Tag It Smart
Smart tags driven service platform for enabling ecosystems of connected objects

Grant agreement 688061

Open Call Deliverable Report for

Honey Tag – Brand protection and Quality Improvement for Montenegrin Honey

– Analysis of the Honey Production and Supply Chain –

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Durmitor honey - food and medicine

Analysis of production and placement of the Durmitor honey

1. Beekeeping in Montenegro

The concept of the Montenegrin economy development is based on the development of agriculture and tourism. These two branches are very complementary, the food produced in Montenegro is highly appreciated and sought after, and as such is generally easy to be marketed. This is especially true for placement through tourism where the final product has an expressed added value. In the field of agriculture, beekeeping is one of the most organized branches with a clearly defined structure.

Beekeeping in Montenegro has a long tradition. At the beginning of the 20th century, people were interested in beekeeping only sporadically, with rather primitive beehives. More intensive development of beekeeping has been particularly pronounced in the last fifteen years since the increasing investment in this branch of agriculture began. With investments, the number of beekeepers, beehives and honey production increased. In the field of Montenegrin agriculture, beekeeping is one of the most organized branches. The reason for this is very good organization of the national Union and cooperation with local associations as well as with the Ministry of Agriculture and Rural Development.

In this structure, the Union of Beekeeping Organizations of Montenegro plays an important role in creating a policy of development of Montenegrin beekeeping. In relation to other branches of agriculture, the key advantage of the beekeeping sector is the creation of a strong organization. In this process, there are two levels of organization, the first one is the membership of beekeepers in local beekeeping associations that forms the institution of the Union. Currently, the Union unites the work of 36 beekeeping organizations.

The Union has 2442 beekeepers with a total of 63.000 hives. The structure of the hives according to the type is: 51% LR, 38% DB and 2% other hives[1]. The annual production of honey varies and is mainly qualified by weather conditions. The yield of honey in

[1] Source: National Union of Beekeeping Organizations of Montenegro

Montenegro can be ranked among the smallest in Europe. On the other hand, the quality of the honey is among the first in Europe.

2. Durmitor Vegetation

The area of the Durmitor is distinguished by the extraordinary richness of the flora and represents a natural phenomenon of a special scientific, phytogeographical and ecological significance. The richness and diversity of the flora is directly expressed through the number of species of vascular plants. At the territory of the Durmitor, including the surrounding canyons of the Tara and the Piva, there are a total of 1325 species that are classified in 484 genera and 129 families[2]. Thanks to the diversity of flora, the honey from the Durmitor area has exceptional quality which places it among the best quality honey.

3. Beekeeping on Durmitor

Initially, the beekeepers in this area used primitive hives in the forms of wood carving, called 'depths'. They were made of lime tree because it was easy to process and had a very pleasant smell. These hives were used until the appearance of modern hives that began to apply in Montenegro in the 1970s.

The Durmitor area belongs to the northern part of Montenegro, with an altitude of approximately 1300 meters. Under these conditions, beekeeping is developing without interruption, however, one of the aggravating factors is long winters and a relatively short summer. Under these conditions, beekeepers must be highly educated and familiar with beekeeping techniques that will establish a balance between the development of bee colonies and the period of honey collection.

With regard to beekeeping, higher altitude has its own positive and negative sides. The advantage of beekeeping at these heights is what bees have a very long period of rest (October-March). This is important because they preserve the energy and maintain the vitality they need for the second half of the year when they collect nectar. The special advantage of beekeeping in this area is an extremely preserved nature without pollutants and pathogens that can ruin the bee's health but also the quality of honey. On the other

[2] Stevanović, V. (1996) Fitogeografska analiza flore Durmitora, Priroda nacionalnog parka Durmitor, Beograd: Geografski fakultet, Posebna izdanja br.8. 185 - 200. UDC

hand, the unfavorable influence of beekeeping at higher altitudes is unstable weather conditions during the summer season. This results in oscillations in yields of honey[3].

The special advantage of beekeeping in this area is achieved through moving beekeeping. This implies the wintering of bee colonies in the continental parts of Montenegro and the subsequent moving of bee colonies to the area of the Durmitor. With this beekeeping regime, the excellent results are achieved that will be described in the next chapters.

3.1 Data on the number of members of associations in the municipalities of Pluzine, Savnik and Zabljak

There are three municipalities in the area of Durmitor: Zabljak, Pluzine and Savnik, each of them has one beekeeping association, 'Association of Beekeepers Zabljak', 'Association of Beekeepers Savnik' and 'Association of Beekeepers Piva – Pluzine'. All three associations are members of the Union.

