



At a Glance

Why We Did This Review

We conducted this review to assess the U.S. Environmental Protection Agency's (EPA's) management and oversight of resistance issues related to herbicide-resistant genetically engineered crops. We looked at EPA processes and practices, steps the EPA has taken to validate risk, and how the agency collects herbicide resistance data.

Approximately 90 percent of the U.S. soybean, corn and cotton crops are genetically modified to withstand herbicide applications on surrounding weeds. However, when weeds adapt and acquire the ability to withstand the effects of herbicides, this results in herbicide resistance. According to the EPA, the Federal Insecticide, Fungicide, and Rodenticide Act designates herbicide resistance as a risk. The EPA considers herbicide resistance to be one of the farmer's biggest challenges in crop production. Substantiated resistance must be reported to the EPA.

This report addresses the following EPA goal or cross-agency strategy:

- *Ensuring the safety of chemicals and preventing pollution.*

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EPA Can Strengthen Its Oversight of Herbicide Resistance With Better Management Controls

What We Found

The EPA's Office of Inspector General (OIG) found that the agency has taken few steps to address herbicide resistance. The EPA believes that a delay in herbicide resistance is in the "public good." Delaying resistance minimizes the amount and type of herbicides applied to combat weeds, reduces human and environmental exposure, and increases grower productivity. However, the EPA has several management and oversight challenges related to the agency effectively addressing herbicide resistance.

Billions of dollars in U.S. crop value are at risk due to the threat of herbicide-resistant weeds. With private and public partners, the EPA can establish better controls to manage and minimize the threat.

We found that the EPA uses the pesticide registration process to collect information on human health and environmental risks from pesticides used on herbicide-resistant weeds, but no information is collected regarding synergism. Synergy occurs when the effect of a mixture of chemicals is greater than the sum of the individual effects.

In addition, labels for products such as glyphosate currently do not require information about the chemical pathway that describes how a herbicide causes harm to a plant (i.e., the "mechanism of action"). Not requiring this information on labels can result in the improper use of pesticides to combat herbicide-resistant weeds. The EPA's pesticide registration and reporting processes also do not generate necessary herbicide resistance information for tracking, monitoring and identifying where resistance occurs.

There is a lack of communication and collaboration between the EPA and its public and private stakeholders regarding herbicide resistance management. This limits the reach of actions proposed and taken by the EPA, the development of meaningful alternatives, and the agency's ability to proactively respond to herbicide resistance in the field. The EPA also does not have measures to track its progress addressing and slowing the spread of herbicide resistance. With improved management and oversight controls, the EPA can be better prepared to assess and develop actions to address and prevent future herbicide resistance issues.

Recommendations and Planned Agency Corrective Actions

We recommend that the Assistant Administrator for Chemical Safety and Pollution Prevention (1) consider requiring herbicide labels include mechanisms of action, (2) assess the need for more information on synergism, (3) improve data collection and reporting on herbicide resistance, (4) develop performance metrics, and (5) develop a plan for establishing consistent communication with stakeholders. The EPA agreed with our recommendations. All recommendations have been resolved with corrective actions pending.