



Journal of Environmental Sciences

Available online 8 February 2025

In Press, Journal Pre-proof What's this?



Research Article

Impact of irrigation with fipronil-contaminated waters on zucchini plants and their main insect pest, *Aphis gossypii*

Vittoria Caccava¹, Monica Brienza¹ , Sofia Semitsoglou-Tsiapou², Gianluigi Buttiglieri²,
Roberto Rosamilia³, Paolo Fanti³, Donatella Battaglia³, Vincenzo Trotta³ 

[Show more](#) [+ Add to Mendeley](#)  [Share](#)  [Cite](#)<https://doi.org/10.1016/j.jes.2025.02.005> [Get rights and content](#) [Under a Creative Commons license](#)  [Open access](#)

Understanding the Risks of Pesticide Residues in Reclaimed Water

Description



Journal of Environmental Sciences

Available online 8 February 2025

In Press, Journal Pre-proof [What's this?](#)



Research Article

Impact of irrigation with fipronil-contaminated waters on zucchini plants and their main insect pest, *Aphis gossypii*

Vittoria Caccavo¹, Monica Brienza¹  , Sofia Semitsoglou-Tsiapou², Gianluigi Buttiglieri², Roberto Rosamilia³, Paolo Fanti³, Donatella Battaglia³, Vincenzo Trotta³  

[Show more](#) 

 Add to Mendeley  Share  Cite

<https://doi.org/10.1016/j.jes.2025.02.005> 

[Get rights and content](#) 

Under a Creative Commons [license](#) 

 Open access

A recent study published in the *Journal of Environmental Sciences*—conducted as part of the **PRIMA-SAFE** project—investigates the impact of using **fipronil-contaminated irrigation water** on zucchini plants and their main insect pest, *Aphis gossypii*.

The researchers found that even low concentrations of fipronil, a persistent insecticide often found in treated wastewater, can accumulate in plant tissues and **negatively affect aphid survival and reproduction**. More importantly, aphids exposed to these conditions showed **increased resistance to pyrethrins**, a natural insecticide widely used in organic farming.

These findings raise important concerns about the **ecological and agronomic risks** of reusing treated wastewater in agriculture. They suggest that pesticide residues in irrigation water—though present at low levels—may contribute to the **development of resistance in pest populations** and impact the sustainability of crop protection strategies.

Reference

Caccavo V. et al. (2025). *Impact of irrigation with fipronil-contaminated waters on zucchini plants and their main insect pest, Aphis gossypii*. *Journal of Environmental Sciences*.

DOI: [10.1016/j.jes.2025.02.005](https://doi.org/10.1016/j.jes.2025.02.005)

Category

1. Publication

Date Created

2025/05/27

Author

writer