

Theonios and Athens University Launch Smart Olive Grove Research

Theonios and the Agricultural University of Athens launch smart farming research using multispectral drones to predict olive fungal pressure.

MESSINIA, MESSINIA, GREECE, May 21, 2026 /EINPresswire.com/ -- In the mountains of Western



We believe the future of ultra-premium olive oil lies in combining ancient terroir with precision agriculture and scientific research.

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Messinia, Greece, a new research initiative is bringing together traditional olive cultivation and advanced [precision agriculture](#) technology. Theonios Traditional Olive Groves has entered into a collaboration with the Smart Farm Group of the Agricultural University of Athens to investigate whether multispectral drone technology can help identify fungal pressure in olive groves before visible outbreaks occur.

The research will focus primarily on olive anthracnose, known in Greece as γλοιοσπόρειο, one of the most damaging fungal diseases affecting olive trees and olive oil quality worldwide. Theonios has made one of its mountain olive estates available as a live research environment

where university researchers will install weather stations, environmental cameras, soil sensors, and monitoring systems while conducting repeated multispectral drone flights throughout the cultivation season.

The objective is ambitious but highly relevant to the future of olive farming: to determine whether environmental data and multispectral imaging can reveal the earliest signs of fungal pressure before symptoms become visible to the human eye.

Olive anthracnose is considered one of the most destructive fungal diseases in olive cultivation. Under favorable conditions, particularly elevated humidity, rainfall, and poor orchard ventilation, the disease can spread rapidly through olive groves and significantly affect both olive production and olive oil quality. Infected olives often produce oil with higher acidity, oxidation problems, lower polyphenol concentrations, and reduced flavor complexity.

For producers focused on [ultra-premium extra virgin olive oil](#), early detection is critical. Once visible symptoms appear, damage may already be affecting the quality potential of the harvest.

Traditional disease management methods largely rely on visual inspections or laboratory analysis after fungal pressure has already intensified.

The collaboration between Theonios and the Agricultural University of Athens aims to explore whether modern precision agriculture can shift disease management from reactive to predictive.

The selected research grove is located in the mountainous zone of Western Messinia, an area known for lower humidity, strong natural ventilation, cooler temperatures, and continuous northern winds. These environmental conditions already contribute to the production of exceptionally low-acidity, [high-polyphenol extra virgin olive oil](#) and provide an ideal natural laboratory for studying the relationship between weather conditions and fungal development.

Researchers will continuously collect environmental data through weather stations and soil sensors while simultaneously monitoring the grove using multispectral drone imaging. Unlike conventional cameras, multispectral sensors capture wavelengths invisible to the human eye, including near-infrared and red-edge bands associated with plant health and physiological stress.

Healthy olive trees reflect light differently than stressed trees. The central question of the research is whether fungal pressure creates measurable physiological changes before visible symptoms emerge.

If successful, the project could help establish methods for identifying fungal risk earlier and more accurately than conventional monitoring techniques currently allow.

The research team will investigate the correlation between weather conditions and fungal pressure, including humidity levels, rainfall duration, temperature fluctuations, leaf wetness, soil moisture, and orchard ventilation. By comparing environmental conditions with multispectral drone data, researchers hope to identify patterns associated with the earliest stages of fungal stress in olive trees.

The potential implications extend well beyond disease prevention alone.

Predictive monitoring could allow olive growers to reduce unnecessary spraying by targeting interventions only when environmental and physiological indicators justify action. This would support more sustainable farming practices while helping preserve olive oil quality. Reduced chemical intervention, healthier trees, and improved harvest management could contribute directly to lower acidity, higher polyphenol concentrations, and superior flavor characteristics in extra virgin olive oil.

The use of multispectral drones in agriculture has expanded rapidly in recent years, particularly in vineyards and high-value crops. However, their application in olive cultivation remains

relatively limited, especially regarding fungal prediction and disease pressure analysis under real Mediterranean orchard conditions.

Theonios believes this type of research represents part of the future of premium olive farming.

The company has already incorporated several precision agriculture practices into its cultivation philosophy, including drone-assisted spraying systems, soil and leaf laboratory analysis, regenerative mulching practices, and detailed environmental monitoring across its estates. The collaboration with the Agricultural University of Athens significantly expands this approach by integrating institutional scientific research directly into a functioning olive grove.

Unlike controlled greenhouse experiments, the project operates under authentic field conditions where climate variability, terrain, airflow, and seasonal changes naturally interact with tree physiology and fungal pressure.

The founders of Theonios bring an unusual perspective into agriculture through their long involvement in the luxury superyacht industry, where preventive maintenance, advanced monitoring systems, precision operations, and risk management are essential. That same philosophy now shapes the company's approach to olive cultivation.

In the same way that advanced monitoring systems on high-value vessels identify risks before failures occur, Theonios is exploring whether modern agricultural monitoring can identify biological stress before fungal outbreaks become visible.

The project also reflects broader changes taking place across global agriculture. Climate change, unpredictable weather patterns, and increasing consumer demand for sustainable farming practices are forcing producers to adopt smarter and more data-driven cultivation methods. Olive growers across the Mediterranean increasingly face challenges related to humidity spikes, irregular rainfall, and fungal pressure associated with changing climatic conditions.

Precision agriculture technologies may soon become essential tools for protecting both crop quality and long-term sustainability.

For olive oil consumers, initiatives like this provide greater transparency regarding how premium extra virgin olive oil is cultivated and protected throughout the production cycle. Increasingly, consumers want to understand not only where olive oil comes from, but also how it is produced, monitored, and managed from tree to bottle.

By supporting advanced agricultural research directly within its groves, Theonios hopes to contribute valuable knowledge that may eventually benefit olive cultivation not only in Greece but across olive-producing regions worldwide.

The ancient olive tree, cultivated across the Mediterranean for thousands of years, may now be

entering one of the most technologically advanced periods in its agricultural history.

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