

eip-agri
AGRICULTURE & INNOVATION



EIP-AGRI Focus Group

Bee health and sustainable beekeeping

MINIPAPER 01: Platform of information at EU level
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1. Introduction - Motivation

Knowledge exchange and capacity building for healthy honeybees and sustainable beekeeping is of major concern. But what knowledge is to be trusted as valuable information and how can we bridge best available knowledge and existing beekeeping practices? Communication is a two-way activity, meaning that if we want to make a change the bottom-up perspective is important. Some countries e.g. Slovenia, has long-standing tradition of beekeeping and beekeeping is also part of cultural heritage. This aspect beside the environmental and economic importance, need to be considered during the knowledge transfer and capacity building for healthy honeybees and sustainable beekeeping. We need to address issues like:

- Effective dissemination of quality information
- Enabling access to best available knowledge/best practice
- Regional adaptation of general information
- Creating arenas for joint learning
- Developing new products, business models and markets
- Gaining access to and linking with beekeepers needs

If we compare beekeeping to other agricultural practices, there are some specific challenges to take into account: diversified target group (large- to small-scale), mainly micro-businesses and self-subsistence, geographically scattered rural entrepreneurs, gender and wide age structure (mainly men and aged), the will or ability to pay for professional services, lack of tradition in formalised competence development and autodidacts (trainers and educators are self-trained as pedagogues).

Due to these challenges, the situation about how to get access to knowledge have to be analysed. This minipaper is describing the actual situation for knowledge exchange in Europe today and is defining the trends of how the beekeeping sector is gaining access to information. Are there any risks concerning bee health and sustainable beekeeping practices connected to this? What are the challenges for good quality information not being accessible? Where can valuable information and knowledge be found? Can a platform at European level for access of good quality information help to reach out with research results to practice? How can we use the social media and other new communication systems to provide beekeepers with the information they need? We cannot control the web or social media, but if we are seen there with up to date good quality information, we are visible and reachable for beekeepers.

2. Dissertation

General issues related to platform of information

Diversity of beekeeping in countries

There are very different management types of beekeeping among countries and even though among groups of beekeepers (e.g. beekeepers association) within a country that makes almost impossible to describe all of them. Beekeeping is directly linked with its environment (flora, climate etc) and will develop specificities. Beekeepers can be influenced on the way of beekeeping from different perspectives that they receive during courses, oral presentations, exchange with other beekeepers etc., and as well the way of thinking of the beekeepers themselves. Such information sometimes relays on empirical experiences and often are missing knowledge based on scientific research. Furthermore, the management types of beekeeping vary among the size of the beekeeper's operation. Professional beekeepers are strongly oriented to profit and reduce of cost, hobby beekeepers often do not care if a practice can be costly as long it offers a satisfaction for them.

There are big differences among the “knowledge systems in beekeeping”, (B-KIS), across Europe (actors, networks, funding, etc) and every country needs to find its own way of how to implement the knowledge to fit in a structure.

Access to information and its quality

Currently access to information on beekeeper issues is huge in the internet, social networks, books etc., however the validation of such information is difficult if in the case of practical experiences which makes sometimes confusing to the beekeepers on how to implement such knowledge into own conditions. The beekeepers are used to take responsibility for their own learning, finding information from many different sources. Here comes the ability of critical being able to sort out information that are correct and based on evidence and to understand the language the information is produced in.

Data collection on the situation of beekeepers, market, consumer opinion, image of beekeeping in the countries

There is very little information and data that is published and updated yearly on the different issues as situation of beekeepers, market, consumer opinion and image of beekeeping at European level. At European level, the European Commission presents twice a year a situation of the honey market and every 3 years the evolution of the beekeeping situation in EU. Some countries like France and Italy have a specific organization to monitor the evolution of the beekeeping market. The French Ministry of Agriculture publishes every year a summary on beekeeping sector and honey market¹ and ISMEA (Istituto di servizi per il mercato agricolo alimentare) publishes a report on the national beekeeping sector in Italy². This tool exists also in US and in Argentina. In the case of the organic beekeeping sector, there is an effort from the Research Institute of Organic Agriculture (FiBL) to gather data on the situation of organic beekeepers at European level but here is still missing much precise information on the situation of beekeepers, market, consumer opinion, image of beekeeping etc. For example, on the level of a country the information is almost not available if beekeepers work under one organic beekeeping standard or manage the bees under different organic beekeeping standards. The same can be mentioned for other topics.

