



COMPARATIVE ANALYSIS OF THE CURRENT STATE OF BEEKEEPING IN PARTNERS COUNTRIES AND IN TURKEY AND POLAND

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PUBLIC

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3		IO1.A1 National Report_GR
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1. Introduction

1.1. The scope of the project

PlanBee is a 2-year EU funded project that aims at helping beekeepers start their own profitable business mitigating the risks of traditional beekeeping. This will be achieved through the development of innovative training material and of an apiculture training game for low-skilled adults supporting the development of beekeeping associations in rural areas. The PlanBee partnership comprises 6 organisations with complementary expertise that will be actively involved in planning, designing, implementing, testing, and disseminating the project outputs to support beekeepers deal with the challenges of bee cultivation.

1.1.1. Project objectives

The main project objective is to develop an apiculture training game for low-skilled adults supporting the development of beekeeping associations in rural areas by low-skilled adults who have been trained with PlanBEE. The PlanBEE game will serve as a single information point guiding a potential beekeeper on how to start a lucrative business depending on their own needs and background by diminishing the risks related to traditional beekeeping (bee diseases, mortality rate, exposure to chemical products, etc.). Also, the PlanBEE project will contribute to the increase of the bee population in the wild by promoting apiculture. In progress it will promote the creativity of organisations providing training to agricultural SMEs through the promotion of serious games, it will make European bee farmers more competitive, it will help the mobility of bee farmers among partner countries and thus employability and most of all it will help the growth of an entrepreneurial spirit mainly in rural areas.

1.1.1. Project Target Group

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The main target group on which the development of the training curricula and the game will focus are adults from rural areas, mainly low-skilled and with an interest in bee farming, beekeepers, and agricultural trainers.

Other target groups are:

- Apiculture enthusiasts
- Agricultural institutes and universities
- Rural development organisations
- Wildlife/bee/eco preservation societies
- Agriculture training organisations
- Ministries of agriculture
- Beekeeping societies
- Anyone with an interest in bee cultivation
- Education organisations and SMEs with an interest in serious games,
- Game / Learning / Instructional designers
- Decision / Policy makers with an interest in quality guidelines on eLearning products and services

1.2. The objectives of the Report

The Comparative Analysis Report concerns the identification of the problems and risks that are encountered in each participating area with regards to the challenges that beekeepers deal with in their businesses. It includes 5 National Reports analysing the current state of beekeeping in each of the partner countries (Greece, UK, Cyprus, Spain, Ireland) as well as a Report analysing the situation of beekeeping in 2 countries outside the partnership (Turkey and Poland). The National reports are the basis of the 'BEEsiness' manual that constitutes the training framework that will guide beekeepers in building up a successful beekeeping business and will provide them with innovative methods to overcome the potential risks entailed in traditional beekeeping. The Comparative Analysis Report will examine the current situation in partner countries with reference to apiculture problems, existing training, and available resources ("AS-IS" situation). Based on the outcomes, IO1 will develop the training material, upon which the serious game will be based. The next step comprises the conceptualisation of the game,

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leading to the desired situation: Sustainable beekeeping businesses by adults from rural areas ("TO-BE" situation).

1.3. The methodology

Partners conducted desk research on the current situation of beekeeping in their countries. They identified qualitative and quantitative data to describe their national "AS-IS" situations. Additionally, they presented good practices in the field that will be used as examples to provide motivation and ideas to the project participants. Lastly, good practices from 2 countries outside of the partnership, Poland and Turkey, that have shown long history and strong presence in the beekeeping field have been identified by the project coordinator. A comparative analysis was put together based on the findings of the National Reports to identify the needs, challenges, and opportunities of the partner countries.

2. National Reports

2.1. The UK

2.1.1. Results

2.1.1.1. How many beekeepers exist in your country and how many beehives do they own?

There were c244,000 beehives recorded in the UK in 2018, down slightly by 1.2% from 247,000 in 2017. These 244,000 hives are owned by 37,888 beekeepers with an expected 6.3% increase to 40,275 predicted by 2022. The UK has the lowest number of hives per beekeeper in the whole of the EU at just 6 hives, compared to 21 for the EU as a whole and 149 for Greece.

The annual UK honey production in 2018 was 6.6 thousand tons. Honey yield per hive was 34kg, a sharp increase from 10kg in 2017, putting the UK in the top three of EU countries.

The price of multi floral honey at site of production for the UK in 2018 was €14.15/kg, compared to the EU figure of €6.46/kg, and the UK tops the EU table for the price for multi floral bulk honey at wholesalers at €10.04/kg compared to the EU figure overall of €3.79/kg (1. European Commission, 2019).

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The vast majority of beekeepers in the UK are classed as ‘hobby’ beekeepers and there is no great desire among these to earn an income. The overall approach and philosophy is very different, however, when beekeepers wish to move into the ranks of professional beekeeping and become ‘bee farmers’ and a distinction should be made here.

The Bee Farmers’ Association (BFA) is the voice of professional beekeeping in the UK. As the industry trade association, it represents around 450 bee farming businesses, managing about 65,000 hives between them. This amounts to c27% of the UK’s total number of hives.

Its members produce honey throughout the UK and supply products in bulk, for wholesale and for retail. In addition, the association provides contract pollination services to growers. (2. The Bee farmers Association 2020).

The demand for honey has risen and the price remains high for locally produced honey. UK beekeepers produce only around 14% of the honey consumed here compared with 60% on average for the EU as a whole, so there is much potential for expansion in bee farming. On the other hand, there has been a decline in the number of bee farmers over the last 20 years and a rise in the average age of beekeepers; half the BFA membership is over 65 years. Consequently, the industry is seriously challenged today.

2.1.1.2. Are there local associations that provide support to beekeepers in your country? What kind of support?

Beekeeping is devolved in the UK meaning that the respective governments in England, Scotland, Wales and Northern Ireland have their own strategies to assist pollinators and to ensure healthy and sustainable populations of honey bees in their respective countries.

ENGLAND AND WALES

The British Beekeepers Association (BBKA), representing beekeepers in England and Wales was established in 1874 and currently has c25,000 members and 74 Area Associations (AAs) which are sub-divided into local branches.

The BBKA offer members a comprehensive education and examination system, starting at the basic beekeeping level and working through written and practical examinations and assessments, culminating in the award of the, ‘Master Beekeeper’ qualification, the highest qualification available in their syllabus.

The BBKA also arrange beekeeping conventions and provide lecturers. Members are covered by third party £10m public liability and £10m product liability insurance and can obtain insurance for loss of colonies from certain diseases (at a cost of £36).

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Membership also includes a monthly beekeeping magazine along with access to further printed training material.

The BBKA have a national beekeeping centre, the headquarters of the association where they also run courses and hold assessments. (3. British Beekeepers Association 2020)

WALES

The Welsh Beekeepers Association (WBKA), representing beekeepers in Wales currently has 1867 members and 19 affiliated beekeeping associations. Individual membership starts at £20.

The WBKA have a national beekeeping centre, the headquarters of the association where they run introductory beekeeping courses but there are no courses currently for improver or intermediate beekeepers.

Members enjoy the same benefits as BBKA members in terms of beekeeping conventions, insurance and receipt of a monthly magazine. (4. The Welsh Beekeepers Association 2020)

SCOTLAND

The Scottish Beekeepers Association (SBA), representing beekeepers in Scotland was established in 1912 and currently has over 1,500 members and 44 affiliated beekeeping associations (ABAs). Individual membership costs £35.

The SBA run an examination system, similar to the system run by the BBKA, which culminates in the award of the, 'Scottish Expert Beemaster's qualification.

The SBA does not currently provide a beekeeping training programme. Many ABAs teach introductory beekeeping courses locally to prospective beekeepers but there is no co-ordinated training available to improver or intermediate level beekeepers.

Recently, since 2017, EU funding has been obtained by Moray Beekeepers Association, to run the Healthy 'BEES' (Bee Education in Scotland) Project, a series of 24 beekeeping courses over a 3 year period, throughout Scotland and these have been very popular.

SBA members enjoy similar benefits as BBKA members in terms of beekeeping conventions, insurance and receipt of a monthly magazine. (5. The Scottish Beekeepers Association 2020)

NORTHERN IRELAND

The Ulster Beekeepers Association (UBKA) representing beekeepers in Northern Ireland, was formed in 1942 and currently has c12,000 members and 16 affiliated local area Associations.

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UBKA offers accredited beekeeping training courses to all levels, from absolute beginner to the more advanced.

Members enjoy the same benefits as BBKA members in terms of beekeeping conventions, insurance and receipt of a monthly magazine. (6. The Ulster Beekeepers Association 2020)

Local Associations in each of the devolved countries collect provide introductory beekeeping courses and own extracting and other equipment which members can borrow, sometimes for a nominal fee, and often have a bulk buy system where members can buy equipment and consumables at special rates.

2.1.1.3. What is the level of knowledge of beekeepers regarding honeybees' natural history?

This is difficult to measure as anyone can become a beekeeper without the need to attend a training course or the attainment of a qualification.

Knowledge of the honey bees' natural history is important because without this understanding, beekeepers will struggle with their yearly management system and their potential honey harvest. If the beekeeper does not know what is going on inside the hive, they will not become an efficient beekeeper, so it is important that this knowledge is learned. In particular, the loss of a honey bee swarm will drastically reduce a honey harvest and in order to prevent or control swarming, a basic knowledge of the honey bees' natural history will be required.

The author of this report teaches many beekeeping courses, from basic level, through intermediate and up to advanced levels across the UK and it is his opinion that the theoretical knowledge in this respect is somewhat lacking.

There are many new beekeepers every year in the UK who are coming into it with no knowledge at all so it is important that they are taught about the honey bees' natural history in the classroom, as well as teaching them beekeeping skills in the apiary.

2.1.1.4. Are there any trainings addressing beekeepers' needs towards running a business?

None of the National Associations run courses aimed at those wishing to run a beekeeping business.

Young People

The BFA has developed a unique apprenticeship scheme in partnership with Rowse Honey and it is believed to be the only beekeeping apprentice scheme world-wide. (7. The Bee Farmers Association 2020)

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The scheme, supported by the Department for Environment, Food and Rural Affairs (Defra) and developed with the help of the Livery Companies Skills Council and City & Guilds, is open to 16 to 24-year-olds and aims to equip young people with the skills and knowledge to make a successful career in the bee farming industry.

Those successfully completing the three-year programme are awarded a Diploma in Excellence in Bee Farming by the Worshipful Company of Wax Chandlers.

Launched in 2014, 30 trainees have been placed during the first five years of the scheme.

Adults

The BFA is also launching a pilot scheme for adults who wish to become professional bee farmers which is planned to commence in October 2020 and it includes the subject of running a beekeeping business. (8. The Bee farmers Association 2020)

Successful students who complete the three-year programme will be awarded a formal qualification, the Wax Chandlers' Diploma of Excellence in Bee Farming. The course comes with the backing of recognised organisations such as the Livery Companies Skills Council (LCSC) and City & Guilds (C&G).

As well as the usual beekeeping subjects, the qualification offers modules in subject such as:

- health and safety
- first aid for lone workers
- food safety
- pest control
- manual handling and fork-lift training
- financial management
- use of social media in marketing.

Five strategically located centres have been appointed around the UK to deliver the pilot programme.

Spey Valley Bees Ltd

There are many private beekeeping training organisations advertised in the UK but only one course to help beekeepers set up a business is available. Run by Spey Valley Bees Ltd, on behalf of Moray Beekeepers Association, the course is entitled, 'Making the Move into Bee Farming' and is for the hobby beekeeper looking to make the move towards professional bee farming. It covers the practical issues affecting bee farming on a larger scale, as well as information on setting up a business, keeping accurate

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accounts, running a business and writing a business plan. Marketing and branding products is also covered and the course includes a visit to a large scale bee farming extracting facility.

Four of these 2-day courses have been run between November 2018 and November 2019, with 48 students and the feedback has been excellent. (9. Moray Beekeepers Association 2020)

2.1.1.5. What do beekeepers do regarding apitherapy and honey bee health?

Apitherapy is a branch of alternative medicine that uses honey bee products, including honey, pollen, propolis, royal jelly and bee venom. Proponents of apitherapy make claims for its health benefits which are unsupported by evidence-based medicine.

Apitherapy is not widely practised in the UK although a few small business are now appearing.

Honey Bee Health

The starting point for all beekeepers is to keep strong, healthy colonies of bees and most beekeepers will strive towards that aim. While beekeepers have a responsibility and a desire for maintaining the health of their bees, there is no legislation in this respect and some will manage better than others.

A healthy colony of bees will thrive, produce a honey harvest and survive over winter to do the same the following year. Dead bees produce no honey so it is in the beekeepers best interest to maintain healthy bees.

There are many beekeeping courses in the UK to assist beekeepers to keep healthy bees and how to recognise pests and diseases that can affect their bees. Many of these courses are run by national associations and subsidised by the respective governments and EU funding and the courses are always well attended.

The BBKA have introduced a new module into their education syllabus entitled, 'The Honey Bee Health certificate' and aspiring hobby beekeepers can work towards achieving this qualification. (10. The British Beekeepers Association 2020)

Keeping healthy bees is even more important for professional bee farmers. To be sustainable, a bee farming business needs to ensure its honey bees are well-managed to ensure the bees are kept in optimum condition, healthy and disease-free. Good husbandry, as in all livestock farming, is essential.

The Varroa mite, *Varroa destructor*, and the associated viruses that it carries remain the biggest killer of honey bee colonies in the world. In the UK, beekeepers adopt an integrated pest management system, (IPM) to combat the mite which aims to keep pests below the level where they cause significant harm by using a combination of controls, applied at different times of the year, keeping chemical input to a minimum.

Beekeepers on the whole keep their bees in moveable frame hives which allows the brood area to be checked regularly for disease which is good practice. Prevention is better than cure, so beekeepers adopt several mechanisms to ensure healthy bees. To prevent pathogens and disease building up in brood

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combs beekeepers ensure they replace the combs every 3 years. Strict apiary hygiene is important in preventing the spread of disease so beekeepers keep their bee suits clean, wash tools in soda water solution before and after hive inspections and do not swap equipment or combs between hives.

Two bee diseases must be notified to the government in the UK, American foulbrood, *Paenibacillus larvae*, and European foul brood, *Melissococcus plutonius*. If any of these are suspected the beekeeper must notify the Secretary of State and immediately impose upon themselves a prohibition of movement or 'Standstill', of the hive/s and equipment that if moved could transmit the infection. The self-imposed standstill is required until a Government Bee inspector visits and confirms or discounts the report of infection. If there is an infection, the inspector has the power to order the destruction or treatment of the hives, equipment, premises etc.

Additionally, two exotic pests of honey bees must be reported if found by the beekeeper, Small Hive Beetle, *Aethena tumida* and the Tropilaelaps mite, *Tropilaelop species*. Neither of these have been found in the UK yet. A major threat to honey bee colonies in the UK currently is the Asian hornet, *Vespa velutina*, with several nests being discovered in recent years.

There is a system of statutory hive inspections in the UK, administered by the devolved countries and these are carried out by trained bee inspectors who are looking for any of the prescribed diseases or pests mentioned above.

Disease Assurance Scheme for Honeybees (DASH)

The risk of disease, particularly the foul brood diseases is greater in professional bee farmers as they move hives to and from crops at different times of the year and this can spread disease to other hives.

DASH is only eligible to members of the BFA in England and Wales and those members that successfully complete the training receive greater autonomy and fewer inspections by Bee Inspectors. In essence, they take responsibility for the monitoring and treatment of their own hives if foul brood is discovered. (11. The Bee farmers Association 2020)

2.1.1.6. What are the methods and techniques used for honey extraction?

The extraction, storage, jarring and selling of honey have several legal requirements and all beekeepers must follow strict hygiene regulations when handling and extracting honey. Some of the main requirements are that all equipment should be food grade plastic or stainless steel, the premises should be bee tight (i.e. no bees can enter) and the honey handler must be dressed appropriately.

Honey harvests will generally be spring honey (in May/June), summer honey (August) and possibly late summer/autumn honey (September/October).

Honey bees will store excess honey in boxes (known as 'supers'), placed above the main brood box (where they raise their young bees) by the beekeeper and a harvest may consist of between 1 and 12 of these boxes. The bees need to be cleared from the supers before they can be removed and there are several methods carried out by beekeepers to do this. The most common is placing a 'clearer board' between the brood box and the supers with a special one-way valve that allows the bees to go down into

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the brood box but is then prevented from returning to the honey supers. The beekeeper will generally leave the clearer board on overnight and will remove the supers, now empty of bees, the following day. The honey supers are then removed to a warm extracting facility. For the hobby beekeeper this is often the kitchen or converted garage or shed. The professional beekeeper will usually have a separate extracting facility that has been inspected and approved by local council officials.