According to data of the Union for 2018, the number of members / beekeepers is as follows.

Table 1: Members by Municipalities

No	Association	Number of members
1	Association of beekeepers Zabljak	17
2	Association of beekeepers Savnik	24
3	Association of beekeepers 'Piva' - Pluzine	37
	TOTAL:	**78**

Source: Union of Beekeeping Organization of Montenegro

3.2 Data on the type and number of hives

The Union keeps accurate records on the number and type of hives at the national level. In cooperation with local associations, Union keeps records only for beekeepers who are members of the Union. However, in cooperation with representatives of local beekeeping

[3] Mića dr Mladenović (2013) Pčelarenje, Univerzitet Edukons-Sremska Kamenica

organizations from Žabljak, Plužina and Šavnica, the Alliance conducted research on the total number and type of hives in these three municipalities. The study was carried out for the purposes of the Study and based on it, the exact number and type of hives in the area of Durmitor was determined. The number and type of hives are listed in Tables 2 and 3.

The number of hives in beekeeping is a variable value and it is difficult to determine the precise data. Different factors affect the number of hives and the most common reason is the apitechnic measures and beekeepers want to improve certain segments in beekeeping with them. In terms of hives, there are beekeepers with two types of hives in the Durmitor area: 'Langstrot Rut' (LR) and 'Dadan Blat' (DB).

LR hives give more opportunities and operations in terms of the development of bee colonies and honey production. This hive is also the most represented at all continents, especially in America. This hive has the same three parts, which represents its great advantage. The advantage is reflected in the possibility of vertical rotation of the body. This operation allows the beekeeper to have much more technical steps to improve the strength of society, speed of development, productivity, etc. The greatest advantage of this type of hive is working with bodies in relation to other types of ramps and frame transfer. If we can cite some deficiency in this honey type, then it is a weaker organization for the winter supplies of food. This type of bee hive requires from a beekeeper timely interventions, professional and practical knowledge[4].

Beehive Langstrot Rut (LR)

Any delay in planned operations can negatively affect the development and yield of bee colonies, so the advantage of this beehive can be turned into its disadvantage. Equal parts in honey bodies with brood and honey supers with frames of the same dimensions, offer multiple possibilities in apitechnics, the biological development of bees' colonies and the exploitation of honeycomb flora.

[4] Mića dr Mladenović (2013) Pčelarenje, Univerzitet Edukons, Sremska Kamenica pg 51

The greatest advantage of this type of hives is working with parts in relation to other types with frames and transmitted frames. Separation of the bee nest and the honeycomb gives significant opportunities for dislocation and encourages a better and faster development of the bee nest. Every separation of the bee within a hive (the addition or deduction) represents a radical intervention both for the bee colonies and for the economic effect of the beekeeper.

DB beehives are also structured from three bodies, one of which is larger in size and is intended for bee litter. The other two bodies are smaller in size and are intended for disposal of honey. Compared to other types, DB beehives have the advantages of obtaining an exceptional variety of honey obtained from the semi-plant and very good survival of bee-keeping companies. Due to the long and cold winters that Durmitor can last for nearly half a year, this hive type has an advantage over other types. Some of the disadvantages of this type of hive have been increased hunch impetus, slower spring development, and more frequent reviews of society.

As mentioned, in comparison to other types, DB hive has the advantages of extraordinary variety of honey obtained from half honeycomb and very good wintering of bee colonies. The disadvantage is the increased occurrence impulse for swarm due to deep frames and large honey caps.

Bee hive Dadan Blat (DB)

In the category "Other" it is mainly a traditional hive type called "indepth" (in Montenegrin Dubina). It is the forerunner of modern hives used in Montenegro until the early 1980s when the modern beehives started to be introduced. “Dubina” has a very strong symbolic significance in beekeeping especially in the northern parts of Montenegro where it has been kept longer than the central and coastal part. Today,

"dubina" is still present in beekeeping in Montenegro, but mostly one that is held in bees as part of tradition.

