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Honeybees (*Apis mellifera*) are vital pollinators, well-known for their role as biomonitoring and microsamplers. This study aimed to develop a method to quantify chemical stress in honeybee colonies by analysing various hive matrices and forage plants. We focused on identifying the most effective sampling strategy to reflect colonies' chemical exposure and provide beekeepers with tools to monitor hive health and environmental quality. We defined two phases: an initial broad sampling phase (3 locations, where honey from brood nests and supers, harvested honey from the year (acacia or linden), wax, trapped pollen, bees, and forage plants tissues (sunflower) were collected and analysed, 146 samples), followed by a refined sampling strategy based on the first-phase results on areas with specific mass-flower crops (3 locations, where pooled samples from 3 colonies of honey from brood nests, beebread, wax, brood and plant tissues during rapeseed and sunflower blossom (2 periods) were collected and analysed, dividing samples in two to test the impact of freezing in residue content, 74 samples). High-resolution chemical analyses using GC-MSMS and LC-MSMS were conducted to screen for 472 agrochemical and environmental chemicals. Thirty-seven percent of the first-phase samples contained detectable chemical residues, with the most contaminated pollen and honey from the brood nest. Fluvalinate, an acaricide used as a veterinary product, was, without surprise, the most frequently detected chemical (22% of contaminated samples) in this phase. Acetamiprid and Tebuconazole were the most detected insecticide and fungicide active ingredients. Pollen and honey from the brood nest are reliable indicators of long-term chemical exposure, while honey from supers reflect short-term exposure. This study provides a practical framework for assessing chemical stressors in honeybee colonies, highlighting the importance of pollen and brood nest honey as key matrices to monitor environmental contamination. The findings underscore the need for improved monitoring and management of agrochemical use to protect honeybee health and ensure sustainable pollination services.