

INTERNATIONAL BEEKEEPING

Beekeeping innovation across the globe

The New Zealand BeeKeeper was pleased to be contacted recently by Dobro Zovko, secretary of Kadulja, a beekeepers' association in Bosnia and Herzegovina, who has shared this story celebrating beekeeping innovation from a fellow proud beekeeping nation.

The development of beekeeping in general, and beekeeping technology in particular, has been closely linked to the development of honeycomb bases since 1857, when the German beekeeper Johannes Mehring from Frankfurt first invented a movable comb—a beekeeping frame made of a flat wax plate in a wooden frame. After him, in 1861, the American Samuel Wagner further improved the honeycomb by creating and forming the beginning of the cell walls on a wax plate. Since then, for the last 150 years, there have been no significant technological improvements in the field of comb foundations.

In the last 30 years, various, mostly unsuccessful attempts have been made to come up with even better honeycomb bases. The failure of those attempts can be attributed to the use of inadequate plastic materials and the construction of the honeycomb base not being adapted to the instinct of the bee. Honey bees could not 'understand' the honeycomb bases offered and were confused by the incorrectly formed tips

of the initial cell walls. These were too thick, and the bees could not shape the beginning of the comb with the initial bite of their jaws.

In search of a better solution for the honeycomb base, beekeeper Ivan Milićević from Posušje, Bosnia and Herzegovina, a member of our association Kadulja, made a significant step towards the perfect honeycomb base with his patented invention of the Permanent Honeycomb Base.

When he tested his new permanent honeycomb base, the results in the hive were excellent. Encouraged by the test results, Milićević started to prepare the serial production of permanent honeycomb bases in full Langstroth-Ruth (LR) format.

The bases significantly reduce preparatory work in the beekeeping season. The permanent honeycomb base does not need wires on the frame, eliminating the need for drilling and threading and tightening the wire.

Once the frame is installed, it can remain on it permanently as a base. Every third year, the honeycomb is removed using a steam melter, and the foundation and the frame are simply returned to the hive.

This saves beekeepers time and money as they no longer need to buy or make bases.

This permanent honeycomb base can be used as a tool to produce virgin wax and reduce the brood drive in the hive. The base can be placed in the hive and when the young bees build the comb, the empty comb can be pulled out or peeled off the base and re-based back to the hive. In this way, young bees use up their wax gland without triggering the reproductive drive.



Bosnian beekeeper Ivan Milićević.



Ivan Milićević's gold medal for sustainable foundations for honeycomb from the International Exhibition of Innovations in Paris. All photos supplied.

This permanent honey base allows for a higher spinning speed, which shortens the total spinning time. After spinning, the frame with the comb is returned to the hive without damaging the combs during spinning.

The permanent honeycomb base enables the replacement of old wax contaminated by various agents and residues after the treatment of bees (amitraz, coumaphos, etc.) and other impurities in the old wax such as paraffin. It is not affected by wax moth and can be heated up to 130°C to eliminate American rot spores.

Milićević developed and tested his innovation for 10 years and received a number of gold medals and awards at international innovation exhibitions. This Permanent Honeycomb Base is expected to be on the market in the 2024 beekeeping season and we hope it will represent a revolutionary advance in beekeeping technology with significant long-term economic savings.

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Ivan Milićević's permanent honeycomb bases.



An apiary in Herzegovina.

POSTCARD FROM BOSNIA AND HERZEGOVINA

Dobro Zovko

Bosnia and Herzegovina is a country in Southeastern Europe. The state's name recognises two historical regions: 'Bosnia', roughly the northern two-thirds of the country, and 'Herzegovina', the southern one-third. It boasts many areas naturally rich in honey plants, thanks to its different climate zones.

The first written traces of beekeeping in the territory of today's Bosnia and Herzegovina were found in archives from the 14th century. These were

contracts that secured licenses for keeping bees. From then until the beginning of the 20th century, beekeeping practices did not change significantly. From the beginning of the 20th century, movable honeycomb frames were slowly introduced. An intensive approach to beekeeping has been applied for five or six decades. And a completely technological and professional approach has been applied for the past 30 years.

According to Ministry of Agriculture data, there are about 9,500 registered beekeepers with about 350,000 hives (the number always varies depending on the weather and the health of the bees and other factors).

There are three beekeeping associations in Bosnia and Herzegovina, one of which is our Association of Beekeepers 'Kadulja', which has about 1,500 beekeepers with approximately 60,000 hives. We have been a member of APIMONDIJA since 2011. We have a regular publication called *Bee* and once a year we organise a honey evaluation, and we also organise professional lectures for our beekeepers.

The vast majority of beekeepers are migratory beekeepers, following the different blooming and honeying times of bee pastures. The season starts in early spring in the southern region (Herzegovina). This area is full of orchards and honey plants that grow in a naturally unpolluted environment, such as sycamore (*Petteria ramentacea*), sage (*Salvia officinalis*), bramble (*Paliurus spina-christi*) and heather (*Satureja montana L.*).



Bosnia and Herzegovina. Photo: Diego Delso, Creative Commons.

As the weather gets warmer, beekeepers drive their bees to the northern area along the Sava river (along the Croatian border) rich in large forests of acacia (*Robinia pseudoacacia L.*). In order to finish grazing acacias, beekeepers return to Herzegovina, but this time to the mountainous areas where there are rich expanses of meadow honey plants such as heather and herbaceous white vetch (*Dorycnium herbaceum*).

In addition to these primary honey plants, there are areas with sweet chestnut forests in the central and northwestern parts of the country. There are over 3,700 different plant species suitable for the production of seasonal honey in Bosnia and Herzegovina, including 700 medicinal and aromatic plants.

The beekeeping season ends in September. Towards the end of each season we do a preliminary treatment against varroa, which we start in August and end in December.

In recent years, there has been a greater interest in beekeeping, despite sudden climate changes affecting honey yields.



Bramble or Christ's thorn (*Draca palliurus spina christi*).



Sour cherry. All photos supplied.