

Uncontrolled Usage of Pesticides: Can Türkiye Shift to Safer Alternatives?

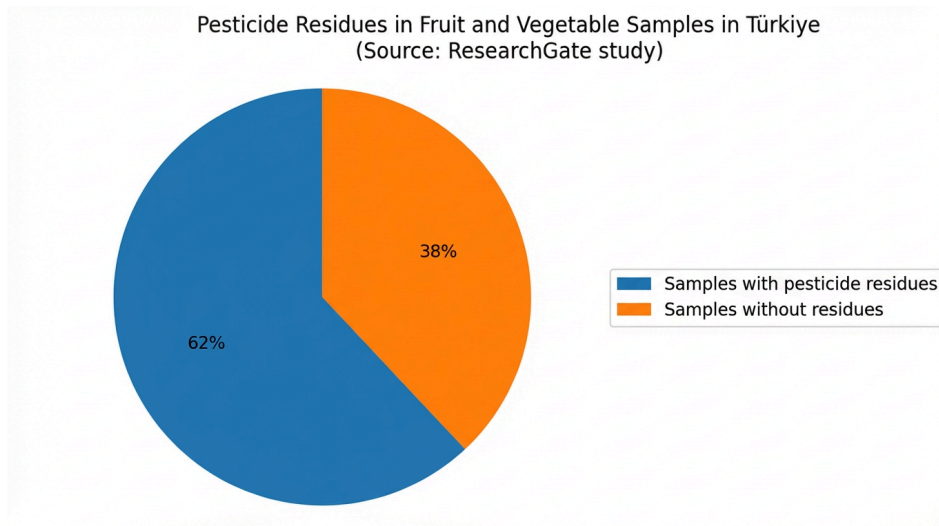
Pesticides are a real problem in Türkiye. Producers commonly prefer chemicals that pose serious risks to public health over safer agricultural methods. We have researched why this is the case, and found some reasons that pesticides are irresponsibly used. It is important to understand that this problem cannot be looked at from a single perspective, as farmers and mass producers have their own reasons to use these chemicals. In this article, we tried our best to highlight the specific reasons behind the increased usage of pesticides.

In İzmir, one of Türkiye's leading agricultural regions, pesticide usage is particularly high due to the province's diverse and intensive crop production. Farmers in İzmir often rely on pesticides to protect vineyards, orchards, and various crops from pests and diseases, aiming to maximize yield and maintain quality. However, this widespread use has led to environmental concerns, such as contamination of local water supplies and elevated levels of pesticides detected in groundwater. Public health is also at risk, with pesticide exposure linked to both acute poisoning and long-term health issues. While national and local authorities have begun implementing digital monitoring systems and have reported some reduction in pesticide residues, İzmir continues to face significant challenges in balancing agricultural productivity with environmental and health safety.

Why are pesticides used at all?

A talk with an expert in regional planning at Izmir Planning Agency has revealed that pesticides are mainly used to improve product yield, as well as mentioned in the 2025 COP report of İzmir Metropolitan Municipality, the increased occurrence of mycotoxins in food production brings the need for pesticides. The question is, can we achieve a balance between use of pesticides, food safety, and product yield, that will reduce the impact of harmful chemicals on public health?

According to a ResearchGate study, 62% of collected fruit and vegetable samples in Türkiye had pesticide residues. These residues can pose health risks when exposure occurs repeatedly over long periods, and increase risk of chronic diseases.



Is it possible without pesticides?

Short answer, yes. Pesticides are not necessary in producing fruits and vegetables. The product yield would be drastically lower and pathogens such as mycotoxins could be present in the yield. However, there are other ways to combat these circumstances than using synthetic chemicals.

Are there safer alternatives?

Safer alternatives to pesticides are some recently emerged solutions such as biological control, botanical pesticides, and microbial biopesticides. Let's dive deeper into how these solutions work. Biological control is a method where natural predators, parasites, and pathogens are used to control harmful pests. Botanical pesticides are natural compounds extracted from plants that disrupt insect growth through affecting insect nervous systems; their toxicity is reported to be much lower compared to synthetic pesticides. Microbial biopesticides are basically microorganisms that kill pests, these can be fungi, viruses, or bacteria.

Why aren't we transitioning to these alternatives?

Despite the availability of these alternatives, transitioning away from conventional pesticides is not always easy for farmers. Biological and ecological solutions require more knowledge, careful monitoring, and higher short-term costs. Many farmers rely on familiar chemical products because they are fast, predictable, and widely available in agricultural supply chains. For this reason, experts emphasize that reducing pesticide dependence in Türkiye will require stronger agricultural services, farmer education programs, and government incentives that support safer pest-management practices.

With the right policies and awareness, it may be possible to protect both crop productivity and public health while gradually decreasing the reliance on hazardous chemicals.



Our Group At Izmir Planning Agency

Bibliography

- İzmir Metropolitan Municipality. (2025). *COP İzmir Report 2025*.
https://apiskb.izmirteknoloji.com.tr/YuklenenDosyalar/04082025_031325_cop-kitap-eng.pdf
- Bakırcı, G.T., Ötleş, S., Bakırcı, F., & Yaman Acay, D. B. (2014). *Pesticide residues in fruits and vegetables from the Aegean region, Turkey*.
https://www.researchgate.net/publication/262075912_Pesticide_residues_in_fruits_and_vegetables_from_the_Aegean_region_Turkey
- U.S. Department of Agriculture, Agricultural Research Service. (2025). *Biological “Green” Alternatives to Chemical Pesticides*.
<https://www.ars.usda.gov/oc/utm/biological-green-alternatives-to-chemical-pesticides/>