Hobby beekeepers extracting honey in their kitchen for more than 5 days in any 5 consecutive weeks must also register the premises, and they too will be subject to an inspection.

Most honey in the UK is spun out of the honeycomb using a manually operated or electric extractor specifically built for that purpose. When the honey is ripe in the hive, the bees seal each cell with beeswax. The first step in the extraction process is to remove this beeswax, usually with an uncapping knife, so the honey will spin out. The uncapped frames are placed evenly in the extractor which then spins for maybe 5 or 10 minutes and the honey is forced out of the cells by centrifugal force.

When complete, the honey gate is opened at the bottom of the extractor and the honey is allowed to run out, via a strainer to remove any extraneous items and then into a honey bucket. If being jarred, it will be allowed 24 hours to settle in the bucket and then run into clean jars via the honey gate in the bottom of the honey bucket. The lid will be applied and then a label, which must also adhere to legal requirements, including the weight of the honey, its origin, e.g. product of UK or Scotland, a lot number, best before date and the name and address of the person jarring it.

Excess honey is stored in sealed buckets at a temperature of 14C to encourage granulation and then below 10C to prevent yeast growth. It will require warming in a warming cabinet to about 40C for jarring.

There are different varieties of honey with specific characteristics and these have to be dealt with differently. For example ling heather honey (*Calluna vulgaris*), a premium UK honey is not liquid but a jelly and cannot be spun out of the comb as described above. Most hobby beekeepers simply cut the honeycomb into pieces and sell it in attractive boxes as 'cut comb honey, and this is a very popular honey. The consumer simply eats the honey and the honeycomb as it is, being honey in its most natural state.

Many local beekeeping associations will own extracting equipment which members are allowed to borrow and this works well as beekeepers do not have to buy expensive extracting equipment.

Some local associations and private enterprises operate a co-operative where the beekeeper can take their full honey supers to a facility, and for an appropriate fee they will be extracted for them

The principals of extracting honey is the same for professional bee farmers but with hundreds or even thousands of bee hives, most of them will use automated equipment to save them time as this is more productive.

However, a fully automated extracting facility is very expensive and can cost in excess of €60,000

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2.1.1.7. Which are the management practices in beekeeping? How do beekeepers handle different situations?

There is a well-known saying that if you get 10 beekeepers in a room and ask them how to deal with a given situation with their bees you will likely get 11 different answers. However, there are accepted management practices that take place, in the UK, i.e. cool, wet winters and warm, wet summers and they will take into account the yearly population cycle of the bees. There is a minimum worker bee population of c10,000 bees in early spring (March) with winter bees dying daily. The bees react to the lengthening daylight hours and the queen begins to lay eggs. The honey bee colony builds up quickly on the spring nectar flow until it is at its peak of c60,000 bees when the main summer nectar flow occurs, and they then store nectar which provides their winter stores as honey.

For maximum honey production the beekeeper needs to manage the colony, i.e. build up large colonies in advance of the main nectar flow, not on it and that means having a peak population in July. One strong colony will always collect more nectar and thus give you more honey than 6 weak colonies.

The skill and challenge for the beekeeper is to keep the colony as strong as possible, without the loss of a swarm for the main nectar flow, whenever that occurs!

It is no coincidence that the most diligent beekeepers get the best honey harvests from their bees and they do so by carrying out several management techniques throughout the year.

Rigorous Management System. Leave alone beekeepers are unlikely to maximise their honey harvest and successful beekeepers must rigorously check their bees at regular intervals. Beginners are taught to get the basics right first and then after they have become proficient in the basics choose a system that suits them.

Regular 7-day inspections of the bees from March to September to check:

Has the colony sufficient room?

Is Queen present and laying the expected quantity of eggs?

Early in Season - Is Colony building up in size as fast as other colonies in same apiary?

Mid season- Are there Queen cells present?

Any signs of disease or abnormality?

Has the colony sufficient stores to last until next inspection?

Marking the Queen. Beekeepers mark the queen with a dot of paint on her thorax as many manipulations in beekeeping involve removing the queen from the hive. The dot of paint makes it easier to find the queen. Some beekeepers will clip one of the queen's wings so she cannot fly. This does not prevent the loss of a swarm but will give the beekeeper time to deal with swarming as the swarm will be delayed from leaving by a few days.

Swarm Prevention and Control. The biggest challenge facing beekeepers is preventing their bees from swarming. Swarming is the bees' natural method of reproduction. When the colony gets large, the old queen along with two thirds of the flying bees leave the nest to make a new home. The remaining bees in the original nest will make a new queen. Apart from the public nuisance a swarm can cause, the hive is unlikely to produce any more honey if a swarm is lost.

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Swarm prevention is what the beekeeper does before the bees go into swarming mode and swarm control is what the beekeeper does once the bees are intent on swarming, i.e. queen cells are present.

Swarm prevention includes keeping young queens that are less likely to swarm, keeping non swarmy bees, giving the bees plenty of space to expand and store nectar and removing adult bees and brood from the main hive into a smaller box, known as a making a nucleus.

Swarm control involves removing one of these from the other two, the queen, the flying bees and the brood. There are several different swarm control methods and beekeepers will have their own favourites. These include methods known as Demaree, Pagden artificial swarm, shook swarm and the nucleus method.

Other important management practices include feeding bees, making and using nuclei, uniting colonies, queen rearing, queen introduction, carrying out a Bailey comb change and removal of honey supers.

The skill in being able carry out the management practices mentioned above can be learned and come with experience.

2.1.1.8. Which are the financial aspects of a beekeeping business?

Hobby beekeepers starting out in beekeeping will spend many hundreds of pounds buying equipment, consumables and bees and this often continues year after year.

Professional bee farmers, however, aim to run a profitable business enterprise, and this is where there is a vast difference in the approach to the management of honey bees.

The unpredictable nature of the UK weather, and therefore the honey harvest means it is highly unlikely that a prospective bee farmer will get funding from a bank for a start-up business. To acquire an additional 100 hives, at a cost of €300.00 per hive, and €200.00 for the bees, requires a financial outgoing of €50,000.00 and without the means of obtaining a loan, it is beyond the reach of most amateurs, who usually grow their hive numbers organically over several years by splitting hives.

Other bee farmers are part of a family business going back generations and thus they inherit the bees, equipment and the customer base.

This author's experience as a bee farmer in Scotland suggests that it is just about possible to make a sustainable income from between 250 and 300 hives, working full time without any staff. A yearly average per hive is about 70lb of honey, rising to 150lb in a good year. This can be sold for an average €4.24 per lb in bulk or €6.00 per lb if sold in jars. A hive will therefore on average generate between €295.00 and €424.00 of income annually from which needs to be deducted the costs of production per hive of c€120.00.

The wise bee farmer in the UK will diversify, to ensure money comes into the business when the summer is a washout. The old adage of 'not putting all your eggs in one basket' is particularly apt for UK bee farmers.

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In the longer term the business would want to be able to extract and process honey in its own premises and for this further capital will be needed.

2.1.1.9. How do beekeepers promote bee products in the market?

There is a huge demand for honey in the UK as beekeepers only produce 14% of all the honey consumed.

Locally produced honey is a premium product and presented to the customer in an attractive jar with a simple but catchy label will market itself. However, branding and marketing honey in a positive and creative way will give the edge over competitors.

Branding involves creating a unique name and image for a product in the consumers' mind and will establish a significant and differentiated presence in the market that attracts and retains loyal customers. The brand is the way customers perceives a company and if they buy into a product and connect emotively - because they share the same values and beliefs of a brand - it leads to higher sales and customer loyalty.

Marketing, the action or business of promoting and selling products or services, including market research and advertising is also important.

Tips for Honey marketing include:

Bright, interesting promotional material such as leaflets or signs.

Honey for sale must always be top quality and pure.

Honey containers must be perfectly clean.

Improve sales by offering different sizes and styles of packaging.

Link honey with other products, e.g. beeswax candles, beeswax soap and lip balms.

Build up a trust relationship with customers to get repeat orders.

Many bee farming businesses will use social media to promote their products, e.g. Facebook, Twitter, Instagram and YouTube and this can be very powerful.

For instance there are c13 million Twitter users in the UK and c500 million tweets are sent per day. (12. Omnicore 2020). Facebook has over 2.5 billion daily active users who spend an average of 20 minutes per day on the site (13. Zephoria Digital Marketing 2020). Instagram has 25 million business profiles (14. Wordstream 2020) and 1 million monthly active advertisers. (15. Marketing Land 2020).

Successful bee farmers in the UK will provide a quality product, attractively displayed with a unique label that provides brand recognition and will promote themselves and their products via a website and use of social media.

2.1.1.10. Do beekeepers know and use mobile beekeeping strategies? If yes, what strategies?

Mobile beekeeping is known as migratory beekeeping in the UK and involves beekeepers moving hives to flowers instead of waiting for them to find the flowers themselves.

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It is practiced by relatively few hobby beekeepers but is important for those wishing to maximise their honey harvest. Generally, for increased honey, beekeepers move hives to Oil seed rape (Canola) fields in April, field beans in June, borage in late June, and finally, to the ling heather in late July.

Strong colonies are required with plenty of bees to collect the abundant nectar that can be produced by these plants in good weather so good management practices are required.

There is an additional transport cost to the beekeeper who practices migratory beekeeping.

Professional bee farmers in the UK can earn money if they use their bees for pollination services, mainly for orchard crops of pears, apples, plums and cherries in spring.

Pollination is the 'unique selling point' for honey bees as large numbers of managed colonies are available in spring when other pollinators are not available. Managed pollination gives better quality fruit, higher yields, and better shaped fruit with more seeds so the grower is happy to pay up to £75 per hive to the bee farmer.

This national pollination service is organised and administered by the BFA and involves BFA members moving hives to specific crops for agreed time periods, under contract with the grower. (16. The Bee Farmers Association 2020)

2.1.2. Conclusions

With 373,888 mainly hobby beekeepers in the UK, owning 244,000 hives, it could be said that the beekeeping industry is thriving. However, as the UK has the lowest number of hives per beekeeper in the whole of the EU at just 6 hives, it can be seen that the number of professional beekeepers is quite low, in fact there are only 450 members of the BFA.

Despite the honey yield per hive in 2018 being high at 34kg, the UK only produces 14% of the honey it consumes, and it therefore relies heavily on imports.

The temperate climate in the UK also means that the honey harvest can vary from year to year and there is no guarantee of high per hive yields.

However, the price for locally produced honey remains high and the UK tops the EU table for the price of multi floral bulk honey at wholesalers at €10.04/kg compared to the EU figure overall of €3.79/kg.

National and local beekeeping associations are well established and on the whole are providing a variety of beekeeper training although there is a gap in the training for beekeepers wishing to run a beekeeping business.

More beekeeper training is required for Wales and Scotland.

The Bee Farmers Association representing professional bee farmers in the UK offer an apprentice scheme for young people but do not currently provide any training for adult beekeepers wishing to start a beekeeping business.

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There is plenty of scope for new beekeeping business in the UK but for the numbers of professional bee farmers to increase, there needs to be more training in the business side of running a business.

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2.2. Cyprus

The honey market might be small, however it is an important sector for agriculture and pollinisation. The EU honey market ranks second, after China, in honey production with a total number of beehives at 17.5 million belonging to 650 000 beekeepers scattered around European countries. These numbers seem big, however the EU is only 60% self-efficient in honey and imports are needed to cover domestic consumption, mainly from China (40%) and Ukraine (20%) (European Commission, 2019).

The present report is the result of a thorough research on beekeeping in Cyprus. Cyprus is a small country of 800 thousand people and its main markets are tourism, manufacturing, agriculture, and banking and financial services. The honey market in Cyprus belongs to the agriculture sector which accounts for about 2% of the country's GDP in 2010, and steadily is witnessing a decline due to the development of other sectors of the economy (European Commission, 2019).

2.2.1. Results

2.2.1.1. How many beekeepers exist in your country and how many beehives do they own?

Cyprus ranks 24th out of 28 EU member states in numbers of hives existing in the country. There were around 51 000 beehives in 2019, 3.2% more compared to 2018. In general, there is an average annual growth of 3% in the number of beehives since 2010. These 51 000 hives are owned and managed by approximately 690 beekeepers. The number of beekeepers own more than 150 beehives is 75. On average a beekeeper in Cyprus owns and manages 76 beehives, making Cyprus the 4th EU member state with the most hives per beekeeper (Ministry of Agriculture and Rural development, 2019).

The annual honey production in 2019 was 584 tons. The estimated average yield in kilos of honey per beehive per year was 11kg and the estimated production costs were 3.6€ per kilo of honey. In Cyprus the price to buy a kilo of honey varies from 8€ to 15€, depending on the type of honey. More specifically, the

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most popular honey types are Blossom, Raw Blossom and Thyme honey (Ministry of Agriculture and Rural development, 2019).

2.2.1.2. Are there local associations that provide support to beekeepers in your country? What kind of support?

In the 1980s, the Pancyprian Beekeepers Association (PBA) was founded in Cyprus, having the mission to represent and train beekeepers in Cyprus, promote and protect beekeeping, and upgrade and modernise beekeeping production facilities. PBA represents Cyprus beekeeping society to international conferences and meetings, presents existing problems in regard to beekeeping in Cyprus and transfers back to its members news about technologies, policies and everything else that has to do with beekeeping. In 2009, PBA founded the Beekeeping School, the only educational centre for beekeeping in Cyprus where more than 150 new beekeepers had successfully graduated until 2019 (Pancyprian Beekeepers Association, 2020).

Furthermore, the Cyprus Agro Industry Center (CAIC) supports and assists individuals in setting up small agricultural businesses and small-scale industries. Apiculture is one their main themes where training is offered to potential beekeepers and apiculture enthusiasts (Cyprus Agro Industry Center, 2020).

Finally, in 2019 the European programme, MEDFEST, was established, and one of their thematic is the promotion of honey routes in rural areas of Cyprus. The programme brought together beekeepers from nine local communities of Cyprus who have the chance to showcase their products in annual honey festivals (MEDFEST, 2019).

It is estimated that around 300 beekeepers (45%) are organized in beekeepers' associations all over the island and efforts are being made to increase this number on an annual basis (Ministry of Agriculture and Rural development, 2019).

2.2.1.3. What is the level of knowledge of beekeepers regarding honeybees' natural history?

Beekeeping in Cyprus is mainly done by families who have a long history of professional beekeeping for generations and generations. Even though there is not written proof of their knowledge on honeybees' natural history, beekeepers in Cyprus seem confident with their knowledge and experience with honeybees. A number of local producers' websites include a lot of information about honey, bees, apiculture, nutrition, recipes and other relevant fields.

A list of such website is presented below:

- HONEYMELL: <https://www.honeymell.com/en/bees>
- ΌΡΟΣ Μαχαίρα: <http://honeycyprus.com/>
- PBA: <https://www.cybeeas.com/swse-tis-melisses>

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Having in mind that beekeeping is a profession where one needs to have expertise and knowledge in order to succeed, it makes it easier to assume that beekeepers are informed and knowledgeable about the origin and natural history of honeybees.

2.2.1.4. Are there any trainings addressing beekeepers' needs towards running a business?

Research showed that there are a number of courses offered in Cyprus regarding beekeeping and apiculture. However, there are not any specific courses that focuses on the business needs of a potential beekeeper. The most relevant training offering are presented below.

As mentioned in 2.3.2, PBA founded in 2009 the Beekeeping School of Cyprus. The school offers training on beekeeping having as goal the best possible preparation of the beekeepers to organize manage and develop their apiary. The courses cover a plethora of modules, from beekeeping history and honeybee biology, to apiary management and extraction of honey (Pancyprian Beekeepers Association, 2020).

The Cyprus Agro Industry Center offers a course regarding apiculture and beekeeping focused on bee biology, hive management, queen bee breeding, honey extraction, bees' illnesses. The course also includes hands-on training on assembling hives, examining colonies and honey production. It covers every aspect that potential beekeepers need to get their business off the ground (Cyprus Agro Industry Center, 2020).

2.2.1.5. What do beekeepers do regarding apitherapy and honey bee health?

The most common threat for beehives in Cyprus is the Acari Varroa. Acting against Varroa, is estimated to cost about 22% of the total cost for an apiary, just for bee medicines. In 2019, a directive from the European Union suggests and partially funds beekeepers to tackle Varroa acarosis through the rational use of licensed beeswaxes, including substances proposed in organic beekeeping. Such medicines should be prescribed by the competent authorities of veterinary services (Ministry of Agriculture and Rural development, 2019). Furthermore, the Pancyprian Beekeepers Associations has published articles regarding the importance of dealing with Varroa, suggesting new ways of determining the toxicity of various medicines and their impact on the beehive (Papachristoforou, 2008).

