

Honey Bee Field Tests

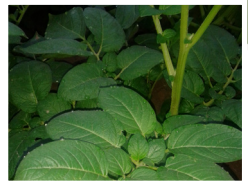
Welcome To Eurofins Agrosience Services

Eurofins Agrosience Services is experienced in honey bee (*Apis mellifera* L.) standard studies conducted in *Phacelia tanacetifolia* and rape. We also have considerable expertise in conducting studies in the relevant crop (e.g. maize, sugar beet, potato and sunflower), performing residue studies in various European countries and carrying out long-term studies over the whole bee season or longer.

Beside studies in crops, we are able to conduct brood feeding studies in Germany, Spain and the USA to evaluate the possible risk of plant protection products to the honey bee brood.

As standard in field studies, we carry out *Phacelia* or rape trials at different locations in Germany, France or Spain. During a study, several parameters such as flight activity in the crop, behaviour, mortality of the bees in the crop (linen sheets), and in front of the hives (dead bee traps), and the conditions of the colonies and brood development are recorded before and after application. In addition to general parameters, we offer detailed observation on behaviour (e.g. homing behaviour), long-term observation of the bee colonies including over-wintering success, health assessment (virus and disease analysis at relevant time points), and residue samplings on all kinds of matrices of the bee hive and the crop. In recent years, Eurofins Agrosience Services has experience in conducting these studies in many countries including Denmark, France, Spain, Italy or Greece.

In accordance with current OEPP/EPPO Guidelines and EFSA Guidance document, fields of at least 2 ha are used for field studies. In each field, four to six commercial bee hives are installed for further assessments on bee



mortality, flight intensity in the crop and behaviour of the bees in front of the hives and crop area. The condition of the colonies as well as the brood development is recorded once before and frequently over at least one month after treatment.

Portfolio

- Standard studies according to OEPP/EPPO guideline No. 170 and EFSA Guidance document (field size at least 2 ha; assessments: flight activity in the crop, behaviour of the bees, mortality of the bees in the crop and in front of the hives, condition of the colonies and brood development, sampling of bee hive products and/or foraging bees for residue analysis)
- Long-term studies (bee health: 1 - 4 years) (field size at least 2 ha; assessments: at least flight activity in the crop, behaviour of the bees, mortality of the bees in the crop and in front of the hives, conditions of the colonies and brood development, including overwintering and health check (virus and disease analysis) of the colonies, sampling of bee hive products and/or foraging bees for residue analysis).
- Homing behaviour studies, besides the parameters assessed in standard studies (mortality, flight activity in the crop and bee brood development), additional detailed observations on behaviour e.g. homing behaviour, whereby observations of return rate of marked bees are conducted on honey bees or bumble bees using RFID or classical paint marking.

Coated seeds – effects of dust (seeding of a field combined with assessments on bee colonies or application of dust with a dust applicator on a flowering crop; assessments of mortality, flight activity in the crop and bee brood development)

- Coated seeds – effects of guttation (observation of bees collecting guttation droplets from emerged plants before flowering in the field; assessments

of mortality, flight activity in the crop and bee brood development; in addition collection of guttation droplets for residue analysis)

Honey Bee Field Tests - Relevant Crop

For the evaluation of side effects on the honey bee (*Apis mellifera* L.) after the application of plant protection products (PPPs) on relevant crops, the study design has to be adapted to the special needs of the plant used, such as e.g. maize, citrus, melon, peach, strawberries, sunflower, apple, potato, rice, sugar beet, buckwheat, coffee, soybean and cotton. The experience gained by our staff through working in different European countries as well as in Brazil, USA and China is a valuable tool in the adaptation of the study design.

Brood feeding studies

Brood feeding tests are performed in accordance with the OEPP/EPPO Bulletin No. 22 (1992 a+b), OECD guidance document number 75, and EFSA Guidance Document. In a brood feeding study, the possible adverse effects of a test item on the honey bee brood development are evaluated. Besides assessments on mortality, behaviour and the condition of the colonies, brood development is monitored. For this purpose a high number of cells containing eggs of young and old larvae are marked. The evaluation of development is performed using Hive Analyzer®. Commercial free flying bee colonies are fed directly with a contaminated sugar solution and the brood development is checked for approximately one month after the start of feeding. One trial can be performed with different treatments and concentrations of a test item. Eurofins Agroscience Services conducts such studies in Germany, Spain and the USA.

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