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NO BEES LIFE

EBA MAGAZINE

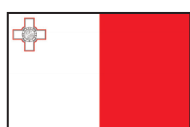
32 COUNTRIES

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(65 beekeeping organizations)

In order of confirmation of the Statute of EBA

430.584 beekeepers



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Montenegro
Lithuania
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Sweden
Croatia
Czech Republic
Poland
United Kingdom
Netherlands
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GOD WILL NOT HELP US, IF WE DON'T TRY TO HELP OURSELVES

Across Europe, our markets are increasingly flooded with low-priced honey of questionable origin.

European beekeepers simply cannot produce honey at such prices.

We all know that this is a serious challenge for the future of European beekeeping.

But I believe we also need to be honest with ourselves: we cannot expect someone else to solve this problem for us.

If we want consumers to choose real, local honey, we need to do much more ourselves. We need stronger communication, better pro-

motion, more education and a much more visible presence of local honey in the market.

As beekeeping organisations, we have a responsibility to take the initiative and bring the value of European and local honey much closer to consumers.

We cannot just wait for governments, institutions or someone else to act. We need to act ourselves – and we need to do much more than we are doing today.

The future of European beekeeping will not be secured by waiting. It will be secured by what we are willing to do ourselves.

Boštjan Noč

President of the European Beekeeping Association



STRONGER TOGETHER • PROTECTING BEES • PROTECTING CONSUMERS • PROTECTING BEEKERS

COMMITTEE ESTABLISHED TO COMBAT HONEY FRAUD IN GREECE WITH THE PARTICIPATION OF AN EBA REPRESENTATIVE

The Greek Ministry of Rural Development and Food has established a Working Group on Greek Honey and Beekeeping Products (Decision 172446/1-6-2026).

The Committee consists of:

specialized scientists in apiculture; representatives of the Federation of Greek Beekeeping Associations; Greek honey packers and distributors; beekeeping cooperatives; inspection and control authorities (ELGO-DIMITRA and EFET); the General Chemical State Laboratory; and administrative officials of the Ministry of Rural Development and Food.

The Ministry also invited a representative of the European Beekeeping Association (EBA) to participate in the Committee, thereby recognizing EBA's active contribution to the fight against honey fraud and its efforts to support and promote local beekeepers. The Committee's areas of discussion include:

a) The development and implementation of digital tools for honey traceability.

b) The harmonization and combined use of validated methodologies for honey analysis and quality control.

c) The identification, legal protection, certification, and promotion of the distinctive characteristics of various types of Greek honey.

d) The updating of the regulatory framework concerning inspections, sanctions, and related matters, as well as organizational and structural reforms in the honey and beekeeping sector.

As the EBA representative, Professor Andreas Thrasyvoulou, a member of the EBA Scientific Committee on Safety and Quality of Bee Products, has been nominated. Professor Thrasyvoulou frequently presents the Committee's positions and his views on these issues in the EBA magazine No Bees No Life.

THE AMENDED HONEY DIRECTIVE: IMPLEMENTATION, TRANSITIONAL LOOPHOLES, AND THE READINESS OF THE EU MARKET

Introduction

Under Article 6 of the revised Honey Directive (Directive (EU) 2024/1438), products placed on the market or labelled before 14 June 2026 in accordance with the older Directive 2001/110/EC may continue to be marketed until stocks are exhausted.

In practice, this means a retailer can legally sell a honey jar labelled with the vague "blend of EU and non-EU honeys" designation well into 2028 or even 2029, provided it was packaged and labelled prior to the mid-June deadline. Consequently, consumers will continue to encounter old, opaque labels on supermarket shelves for a considerable time. This overlap makes it extraordinarily difficult for the public to differentiate between products lawfully benefiting from transitional leniency and those actively non-compliant with the new country-of-origin and percentage-labelling mandates (figure 1).

These updated regulations were heavily driven by consumer demand for supply-chain

transparency. The public promised that honey blends would explicitly state both the countries of origin and their exact percentages in descending order. However, because thousands of jars carrying the generic "EU/non-EU" label remain on the shelves for an indefinite period, consumer confidence faces an immediate threat. If buyers see little visual change in stores for years, paired with the knowledge that these new declarations cannot yet be independently verified in a laboratory, many may question whether this hard-fought legal reform has actually delivered on its promise.

Can Consumers Spot a Mislabeled Product?

The short answer is no. Regular consumers have no practical means of distinguishing an old, lawfully grandfathered label from an illegally mislabeled product.

- The Lot Number: This identifier is designed for internal traceability, not public informa-

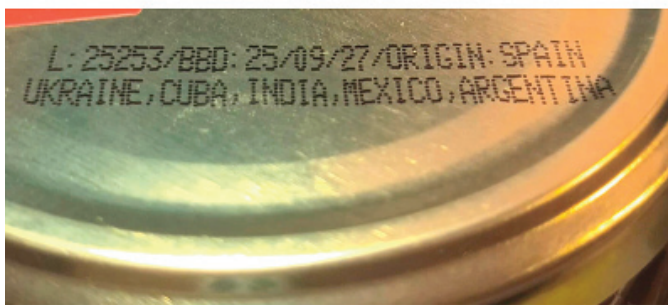
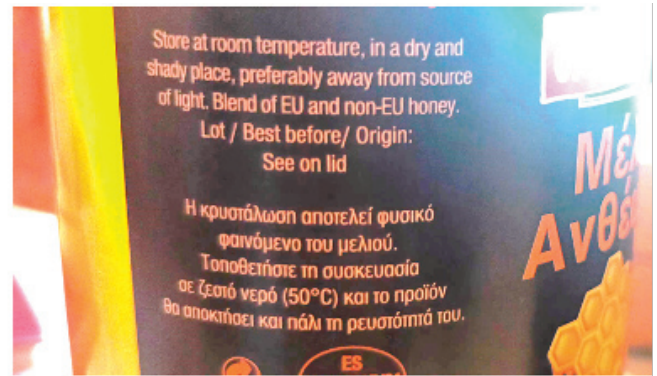
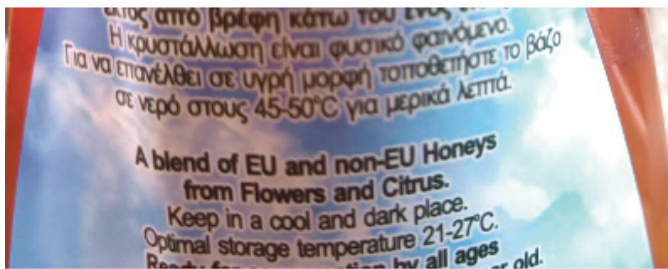


Figure 1: Two jars of honey purchased in the Greek market on July 7th, featuring "best before" dates of 20/09/2027 and 09/03/2028, respectively. Both remain legally permitted on store shelves under current transitional rules as Blends of EU and non-EU honey

tion. Its format is chosen entirely at the manufacturer's discretion; there is no EU-wide standard that encodes a readable production or packaging date.

- The Best-Before Date: This metric offers no proof of when a jar was actually filled. Because honey naturally possesses a long shelf life, producers arbitrarily set best-before windows between 18 and 36 months. A jar marked for March 2028 could have been filled either just before or well after the June 2026 deadline.

The only way a consumer could verify legality is by contacting the packer directly to request specific manufacturing logs—or by filing an official complaint with a national food authority. The statistical likelihood of a consumer taking either step is exceptionally low.

Can Competent Authorities Verify Compliance?

If formally challenged by regulatory authorities, a producer is expected to provide com-

prehensive documentation: ink-jet production logs, label printing receipts, batch sheets, and initial invoices demonstrating exactly when a lot was packed and placed on the market. It is this paper trail—not the visible lot number on the jar—that determines whether the transitional measure legally applies.

Protection for Industry Over Transparency for Consumers?

The EU's justification for the open-ended transitional period is economic: avoiding the destruction of compliant packaging material, reducing sudden overhead costs for manufacturers, and preventing food waste (table 1).

This leniency deserves healthy criticism. The previous Honey Directive had been in place since 2001, and commercial packers knew for years that country-of-origin transparency was becoming a major political priority. Furthermore, the

<u>EU Priority</u>	<u>Practical Real-World Consequence</u>
<u>Mitigating Food Waste</u>	Permits older stocks to stay on shelves until exhausted.
<u>Reducing Operational Costs</u>	Avoids forcing packers to discard millions of pre-printed labels.
<u>Protecting Inventories</u>	Fails to implement a firm, final "sunset date" for retail sales.

Table 1. The current setup suggests that European frameworks favor operators over consumers:

amended text was adopted in May 2024, providing a full two-year runway before its application date. Granting an open-ended transition period despite this two-year grace period means that consumer transparency is delayed by years for a long-shelf-life product like honey, while businesses were given a generous two-year window to phase out old stock.

The core flaw of Article 6 is not the existence of a transition period, but that it is open-ended. Had the Directive mandated a strict sunset clause—ruling that old labels could only be sold until June 14, 2027—consumers would have a clear date for total transparency. Instead, "until stocks are exhausted" tethers public transparency entirely to commercial inventory rates.

While packers regularly replenish inventory, and most old labels will naturally disappear within 12 to 24 months, there is a distinct risk that some operators may have deliberately printed massive quantities of old labels right before June 2026 to bypass the stricter rules for as long as possible.

The Unfulfilled Realities of the Two-Year Window

The two-year gap between May 2024 and June 2026 was intended to give the European Commission, competent national authorities, and commercial packers ample time to establish a functional ecosystem.

The EU Commission was expected to:

- Provide validated analytical methods capable of verifying both the countries of origin and the exact percentages declared in a blend.

- Establish a European Union Reference Laboratory (EURL) specifically dedicated to honey authenticity.

- Drive framework discussions within expert groups and the Honey Platform to establish practical enforcement guidelines.

Competent National Authorities were expected to:

- Update national guidance, train inspectors, and adjust local legislation.

Packers were expected to:

- Redesign corporate packaging, update internal traceability software, and adjust purchasing records to list countries of origin in descending order.

Despite these clear expectations, a massive systemic gap remains:

While the amendment successfully introduced stricter origin-labelling obligations, it failed to simultaneously establish the infrastructure required to police them. We now have a law without an accompanying harmonized analytical method, an operational EURL, or a modernized traceability framework capable of scientifically verifying percentage claims.

Consequently, market enforcement relies almost entirely on documentary evidence—purchase invoices, import customs slips, and batch records—rather than laboratory testing. This severely limits the real-world effectiveness of the new consumer protections.

Furthermore, market surveillance remains uneven. In Greece, for instance, competent authorities are not exercising sufficient oversight to ensure the transitional exemption isn't being exploited. There is a very real concern that some

packers may have deliberately printed massive quantities of old labels prior to June 2026, knowing they could legally exhaust them over the coming years.

Conclusion

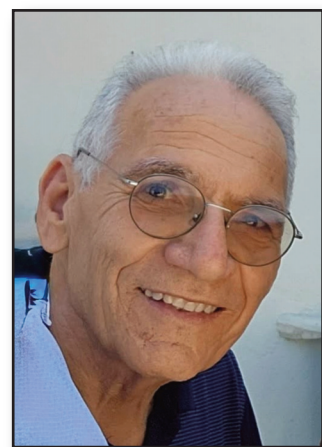
A fundamental question arises: should analytical capabilities and enforcement infrastructure be fully established before legal obligations are codified, or should they develop in parallel? Legally mandating a standard before anyone has the practical tools to verify it is a flawed approach. Yet, this is exactly what has happened to the honey sector.

The European Union is implementing an origin provision 23 years after its original directive, which—when factored alongside these transition windows—stretches the timeline out to nearly 27 years. Even so, the appropriate analytical infrastructure is still missing. The law binds operators to absolute accuracy on their labels but leaves inspectors unable to verify those claims via a laboratory test.

This does not render the new Breakfast Directive useless. Forcing companies to document countries and percentages creates an unprecedented legal accountability mechanism. False declarations can still be prosecuted through standard corporate audits and paperwork tracing. How-

ever, until the EU backs its legislation with robust, harmonized scientific verification tools, the true promise of honey transparency will remain trapped on paper rather than realized on supermarket shelves. The law expects operators to tell the truth, even though authorities lack the tools to catch those who do not.

However, laws are only as strong as their mechanisms of verification. Until the EU provides standardized analytical methodologies and strict, proactive market surveillance, the true transparency promised to consumers will remain largely on paper.



Andreas Thrasyvoulou

Emeritus Professor
Aristotle University of Thessaloniki, Greece





REPORT FROM SLOVENIA:

IN ACCORDANCE WITH THE NEW DIRECTIVE, ONLY 1.79% OF HONEY BLENDS IN SLOVENIAN STORES ARE LABELED
– GO TO A LOCAL BEEKEEPER!

A month and a half ago, on June 14, 2026, the Rules on the Quality and Labeling of Honey came into force. The key change incorporates Directive (EU) 2024/1438, which requires more precise origin labeling for honey blends. Instead of the old, vague label “blend of EU and non-EU honey,” packers must now state all countries of origin alongside their corresponding percentages in descending order in the product’s primary field of vision.

Because the Directive includes a safeguard mechanism allowing packers to sell off stocks placed on the market or labeled under the old rules (before June 14, 2026), the situation across Slovenia’s six largest retailers remains virtually unchanged. Out of 56 honey blend products counted on store shelves, only one product was labeled in accordance with the new rules—found in a Hofer d.o.o. store. Four products were incompletely labeled, displaying only some countries of origin without their respective percentages. The remaining 51 products still carried the general label “blend of EU honey” or “blend of EU and non-EU honey.”

This review confirms that packers intend to fully utilize the transitional period. Even though

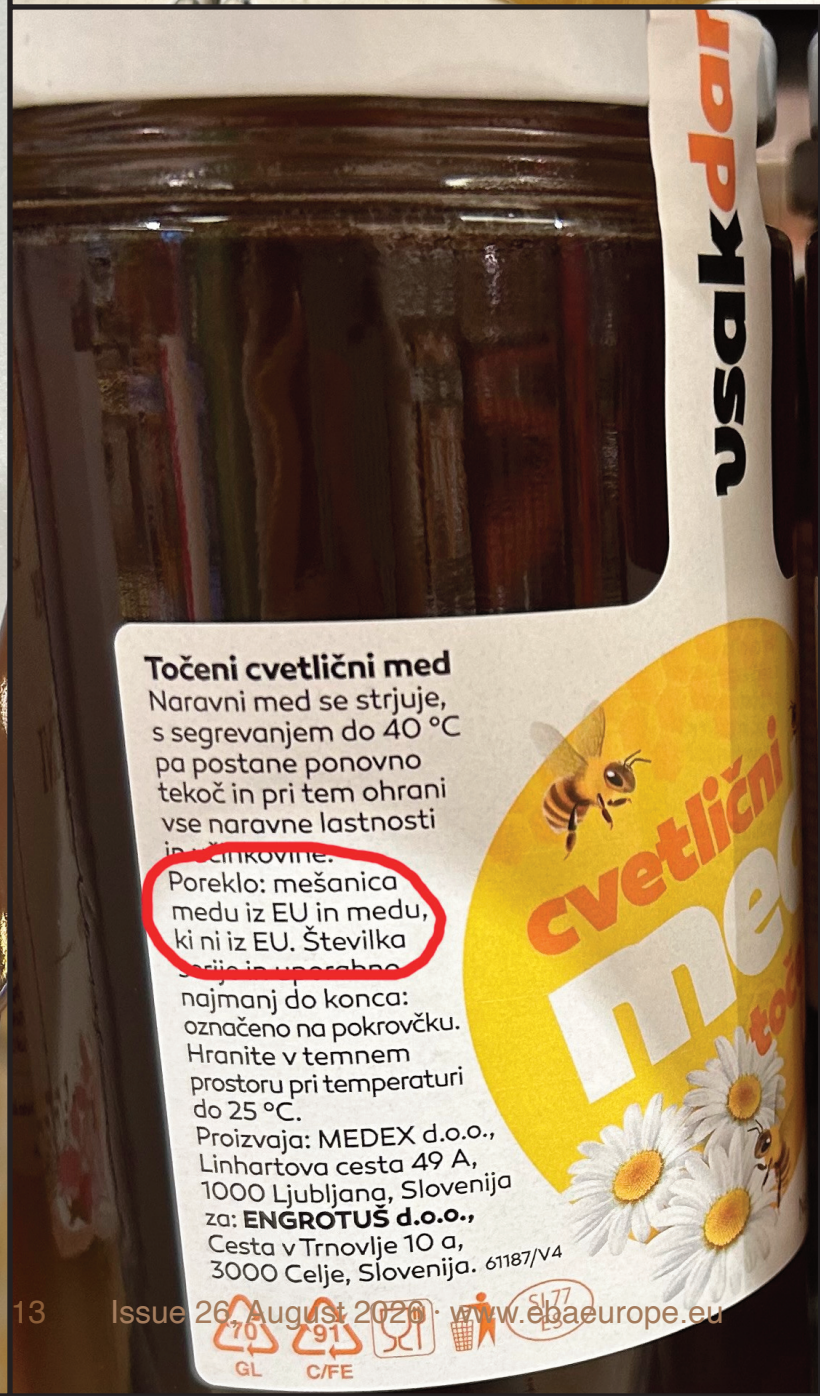
Directive (EU) 2024/1438 was adopted way back in May 14, 2024, consumers still rarely encounter the new labels on store shelves more than two years later.

Nevertheless, options do exist in Slovenia: alongside the 56 honey blends from various countries, 36 products of Slovenian origin were also observed. Furthermore, consumers can always purchase bee products directly from local Slovenian beekeepers. To find local suppliers, consumers can also use the Map of Active Producers of Slovenian Honey with Protected Geographical Indication (Slovenski med z zaščiteno geografsko označbo), accessible here: <https://www.okusi-med.eu/zemljevid-smgo>

Slovenian Beekeeper’s Association and the European Beekeeping Association urge other countries to also actively inspect the current situation on the market. It is absolutely key for the consumer to know where honey comes from!

Boštjan Noč

President of the European Beekeeping Association and the Slovenian Beekeeper’s Association



EUROPEAN BEEKEEPING ASSOCIATION STANDS WITH FRENCH BEEKEEPERS

**BEES
LIFE**

AS PESTICIDE ROLLBACK SPARKS OUTRAGE



The French parliament has reauthorised the exceptional use of nationally banned neonicotinoid pesticides—including acetamiprid and flupyradifurone—triggering deep anger across the beekeeping community.

Environmentalists and French beekeeping unions (UNAF) have condemned the decision as a catastrophic setback for biodiversity and pollinators. Scientific research shows that acetamiprid inflicts neurotoxic damage on honeybees, disrupting their memory, foraging capacity, and colony survival.

The European Beekeeping Association (EBA) stands fully in solidarity with our French colleagues. Reauthorising bee-toxic chemicals under the guise of agricultural emergencies threatens the future of European apiculture and undermines years of progress in pollinator protection. Bees are fundamental to biodiversity

and our food systems; protecting them must remain a non-negotiable priority.

This decision underscores the urgent need for systemic change across Europe. Read the official EBA Position Paper on the Acetamiprid Vote to learn more about our stance against raising pesticide residue limits (voted for by the EU Parliament in December 2025) and how we are fighting to safeguard honeybees, the environment and the consumer.

Article: 'Scandalous, irrational and irresponsible': French beekeepers' fury at lifting of pesticides ban | France | The Guardian

EBA position paper:

<https://ebaeurope.eu/acetamiprid-again/>

Boštjan Noč

President of the European
Beekeeping Association



HOW TO PRODUCE HIGH-QUALITY MONOFLORAL HONEY FOR SUCCESSFUL SENSORY EVALUATION

Honey contests, including the European honey contest, are not intended solely to identify the best honey. Its primary purpose is to assess honey quality, authenticity, and the characteristic properties of individual honey varieties. One of the most important requirements is the correct botanical classification of the honey.

It is not enough for honey to be of high quality. If it is labelled as acacia (black locust), linden, chestnut, forest, multifloral, or another monofloral honey, it must exhibit the characteristic appearance, aroma, odour, taste, and sen-

sory profile of that variety. During sensory evaluation, one of the most common reasons for lower scores is a mismatch between the declared botanical origin and the actual sensory characteristics of the honey.

Producing Monofloral Honey Begins Before the Nectar Flow

Successful production of monofloral honey requires a thorough knowledge of the nectar and honeydew sources available at the apiary



or at locations where colonies are moved for migratory beekeeping. Beekeepers should closely monitor plant development, weather conditions, and the progress of the nectar flow.

Climate change is increasingly affecting both the timing and intensity of honey flows. Flowering periods are becoming less predictable, and new combinations of nectar and honeydew sources are appearing more frequently. Beekeepers therefore need to determine accurately when the dominant honey flow begins and when it ends.

Strong, Healthy Colonies Are the Foundation of Quality Honey

To make full use of often short honey flow periods, colonies should be healthy, populous, and headed by young, high-quality queens. Colonies must reach peak strength in time for the main honey flow while avoiding weakening through swarming.

Honey production depends not only on foraging bees but also on the many house bees that receive incoming nectar or honeydew, process it, reduce its moisture content, and enrich it with enzymes and other natural substances.

Properly ripened honey with a lower moisture content generally has a more pronounced aroma and flavour, which are key attributes during sensory evaluation. During periods of exceptionally high nectar intake, beekeepers should be aware that bees may cap honey before it has reached optimal maturity.