Another common disease, relatively new, is Nosema ceranae which are parasites that attack honeybees' digestive system causing a slow, inevitable death. This parasite disease was first located in China and soon transferred to Europe. Due to the seriousness of the Nosema ceranae, beekeepers need to declare it to the official authorities. Unfortunately, there are no registered medicines, so the precautionary measures and especially the disinfection of the apiary play a big role in the fight against the Nosema ceranae (Filachtou, 2008).

2.2.1.6. What are the methods and techniques used for honey extraction?

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Harvesting takes place two times per year, the months of April/May and August. Spring honey is largely citrus nectar honey, while summer honey is largely derived from thyme, eucalyptus, and other aromatic plants (HONEYMELL, 2015). Beekeepers decide how many and which honeycombs will be removed. Deciding which frame to select for extraction requires experience and generally beekeepers choose the frame which is capped by bees as a whole or at least 75% of its surface. If more than $\frac{1}{4}$ of the comb surface is unsealed, it means that the honey is not ready to be harvested because it is not dehydrated at proper levels and it has not undergone the complete enzyme biochemical process (WIKIFARMER, 2017).

Following the harvest, the honey frames are transported to local workshops or small factories for extraction. The procedure that follows is simple. The thin wax layer, created by the bees to protect the honey as it matures, is removed using a heated knife or other special tool. Then the frames are put to the honey extractor, where honey is extracted using a centrifugal force. The extracted, pure honey flows in appropriate containers (jars) where it is stored at low temperatures until its bottling date (WIKIFARMER, 2017).

Some beekeepers have invested in state-of-the-art equipment which allows them to bottle the pure honey without sacrificing its aroma or taste. Foreign bodies, such as beeswax are removed from the honey and then the honey is left for 72 hours before beekeepers proceed with its bottling (WIKIFARMER, 2017). Since the majority of beekeepers in Cyprus do not own their own extraction factory or workshop, they can rent facilities and equipment either from other beekeepers or by the association they belong to.

2.2.1.7. Which are the management practices in beekeeping? How do beekeepers handle different situations?

Research showed that there is no evidence of implemented beekeeping management strategies in Cyprus. Beekeeping is a traditional family business that is inherited from generation to generation of beekeepers. Managing the business comes from experience, from the elders to the youth, and it has been so since the very first appearance of beekeepers on the island. There are Cypriot beekeeping businesses that are considered market leaders. These businesses are known for their management and quality standards and are well-known around the globe for their honey and honey products.

Nevertheless, in 2019 the European Commission instituted the National Apiculture Programmes 2020-2022, aiming at improving production and marketing structure in the beekeeping sector for EU countries. For Cyprus that meant, among others, technical assistance for beekeepers for the production of honey, the opening of a Beekeeping Center for training, maintenance and replacement of old and worn hives, implementation of quality standards (Protected Designation of Origin or Geographical Indications) and marketing strategies for honey products (Ministry of Agriculture and Rural development, 2019).

Last but not least, beekeepers' associations assist their members in handling different situations, offering expertise and training on every aspect of beekeeping.

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2.2.1.8. Which are the financial aspects of a beekeeping business?

Starting a beekeeping business, cannot happen overnight, especially if the potential beekeeper does not have any prior experience in the field. Literature suggests that in order to become a beekeeper, one needs to take three steps prior to any real investment.

Step 1 is to meet the bee either through a book, a seminar or a training. Step 2 is to acquire (purchase) less than five beehives, in order to hands-on train yourself on beekeeping. If after a year or two the beekeeper still feels comfortable that beekeeping still interests them, then step 3 would be to acquire a few more beehives, either by buying them from other beekeepers or by multiplying their own. Consideration must be given to the total number of hives the beekeeper can actually manage so yield is maximized, losses are minimal, and supply is balanced with demand (Gkoras & Antoniou, 2018).

Deciding to professionally do beekeeping would come after three to four years. An important benefit during this waiting period is that the potential beekeeper already owns a small market share, since the first honey productions are consumed by friends and family (Gkoras & Antoniou, 2018).

Moving on to the real financial aspects of a beekeeping business, according to legislation both in Cyprus and Greece to exercise beekeeping does not presuppose owning a field. However, buying the equipment and setting up the infrastructure for a beekeeping business can become very expensive. Purchasing all the needed equipment, paying for medicines, maintenance, transportation, and other expenses can cost as much as 320€ per hive. It is clear enough that in order to break even on your original investment and eventually have profit, will take years of honey production, hard work and luck. Adding to the equation, the costs for storage, bottling and delivery, honey production is not a cheap hobby (Gkoras & Antoniou, 2018).

2.2.1.9. How do beekeepers promote bee products in the market?

Bee products are promoted through three main means:

1. Honey festivals

Each year 3 honey festivals take place in Cyprus. The biggest festival is called Honey and Beekeeping festival and it takes place at the village of Odou, in the Larnaca mountains. More than 20 exhibitors with honey and honey products from all over the island are present, showcasing a wide range of products of gastronomy, beauty and wellness, all related to honey. Moreover, they hold tours to enlighten the protection of the bee and to promote beekeeping.

2. Websites and social media

Many honey producers have their own website for their businesses, where honey and honey products are presented and are available to consumers. If a website is not present, the use of social media plays a

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key role in beekeeping, as a lot of promotion is done using Facebook, Instagram and Twitter, which shows that beekeeping is becoming more popular and modern.

3. The Pancyprrian Beekeeping Association (PBA)

As mentioned in 2.3.2, PBA is the representative body of beekeepers in Cyprus. PBA publishes every 6 months their own magazine for beekeeping, in which events, seminars, festivals and beekeeping businesses are presented. Moreover, the magazine offers information for beekeeping, bee diseases, new technologies and tools.

3.2.1.10. Do beekeepers know and use mobile beekeeping strategies? If yes, what strategies?

Findings for Cyprus are inconclusive for mobile beekeeping strategies. There are some mentions which involve technology in monitoring bees' health and colony development, however there is no evidence of implementation for such technologies in the Cypriot beekeeping sector.

3.2.2. Conclusions

- There are 51 000 beehives in Cyprus belonging to 690 beekeepers, placing Cyprus in the 4th place of most beehives per beekeeper. Honey production for 2019 was 584 tons and the average honey yield was 11kg per beehive. The most popular honey types in Cyprus are Blossom, Raw Blossom and Thyme honey, pricing from 8€ to 10€ per kg.
- Beekeeping associations exist in Cyprus, providing support to old and new beekeepers. The Pancyprrian Beekeepers Association was the first to be founded in the 1980s. In total, an estimation of 300 beekeepers are organized in some association.
- There are several courses for beekeeper and apiculture enthusiasts, however it is inconclusive if these trainings cover the managerial part of running a beekeeping business.
- Two main diseases appear in Cyprus: the Acari Varroa which is tackled using bee medicine and the Nosema ceranae which is a parasite that cannot be tackled with any kind of medicine, only with proactive measures at the beehive.
- Honey extraction is performed in April/May and August/September. The extraction procedure takes place in workshops or small factories where the honey is extracted through centrifugation.
- Starting a beekeeping business can cost as much as 320€ per hive, making honey production an expensive, nonetheless, journey.

Cypriot bee products are promoted through honey festival, websites and social media, and the beekeepers' associations.

There are no real proof that mobile beekeeping strategies are implemented by Cypriot beekeepers.

There is a real need for Cypriot beekeepers to be trained in the application of good beekeeping practices as well as new or improved techniques in the production and marketing of beekeeping products.

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2.3. Ireland

2.3.1. The results

Beekeeping is an agriculture activity practiced in all European countries and is characterioed by diverse production conditions, yields and beekeeping practices. Every year, the EU's 600.000 beekeepers and their 16 million beehives produce 200.000 tonnes of honey. This is not however sufficient to cover

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demand on the EU market, and the shortfall is made up by imports, above all from China. (AAG European Parliamentary Research Service, 2017).

Beekeeping in Ireland has a long history since the last 2000 years and can be practiced almost anywhere in Ireland, but naturally there are localities more favorable than others. It has gained more and more popularity, evidenced by numerous organizations promoting and assisting beekeeping. Specific aspects and crucial issues of beekeeping in Ireland are analyzed as detailed below.

3.3.1.1. How many beekeepers exist in your country and how many beehives do they own?

Despite the increased pressures on bees and beekeepers through new diseases and loss of habitat, there are now in excess of 2.200 beekeepers managing over 24.000 colonies of bees with a production of 200 tons of honey according to Demographics of the European Apicultural Industry. Ireland is ranked 14 in honey production among others European countries. Imported honey reached 1156 tons and exported honey estimated at 163 tons with retail price range 10-14 € per kilo and wholesale price 6-8 € per kilo. (Chauzat M., et al 2013).

There are several types of beekeepers: as a hobby/career is an activity for people who are interested in having their own beehives. Beekeepers create profit by selling honey, honeycomb, and wax. Another type is the sideline beekeeper, who attempts to make a profit keeping bees, but relies on another source of income. Sideliners may operate up to 300 colonies of bees. The last type of beekeepers is the commercial beekeepers, that control hundreds or thousands of colonies of bees. The most extensive own and operate up to 50,000 colonies of bees and produce millions of pounds of honey (Illustrated Encyclopedia of Beekeeping, 1985).

There are many types of beehives available on the Irish market. The most common type of beehives used in Ireland are The National, The Smith Hive and Modified Commercial Hive. The approximate comb areas of the various frames are: National and Smith Deep – 5000 worker cells, Commercial Deep- 7000 worker cells. (The Federation of Irish Beekeepers Associations, 2020)

3.3.1.2. Are there local associations that provide support to beekeepers in your country? What kind of support?

The main beekeeping associations that provide support to beekeepers in the Republic of Ireland are the Federation of Irish Beekeepers' Associations (FIBKA) and the Irish Beekeepers Association/Cumann Beachairí na hÉireann (CLG), while in Northern Ireland the main beekeeping organizations are the Ulster Beekeepers Association (UBKA) and the Institute of Northern Ireland Beekeepers (INIB). There are also a number of other organisations within Ireland, including the Native Irish Honey Bee Society (NIHBS) and the Irish Buckfast Beekeepers Association (IBBA).

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The Federation of Irish Beekeepers' Associations (FIBKA) provides education and training to beekeepers via Panel of Lecturers and Instructors and a Syllabus of Examination for Proficiency in Apiculture. Also the website of FIBKA makes useful articles and beginners' guide available for all junior beekeepers and valuable information for Bee Health.

The Irish Beekeepers Association/ Cumann Beachairí na hÉireann (IBA/ CLG) has as main objectives to foster the skills of beekeeping, in an environmentally sustainable manner and to offer affordable group insurance cover to members both in the Republic of Ireland and Northern Ireland. Furthermore, offers education which allows members to pursue a syllabus with internationally recognised qualifications and provides support and assistance in the field of relevant apiculture research through information and Public Events, to increase public awareness of the importance of honey bees and pollinating insects in our environment.

The Native Irish Honey Bee Society (NIHBS) has as main objectives to promote the conservation, study, improvement and re-introduction of *Apis mellifera mellifera* (Native Irish Honey Bee), throughout the island of Ireland and to act in an advisory capacity to groups and individuals who wish to promote it. The promotion of the formation of Bee Improvement groups and the provision of education on Bee improvement are main goals as to increase public awareness of the native Irish honey bee. Last but not least, the cooperation with other Bee-Keeping organisations with similar aims is of high importance in order to seek the help of the scientific community and other stakeholders in achieving these objectives.

The Irish Buckfast Beekeepers Association (IBBA), as a member of the European Buckfast Beekeepers Federation, is a breeding group in the first place and encourages its members to engage in their own breeding activity, be it so-called basic breeding, line breeding, or the true method of breeding Buckfast bees, the combination breeding. The continual improvement in breeding the Buckfast bee is the main objective.

The Ulster Beekeepers Association (UBKA) is an Association of the affiliated local Beekeeping Associations in Northern Ireland, formed in 1942. The UBKA's objectives are to unite beekeepers in Northern Ireland for their mutual benefit in promoting apiculture, to represent the collective interests of beekeepers and to undertake activities which support local Associations. UBKA's activities include the provision of advice, guidance and expert opinion and promoting members as a source of expertise and experience in beekeeping.

The Institute of Northern Ireland Beekeepers (INIB) is a charitable organisation. It has a deep commitment to educating and informing the public about beekeeping. Each year the INIB runs a programme of events to help inform and educate people about honeybees and about the craft of beekeeping. The INIB's annual programme is directed at the growing number of people who are interested in honeybees, beekeeping and the role these fascinating little insects have to play in our wider

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environment. Honeybees and other pollinating insects are under continued and varied threat. The INIB works to inform people how they can help preserve these important insects.

3.3.1.3. What is the level of knowledge of beekeepers regarding honeybees' natural history?

Ireland beekeepers come from a very old tradition. Until the spread of cane and beet sugar to northern Europe beginning three centuries ago, honey had huge economic importance as a sweetener, preservative and medicine, and the laws reflected that. Current knowledge of past beekeeping in Ireland is based largely on early mediaeval manuscripts, printed books from later centuries, and also surviving structures built to protect bee hives (Ulster Folklife, 1998). Before bees were kept in hives, people in Ireland would have obtained honey combs from wild nests in trees, and combs were still harvested from natural nests long after hives were used. Such information regarding honeybees' natural history can be obtained from books, ostensive:

- A smaller Social History of Ancient Ireland (P.W. Joyce 1906)
- Irish beekeeping in the past (Eva Crane and Penelope Walker, 1998)
- Starting Beekeeping in Ireland - The No Nonsense Guide (Thomas Carroll, 2018)

Therefore, we can easily assume that while the access to these sources is not so common, beekeepers have a limited level of knowledge regarding honeybees' natural history and are not so well informed about the origin and natural history of honeybees.

3.3.1.4. Are there any trainings addressing beekeepers' needs towards running a business?

There are a number of courses offered in Ireland regarding beekeeping and apiculture in general. The most relevant training that focuses on business needs of a potential beekeeper is offered from Teagasc, the Agriculture and Food Development Authority. Teagasc is the national body providing integrated research, advisory and training services to the agriculture and food industry and rural communities. In order to support new beekeepers, Teagasc held a seminar on 'Starting a Food Business', that targeted at people interested in diversification into artisan food production (organics, horticulture, setting up a food business, forest food, bee keeping) to complement their existing farming enterprise. Also since 1996 Teagasc has published a booklet entitled "Profitable Honey Production" that provides meaningful information for honeybees, colony management, harvesting and diseases and control diagnosis.

Thus, we can deduce that there is an urgent need not only for more beekeeping-focused seminars and trainings for business purposes, but also for updated booklets and guides that will provide current trends and methods for profitable honey production.

3.3.1.5. What do beekeepers do regarding apitherapy and honey bee health?

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Apitherapy is the science and art of using beehive products to prevent and/or heal hundreds of human and animal diseases (Stefan Stangaciu, 2015). The native Irish honey bee (*Apis mellifera mellifera*) is beneficial because of antioxidants it contains. To help the Irish honey bee health, beekeepers are about to increase forage, which means more flowers, especially wild flowers. It takes approximately 2.000.000 flowers for a honey bee colony to produce one pound of honey (Taragh Loughrey-Grant, 2016).

The beekeeping sector is regulated by EU and national legislation. Under this legislation, bee health are subject to veterinary inspection for certain notifiable pests and diseases. Irish Beekeepers must notify at Department of Agriculture, Food and the Marine (DAFM) all suspected outbreaks of any of these pests or diseases in their bee hives or colonies. Department of Agriculture, Food and the Marine (DAFM) has provided a free bee disease diagnostic service that is currently available to all beekeepers. This service is funded by DAFM with analysis conducted by Dr Mary F. Coffey. To safeguard bee health all beekeepers are asked to remain vigilant for notifiable pests and diseases and to submit samples if foulbrood is suspected (DAFM, 2020).

3.3.1.6. What are the methods and techniques used for honey extraction?

Honey extraction is the central process in beekeeping of removing honey from honeycomb so that it is isolated in a pure liquid form. The honey frames are typically harvested in August, when most will be filled with honey. On a completely filled frame the honeycomb will be capped by the bees with wax for storage. The process of extracting the honey from the waxed honeycombs into a pure liquid form and bottled in jars is labour intensive and local beekeeping associations often have equipment to lend to members to keep costs low and members are full of advice on how to produce the finest honey.

Generally, the frames are removed from the beehive to a suitably hygienic room or honey house. As honey is a food product all the handling is done under hygienic and safe conditions. Firstly, the beekeeper removes the covering of capping wax manually with a knife and this wax is very valuable and often used to make candles or other products. The honeycomb frames are then placed in a stainless steel spinning machine called an extractor. It is spun around at speed so that the honey flies out of the honeycomb and the liquid honey collects at the bottom of the extractor (Mary O' Riordan, 2015). After this the liquid honey has to be finely strained to remove any wax and debris and allowed to settle to remove air bubbles before jarring and labelling and then delivered to the market stall.

