and Rural Development of the Andalusian Regional Government, serves as the national knowledge agent for the Virtigation network in Spain.

On the other hand, the Technological Center Tecnova, as the coordinator of collaboration actions with sector agents of the VIRTIGATION project, has hosted the event at its headquarters in PITA, Almería. Since its inception, the Technological Center has maintained a strong commitment to society, especially in the appropriate application of technology for the sustainable production of fruits and vegetables, as well as in the promotion of high standards of quality and food safety. This reaffirms that multidisciplinary collaboration and connection among different stakeholders are essential for the implementation of more environmentally sustainable practices.

To become part of our network of sector agents and benefit from project information firsthand, we invite you to contact our regional agents directly or sign up through this link or QR code:



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Project website: www.virtigation.eu



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