Original thinking... applied

Your Vision, Our Expertise
Standard & Higher Tier Bee Studies

Fera can support your pollinator testing requirements from the first tier studies through to the more complex higher tier testing. As part of our continued drive for quality and market-leading scientific excellence in 2019 all of our 22 day larval studies exceeded the validity criteria on the first run.

Study Type	Key Regulations	How?
Lower Tier Bee Studies		
Acute Contact & Oral Toxicity Adult	**Honey Bee:** OECD Test Guidelines 213 and 214 **Bumble Bee:** OECD Test Guidelines 246 & 247	• With honey bees & bumblebees • Oral and contact exposure routes • Testing for mortality • Laboratory based
Chronic Oral Toxicity Adult	**Honey Bee:** OECD Test Guideline 245 for the Testing of Chemicals: Honey bee (*Apis mellifera L.)*, chronic oral toxicity test (10 day feeding test in the laboratory)	• With honey bees • Continuous oral exposure • Testing for mortality and sub-lethal effects(feeding behaviour) • Laboratory based
Toxicity Larval, Single Dose	**Honey Bee:** OECD Test Guideline 237: Honey Bee (*Apis mellifera*) Larval Toxicity Test Following Single Exposure	• With honey bees • Combined oral and contact exposure routes • Single application • Testing for mortality and sub-lethal effects (growth) • Laboratory based
Toxicity Larval, Repeat Dose	**Honey Bee:** OECD Guidance Document 239: Honey Bee (*Apis mellifera*) Larval Toxicity Test Following Repeated Exposure	• With honey bees • Repeat application • Combined oral and contact exposure routes • Assessment of the effects on honey bee brood development - mortality and sub-lethal effects (emergence and abnormalities) • Laboratory based
Higher Tier Bee Studies		
Cage, Tunnel Semi-field	**Honey Bee:** OECD Guidance Document 75	• With honey bees • 7 day (minimum) exposure to treated crop • Evaluates potential for effects on bee brood development -mortality, brood development and colony survival and condition • Option to measure residues in pollen, nectar, wax and honey • Field based
Field - Post Registration Monitoring / Residue Monitoring	**Honey Bee:** Study specific	• With honey bees • Monitoring bee behaviour, colony survival and development • Determination of residues in pollen and nectar • Field based

Semi-field tests, such as honey bee brood tests run according to OECD 75, are conducted under tunnel conditions using photographic and monitoring software methods.

These tests monitor the effects that plant protection products (PPPs) may have on the development of the different brood stages (i.e. eggs and developing larvae).

In order to protect both bee colonies and crops, it is therefore vital that PPP manufacturers and developers work closely with organisations that can provide this level of analysis and insight for the protection of pollinators.

Historically, honey has been excluded from supervised field trials and the MRLs for PPPs in honey has been set by default to a level of 0.05mg/kg, as the methodology on the data required was not established. If data is required there are two routes; tunnel/field studies or direct colony feeding studies, that may be performed.

Partnering with a trusted partner like Fera Science gives you access to an unprecedented wealth of experience with particular strengths in bee ecotoxicology and next generation diagnostics, with the ability to apply multidisciplinary perspectives in resolving your product's unique challenges. Together with providing you with data collection and endpoints enabling you to meet regulatory requirements.

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Speak to our experts about your Pollinator Studies Requirements

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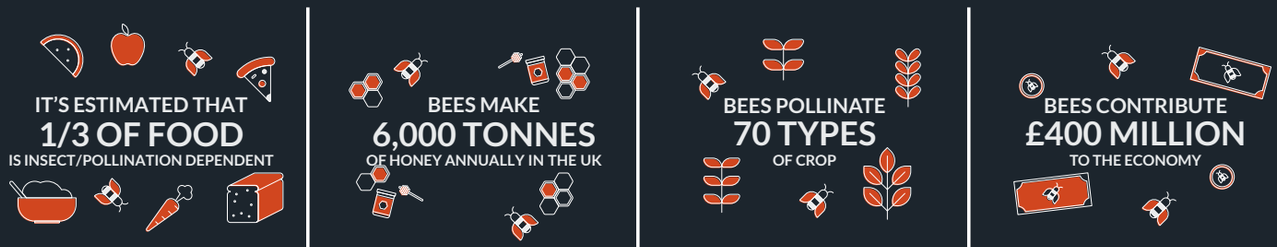
Be Informed About Bees

Pesticides, or other plant protection products (PPPs), are used worldwide to protect crops and increase agricultural productivity. Hence why controls are placed on the application of such products to reduce potential contamination of the environment, bees and ultimately the food we eat.

It is, therefore, necessary to determine the safe Maximum Residue Limits (MRLs) for pesticide residue that is legally permitted in or on food or feed.

MRL builds-in a safety margin 100x that of the actual safety level for a pesticide residue. Food products that exceed a MRL are not allowed on the market. Honey bees make honey from pollen and nectar collected from flowers.

Honey bees, solitary bees, bumblebees and stingless bees are important for the environment's survival and play a vital role in providing ecosystem services.



The best known primary products of beekeeping are honey and wax, but pollen, propolis, royal jelly, venom, queens, bees and their larvae are also marketable primary bee products.

According to the European Commission, which sets the MRLs for all food and animal feed, the amount of residues found in food must be safe for consumers and must be as low as possible.

ONE BEE COLONY