



Current development and strategies against GMO-contamination in organic bee-keeping

Freedom of choice, coexistence and zero-tolerance

The application of the core principles of EU GMO legislation to bee products and services

Walter Haefeker, Member of the Board of Directors,

Deutscher Berufs und Erwerbsimkerbund (DBIB)

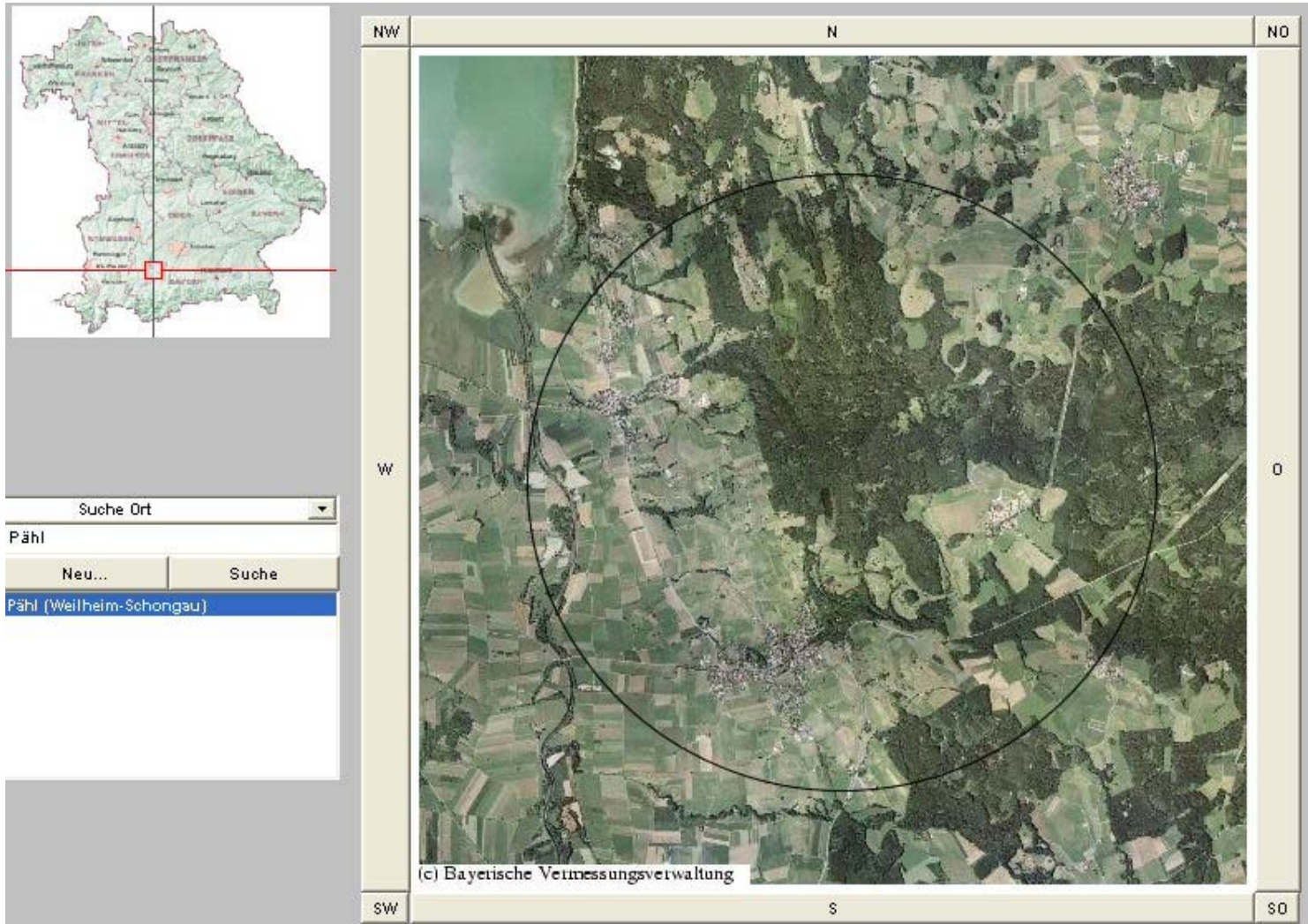
President, European Professional Beekeepers Association (EPBA)