Data collection of research work, applied research

Scientific papers are often hard to reach and understand in a practical way for most beekeepers. Extension services at the universities where research is being done are no longer in function in most countries in Europe. On this issue, as far as is known, there is few information available to the beekeeper's language, specifically on applied research for many different issues. It is necessary to have validation and local adapted experiences based on research. For this, research experiences together with professional beekeeping practices implemented through policy makers are core solutions for beekeeping sector and are important for promotion beekeeping as part of local economy.

Knowledge transfer based on research work many times fails due to almost non-existent channels for dissemination among beekeepers (and as well farmers) on issues of beekeeping and agriculture and honeybees. To bring research results into practice we need to know the target group. It is important for successful knowledge transfer. Advisory services need to collaborate close to research to bridge the gap.

In the last decades, beekeepers have been confronted with honeybee colony losses caused by interactions between various internal and external factors including new disease and technological challenges. Researcher groups from all over the world have extensively studied impacts of variety of factors. There were several new

¹ <https://www.franceagrimer.fr/Actualite/Filieres/Apiculture/2019/Production-francaise-de-miel-et-de-gelee-royale-en-2018>

² <http://www.ismea.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/10772>

findings, but the communication gap between research organizations and beekeepers/farmers have prevented the large-scale and effective dissemination and solutions implementation into practice of all potential innovations. There are also obstacles in plethora of advising agencies organized in countries to be flexible in new findings adoption and implementation into practice.

Diversity of risks and challenges, image of beekeeping and bee products, relations with farmers and environmentalists

Communication from the beekeeping world to the general public is also important. If until recently, the honeybee appeared as a sentinel of the environment, which is justified; it is more and more often perceived as a generalist species that is essential and competes with other bee species. Scientifically based information is essential to avoid generating new emotional conflicts such as the conflict experienced in the past with some farmers. In order to address problems such as the massive adulteration of honeys, adequate information must also be disseminated to consumers to preserve the positive image of hive products.

Existing practices, tools, projects

Many different tools exist in the field of information and learning. Here is a table to summarize the current situation.

Journals and magazines	<ul style="list-style-type: none"> • SUPPORT : Paper - often associated with a web version • PUBLIC : small to large scale beekeepers
Books	<ul style="list-style-type: none"> • SUPPORT : Paper - sometimes associated with a web version • PUBLIC : all
Social networks	<ul style="list-style-type: none"> • SUPPORT : web version • PUBLIC : all, and non beekeepers
Web sites	<ul style="list-style-type: none"> • SUPPORT : internet • PUBLIC : all
Conferences, technical days	<ul style="list-style-type: none"> • SUPPORT : events • PUBLIC : small to large scale beekeepers
Scientific databases	<ul style="list-style-type: none"> • SUPPORT : web version of papers • PUBLIC : scientist
Project reports	<ul style="list-style-type: none"> • SUPPORT : Paper - often associated with a web version • PUBLIC : members of the project + scientist ans technicians
Advisory services	<ul style="list-style-type: none"> • SUPPORT: Individual • Public: all, if available in the country

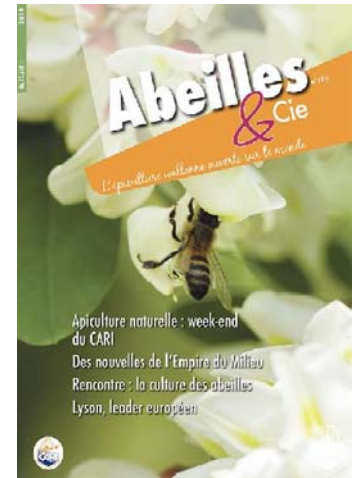
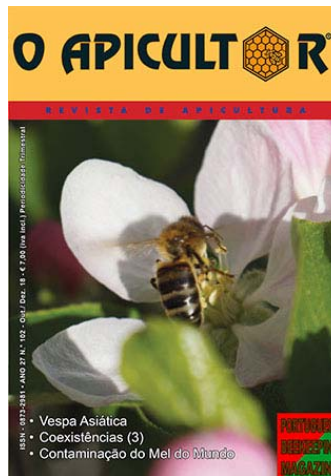
Journals of beekeeping associations

Each beekeeping association has its own information medium in the form of a journal, which can be either monthly, bimonthly or even less frequent. It's one of the most important sources of information for most of the beekeepers in EU. Some cover all the aspects of beekeeping and other are specialized like for breeding or pathology.

