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Honeybees (*Apis mellifera*) play a fundamental role in global agricultural production, as they are key pollinators for commercial crops and provide products such as honey. However, their importance is threatened by the indiscriminate use of pesticides in agriculture. These pesticides have been directly linked to the death of thousands of bee colonies. The problems caused by pesticides go beyond the direct lethal effects on colonies. Pesticides have numerous indirect collateral impacts on bee health, including negative effects on their nutrition, reproduction, and behavior. Additionally, pesticides can persist in soil and water for long periods, affecting bees long after their application.

The extensive use of pesticides not only harms bees but also disrupts the community of beneficial soil microorganisms. These microorganisms play a crucial role in nitrogen fixation and phosphorus solubilization, vital processes that occur in the soil to nourish plants and, consequently, feed bees. The disruption of these microorganisms directly affects nutrient availability for plants and indirectly for pollinators by altering plant nutrition. Poorly nourished plants have a reduced capacity to allocate nutrients to pollen and nectar production, which bees consume.

In this work, we observed that bees feeding on plants with low nitrogen and phosphorus levels in their tissues show reduced development. Furthermore, they have lower levels of essential fatty acids and proteins in their bodies. Finally, these bees have a diminished ability to defend against pests and diseases, as the activity of immune-related enzymes such as prophenoloxidase is reduced.

The lack of both basic and applied knowledge about the indirect effects of pesticides highlights the need for deeper research to understand all possible impacts of pesticides on bee health and nutrition. The relationship between pesticides and bees is more complex than initially believed.

Understanding how pesticides considered safe for bees can still have indirect effects on them can help us make better decisions regarding their safe use in agriculture, thus promoting pollinator conservation.