3.3.1.7. Which are the management practices in beekeeping? How do beekeepers handle different situations?

Research showed that despite most of beekeepers own hives as a hobby, beekeeping management can be proved a very serious business. Management strategies in Ireland include health and safety risk assessment, medical emergencies, diseases control and diagnosis and honey labelling and selling in compliance with legislative requirements.

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Beekeepers' associations assist their members in handling different situations. Irish Beekeepers Association is offering Members' Handbook on Beekeeping, which aims to give to novice beekeepers increase confidence, practical experience and skills necessary to successfully manage a beekeeping enterprise.

The aim of the beekeeper should be to manage the bee colonies so as to have the maximum population of bees in the hive to coincide with the start of the main honey flow period. This will vary with the location within the country but for the majority of Irish beekeepers will be from mid-June to the end of July. Obviously, the prevailing weather conditions will have a big influence on the honey crop obtained, but the skill of the beekeeper in ensuring that a large population of bees are present during this period will determine if the enterprise is successful or not (Harry O'Brien, 2006) .

The beekeeper will have to ensure that the bee colony has an adequate food supply in the hive at all times. Another challenge for beekeepers is swarming. Swarming is the natural method of propagation that bees employ to continue the development of the species. This is sometimes the most difficult aspect that the beekeeper has to deal with because if the colony swarms then he will have very little surplus honey to market. Consequently a good understanding of the factors that encourage swarming is necessary (Harry O'Brien, 2006).

Beekeeping as in any enterprise has a number of diseases, which with good management the beekeeper can control or eliminate. The most serious one at the present time is Varroasis, which has only in recent times become established in this country. However, it can be controlled and it should not deter any prospective beekeeper. Also, proper protective clothing is necessary to reduce the risk of stings. This will consist of bee veil, white overalls, gloves, hive tool and smoker and proper boots (Harry O'Brien, 2006).

3.3.1.8. Which are the financial aspects of a beekeeping business?

The capital costs of setting up a beekeeping enterprise can be high if the intending beekeeper purchases the hives at catalogue prices. It is much cheaper if manufactured by the beekeeper whilst ensuring that the specifications are met. The following table indicates the basic costs and returns (Harry O'Brien, 2006).

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Table 1: Annual Hive Costs and Honey Returns (Teagasc, Honey Production 2006)

Hive Costs		Annual Costs	
	Price	Feeding	€20 per Hive
New	€200	Disease Control	
DIY Assembled	€140	Repair of Hives	
Annual Honey Returns			
Price	Yields		
	15 Kg.	20 Kg.	25 Kg.
Bulk Price €4 per Kg.	€60	€80	€100
Jars €6 per Kg.	€90	€120	€150

The Department of Agriculture, Food and the Marine supports Irish beekeeping through a number of initiatives including providing aid to support the activities of national beekeeping organisations and provision of grant aid for capital investments by individual beekeepers in specialised beekeeping related equipment and structures (DAFM, 2019). For that reason, provides two grant schemes for Irish National Beekeepers which are:

- Horticulture Grant Scheme 2020 Notice for Beekeepers
- Annual Grants to Irish National Beekeepers Federations

3.3.1.9. How do beekeepers promote bee products in the market?

Honey is the best-known product of beekeeping, although other apiculture products (royal jelly, propolis, pollen and beeswax) and services (e.g. renting out bees for pollination) can represent a source of income for beekeepers (Rachele Ross, 2017). Honey offered for sale to the Irish consumer must comply with the European Communities (Marketing of Honey) Regulations 2003 (SI No. 367 of 2003). These regulations aim to ensure the honey is of acceptable quality and accurately labelled, especially in terms of origin.

The promotion of honey is an area that beekeepers have to explore and it is under utilised at present. Perhaps producing some comb honey in conjunction with the conventional extracted honey would be a good marketing ploy. The honey offered for sale should be properly strained and it is good practice to visit the shop regularly when the honey is on sale and replace any jars that have started to granulate (Harry O'Brien, 2006).

According the research, The Federation of Irish Beekeepers' Associations (FIBKA) acts as an umbrella organisation, providing promotion of the interests of bees, beekeepers and beekeeping in Ireland. More specific the members of FIBKA have access to:

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- Promotion and lobbying on behalf of beekeepers with the Department of Agriculture, Fisheries and Marine (DAFM) to promote the good health of bees and the interests of beekeepers.
- Annual National Honey Shows at Gormanston and at Fota. FIBKA covers mileage costs of Honey Judges to attend these Shows and other Honey Shows recognised by FIBKA.
- A FIBKA stand promoting beekeeping and Irish Honey at most of the large public events such as The National Ploughing Championships, Bord Bia Bloom in the Park, The RDS Horse Show, Tullamore Agricultural Show amongst others.

As it can be derived from the above, beekeepers wishing to promote effectively their bee products are encouraged to have a membership in Beekeeping Associations such as FIBKA.

3.3.1.10. Do beekeepers know and use mobile beekeeping strategies? If yes, what strategies?

A software platform that collects data from sensors within the hive and presents the data in an easy-to-digest way to beekeepers has developed by Fiona Edwards Murphy under the name “ApisProtect”. The application collects data on things like temperature, humidity and sound from inside the beehive, and uses machine learning to convert that raw data into valuable information for the beekeeper. According to COLOSS, a Swiss-based honey bee research body that has worked with third-level institutions like the University of Limerick, Ireland had some of the highest loss rates in beekeeping in the world over winter 2015/2016 (Apisprotect.com, 2019).

ApisProtect is currently monitoring the health of ten million honey bees across 100,000 acres in Europe, North America, and South Africa. With this new technology, beekeepers will no longer need to rely solely on periodic, manual hive checks that can allow disease, pests and other issues to deteriorate hive health beyond rescue (Apisprotect.com, 2019).

2.3.2. Conclusions

- There are 24000 honeybee colonies in Ireland belonging to 2200 beekeepers, placing Ireland in the 14th place of European Union ranking. Honey production for 2010 was 200 tons, imported honey reached 1156 tons and exported one 163 tons. The most common type of beehives used in Ireland are The National, The Smith Hive and Modified Commercial Hive.
- There is an adequate number of beekeeping associations in Ireland, providing support and training to new beekeepers. The main beekeeping associations are the Federation of Irish Beekeepers' Associations (FIBKA) and the Irish Beekeepers Association/Cumann Beachairí na hÉireann (CLG), while in Northern Ireland the main beekeeping organizations are the Ulster Beekeepers Association (UBKA) and the Institute of Northern Ireland Beekeepers (INIB).
- Beekeepers have a limited level of knowledge regarding honeybees' natural history and are not so well informed and about the origin and natural history of honeybees. Courses are mainly

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focused on developing technical skills and sufficient beekeeping methods, than to provide historical facts about honeybees.

- There is an urgent need for more beekeeping-focused seminars and trainings for business purposes and for updated booklets and guides that will provide current trends and methods for profitable honey production.
- In order to maintain apitherapy and honey bee health, beekeepers are about to increase forage, which means more wild flowers. Also Irish Beekeepers must notify this Department of Agriculture, Food and the Marine (DAFM) of all suspected outbreaks of any of these pests or diseases in their bee hives or colonies.
- The honey frames are typically harvested in August, when most will be filled with honey. The process of extracting the honey from the waxed honeycombs into a pure liquid form and bottled in jars is labour intensive and local beekeeping associations often have equipment to lend to members to keep costs low and members are full of advice on how to produce the finest honey.
- Management practices in beekeeping in Ireland include health and safety risk assessment, medical emergencies, diseases control and diagnosis and honey labelling and selling in compliance with legislative requirements.
- According to Teagasc (Honey Production, 2006), annual hive costs for starting a beekeeping business can reach as much as 220€ per hive.
- Irish bee products are promoted mainly through means of beekeepers' associations.
- Apiprotect is a mobile beekeeping strategy developed in Ireland by Fiona Edwards Murphy. It is used by Irish beekeepers and has gained international acceptance.
- There is a real need for Irish beekeepers to be trained and educated in the production and marketing of beekeeping products.

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2.4. Spain

2.4.1. The results

2.4.1.1. How many beekeepers exist in your country and how many beehives do they own?

In Spain, there are 32.845 beekeepers accounted, from which 17,6% are considered professionals as their farms have more than 150 beehives. The professional beekeepers in Spain are above the European average, constituting an important professionalized area. Regarding beehives, the number amounts

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2.961.353¹, from which 75% are handled by professionals. Number of beehives has followed an increasing trend in last periods consolidating Spain's position as first honeybee producer of the EU with 17% of production.

In the country, the greater part of beehives and honey production is concentrated in the autonomous communities of Extremadura, Andalucía, Castilla y León and Valencia Community.

2.4.1.2. Are there local associations that provide support to beekeepers in your country? What kind of support?

Yes, there are associations at national, regional and local level giving support to beekeepers. At national level most relevant is "Asociación Española de Apicultores" (A.E.A.), the National Association of Spanish Beekeepers that provides a wide range of services for all beekeepers since starters to professionals.

Moreover, the state through the Ministry of Agriculture, Fishing and Livestock created the so called "*Programa Nacional de Medidas de Ayuda a la Apicultura*" or "*Spanish National Programme of Support Measures for Beekeeping*" for the period between 2020 and 2022 in order to promote the formation and internationalization of the sector as well as to harmonize the practices of beekeeping amongst all the territory.

At regional and national level there are several types of organizations, like associations, cooperatives, or unions of farmers and beekeepers.

The main support provided is regarding formation, advice, promotion and R&D. Other associations act as commercial organizations for unifying sellers and consumers for achieving best conditions in the sector.

2.4.1.3. What is the level of knowledge of beekeepers regarding honey bees' natural history?

In Spain there's a long tradition of beekeeping, so knowledge is taught through generations. This knowledge includes bees' history, behavior, functions and processes and also those regarding the honey collection process, which in most of the territory still follows ancient methods.

All this needed knowledge could also be learnt through some courses that beekeeping organizations provide to general public who is interested in starting a business. Thanks to these informative channels, beekeepers professionals and starters have a solid knowledge of bees' environment.

¹ The amount of beehives has increased in comparison to 2016 and 2017. *Spanish National Programme of Support Measures for Beekeeping*, section 3.2 "*Report of the beekeeping structure*".

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2.4.1.4. Are there any trainings addressing beekeepers' needs towards running a business?

Beekeeping is a spread tradition over Spain, so exist many associations and organizations supporting those who are interested in starting a beekeeping business. We can find training courses regarding different topics inside the area like queen breeding, bee feeding, health, safety, bricolage or production. Also general introductory courses offer a wide perspective of beekeeping sector and its business, but more from an agricultural perspective rather than from economical. The orientation is more national than international, as the Ministry of Agricultura, Fishing and Livestock assess in its *Spanish National Programme of Support Measures for Beekeeping*".

Moreover, beekeepers can find in this national programme information about the structure of beekeeping in Spain in order to be able to assess the profitability, evolution and distribution of the sector in the county.

Information about business aspects like regulation, investment needed or profitability can be found in blogs and specific webpages where some beekeepers offer their advice.

2.4.1.5. What do beekeepers do regarding apitherapy and honey bee health?

There are companies that use the apitherapy as treatment for different health conditions. Moreover, the Spanish National Beekeeping Agency (A.E.A.) promotes the use of the apitherapy as a natural alternative to the traditional medicine means to deal with different illnesses and conditions.

Regarding the honey bee health, the most common health condition that is affecting the bees in Spain is the mite verroa. It weaknesses the immunity system of the bees, making them more likely to develop other kind of illnesses caused by bacteria, fungus or viruses. It affects also the reproduction of the bees as well as produces a great depopulation.

The treatments are almost inexistent and so expensive, so it constitutes a great problem for the beekeepers due the affordability². Its effectivity is also quite complicated.

2.4.1.6. What are the methods and techniques used for honey extraction?

Honey extraction depends on the type of hive the beekeeper uses. In Spain, most used from professionals are Layens, but lately has been a changing tendency to other models like Langstroth or Dadant) due to productivity reasons. Layens method consists on extracting honeycombs one by one, a process that takes

² We must take into account that in the price should be included the costs of the treatment but also the ones regarding the secondary illnesses and replacement of the dead bees, as the mite produces a 25% of death.

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a lot of time and patience. After the honeycomb is out, the beekeeper extracts the honey and takes it back to the hive. This process is invasive for bees, disorganizing the hive.

The method for Langstroth and Dadant hives is less invasive than previous one. One part of the process is removing the bees by different methods. Spain is pioneer in the use of a method by air pressure, motivated by the idea of being less aggressive to bees and nature as possible.

2.4.1.7. Which are the management practices in beekeeping? How do beekeepers handle different situations?

In Spain we can differentiate two different management practices in beekeeping. The North and North-East of the territory is characterized by small beekeepers, amateurs and not professionals whose farms are small and who do not change their hives after the honey collection process, so are always located in same place. On the other side, the Centre and Southeast has a higher grade of professionalization and the migrant practice is more common, changing the hives to zones with more moderate weather.

Beekeepers have to face different situations and manage hives according to the zone climate characteristics for ensuring bees best conditions.

2.4.1.8. Which are the financial aspects of a beekeeping business?

Basic financial aspects of a beekeeping business are profits and costs. Profits come not only from honey but also from selling pollen, wax, jelly or even hives. Costs play a central role in the business as conditions like weather, closeness or distribution are key factors affecting competitiveness. We should also bear in mind depreciation of all materials and installations.

Profitability of the business will be determined by the cost of production and profits. So, profitability will increase when a beekeeper becomes more productive (cost of production decrease) but also when profits increase for achieving a higher price in the market.

2.4.1.9. How do beekeepers promote bee products in the market?

In Spain, beekeepers can promote their products for sale in different ways. One is by their own way, selling their products as suppliers (to shops, supermarkets or brands) or by direct sale with their own shop. Other possibility is selling their product to a cooperative, who afterwards will negotiate price conditions with potential buyers.

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Beekeepers do not carry out promotional practices by their own as selling practices are to wholesaler. Only few brands of honey take advertising campaigns, but are big companies. As a collective, Spanish Ministry of Agriculture is stimulating Spanish honey as a protectionism campaign against imports, mainly Chinese.

The common ways of promotion are the honey festivals that are carried out in different autonomous communities each several months as well as medieval fairs where some stands are always allocated.

The DOP (Origin Denomination) of the Spanish honey is also worldly known, so this constitutes a competitive advantage *per se*.

2.4.1.10. Do beekeepers know and use mobile beekeeping strategies? If yes, what strategies?

There's no evidence of application or common use of these kind of beekeeping strategies in the Spanish territory.

2.4.2. Conclusions

In Spain, beekeeping is an important driver of the agricultural area, as it has a great impact on the economy of this sector. Some of the most relevant findings are the following ones:

- The honey production in Spain has been increasing in the last years as well as the wax or other products arising directly from bees.
- The number of specialists is increasing and the first one within the European territory although more specialization is still needed to constitute a good foundation.
- The 80% of beehives is in charge of professional beekeepers, so it's easier to manage the production.
- One of the main problems of the Spanish beekeeping is also the illnesses produces by the varroa, that needs a more specific action plan to be fought.
- The information regarding how to run beekeeping businesses is not complete nor properly explained.
- Is necessary to give more support to the beekeeping and beekeepers by promoting their businesses.
- More means of promotion and marketing are needed to internationalize the production of honey and other products, as the businesses have a very strong local or regional character.
- The beekeepers have a lot of knowledge about beekeeping and traditions in the business, although there's no a common framework to check everything that includes all the information in the same place.

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- Spain is one of the most important producers in the European Union regarding honey production although there are some problems that are present on the sector, as the need of more specialization of beekeepers or the necessity of more sustainability regarding the beekeeping businesses.

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2.5. Greece

2.5.1. Results

The EU beekeeping sector is an important sector for agriculture and for EU economy in general. The pollinisation is a serious matter which affects to the plants’ and trees’ life. The EU honey market is the second biggest market globally, follows China which is the leader on global honey market. The total number of beehives in EU is 17.5 million and belonging to 650 thousand beekeepers scattered around European countries.

