

Bayer expands pollinator safety measures as Neonicotinoid debate intensifies globally

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As regulatory scrutiny around neonicotinoid insecticides continues to intensify across global markets, Bayer is doubling down on pollinator safety, stewardship protocols, and next-generation risk management systems while reaffirming the strategic role of neonicotinoids in modern agriculture.

In the sixth edition of its report, *Neonicotinoids: Bayer's Systematic Risk Management & Portfolio Evolution*, the company outlined a significantly expanded approach to pollinator protection, including the integration of bee-toxicity screening much earlier in its product-development pipeline. The report arrives at a pivotal moment for the global crop-protection industry, with Europe continuing to tighten restrictions on neonicotinoids even as major agricultural economies such as India, Brazil, the United States, Canada, and Australia continue permitting widespread use.

Bayer said the updated report reflects both evolving scientific understanding and changing regulatory realities, while removing outdated information from earlier editions.

Originally introduced in the 1990s, neonicotinoids transformed insect control by offering a new mode of action and accelerating the adoption of seed-treatment-based crop-protection systems. Bayer argues that the technology reduced dependence on older insecticides and enabled more targeted pest management with comparatively lower environmental exposure.

The company's portfolio includes active ingredients such as imidacloprid, clothianidin, thiacloprid, and acetamiprid. Bayer continues to distinguish between nitro-substituted neonicotinoids — including imidacloprid and clothianidin — and cyano-

substituted variants such as thiacloprid and acetamiprid, which it says demonstrate comparatively lower toxicity to bees.

Much of the report focuses on the industry's evolving response to pollinator-related concerns following high-profile bee mortality incidents in Europe in 2008, when dust released from treated corn seeds during planting operations affected bee colonies in Germany's Upper Rhine Valley. Bayer said those events triggered extensive internal reviews, stewardship reforms, and modifications to both research and product-handling practices.

Over the past decade, the company has implemented a series of mitigation technologies designed to reduce pollinator exposure during seed treatment and sowing operations. These include the adoption of the Heubach test for measuring dust abrasion from treated seeds, advanced polymer coating systems, planter box lubricants, and deflector systems on sowing equipment that redirect dust emissions into the soil. According to Bayer, improved seed coatings can reduce dust emissions by up to 95 per cent, while deflector technologies can lower airborne exposure by up to 90 per cent.

The company also highlighted the expansion of seed-treatment certification systems such as the European Seed Treatment Assurance (ESTA) scheme, alongside similar standards operating in Canada and other regions. Stewardship and farmer-training programmes now extend across Europe, North America, Latin America, Africa, and Asia-Pacific markets, including India.

Label-based mitigation strategies for foliar applications have also become increasingly central to Bayer's stewardship framework. The company reiterated that nitro-substituted neonicotinoids should not be sprayed on bee-attractive crops during flowering stages and stressed the importance of avoiding applications on flowering weeds. Updated labels now include enhanced pollinator-safety warnings, resistance-management guidance, and operational instructions aimed at reducing seed-treatment dust exposure.

At the centre of Bayer's updated strategy is a more proactive research approach. The company revealed that pollinator-toxicity screening has now been integrated much earlier into the discovery and development process for novel compounds. According to Bayer, candidate molecules are increasingly assessed for impacts on bees and other non-target organisms during early-stage development to improve the probability of bringing pollinator-safer products to market.

The company says it has invested more than \$4.5 million in pollinator-health initiatives over the past decade, supporting over 50 global collaborations and programmes, including Healthy Hives and Salud Apícola. In 2023, Bayer also entered a partnership with the Free University of Berlin to study sublethal insecticide effects on honeybees using digital technologies and advanced monitoring systems.

Safe-use education remains another major pillar of Bayer's stewardship strategy. The company reported reaching approximately 4.1 million stakeholders globally through safe-use programmes in 2025 alone, including nearly 3.4 million smallholder farmers.

Bayer also detailed its internal adverse-incident reporting platform, CAIRnew, which is used globally to document, monitor, and analyse product-related incidents. The system, according to the company, helps identify operational gaps requiring additional mitigation measures, training, or stewardship interventions.

Despite growing scrutiny, Bayer maintains that neonicotinoids continue to play a critical agronomic role in protecting major crops such as corn, soybean, canola, cotton, cereals, potatoes, and sugar beet. The report references a 2015 North American study estimating that neonicotinoid seed treatments generate more than \$1.4 billion in annual value for farmers through yield protection and productivity gains.

The company also pointed to experiences in Europe following tighter restrictions, arguing that some growers reduced or abandoned cultivation of crops such as oilseed rape due to rising pest pressure and limited alternatives. Bayer additionally cited yield losses in French sugar beet production associated with beet yellow virus outbreaks after restrictions on neonicotinoid seed treatments.

Regulatory fragmentation remains one of the defining challenges facing the sector. Bayer noted that neonicotinoids continue to be registered in more than 80 countries globally. India, for example, completed a nine-year regulatory review between 2013 and 2022 and ultimately retained approval for six neonicotinoids — clothianidin, thiamethoxam, imidacloprid, dinotefuran, acetamiprid, and thiacloprid — while adding cautionary label statements advising against spraying during crop flowering stages.

At the same time, the European Union has continued tightening restrictions, including lowering maximum residue limits (MRLs) for certain compounds and limiting emergency authorisations following a 2023 European Court of Justice ruling.

Beyond neonicotinoids themselves, Bayer says its long-term strategy increasingly integrates broader sustainability platforms, including integrated pest management (IPM), precision agriculture, and digital farming ecosystems. The company highlighted investments in its FieldView platform and partnerships focused on water-efficient farming technologies as part of a wider push to align crop protection with climate resilience and sustainable agriculture goals.

As the global debate over pollinator safety, food security, and agricultural productivity grows more polarised, Bayer's latest report signals an attempt to reposition neonicotinoids not as legacy chemistry under siege, but as a technology platform undergoing continuous adaptation under increasing scientific and regulatory scrutiny.