Initially used bee hive, Dubina

Table 2. Number and type of hives for members of the Union in targeted municipalities

No	Association	Type of hives		
		LR	DB	Other
1	Association of beekeepers Zabljak	384	126	
2	Association of beekeepers Savnik	453	352	5
3	Association of beekeepers Pluzine	415	790	9
	Total:	***1 252***	***1 268***	***14***

Table 3. Number and type of hives for those who are not members of the Union in targeted municipalities

No	Association	Type of hives		
		LR	DB	Other
1	Association of beekeepers Zabljak	70	35	
2	Association of beekeepers Savnik	184	72	7
3	Association of beekeepers Pluzine	107	89	14
	Total:	***361***	***196***	***21***

3.3 Data on yields

In general, honey yields in Montenegro are smaller compared to other countries. With regard to honey yield, the area of Durmitor can not be classified into a highly honeyed region. The reasons are multiple, above all this is the area with a short period of colleting the honey[5] and instable weather conditions. There are frequent fluctuations in air temperature as well as precipitations that negatively affect the nectar availability. For stable honey yields it is necessary first of all to have adequate air temperature in the interval between from 20 to 25 degrees and in continuity for a longer period of time.

One of the disadvantages is that the area of Durmitor does not have cultivated plant species that give higher yields of honey[6].

Special adversity in the honey collection is a severe overturn in the period of full vegetation (May and June) when snowfall is possible on Durmitor. Depending on the fact that beekeepers organize stationary or selective beekeeping, honey yields range from 7 to 10 kilograms per hectare in bee keeping mode and 10 to 15 kilograms in bee-clear mode. This average refers to a three-year period[7].

4. Characteristics of the Durmitor Honey

The Durmitor Honey belongs to a group of polyphloric high-quality honey[8]. Organoleptic characteristics of Durmitor honey are bright colors, light and aromatic taste, medium thick consistency and a very pleasant smell. With respect to the participation of plant species, the composition of honey from the Durmitor region is very diverse. Based on the melisopaleological analysis it was found that honey from this area has close to 40 different species of pollen. Polen powder plays a very important role in the structure and values of honey so that for this honey we can say it is one of the highest quality.

Because of all listed characteristics, the Durmitor honey brand has predispositions of one of the more powerful market products of Montenegro intended for export. First of all, this refers to sale through tourism because this area does not have enough honey for organized exports.

By its quality, it is certainly at the very top in the Balkans, and with the number of plant species that are part of its pollen structure, the Durmitor Honey as a product is unique in the world. The organoleptic properties and the origin of the name for the Durmitor

[5] The time when bees are harvesting nectar from flowers.
[6] Veroljub Umeljić (2006) U svetu cveća i pčela
[7] CEED (2015), Sektorska studija o proizvodnji meda
[8] Honey derived from nectars from many different types of plants

Honey brand stand out completely from a large group of Montenegrin honey coming to the market of Montenegro. This brand carries a traditional way of beekeeping in an extraordinary natural environment.

In relation to the prices of honey in the surrounding areas, the price of Durmitor honey is very acceptable because it guarantees high and equable quality, which is controlled by authorized laboratories in Montenegro. Depending on the type and volume of the packaging, its price per kilogram ranges from 12 to 25 euros. The Durmitor honey brand is the first step in trying to get a number of national brands in the field of agriculture. In the near future, the logical continuation of the Durmitor Honey brand will be the protection of the geographical mark of the Durmitor Honey.

4.1 Procedure for the production of the Durmitor honey

Production procedure of Durmitor honey is based on fulfilling the standards of Good beekeeping and Veterinary practice. Traceability process in all production phases is an important condition for obtaining product of high quality. The domestic breed of bees in Montenegro, including the area of Durmitor, is *Apis melllifera carnica*. This bee has good production characteristics: fast spring development, excellent bee nest cultivation, calmness, great defensive instinct, good wintering, modest consumption of food ... It is the starting point for the production of the Durmitor honey. All queen bees in nuts, involved in the production of the Durmitor honey, should be labeled with opalite tiles with number and color that is internationally valid for the year of production. The queen bees should be introduced into production each year at the first spring inspection when their recording and marking is done.

It is recommended that the queen bees are purchased from the Centers for the selection of honey bees from Montenegro and that the replacement of the queen bees is done every second year. Treatment of bee protection against ticks the Varo destructor is done with the use of medicines on an organic basis. The possibility of purchasing regressed medicines by the Ministry of Agriculture and Rural Development significantly improves this segment of beekeeping. Through this measure, the beekeepers have the opportunity to purchase two medicines, Apiguard and Api Life Var. Both medicines are regressed with 50%. In addition to these medicines, beekeepers use acids to control varoe as well as biological methods such as trap combs.

