

Pesticide

monitoring and analysis of our global food supply chains

What are pesticides?

The term pesticide covers a wide range of compounds including insecticides, fungicides, herbicides, rodenticides, molluscicides, nematocides, plant growth regulators and others. Pesticides are widely used in agricultural production to prevent or control pests, diseases, weeds, and other plant pathogens.¹

Pesticides are also used in forestry, public health, and even in industries such as construction and transportation.²



Pesticides and population

As our **population continues to increase**



pesticides will continue to play an **important role** across many industries, but especially in **global agriculture production**

By the year **2050**, the earth's population is expected to reach **9.7 billion**



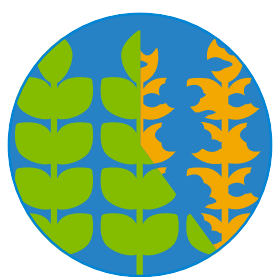
Approx **30% more people** than in 2017³

This means there will be an **additional 2.1 billion people to feed**⁴



But the majority of the increase in food production will need to come from an **increase in yields** and the **number of times per year crops are grown on the same land**⁵

For successful crop production, **pesticides are important**



as infestations can reduce crop yields **by up to 40%**⁶

Regulations around pesticides, prudent use, development of more benign pesticides, continuous monitoring and testing, and innovative technological advancements will be essential to ensure public health and reduce the risks to the environment.



1. Regulations

To ensure public and environmental safety and ensure our food is safe, government regulators strictly monitor foods treated with a pesticide.



2. Prudent use

Pesticides can be overused, sometimes creating new pest problems or pest resistance. As well as putting an end to overuse of pesticides, it is possible to reduce pesticide use further with viable alternatives, such as genetic technologies to develop long-lasting disease resistance within plants.



3. Development of benign pesticides

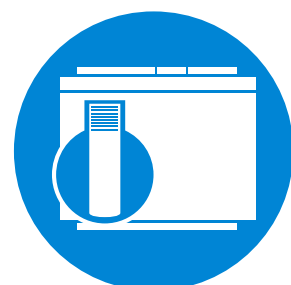
Ensuring pesticides are selective for target organisms is crucial. Cutting-edge technologies can help produce pesticides that conform to high regulatory requirements, are environmentally benign and are cost effective.



4. Continuous monitoring and testing

A significant challenge for testing labs is analyzing 100's of analytes in complex food matrices, which requires multi-residue processes and sample prep techniques that are accurate and cost-effective.

Technological innovations are helping labs ensure optimal sensitivity, and robust detection of pesticides and their metabolites in foods.



5. Innovative technological advancements

Chromatography combined with mass spectrometry provides accurate results in pesticide testing. Agilent instruments are pre-configured with combined LC/MS and GC/MS multi residue methods, which have been developed and validated by Agilent's expert collaborators for multi-residue screening.

For more information, please visit: www.agilent.com/en-us/solutions/food-testing-agriculture/pesticides

1. Interdiscip Toxicol. 2009 Mar; 2(1): 1-12. Published online 2009 Mar. doi: 10.2478/v10102-009-0001-7
2. Interdiscip Toxicol. 2009 Mar; 2(1): 1-12. Published online 2009 Mar. doi: 10.2478/v10102-009-0001-7
3. United Nations Population Division www.un.org/en/development/desa/population/theme/trends/index.shtml
4. United Nations Population Division www.un.org/en/development/desa/population/theme/trends/index.shtml

5. Food and Agriculture Organization of the United Nations www.fao.org/home/en/
6. National Center for Biotechnology Information (NCBI). Ashim Chowdhury et al www.ncbi.nlm.nih.gov/pmc/articles/PMC2984095/



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