Timely Harvesting Preserves Botanical Purity

When producing monofloral honey, it is essential that honey supers are extracted and emptied before the next major honey flow begins. This minimizes the risk of mixing honey from different floral or honeydew sources.

Honey should be harvested promptly after the end of the dominant honey flow and before the next significant nectar or honeydew source becomes available. Only in this way can the distinctive characteristics of each honey variety be preserved.

Particular care is required when several important nectar or honeydew sources overlap, such as linden, chestnut, honeydew, or mixed blossom flows. Although these honeys may be excellent products for consumers, they often lack the clearly defined sensory characteristics

required for successful classification as a specific monofloral honey during sensory evaluation.

Comb Is the First Container for Honey

The condition of the comb also has a significant influence on honey quality. Fresh, clean comb enables the production of lighter-coloured and purer honey. This is especially important for light-coloured varieties such as acacia (black locust) and linden honey.

Older comb may affect the colour and appearance of honey. In addition, various substances can accumulate in beeswax over time, making regular comb renewal an important component of good beekeeping practice.

Take Care with Feeding and Varroa Control

During late-season honey flows, particular attention should be paid to colony feeding. Bees should not be overfed, as stored sugar syrup may later become mixed with harvested honey.

Effective and timely control of Varroa destructor is equally important. Only approved and properly applied treatment methods should be used, while ensuring that residues from varroa treatments do not contaminate beeswax and, consequently, honey.

Cleanliness and Proper Storage Influence the Final Score

The overall presentation of the sample is also an important part of sensory evaluation. Honey should be clean and free from wax particles, foam, bee parts, or any other visible impurities.

Before submitting a sample, beekeepers are advised to inspect the honey under good lighting. The jar should be perfectly clean, and the honey should be stored correctly, protected

from light, excessive temperatures, and foreign odours.

Nothing should be added to or removed from the honey—it should be presented exactly as the bees collected and naturally transformed it.

The Best Honey Is the Result of Good Decisions Throughout the Season

Success in sensory evaluation is not determined solely by favourable weather or an excellent honey flow. It is the result of knowledge, careful observation of nature, proper colony management, timely harvesting, good hygiene, and careful handling of honey throughout production.

Beekeepers who apply good beekeeping practices, understand their local forage conditions, know their colonies well, and combine experience with careful management—and a little help from nature—have the greatest chance of producing monofloral honey whose quality and distinctive sensory characteristics will impress even the most demanding judges.



Klavdijo Babič

Field Beekeeping Advisor
Slovenian Beekeepers' Association

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CAN HONEY BEE WINTER LOSSES BE **PREDICTED?**

The results of numerous studies have confirmed the persistence of several characteristic risk factors (markers) that can be used to predict honey bee colony losses several months in advance and may help beekeepers assess their colonies' chances of successful overwintering.

Honey Bee Losses Worldwide and in Serbia

In recent years, large-scale honey bee colony losses have been recorded during the winter period in many parts of the world. Winter

has always been the most critical period for honey bee colony survival, but since the emergence and spread of the parasitic mite *Varroa destructor*, winter colony mortality has increased dramatically.

During the winter of 2018/2019 (1 October 2018–1 April 2019), winter colony losses in the United States amounted to 37.7%, according to a survey involving 47,000 beekeepers managing approximately 12% of all managed honey bee colonies in the country. This represented an increase of 7 percentage points compared with the previous year (30.7%) and an increase of 8.9 percentage points compared with the 13-year average winter loss rate of 28.8%. It was



*Varroa destructor – the leading cause of winter honey bee colony losses
(Photo: Maja Dumat – CC BY 2.0)*

the highest winter loss rate recorded since the survey began in 2006/2007 (Bee Informed Partnership).

At the end of July 2019, the Canadian Association of Professional Apiculturists published the results of its survey of honey bee colony mortality during the winter of 2018/2019. During this period, 25.7% of colonies were lost. This was close to the average loss recorded since winter colony mortality monitoring began in 2007. Losses varied considerably among provinces, ranging from 19.8% in Nova Scotia to 54.1% on Prince Edward Island. During the winter of 2017/2018, colony losses amounted to 32.6%.

Results from the COLOSS survey, which included 25,363 beekeepers from 33 European countries, as well as Algeria, Israel and Mexico, showed an average winter colony loss rate of 16.4% during 2017/2018, with considerable

variation among countries, ranging from 2.0% to 32.8% (Journal of Apicultural Research, Volume 58, 2019, Issue 4).

Average colony losses in Serbia during the 2017/2018 season were only 7.4%.

This was considerably lower than the losses recorded in Serbia during the previous year, as well as the average loss rate of 16.4% recorded across the 36 countries included in the survey that season.

It was also lower than the losses recorded in Croatia (13.7%) and Macedonia (13.2%) (Stevanović et al., 2019).

Varroa and Viruses as the Main Predictive Markers

The single most important factor associated with winter colony losses remains Varroa de-



*Visible signs of DWV usually become apparent only when a colony is heavily infested with Varroa mites
(Photo: scientificbeekeeping.co.uk/DWV.html)*

structor. However, it is now clear that the greatest damage is caused not merely by the presence of Varroa mites themselves, but by their interaction with Deformed Wing Virus (DWV).

The most widespread and damaging parasite shown to affect honey bee populations worldwide is the parasitic mite Varroa destructor (Rosenkranz et al., 2010).

Among the numerous factors considered responsible for winter honey bee colony losses, Varroa destructor ranks first, followed by viruses and the microsporidian Nosema ceranae.

Long-term research conducted at the Swiss Bee Research Centre in Bern (2012) showed that Deformed Wing Virus (DWV), Nosema ceranae, Varroa destructor and vitellogenin are reliable indicators that can be used to predict winter colony losses with a relatively high de-

gree of confidence. The individual contribution of each of these factors varied from year to year.

Varroa destructor is considered the most common cause of winter honey bee colony mortality in Europe.

Viral infections are also regarded as one of the major causes of colony losses, with Varroa again playing a crucial role as both a mechanical and biological vector of several viruses, thereby accelerating the spread of infection.

Although 19 different viruses associated with the Western honey bee, *Apis mellifera*, had been identified at the time—and more recent research has suggested as many as 23—researchers have linked only three viruses particularly closely with large-scale winter colony losses: Deformed Wing Virus (DWV), Acute

Bee Paralysis Virus (ABPV) and Israeli Acute Paralysis Virus (IAPV).

Taken together, Varroa destructor infestation and DWV infection represent the most reliable predictors of winter honey bee colony losses.

The aforementioned study showed that all colonies that had not been treated against Varroa—11 of the 29 colonies included in the experiment—had died by the end of December, while two of the 18 appropriately treated colonies died during February.

The colonies that died during winter (13 in total) had significantly higher Varroa infestation levels during summer, autumn and winter than the colonies that survived (16 in total).

This provides strong evidence that the level of Varroa infestation is a highly reliable indicator of subsequent overwintering success.

The Varroa population in colonies that eventually died increased over time, reaching a peak in October, after which it began to decline in proportion to the decreasing adult bee population within the colony.

When the Varroa population exceeds approximately 2,000–3,000 mites per colony during autumn, most bees entering the overwintering period become susceptible to DWV infection, which can ultimately result in colony collapse during winter. This occurs because the new brood produced during this period is insufficient to compensate for the loss of infected overwintering bees that die during winter (Martin, 2001).

Even when larvae affected by DWV and Varroa survive, the resulting adult bees may exhibit altered behaviour, impaired learning ability and reduced longevity (Iqbal and Mueller, 2007; Benaets et al., 2017; Nazzi and Pennacchio, 2018).

The Fat Body and the Quality of Winter Bees

The honey bee fat body is a key organ involved in immunity, nutrient storage and vitellogenin synthesis. Damage to this tissue during August and September can therefore have a major influence on the quality and longevity of

winter bees. Because of the close biological association between DWV and Varroa mites, the study found high levels of DWV in honey bee colonies during summer and early autumn. Following treatment of colonies against Varroa, DWV levels also declined dramatically.

This confirmed the previously established finding that this virus is transmitted relatively slowly horizontally—that is, from one bee to another—while vertical transmission from one generation to the next is unlikely, by itself, to result in high levels of infection in subsequent generations.

Colonies that died during winter were found to have higher DWV loads than colonies that survived.

The virus was also shown to replicate in various honey bee tissues, including the fat body, which plays a key role in numerous physiological processes, particularly immune function, nutrient metabolism and the production of the protein vitellogenin.

Vitellogenin is closely associated with honey bee immunity and longevity and is particularly important for the physiology and extended lifespan of winter bees.

Researchers therefore consider DWV infection to be a likely cause of the significantly lower vitellogenin levels observed in colonies that subsequently died during winter.

Nosema ceranae — A Commonly Detected Pathogen

Another pathogen associated with winter honey bee colony losses is the microsporidian *Nosema ceranae*, although, according to many researchers, the impact of this pathogen on honey bee health in Europe remains controversial.

The presence of *Nosema ceranae* is considered relatively common, even in the absence of clinical signs.

Recent studies indicate that this honey bee pathogen has not been responsible for large-scale colony losses in Europe, with the notable exception of Spain (Barroso-Arévalo et al., 2019).



Zoran Stanimirović PhD, testing for the presence of Nosema infection

The results of the Swiss study also support the conclusion that *N. ceranae* is not a major cause of widespread winter colony losses. Levels of infection with this pathogen were almost identical in colonies that died and those that successfully overwintered.

Likewise, no increase in *N. ceranae* infection levels was observed from summer into autumn, or even in December, when the colonies died.

Furthermore, *N. apis* was not detected in any of the samples, despite the fact that this species is better adapted to lower temperatures than *N. ceranae* and might therefore be expected to occur more frequently in the colder climatic regions of northern Europe.

Nutrition and Climatic Stress

Prolonged droughts and unusually warm autumn periods can reduce pollen quality and extend the reproductive period of *Varroa destructor*, thereby increasing viral pressure on the colony.

Subtle indicators of increased winter-loss risk

Subtle indicators of increased winter-loss risk include:

- * high *Varroa* infestation levels in late summer;
- * a rapid decline in colony strength following the main nectar flow;
- * a reduction in the area of healthy, high-quality brood; and
- * poor pollen intake during the period when winter bees are being reared.

Conclusion

Based on the four indicators (markers) described above, winter honey bee colony losses can be predicted with a relatively high degree of reliability.

Among these, *Varroa destructor* and DWV have been identified as the most important predictors of winter colony mortality.

Since winter bees are reared from approximately mid-July to mid-September, beekeepers are advised to assess Varroa infestation levels well before the end of summer. Early monitoring makes it possible to identify colonies at increased risk and take appropriate action while there is still sufficient time to protect the generation of bees that will have to survive the winter.

The most important assessment of a colony's overwintering risk should therefore not be made in November, but between late July and late September.

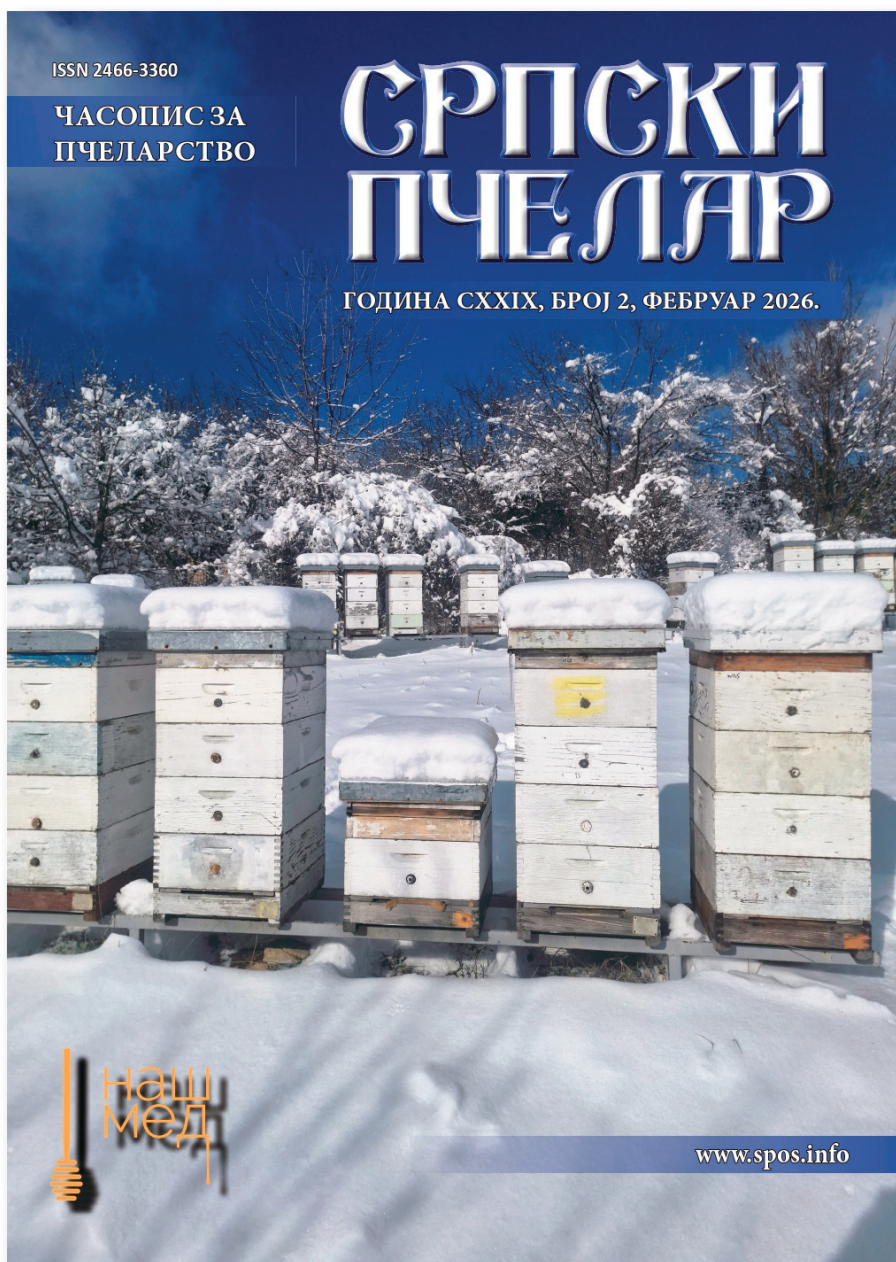
It is during this critical period that the quality and longevity of winter bees, Varroa infestation levels, viral load, and ultimately the colony's ability to survive until spring are largely determined.



Vlastimir Spasić

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INDIVIDUAL-LEVEL COMPARISONS OF HONEY BEE (Hymenoptera: Apoidea) HYGIENIC BEHAVIOR TOWARDS BROOD INFESTED WITH VARROA DESTRUCTOR (Parasitiformes: Varroidae) OR TROPILAEELAPS MERCEDESAAE (Mesostigmata: Laelapidae)

ABSTRACT

The mites *Varroa destructor* Anderson and Trueman and *Tropilaelaps mercedesae* Anderson and Morgan are both serious threats to the *Apis mellifera* beekeeping industry. A trait frequently used in selection programs for *V. destructor* resistance is hygienic behavior, the selective removal of diseased/damaged brood. Here, we measured the level of association of the expression of hygienic behavior against both mites in *A. mellifera*, by observing whether the same individual bees would carry out the opening and removal of brood infested by the two parasites. The groups of bees showing these behaviors on cells artificially infested by either parasite showed a large overlap, making it appear likely that the two traits are at least closely coupled. Therefore, breeding for *V. destructor* resistance based on hygienic behavior could prepare *A. mellifera* populations for dealing with *Tropilaelaps* sp. mites, and vice versa. Using the same bioassay, we also compared the hygienic behavior of *A. mellifera* towards *T. mercedesae* to that of the Asiatic honey bee, *Apis cerana*. *A. cerana* workers eliminated a greater proportion of infested cells, which may in part explain the resistance of this bee to

Tropilaelaps and the observation that *Tropilaelaps* reproduction on brood of this species is extremely rare.

1. INTRODUCTION

Parasitic mites and associated pathogens are among the most frequent causes of *Apis mellifera* (L.) colony losses in most parts of the world [1–4]. In Europe, North and Central America, and most of temperate Asia, *Varroa destructor* (Anderson and Trueman) is by far the mite species with the greatest economic impact. In those parts of Asia in which the introduced *A. mellifera* coexists with autochthonous giant honey bees (*Apis dorsata*, *Apis breviligula*, and/or *Apis laboriosa*), mites of the genus *Tropilaelaps* are often equally or even more damaging to the *A. mellifera* beekeeping industry [5,6].

The Asian giant honey bees are thought to be the original hosts of the genus *Tropilaelaps* [5].

Like *V. destructor*, all four *Tropilaelaps* species reproduce inside capped brood. Two species, *Tropilaelaps clareae* and *Tropilaelaps mercedesae*, are known to cause damage also to *A. mellifera* colonies, and at least *T. mercede-*



sae (Anderson and Morgan) is capable of transmitting Deformed Wing Virus as well as black queen cell virus [7,8]. Unlike *V. destructor*, adults of *T. mercedesae* also feed on early larval stages of *A. mellifera* [6]. It is not clear, however, whether mites of the genus *Tropilaelaps* are able to feed on adult bees, and they survive for only a few days if the host colony is broodless [5]. This is thought to be an important limiting factor of the spread of this genus of bee parasitic mites. However, the main condition for *T. mercedesae* survival, continuous brood rearing, is fulfilled in many parts of the distribution area of the western honey bee, and there are indications that the mite may also survive on rats [9]. Therefore, tropilaelapidsosis is seen as a serious risk to *A. mellifera* beekeeping worldwide [10].

The best-studied Asian honey bee, *Apis cerana* (Fab.), appears to be resistant to both mites of the genus *Tropilaelaps* and *V. destructor* [11–13]. In the case of *V. destructor*, this resistance is probably due to a combination of behaviors of the adult bees, including grooming, “entombing” of infested drone pupae, and removal of infested worker brood, with the in-

ability of the mite to reproduce on worker brood [11,14,15]. In the case of *T. mercedesae*, grooming behavior seems to play an important role [16]. Whether *A. cerana* removes *T. mercedesae*-infested brood has not yet been tested to our knowledge.

Beekeepers working with *A. mellifera* in regions where either *T. mercedesae* or *T. clareae* occur have to find ways to control these parasites, since untreated *Tropilaelaps* infestations regularly lead to colony collapse in this honey bee species. Although chemical treatments used to control *V. destructor* seem, for the most part, also effective against mites of the genus *Tropilaelaps* [17–19], the availability of resistant stocks of bees would represent a more sustainable solution. In the case of *V. destructor*, more than four decades of selective breeding, as well as natural selection of resistance traits in isolated populations, are finally beginning to show results [20–24]. Hygienic behavior, the detection and removal of damaged/diseased brood by worker bees, affects mite reproductive success [15] and is central to many resistance breeding programs. Khongphinitbunjong et al. [25] have studied *T. mercedesae* non-reproduc-

tion and infested brood removal by *A. mellifera* worker bees in Thailand, where bees of this species have been exposed to *T. mercedesae* for many years. They found removal rates of artificially infested brood of 53%, and high rates of non-reproduction on artificially and naturally infested *A. mellifera* brood. This seems to indicate that in *A. mellifera*, hygienic behavior could be a promising resistance trait not only with regard to varroosis, but also to tropilaelapidsis. An important question now is whether the removal of *T. mercedesae*- and *V. destructor*-infested brood really constitutes the same trait. Given that the type of injuries produced by feeding of *T. mercedesae* on larvae and pupae is distinct from that produced by *V. destructor* [6,26], it may be hypothesized that different genetic specializations are required on behalf of the hygienic workers in order to sense them across the cell capping. Also, the role of hygienic behavior in *A. cerana* resistance to *T. mercedesae* remains to be elucidated.

In the present study, we aimed to:

(1) Compare hygienic behavior of *A. mellifera* and *A. cerana* against *T. mercedesae*. For this, we first observed hygienic behavior separately in monospecific groups of bees. We then went on to observe mixed groups of bees on brood of either species. This was done with the objective of comparing their reaction to strictly identical removal stimuli.

(2) Verify whether hygienic behavior against *T. mercedesae* and *V. destructor* are co-expressed in *A. mellifera*, by determining whether the same individual worker bees perform these behaviors.

2. MATERIAL AND METHODS

2.1. Bees and Mites

The experiments were performed in an experimental apiary in Kathmandu, Nepal. Colonies of

A. mellifera used in the study included local hybrids as well as hives headed by *Apis mellifera carnica* queens imported from Germany. *A. cerana* was represented by colonies from

three Nepalese regions, the Terai, the Kathmandu Valley, and the mountains around this valley. Bees from the different stocks within both species were mixed in the experiments, equalizing the numbers of bees from each stock as far as possible. All mites were obtained from local *A. mellifera* colonies, and were collected from newly-capped brood (prepupal or white-eyed stages). Great care was taken not to injure the brood while collecting the mites, and also in order to avoid contamination through leaking body fluids. The species affiliation of *V. destructor* and *T. mercedesae* was verified morphometrically by applying published identification keys [12,27].