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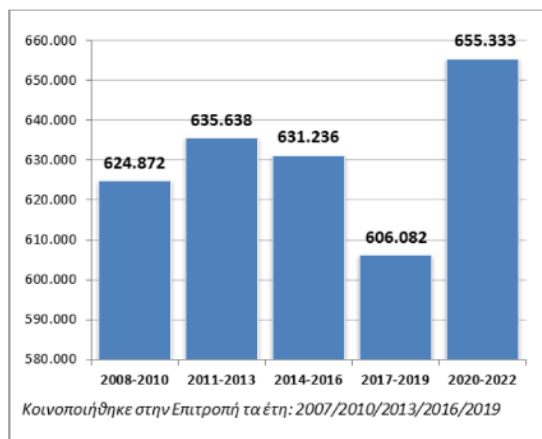


FIGURE 1: Number of EU Beekeepers - Photo Source: EU Commission Report COM(2019) 635/17.12.2019

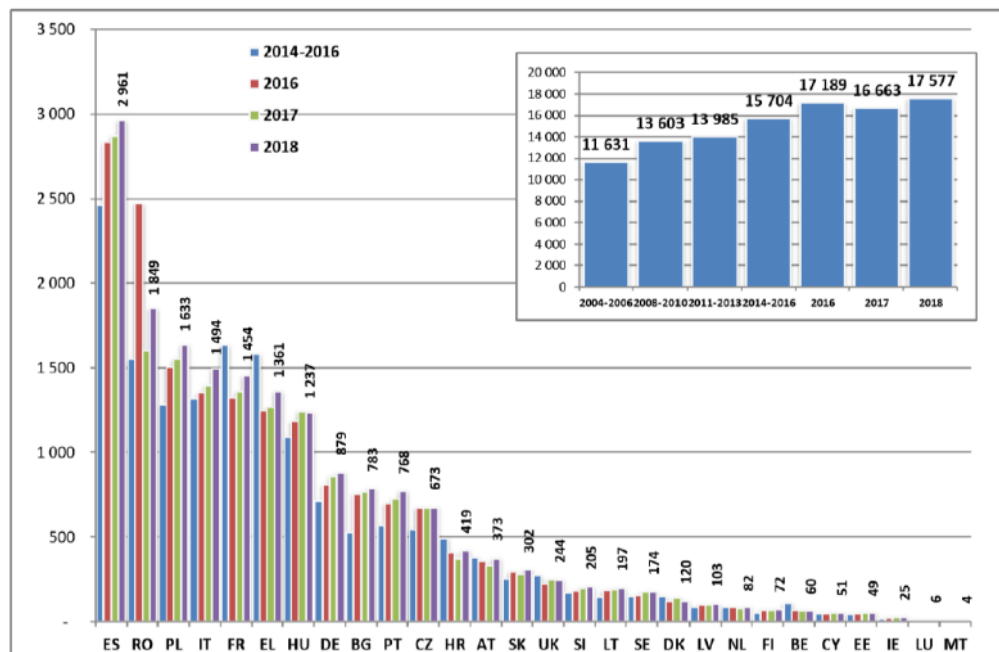


FIGURE 2: Number of EU Beehives per country - Photo Source: EU Commission Report COM(2019) 635/17.12.2019

The overall honey production in EU is approximately 250 thousand tonnes (2019-2020). The EU honey production trend might be slightly increasing.

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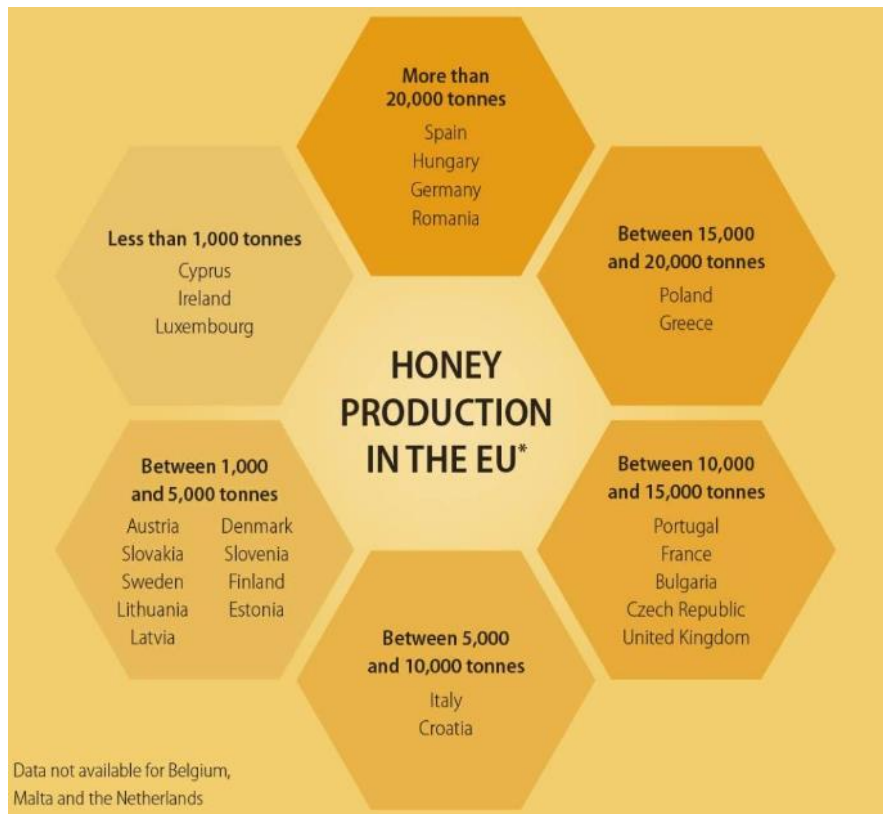


FIGURE 3: EU Honey production (in thousands Tn) per country–

Photo Source: <https://www.europarl.europa.eu/news/en/headlines/economy/20180222STO98435/key-facts-about-europe-s-honey-market-infographic>

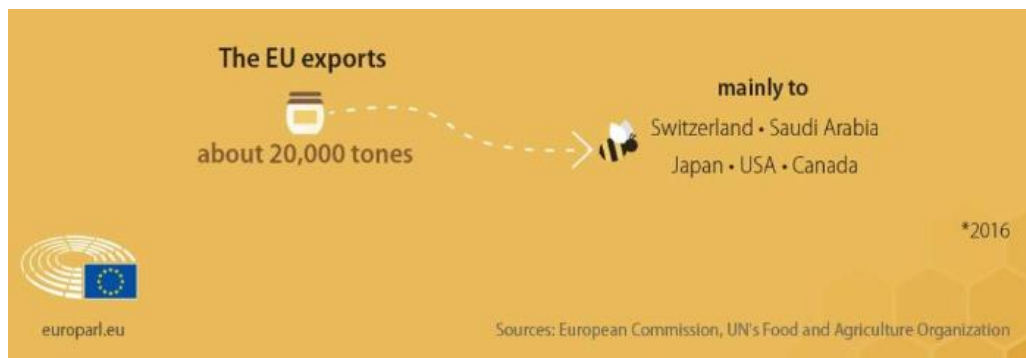


FIGURE 4: EU Honey exports (in thousands Tn)

Photo Source: <https://www.europarl.europa.eu/news/en/headlines/economy/20180222STO98435/key-facts-about-europe-s-honey-market-infographic>

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This honey production is cover only the 60% of the domestic demand, so honey products are imported to cover the rest of 40% of the domestic needs.

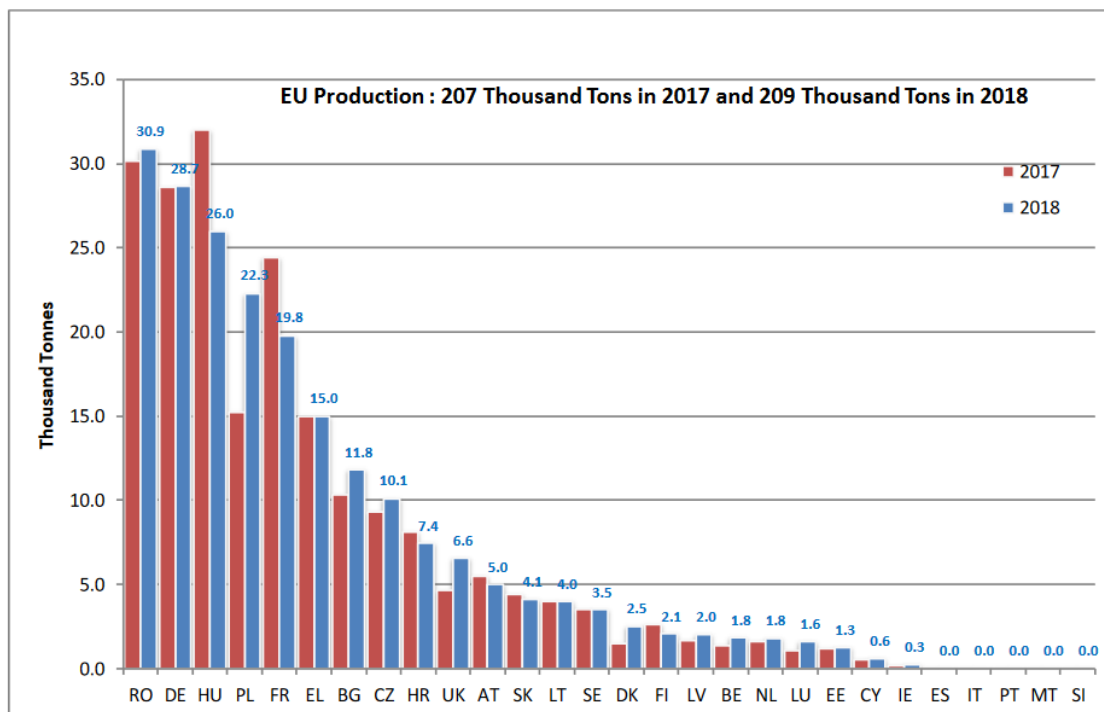


FIGURE 5: EU Honey production (in thousands Tn) per country - Photo Source: EU Commission Report COM(2019) 635/17.12.2019



FIGURE 6: Worldwide Honey production (in thousands Tn) per country–

Photo Source: <https://www.europarl.europa.eu/news/en/headlines/economy/20180222STO98435/key-facts-about-europe-s-honey-market-infographic>

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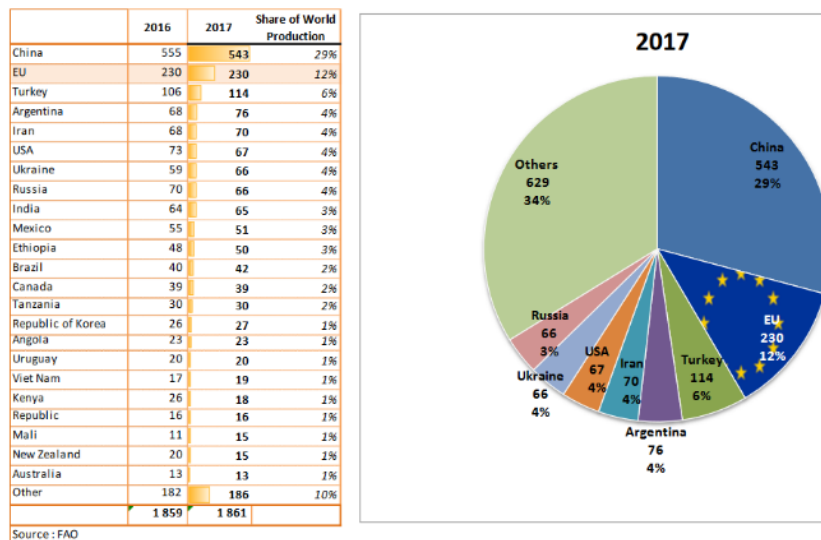


FIGURE 7: Global Honey production (in thousands Tn) per country

Photo Source: https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/animals_and_animal_products/presentations/market-presentation-honey_en.pdf

The bigger exporter to EU is China with 40% of overall EU honey imports and follows Ukraine with 20% of overall EU honey imports (European Commission, 2019).

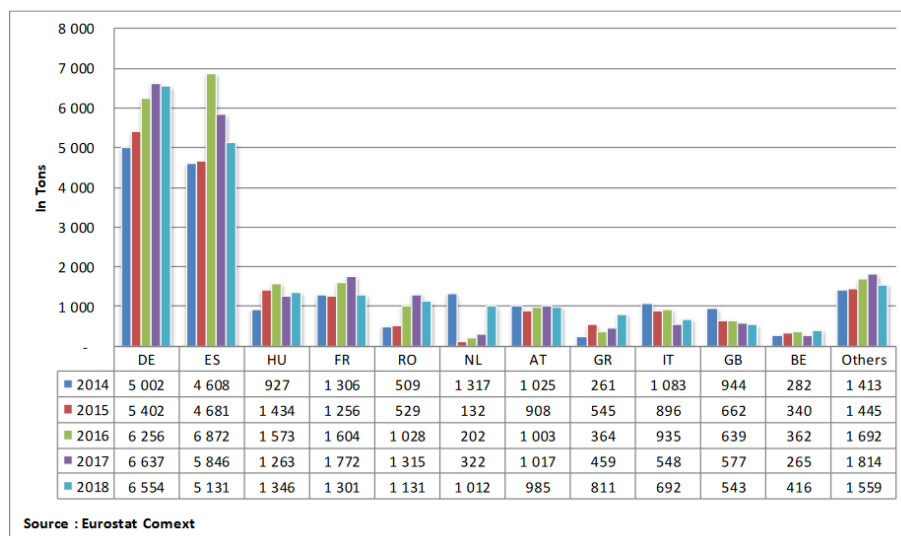


FIGURE 8: Member States' Share of Imports from Third Countries

Photo Source: https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/animals_and_animal_products/presentations/market-presentation-honey_en.pdf

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Although Greece is a small country with population of 12 millions of people, produces over of 15 thousand tonnes of honey per year. This is the 6th honey production into EU and for this reason Greece is the 6th EU producer among other EU countries. In the same time Greece is the 8th EU exporter to third countries with 811 thousand tonnes honey exports which was approximately the 10 percent of Greek honey production (2018).

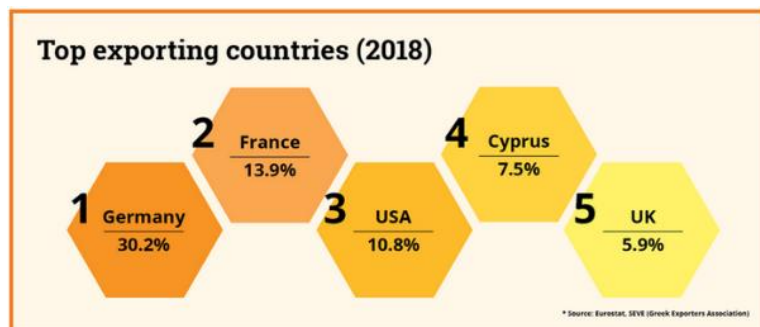


FIGURE 9: Greek honey export destinations

Photo Source: <https://greekfoodnews.com/greek-honey-exports-increasing-year-on-year/> article by Vana Antonopoulou July 3/2019

The honey market in Greece is steadily increased among other sectors of agriculture and contributes to Greek economy in general (1,5% of the country's GDP in 2013). Greek honey penetrates the EU honey market as premium product and is exported to Germany, Cyprus, Canada, France and the UK, among EU countries. These EU countries (plus U.S) absorbs approximately the 80% of Greek honey exports and amongst them France is double imports from Greece. Other traditional markets are Italy, Austria and Russia. New emerging markets for Greek honey are Lebanon, Saudi Arabia Norway and Japan.

The reason for that results on Greek honey exports is the quality of products. This quality is due to the rich biodiversity of Greece and a plenty of endemic plants which contribute to honey flavor, the mild climate which is ideal for honey production and the large exposure of bee population and beehives to natural areas where the exposure to pesticides is minimum. Also Greek honey products have small percentage of humidity which strengthen the honey flavor and contribute to optimization of physicochemical properties. (Source: <https://greekfoodnews.com/greek-honey-exports-increasing-year-on-year/> article by Vana Antonopoulou July 3/2019).

2.5.1.1. How many beekeepers exist in your country and how many beehives do they own?

Beekeeping in Greece traditionally is a highly dynamic sector. There are almost 25 thousand beekeepers in Greece (2019) although the EU statistics shows a significant reduction of Greek beekeepers in 2022. Greece bee sector covers 11% of the total European Union beehives and 1.7% worldwide (FAO-2010).