Bee Products & Pollination Service



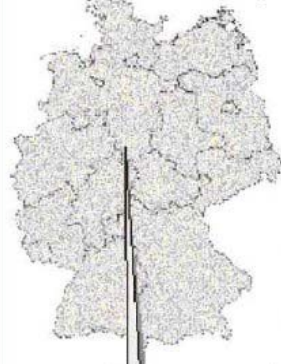


Foraging range of honey bees: minimum 3km

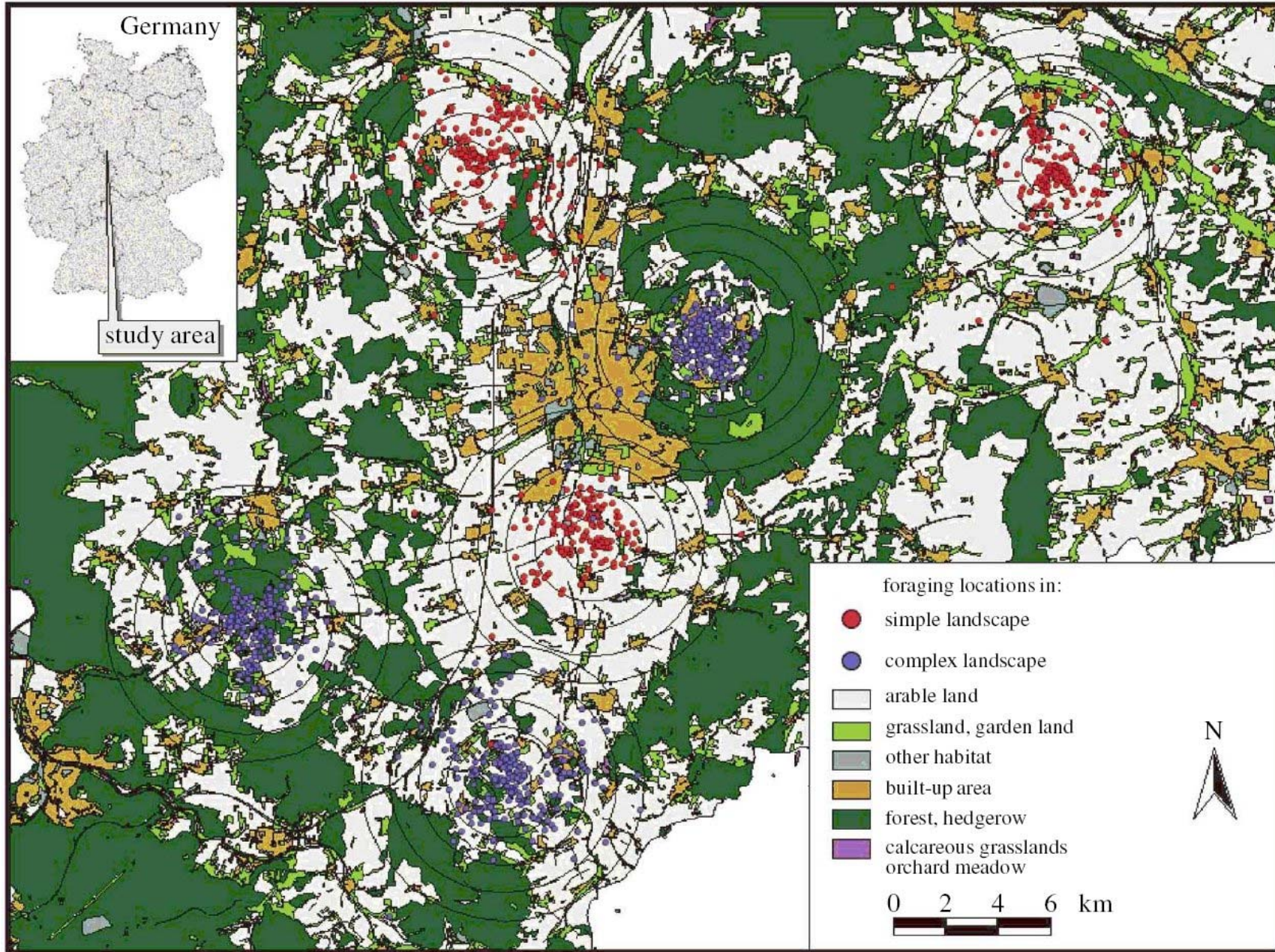




Germany



study area



CO-EXISTENCE OF GM-CROPS WITH BEEKEEPING

IMPACT OF GM-CROPS ON THE SUPPLY CHAIN FOR HONEY AND OTHER BEE PRODUCTS.