2.2. Bioassay for Observing Hygienic Behavior

The bioassay used is described in detail in [28] and is depicted in Figure 1. The day before



an experiment, combs of emerging brood were removed from the source colonies. An additional comb of freshly-capped brood was taken from a donor colony, unrelated to the bees used in the experiment, to be used for artificial infestation. Source colonies of these combs were treated with Amitraz, and were monitored for infestation by opening variable numbers of brood cells in order to avoid using brood with sizeable natural infestation. Between 20 and 35 mites were introduced into brood cells with a brush (one per cell) after carefully opening the cells with a razor blade. The caps were closed again, and their positions marked on transparency sheets. Between three and five cells were opened and closed without the introduction of a mite ("sham-manipulation"), and served to check whether brood removal was due to the presence of the mite or to manipulation of the cell. The comb was then placed inside a hive previously shown to present little brood hygiene, for repair of the manipulated cell caps. Groups of 1100–2100 newly-emerged (<24-h-old) worker bees were individually labelled with opalith plates of different shapes and orientation, using nail polish (Maybelline Express; L'Oréal, Paris, France) as glue. After 24 h, the manipulated comb was placed in a wire mesh cage with one glass side. The labelled bees were introduced together with a mated queen, and the cage was placed inside a strong colony of the same species as the labelled bees, with the glass pane facing an opening in the side wall of the hive. In cases where a mix of cerana and mellifera workers were used, the species of the fostering colony was alternated between repetitions of the experiment. Hygienic behavior was then observed under infrared illumination with the help of a suitable CCTV camera (PS/DX4-285GE; Kappa optronics, Gleichen, Germany). Observations were recorded continuously for 4–5 days (corresponding to days 2 to 5–6 post-infestation), and later viewed. From these videos, we determined the time of cell openings, as well as the identity of the bee initiating the cell opening, and of the first two bees continuing with this task. In order to limit the effort required to analyze the ~2400 h of video material, we only looked at those cells that had been emptied at the end of the experi-

ment. Only the event that ultimately led to the removal of the pupa was observed. Potential earlier attempts at uncapping and events of recapping could not be included. The intensity of these behaviors was judged as either "low" (a bee nibbling briefly at a cell cap and then leaving), "medium" (a bee nibbling repeatedly with brief interruptions or for a period of up to 30 s), or "high" (sustained nibbling for >30 s).

2.3. Comparisons

The above-described assay was performed 19 times, with a total of 35,910 tagged worker bees:

- (1) Five times with *A. cerana* bees on *A. cerana* brood (designated below as "cbees_cbrood").
- (2) Four times with *A. mellifera* bees on *A. mellifera* brood ("mbees_mbrood").
- (3) Eight times with equal numbers of bees from both species and alternating origins of brood ("xbees_xbrood").
- (4) One time with *A. cerana* bees on *A. mellifera* brood ("cbees_mbrood").

One round of the experiment could not be used, because bees started to indiscriminately remove all brood, possibly due to overheating. *V. destructor* and *T. mercedesae* mites were used together in the same experiments at a ratio of approximately 1:2. In four of the experiments with *A. cerana* bees on *A. cerana* brood, only *T. mercedesae* mites could be used because no *V. destructor* mites were available.

2.4. Data Analysis

All statistical analyses were conducted using IBM SPSS software (IBM, Armonk, NY, USA).

We first verified, for each of the bees/brood combinations cbees_cbrood, mbees_mbrood, and xbees_xbrood, whether hygienic behavior was specific to infested cells, i.e., whether the bioassay really allowed us to observe mite-related responses. We did this by comparing removal ratios using the χ^2 test. These tests were performed separately for *T. mercedesae*- and *V. destructor*-infested cells.

Next, we compared the removal dynamics of *Tropilaelaps*-infested brood among the three bee/brood combinations *cbees_cblood*, *mbees_mblood*, and *xbees_xblood*. This was done using Kaplan–Meier analysis with pairwise comparisons (Mantel–Cox test). In the case of the experiments with mixed worker bees (*xbees_xblood*), experiments with *A. mellifera* brood and with *A. cerana* brood were distinguished, in order to also visualize the role of the species of brood used.

We then went on to compare the efficiency and intensity of cell opening behavior towards *T. mercedesae* - and *V. destructor*-infested brood in *A. mellifera* using χ^2 tests on the frequency distributions. Only data from those experiments in which bees and brood were of one and the same species were used for this analysis, because we could not exclude interactions between the factors “species of brood” and “species of workers”. In a separate analysis, we compared the intensity of opening events on *T. mercedesae*-infested brood from the mixed-species experiments (*xbees_xblood*), contrasting cases in which workers had opened brood of their own or the other species.

Finally, we investigated whether a bee involved in the opening of cells infested by one of the two mite species had a greater-than-arbitrary probability of also being involved in the removal of the other. For this, we calculated the proportions of both *T. mercedesae*- and *V. destructor*-infested cell-openers in all bees in the experiments. We multiplied these two probabilities to obtain the likelihood of any bee to become an opener of both types of cells, under the hypothesis that the two traits occurred in-

dependently. This theoretical likelihood was then compared with the observed frequency of openers for both cell types using the χ^2 test. This analysis was performed only for *A. mellifera* bees, because too few cases of *A. cerana* opening *V. destructor*-infested cells were available, due to the lack of *V. destructor* mites during experiments with this bee species.

The significance level of the type 1 error for all tests was 0.05.

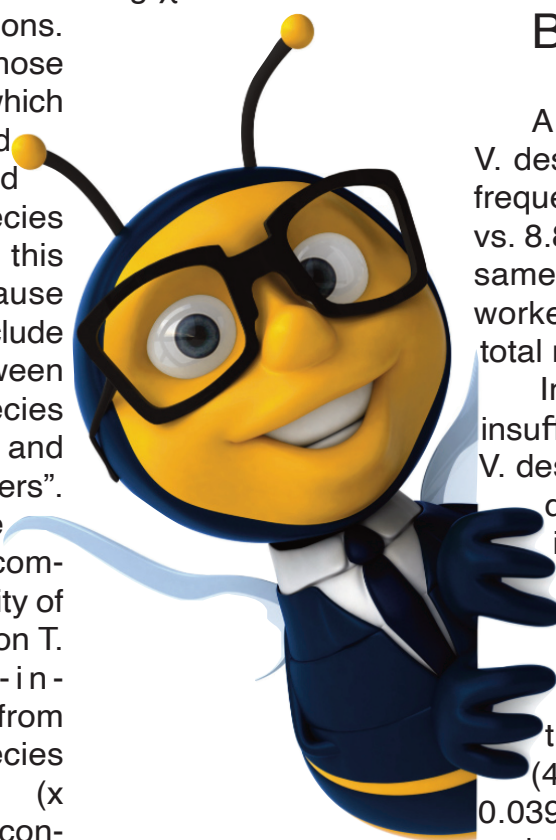
3. Results

3.1. Specificity of Opening Behavior to Infested Cells

A. mellifera workers opened and removed *V. destructor*-infested brood significantly more frequently than sham-manipulated brood (45.5 vs. 8.8%; total $n = 56$; $\chi^2 = 5.5$; $p = 0.017$). The same was true for mixed-species groups of worker bees (*xbees_xblood*; 43.6 vs. 18.2%; total $n = 61$; $\chi^2 = 8.4$; $p = 0.004$).

In the *cbees_cblood* experiments, insufficient numbers of cells were infested with *V. destructor* to carry out the test. Similar to *V. destructor*, the removal of *T. mercedesae*-infested larvae/pupae by *A. mellifera* workers was a specific response to infestation, rather than to the manipulation of the cells alone (37.6 vs. .8%; total $n = 121$; $\chi^2 = 4.1$; $p = 0.043$). This was also true for the *xbees_xblood* experiments (41.3 vs. 18.2%; total $n = 148$; $\chi^2 = 4.2$; $p = 0.039$). The frequency of removal of *T. mercedesae*-infested brood by *A. cerana* (experiments *cbees_cblood*), however, was not significantly different from that observed in sham-manipulated brood (37.6 vs. 20.0%; total $n = 129$; $\chi^2 = 2.3$; $p = 0.13$).

3.2. Comparison of Removal of *T. mercedesae*- and *V. destructor* - Infested Brood Cells by *A. mellifera* Here, “survival” means that brood was not opened and removed by the worker bees. The graph is based on a total of 745 artificially infested cells. The period of 0–24 h post-infestation is not displayed, because combs were placed inside a non-hygienic hive for repair of manipulated cell caps by the bees.



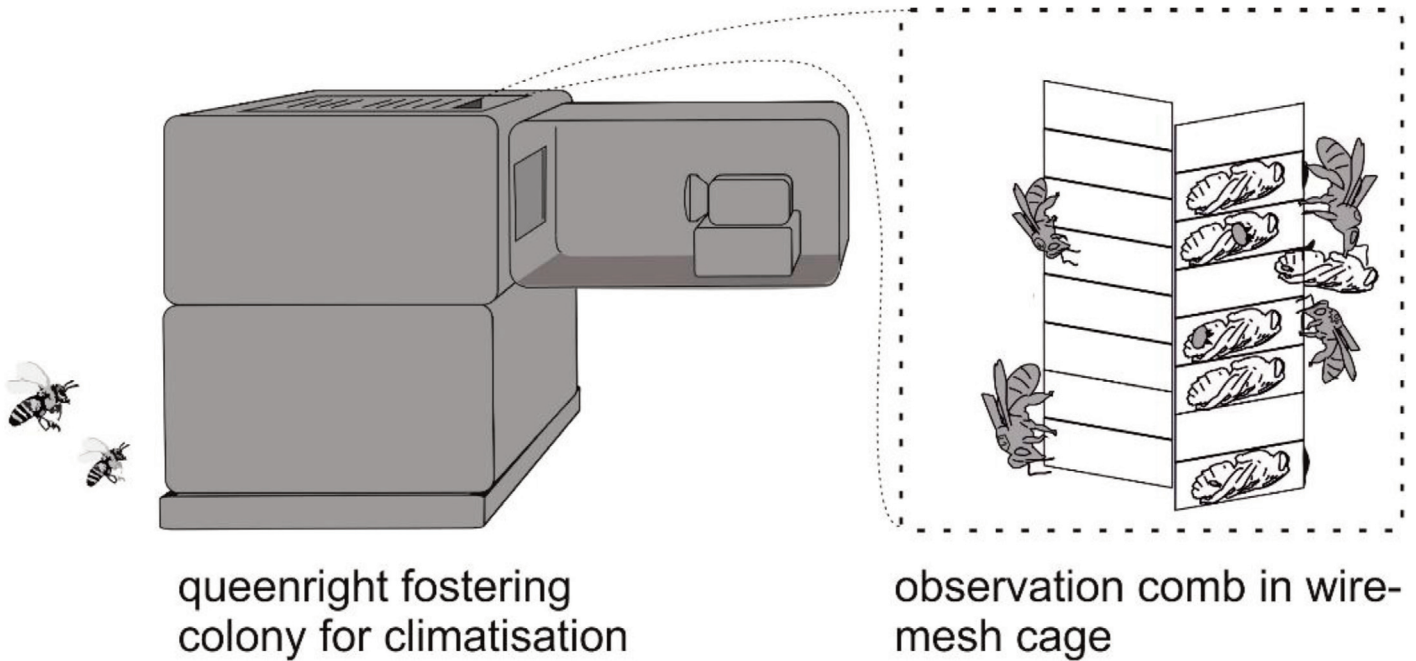


Figure 1.
Experimental setup for the observation of hygienic behavior

The time course of brood survival differed significantly between *T. mercedesae*- and *V. destructor*-infested cells ($\chi^2 = 11.3$; $df = 1$; $p = 0.001$).

The graphs are based on the following numbers of observations (= opening events; from left to right): 38; 49; 54; 22. In the case of cerana bees observed on cerana brood, no cells were infested with *V. destructor* mites. The intensity of opening behavior shown by *A. mellifera* bees was not different for *T. mercedesae*- and *V. destructor*-infested brood of this same species (left part of graph; $\chi^2 = 3.9$; $p = 0.14$). Different combinations of the factors “species of bees” and “species of brood” produced different intensities of opening behavior towards *Tropilaelaps*-infested brood (comparison of the four parts of the graph; $\chi^2 = 14.9$; $p = 0.02$); n.a.: not analyzed.

Figure 2 depicts the time course of infested brood removal of larvae/pupae for the two species of mites. Only *A. mellifera* bees observed on *A. mellifera* brood are included here. It shows that, although both types of infested brood are removed, *V. destructor*-infested cells are emptied slightly faster and to a greater proportion (log-rank test; $\chi^2 = 11.3$; $df = 1$; $p = 0.001$; total number of cells observed = 745). The intensity of removal behavior of *A. mellifera*

towards *T. mercedesae*- and *V. destructor*-infested brood was not different, however (initiation of uncapping: $\chi^2 = 3.9$; total $n = 49$; $p = 0.14$; continuation of uncapping/removal: $\chi^2 = 0.1$; total $n = 89$; $p = 0.98$; data for initiation of uncapping shown in Figure 3). The chance of any *A. mellifera* worker bee to perform com-

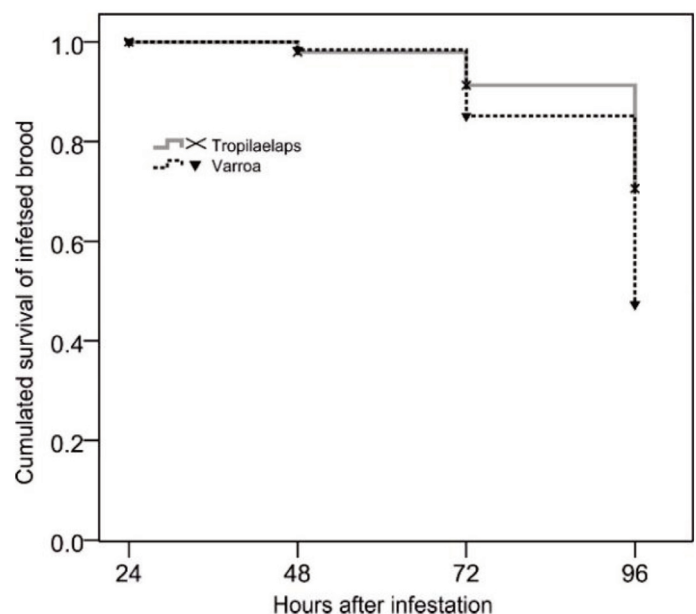


Figure 2.
Survival of *Tropilaelaps mercedesae* or *Varroa destructor*-infested brood by *Apis mellifera* worker bees

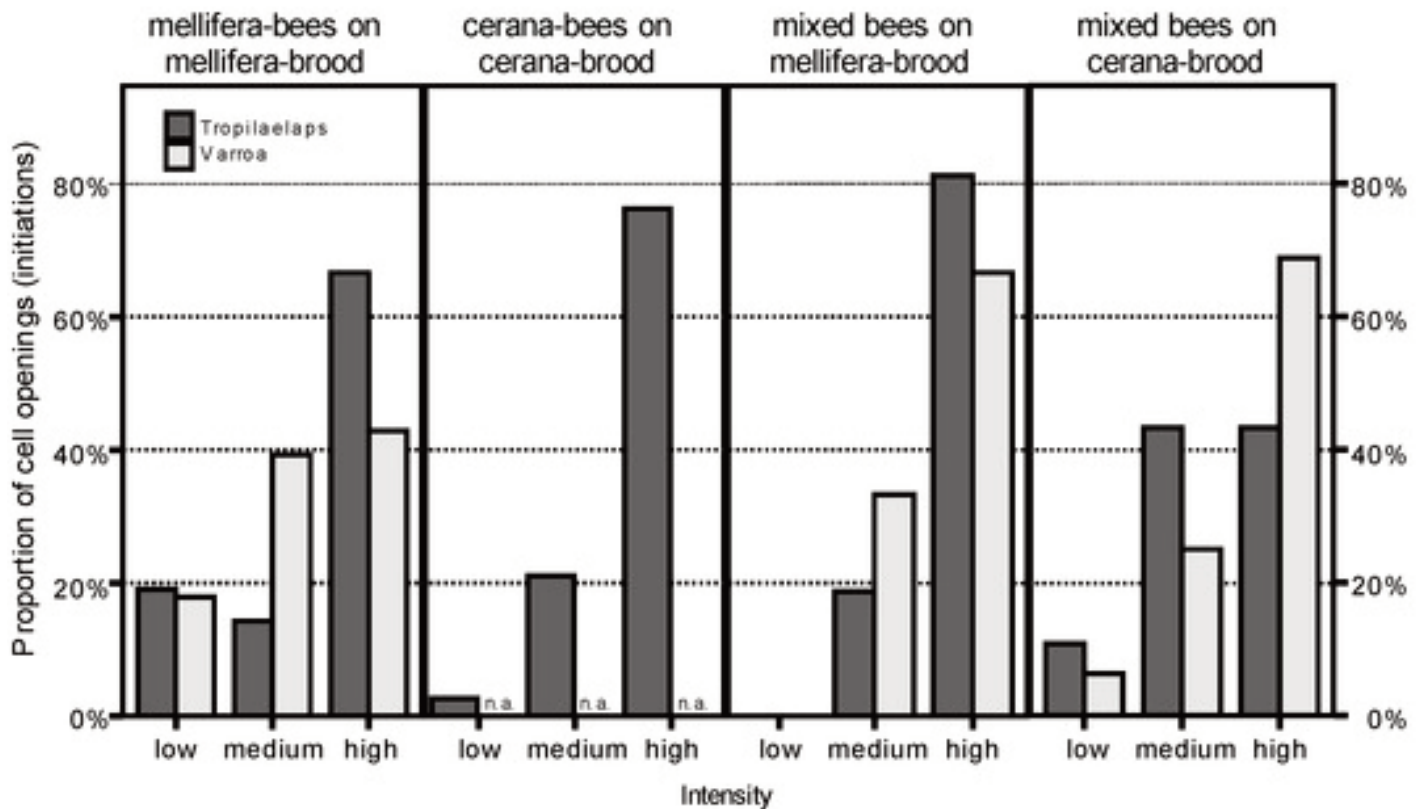


Figure 3.

Intensity of cell opening behavior towards *V. destructor*- and *T. mercedesae*-infested brood

ponents of hygienic behavior on both *T. mercedesae*- and *V. destructor*-infested brood was far greater than could be expected if the two traits had occurred independently of each other ($\chi^2 = 9.0$; $df = 1$; total $n = 1213$; $p = 0.003$).

3.3. Comparison of *Tropilaelaps* Removal by *A. mellifera*, *A. cerana*, and Mixed-Species Groups of Worker Bees Here, “survival” means that brood was not opened and removed by the worker bees. The graph is based on a total of 1228 artificially infested cells. The period of 0–24 h post-infestation is not displayed, because combs were placed inside a non-hygienic hive for repair of manipulated cell caps by the bees. The time course of brood survival differed significantly between treatments ($\chi^2 = 26.8$; $p < 0.001$).