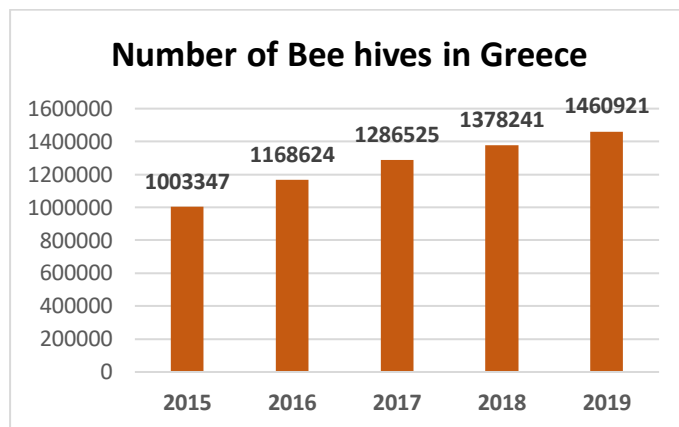
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	2003	2004-2006	2008-2010	2011-2013	2014-2016	2017-2019	2020-2022
DE	103 600	103 600	103 600	103 600 *	98 297	116 000	129 048
PL		42 800	39 410	44 999	51 778	62 575	74 302
CZ		49 734	48 678	46 033	48 132	49 486	61 572
IT	75 000	50 000	70 000	70 000	50 000	50 000	56 059
FR	100 000	100 000	69 600	73 500	75 000	41 560	53 953
UK	43 600	43 600	43 900	43 900	43 900	37 888	40 275
AT	25 027	24 421	23 000	24 451	25 099	25 277	29 745
ES	27 420	24 606	23 265	23 816	23 473	23 816	28 786
RO			36 800	40 000 *	43 200	22 930	23 161
HU		15 302	16 000	16 000	20 410	21 565	22 447
SK		18 123	14 339	14 699	16 338	17 171	18 586
SE	14 000	14 000	15 000	15 000	12 000	14 000	16 000
BG			29 097 *	29 097	19 179	17 969	12 260
SI		7 955	7 620	8 838	9 638	10 145	11 349
PO	26 000	22 000	15 267	17 291	16 774	10 698	11 301
EL	22 000	19 560	19 814	19 392	21 031	24 582	9 266
LT		11 000	10 923	13 000	10 132	8 536	8 950
NL	10 000	10 000	10 000	8 000	8 000	7 000	9 345
BE	11 000	7 715	7 000	7 600	9 500	9 490	8 223
HR					8 953	12 526	7 283
DK	6 000	5 000	4 278	4 300	5 000	7 000	7 000
EE		7 600	7 400	2 416	5 934	5 250	5 215
IE	2 300	2 200	2 200	2 388	2 326	3 000	3 300
FI	4 200	4 200	3 300	2 500	2 700	3 100	3 200
LV		8 300	3 300	3 700	3 346	3 282	3 341
CY		634	544	588	550	691	676
LU	650	650	369	348	331	337	456
MT		168	168	182	215	208	234
EU	470 797	593 168	624 872	635 638	631 236	606 082	655 333

FIGURE 10: EU number of beekeepers per country - Photo Source: EU presentation of National apiculture programs 2020-2022

The number of beehives existing in the country is almost 1,5 million beehives (2019). In general, there is an average 31,3% growth of beehives since 2015. But the average annual growth of 0,06% every year since 2016 is very small. In fact the honey production is concentrated in a few beekeepers who have invested to the production in semi industrial scale.

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FIGURE 11: Number of Greek Beehives Source: <http://aggregate.opeepe.gr>

NUMBER OF BEEHIVES IN THE EU

	2003	2004-2006	2008-2010	2011-2013	2014-2016	2016	2017	2018	
ES	2 398	2 465	2 321	2 459	2 459	2 834	2 868	2 961	+3.2%
RO			975	1 280	1 550	2 472	1 603	1 849	+15.3%
PL		949	1 092	1 123	1 281	1 505	1 553	1 633	+5.2%
IT	1 100	1 100	1 157	1 128	1 317	1 356	1 396	1 494	+7.0%
FR	1 297	1 150	1 361	1 339	1 636	1 322	1 360	1 454	+6.9%
EL	1 380	1 388	1 468	1 502	1 584	1 248	1 264	1 361	+7.6%
HU		873	900	900	1 089	1 184	1 239	1 237	-0.2%
DE	900	893	751	712	711	807	859	879	+2.3%
BG		-	672	617	526	754	766	783	+2.3%
PT	633	590	555	563	567	700	721	768	+6.4%
CZ		478	526	498	541	671	671	673	+0.4%
HR	-	-	-	-	492	406	371	419	+12.7%
AT	344	327	311	368	376	354	329	373	+13.2%
SK		192	246	236	255	292	279	302	+8.4%
UK	274	274	274	274	274	223	247	244	-1.2%
SI		143	171	143	167	181	195	205	+4.9%
LT		84	85	118	145	186	192	197	+2.8%
SE	145	145	150	150	150	154	174	174	+0.0%
DK	155	160	170	170	150	115	141	120	-14.9%
LV		54	62	64	84	97	96	103	+6.8%
NL	80	80	80	80	80	79	78	82	+4.6%
FI	42	47	56	46	50	64	67	72	+7.9%
BE	100	111	110	112	108	65	59	60	+0.8%
CY		46	44	44	45	43	50	51	+3.2%
EE		51	33	25	41	44	50	49	-2.4%
IE	20	20	22	24	16	21	23	25	+5.8%
LU	10	11	9	8	8	6	6	6	-1.5%
MT		2	2	3	3	4	4	4	+2.8%
EU	8 877	11 631	13 603	13 985	15 704	17 189	16 663	17 577	+5.5%

FIGURE 12: Number of EU Beehives per country and per year - Photo Source: EU presentation of National apiculture programs 2020-2022

In accordance to EU statistics for Greece the number of beekeepers who have more than 150 beehives is 9.266 beekeepers (2017-2018). From the rest of approximately 14.734 beekeepers, is corresponded 9 beehives per beekeeper when the EU number is 21 hives per beekeeper (2018).

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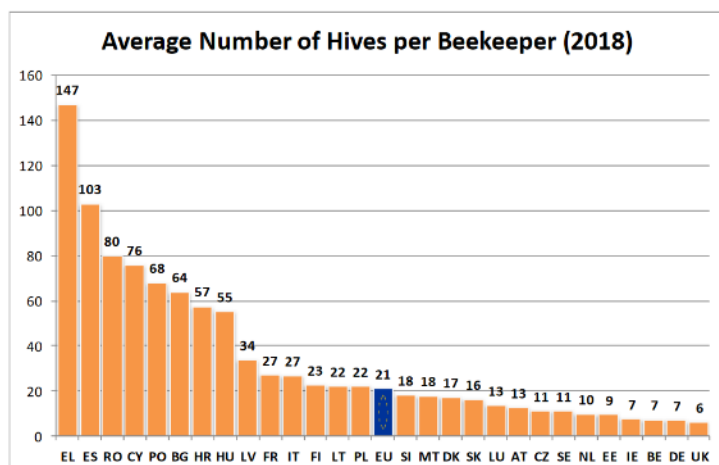


FIGURE 13: Number of EU Bee keepers per country - Photo Source: MS NAP / https://ec.europa.eu/info/sites/info/files/market-presentation-honey_en.pdf

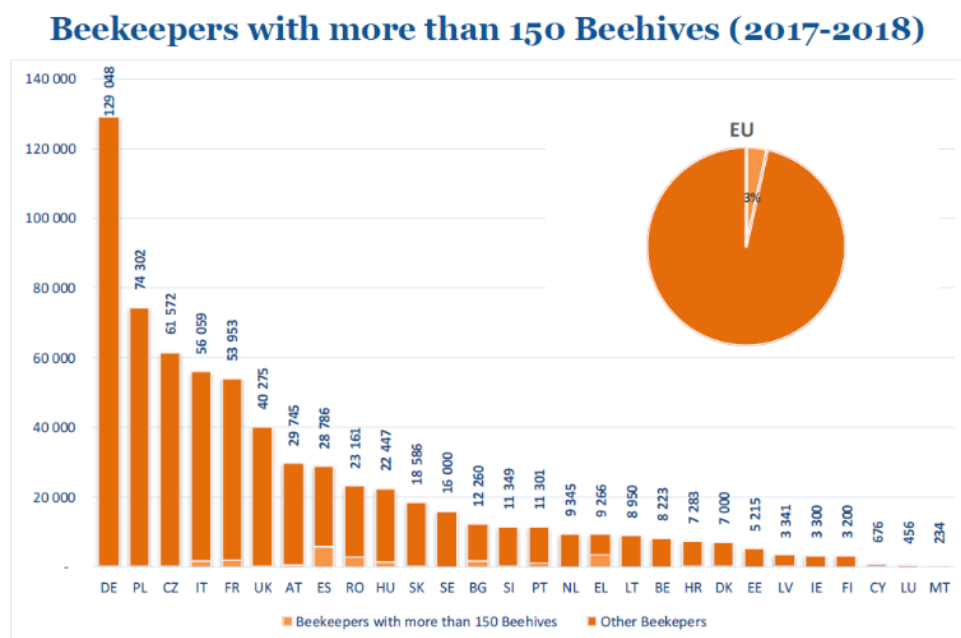


FIGURE 14: Number of EU beekeepers with more than 150 Beehives per country - Photo Source: EU presentation of National apiculture programs 2020-2022

The premium quality of the Greek products and their place of origin guarantee the good positioning of the Greek honey, both internationally and nationally.

Approximately 15.000-17.000 tons of honey are produced annually in Greece, which mainly are consumed as food and partially as other products. The bigger amount of honey, almost 60%, comes from areas of pine trees. The rest amount of honey is divided between thyme nectar honey (10%), honey of varying flowering somewhere, e.g. cotton (10%) and varietal flower honey e.g. honey or chestnut (10%).

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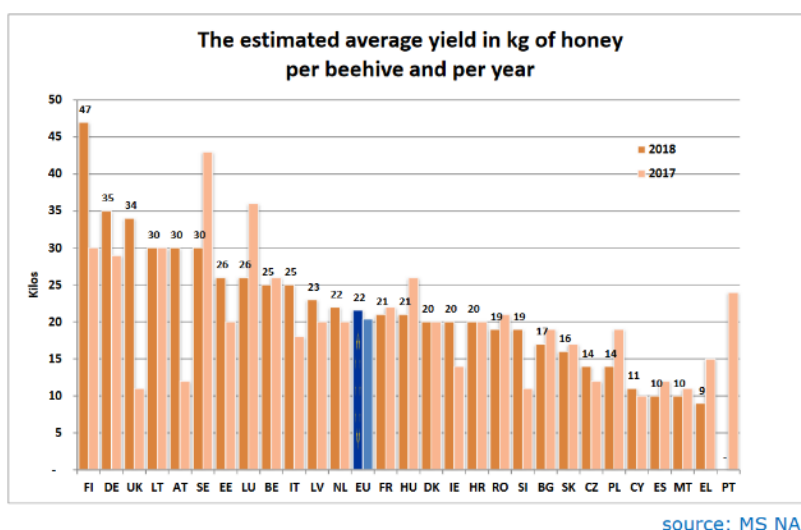


FIGURE 15: EU average price values in 2018 (average value per min price) - Photo Source: EU presentation COM(2019) 635/17.12.2019

The annual honey production in 2018 was 19,8 thousand tons. The estimated average yield in kilos of honey per beehive per year was 4,1kg (2014) and the estimated production costs were 9€ per kilo of honey (2018).

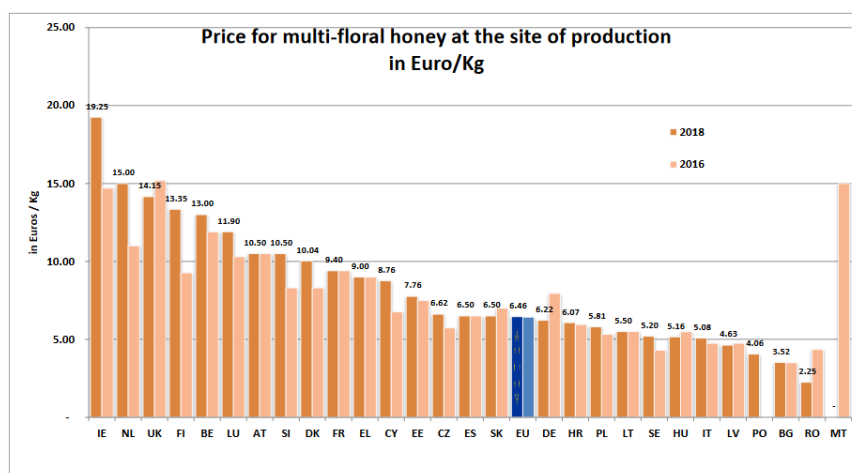


FIGURE 16: Price of multi-floral honey of EU per country - Photo Source: EU presentation COM(2019) 635/17.12.2019

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Average Production Cost per Kg of Honey Produced (2017-2018)

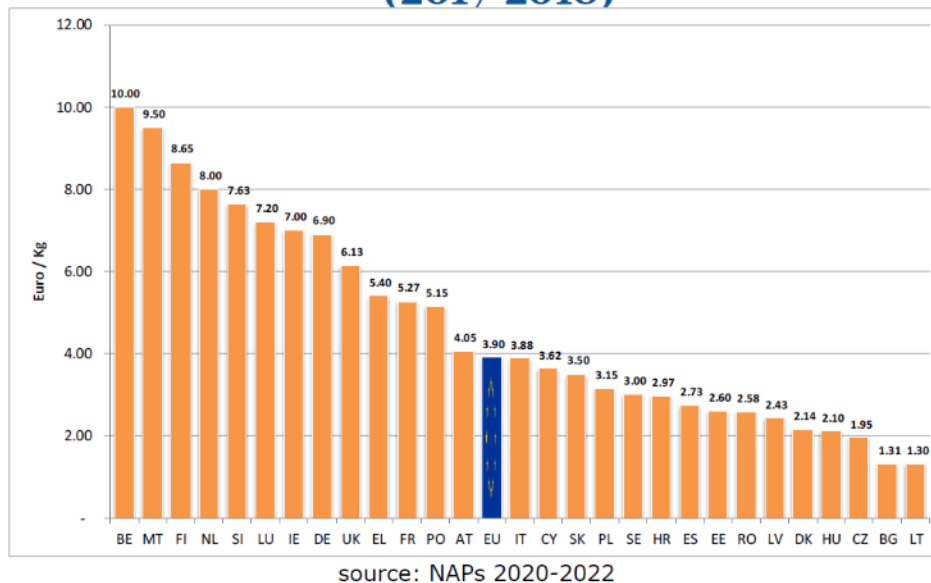


FIGURE 17: Price of multi-floral honey of EU per country - Photo Source: EU presentation of National apiculture programs 2020-2022

In Greece the price to buy a kilo of Greek honey varies from 6€ to 10€ (informal internet poll source: https://orinimelissa.blogspot.com/2015/09/blog-post_54.html), depending on the type of honey and the type of packaging. More specifically, the most popular honey types are Pine (55-60% of production) Blossom (10% of production) and Thyme honey (10% of production) (Eurostat and SEVE Greek exporters association, 2018). Other no Greek honey products have lower prices which starts from 3€ per kg.

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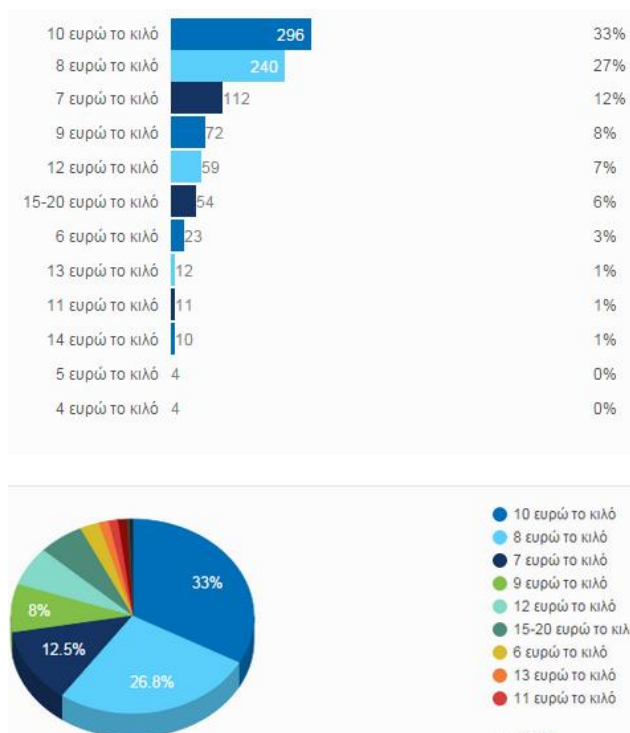


FIGURE 18: In base of 900 beekeepers results of honey selling price per kg

Photo Source: https://orinimelissa.blogspot.com/2015/09/blog-post_54.html

The value of products produced by exercise of beekeeping represents 1.8% of the total value of livestock production and 0.55% of the total gross farm income.

2.5.1.2. Are there local associations that provide support to beekeepers in your country? What kind of support?

There are two (2) major beekeepers associations in Greece which support to beekeepers in every matter technical or economical. One of them is the cooperative and the other is the trade union.

The Federation of Greek Beekeepers' Associations which abbreviated as O.M.S.E. is the supreme trade union of beekeepers in Greece. O.M.S.E. was founded in 1996 and based in central Greece in city of Larissa. The O.M.S.E. is a non-profit organization and has about 60 beekeeping associations as members.

The O.M.S.E also is a member of the global apiary organization "APIMONDIA", a member of the Federation of European Apiculture Organizations "APISLAVIA", a member of the Balkan Federation of Apiculture Organizations and a member of the Federation of Professional Beekeepers of the EU countries. (ERBA).