Walter Haefeker, Vice President, European Professional Beekeepers Association



Collecting nectar from clover



Collecting honeydew in forest



Collecting pollen from corn (Photo: A. Spangler)



Collecting resin for propolis from tree bark



Collecting water.

Honey bees collect Nectar, Honeydew, Pollen, Resin and Water.

Bee products can be contaminated by GM-crops including those not intended for food production like starch potatoes, poplar trees or pharma crops.

How does beekeeping fit into this picture?





COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 23 July 2003
C(2003)

COMMISSION RECOMMENDATION

of 23 July 2003

on guidelines for the development of national strategies and best practices to ensure the co-existence of genetically modified crops with conventional and organic farming

News Release



The Chemical Company

BASF to concentrate plant biotechnology activities on main markets in North and South America

- **BASF Plant Science headquarters to move to Raleigh, North Carolina**
- **Research activities in North America, Ghent and Berlin to be strengthened**

Ludwigshafen, Germany – January 16, 2012 – BASF announced today that it is concentrating its plant biotechnology activities on the

January 16, 2012

P 109/12e

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No matter where we produce, we all serve the same customer



JUST LABEL IT!
We have the right to know • justlabelit.org

COMING SOON: A NEW LOOK FOR JUST LABEL IT!
BUT THERE'S NO NEED TO WAIT TO TELL THE FDA YOU WANT TO KNOW WHAT'S IN YOUR FOOD!

HELP US SEND THE FDA 1 MILLION COMMENTS THIS SPRING!



600,000 comments so far!

WATCH THE VIDEO!

WE HAVE A *RIGHT TO KNOW*

93% of Americans want the FDA to label genetically engineered foods. Watch the new video from *Food, Inc.* Filmmaker Robert Kenner to hear why we have the right to know what's in our food. **Will you join these individuals – and over half a million Americans – in contacting the FDA to require the labeling of genetically engineered (GE) foods?**

Just Label It: We Have a Right to Know

SHARE THE VIDEO

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0:00 / 2:59

TELL THE **FDA!**

A legal petition (Docket # FDA-2011-P-0723-0001/CP) has been filed with the Food and Drug Administration (FDA) calling on the FDA to label genetically engineered (GE) foods.

YOUR MESSAGE:

Dear Commissioner Hamburg,

I am writing to urge the FDA to require the mandatory labeling of genetically

The customer is always right!

- The views of beekeepers on GMOs around the world may vary greatly.
- But it does not matter, what beekeepers think. It matters, what our customers think.
- What matters is also, what our customers have been promised by the commission about GMOs in their food:
 - Freedom of choice
 - Coexistence
 - Zero-tolerance

Organic products have the most to loose

- Customers expect organic to be GMO-free.
- Organic products provide more information about their regional origin – this has serious consequences, if a region is known to have GMO cultivation and/or contamination.
- If there is no labeling, customers will draw their own conclusions about the GMO status of a product.

Freedom of Choice

- Our customers have the same rights when purchasing honey as they have when shopping for any other food.
- Only proper labeling of honey containing GMOs allows consumers to exercise this right.
- Customers demand to know what is in their regional honey, when there is GMO cultivation in the region.
- Beekeepers marketing directly to the consumer cannot hide behind labeling rules.

Freedom of Choice

- It's not just about the pollen.
 - Depending on the plant species, the pollen is an indication of the source of the nectar.
 - If there is GM-canola pollen in the honey, part of the nectar will be of GM origin.
- All bee products need to be available in non-GM quality for our customers to choose.



Stored pollen in honeycombs



Honey



Pollen



Propolis



Gelée Royale

Freedom of Choice

- The beekeeping community is supporting efforts to define standards for honey analysis that better reflect the unique properties of honey.
- It is essential that such standards are not only practical but most importantly credible for consumers.
- Trying to define the problem away by watering down standards only leads to the market place defining it's own standards, resulting in confusion and fragmentation.