Figure 4 compares the cumulated survival over time of *Tropilaelaps*-infested cells in the treatments mbees_mbrood, cbees_cbrood, and xbees_xbrood. It can be seen that *A. cerana* bees, when observed on their own brood and in the absence of *A. mellifera* workers, showed

the fastest removal of infested brood, and also removed the greatest proportion of it. This difference was significant for the comparisons with mbees_mbrood, as well as with xbees_cbrood ($\chi^2 = 20.7$ and 7.3 ; $p < 0.001$ and 0.007), while it was marginally non-significant in the case of xbees_mbrood ($\chi^2 = 3.2$; $p = 0.075$). The three sets of experiments in which *mellifera* workers were used, either alone or in combination with *A. cerana*, formed a homogeneous block ($\chi^2 = 2.3$ – 3.8 ; $p = 0.127$ – 0.053), indicating that the presence or absence of *A. cerana* workers did not influence hygienic behavior in these experiments. *A. cerana* and *A. mellifera* did not differ with regard to the median duration of uninterrupted cell opening events, although the range of durations was far wider in *A. cerana* (total $n = 167$; *A. cerana*: median = 104 s (7 to 5569); *A. mellifera*: median = 94 s (1 to 630)). The intensity of initiations of cell openings was generally quite similar in all treatments, but judged slightly lower in the case of xbees_cbrood than in the others

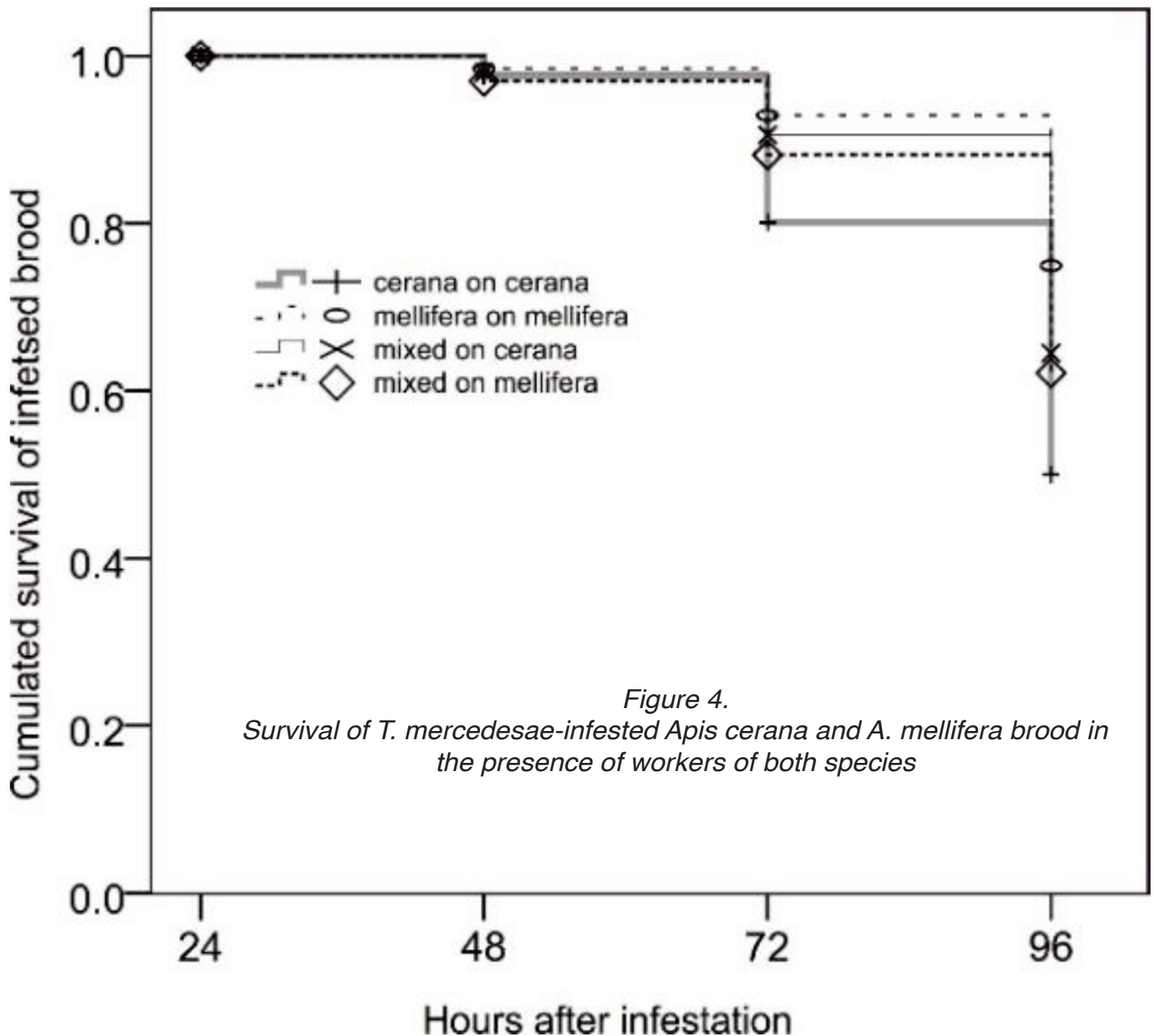


Figure 4.
*Survival of *T. mercedesae*-infested *Apis cerana* and *A. mellifera* brood in the presence of workers of both species*

($\chi^2 = 14.9$; $n = 169$; $p = 0.02$; Figure 3). In contrast, the intensity of continuations of cell opening and brood removal was lowest in treatment bees_mbrood ($\chi^2 = 13.2$; $n = 262$; $p = 0.04$; data not shown).

3.4. Hygienic Behavior in Mixed Groups of Worker Bees

Hygienic behavior in mixed groups of workers (experiments x brood_x bees) was al-

most exclusively performed by *A. mellifera* bees, despite the fact that equal numbers of individuals from both species were present, and regardless of the species affiliation of the brood (173 observed actions of initiation or continuation by *A. mellifera* vs. only 4 by *A. cerana*). In order to clarify whether the absence of hygienic behavior by *A. cerana* on brood of *A. mellifera* was due to factors linked to the brood, we performed an additional experiment in which an *A. cerana*-only group of worker bees was placed on infested mellifera brood. In this experiment, 16 infested pupae out of 25 were removed.

The fact that, in each of the xbees_xbrood experiments, one half of the bees was confronted with brood from another species did not lead to indiscriminate removal of brood. This is illustrated by the removal of sham-manipulated cells, which was not greater in the “xbees_xbrood” experiments than in the mbees_mbrood or cbees_cbrood experiments ($\chi^2 = 1.6$; $df = 2$; total $n = 86$; $p = 0.46$).

4. DISCUSSION

It has been reported several times that *T. mercedesae*, like *V. destructor*, can trigger hygienic behavior towards infested brood in *Apis mellifera* ([25,29], Ritter and Schneider-Ritter 1987; as cited in [15]). Our data confirm this finding. Khongphinitbunjong et al. [25] have also shown that *T. mercedesae* reproductive success in cells targeted by hygienic behavior is effectively reduced. However, while the earlier authors agree on the fact that cells singly infested by *T. mercedesae* females are removed faster than cells singly infested by *V. destructor*, our results point to the contrary. It may be speculated that differences between local strains of the two mite species are responsible. The two earlier studies were performed with locally-occurring mites in Thailand, while ours was performed in Nepal. According to Anderson et al. [30], at least two different haplotypes of *T. mercedesae* are present in Thailand, one of which is the “mainland Asia” type also found in both India and China, the two neighboring countries of Nepal. Samples of *V. destructor* from the Kathmandu region have been genotyped by Solignac et al. [31]. They presented an unusually high heterozygosity in microsatellite markers, and were classified as belonging to the rare “Japan” haplotype, based on the analysis of mtDNA. This haplotype is thought to show a lower virulence than the more common “Korean” haplotype [31]. Our bioassay involved the transfer of mites from early capped stages of donor brood to similar stages of recipient brood. As reproduction of both *V. destructor* and *T. mercedesae* started shortly after cell capping [26,32], the transfer might have interrupted reproduction, thereby influencing the onset of reproduction-related removal stimuli. From earlier

experiments, we know that most transferred mites nevertheless manage to produce viable offspring. As a possible retardation of reproduction would concern both mites alike, it can be assumed to be of minor importance for the interpretation of the present results.

For more than 30 years now, big efforts have been, and are being, made to increase the prevalence of hygienic behavior (and related traits such as *Varroa* sensitive hygiene/suppressed mite reproduction) in populations of *A. mellifera* in many parts of the world [28,33–39]. If it can be shown that hygienic behavior against *V. destructor* and against *T. mercedesae* are really the same trait, or at least closely coupled, then this would mean that breeding for *V. destructor* resistance through selection on hygiene traits is also a preventive strategy in view of a possible introduction of *T. mercedesae*. It has been reported that lines of bees partially resistant to the latter (from a commercial strain used in Thailand) and bees partially resistant to *V. destructor* (ARS (Agricultural Research Service) “Russian bees”) are characterized by similarly high levels of hygienic behavior, as measured by the freeze-killed brood assay, making it likely that the genetic bases of *V. destructor*- and *T. mercedesae*-specific hygiene are at least linked [40]. Even in strongly hygienic colonies, recognition and removal of damaged brood is a behavioral specialization only expressed by a small minority of the worker bees [28]. Our data now show that *V. destructor*- and *T. mercedesae*-infested cells are often opened by the same specialized individuals, meaning that the two traits were coupled or identical. This strongly suggests a close association of the two traits.

It is known that *A. cerana* workers remove *V. destructor*-infested worker brood with far greater efficiency than *A. mellifera* workers [11,41]. We show here that this is also true for *T. mercedesae*-infested brood. This may seem surprising given that brood removal is thought to be triggered by stimuli linked to the reproduction of mites on the brood [42], and that *T. mercedesae* only very rarely reproduces on *A. cerana* pupae [30]. An explanation could be that hygienic behavior is the reason for *Tropilaelaps* non-reproduction. Another explanation may lay



in the fact that mite infestations are often lethal to *A. cerana* pupae [43], and that dead pupae presumably emit stronger cues for removal. Viral replication, which has also been reported to increase the likelihood of mite detection inside brood [44], is triggered by feeding of the parasite on its host, and so may also be involved in *T. mercedesae* recognition by *A. cerana*. In every case, the stronger hygienic behavior of *A. cerana* towards *T. mercedesae* offers an additional explanation for the fact that *A. cerana* colonies, in general, appear to be more resistant to mites of the genus *Tropilaelaps* than colonies of the western honey bee [26]. The relative importance of hygienic behavior with regard to other resistance mechanisms, including other mechanisms suppressing mite reproduction, will be an important subject of future research.

Our experiments with mixed groups of *A. cerana* and *A. mellifera* workers were originally designed to be able to directly compare the ethology and temporal pattern of hygienic behavior of the two species side by side on the same brood comb, i.e., in response to strictly the same stimuli. This turned out not to be

possible, because hygienic behavior was almost completely suppressed in *A. cerana* workers by the presence of *A. mellifera* bees. This suppression was apparently not due to an inability of *A. cerana* workers to sense infestation in *A. mellifera* brood, because it equally occurred in mixed groups of bees on *A. cerana* brood, and because in the absence of *A. mellifera* workers, infested *A. mellifera* pupae were removed at a high proportion. This result is interesting with regard to the question of task affiliation between worker bees. In mixed colonies of *A. cerana* and *A. mellifera*, both species participate in almost equal numbers in queen retinue behavior [45], whereas *A. cerana* workers tend to specialize in foraging [46]. Communication via the dance language is possible across the species barrier [47].

One hypothesis to explain the suppression of brood hygiene in *A. cerana* is that *A. mellifera* workers possess a lower detection threshold for the signals emitted by infested pupae. Hygienic behavior is at least in part triggered by chemical cues that are perceived through the wax capping [48,49]. *A. cerana* pupae have been shown to react more strongly to mite infestations [43].

Therefore, it seems possible that a moderate olfactory sensitivity of *A. cerana* workers would be sufficient to reliably sense them, whereas *A. mellifera* may have had to evolve a greater sensitivity, because the stimuli emitted by infested pupae are weaker.

T. mercedesae has recently been detected on *A. mellifera* in several areas outside of the distribution range of *A. dorsata* [31]. Our study confirms that one of the central defense mechanisms of the western honey bee against brood diseases, hygienic behavior, is also expressed vis-à-vis this new parasitic mite.

Given that hygienic behavior against *V. destructor* and *T. mercedesae* appear to be closely coupled, breeding for behavioral resistance to varroosis likely can reduce the vulnerability of *A. mellifera* beekeeping also to *T. mercedesae*, and possibly also to other species of this genus.

This is of particular importance, given the increasing trend of *A. mellifera* colonies to produce brood throughout the winter, even in “temperate” regions, brought about by climate change. At the same time, greater efforts will be needed to elucidate the biology of the four *Tropilaelaps* species, where great knowledge gaps need to be filled e.g., with regard to reproduction biology, dispersal, and host–pathogen interactions.

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GENETICALLY ENGINEERED MICROBES POSE SIMULTANEOUS RISKS FOR HUMANS, BEES AND PLANTS

New backgrounder warns against fast-track releases

The European Commission is proposing a far-reaching deregulation of environmental releases of genetically engineered microorganisms if, in their natural forms, they are considered as safe. Testbiotech research shows that around 40 species of such microbes are found in honey bees and bee products. Many of them are also part of the microbioms of soil, plant, animals and humans.

If genetically engineered microorganisms that belong to these species are released into the environment, they may easily enter the food and feed chains and may end up in human diets, for example, via bee products. Against this background, lower standards in risk assessment cannot be justified.

Microbes obtained from genetic engineering processes can exhibit unique patterns of genetic changes and biological characteristics that are new to the environment, even without the insertion of additional genes. This is because new genetic engineering allows microbial genes and their activity to be changed, blocked,

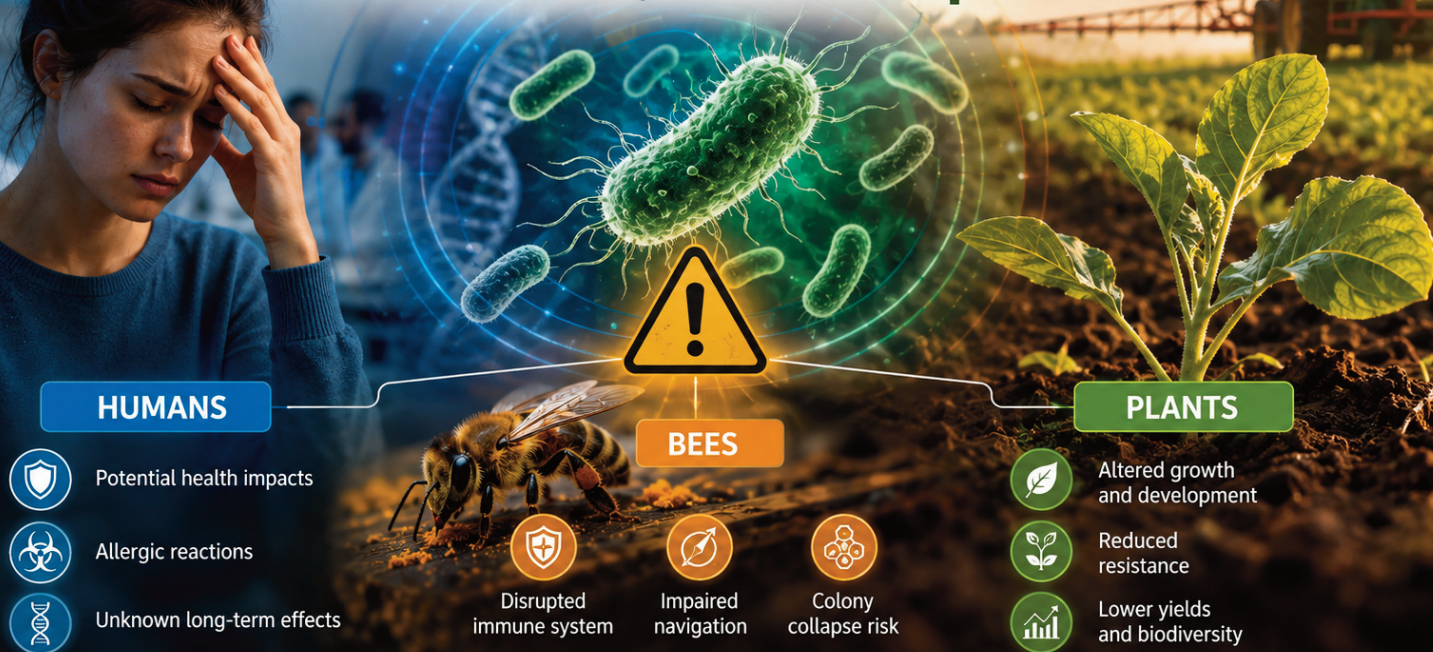
enhanced or suppressed to achieve results far beyond what was possible with previously used methods.

The risks, for example, include higher toxin production, higher invasiveness and negative effects on natural microbial communities necessary to maintain the health of plants, animals and humans.

The proposed future regulation would allow environmental releases of genetically engineered microbes, even if there were significant data gaps. Furthermore, any potential environmental spread would not be subject to control, and the authorisation would not be restricted to a maximum of ten years, as is currently the case, but would be unlimited after the first renewal.

The list of microorganisms considered environmentally safe currently comprises more than 120 species of bacteria, fungi, algae and viruses. The proposal made by the Commission assumes that genetically engineered organisms belonging to these species, can benefit

Genetically engineered microbes pose simultaneous risks for humans, bees and plants.



from fast-tracked market approval if no additional 'genes of concern' are inserted. However, as the report shows, the risks of genetically engineered microbes does not depend on the insertion of additional genes.

Further information:

<https://www.testbiotech.org/publikation/fast-track-releases-of-genetically-engineered-micro-organisms-gemos-risks-across-the-domains-of-life/>

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The Commission proposal:

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52025PC1031>



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SO, HOW ARE POLLINATOR CONSERVATION AND PROPOLIS HARVESTING INTERCONNECTED?

It is well known that the honey bee (*Apis mellifera* L.) is one of the most important pollinators of entomophilous agricultural crops and wild plants worldwide.

For this reason, numerous scientific, environmental, and governmental programmes have been implemented in many countries to conserve pollinator populations, particularly honey bees, and to maintain their abundance. At the same time, honey bee conservation has traditionally been considered primarily in the

context of combating diseases, parasites, pesticide exposure, and other adverse factors. Considerable efforts have also been devoted to expanding forage resources and preserving and restoring floral biodiversity. This article presents a different perspective by considering propolis collection as one of the factors that may contribute to honey bee conservation. This raises a logical question: how can propolis harvesting and the stimulation of honey bees to intensify the collection of plant resins positively

affect the viability and conservation of honey bee colonies?

In addressing this question, we draw attention to the findings of researchers including Marla Spivak, Michael Simone-Finstrom, Jay D. Evans, Renata S. Borba, Megan Shanahan, Kirk E. Anderson, Daniel C. Copeland, Heather Dalenberg, and others, whose studies have made a significant contribution to our understanding of the role of propolis and social immunity in honey bee colonies.

One of the most important areas of contemporary honey bee health research is the study of social immunity, which describes the collective defence mechanisms by which a honey bee colony protects itself against pathogens and parasites through the coordinated behaviour of individual bees. One of the key components of this defence is the collection of plant resins possessing pronounced antimicrobial properties. Under natural conditions, honey bees (*Apis mellifera*) nesting in tree cavities coat the inner surfaces of their nests with a continuous propolis envelope formed from a mixture of plant resins and beeswax.

In contrast, the smooth wooden hive bodies commonly used in modern beekeeping provide considerably less stimulus for resin collection, resulting in most managed honey bee colonies being maintained under conditions of propolis deficiency (Fig. 1).

It has been demonstrated that hives with roughened internal surfaces significantly stimulate propolis deposition, which is associated with a reduced prevalence of bacterial and viral infections, including *Melissococcus plutonius*, stabilization of immune gene expression, increased colony population size, and maintenance of colony homeostasis (Shanahan et al., 2024). The propolis envelope contributes to the maintenance of the microbial homeostasis of the nest by suppressing the growth of pathogenic microorganisms on hive surfaces, reducing the infiltration of undesirable air currents, and providing an additional mechanical barrier against pest intrusion. Experimental studies have further demonstrated that the presence of a propolis envelope is associated with reduced expression of the immune-related genes hymenoptaecin and AmEater, together with a lower bacterial load in honey bee colonies. Furthermore, age-dependent patterns of the expression of these genes have been identified in both larvae and adult honey bees. It has also been demonstrated that, in seven-day-old worker bees, a propolis-rich nest environment reduces the energetic costs associated with maintaining the immune system. These findings indicate that propolis not only directly suppresses the development of pathogens but also indirectly promotes colony health by reducing the physiological burden placed on the individual immune system of colony members.

Numerous studies have also demonstrated that propolis exhibits activity against the causative agent of American foulbrood, the ectoparasitic mite *Varroa destructor*, and the small hive beetle (*Aethina tumida*), further confirming its important role as a natural factor contributing to honey bee colony health (Simone-Finstrom et al., 2009; Simone-Finstrom & Spivak, 2010). In addition, the presence of a propolis envelope within the nest has been shown to enhance the antimicrobial activity of the larval food produced by nurse bees. In colonies with a propolis en-



Fig. 1. Propolis deposition by honey bees in the crevices of a wooden hive
Photo by the author

velope, larval food inhibited the growth of the American foulbrood pathogen (*Paenibacillus larvae*) significantly more effectively, both before the appearance of clinical signs of disease and after disease onset. These findings indicate enhanced natural protection of the brood and highlight the important role of propolis in the prevention of American foulbrood (Borba & Spivak, 2017).

Subsequent studies have confirmed that the beneficial effects of the propolis envelope extend beyond the suppression of pathogenic microorganisms to include the maintenance of the honey bee microbiome and physiological homeostasis. Colonies with a well-developed propolis envelope have been shown to harbour significantly higher populations of beneficial indigenous gut microbiota in young worker bees without substantial changes in the taxonomic composition of the microbial community.

At the same time, reduced expression of genes associated with immune responses and redox regulation, including pro-phenol oxidase and catalase, has been observed, together with increased expression of superoxide dismutase. These findings indicate that the propolis envelope contributes to the maintenance of redox homeostasis, reduces the physiological costs associated with immune defence, and creates favourable conditions for the establishment and persistence of beneficial microbiota.

In addition, colonies with a propolis envelope exhibited significantly greater abundances of beneficial bacteria associated with

the mouthparts of worker bees and a lower prevalence of pathogens, providing further evidence of the fundamental role of propolis in the social immunity of honey bee colonies (Dalenberg et al., 2020; Anderson et al., 2024).

Taken together, the collection of plant resins and the subsequent formation of a propolis envelope represent one of the key adaptive mechanisms of social immunity in honey bees. This mechanism enhances resistance to infectious diseases, supports colony homeostasis, and ultimately contributes to the maintenance of colony viability and productivity.

Most contemporary hives used in both commercial and hobbyist beekeeping are manufactured from smoothly finished wood or other materials with low surface roughness. Such hive constructions provide considerably less stimulation for the natural instinct of honey bees to collect plant resins and establish a propolis envelope within the nest.

As a result, propolis accumulates primarily in frame rests, grooves, crevices, and other confined areas of the hive, where it gradually loses its physicochemical properties over time.

Propolis contains both volatile and non-volatile bioactive constituents.

The volatile fraction consists predominantly of monoterpenes, sesquiterpenes, and essential oils, whereas the non-volatile fraction is dominated by phenolic acids, their esters, flavonoids, and, depending on the botanical origin of the resin source, diterpenoids. According to Saccardi et al. (2022), propolis samples maintained at room temperature (24 °C) lost, on average, $0.9 \pm 0.3\%$ of their mass within seven hours, indicating substantial evaporation of volatile constituents.