4.1.1 Beekeeping - important works during the year

As already emphasized in the previous chapters, the climate conditions in the Durmitor area are a limiting factor and beekeepers have to implement certain measures on time to succeed in the development of bee colonies, thus creating conditions for optimal yields of honey.

The general beekeeping rule is that the bee season ends or begins in August. This means that the beekeepers in the period of August must be especially dedicated to ensure a quality winter and a successful next season. The two basic principles in this period are the treatment of bees against ticks the Varoa destructor and the nutrition of bee colonies.

If these two conditions are fulfilled in accordance with the recommendations of the Good Beekeeping and Veterinary Practice, the wintering of bees will be stable and without losses (from 5 to 10% of loss is acceptable). In the period from October to March next year, beekeepers should not raise their hives or to disturb peace on the apiary. The only obstruction needed during this period is the treatment with oxalic acid that is organized at the end of November.

The first spring inspection in the Durmitor area is recommended in the middle of April when the state of the bee colonies is determined. After the assessment of the condition in the apiary, the stimulative nutrition is done with sugar syrup or cakes for bees. At the beginning of May, the removal of old frames and addition of hourly bases is organized.

It is recommended to replace about 1/3 of the frames with the honeycomb annually. This is very important operation that employs young bees and prevents impulse for swarm, then produces quality bee products and ultimately improves the health of the bees. The beginning of June is the period when a more serious nectar intake from the nature begins and when the honey supers, in which the honey is stored, are added. Honey extraction takes place at the end of July and in early August, when the focus is returned to the health care and bee nutrition process again.

4.1.2 Extracting and keeping honey

The honey obtained in the Durmitor geographical area must only be extracted when 80% of honey surface is covered in the honeycomb. This is also a rule that applies to other areas.

The honey obtained under the conditions of the modified stationary beekeeping is a polyphlorine honey that is extracted usually twice a year. The hygienic sanitary conditions under which the honey must be extracted must be satisfied by ensuring the appropriate premises and equipment for extracting, keeping and storing of the honey.

All of the taken frames for extracting are collected and returned in clear and clean premises, completely isolated from the bees. The floor must be of a material that can be cleaned and disinfected if necessary.

Centifuge, forks for honey openning and all other extracting accessories must be made of inox. The vessels (bowls) must be clean, made of inox and with good closures. Mixing and packing of honey in jars should be done in one place.

The necessary measure for equalization of the quality of the Durmitor honey is the mixing of the complete annual amount of honey obtained in the Durmitor area in large prochromic barrels. The premises, where the honey is kept and stored, must be under a special temperature regime (from 5 to 20°C).

4.1.3 Honey packing

After extracting, the honey is placed in barrels that must be of a material meeting the standard for storing of food, and this is usually INOX material. The barrels are usually in the range of 50 to 100 kilograms. It is recommended that the stored honey stays 10-15 days after which it is packed in glass packaging. Glass jars for filling must be new, washed and dried. The volume of the jar varies depending on the target group of customers. The jar should be closed with a lid, made of metal and intended for the food industry. It is INOX in most cases.

After filling in jar, it is necessary to put an appropriate label. The declaration of Montenegrin honey is done in accordance with the rules prescribed by the Union and the conditions valid for the Durmitor Honey.

Storage of packaged honey should be done in the premises where temperature control is possible (from 5 to 20°C).

4.2 Quality analysis of the Durmitor honey

The environment in the Durmitor area is extremely preserved. There is no heavy industry in this area that can cause flora contamination and hence bee products. Under these conditions, only man/beekeeper can damage the quality structure of bee products. The disturbance of quality of bee products can most often occur when using unauthorized agents for the protection of bees from parasite varoe. For this purpose, amitraz-based preparations (to explain the meaning in the footnote) are often used, prohibited for usage but used by beekeepers in general at the same time.

In order to protect consumers, the honey quality control from this area is mandatory. In Montenegro, there are three laboratories dealing with quality analysis and composition of honey:

- Center for Ecotoxicological Testing
- Institute for Public Health of Montenegro
- Laboratory of the University of Donja Gorica

Depending on the type of analysis, various tests of the honey quality and content can be done. Sampling is carried out in glass jars with a volume of 500 grams. The test results are being awaited a maximum of 10 days.