Zero-Tolerance

- European consumers have been promised zero-tolerance for events, that have not been found by EU authorities to be safe for human consumption.
- Beekeeping has the highest likelihood of contamination from non-food and research events.
- In order to protect the integrity of our products, the zero-tolerance principle has to be fully implemented.
- All GMOs need full food approval unless there is no possibility of contamination of bee products.
- Food approval can only be given based on credible tests.
 - No food approval „lite“ for honey.
 - No zero-tolerance “lite” for honey.

Zero-Tolerance

- MON-810 is not an exception, but is representative for products without comprehensive authorization for food.
- At least 20 companies worldwide are developing plants for the production of pharmaceutical or industrial proteins using alfalfa, barley, corn, white clover, flax, mustard, peas, potatoes, rape seed, rice, safflower, soy, sugar cane, tobacco, tomatoes, wheat and other plants.
- The regulations have to work for the products coming down the pipeline.

Are we beekeepers and our customers expected to tolerate all of this in our products?

Pharming (genetics) - Wikipedia, the free encyclopedia

W http://en.wikipedia.org/wiki/Pharming_(genetics)#Pharming_in_plants Reader Q pharma crops

News (450) Technology (373) Beliebt Schreiben Tools Reise Imkereei Shopping Haefeker Family Network

List of originators (companies and universities) and research projects and products [edit]

Please note that this list is by no means exhaustive.



- **Agragen** - docosahexaenoic acid and human serum albumin in flax
- **Chlorogen, Inc.** - cholera, anthrax, and plague vaccines, albumin, **cloriene**, interferon for liver diseases including hepatitis C, elastin, 4HB, and insulin-like growth factor in tobacco chloroplasts
- **Dow AgroSciences** - poultry vaccine against **Newcastle disease virus** (first PMP to be approved for marketing by the **USDA Center for Veterinary Biologics**^[11] - however as of 2010 it appears that Dow AgroSciences has not begun marketing the product.)
- **Dow Chemical Company** - anti-cancer antibodies
- **Epicyte** - spermicidal antibodies in corn
- **Genzyme** - antithrombin III in goat milk
- **GTC Biotherapeutics** - **ATryn** (recombinant human antithrombin) in goat milk
- **Iowa State University** - unknown product in corn
- **MacIntosh & Associates, Inc.** - unknown product in peas
- **Medicago Inc.** - Pre-clinical trials of **Influenza vaccine** in alfalfa^[12]
- **Meristem Therapeutics** - **Lipase**, **lactoferrin**, plasma proteins, **collagen**, antibodies (IgA, IgM), **allergens** and **protease inhibitors** in tobacco
- **Pharming** - **C1 inhibitor**, human **collagen 1**, **fibrinogen** (with **American Red Cross**), and **lactoferrin** in cow milk
- **Planet Biotechnology** - antibodies against **Streptococcus mutans**, antibodies against **doxorubicin**, and **ICAM 1 receptor** in tobacco
- **PPL Therapeutics** - **Alpha 1-antitrypsin** for **cystic fibrosis** and **emphysema** in sheep milk
- **ProdiGene** - **aprotinin**, **trypsin** and a veterinary **TGE** vaccine in corn
- **SemBioSys** - **insulin** in safflower
- **Syngenta** - **Beta carotene** in rice (this is "golden rice 2")
- **University of Arizona** - **Hepatitis C** vaccine in potatoes
- **Ventria Bioscience** - **lactoferrin** and **lysozyme** in rice
- **Washington State University** - **lactoferrin** and **lysozyme** in barley

Projects known to be abandoned

- **Large Scale Biology** (*bankrupt*)^[13] - using **Tobacco mosaic virus** to develop patient-specific vaccines for **Non-Hodgkin's lymphoma**, **Papillomavirus** vaccine, **parvovirus** vaccine, **alpha galactosidase** for **Fabry disease**, **lysosomal acid lipase**, **aprotinin**, **interferon Alpha 2a and 2b**, **G-CSF**, and **Hepatitis B** vaccine antigens in tobacco
- **Monsanto Company** - abandoned development of pharmaceutical producing corn

Zero-Tolerance is being applied to other food.

EU tightens control of Chinese rice over GM fears

(AFP) – Nov 15, 2011   1

BRUSSELS — The European Union has tightened controls on imports of Chinese rice products after a growing number of shipments were contaminated by unauthorised genetically-modified rice, the EU said Tuesday.