Furthermore, the physicochemical properties of propolis gradually change over time as a consequence of the evaporation of volatile compounds, oxidative processes, and the polymerization of specific resin constituents. As a result, propolis progressively hardens, loses its plasticity, and becomes less suitable for further manipulation and redistribution by honey bees within the nest.



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Fig. 2.

*Propolis deposition by honey bees on flexible propolis collectors installed in a 10-frame hive
Photo by the author*

One of the most promising approaches to maintaining a continuous supply of fresh propolis within the nest and promoting the formation of a well-developed propolis envelope is the use of modern flexible propolis collectors. The placement of flexible plastic grids with specially designed mesh geometry inside the hive stimulates honey bees to intensify the collection of plant resins and deposit fresh propolis on their surfaces. This not only ensures the continuous renewal of the propolis layer but also helps preserve its antimicrobial properties, promotes the development of an effective propolis envelope, and consequently enhances the health, resilience, and long-term survival of honey bee colonies (Fig. 2).

At the same time, commercial apiaries, where colony management is performed according to well-established and standardized operating protocols, generally do not use propolis collection devices. The primary reason is the high labour demand associated with clean-

ing the collectors, a process that is still traditionally performed manually. According to official statistics, Ukraine has more than 6,800 registered beekeeping enterprises maintaining 100 or more honey bee colonies. Even the use of only 100 propolis collectors on a single apiary requires considerable time and labour for subsequent cleaning. As a result, beekeepers frequently postpone this task for extended periods after the end of the beekeeping season. In commercial beekeeping operations, where profitability is the primary objective, the adoption of any technological practice is determined by its economic feasibility, operational efficiency, and labour and resource requirements.

As a result of many years of research and practical validation, we have developed a comprehensive solution to this challenge. A device for the mechanized removal of propolis from flexible propolis collectors was designed and successfully implemented. Its application enables beekeepers to install propolis collectors



Fig. 3.

Training beekeepers in the operation of the propolis collector cleaning device at the Department of Beekeeping, National University of Life and Environmental Sciences of Ukraine (NUBiP)

Photo by the author



in hives more frequently and, consequently, to remove and clean them repeatedly throughout the season rather than limiting propolis harvesting to a single collection. This approach continuously stimulates honey bees to reconstruct the propolis envelope within the nest, thereby contributing to the maintenance of the colony's natural sanitary environment.

The device was awarded a Bronze Medal in the Innovation category at the 49th Apimondia Congress, held in Denmark.

Following cooling of the propolis collectors for approximately one hour to a temperature of about +5 °C, the propolis can be readily separated using the devel-

Fig. 4.

Demonstration of the propolis collector cleaning device by the author at an exhibition in Cherkasy, Ukraine, February 2026

Photo by the author

oped device. The system is capable of processing more than 150 propolis collectors within 2 hours, reducing labour requirements many times over compared with conventional manual cleaning.

Thus, implementation of the proposed technology not only provides beekeepers with an additional source of income through the commercialization of propolis but also creates favourable conditions for improving honey bee colony health by stimulating the formation of a natural propolis envelope. Consequently, this approach has the potential to reduce the need for veterinary treatments while increasing the overall efficiency and sustainability of beekeeping operations. Moreover, by providing commercial beekeepers with an effective solution to the long-standing challenge of cleaning propolis collectors, we encourage the wider adoption of this technology. In many cases, beekeepers install propolis collectors primarily to generate additional revenue from propolis production rather than to improve colony health. Nevertheless, this practice inherently stimulates honey bees to reconstruct a new propolis envelope within the nest, thereby enhancing the sanitary status of the colony and strengthening its natural defence mechanisms. The device we developed has already been successfully implemented in a number of commercial apiaries in Ukraine, and its adoption continues to expand (Fig. 3; Fig. 4).

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14TH INTERNATIONAL MEETING OF YOUNG BEEKEEPERS (IMYB) NORTHERN IRELAND 2026

The 14th International Meeting of Young Beekeepers (IMYB) was hosted in Northern Ireland for the first time in July 2026, bringing together young beekeepers from around the world for five memorable days of learning, competition, friendship and cultural exchange.

This year's event welcomed 79 young beekeepers aged 12–18, supported by 14 young

facilitators aged 18–25, together with 55 accompanying adults' "mentors" and 4 judges from across Europe and beyond.

Countries:- Australia, Austria, Bulgaria, Canada, China, Czech Republic, England, Estonia, Finland, France, Germany, Greece, Israel, Lithuania, Malta, Northern Ireland (2 teams) Poland, Republic of Ireland, Romania, Scotland,



Slovakia, Slovenia, Turkey, United Arab Emirates and Ukraine, making IMYB 2026 a truly international celebration of youth beekeeping.

Based at the beautiful surroundings of Queen's University Belfast's Riddel Hall and the University's modern Elms Village accommodation, the event benefited from outstanding facilities throughout the week. The professionalism, friendliness and "can-do" approach of the

Queen's University staff contributed significantly to the success of the event, with every request met with enthusiasm and efficiency.

The memorable Opening Ceremony set the tone for an exciting programme that combined practical beekeeping, scientific knowledge, teamwork and cultural exchange. Throughout the week, participants demonstrated their beekeeping knowledge and practical skills while



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developing friendships that will last a lifetime. As is traditional at IMYB, young beekeepers competed both individually and in mixed international teams. Evening cultural presentations showcased each country's traditions, heritage and beekeeping practices, encouraging collaboration, mutual understanding and international friendship.

The Competition

The core element of each IMYB is the Competition

2 multiple choice papers each with 50 questions

Bee Biology & Behaviour. Then Hive Management, equipment, Disease and pests.

Practical Tests

Hive management At Minnowburn apiary
Microscopy - Identification of bee anatomy
Equipment identification, Frame building,
Hive Building, Honey Testing, Honey Labelling design, Candle rolling.

Awards given to – Individual participants, Top Country, Mixed teams

Awards for Cultural presentations- These were awarded on the bases of the young people participation, a bee element to the presentation as well as country traditions and finally involving the audience.

Judges included Enid Brown Scotland, Michael Gleeson Ireland, Ruth Homer England and Joyce Nisbet Scotland.

The practical beekeeping competition was held at the Belfast Beekeepers' Association apiary at the National Trust's Minnowburn site in South Belfast. Competitors worked with colonies of *Apis mellifera mellifera* under the assessment of four experienced international judges from Scotland, England and Ireland. The standard of practical skills and enthusiasm displayed by the young competitors reflected the bright future of beekeeping across the world.

One of the highlights of the week was the Fun Day, generously hosted by the Northern Ireland Assembly at the historic Stormont Estate, the seat of government in Northern Ireland. Alongside recreational activities, participants planted a legacy wildflower



meadow adjacent to the Native Irish Honey Bee conservation apiary, creating a lasting environmental contribution to the estate. The day concluded with a barbecue, providing participants, volunteers and organisers with the opportunity to relax and enjoy one another's company outside the competition environment.

The event concluded with a prestigious Closing Ceremony and Awards Presentation, generously hosted by Belfast City Council in the magnificent surroundings of Belfast City Hall. The venue was beautifully decorated with the flags of all participating nations and enhanced by stunning floral displays provided by Belfast Botanic Gardens.

Guests were welcomed by the stirring sound of a lone piper before enjoying traditional Irish dancing performed by a talented group of young dancers. Following refreshments, the ceremony celebrated the achievements of the competitors and recognised the outstanding performances demonstrated throughout the week.

Mentors' (Adults') Programme

Running alongside the youth competition was a comprehensive programme for mentors and accompanying adults, designed to encourage international cooperation, knowledge ex-

change and the development of youth beekeeping programmes.

Day One

The programme commenced with an open-top bus tour of Belfast, providing visitors with an introduction to the city's rich history, culture and diverse communities. This was followed by a guided visit to the Ulster Museum, where participants explored exhibits covering natural history, biodiversity and insect life.

Day Two

Mentors enjoyed a guided tour of Belfast Botanic Gardens, one of the city's most treasured Victorian attractions. The visit included exclusive access to areas not normally open to the public, including the famous Palm House and the beautifully restored Tropical Ravine, home to rare tropical plants more than a century old. Participants also explored the extensive gardens, rose collections and mature parkland.

The afternoon continued with a walking tour of the historic Queen's University Belfast campus, recognised in 2026 as one of the UK's highest-rated universities for student satisfaction. The day concluded with a visit to a traditional Belfast public house, allowing delegates



to experience Northern Ireland's renowned hospitality and continue informal discussions.

Day Three

Following a walk along the historic Prince of Wales Avenue through the Stormont Estate, mentors received a personalised tour of Parliament Buildings, home of the Northern Ireland Assembly. Delegates were welcomed by the Deputy Speaker and gained valuable insight into the operation of devolved government in Northern Ireland.

While the young participants were creating the IMYB legacy wildflower meadow, the adult delegates attended presentations and discussions focused on youth development in beekeeping.

Hosted in the long Gallery within Parliament Buildings, Representatives from each participating country outlined their national youth programmes, highlighting achievements, challenges, barriers to participation and future ambitions.

These presentations generated valuable discussion, enabling delegates to exchange ideas, share successful initiatives and establish new international partnerships.

Many considered this collaborative forum to be one of the most valuable aspects of IMYB 2026, with the International Centre for Young Beekeepers committing to continued cooper-

ation and the sharing of best practice long after the event. The day concluded with award winning, locally produced Glasyr Farm Ice Cream, enjoyed by participants and delegates in the beautiful surroundings of the Stormont Estate during the exceptionally warm summer weather.

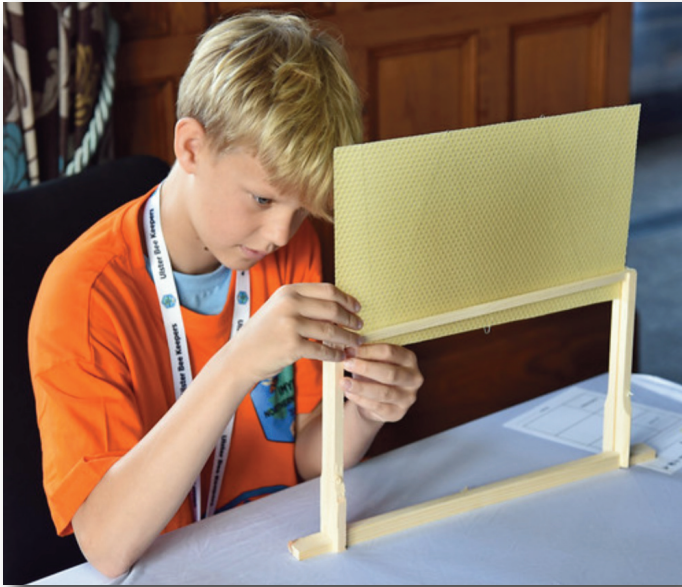
Competition Results

Individual Competition – Top Ten

1. Fabio Rieder	Austria
2. Joshiah Dick	Australia
3. Maria McLoone	Northern Ireland
4. Charles. Schulz	Canada
5. Adam Simonik	Czech Republic
6. Esme Huey	Northern Ireland
7. Bridget Matthews	Canada
8. Oskar Dahms	Germany
9. Gabriel Borz	Romania
10. Leah Buchanan	Scotland

Country Rankings – Top Ten

1. Austria
2. Canada
3. Czech Republic
4. England
5. Northern Ireland.2



Mixed International Teams

(names: based of County names in Northern Ireland)

1st Place- Ballymena – Facilitator Jan Krchnscek – Czech Republic

- Elija Raab Austria
- Giedre Armoskaite Lithuania
- Elean Meyer Australia
- Richard Bazso United Arab Emirates
- Rashed Almazrouel, United Arab Emirates
- Lameece Ewas Scotland

- 6. Germany
- 7. Australia
- 8. Northern Ireland.1
- 9. Netherlands
- 10. Estonia

2nd Place – Carrickfergus – Facilitator Lorenz Paul Hinterplattner – Austria

- Jan Kopacek Czech Republic
- Lucy Hawthorne Northern Ireland
- Xinyue Zhang China





- Yaniek Van Es Netherlands
- Denislav Monevm Bulgaria
- Joel Terheide Germany

3rd Place – Armagh - Larissa Kreuzhuber – Germany

- Sofia Berger – Israel
- Emilia Huey - Northern Ireland
- Kristjan Meserko - Slovenia
- Ivanna Sokolave - Ukraine
- Tobia Oriescik Slovakia

Cultural Presentation Awards

1st Place - Northern Ireland 1

- Esme Huey
- Emilia Huey
- Isabelle Vangrove

2nd Place - Slovenia

- Lukas Klabjan
- Leon Taj Lustek
- Kristjan Meserko

3rd place - Republic of Ireland

- Patrick Bourke
- Alex O'Sullivan
- Stan O'Sullivan

A Lasting Legacy

The success of IMYB 2026 was the result of an extraordinary team effort. The organising committee worked tirelessly over several years

to secure funding, coordinate with the International Centre for Young Beekeepers and collaborate with participating national committees to transform the vision of hosting IMYB in Northern Ireland into reality.

We are deeply grateful to our local, national and international supporters whose encouragement, generosity and commitment enabled the successful delivery of this prestigious event. Our sincere thanks also go to the many volunteers who gave so generously of their time and expertise throughout the week, and to our sponsors whose support allowed us to provide a truly world-class experience promoting education, international friendship and the future of beekeeping.



IMYB 2026 concluded with the Closing Ceremony at the beautiful Belfast City Hall.

Hosting this remarkable event has created a lasting legacy for beekeeping in Northern Ireland. It has strengthened our beekeeping community, inspired a new generation of young beekeepers and demonstrated what can be achieved when volunteers, organisations, sponsors and communities work together towards a shared vision.



The event celebrated excellence in beekeeping while creating lifelong friendships, strengthening international relationships and inspiring young people to become ambassadors for bees, biodiversity and environmental stewardship.

Building upon this success, the Ulster Beekeepers' Association is delighted to announce the establishment of a dedicated Young Beekeepers Section. This initiative will provide young people aged 12–18 with year-round opportunities for education, practical training and participation.

The Association has committed to:

- Establishing a dedicated Young Beekeepers Committee within the UBKA.
- Organising regular training events led by young people for young people.
- Creating dedicated youth sessions within the annual UBKA Conference.
- Introducing a dedicated Young Beekeepers section within the annual UBKA Honey Show.

- Continuing to encourage, support and develop the next generation of beekeepers throughout Northern Ireland.

The true success of IMYB 2026 will ultimately be measured not simply by competition results, but by the knowledge shared, the friendships formed and the enduring legacy that will continue to inspire young beekeepers for many years to come.







WOULD YOU LIKE TO RENT THE LARGEST BEE IN THE WORLD?

An impressive 3D model of the Carniolan honeybee (*Apis mellifera carnica*) in 1:100 scale.

A unique, interactive and educational exhibition that attracts visitors of all ages.



**IMPRESSIVE
3D MODEL**
170 cm long



**INTERACTIVE
& EDUCATIONAL**
Animations,
moving parts,
content in English



**PERFECT FOR
ALL AGES**
Museums, schools,
science centres,
fairs & events



**RENTAL IS
FREE OF CHARGE!**



The borrower only covers
the transportation costs.



For more information and bookings:
barbara.dimc@czs.si

KRANJICA  CARNIOLAN

FREE EXHIBITION RENTAL 3D GIANT CARNIOLAN HONEYBEE

The initiator and conceptual designer of the project was Boštjan Noč, president of the Slovenian Beekeepers' Association.

Bring the fascinating world of bees to your visitors with the 3D Giant Carniolan Honeybee – a unique, interactive exhibition featuring a 1:100 scale model of the Slovenian indigenous Carniolan honeybee (*Apis mellifera carnica*).

The 170 cm long 3D-printed model includes moving body parts and educational animations

in English, making it an attractive exhibit for museums, science centres, schools, fairs and public events. Originally created for showcased at Expo Dubai, where it attracted almost one million visitors.

Rental is **FREE OF CHARGE**.

The borrower only covers the transportation costs.

For more information and bookings:
Barbara Dimc

 barbara.dimc@czs.si

GMO APPROVAL: A HIDDEN THREAT TO BEEKEEPING

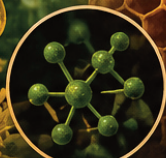
GMO changes in pollen and nectar –
a risk to bees, honey and our future.



**BEES
LIFE**



GMO POLLEN
(genetically modified)



GMO NECTAR
(genetically modified)



IMPACT ON BEES

- Disorientation
- Weakened immunity
- Reduced reproduction
- Colony losses



IMPACT ON HONEY

- GMO pollen in honey
- Loss of authenticity
- Market rejection
- Loss of consumer trust



IMPACT ON ECOSYSTEMS

- Gene flow to wild plants
- Biodiversity decline
- Unpredictable consequences



- To bees
- To hive products
- To ecosystems



ONCE GMO POLLEN ENTERS NATURE – THERE IS NO RECALL.

PROTECT BEES. PROTECT POLLINATION. PROTECT OUR FOOD.

SAY **NO TO GMO APPROVAL!**

EBA SUPPORTS THE EFFORTS OF SLOVAKIA

The European Beekeeping Association supports the efforts of Slovakia to lodge an action for annulment before the Court of Justice of the European Union against the Regulation (EU) 2026/1388 of the European Parliament and of the Council of 17 June 2026 on plants obtained by certain new genomic techniques and their products, and amending Regulation (EU) 2017/625 and supports the initiatives of national and international organizations joining this legal action.

The European Beekeeping Association calls upon the competent ministries and institutions of the EU Member States to support,

within their respective remits, the filing of the action for annulment against the aforementioned regulation. Unregulated modifications to plant genomes can unpredictably alter the composition of nectar and pollen, directly endangering the health and reproductive capacity of bee colonies. By disrupting natural food chains and introducing potential toxicity to insects, these changes pose a severe threat to ecological stability and overall biological security. Moreover, by abolishing mandatory GMO labeling, the regulation undermines market transparency and strips consumers of their fundamental freedom of choice.

JOINT APPEAL TO REJECT THE DEREGULATION OF GENETICALLY MODIFIED ORGANISMS (GMOS) OBTAINED THROUGH NEW GENOMIC TECHNIQUES (NGTS) AND TO SUBMIT AN APPEAL TO THE COURT OF JUSTICE OF THE EU (FILING AN ACTION FOR ANNULMENT)

14 JULY 2026

Dear Mr. Prime Minister, Dear Mr. Minister of Agriculture,

We, the undersigned representatives of civil society, farmers, food producers, environmentalists, breeders, scientists, and other public figures and organizations, hereby express our appreciation for your consistent rejection of the deregulation of GMOs obtained through new genomic techniques (NGTs). At the same time, we turn to you with an urgent joint appeal: we request that the Slovak Republic, in the interest of protecting the health of its citizens, biodiversity, transparency, and food sovereignty, persist in its dissenting position and file an action with the Court of Justice of the European Union (CJEU) against the approved regulation (action for annulment).

On 17 June 2026, without the adoption of any amendments, the European Parliament plenary voted to adopt a controversial regulation:

„Regulation (EU) 2026/1388 of the European Parliament and of the Council of 17 June 2026 on plants obtained by certain new genomic techniques and their products, and amending Regulation (EU) 2017/625“

The adoption of the regulation in this wording means exempting Category 1 NGT plants from the regulatory framework for GMOs, arbitrarily equating them to conventional crops. In practice, this means the end of mandatory labeling of new genomic technique products as GMOs, the absence of risk assessment, and the loss of traceability and the possibility of banning them.

In this context, we highlight the crucial points of the systemic failure of this new regulation:

- **Destruction of market transparency and loss of consumer sovereignty:** The regulation directly infringes upon the basic right of consumers to know what they consume. By abolishing the mandatory labeling of NGT crops as GMOs, the state resigns from consumer protection and deprives citizens of their freedom of choice. Citizens will no longer be able to distinguish between conventional food and food with modified DNA, which we consider an unacceptable intrusion into the personal integrity and ethical values of the population.
- **Threat to competition, elimination of organic farming, and GMO-free production:** The regulation will make it impossible for growers and processors in conventional and organic agriculture to guarantee the absence of genetically modified ingredients. The loss of transparency and traceability for Category 1 NGTs will lead to irreversible contamination of supply chains, which will undermine public trust and devalue investments in GMO-free production. At the same time, we draw attention to the critical risk of **monopolization of the European seed market**. A narrow group of multinational corporations is already patenting thousands of plants of this category, which, combined with deregulation, will create an unacceptable technological and economic dependence of Slovak farmers on external patent holders. Such a development directly **threatens the food security and sovereignty of the Slovak Republic**, as control over the basic link of the food chain – seed – is shifted into the hands of a narrow group of global actors.
- **Absence of scientific consensus and violation of the precautionary principle:** There is no relevant evidence on the safety of NGT plants or studies demonstrating their equivalence to conventionally bred crops. On the contrary, numerous peer-reviewed studies point to the occurrence of undesired DNA mutations, which can lead to the creation of new toxins or allergens. We view the exemption of these technologies from the mandatory risk assessment process as a direct violation of the precautionary principle enshrined in EU primary law.
- **Uncontrolled spread in the environment and threat to biodiversity:** NGT crops pose an unpredictable risk to natural ecosystems. Given their ability to cross freely with wild relatives and conventionally bred plants, there is a threat of uncontrolled transfer of modified genetic material into the wild. This process can lead to permanent genetic contamination of the native gene pool,

loss of biodiversity, and disruption of ecological balance, while correcting such changes is practically impossible. At the same time, we draw attention to the **high risk for non-target organisms, primarily bees** and other pollinators. Changes in the plant genome can lead to unpredictable changes in the composition of nectar and pollen, which directly threatens the health and reproductive capacity of bee colonies. The disruption of natural food chains and potential toxicity to insects can cause the destabilization of the entire ecological balance. Since bees are a key indicator of a healthy environment and a pillar of agricultural production, we consider any unregulated spread of NGT crops without prior impact assessment on these populations to be a gamble with the biological security of the state.