(source: <http://www.omse.gr/index.php/el/poioi-eimaste>)

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The main purpose of the Federation is to help the beekeepers in economic, social and professional issues. In order to protect the authenticity of beekeeping products, the O.M.S.E participates or does scientific researches and empowers the beekeepers to participate in primary beekeeping trade unions in order to strengthen the bonds between organisation and beekeepers.

The O.M.S.E publishes the magazine with the title “Beekeeping Step” for its members and for everyone who interested in issues about beekeeping.

Through the website of O.M.S.E, the federation offers services, such as a method for reporting stolen hives and information on who to contact for roadside assistance. The website also provides articles on topics such as hive insurance and current government funding opportunities.

An online resource funded by the European Union, Melinet.gr, allows beekeepers to share beekeeping information, tips, techniques and collaborate with other beekeepers.

source: <https://digitalcommons.wpi.edu/cgi/viewcontent.cgi?article=6399&context=iqp-all>)

The association of PASEGES also has many members all over Greece. Finally there are approximately 80 autonomous cooperatives in bee sector.

(source: https://ec.europa.eu/agriculture/sites/agriculture/files/evaluation/market-and-income-reports/2013/apiculture/chap3_en.pdf).

Also the Institute of Agricultural Sciences - I.A.S support Greek beekeepers in technical aspects. Another public agricultural organization the Hellenic Institute of Apiculture known as “ELGO DEMETER” supports beekeepers and ensure the safety and well-being of the community, beekeepers, and bees. .

This Institution provides dedicated knowledge and has done several researches about bees and beekeeping.

A/A	Type of organisation	A/A	Type of organisation
1	PASEGES (Federation)	9	Epirus & Roumeli (association)
2	Central Macedonia (Union)	10	West Greece (association)
3	Chalkidiki (association)	11	Peloponnisos (association)
4	Trace (Union)	12	Crete (association)
5	West Macedonia (association)	13	Piraeus & Kyklades (Union)
6	North Aegean (association)	14	Dodecanese (association)
7	Thessaly (association)	15	Kavala & Thasos (association)
8	Central Greece (association)	16	O.M.S.E (Federation)

Table 1 source: http://www.minagric.gr/images/stories/docs/agrotis/MeliMelissokomia/Kentra_melisokomias.pdf

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Finally, there is another association of professional beekeepers but refers to honey industry. The Association of Greek honey SMEs Packagers and Exporters (SETSEM) which is branch of Federation of Hellenic Food Industries (SEVT). This association has only five (5) members.

The main purpose of this association is to help members of SEVT to export their products and to help them in many issues regarding to their activities.

2.5.1.3. What is the level of knowledge of beekeepers regarding honey bees' natural history?

Beekeeping was known in ancient Greece. One example of beekeeping presentation in ancient city of Athens, comes to our days from Aristotle who was taught to the people all the agricultural arts, among them including beekeeping.

Then the ancient techniques of beekeeping, the ancient beehives and the ancient tradition of honey production were passed to newer generations from father to son. In this evolutionary process, many things have changed. New types of beehives are developed with the help of sciences and new methods or techniques of honey production are emerged. But all these new accomplishments met the resistance of traditional beekeeping in Greece. And this is the reason which these accomplishments did not used in a mega scale in beekeeping. Today there are several small and medium size companies who follows the family secrets about honeybees' natural history for generations.

The traditional beekeeping of Greece, was practiced for the most part of the previous century with traditional beehives and methods.

This history was recorded, evolved and gave to the new generations the knowledge base to expand the Greek beekeeping, thus beekeepers in Greece seem confident with their knowledge and experience with honeybees.

In recent years, every serious beekeeper identifies the following bee breeds, as a. m. carnica from the Ionian Islands), a. m. macedonica from Macedonia and Thrace, a. m. cecropia from Central and Southern Greece, a. m. adami from Crete and the Aegean islands.

Because of the imports of foreign kind of queens, are developed hybrids of bees with negative effect in development of domestic kinds of bees. Also domestic population is dominated by the Macedonian bee. Thus in only a few areas (some Aegean islands and the region of Larissa in Central Greece) there is evidence that there are plenty of bees that differ from the Macedonian one (Source: (Dr. Fani Hatzina beekeeping sector of Institute of Science of animal production, www.hellenic-beereseearch.gr).

Additional, most Greek big cities among them Athens and Thessaloniki host annual honey festivals to attract the interest of the community by serving a variety of honey products and teaching visitors about the benefits of bee products

(source: <https://digitalcommons.wpi.edu/cgi/viewcontent.cgi?article=6399&context=iqp-all>).

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The most popular festival among other events in Greece is the Bee Festival of Athens. The 11th Bee festival was organized last December. Through the presentations and several events, anyone who interested in honey bees' natural history, could found interesting topics and talk with some of one of hundreds (100) exhibitors.



Photo Source: <http://greekhoneyfestival.gr>

2.5.1.4. Are there any trainings addressing beekeepers' needs towards running a business?

Research from Worcester Polytechnic Institute (WPI) for Best Practices for Collaborative Beekeeping in Northern Greece in April of 2019, showed the needs for a number of courses regarding beekeeping and apiculture. The major issues concern beehive maintenance, beekeeping marketing, quality, financial and taxation management, etc.

Source: <https://digitalcommons.wpi.edu/cgi/viewcontent.cgi?article=6399&context=iqp-all>

In accordance to governmental policy, the Ministry of agriculture through the regional authorities like DAOK (Directorates of Rural Economy and Veterinary Medicine), design and implement in yearly basis high-speed trainings throughout the Greek territory.

In previous decade were implemented two high speed seminars in order to train beekeepers supervisors by training centres of "DEMETER" organisation in the Agricultural University of Athens and the Aristotle University of Thessaloniki. Sixty three (63) of them were training almost one thousand and seventy one (1.871) beekeepers from rural areas and islands.

The program of these trainings, provided a wide range of beekeeping-applicants themes but only relevant to technical aspects and not about economics and how to run such business.

Also there are plenty of professional schools in Greece, in which a few of them, provides public certification in beekeeping. A very few of the Greek beekeepers are post graduated of Greek and foreign Universities. Of course there is internet which provides a lot of information to anyone who interested in aquaponics. Many sites provides targeted information to any user, especially these in the field of honey production, packaging, technical specifications, equipment, etc.

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2.5.1.5. What do beekeepers do regarding apitherapy and honey bee health?

Because of the small size of Greece, any risk in bee population, beehives and general in bee products, is serious if there aren't any predictive or corrective measures. In general, the most of these risks come from other countries but treated very well, by the public authorities who give detailed guides to scientists and beekeepers, in any situation. The acari *Varroa destructor* was appears in Greece before some years and it has caused many serious problems to beekeepers, until now. Some other diseases like AFB / SHB *Tropilaelaps* spp.



Photo Source: http://www.minagric.gr/images/stories/docs/agrotis/MeliMelissokomia/baraoikh_akariash.pdf

But the beekeepers who follow the guides of experts on hygiene and safety, on what medicines and the right methods of use, isolate infected beehives into quarantine, etc. they faced minor problems to their beehives and bee population.

Today the major risk is the little beetle of beehive who has already caused serious problems in France and Italy.

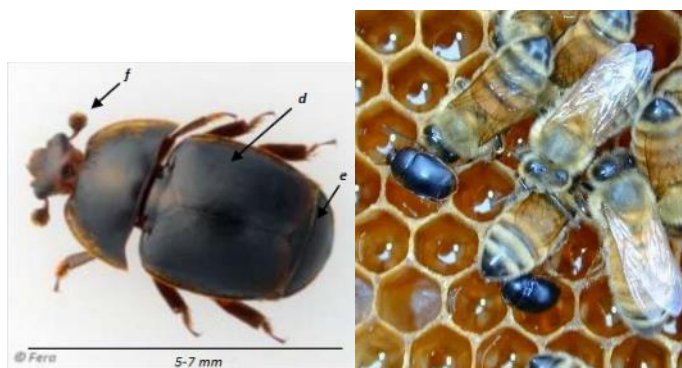


Photo Source: <http://beesaronikou.gr>

Photo Source: http://www.minagric.gr/images/stories/docs/agrotis/MeliMelissokomia/mikro_skathari250518.pdf

This small creature whose name is *Aethina tumida* is installed to beehive and is multiplied by large number, in order to create big colony. Then beetles are ready to eat bees, honey, and pollen and

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finally they destroy honey cobs. Under some conditions, the attack of the beetle causes destruction of bee colonies and abandonment of beehives by bees. In order to protect their business by this risk, beekeepers must participate to informative events (seminars, workshops, etc.) which are prepared and implemented by Greek authorities. Beekeepers are trained to identify the beetle or traces of them, to using special traps in order to catch some of beetles which help beekeeper to count the beetle population. Other point of interest are the corrective measures which beekeepers must follow. Of course beekeeper who identify the risk has the duty to inform Greek authorities.

In any risk, beekeepers must follow the process of plan, do, check and act to eliminate the risk and to minimize the problems of this risk.

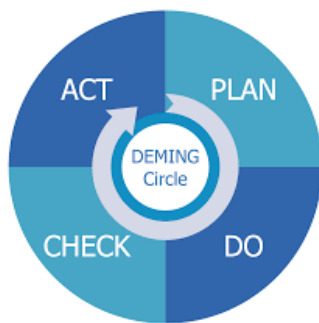


Photo Source: <https://www.conceptdraw.com>

Other risks are pesticides and neonicotinoids which can cause bee losses and not acceptable bee products for human use. Against these risks, beekeepers move beehives from place to place in order to avoid their bees to eat not healthy crops or even worst crops with poisons. Other measure which any beekeeper applies is the proper maintenance of beehives avoiding toxic material to come in conduct with hives or bees.

The best predictive measure to avoid these risks is to bring together land farmers and beekeepers, in order to adopt good practices of both of them, so finally to minimize the problems.

In some cases beekeepers follow wrong measures to maintain the products of bees like honey, pollen and royal jelly. Some of these beekeepers implement the principles of food legislation, or even better follow some standards like Agro, ISO 22000, etc., and have good effects on their products. Others, implement good practices and have less good effects on their products and very few of beekeepers do nothing to retain their products.

2.5.1.6. What are the methods and techniques used for honey extraction?

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In general, most of Greek beekeepers follows the traditional way to extract honey of their beehives. In accordance to tradition, beekeeper proceeds to honey extraction in specific seasons of year like summer and autumn. This is necessary because during these time periods there is a big amount of flowers' nectar, so if is better the amount of nectar, then will be bigger the honey production.

The harvesting of honey from honeycombs starts from these honeycombs which are sealed by 75% of bees. The percentage sealing of honeycomb indicates the process of honey production. In honeycombs with smaller percentage of sealing the amount of existed honey is not good for production and human consumption. In the process of honey harvesting, beekeepers must follow the rules for health and safety (uniform, gloves, smoke generator, etc.) to protect themselves.



Photo Source: <https://oreinomeli.wordpress.com>

Photo Source: <https://wikifarmer.com>

When bees have abandoned beehive, beekeeper can remove the specific honeycomb and put it to an empty beehive. Beekeeper follows this step for every beehive and sealed honeycomb. All sealed honeycombs are put into empty beehives. Then beekeeper brings all these honeycombs to warehouse. The place of honey extraction and the specific equipment must be clean. At first, Beekeeper must remove the bee wax from the honeycomb, using the right tools. Then beekeeper put the honeycombs to the honey extractor and adjusts the velocity of rotation of the machine. When the process of honey extraction is finished, beekeeper filtrates the honey through proper filters in order to avoid the presence of foreign materials like wax, particles of honeycomb, etc. After that and before the honey packaging into jars or tins, beekeepers pasteurizes the amount of honey to pasteurization machine. This step of process is forced by the food legislation, at least ten years ago.

Some numbers of honey production process in Greece, indicate that a very few beekeepers have the right equipment to produce honey, so beekeepers borrow the right equipment from others. The

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major issue is the absence of pasteurization machine which costs a lot of money, so many beekeepers prefer to sell their honey production as is, or as raw material to honey industry.

2.5.1.7. Which are the management practices in beekeeping? How do beekeepers handle different situations?

Although beekeeping sector in Greece is developing part of National economy, there isn't any planned strategy on how beekeepers actioned on serious situations, or how to apply standard management practices. Of course the Greek Ministry of agriculture and the federation of beekeepers included trade Unions and associations of beekeepers are tried to give specific directions to beekeepers. But in general there is a lack of confidence or professionalism of beekeepers.

The beekeeper sets up his activity without any certification in beekeeping, but mainly has learn the basics in beekeeping from others. In the meantime, in order to increase awareness in beekeeping, participates in special seminars which are organized from Greek authorities, Federation of beekeepers or by individuals training centres. Many of beekeepers have not the necessary capital to run their businesses. So because of lack of money beekeepers prefer to maintain their business in the level of primary production and avoid to go further investing to transform their small activity to bigger enterprise. Also the lack of money is the reason of using old equipment, cheaper beehives, etc. by beekeepers. Additionally many beekeepers have beekeeping as second job to increase their income. For all these reasons, the beekeeping in Greece needs changes to optimize the beekeeping sector, in total.

As result of lack of good management practices, beekeepers handle different situations by different ways. But when a situation affects many beekeepers, or it affects to a whole area or even the country, then beekeepers follows the guides and implement the national strategy, with help by national authorities.

Some of the issues and situations that affect beekeepers are the followings:

- Bad climate conditions
- Minimization of rural areas
- Destruction of forests

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- Destruction of the native vegetation
- Using of herbicides and pesticides
- Illegal or uncontrolled distribution of foreign honey products

Some of the above problems are treated with the help of national authorities, associations and trade unions. For destructions that happened because of bad climate conditions, or the climate change, the E.U and national agency provide specific economic measures to relief the victims and other measures to boost the beekeeping sector. Also there are measures to treat diseases or parasites who are affected to bees.

In many cases topic associations or unions, provide special support to their members in order to treat these problems. Some examples are the monitoring of beehives in order to minimize the amount of stolen beehives, studies of several issues that could interested in beekeepers, etc.

2.5.1.8. Which are the financial aspects of a beekeeping business?

As many other agricultural or livestock business, beekeeping faces similar financial issues. Many of them due to lack of beekeeper professionalism, lack of necessary capital, lack of awareness of the business object, etc.

The first movement of beekeeper is to deal with bees and to try occupation with them. The experiment of this includes the beekeeping of a small number of beehives and a colonies of bees, under supervising of an expert or a beekeeper with significant experience. In this step beekeeper shares the effects and bee products with his friends and family.

The second step is the training of beekeeper to the principles of beekeeping, apiculture, etc. The training process will help beekeeper to understand beekeeping, to learn basics about bee diseases, bee breeding, bee diet, external or internal hazards and factors which affect beekeeping, basics about bee products, legislation requirements, etc. The financial aspects of 1st and 2nd includes:

- The cost of business establishment
- The cost of bee colony
- The cost of beehives
- The cost of basic equipment
- The cost of primary packaging
- The cost of training
- The cost of medicines, bee feed, etc.
- The cost of a warehouse

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The third step is to scale up to a medium number of beehives and renewal of bee colonies by beekeeper. This step is crucial for a new potential beekeeper, because of hazards as bee losses, bud effects on bee products, other actions which may be increase the overall beekeeping cost, etc. In this step a very few applicants decides to continue as beekeepers.

The fourth step is parallel to third step and is refers on the training of beekeeper but now focuses on the principles of professional beekeeping, including specific training aspects focus in the production of bee products, in how to produce quality bee products (especially different types of honey products), about effective packaging, sources of finance, basics on standard business costs, expenses and gross profit margins in order beekeeper to develop a monthly cash flow statement, etc. In this step beekeeper identifies good cooperation and partnership with suppliers and customers, the honey trade block chain, domestic and international needs and marketing trend on bee products, etc. The financial aspects of 3rd and 4th step includes:

- The cost of business running (working capital)
- The cost of additional bee colonies
- The cost of additional beehives
- The cost of specific equipment
- The cost of primary packaging
- The cost of specific training, consultancy, etc.
- The cost of basic infrastructure (legislation requirements)
- The cost of medicines, bee feed, etc.
- The cost of business marketing and promotion
- The cost of transportation
- Exceptional costs

Finally in fifth step, beekeeper in order to be competitive in domestic an international market must be transformed to a real businessman who adopts professional practices in beekeeping, running the business efficiently and with profitability.

- The cost of business expanding (capital for investments)
- The cost of additional bee colonies
- The cost of additional beehives
- The cost of different type of bee and or honey products
- The cost of additional specific equipment
- The cost of primary and secondary packaging
- The cost of specific training, consultancy, etc.