The EU has decided to require Chinese authorities to provide a report on all rice consignments before export, instead of the current random checks.

The move was in response "to an increasing detection of products contaminated with unauthorised genetically-modified (GM) rice," the European Commission said in a statement.

The decision was based on an audit from a mission in China carried out by the commission's Food and Veterinary Office in March and persistent reports about GM rice in the EU's Rapid Alert System for Food and Feed.

"The mission's initial findings indicate an uncertainty as to the level, type and number of GM events, which may have contaminated rice products originating in, or consigned, from China," the commission said.

"They also indicate that there is a risk of further introductions of non-authorised genetically-modified organisms in such rice products."

Chinese rice products contaminated with the unauthorised GM rice Bt63 have been notified through the EU's alert system since September 2006.

A control system was set up in April 2008 to prevent the introduction of such rice in Europe but GM rice was detected again later on.

The new measures will be reviewed in six months.

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Coexistence

- No freedom of choice for consumers, if beekeepers cannot produce GMO-free honey.
- Forcing beekeepers to flee from GMO-cultivation is obviously not acceptable to beekeepers.
 - If a farmer grows a crop that needs pollination, his rights are infringed upon, if a farmer in the neighborhood decides to grow GMOs and the beekeepers have to leave or are no longer willing to move their bees into the area.
 - Coexistence rules in the member states need to protect these farmers.

What can be done in exporting countries?

New tools for Chilean beekeepers to meet demanding European GM standards | Fresh Fruit Portal

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New tools for Chilean beekeepers to meet demanding European GM standards

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December 9th, 2011

Chile's Agriculture and Livestock Service (SAG) has released a new computer system to let beekeepers know where genetically modified organism (GMO) crops are located. The move follows a European Union (E.U.) Court of Justice decision to enforce stricter honey trading laws in September, after a German beekeeper was forced to destroy his production when a trace of GM corn pollen was found.

Europe is the leading destination for Chilean honey exports, and the South American country is taking action to make sure the situation stays the way.

SAG's "National Geographic System for Apiculture Consultation" allows beekeepers to enter coordinates of where their apiaries are located, and keep a distance from catchment areas where GM seeds may be found.

"This system allows us to have our hives far away from GMO crops. This tool, and the related analysis, allows our honey not only to continue being traded in the European Union and the world, but they can also be more appreciated for being free of GMO pollen," said Federation of Beekeeping Cooperatives president Ítalo Bozzi.



Responsibilities of Governments

- Public register of GMO fields
- Zero tolerance for GMOs in seed.
 - Definition of Zero-Tolerance must allow for safety margins at each level of production.
- Monitoring of GMOs throughout the environment.
 - Beekeepers can provide samples.

The role of importers

- Logistics of collecting honey from beekeepers needs to be changed.
- Avoid contamination of clean batches.
- Maintain information of regional origin.
- Use tracability data to build database.
- Maybe setup an industry wide database to pool results.
- Apply pressure on governments of honey exporting countries.

Role of government and private laboratories

- Clear definition of thresholds.
 - Zero tolerance
 - What is detection level?
 - Labeling threshold 0,9% by species or total pollen DNA.
- Standardize sampling methods.
- Standardize analytical methods.
- Clear definition of the quality of the results obtained by a particular method.
- Harmonize communication of results to clients.

Role of beekeepers

- Avoid contamination from pollen substitute.
- Keep good records of hive movement.
- Cooperate with logisitcs, tracability and monitoring efforts.
- Apply pressure on governments to properly regulate GMO cultivation.

Our best protection so far:
Farmers, environmentalists and
consumers created GMO-free regions.



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www.civilcourage.ro



Bavarian court: If you want to protect your product, move your bees, ...



So we moved the bees ...



Outlook ...

Famous quote:

“America will always do the right thing, but only after having exhausted all other options.”

We are optimistic, that in many countries we now have the chance to do the right thing for beekeepers around the world and for the organic customers we all serve.



Thank you for your kind attention!

Walter Haefeker, Vorstandsmitglied,
Deutscher Berufs und Erwerbssimkerbund (DBIB)
Präsident, European Professional Beekeepers Association (EPBA)