Some relevant examples of existing journals all over Europe are available in the annex.

A review of existing beekeeping magazines is

available from Apimondia. <https://www.apiservices.biz/en/databases/beekeeping-journals>



Books

Beekeeping books are very numerous but less and less consulted by beekeepers. Some libraries are very well stocked. The best known is the IBRA.³

For other examples, see the Annex.

Web sites

The interest in web sites increase a lot during the 20 last years. Today each association has its own website. Some are free to access, and others are reserved for their members or are subject to a fee. This source of information can transmit the best and the worst. It is often difficult to verify the reliability of the source. In each language, you can find specific portals in the EU, where you will find many links to other sites. Very few are multilingual. We have also to present an international platform on beekeeping, TECA Beekeeping exchange group, manage by FAO⁴.

Social network and monitoring systems

Social networks are becoming increasingly important in beekeeping. They are probably the most important way of communication today even for beekeepers. As for the websites, it's where good and bad information is disseminated most quickly. We can of course mention the Facebook pages, Twitter, LinkedIn but also blogs (see a list of the most popular⁵) mailing lists, WhatsApp.

Communication by smartphones or websites is also used by companies who manage the monitoring systems of hives, beekeeping activities, local flora and climate⁶. The management of the Data Warehouse linked to these control systems is a key challenge for the future.

³ <https://ibra.org.uk/>

⁴ <http://www.fao.org/teca/forum/beekeeping/en/>

⁵ https://blog.feedspot.com/beekeeping_blogs/

⁶ <https://mybees.buzz/>, <https://www.arnia.co.uk>

Scientific databases

The best known in this field is the IBRA, which for years has published the Apicultural Abstracts and who continues to edit Bee World and Journal of Apicultural Research. Scientific information is better structured and refers to Google scholar, PubMed, Scopus (paid) search engines, but many articles are linked to a subscription and only abstracts are accessible. Some journals such as Plos On, Diversity, Insect e are open to the public. One can also search for an author's work on Research gate.

Project reports

European projects normally have a website on which they report on the progress of their work and the publications available. On the EUROPA website,⁷ there is a page dedicated to beekeeping and there are more beekeeping programmes entered by the Member States in the context of beekeeping.

Courses – teaching resources

Beekeeping courses are offered throughout Europe but there are only a few courses that are freely accessible to all beekeepers (e.g. Austria). There are also internet courses and online training courses (MOOC on beekeeping and the environment). As the vast majority of beekeeping courses do not form part of an official course curriculum, checks on the subjects taught are rare. It's due to the fact that except in some countries where official school organize lesson for professional beekeepers, most of the beekeeping school are manage by hobbyist with a lack formalised competence development and most of the trainers and educators are self-trained as pedagogues (autodidacts).

Some examples	Country	Language	Public	Content					Comments
				Beekeeping techniques	Products and trade	Farming	Environment	Research	
MOCC abeilles et environnement	FR	French	Beginner BK Everyone interested in bees and beekeeping	x		x	x		
Escola Nacional de Apicultura, LOUSAMEL	PT	Portuguese, english	Beginner BK, advanced beekeepers and everyone interested in bees and beekeeping	X	X	X	X	X	x

⁷https://ec.europa.eu/info/food-farming-fisheries/animals-and-animal-products/animal-products/honey_en

Videos, films

Today, there are more and more videos from conferences, videos illustrating beekeeping operations, the use of specific equipment, etc. Beekeepers like this kind of media that brings a lot of practical informations in a very short time. Youtube is the most common platform for researching videos (more than 12 Million result just for beekeeping).

Conferences, technical days

At the international level, some meetings allow for exchanges on a very large scale. At European level, we can of course mention the major national congresses (FR - Congrès national d'apiculture, Donaueschingen in Germany, Apimel in Italy, etc). Beecome is a European congress that change of place every year. The Apimondia symposiums cover more specific themes such as pathology, organic beekeeping, apitherapy, etc.

Evaluation of the existing tools of information

- There are several books on the market, reference courses, etc that offer a good vision of general beekeeping. Quite often, the different information media are in competition and seek to stand out from each other to improve their visibility. There is therefore little exchange between the different structures (beekeeping associations, private firms, etc.) in charge of information.
- Technical information very often remains localized (regions, countries, communities grouped around the same language) or circulates only in specific groups of actors according to their level of professionalism, their ability to understand scientific texts and/or their field (products of the hive, breeding, race conservation, pathology - pesticides).
- At the research level, the research tools make it possible to reach a much higher level of selection (key words, year of publication, references, citations, recommended articles).
- There is hardly any general tool for all beekeepers at European level at the moment, even if some sites present their information in several languages. The most complete site at this level is managed by Apiservice⁸.

