TÜRKİYE BİLİMLER AKADEMİSİ
TURKISH ACADEMY OF SCIENCES

TÜBA – SYMPOSIUM ON THE EFFECTS OF PESTICIDES ON FOOD SAFETY AND PUBLIC HEALTH

April 3–4, 2026 – Mersin University

FINAL DECLARATION

The "Symposium on the Effects of Pesticides on Food Safety and Public Health," organized by the Turkish Academy of Sciences (TÜBA) and hosted by Mersin University on April 3–4, 2026, evaluated the role of pesticide use in agricultural production and its impacts on food safety, public health, and environmental sustainability through a multidisciplinary perspective.

Scientific evidence presented during the symposium clearly demonstrated that pesticides are an important tool in modern agriculture for preventing yield losses and meeting the food demands of a growing population. However, their improper, excessive, and uncontrolled use poses significant risks to human health, the environment, and the economy. Although the magnitude of losses caused by pests in agricultural production necessitates pesticide use, it was emphasized that only approximately 1% of applied pesticides reach their target organisms, while the remaining portion disperses into the environment, creating a major inefficiency and risk factor.

It was noted that pesticide residues are widespread in food products, and in some cases, legal limits are exceeded, leading to important consequences for both public health and international trade. It was further highlighted that pesticide use in Türkiye has increased in recent years, and residue-related notifications in exports to the European Union have resulted in economic losses and reputational damage for the country.

The effects of pesticide exposure on human health were identified as multidimensional. In addition to acute effects, long-term exposure has been associated with endocrine disorders, neurodegenerative diseases, reproductive problems, and increased cancer risk. These effects are particularly pronounced in vulnerable groups such as children, pregnant women, and the elderly. Furthermore, the persistence of pesticides in the environment, their transport between soil, water, and air systems, and their accumulation in the food chain were reported to cause significant adverse impacts on ecosystem balance and biodiversity. In this context, pesticide persistence contributes to biodiversity loss and the disruption of ecological systems.

The symposium also concluded that although Türkiye has a strong legislative framework regarding pesticides, there is a need for more effective implementation of monitoring, control, and traceability systems. Moreover, it was emphasized that the pesticide issue is not solely a technical matter but is also closely related to public perception, risk communication, and behavioral change. Therefore, improving health literacy and ensuring accurate public awareness are of critical importance.

Based on the scientific evaluations, it was concluded that completely eliminating pesticide use is not feasible under current conditions; however, risks can be minimized through science-based, integrated, and sustainable approaches. In this regard, the implementation of a comprehensive “farm-to-fork” risk management strategy, ensuring proper dosage and timing of pesticide applications, compliance with pre-harvest intervals, and strengthening traceability systems were identified as priority actions. The widespread adoption of Integrated Pest Management (IPM), the promotion of biological and cultural control methods, and the reduction of chemical dependency were highlighted as key strategic objectives.

In addition, it was emphasized that emerging Technologies, such as biopesticides, artificial intelligence, sensors, and drone Technologies, have significant potential to optimize pesticide use, enhance productivity, and reduce residue risks. The development of multi-residue analytical methods, the establishment of national biomonitoring programs, and the adoption of a One Health approach integrating human, animal, and environmental health were also recommended.

In conclusion, the fundamental principle that “food safety is directly linked to public health” has once again been reaffirmed. Türkiye has the potential to become a regional and global model by developing science-based policies, increasing investments in research and development, and strengthening multidisciplinary collaborations in this field. It is hoped that this symposium will contribute to increasing scientific awareness and to the establishment of a safer and more sustainable food system. We extend our sincere gratitude to all stakeholders who contributed to this important event.