



Appendix IV

Poster demonstrating the
global nature of collaborative
bee research



Violet-winged mining bee
(*Andrena agillensis*)

Pollinator diversity project
Upper Rhine Valley, Germany



Drip application technology



Native bees for crop pollination



Effects of hedgerows and nesting aids on
pollination services, bee diversity and natural
pest control in apple orchards in Germany



Healthy Hives 2020 LATAM: bee health monitoring and beekeeper training,
e.g. in Chile, Colombia, and Argentina



Selective breeding of Varroa-resistant
bees



Small Hive Beetle brochure



Healthy Hives

Many pollinator species play an important role in agriculture. Of these, no other individual species has been more studied and is more relevant to agriculture than the honey bee (*Apis mellifera*), even in regions where it is not a native insect.

Our 'Healthy Hives' scientific activities work towards a better understanding and monitoring of the underlying factors influencing honey bee health, developing ways to optimize beekeeping practices and better combat honey bee pests and pathogens.

Varroa Gate and Supporting Projects

A novel approach to control the parasitic Varroa mite has been developed by Bayer in a cooperative approach between Bayer's business unit Animal Health and the Bee Care Center. In 2017, this technology first came onto the European market in certain countries. We continue to support the Varroa Gate technology, e.g. by investigating Varroa resistance to varroacides.

Alternative Methods of Varroa Control

Many beekeepers prefer alternative Varroa treatment options over synthetic varroacides – we are also active in this field. For instance, with a project to optimize the application of formic acid against Varroa.

Varroa-Resistant Bees

Another sustainable solution besides Varroa control could be to breed Varroa-resistant bees. We support this approach in multi-year projects with beekeepers and two research partners, which includes breeding and deployment of resistant bees.

Solutions for Pests and Pathogens other than Varroa

Apart from Varroa, other pests and pathogens threaten honey bee health – we work on approaches to control them. Such as the development of a pheromone trap for the Small Hive Beetle.

Optimization of Beekeeping Practices

Beekeepers have the important task of ensuring their colonies stay healthy and strong. Improvement of beekeeping practices can, therefore, translate into improved honey bee health. We work, for example, on the optimization of digital beekeeping and smart hive technologies to facilitate the monitoring of managed honey bee colonies.

Monitoring of Factors Influencing Bee Health

The key factors impacting bee health are still poorly understood in many regions. We help to identify them and implement concrete measures to improve the situation. For instance, through our large-scale project Healthy Hives 2020 LATAM in Latin America that fosters at the same time best practice implementation among beekeepers.



bee care



Excellence in Pollinator Science

Bayer firmly believes that protecting the health of bees and other pollinators is a shared responsibility of all stakeholders, including the crop protection industry. That is why, in 2011, Bayer established a dedicated Bee Care Program.

The program draws on the company's wealth of experience and expertise in the fields of crop protection and animal health. The aim is to strike a balance between contributing to the health, safety and diversity of pollinators, while helping farmers to optimize their agricultural productivity. At the same time, we actively encourage dialog and communication on the topic of pollinator health in an honest and transparent manner with all interested stakeholders.

Feed a Bee and Sustainable Agriculture

In the next 40 years, the world population is expected to grow from seven to almost ten billion people. Finding solutions to increase yields and to protect pollinators is critical to food production and agricultural sustainability.

There is no 'one fits all' solution or approach to providing and ensuring both pollination services and agricultural productivity. Both are influenced by the climate, environmental factors, land use, pests and diseases of crops and their pollinators, and the agronomic practices in the different regions of the world. Our 'Feed a Bee' / 'Sustainable Agriculture' scientific activities contribute by providing farmers with the latest technologies that help them to be competitive, productive and sustainable, while also developing even better concepts to enhance pollinator safety of agronomic practices and increasing pollination efficiency, worldwide.

Pollinator Biodiversity in Agricultural Landscapes

A variety of projects help us understand how to better achieve conservation or enhancement of structural pollinator diversity in the agricultural landscape. Our long-term biodiversity project in Southern Germany, for instance, explores and quantifies how ecological enhancement measures at landscape level benefit pollinators.

Alternative Pollinators for Agricultural Crops

Many important crops, especially in the tropics, are not optimally pollinated by honey bees, and other pollinators are not always readily available. Our umbrella project to develop native bee species for managed pollination in Latin America, Africa and Asia works towards providing optimized pollination services to farmers.

Safe Use of Crop Protection Products

We are involved in various activities going beyond pollinator safety testing and risk assessment during product development, like approaches to ensure pollinator-friendly pesticide application. For instance, we support the innovative Drip application technology, allowing farmers to apply crop protection products below the blossoms of a flowering crop, to minimize the exposure of pollinators.

Bee Nutrition

Working to ensure pollinators have enough good nutrition at their disposal in the agricultural landscape is of key importance for sustainable crop pollination. We have, for instance, looked into the development of cover crops as bee forage in Canada.

Understanding In-Crop Pollinator Communities

Investigating which pollinators occur in which crop, and what their activity patterns are, helps us to ensure tailor-made protection by more targeted pesticide use. We studied these communities in various key crops in South America.

Optimization of Crop Pollination

We aim to find out whether biodiversity enhancement measures interfere with crop pollination efficiency or if, for instance, patches of natural vegetation can boost crop pollination. We investigate this, amongst others, in apple orchards in Germany and in avocado in Chile.



Coffee pollination in Colombia



Improved melon pollination in Brazil



Biological and chemical diversity of
Italian honey



Impacts of natural vegetation and
landscape structures on pollination in
avocado orchards in Central Chile



Developing standards for wild bee
monitoring in Germany



Pollinator community studies in
key crops of South America



Development of a Small Hive Beetle
pheromone trap



Communication and Dialog

Pollinators need us Let's join forces!

Stay up-to-date on the latest pollinator health news, research and developments, provided by our experts and research partners around the world.



Bayer Bee Care Center
Alfred-Nobel-Strasse 50
40289 Mönchen am Rhein, Germany
bee.care@bayer.com



- Foraging and nutrition
- Pollinator biodiversity



- Research to combat honey bee pests and diseases
- Hive management



- Responsible pesticide use
- Beekeeper / farmer relations
- Crop pollination

A science program
fit for purpose!

Join us
on this important journey!



Leafcutter bee
(*Megachile rotundata*)

The Bee Care Science Program

The comprehensive Bee Care Science Program – soon to comprise more than 30 projects worldwide – addresses some of the main threats and opportunities for pollinators and pollination, which require a tailor-made approach corresponding to local and regional differences.

Bayer brings in its expert knowledge and experience, collaborating with partners around the world – such as scientists at universities, research institutes and beekeeper organizations – on local and regional projects for pollinator ecology, honey bee health, crop pollination efficiency and the safety of pesticides to pollinators. Being recognized as a true partner in the scientific community starts with being seen as a scientifically competent and active partner, and we take pride in contributing to bee and pollinator health via leading-edge, collaborative research.