How to manage the information?

- As clearly presented above, despite a very large number of sources of information in various forms, it is still very difficult to get an idea of all the data available on a particular subject. There are many search tools such as Google or other search engines that direct you to the information most often consulted in your geographical area but which, to our knowledge, do not value the quality or relevance of the information conveyed. In addition, some information collected e.g. in regional projects with beekeepers, is still inaccessible due to the absence of free online media or in a language not supported by the search engine. Moreover, little field information highlights the reliability of the published information and its real interest for beekeepers.
- When we have the information we are looking for, we must filter it on the basis of its reliability, the relevance of the answer it provides and its updating. There, very few tools exist in beekeeping. It must also be adapted to the level of scientific knowledge of the reader and be applicable to the different regions and to beekeeping practices. The type of medium on which it is stored is also important: text, sound, video. It would be necessary to set up a filter that makes it possible to quickly select the type of information we are looking for without having to pay the cost of all this selection work, which is sometimes not even possible given the lack of information on how the information was produced.

⁸<https://www.apiservices.biz/fr/>

Advisory services, information centres

- The information centres are run by different structures depending on the Member States. There are structures financed very largely or even totally by public funds up to voluntary groups, like school apiaries. Their role can range from a simple information centre that centralises all the necessary information in order to provide it to beekeeping specialists or beekeepers through training or information days or publications or reviews. Some centres will also collate the information collected from beekeepers in order to obtain advice and recommendations or even development paths. Still others will develop services (analyses, sale of equipment, etc.) or applied research to answer beekeepers' questions, for example in terms of health or product development. It can be seen that the fieldwork carried out by beekeeping consultants generally meets the needs of many beekeepers. The mission of these people is generally to transmit to beekeepers the information essential to their hive management in order to maintain them in a satisfactory sanitary state and to enable them to ensure good production. Some specialised structures can provide a more targeted framework, for example for the management of pollination or royal jelly production.
- Today, few centres work on the interface between agriculture and beekeeping and few agricultural advisors specialize in pollination and the maintenance of favourable conditions for pollinators.

Sweden provides example of organisation at national and local scale to enhance links between beekeeping and farming sectors

The advisors at the Swedish Board of Agriculture

[http://www.jordbruksverket.se/amnesomraden/miljoklimat/ettriktodlingslandskap/mangfaldp
aslatten.4.e01569712f24e2ca09800012316.html](http://www.jordbruksverket.se/amnesomraden/miljoklimat/ettriktodlingslandskap/mangfaldp
aslatten.4.e01569712f24e2ca09800012316.html)

Advisor in nature conservation at Hushållningssällskapet

<https://hushallningssallskapet.se/blommande-faltkanter/>

Odling I blanas (Farming in balance) <https://www.odlingibalans.com>

EIP-agri Operational Group SamZon on multifunctional buffer zones

<https://ec.europa.eu/eip/agriculture/en/news/inspirational-ideas-multifunctional-buffer-zones>

3. Conclusions/Key messages

Summary: lessons learnt on the key issue

The dissemination of apiculture information at European level is confronted with various types of problems, the most important of which come from the diversity of beekeepers' profiles and production conditions, as well as from information sources that are often not reliable, up-to-date, complete and adapted to their current needs.

It should thus be possible to disseminate validated basic information that meets the needs of as many people as possible in terms of health, the environment or good apicultural practices, by adapting its presentation and the channels of dissemination according to the places and people affected. The more the information is adapted to the target audience and the closer the transmission channel is, the better the transmission will be. Today, new tools in full development could be used without forgetting the personal contacts that remain essential. The link between research and the field is essential both to adapt scientific articles to the beekeepers' level of knowledge and to validate and disseminate the observations and field tests carried out by beekeepers.