The legal framework which defines the quality of the honey and other honey products includes:

- The Rulebook on quality and other conditions for honey, other honey products and products produces on the basis of honey ("Official Gazette", No 45/03)
- The Rulebook on traceability on animal waste, food products from animals, and animal foods ("Official Gazette", No 46/2006)
- The Rulebook on maximum allowed concentration of residuals of pharmacological active substances of veterinary medicine in the food of animal origin ("Official Gazette", No 51/2007)

5. Sales chain – the market and users

Generally speaking, the Montenegrin honey is one of the highest quality products offered at our market. The Durmitor honey belongs to a group of high quality honey and easily finds the way to the customer. As a matter of fact, the half of the produced the Durmitor honey is sold to permanent customers and the other half through tourism. The permanent customers usually take honey in packaging of a volume of 1000 grams while tourists practice smaller packages of maximum up to 500 grams. Accordingly, the beekeepers in this area adjust the type and volume of the packaging.

Within one of the cross-border cooperation projects between Bosnia and Hercegovina and Montenegro, 'Honey route through Durmitor and Herzegovina', three sales promotion points were set up, one of which is on the territory of the Savnik municipality where the Durmitor area extends. The beekeepers from the Durmitor area have the opportunity to offer their bee products through this facility and place a part of their production.

A number of the beekeepers within their house holdings organizes tourist visits and in this way make the contacts and placement of honey. Through this model of placement, the direct contact with people from abroad is achieved and expansion of the base of potential customers.

6. Development directions of the Durmitor honey

The directions to create and develop Durmitor Honey brand should be derived from three facts:

1. Durmitor is a well-known and recognized tourist destination not only in Montenegro but also in the entire region and wider, especially having in mind UNESCO status of its National Park.
2. In general, Montenegrin honey is recognized as one of the best quality agricultural products. Honey from the Durimitora area is one of the highest quality in Montenegro.
3. Honey has traditionally served in Montenegro as an act of welcoming guests to the house.

On the one hand, the development of the Durmitor honey is facilitated by the fact that Durmitor is recognized as a tourist destination as well as a destination of exceptional

natural beauty and beauty. For that very reason it would be extremely irrational to not use that opportunity. On the other hand, the brand of Durmitor honey can significantly contribute to the quality of the tourist offer. Honey served in the Montenegrin tradition to the delightful guests when entering the house and should revive this segment when accepting the tourists. In this way, along with the appropriate story of tourist workers, they would significantly contribute to the promotion and sale of honey from this area.

The development of Durmitor honey should be based on the establishment of a product quality scheme. The adherence of the production process, the adoption of quality standards, the monitoring of modern techniques of working in bees and honey stripping and storage facilities is a prerequisite for the development of beekeeping in this area as a prerequisite for the creation of insects. For brand development, the quality is the first precondition that must be supplemented with the appropriate uniform packaging, mark, label and what is the most important story.

Cooperation at all levels, starting with the Ministry of Agriculture and Rural Development through local governments, the UNION and local beekeeping associations, is a way of making progress. In this way, honey as one of the major bee products will have a special status among the quality products obtained in this area. The development and strengthening of Durmitor Honey must be accompanied by adequate marketing, which implies the appearance of beekeepers at exhibitions and fairs where the promotional materials will be used in his presentation.

Since the beekeepers from this area do not produce large quantities of products that they can not deliver through the development of the Durmitor honey, their incomes primarily increase. This is due to the increase in product prices by strengthening the inside.

Literature

1. Stevanović, V. (1996) Fitogeografska analiza flore Durmitora, Priroda nacionalnog parka Durmitor, Beograd: Geografski fakultet, Posebna izdanja br.8. 185 - 200. UDC
2. Mića dr Mladenović (2013) Pčelarenje, Univerzitet Edukons-Sremska Kamenica
3. Mića dr Mladenović (2013) Pčelarenje, Univerzitet Edukons, Sremska Kamenica st,51
4. Veroljub Umeljić (2006) U svetu ćveća i pčela
5. CEED (2015), Sektorska studija o proizvodnji meda
6. Časopis Pčelarstvo broj: 97, 114, 175 Savez
7. Časopis Pčelarstvo broj 197, Savez

Annexes

Pollen Analysis of Durmitor Honey

LAB N° 0196

Bologna **15/12/2015**

Reference number: **15-000465**
Test Report n°: **15-IN01833 - 15/12/2015**

To:
VLADIMIR RADULOVIC - SPOCG - Savez Pcelarskih Organizacija Crne Gore
Grbe bbe, Danilovgrad
81450 MONTENEGRO ()

We hereby communicate the results of the test performed on the sample/samples of honey you sent to our laboratory which were received on 24/11/2015.

