

The EPPO database on resistance cases: addressing pesticide resistance to support plant health and One Health objectives

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Issues/challenges

At the international level, several challenges hinder effective management of resistance to plant protection products (PPPs), including fragmented data, delays in early detection, inconsistent reporting, limited integration of national and regional data, and the lack of coordinated resistance management strategies.

The **EPPO Database on Resistance Cases**, developed by the European and Mediterranean Plant Protection Organization (EPPO), addresses these challenges by sharing information on documented resistance cases among authorities responsible for PPP registration across the EPPO region, and with other stakeholders, including agrochemical companies, researchers, extension services and users of PPPs.

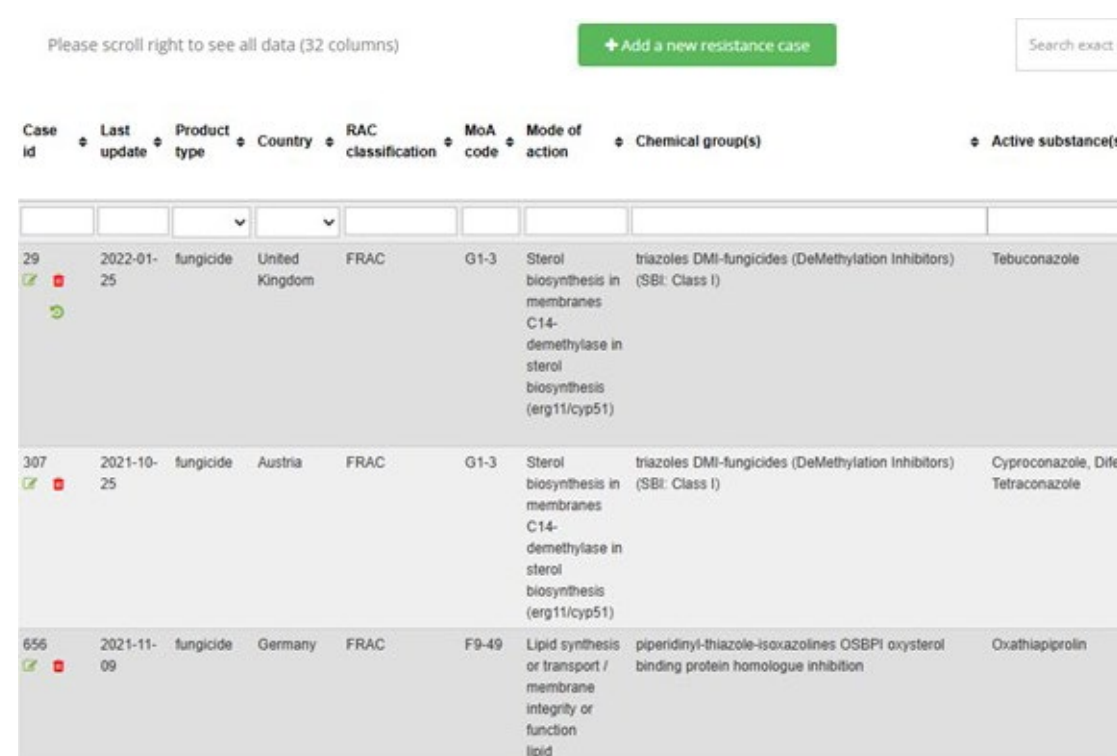
The database supports:

- a common understanding of pesticide resistance development across the EPPO region;
- early identification of resistance trends;
- development of resistance management strategies at national and regional levels;
- consideration of resistance issues in authorization processes, including implementation of **EPPO Standard PP 1/213 (Resistance risk analysis)**.

A key added value of the database is the inclusion of **early-stage and locally detected resistance cases**, even when supporting data are limited. These complement resistance records published in peer-reviewed literature and other recognized databases, which are also captured.

The database covers resistance cases detected in **field-collected samples**. Each entry corresponds to a specific combination of crop (or crop group), pest, mode of action and country.

Figure 1: The EPPO Database on Resistance Cases
<https://resistance.epppo.int/>



Please scroll right to see all data (32 columns) [Add a new resistance case](#) Search exact:

Case id	Last update	Product type	Country	RAC classification	MoA code	Mode of action	Chemical group(s)	Active substance(s)
29	2022-01-25	fungicide	United Kingdom	FRAC	G1-3	Sterol biosynthesis in membranes C14-demethylase in sterol biosynthesis (erg11/cyp51)	triazoles DMI-fungicides (DeMethylation Inhibitors) (SBI: Class I)	Tebuconazole
307	2021-10-25	fungicide	Austria	FRAC	G1-3	Sterol biosynthesis in membranes C14-demethylase in sterol biosynthesis (erg11/cyp51)	triazoles DMI-fungicides (DeMethylation Inhibitors) (SBI: Class I)	Cyproconazole, Dife Tetraconazole
656	2021-11-09	fungicide	Germany	FRAC	F9-49	Lipid synthesis or transport / membrane integrity or function lipid	piperidiny-thiazole-isoxazolines OSBPI oxysterol binding protein homologue inhibition	Oxathiapiprolin

Actions taken

All EPPO member countries were invited to designate an official contact point to submit resistance data. To date, **27 of 52 EPPO countries** have nominated a contact point.

An **EPPO Expert Working Group on Resistance**, composed of experts nominated by National Plant Protection Organizations, oversees the scientific validation of resistance cases. Only cases validated by the working group are published in the database.

Figure 2. In blue, EPPO countries that have nominated a contact point for the EPPO Database on Resistance Cases.



Figure 3. EPPO Expert Working Group on Resistance to Plant Protection Products at their 2025 meeting in Oeiras, Portugal



EPPO continues to encourage data submission through engagement with national contact points and collaboration with **Resistance Action Committees**, which are represented in the expert working group. Updates and new information are incorporated following validation.

Key results

As of **February 2026**, the database contains **1 227 validated resistance cases**, including:

- 479 fungicide resistance cases;
- 454 herbicide resistance cases;
- 245 insecticide resistance cases;
- 49 acaricide resistance cases.

Following each annual expert working group meeting, database updates are communicated through the database homepage, the EPPO website, EPPO social media channels and a dedicated mailing list.

As of **May 2025**, the database had been accessed more than **1 100 times from 62 countries**, with approximately **10 percent of consultations originating outside the EPPO region**.

A One Health perspective

The EPPO Database on Resistance Cases supports the **One Health approach** by contributing to the management of pesticide resistance, which has implications beyond plant health. Fungicide resistance is directly linked to antimicrobial resistance, while insecticide resistance can affect the control of vector-borne diseases. Monitoring and sharing resistance data supports surveillance, prevention and coordinated action across sectors, in line with One Health principles.