4. Ideas for innovations and research needs

Creation of a European platform assisted by a series of centres located by linguistic regions

The scope of this innovation will be to:

- Organise a network of credible and validated information gathering in the different regions of the European Union in order to be able to take the best possible account of local specificities linked to culture, climate, land use and the main existing beekeeping practices. The information should cover beekeeping health, sustainable practices, economic aspects, etc (results of local scientific projects, education material, monitoring of production and prices, field information of international interest, etc.).
- Facilitate the structuring and standardisation of the information received (definition of a common approach on the content and format of the information to be collected) in order to be able to correctly analyse the information collected. This information would be centralised by the European platform and made accessible to all cells and/or directly to beekeepers. This should take into account existing tools.
- The information sent to the platform would be supplemented by scientific monitoring on subjects of direct interest to beekeepers in the field. Requests scientists to share their research results. Possibly popularized articles and scientific publications geared more particularly to field beekeeping and to scientific advances with a short or medium-term impact on the beekeeping sector, could be centralized on a site accessible to all (different languages) with indication of the number of views, re-direction to other sites, downloads and an indicator of interest for beekeepers. This will need to set up and manage a database directly accessible by beekeepers.
- On the basis of these two main sources of information, production of dossiers, summary reports, articles and other information & education material on current topics responding to the priority needs defined by the beekeeping sector in European countries.
- Redistribute the info to the regional centres who could translate the information into their own language and adapt it to local production conditions (local beekeeping).
- In parallel, it would be useful to set up a **study to better describe the different sociological profiles of beekeepers at European level** in order to better understand their real needs and the motivations that lead them to become beekeepers.

Aspects to take into account while addressing the issues

- Ensure the promotion in communication among stakeholders at all levels: national, EU, international level. New stakeholder synergies and networks can be established to support the existing and initiating new projects in mentioned fields and topics.
- New tools and services, including education materials, on-site trainings, visits, demonstrations, need to be performed by educated and professional personnel. Exchange of good practices and fostering a long-term network to support exchange of knowledge on existing research solutions findings and implementation into beekeeping practice.
- Specific challenges need to be addressed at national levels, by boosting the communication between stakeholders (researchers, advisors, farmers/beekeepers, policy makers etc.). Current official advising agencies need to be functional and be able to create a long-term network to support exchange of knowledge on existing best practices and research findings. A set of tools and services need to be re-evaluated and renewed in order to promote essential innovative beekeeping and adjacent practices.
- New tools need to be identified, to recognise and solve existing or potential problems in beekeeping. End-users (beekeepers/farmers) included in communication need to express their concerns and/or expectations. Experts and policy makers present research results, best beekeeping practices in their fields and policy-based solutions.
- Innovative practices have to be established through collaboration between actors of the beekeeping industry, honeybee research groups/labs and national or international beekeepers' associations.

Further research needs coming from practice, ideas for EIP AGRI operational groups and other proposals for innovation can be found at the final report of the focus group, available at the FG webpage <https://ec.europa.eu/eip/agriculture/en/focus-groups/bee-health-and-sustainable-beekeeping>

ANNEX

Review of some beekeeping journals

Title	Country	Language	Public	Content					Comments
				Beekeeping techniques	Products and trade	Farming	Environment	Research	
Abeilles & Cie	BE	French	All beekeepers	x	x	x	x	x	6/year
Abeilles et fleurs	FR	French	All beekeepers	x	x		x		Monthly
L'abeille de France	FR	French	All beekeepers	x	x		x		Monthly
La santé de l'abeille	FR	French	All beekeepers	x		x	x	x	Monthly. Mainly deals with sanitary aspects
Info Reines	FR	French	Professional	x				x	4/year Mainly about breeding
Revista o Apicultor	PT	Portuguese	All beekeepers	x	x	x	x	x	4/year
Bitidningen	S	Swedish	All beekeepers	x	x				8/year

Books

Title	Country	Language	Public	Content					Comments
				Beekeeping techniques	Products and trade	Farming	Environment	Research	
Traité Rustica de l'apiculture	FR	French Spanish	Beginners	x	x		x		
Mina första år som biodlare and Min biodling	S	Swedish	Beginners	x					Both textbook, workbook and teacher's book

Websites

Title	Country	Language	Public	Content					Comments
				Beekeeping techniques	Products and trade	Farming	Environment	Research	
Apiservices.biz	FR	French English Spanish German	Beekeepers	x	x		x	x	
ITSAP	FR	French	All bk advisors	x	x	x	x	x	Website and blog available. Links to Guide des bonnes pratiques apicoles
INTERAPI	FR	French	Farmers Bk advisors			x			Description of plants & crops linked to interest for bees
www.cari.be	BE	French	Beekeepers	X	X		X	X	