The results contained in the Test Report relate only to the analysed sample/samples.
The accreditation refers to the analysis procedure for wich it has been granted, and never to the analysed sample or product.

The Test Report shall not be reproduced except in full, without written approval of the laboratory Director.

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ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
LAB N° 0196

OUR REFERENCE: 15-IN01833 Description: **Honey**
Sample description/Batch: **HONEY - ITALY**
Declared botanical origin: /
Declared geographical origin: Montenegro - Serbia

BOTANICAL AND GEOGRAPHICAL ORIGIN BASED ON POLLEN IDENTIFICATION

Test Method: MDP/08 rev. 9 2015

DETERMINED BOTANICAL ORIGIN: Polyfloral - Miele millefiori

DETERMINED GEOGRAPHICAL ORIGIN: The pollen spectrum of the sample is compatible with the declared origin. Lo spettro pollinico del campione di miele in esame è compatibile con l'origine dichiarata (Montenegro-Serbia).

Pollen spectrum

Nectariferous pollen types

Predominant pollen	Myosotis
Secondary pollen	Absent
Important minor pollen	Trifolium repens gr.
Important minor pollen	Umbelliferae
Important minor pollen	Linaria
Minor pollen	Salix
Minor pollen	Echium
Minor pollen	Liliaceae
Minor pollen	Prunus f.
Minor pollen	Rhamnaceae
Minor pollen	Robinia
Minor pollen	Rubus f.
Minor pollen	Sedum
Minor pollen	Acer
Minor pollen	Anacardiaceae
Minor pollen	Clematis
Minor pollen	Compositae forma J
Minor pollen	Compositae forma S
Minor pollen	Compositae forma T
Minor pollen	Cornus sanguinea
Minor pollen	Cynoglossum
Minor pollen	Dipsacaceae
Minor pollen	Geraniaceae
Minor pollen	Labiatae forma M
Minor pollen	Lotus
Minor pollen	Malus/Pyrus f.
Minor pollen	Medicago
Minor pollen	Melilotus
Minor pollen	Onobrychis
Minor pollen	Polygonum bistorta
Minor pollen	Rhinanthus
Minor pollen	Teucrium
Minor pollen	Tilia
Minor pollen	Trifolium incarnatum
Minor pollen	Trifolium pratense gr.
Minor pollen	Verbascum f.

Non nectariferous pollen types

Non nectariferous pollen types

Chamaerops
Cistaceae
Filipendula
Hypericum
Mercurialis
Oleaceae
Papaver
Plantago
Poterium
Rumex

Honeydew elements

Absent

Sensory characteristics

Visual (tone and physical state):

nearly cristallyzed, light brown

Olfactory (odour description):

intense, spicy, with an animal note

Tasting and After-taste (aroma description, persistence):

intense, fresh, minty

Defects:

/

DATE 15/12/2015

LAB N° 0196

Informative appendix

The results of the analysis are expressed in frequency classes.
The frequency classes are:

"Predominant pollen"	> 45%
"Secondary pollen"	16-45%
"Important minor pollen"	3-15%
"Minor pollen"	< 3%

"Louveaux J., Maurizio A., Vorwhol G., (International Commission for Bee Botany of IUBS) (1978) Methods of melissopalynology. Bee World, 59 (4): 139-157"

The honeydew elements are expressed in relation to the number of nectariferous plants pollen grains:

"absent"	0,00 - 0,09
"low amount"	0,10 - 1,49
"medium amount"	1,50 - 2,99
"high amount"	3,00 - 4,49
"very high amount"	> 4,50

The analysed samples are kept by the Laboratory for at least 3 months after analyses, in conditions suitable to repeat the analyses, if necessary.

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L'ENTE ITALIANO DI ACCREDITAMENTO

LAB N° 0196

REPORT TEST END - DIGITAL SIGNATURE (according to italian legislation CNIPA N.45/2009)

The Technical Manager of the Laboratory
Per. ind. chimico Roberto Colombo

The signature, represents approval of the test report and is affixed by the Head of the Laboratory. In case of absence of the Head of Laboratory it can be affixed by the Technical Manager of the Laboratory as communicated to ACCREDIA.

The analysed samples are kept by the Laboratory for at least 3 months after analyses, in conditions suitable to repeat the analyses, if necessary.