- **Ignoring the will of citizens:** Organizations and citizens in Slovakia have previously clearly stood against the deregulation of new GMOs obtained through NGTs in a successful petition and mass comments, which were accommodated by the Ministry of Agriculture and Rural Development of the Slovak Republic. Public opinion polls confirm this society-wide demand to maintain strict regulation and transparency, which unites people across the entire political spectrum.

Legal and strategic reasons for filing the petition:

1. **Conflict with CJEU case law:** The new regulation bypasses judgment C-528/16, which confirmed that new techniques of mutagenesis create GMOs and are subject to the relevant regulatory rules.
2. **Conflict with Art. 169 TFEU:** EU law guarantees a high level of consumer protection and their right to information. The approved document deliberately suppresses this right in favor of the commercial interests of a narrow group of multinational corporations.
3. **The precautionary principle (Art. 191 TFEU):** The new regulation ignores the absence of scientific consensus on the safety of NGTs and the risks to health and the environment.
4. **Collision with the Cartagena Protocol:** As a signatory to this international treaty on biosafety, the Slovak Republic cannot accept the abolition of individual risk assessments for GMOs.

The Slovak Republic has a unique opportunity to stand up for the protection of its citizens, the environment, and European standards. We possess independent legal analyses confirming that with a timely filing – for which Slovakia has a strict **two-month deadline** from the publication of the regulation (26 June 2026) – our state has an exceptionally high chance of success, thereby keeping its promise to preserve the current regulation for GMOs (Accommodating the petition: Keep new GMOs strictly regulated and labeled). The aforementioned legal analyses and legal precedents from abroad are attached as an annex to this letter.

We therefore request that you reject the deregulation of NGTs and file an **appeal to the Court of Justice of the EU against the new regulation** (filing an action for annulment) in coordination between the Office of the Government, the Ministry of Agriculture and Rural Development of the Slovak Republic, the Ministry of Justice of the Slovak Republic, and the Ministry of Foreign and European Affairs of the Slovak Republic. At the same time, we request a **personal meeting with the coordinators** of this appeal to present you with complete legal documentation and the stances of both the professional and general public.

We trust that you will stand up for the protection of Slovak consumers and their right to safe and transparent food. We expect you to prioritize the strategic interests of the Slovak Republic in the area of food safety, sovereignty, and biodiversity protection over narrow commercial interests.

Respectfully,

(in alphabetical order [in Sloval language]: individuals, followed by organizations)

1. **Ing. Dušan Bevilaqua PhD.** - landscape ecologist, emeritus director of the Slovak Paradise National Park, founding member of the Slovak Conservation Assembly (*Slovenský ochranársky snem*)
2. **Prof. RNDr. Agáta Fargašová, DrSc.** - leading Slovak toxicologist and environmental safety expert, Faculty of Natural Sciences, Comenius University
3. **Akad. mal. Viliam Hornáček** - initiator and co-author of the Declaration of Sovereignty of the Slovak Republic (by the Slovak National Council) and the project "Za Zdravé Slovensko" (For a Healthy Slovakia), founder of the Society of Slovak Intelligentsia
4. **Doc. Ing. Vladimír Choluj, PhD.** - economist, university lecturer at the Faculty of National Economy, University of Economics in Bratislava
5. **Ing. Gabriela Jamnická, PhD.** - researcher, Head of the Department of Plant Ecophysiology, Institute of Forest Ecology of the Slovak Academy of Sciences
6. **Ing. Miroslav Jureňa** - Minister of Agriculture and Rural Development of the Slovak Republic (2006-2007)
7. **RNDr. Róbert Kanka, PhD.** - ecologist, researcher and Head of the Department of Ecosystems Analysis, Institute of Landscape Ecology of the Slovak Academy of Sciences
8. **RNDr. Mgr. Dominik Roman Letz, PhD.** - vreseacher at the Plant Science and Biodiversity Center of the Slovak Academy of Sciences, Secretary of the Environmental Subcommittee of the Bishops' Conference of Slovakia
9. **Ing. Gabriela Matečná** - agronomist, Minister of Agriculture and Rural Development of the Slovak Republic (2016-2020)
10. **SEODr. Jonáš Maxim, PhD.** - Archbishop and Metropolitan of Prešov, Chairman of the Environmental Subcommittee of the Bishops' Conference of Slovakia
11. **Ing. Radovan Ostrovský, PhD.** - researcher at the Institute of Forest Ecology of the Slovak Academy of Sciences, p.r.i. (public research institution), Department of Phytopathology and Mycology Nitra
12. **Mgr. Zuzana Pavlikovská** - researcher in the field of Soil Remote Sensing, Institute of Landscape Ecology of the Slovak Academy of Sciences
13. **Ing. Katarína Šimončíčová** - conservationist
14. **Doc. Ing. Antónia Štensová, CSc.** - economist and university lecturer at the Department of Marketing and Commerce, Faculty of Management, Comenius University in Bratislava
15. **Ing. Darina Štyriaková, PhD.** - biotechnologist, Forbes Changemaker 2025
16. **Mgr. Marek Ťapák** - actor, screenwriter, director
17. **Ing. Ján Topercer, Csc.** - ecologist and zoologist
18. **Prof. Ing. Peter Urban, PhD.** - Professor of Ecology and Conservation Biology, expert on biodiversity protection, ecological monitoring and environmental impact assessment, Faculty of Natural Sciences, Matej Bel University
19. **Mgr. Katarína Hegedúšová Vantarová, PhD.** -researcher at the Department of Biodiversity and Ecology, Plant Science and Biodiversity Center of the Slovak Academy of Sciences, Editor-in-Chief of the journal Biologia
20. **Adamelle Trade, s.r.o.**
21. **Agro družstvo Staré [Agricultural Cooperative Staré]**
22. **AGRO-BIO s.r.o.**
23. **AgroCert, s.r.o.**
24. **Agroekofórum [Agroecoforum]**
25. **Agrokol, spol. s r.o.**
26. **ALASKA FOODS s.r.o.**
27. **Asociácia výrobcov organických hnojív [Association of Organic Fertilizer Manufacturers]**
28. **BIO nákupy s.r.o. - DOBRIO**
29. **BIO spotrebiteľ [BIO Consumer]**

30. **BIOMILA SK, s.r.o.**
31. **Bioraj s.r.o.**
32. **BIOTATRY**
33. **CASTONEL, s.r.o.**
34. **Cech výrobců medoviny [Guild of Mead Producers]**
35. **Centrum environmentálních aktivit [Center for Environmental Activities]**
36. **CEPTA - Centrum pre trvalo udržateľné alternatívy [CEPTA - Centre for Sustainable Alternatives]**
37. **Chateau Selešťany - Winery & Distillery**
38. **CREATEC MSC, s.r.o. - Dobré časy**
39. **DEFENSE s.r.o.**
40. **DRUŽIVA**
41. **Družstvo podieľníkov Včelince [Shareholders' Cooperative Včelince]**
42. **Eco-Farm Nitra**
43. **ekolive, s.r.o.**
44. **Ekotrend Slovakia - Zväz ekologického poľnohospodárstva [Ekotrend Slovakia - Union of Organic Agriculture]**
45. **Eladan, s.r.o.**
46. **FARMARIA s.r.o.**
47. **Feliz, s.r.o.**
48. **Foody, s.r.o.**
49. **framipek, s.r.o.**
50. **Gamota Jr., s.r.o.**
51. **Gard&Seed s.r.o.**
52. **Gemernákup, a.s.**
53. **Greenpeace Slovensko [Greenpeace Slovakia]**
54. **Madonan s.r.o.**
55. **MT - SHR**
56. **My sme les [We Are the Forest]**
57. **NELAPEK s.r.o.**
58. **NoStress.sk s.r.o.**
59. **PD Nová Ľubovňa [Agricultural Cooperative Nová Ľubovňa]**
60. **PD so sídlom v Smrečanoch [Agricultural Cooperative based in Smrečany]**
61. **Poľana - podielnicke družstvo Jarabina [Poľana - Cooperative Jarabina]**
62. **Poľnohospodárske družstvo Dolný Ohaj [Agricultural Cooperative Dolný Ohaj]**
63. **Poľnohospodárske družstvo Krakovany - Stráže [Agricultural Cooperative Krakovany - Stráže]**
64. **PPD Liptovská Teplička [Agricultural and Shareholder Cooperative Liptovská Teplička]**
65. **quid est VERITAS**
66. **SEMA HŠ, s.r.o.**
67. **SLOVAK NATURE s.r.o. - Sladký košík**
68. **Slovenská asociácia regeneratívneho poľnohospodárstva [Slovak Association of Regenerative Agriculture]**
69. **Slovenská botanická spoločnosť pri SAV [Slovak Botanical Society at the Slovak Academy of Science]**
70. **Slovenská poľovnícka komora [Slovak Chamber of Hunting]**
71. **Slovenská spoločnosť mlynárov [Slovak Society of Millers]**
72. **Slovensko bez GMO [Slovakia GMO-Free]**
73. **Slovenský zväz agropodnikateľov a rodinných fariem [Slovak Union of Agro-entrepreneurs and Family Farms]**
74. **Slovenský zväz pekárov, cukrárov a cestovinárov [Slovak Union of Bakers, Confectioners and Pasta Producers]**

75. **Slovenský zväz včelárov [Slovak Union of Beekeepers]**
76. **Slovenský zväz záhradkárov, republikový výbor [Slovak Union of Allotment and Leisure Gardeners, National Committee]**
77. **Slow Food Pressburg**
78. **Slow Food Tatry**
79. **SOSNA, o.z.**
80. **Spoločnosť slovenskej inteligencie KORENE [Society of Slovak Intelligentsia KORENE]**
81. **Škola permakultúry [School of Permaculture]**
82. **Včelárstvo Dušan Dedinský [Beekeeping Dušan Dedinský]**
83. **Vidiecka platforma [Rural Platform]**
84. **Vidiecky parlament na Slovensku [Rural Parliament in Slovakia]**
85. **Vlastenecký inštitút Petra Šveca [The Peter Švec Patriotic Institute]**
86. **Weis & Partners s.r.o.**
87. **ZPD - Zeleninársko potravinárske družstvo [ZPD - Vegetable and Food Cooperative]**
88. **Zväz výrobcov krmív, skladovateľov a obchodných spoločností [Association of Feed Manufacturers, Storekeepers and Trading Companies]**
89. **ŽIVEA s.r.o.**

International support of the appeal:

The following experts and organizations from abroad also join the submitted appeal:

(in alphabetical order [in Sloval language]: individuals, followed by organizations)

90. **Prof. Michael Antoniou, MA (Oxon) PhD.** - Professor of Molecular Genetics at the Department of Medical and Molecular Genetics, King's College London, United Kingdom
91. **Prof. Dr. Gunter Backes, PhD (Dr. agr.)** - University of Kassel – Faculty of Organic Agricultural Sciences, Section of Organic Plant Breeding/Agrobiodiversity, Germany
92. **Prof. Dr. Martina Bavec, PhD.** - organic agriculture expert, Institute of Organic Agriculture, Faculty of Agriculture and Life Sciences, University of Maribor, Slovenia
93. **Dr. Yves Bertheau, PhD, HDR** - Senior Researcher at INRAE, MNHN CNRS Sorbonne Université, France
94. **Dr. Elisabeth Bücking, Dipl. Biol.** (molecular biology, soil biology) - Emerita Researcher, Forest Research Institute Baden-Württemberg, Germany
95. **Dr. Winfried Bücking** - Emeritus Botanist, Baden-Württemberg Forest Research Station Freiburg, Germany
96. **Dr. Georg Buchholz** - lawyer, expert in environmental law and biosafety legislation, Germany
97. **Ing. Frans Carree** - Head of Breeding Department at De Bolster Organic Seeds, Netherlands
98. **Isabelle Denaro, MBA** - director and producer at Make Impact Films, Denmark
99. **Dr. Jérôme Enjalbert, HDR** - geneticist and agroecologist, Research Director at INRAE, Quantitative Genetics and Evolution Laboratory – Le Moulon Université Paris-Saclay, France
100. **Ole Faergeman, MD, DMSc.** - Emeritus Professor of Preventive Cardiology, Aarhus University Hospital, member of ENSER, Denmark
101. **Prof. Dr. Christine Frison, PhD.** - Professor of International Environmental Law specializing in agrobiodiversity governance, University of Liège, Belgium
102. **Dr. Eva Gelinsky** - agricultural researcher, scientific advisor to ProSpecieRara, member of the Federal Ethics Committee on Non-Human Biotechnology, Switzerland
103. **Dr. Isabelle Goldringer** - Senior Researcher in population genetics, INRAE (French National Research Institute for Agriculture, Food and Environment), France
104. **Prof. Pierre-Henri Gouyon, PhD, MPhil** - Emeritus Researcher, MNHN CNRS Sorbonne Université, France
105. **Martin Graf, MSc** - ETH Zurich Faculty of Agriculture alumnus, Minister of Justice of the Canton of Zurich (2011-2015), President of the Fintan Foundation

- 106.**Prof. Dr. Tina Heger** - ecologist specializing in biological invasions, Professor at the Technical University of Munich, School of Life Sciences, Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB), Leuphana University Lüneburg, Institute of Ecology, Germany
- 107.**Prof. Jack Heinemann, PhD, FHEA** - molecular biologist - University of Canterbury, New Zealand
- 108.**Dr. Angelika Hilbeck** - Emerita Lecturer with 30 years of experience in biosafety and environmental risk assessment of GMOs at the ETH Zurich institute, Switzerland
- 109.**Frédéric Jacquemart, PhD.** - medical biologist, Emeritus Researcher in immunology at the Pasteur Institute, President of GIET (Groupe International d'Etudes Transdisciplinaires), France
- 110.**Prof. Giuseppe Longo** - Emeritus Professor DR-CNRS (mathematics, epistemology, theoretical biology) - Centre Cavaillès, République des Savoirs, CNRS et Ecole Normale Supérieure, Paris, France
- 111.**Prof. Erik Millstone, MA, MPhil, PhD.** - Emeritus Professor at the Science Policy Research Unit, University of Sussex, United Kingdom
- 112.**Dr. Polyxeni Nicolopoulou-Stamati MD. PhD.** - Chair of ENSSER (European Network of Scientists for Social and Environmental Responsibility), Professor of Environmental Pathology at the Med. School University of Athens, Associate Member of the Club of Rome, Greece
- 113.**Prof. Dr. Maria Ewa Rembiałkowska** - organic agriculture expert, Warsaw University of Life Sciences, Association Forum of Organic Agriculture named after M. Górný, Poland
- 114.**Diederick Sprangers MSc.** - biochemist, Scientific Coordinator of ENSSER (European Network of Scientists for Social and Environmental Responsibility), Netherlands
- 115.**Assoc. Prof. Dr. Tina Ternjak** - researcher in the field of genetics and plant genetic resources, Department of Genetics, Faculty of Agriculture and Life Sciences, University of Maribor, Slovenia
- 116.**Prof. Dr. Katja Tielbörger** - Head of Plant Ecology Group, speaker of the Working Group for New Genomic Techniques of the Ecological Society of Germany, Austria and Switzerland (GFÖ), University of Tübingen, Germany
- 117.**Tjaša Trinko, P.b.s.** - researches Slovenian consumers' attitudes towards products obtained through new genomic techniques, Food Safety in Food Chain, Faculty of Agriculture and Life Sciences, University of Maribor, Slovenia
- 118.**Dr. Michel Volovitch, HDR-** Emeritus Professor, Department of Biology - Ecole Normale Supérieure de Paris & Lab Physical and Biological Chemistry UMR8228 CNRS, Department of Chemistry, Ecole Normale Supérieure, France
- 119.**Allison Wilson, PhD.** - Science Director, The Bioscience Resource Project, Ithaca NY, USA
- 120.**Ir. Ellen Winkel** - Editor-in-Chief of the journal Dynamisch Perspectief of the Biodynamic Association, Netherlands
- 121.**Assoc. Prof. Dr. Johann G. Zaller** - ecologist studying non-target effects of agrochemistry, Department of Ecosystem Management, Climate and Biodiversity, Institute of Zoology, Boku University, Austria

International, European and regional organizations:

- 122.**Biodynamic Federation Demeter International**, Global
- 123.**IFOAM (Organics International) Seeds Platform**, Global
- 124.**Navdanya International**, Global
- 125.**Agroecology Europe**, EU
- 126.**BeeLife - European Beekeeping Coordination**, EU
- 127.**Corporate Europe Observatory**, EU
- 128.**ENGA (European Non-GMO Industry Association)**, EU
- 129.**ENSSER - European Network of Scientists for Social and Environmental Responsibility**, EU
- 130.**European Consortium for Organic Plant Breeding (ECO-PB)**, EU
- 131.**European Coordination Via Campesina**, EU

- 132. Friends of the Earth Europe, EU
- 133. IFOAM Organics Europe, EU
- 134. SAFE Safe Food Advocacy Europe, EU
- 135. Balkan Biocert, Balkans
- 136. Balkan Federation of Apicultural Associations, Balkans
- 137. BALKANI Wildlife Society, Balkans
- 138. Balkan Seed Network Association, Balkans

Belgium:

- 139. FAB - BBF [Belgian Beekeeping Federation]
- 140. FUGEA [United Federation of Breeders' and Farmers' Groups]
- 141. Mouvement d'action paysanne [Peasant Action Movement]
- 142. Vitale Rassen [Vital Varieties]
- 143. Voedsel Anders [Food Otherwise]
- 144. Working Group on Natural Beekeeping

Bulgaria:

- 145. AGROLINK Association
- 146. ALOS - Association Center for Informal Education and Cultural Activities
- 147. Bulgarian Environmental Partnership Foundation
- 148. Foundation for Organic Agriculture BIOSELENA
- 149. Human Library Foundation
- 150. PoleRani Association
- 151. Public Environmental Center for Sustainable Development
- 152. Research Practices Association
- 153. Za Zemiata - Friends of the Earth Bulgaria

Croatia

- 154. Association Green Istria
- 155. Biovrt - u skladu s prirodom [Biogarden - in Harmony with Nature]
- 156. Community Seed Bank ZMAG
- 157. HSEP Hrvatski savez udruga ekoloških proizvođača [Croatian Association of Organic Producers]
- 158. PAN, Association for Environment and Nature Protection
- 159. Permacultura Dalmacija [Permaculture Dalmatia]
- 160. Zemljane staze - Earth Trek

Czechia

- 161. Demeter CS

Denmark:

- 162. Biodynamic Association
- 163. Det Fælles Bedste - The Common Good
- 164. Foreningen Frøsamlerne - [The Seed Savers Association]
- 165. Frie Bønder - Levende Land [Free Farmers - Living Land]
- 166. Grønt Marked - Farmer Market
- 167. Københavns Fødevarefællesskab [Copenhagen Food Co-op]
- 168. Landsforeningen Praktisk Økologi [National Association for Practical Ecology]
- 169. Landsorganisationen Grøn Hverdag [National Organization Green Everyday]
- 170. Miljøbevægelsen NOAH [Environmental Movement NOAH]
- 171. Permakultur Danmark [Permaculture Denmark]

172. Self-sustaining Cities

Estonia:

173. Estonian Permaculture Association

Finland:

174. Suomen Pemakultturiyhdistys [Finnish Permaculture Association]

France:

175. APSODA (Association pour la Suppression des OGM dans l'Alimentation): Association for the Elimination of GMOs in Food

176. Amis de la Terre Landes France [Friends of the Earth Landes France]

177. Association Graines De Troc

178. Association Kokopelli

179. Association Sciences Citoyennes [Citizen Science Association]

180. Association Vigilance OGM 46

181. Confédération paysanne [Peasant Confederation]

182. Désobéissance Fertile [Fertile Disobedience]

183. Fédération Nature & Progrès [Nature & Progress Federation]

184. Ferme biologique du Bec Hellouin [Bec Hellouin Organic Farm]

185. FNAB (Fédération nationale d'agriculture biologique) [National Federation of Organic Agriculture]

186. Foll'avoine [Foll'avoine Biodiversity Protection Association]

187. France Nature Environnement

188. GIET (Groupe International d'Études Transdisciplinaires) [International Group for Transdisciplinary Studies]

189. MODEF [Movement for the Defense of Family Farmers]

190. Mouvement de l'Agriculture BioDynamique [Biodynamic Agriculture Movement]

191. Mouvement des Faucheurs volontaires [Voluntary Reapers Movement]

192. Mouvement des Femmes Semencières [Women Seed Savers Movement]

193. POLLINIS

194. Réseau Semences Paysannes [Peasant Seeds Network]

195. SOL - Alternatives Agroécologiques et Solidaires [Agroecological and Solidarity Alternatives]

Greece:

196. AEGILOPS [Greek Network for Biodiversity and Ecology in Agriculture]

197. Medina (Mediterranean Institute for Nature and Anthropos)

198. PANDOIKO - Pan-Hellenic Network of Ecological Organisations

199. SITO Seeds

Netherlands:

200. BioNederland

201. Biowinkelvereniging [Organic Shop Association]

202. De Bolster Organic Seeds

203. Stichting Zaadgoed [Seed Fund Foundation]

204. Toekomstboeren [Future Farmers]

205. Vereniging voor Biodynamische Landbouw en Voeding [Association for Biodynamic Agriculture and Nutrition]

Ireland:

- 206.GM Free Ireland Network**
- 207.Irish Seed Savers Association**

Luxembourg:

- 208.Fondation Hëllef fir d'Natur' [Help for Nature Foundation]**
- 209.Vereenegung fir Biolandwirtschaft Lëtzebuerg a.s.b.l. - [Association for Organic Agriculture]**

Hungary:

- 210.Biokontroll Hungaria Nonprofit Kft.**
- 211.Kelet-Magyarországi Biokultúra Egyesület (East Hungarian Organic Association)**
- 212.Magyar Biokultúra Szövetség [Hungarian Bioculture Federation]**
- 213.Magyar Természetvédők [Friends of the Earth Hungary]**
- 214.Nyugat-Dunántúli Biokultúra Egyesület [West-Transdanubian Bioculture Association]**
- 215.OMKI - Hungarian Research Institute of Organic Agriculture**

Germany:

- 216.Action Alliance for GMO-Free Agriculture in Baden-Württemberg**
- 217.Alliance for a Region Free of Agrogenetic Engineering around Ulm**
- 218.Arbeitsgemeinschaft bäuerliche Landwirtschaft (AbL) e.V. - [Association of Family Farmers]**
- 219.Bioland**
- 220.BUND Naturschutz in Bayern [Friends of the Earth Bavaria]**
- 221.Bündnis für gentechnikfreie Landwirtschaft Niedersachsen [Alliance for GMO-Free Agriculture in Lower Saxony]**
- 222.Demeter Germany**
- 223.Dreschflegel e.V. [Dreschflegel Association]**
- 224.Dreschflegel GbR [Dreschflegel Partnership]**
- 225.Gen-ethisches Netzwer e.V. [Gen-ethical Network]**
- 226.IG Saatgut [Interests Association for GMO-Free Seed Work]**
- 227.Imkerverband Rheinland-Pfalz e.V. [Beekeeping Association of Rhineland-Palatinate]**
- 228.Immanuel Kant-Stiftung – Europas Erbe als Auftrag [Immanuel Kant Foundation – Europe's Heritage as a Mission]**
- 229.Interessengemeinschaft gegen Nachbaugebühren [Interests Association Against Farm-Saved Seed Fees]**
- 230.Katholische Landbewegung Freiburg [Catholic Rural Movement Freiburg]**
- 231.Lebende Samen e.V. [Living Seeds Germany]**
- 232.NaturFreunde Baden-Württemberg e. V. - [Friends of Nature Baden-Württemberg]**
- 233.Naturland**
- 234.Save our Seeds**
- 235.Verband des Katholischen Landvolks e.V. [Association of Catholic Rural People]**
- 236.Verband Lebensmittel ohne Gentechnik (VLOG) [Association of Food Without Genetic Engineering]**

Norway:

- 237.Biodynamisk Forening Norge [Biodynamic Association of Norway]**
- 238.Bondens market Norge [Farmers' Market Norway]**
- 239.Økologisk Norge [Organic Norway]**

Poland:

- 240.Association Forum of Organic Agriculture named after M. Górný**

- 241. **Ekoland - Association of Organic Food Producers, West-Pomeranian Branch**
- 242. **Foundation AgriNatura for Agricultural Biodiversity**
- 243. **Moc Korzeni [Power of Roots]**
- 244. **Polish Ecological Club in Gliwice**
- 245. **Polish Chamber of Organic Food**
- 246. **Spoleczny Instytut Ekologiczny [Power of Roots]**

Portugal:

- 247. **Asociácia Bolgan Studi e Salute - Bolgan Štúdie a Zdravie**
- 248. **Association Demeter Portugal**
- 249. **Living Seeds - Sementes Vivas SA**

Austria:

- 250. **ARCHE NOAH, Association for the Conservation and Development of Cultivated Plant Diversity**
- 251. **ARGE Gentechnik-frei (Arbeitsgemeinschaft für Gentechnik-frei erzeugte Lebensmittel) [Platform for GMO-Free Foodstuff]**
- 252. **Austrian Federal Chamber of Labour**
- 253. **Bio Austria - Organic Farmers Association**
- 254. **Global 2000**
- 255. **Naturschutzbund Österreich [Austrian League for Nature Conservation]**
- 256. **Verein Natur im Garten [Nature in the Garden Association]**

Romania:

- 257. **ARAD [Romanian Association for Sustainable Agriculture]**
- 258. **ROMAPIS-Federatia Asociatiilor Apicole din Romania [Federation of Beekeeping Associations of Romania]**

Slovenia:

- 259. **Association Ekoci - eco civil initiative of Slovenia**
- 260. **Ekosemena - Organic Seed Institute**
- 261. **Institute of Organic Agriculture**
- 262. **KGZS - Kmetijsko gozdarska zbornica Slovenije [Chamber of Agriculture and Forestry of Slovenia]**
- 263. **RGA d.o.o. - Research Genetics and Agrochemistry**
- 264. **Umanotera**
- 265. **Založba AJDA Vrzenec [AJDA Vrzenec Publishing]**
- 266. **Združenje Demeter Slovenje [Demeter Association Slovenia]**
- 267. **Zveza biodinamikov Slovenje [Association of Biodynamic Farmers of Slovenia]**

Spain:

- 268. **Ecologistas en Acción [Ecologists in Action]**
- 269. **Grain**
- 270. **Revista Soberania Alimentaria, Biodiversidad y Culturas [Food Sovereignty, Biodiversity and Cultures Magazine]**

Sweden:

- 271. **FOBO - Förbundet Organisk Biologisk Odling [Association for Organic Biological Cultivation]**

Italy:

- 272. **Associazione coltivare condividendo [Cultivate and Share Association]**

273. **Associazione Italiana Agricoltura Biologica** [Italian Association for Organic Agriculture]
 274. **Centro Internazionale Crocevia** [Crocevia International Center]
 275. **European Consumers APS**
 276. **FIRAB - Italian Foundation for Research in Organic and Biodynamic Agriculture**

Organizations from non-EU countries:

277. **Fondacija Alica** [Alica Foundation], Bosna and Hercegovina
 278. **SYNAPARCAM (Synergie Nationale des Paysans et Riverains du Cameroun)** [National Synergy of Peasants and Local Residents of Cameroon], Cameroon
 279. **EcoLocal Association**, Moldova
 280. **Beyond GM**, United Kingdom
 281. **Down to Earth Gloucestershire CIC**, United Kingdom
 282. **Garden Organic & The Heritage Seed Library**, United Kingdom
 283. **GM Freeze**, United Kingdom
 284. **GM Watch**, United Kingdom
 285. **Local Community Market Gardens CIC**, United Kingdom
 286. **South East Essex Organic Gardeners**, United Kingdom
 287. **Biorespect**, Switzerland
 288. **Bio Suisse**, Switzerland
 289. **Demeter Schweiz**, Switzerland
 290. **Die Bioladen-Genossenschaft [The Organic Food Shop Cooperative]**, Switzerland
 291. **Getreidezüchtung Peter Kunz [Cereal Breeding Peter Kunz]**, Switzerland
 292. **SAG - Swiss Alliance for a GMO-free Agriculture**, Switzerland
 293. **Sativa Rheinau AG**, Switzerland
 294. **Swissaid**, Switzerland
 295. **Uniterre**, Switzerland
 296. **Urban Agriculture Basel**, Switzerland
 297. **Verein für gentechnikfreie Lebensmittel [Association for GMO-Free Food]**, Switzerland
 298. **Verein Gen Au Rheinau [Gen-au Rheinau Association]**, Switzerland
 299. **ZÜRCHER TIERSCHUTZ [Zurich Animal Protection]**, Switzerland
 300. **Institute of Socio-Economic Regional Studies**, Ukraine

Enclosures:

1. Original and translation of the legal analysis "Legal grounds to Challenge NGTs deregulation" by the Artemisia company: 1x + 1x (provided with the 1st version of the appeal dated 30 April 2026)
2. Original and translation of the abridged version of the legal analysis "EU-verordnung über neue genetische Techniken (NGT): zur Verletzung des Vorsorgeprinzips" by Dr. Georg Buchholz: 1x + 1x (provided with the 1st version of the appeal dated 30 April 2026)
3. Original and translation of the legal analysis "EU-verordnung über neue genetische Techniken (NGT): zur Verletzung des Vorsorgeprinzips" by Dr. Georg Buchholz: 1x + 1x (provided with the 1st version of the appeal dated 30 April 2026)
4. Precedent - Judgment of the High Court in London in the case of Beyond GM and others v. Secretary of State for Environment, Food and Rural Affairs dated 4 June 2026: 1x (provided with the 2nd version of the appeal dated 17 June 2026)
5. Original and translation of the draft appeal to the European Court of Justice: 1x (provided with the 2nd version of the appeal dated 17 June 2026)
6. Original and translation of the draft brief summary of the grounds and arguments for filing the petition: 1x + 1x (provided with the 2nd version of the appeal dated 17 June 2026)

Scientific studies and analyses supporting the arguments of the appeal:

1. **KOLLER, F., 2025.** The Potential of NGTs to overcome constraints in plant breeding and their regulatory implications. *International Journal of Molecular Sciences*. 26(23), 11391. DOI: 10.3390/ijms262311391.
2. **KOLLER, F. et al., 2023.** The need for assessment of risks arising from interactions between NGT organisms from an EU perspective. *Environmental Sciences Europe*. 35, čl. č. 27. DOI: 10.1186/s12302-023-00734-3.
3. **KOLLER, F. a M. CIESLAK, 2023.** A perspective from the EU: unintended genetic changes in plants caused by NGT — their relevance for a comprehensive molecular characterisation and risk assessment. *Frontiers in Bioengineering and Biotechnology*. 11, 27. október. Sekcia: Biosafety and Biosecurity. DOI: 10.3389/fbioe.2023.1276226.
4. **CHU, P. a S. Z. AGAPITO-TENFEN, 2022.** Unintended genomic outcomes in current and next generation GM techniques: A systematic review. *Plants*. 11, 2997. PMID: 36365450.
5. **KAWALL, K. et al., 2020.** Broadening the GMO risk assessment in the EU for genome editing technologies in agriculture. *Environmental Sciences Europe*. 32, čl. č. 106. DOI: 10.1186/s12302-020-00361-2.
6. **GELINKSY, E. a A. HILBECK, 2018.** European Court of Justice ruling regarding new genetic engineering methods scientifically justified: a commentary on the biased reporting about the recent ruling. *Environmental Sciences Europe*. 30(1), s. 52. DOI: 10.1186/s12302-018-0182-9.
7. **ECKERSTORFER, M. F. et al., 2019.** An EU perspective on biosafety considerations for plants developed by genome editing and other new genetic modification techniques (nGMs). *Frontiers in Bioengineering and Biotechnology*. 7, s. 31. DOI: 10.3389/fbioe.2019.00031.
8. **KAWALL, K., 2019.** New possibilities on the horizon: Genome editing makes the whole genome accessible for changes. *Frontiers in Plant Science*. 10, s. 525. DOI: 10.3389/fpls.2019.00525.
9. **BANTELE, S. et al., 2025.** Repair of DNA double-strand breaks leaves heritable impairment to genome function. *Science*. 390(6773). DOI: 10.1126/science.adk6662.
10. **WINTER, Gerd, 2024.** The European Union's deregulation of plants obtained from new genomic techniques: a critique and an alternative option. *Environmental Sciences Europe*. 36(1), s. 47 [cit. 2026-06-15]. ISSN 2190-4715. DOI: 10.1186/s12302-024-00867-z.
11. **ANSES, 2024.** OPINION of the French Agency for Food, Environmental and Occupational Health & Safety on methods for assessing the health and environmental risks and socio-economic issues associated with plants obtained using certain new genomic techniques (NGTs). Maisons-Alfort: ANSES, 22. január 2024. Request No 2021-SA-0019 [cit. 2026-06-15]. Dostupné na: <https://www.anses.fr/fr/system/files/BIORISK2021SA0019EN.pdf>
12. **REICHENBECHER, Wolfram et al., 2024.** For a science-based regulation of plants from new genetic techniques [online]. Ed. Federal Agency for Nature Conservation (BfN). Bonn: BfN, február 2024. Policy Brief #02/2024 [cit. 2026-06-15]. DOI: 10.19217/pol241en. Dostupné na: https://www.bfn.de/sites/default/files/2024-02/24_02_07_BfN_policy_brief_NGT-7.pdf
13. **ECKERSTORFER, Michael a Andreas HEISSENBERGER, 2023.** New Genetic Engineering - possible unintended effects [online]. Wien: Kammer für Arbeiter und Angestellte für Wien. Informationen zur Umweltpolitik, Bd. 208. ISBN 978-3-7063-1007-9 [cit. 2026-06-15]. URN: urn:nbn:at:at-akw:g-6550206. Dostupné na: <https://emedien.arbeiterkammer.at/viewer/!toc/AC16982244/1/-/>
14. **GELINSKY, E., 2026.** New GMOs Market Report 2026: Which crops are present in different markets and in development pipelines? [online]. Brussels: European Non-GMO Industry Association (ENGA), semnar, The Non-GMO Project [cit. 2026-07-09]. Dostupné z: https://www.enga.org/fileadmin/user_upload/New_GMOs_market-report-2026.pdf

The expression of support is linked to the content of this appeal. Other signatories were not known to the individual participants at the time of signing. This appeal serves as a supplement to the previous appeals of 30 April 2026 and 17 June 2026 delivered to the Prime Minister of the Slovak

Republic, the Minister of Agriculture and Rural Development of the Slovak Republic, and for information to the Minister of Justice of the Slovak Republic, and the Minister of Foreign and European Affairs of the Slovak Republic.

Given the strategic importance of the issue at hand, in addition to being addressed to the Prime Minister of the Slovak Republic and the Minister of Agriculture and Rural Development of the Slovak Republic, this appeal is also submitted for information specifically to the President of the Slovak Republic, the Minister of Justice of the Slovak Republic, the Minister of Foreign and European Affairs of the Slovak Republic, and the Minister of the Environment of the Slovak Republic.





Co-funded by
the European Union



1st Annual Meeting

26–27 August 2026

Slovenian Beekeepers' Association — Brdo pri Lukovici, Slovenia

DAY 1 · 26 AUGUST

08:45

Registration

09:15

Greetings and Welcome from Authorities

09:30

Internal BEEPERT Meeting

11:00

Coffee Break

11:30

Internal BEEPERT Meeting

13:00

Lunch Break

14:00

ROUND TABLE

“Honey Bees, Nutrition and Beekeeping”

MODERATOR

Prof. Dr. Asli Özdemir Özkırım — Hacettepe University, Turkey

PANELISTS

Dr. Aygun Schiesser
Hacettepe University, Turkey

Dr. Alessandra Giacomelli
UNAAPI, Italy

Dr. Daniele Alberoni
University of Bologna, Italy

Prof. Dr. Ivana Tlak Gajger
University of Zagreb, Croatia

Prof. Priyadarshini Chakrabarti Basu —
Washington State University, USA

WITH THE PARTICIPATION OF

Prof. Robert Chlebo — Apimondia Europe

Prof. Soraia I. Falcao — Instituto Politécnico de Bragança

Prof. Dr. Michel Bocquet — Apimédia

Dr. Maja Smodis Skerl — Agricultural Institute
of Slovenia

19:00

Social Dinner



Co-funded by
the European Union



1st Annual Meeting

26–27 August 2026

Slovenian Beekeepers' Association — Brdo pri Lukovici, Slovenia

DAY 2 · 27 AUGUST

09:30

Registration

10:00

Project Presentation to Participants

Dr. Karen Power

10:30

Apitourism, Bee Products and One Health: ApiTURroute

Prof. Dr. Asli Özdemir Özkırım

11:00

Coffee Break

11:30

The Lifespan of Worker Bees: Bridging Biology and Colony Management

Prof. Janja Filipi

12:00

Round Table: Innovating the Beekeeping Sector

12:30

Lunch Break

13:30–16:00

Information Desk



Instituto Nacional de
Investigação Agrária e
Veterinária, I.P.



Business
Innovation
Council



Federação Nacional
dos Apicultores
de Portugal



Svecište u Zadru
Universitas Studiorum
Iadertina | 1996 | 2002 |



Unione Nazionale
Associazioni Apicoltori Italiani





SAVE THE DATE

European Beekeeping Event

27–29 August 2026

Lukovica, Slovenia



Funded by
the European Union

www.bthenet.eu

27th

Thursday

Afternoon sessions

14:00 - 15:00

Plenary Lecture on *tropilaelaps mite*

- **Speaker:** Dr. Fani Hatjina
- **Format:** Hybrid (Up to 200 participants)

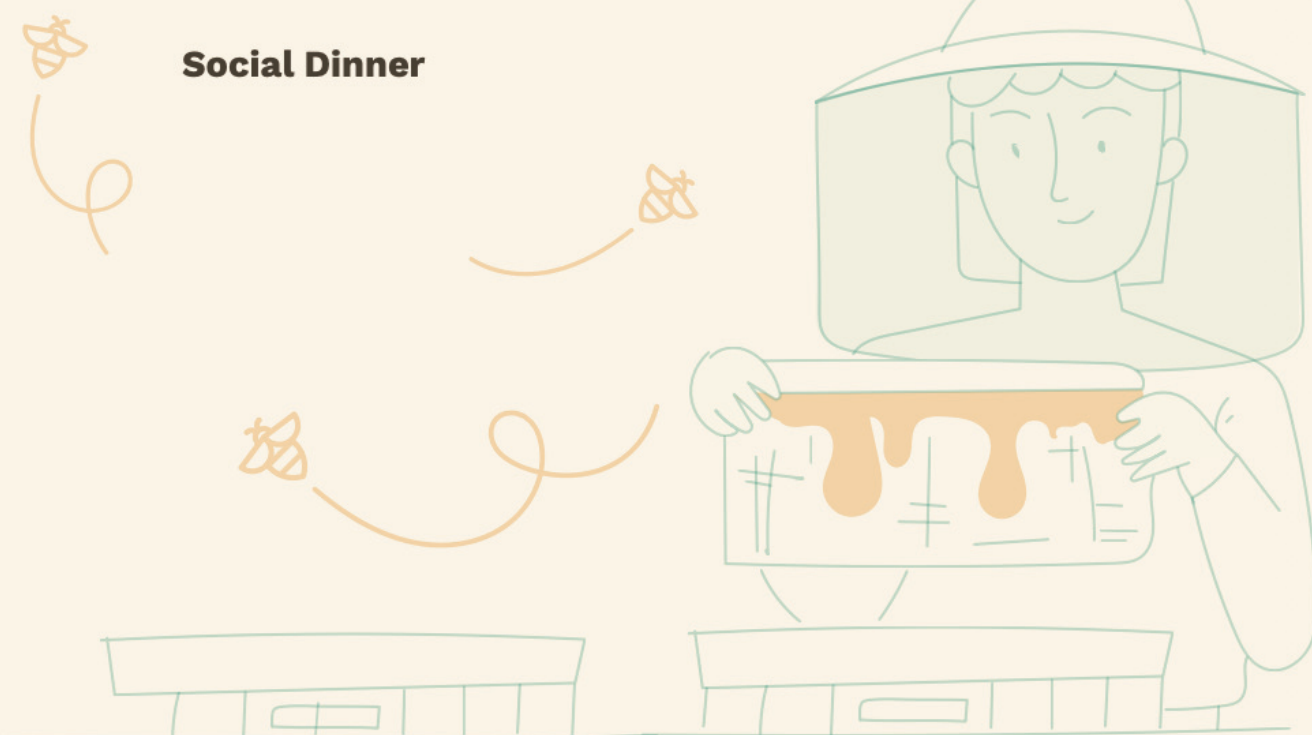
15:00 – 19:00

Practical Workshop for beekeepers: Best Practices for Varroa monitoring

- **Location:** Slovenian Beekeepers' Association apiary
- **Facilitators:** B-THENET Advisors + BEEXPERT experts
- **Format:** In-person/Practical (50 participants, registration required, free entry)

Evening

Social Dinner





Friday

Morning Sessions

09:00 – 11:00

Plenary Lecture on invasive vespids & stressors

- ◆ **Speakers:** Prof. Dirk de Graaf, Dr. Karen Power
- ◆ **Format:** Hybrid (Up to 200 participants)

11:00 – 13:00

Event for Beekeepers: Free Distribution & Presentation of the Best Beekeeping Practices Manual: 101 Practices Adapted to 13 EU Beekeeping Contexts

- ◆ **Speakers:** Apimondia
- ◆ **Format:** Hybrid (100+ participants)

14:00 – 18:00

Policy Dialogue for Sustainable EU Beekeeping

- ◆ **Policy Recommendations on:**
 - Generational renewal and gender balance
 - Invasive hornets roadmap
 - Fake honey
- ◆ **Speakers:** BeeLife
- ◆ **Format:** Hybrid (100+ participants)

14:00 – 19:00

On-field demonstration for beekeepers: Best Practices on how to manage *Vespa orientalis*

- ◆ **Location:** Field excursion to Koper
- ◆ **Facilitators:** B-THENET Advisors + BEEXPERT experts
- ◆ **Format:** In-person/Practical (50 participants, registration & small fee apply)

Afternoon Parallel Sessions

Evening

Social Dinner

29th

Saturday

All Day sessions

Technical tours and excursions to Slovenian apiaries and cooperatives

Format: In-person/Practical
(50 participants, registration & small fee apply)

Travel Information for Participants

Event Location:

Slovenian Beekeepers' Association,
Brdo pri Lukovici, Slovenia.

Suggested Accommodations:

Apartments Bukor | Hotel Krona | Ambient

Closest Airport:

Ljubljana Airport

Shuttle Transfer to Hotels:

A daily shuttle service will be offered on 26, 27, 29 and 30 August (approx. 40-minute transfer to hotels, around 30 km). The exact timetable will be confirmed.

Taxi Transfer:

Taxis are available at the airport
(approx. 40-minute transfer to hotels, around 30 km).



This event is co-organised by B-THENET,
the European Beekeeping Association and
the Slovenian Beekeepers Association

Follow us






 @BTHENETProject

Our Consortium



Istituto Zooprofilattico Sperimentale
del Lazio e della Toscana M. Aleandri



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HOHENHEIM



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the European Union

www.bthenet.eu

info@bthenet.eu

BEST HONEY PRODUCT 2026 COMPETITION



The Slovenian Beekeepers' Association is inviting beekeepers to participate in the "Best Honey Product 2026" competition, which will take place on Saturday, 19 September 2026, at the Beekeeping Centre Lesce as part of the Honey in Culinary Arts Day.

The competition is intended for innovative products made by combining honey with other foods, such as raspberries, cocoa, pistachios, hazelnuts, walnuts, spices and other ingredients.

The aim is to promote innovative honey-based products and showcase the wider range of products offered by Slovenian beekeepers.

Requirements for participation:

Two jars of each submitted product are required. The jars must be 212 ml and intended for Slovenian beekeeping products.

One jar must be properly labelled according to current legislation.

The second jar must be completely unlabelled for anonymous judging. Products must be delivered to the Beekeeping Centre Lesce by Friday, 11 September 2026, on working days between 8:00 and 14:00.

A completed application form must be submitted with the products. **There is no participation fee.** A three-member professional committee will select five finalists. Visitors at the event will then taste the five finalist products and vote for their favourite.

The product receiving the most votes will receive the title "Best Honey Product 2026", with the winner announced at 3:00 PM.

The organisers also state that registration of a food-processing activity is not required for the tasting at the event, because the products are not being sold.

The event is organised by the Slovenian Beekeepers' Association, the Public Advisory Service for Beekeeping, and the Beekeepers' Association of Gorenjska.



2nd Honey Sensory Analysis Education in Greece Level 1, 2026 in Athens

We are delighted to invite you to participate in the **2nd Honey Sensory Analysis Education Level 1**, which will take place in **Athens**.

This 2nd training event follows the highly successful 1st Honey Sensory Analysis Education - Level 1, which was held in **Thessaloniki** and brought together professionals from across Greece and abroad. The strong response and great interest from professionals encourage us to continue spreading specialized knowledge in honey sensory analysis, aiming to further support the development and promotion of Greek honey.

You can find **more information** about the 1st Education - Level 1 here:

<https://chefstories.gr/1st-honey-sensory-analysis-education-in-greece/>

Video: <https://www.youtube.com/watch?v=uM0AcbNy7mM>

Article by a graduate in the Gastronomos magazine: <https://shorturl.at/ebL4n>

The three-level educational scheme in honey sensory analysis has its roots in Bologna, Italy, where it was developed by **Bee Sources**.

Having trained hundreds of professionals internationally, Bee Sources collaborates with **Chef Stories**, and together they implement in Greece the first two levels of the Italian three-level educational program.

Location: Athens. The exact venue will be announced soon.

Dates & time: 18 - 22 November 2026, 09:00 - 17:00.

Description: Education – Level 1

This is an **intensive five-day training program** focused on developing skills in honey sensory analysis.

Participants will have the opportunity to:

- Train in honey sensory analysis techniques and in the recognition of aromas and flavors
- Become familiar with important varieties of Italian and Greek honey, their botanical origins, and their classifications
- Understand conditions such as crystallization, natural properties, and defects of honey
- Learn about European and Greek legislation regarding honey categories, quality, labeling, and marketing
- Learn how to describe and evaluate honey quality using methodological tools of sensory analysis
- Discover ways to use honey in cooking and pastry-making
- Explore current developments in research and laboratory methods for honey analysis

Note: The training activity will be conducted in English. If you require interpretation in Greek, please indicate this in your expression of interest.



Objective of the Honey Sensory Analysis Education

The objective of the Honey Sensory Analysis Education is to create a core group of trained sensory honey analysts who will be able to recognize, describe, evaluate, and communicate the origin, characteristics, and quality of honey in a unified and systematic way.

In the long term, the aim is for these trained honey sensory analysts, through their specialized knowledge, to contribute to the enhancement of the professional value chain and to the promotion of Greek honey as a high-quality product at both national and international levels.

The **2nd Honey Sensory Analysis Education Level 1** is addressed to:

- Beekeepers
- Honey producers and processors
- Honey trade networks and distributors
- Food & Beverage managers
- Nutritionists, dietitians, chefs, and pastry chefs
- Professionals from the agri-food and tourism sectors
- Retail store professionals
- Educators and researchers in relevant fields
- Journalists, food bloggers, and agri-food communication professionals

Next Education Levels: Level 2 & Level 3

Participants who successfully complete **Level 1** will have the opportunity to continue their training with **Level 2 Advanced**, which will take place in **Thessaloniki from 19–21 February 2027**, or in any other city where it may be organized by Bee Sources.

Subsequently, successful graduates will have the opportunity to take part in the **Level 3 Exams** in Bologna, Italy. Successful completion leads to inclusion in the **Italian National Register of Experts in the Sensory Analysis of Honey**.



Organization & Organizers

The Honey Sensory Analysis Education in Greece, Level 1 & Level 2, is organized by Chef Stories, a company providing consulting services as well as the design, organization, and implementation of specialized, high-quality gastronomy events.

Chef Stories is today a strategic partner of numerous businesses, organizations, and institutions in the sectors of food and beverages, retail, tourism, exhibitions, conferences, and development services, contributing its experience and expertise to the design and implementation of diverse projects that highlight and promote local gastronomy and Greek agri-food products.

Members of the Chef Stories team, Sylvia Koumedaki, Chef Stories Co-founder & Gastronomy Events Specialist, and Nana Zygoura, Business Development & Marketing Consultant and Trainer, have successfully completed the Honey Sensory Analysis Courses (Levels 1 & 2) in Italy. Drawing from their personal experience, they have adapted the training content to the specific context and needs of the Greek honey market.

For this 2nd Honey Sensory Analysis Education – Level 1, Chef Stories is collaborating with Bee Sources, an internationally recognized consulting and training company in the beekeeping sector. Since 2005, Bee Sources has specialized in the development and dissemination of honey sensory analysis techniques.

Bee Sources systematically trains professionals who form part of the Italian National Register of Experts in the Sensory Analysis of Honey (<https://www.albomiele.it/>), a body of experienced analysts established in 1988 and officially recognized by the Italian Ministry of Agriculture since 1999.

Participation Fee - Level 1

The participation fee for the 2nd Honey Sensory Analysis Education – Level 1 is €900, payable in two installments.

Deposit: 500 €, until 25/08/2026

Final Payment: 400 €, until 20/09/2026.

Bank Account Details:

Piraeus Bank

IBAN: GR33 0171 5590 0065 5916 4159 697 Account Number: 655916 4159 697

Account Holder: CHEF STORIES L.P. SWIFT/BIC: PIRBGRAA

The participation fee includes:

Training materials and notes, honey samples for tasting and analysis, a parallel activity, welcome lunch

Not included:

Transportation to and from **Athens** and accommodation. **BEES, NO LIFE · EBA MAGAZINE**
Issue 26, August 2026 · www.ebaeurope.eu



ΕΚΠΑΙΔΕΥΣΗ ΣΤΗΝ
ΟΡΓΑΝΟΛΗΠΤΙΚΗ
ΑΝΑΛΥΣΗ ΜΕΛΙΟΥ

HONEY SENSORY ANALYSIS EDUCATION

Participation Process & Expression of Interest Form

In order to ensure the smooth conduct of the training program, the number of participants is **strictly limited**.

To secure your place:

1. Complete the expression of interest form at the following link:
<https://forms.gle/3cxicDHsn8H3cTYLA>
2. After submitting the deposit, please send the payment receipt to the email:
events@chefstories.gr
3. You will then receive the detailed program, additional instructions, and the payment receipt.

Participation registrations are managed by **Tania Georgiadou**

T. +30 2310471628

M. +30 6942980958

The Honey Sensory Analysis Education is an investment in personal and professional development and a step forward in promoting Greek honey as a product of high quality.

We look forward to welcoming you!

Kind Regards,



Sylvia – Ioanna Koumedaki & Nana Zygoura



INSTRUCTOR's CVs

Gian Luigi Marcazzan

Gian Luigi Marcazzan is a researcher and technical manager for honey quality control by chemical and sensory analysis at the Council for Agricultural Research and Economics (CREA) in Bologna, Italy for 26 years. He is the leader of the Honey Sensory group within the International Honey Commission, the leading organization to develop methods for honey quality evaluation. He is the President of the Italian Register of Experts in the Sensory Analysis of Honey with more than 25 years of experience as a teacher and professional honey taster. From 2008, Gian Luigi works as a panel leader for the international honey competition BioMiel. Gian Luigi studies the composition of royal jelly and propolis to open up the knowledge on the composition in order to characterize and control the quality. He is also a beekeeper and breeds bees for the production of swarms and honey.

Raffaele Dall'Olio

Raffaele Dall'Olio is a beekeeper and animal biologist with a master's degree in honeybee pathogens diagnostic, skilled in artificial insemination of honeybee queens. He has more than 10 years of experience in honeybee research and teaching focusing on genetic conservation of honeybee breeds, detection of pathogens and viruses, improving the quality of beekeeping products. He's a member of the international research networks COLOSS (on Colony Losses) and RNSBB (about Sustainable Bee Breeding). Raffaele has commercial experience with 150 hives in Tuscany, Italy and queen-rearing experience and manuka honey in New Zealand. As an internationally sought out speaker including Apimondia and the European Conference of Apidology, Raffaele has more than 10 years' experience as a teacher and professional honey taster and as a panel leader for the Italian National Register of Professional Honey Taster and member of official Panel Test at CRA-API lab since 2005 and in several Honey Contests. In 2015, he found "AsSenso", sensory analyses as an R&D tool for businesses. Raffaele also has written for national beekeeping magazines in Italy such as L'apicoltoreitaliano, Lapis and APOidea.

Mary Nikolaou

Mary Nikolaou was born and raised in Athens. After completing her studies as an Agronomist Technologist, she trained for a year at the Institute of Agricultural Sciences and Aristotle University of Thessaloniki in beekeeping and professional apiculture, establishing her first hives. Since 2012, she has been a beekeeper and honey producer, fully committed to quality and knowledge. Driven by her interest in understanding honey, she pursued further specialization in honey sensory analysis in Italy for two years. In 2023, she passed the exam at CREA, the Italian Ministry of Agriculture research center, earning the title of Expert in Honey Sensory Analysis, held by only 300 people worldwide. She is the first Greek member of the Italian National Register of Experts in Honey Sensory Analysis. Mary views honey as not merely food, but as a carrier of knowledge, experience, and culture. She is also a certified olive oil taster and collaborates with the Olive Oil Sensory Analysis Lab at the University of Peloponnese. In this first Greek training, she will teach Greek honey varieties alongside Italian experts, presenting the rich botanical and sensory profile of local honeys.



ΕΚΠΑΙΔΕΥΣΗ ΣΤΗΝ
ΟΡΓΑΝΟΛΗΠΤΙΚΗ
ΑΝΑΛΥΣΗ ΜΕΛΙΟΥ

HONEY SENSORY ANALYSIS EDUCATION

Nana Zygoura

Nana Zygoura is a Business Development and Marketing Consultant & Trainer. With studies in Marketing, Communication and Culture, she has had a long professional career as a director in Marketing and Communication, Client Service and New Business departments. Today she is an independent professional and supports companies, organizations and institutions in the design and implementation of development programs for agri-food, local, innovative and youth entrepreneurship. She also collaborates with Chef Stories company and together they design, organize and implement comprehensive programs and individual specialized events to highlight and promote Greek and local gastronomy. She is a certified adult trainer, a trained honey taste analyst in Italy, a graduate of the Butchers' School and has completed Level 3 of the Wine Studies of the international organization WSET. More about Nana Zygoura, on:

www.zygoura.gr



BEE SOURCES
B E E N G C O N J U A N C





We are looking for new EUROPEAN CHAMPIONS in honey – a prestigious title for the next two years!

Sample submission

- **3 jars of honey (450 g each)**, properly labelled for sale.
- Register via the online form using the QR code.
- Attach the printed confirmation and proof of payment to the sample.
- Participation fee: **€70** per sample.
- Samples can be sent by post or delivered in person to:

Čebelarska zveza Slovenije, Brdo pri Lukovici 8, 1225 Lukovica, Slovenija.

Evaluation process

The honey will be evaluated by a panel of international honey experts.

- Evaluation is carried out in liquid form (crystallized honey will be properly liquefied beforehand).

A minimum of 7 samples per category is required

- If fewer samples are submitted, the commission will classify them based on electrical conductivity into: honeydew or multifloral.

All samples will be tested for **basic quality parameters** ($\leq 18.6\%$ moisture content, $\text{HMF} \leq 15 \text{ mg/kg}$). The top three honeys in each category will undergo additional analysis for **authenticity** and **safety**.



**European
Honey
Contest**
Koper - Slovenia

www.honey-contest.eu

Only authentic honeys with exceptional sensory characteristics typical of their variety will be awarded the top three distinctions and earn the right to promote this prestigious title.

**Online submission
form with instructions
for sample submission**



**Submit your samples
by: 14.9.2026**

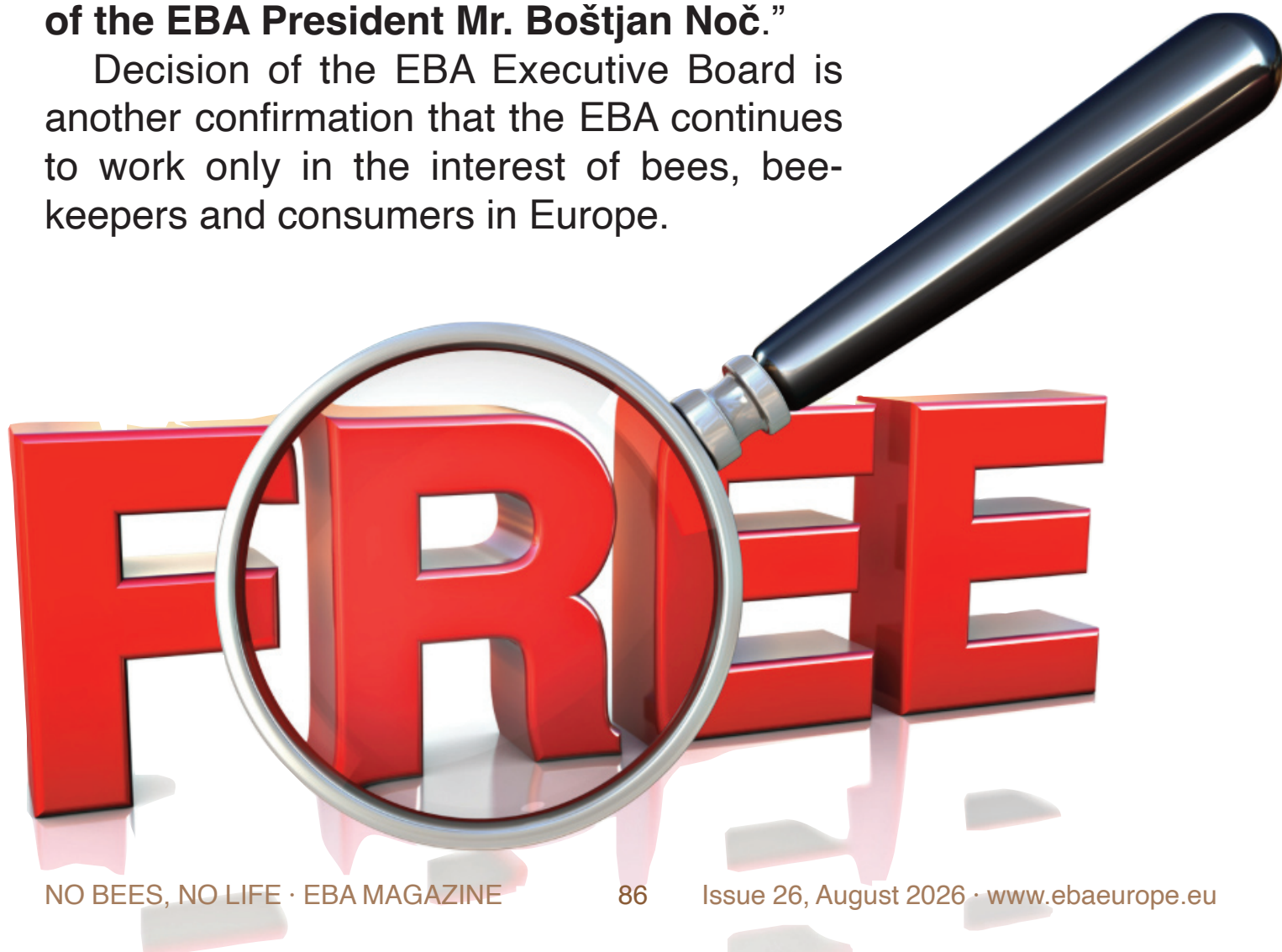
**AWARD CEREMONY IN KOPER, SLOVENIA
5 DECEMBER 2026**



TO THE EBA WITHOUT MEMBERSHIP FEE

At the meeting of the EBA Executive Board, on the proposal of the EBA President Mr. Boštjan Noč, an important decision was made regarding membership in the EBA in the upcoming period: **“Membership in the EBA is free for the duration of the mandate of the EBA President Mr. Boštjan Noč.”**

Decision of the EBA Executive Board is another confirmation that the EBA continues to work only in the interest of bees, beekeepers and consumers in Europe.



SPONSORSHIP REQUEST

AND METHOD OF ADVERTISING IN THE MAGAZINE

On behalf of the European Beekeeping Association (EBA), I am writing to seek your support in the form of sponsorship to help ensure the smooth and effective operation of our Association.

The EBA is dedicated to promoting and supporting beekeeping across Europe. The Association was founded out of necessity, as bees and beekeepers are essential for our ecosystem and society. Without beekeepers there are no bees, and without bees there is no pollination, leading to a lack of food on planet Earth.

EBA works for bees, beekeepers and consumers.

Our mission is to:

1. Fight against counterfeit honey that flooded the European market;
2. Introduction of incentives per beehive as agro-ecological programme;
3. Fight against the improper use of chemicals that are harmful to bees;

In return for your generous support, we offer various sponsorship benefits. We believe that this partnership would be mutually beneficial and would significantly contribute to the advancement of the European beekeeping sector.

ADVERTISING IN THE MAGAZINE:

1. Through sponsorship packages;
2. It is possible to pay for an ad only for 1/4 page (100 euros), for a larger area by agreement. The entire page cannot be obtained, it belongs only to the General Sponsor.

IT CONTINUES



EBA

sponsorship packages

GOLD sponsor - 5.000 euros:

Advertisement on the EBA website

Presentation at all EBA events, logo on all EBA correspondence

12 advertisements in the EBA monthly e-magazine in A4 page size

SILVER sponsor - 3.000 euros:

Advertisement on the EBA website

Presentation at all EBA events, logo on all EBA correspondence

12 advertisements in the EBA monthly e-magazine in half A4 page size

BRONZE sponsor - 2.000 euros:

Advertisement on the EBA website

12 advertisements in the EBA monthly e-magazine in the size of 1/4 A4 page

EBA SUPPORTER - 1.000 euros:

Advertisement on the EBA website

12 advertisements in the EBA monthly e-magazine in the size of 1/8 A4 page

These are basic packages, but we are open to different forms of cooperation, which we agree on individually. We would be delighted to discuss this opportunity further and explore how we can align our goals with your organization's values.

Thank you for considering our request. We look forward to the possibility of working together.

Yours sincerely,

Boštjan Noč

President of the European Beekeeping Association

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The responsibility for the correctness of the English language in the magazine lies with the authors of the texts.

The editor reserves the right to publish a larger advertisement than the size specified by the sponsorship package, if it improves the design of the magazine.

Advertising in the magazine: 1. Through sponsorship packages; 2. It is possible to pay for an ad only for 1/4 page (100 euros), for a larger area by agreement. The entire page cannot be obtained, it belongs only to the General Sponsor.

The total number of pages in the magazine is not fixed.

There are no fees for published texts and photos.

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