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- The cost of expanding infrastructure (production, packaging, warehouse, etc.)
- The cost of medicines, bee feed, etc.
- The cost of extra workers
- The cost of vehicle purchasing and using
- The cost of business marketing and promotion
- The cost of loan
- Exceptional costs

Economic results	
Gross return, €/beehive	106.0
Production costs, €/beehive	77.3
Profit, €/beehive	28.6
Cost of honey production, €/kg	4.1
Farm income, €/beehive	56.4
Return to capital, %	11.0

Table 2: Economic result of beekeeping in Greece in 2014

source: <https://www.agrojournal.org/21/03-02.pdf>

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Country	Operation size				Beekeeper activity			
	<50colonies	51–150colonies	151–300colonies	>300colonies	Professional	Non-professional	Part-time beekeepers	Hobby beekeepers
Austria	NS	NS	NS	NS	NS	NS	NS	NS
Belgium	NS	NS	NS	NS	1	99	0	99
Bulgaria	NS	NS	NS	NS	1.4	98.6	0	98.6
Cyprus	14	60	20	6	9	91	NS	NS
Czech Republic	93.8	6	0.2	0	0.2	99.8	15	85
Denmark	90	6	2	2	2	98	8	90
Estonia	75	20	4.9	0.1	1	99	29	70
Finland	90	NS	NS	0.4	4	96	14	82
France	93	4	2	1	3	97	7	90
Germany	98	NS	NS	NS	0.1	99.9	19.9	80
Greece	45	35	14.8	5.2	39.5	60.5	NS	NS
Hungary	20	73	5	2	7	93	73	20
Ireland	95	4	1	1	1	99	4	95
Italy	60	20	10	10	10	90	20	70
Kosovo	NS	NS	NS	NS	88.4	11.6	7.2	4.3
Latvia	83	14	2.5	0.5	3	97	14	83
Lithuania	NS	NS	NS	NS	3.1	96.9	NS	NS
Netherlands	95	5	1	0	1	99	5	94
Norway	94	5	1	0	1	99	17	82
Poland	90	9.5	0.4	0.1	0.5	99.5	NS	NS
Portugal	88	9	2	1	3	97	NS	NS
Romania	56.6	23.9	10.4	9.1	27	73	23.8	49.2
Slovakia	95	4	0.7	0.3	1	99	5	94
Slovenia	96.5	2.9	0.5	0.1	NS	NS	NS	NS
Spain	NS	NS	22.9	NS	22.9	70.5	NS	NS
Sweden	89	7	3	1	1	99	10	89
United Kingdom	96.5	1	1	1	1	99	NS	NS
Europe	78	16	4	2	9.3	90.7	15.1	76.4

NS: Not specified. The minimum and the maximum are reported in bold in each column.

Table 3: Description of the different types of beekeeper activities and sizes of the apiaries in EU in 2010

source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3827320/>

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Livestock size	>100 colonies	-Finland
	>150 colonies	-Czech republic
		-France
		-Greece
		-Hungary
		-Latvia
		-Portugal
		-Spain
	>200 colonies	-Norway
	>300 colonies	-Sweden
	>500 colonies	-Romania

Table 4: Definition of professional beekeeper according to the different countries in Europe in 2010
source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3827320/>

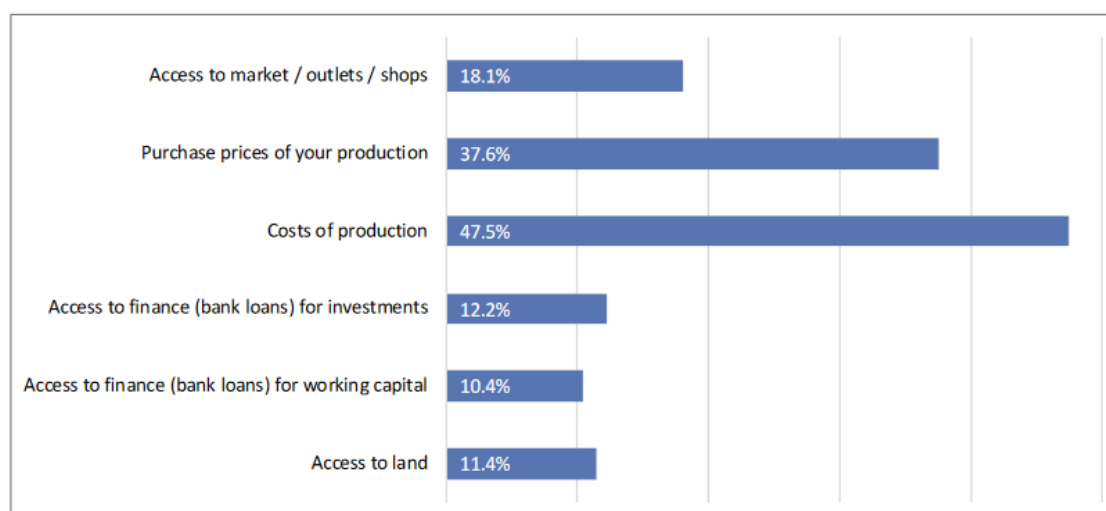


Figure 19: Share of farms experiencing difficulties in 2017

Photo Source: [https://www.fi-](https://www.fi-compass.eu/sites/default/files/publications/Survey_on_financial_needs_and_access_to_finance_of_EU_agricultural_enterprises_0.pdf)

[compass.eu/sites/default/files/publications/Survey_on_financial_needs_and_access_to_finance_of_EU_agricultural_enterprises_0.pdf](https://www.fi-compass.eu/sites/default/files/publications/Survey_on_financial_needs_and_access_to_finance_of_EU_agricultural_enterprises_0.pdf)

In order to help beekeepers, EU decide to increase in funding for beekeeping programs to EUR 60 million per year. This means that during the seven-year period of the future CAP, through EU funding and Member States' contributions, a total of EUR 840 million will be allocated to the bee sector.

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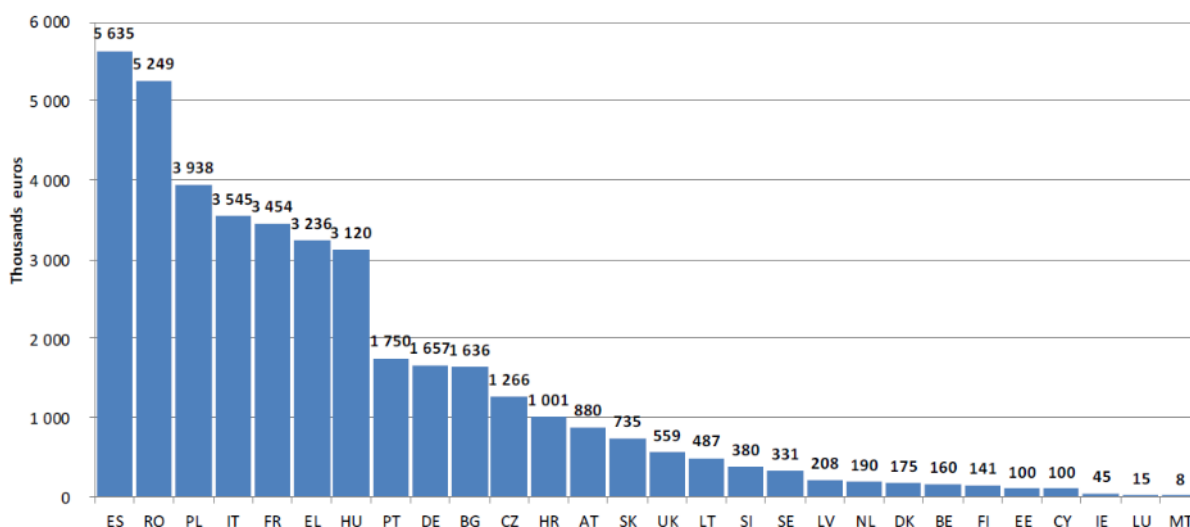


FIGURE 20: Budget Allocated by Member State for 2020 Photo Source: EU presentation of National apiculture programs 2020-2022

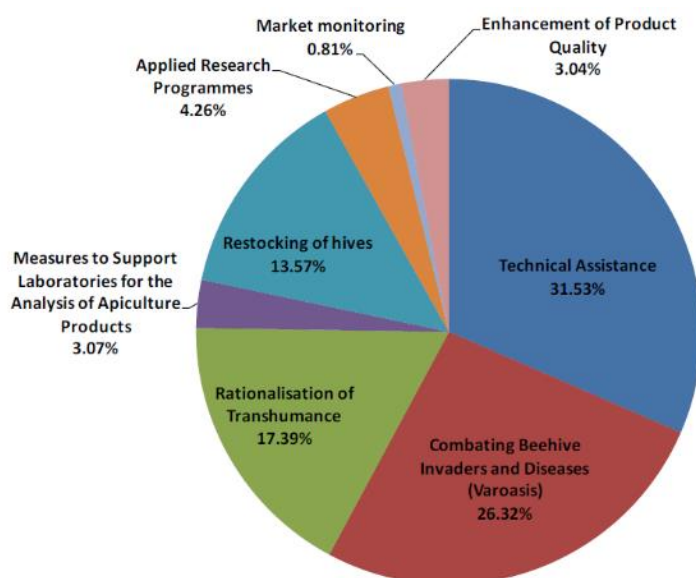


FIGURE 21 Budget as planned by MSs per measure for 2020 Photo Source: EU presentation of National apiculture programs 2020-2022

2.5.1.9. How do beekeepers promote bee products in the market?

Greek beekeepers use traditional ways to promote their products. Because of lack of extra money beekeepers prefer to make discounts to customers, than to spend extra money to

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promote their businesses. The reason is that many small beekeepers target only the domestic market, although national and regional authorities encourage beekeepers to examine the possibility of expanding their sales through retail sector, both in domestic and national market.

An other distribution channel are the traditional flea markets and domestic festivals. According to Greek legislation, any honey producer or beekeeper, must have a regional license in order to sell his bee or and honey products to flea markets and festivals.

In recent years, several small beekeepers present their businesses to potential customers, using the internet, either using personal sites or blogs and through the social media like Facebook, Instagram, You tube, etc.

Some bigger beekeepers participate in national or international exhibitions, publish brochures with their products, using the digital marketing to sell their products through internet.

The marketing mix for this range of products is the quality of the product, the place of origin, the special organoleptic characteristics and finally the traditional formula of honey which differs among beekeepers, even of the same area.

2.5.1.10. Do beekeepers know and use mobile beekeeping strategies? If yes, what strategies?

In recent years in a few Greek Universities were done by students researches in monitoring beehives from distance, using dedicated hardware and software, for this purpose. Today anyone can find these monitoring systems as final products, which are sailed mainly through internet.

Each system provides information in following parameters:

- Indicator of weight provides information in real time which can help beekeeper to extract some useful result of beehive situation. For example beekeeper might be know if the place is right for honey production, if the beehive is full of honey, etc.
- Indicator of temperature provides information about the environmental conditions
- GPS equipment which can inform beekeeper about abnormal situations like movement of beehive as result of animal or human attack, etc.
- Cameras that provide real time picture from one or more beehives

All the above systems are mostly well known by the majority of beekeepers in Greece.

Some Greek companies which sell these systems:

<https://www.beezon.gr>

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<https://www.entersoft.gr>

<https://www.melissozigaria.gr/>

But there aren't findings that these monitoring applications are used by beekeepers. Obviously, because of high prices of these systems (starts from 500 euros / system), beekeepers avoid to use them.

2.5.2. Conclusions

- Greece produces over of 15 thousand tonnes of honey per year. This is the 6th honey production into EU and for this reason Greece is the 6th EU producer among other EU countries. In the same time Greece is the 8th EU exporter to third countries.
- EU countries (plus U.S) absorbs approximately the 80% of Greek honey exports and amongst them France is double imports from Greece.
- There are almost 25 thousand beekeepers in Greece (2019) although the EU statistics shows a significant reduction of Greek beekeepers in 2022. Greece bee sector covers 11% of the total European Union beehives and 1.7% worldwide (FAO-2010).
- The number of beehives existing in the country is almost 1,5 million beehives (2019). In general, there is an average 31,3% growth of beehives since 2015.
- The number of beekeepers who have more than 150 beehives is 9.266 beekeepers (2017-2018). From the rest of approximately 14.734 beekeepers, is corresponded 9 beehives per beekeeper when the EU number is 21 hives per beekeeper (2018). The value of products produced by exercise of beekeeping represents 1.8% of the total value of livestock production and 0.55% of the total gross farm income.
- Approximately 15.000-17.000 tons of honey are produced annually in Greece, which mainly are consumed as food and partially as other products. The bigger amount of honey, almost 60%, comes from areas of pine trees. The rest amount of honey is divided between thyme nectar honey (10%), honey of varying flowering somewhere, e.g. cotton (10%) and varietal flower honey e.g. honey or chestnut (10%).
- The estimated average yield in kilos of honey per beehive per year was 9kg (2018) and the estimated production costs were 4,1€ per kilo of honey (2014). In Greece the price to buy a kilo of Greek honey varies from 6€ to 10€.

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- There are two (2) major beekeepers associations in Greece which support to beekeepers in every matter technical or economical. One of them is the cooperative and the other is the trade union. There are also 80 autonomous beekeeper associations.
- There are many training programs for basic beekeeping issues, but none of them refers to managerial or business economic issues
- The acari *Varroa destructor* was appears in Greece before some years and it has caused many serious problems to beekeepers, until now. Some other diseases like AFB / SHB *Tropilaelaps* spp. Today the major risk is the little beetle of beehive who has already caused serious problems in France and Italy.
- In some cases beekeepers follow wrong measures to maintain the products of bees like honey, pollen and royal jelly. Some of these beekeepers implement the principles of food legislation, or even better follow some standards like Agro, ISO 22000, etc.
- Some numbers of honey production process in Greece, indicate that a very few beekeepers have the right equipment to produce honey, so beekeepers borrow the right equipment from others. The major issue is the absence of pasteurization machine which costs a lot of money
- The gross return per beehive is almost € 106, the production costs per beehive is about € 77, the profit per beehive is € 28,6, the cost of honey production is € 4,1 per kilo of honey (2014), the farm income is € 56,4 per beehive and return to capital is 11%.
- Greek beekeepers promote their products through flea markets, festivals, exhibitions and to internet through web sites, blogs and social media.
- There aren't findings that beehives monitoring applications are used by beekeepers. Obviously, because of high prices of these systems (starts from 500 euros / system), beekeepers avoid to use them.
- Definitely is necessary for beekeepers to be trained in the application of good business practices as well as new or improved techniques in the management and marketing of beekeeping products.

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2.6. Countries outside the partnership: Poland and Turkey

2.6.1. Results

This report describes data and best practices from two countries with long history and strong presence in the beekeeping industry, Poland and Turkey.

2.6.1.1. How many beekeepers exist in your country and how many beehives do they own?

Poland

According to the Honey Market Presentation (European Commission, 2019) in 2018 Poland had 1.633 hives. This number represents a 15.3% increase since 2017 when it had 1.553 hives. The number of beehives in Poland accounts for the 9% of the total beehives in Europe (17.577) - the 3rd largest number in the continent. Spain is the first with 2.961 hives.

According to the same presentation Poland in 2018 had 74.304 beekeepers, 18.7% more than in 2017 (62.575). That's the second largest number in Europe, 11% of the total number of beekeepers (652.305).

Lastly, Poland has an average of 22 hives per beekeeper number close to the EU average (21).

Turkey

Turkey has a rich history of bee farming and is one of the biggest honey and beeswax producers.

According to the same presentation Turkey holds the 6% of the world honey production. Çukur and Çukur (2019) mention that in 2016, there are 90.564.654 bee hives worldwide and that they produce about 1.786.996 tons of honey. During the same year, Turkey had 7.900.364 beehives and produced 105.727.435 tons of honey (TSI, 2018). One year later the hives went up to 7.991.072 produced by 83.210 beekeeping businesses.

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3.6.1.3. Are there local associations that provide support to beekeepers in your country? What kind of support?

Poland

[Polski Związek Pszczelarski](#) (Polish Association of Beekeepers)

[Stowarzyszenie Pszczelarzy Zawodowych](#) (Professional Beekeepers' Association)

Turkey

Turkey has an advanced innovative network of associations. Every beekeeper in Turkey that has more than 30 bee colonies has to register to the Beekeepers Association of their city. All associations in the 81 Turkish provinces are managed by the Central Beekeeping Association in Ankara. 98% of all the Turkish beekeepers are registered in the Association. The Central Beekeeping Association in Ankara was founded in 2003 and aims to train beekeepers, support them, find solutions, and help the production of high-quality bee products. When the beekeeper registers, they get an Identification number and a card. As an Association member, the registered beekeeper is automatically insured for all their colonies, especially against transportation accidents in Migratory Beekeeping. Additionally, they can send samples to the Agriculture minister for laboratory analysis for free. The member can also, get a loan from The Turkish Agricultural Bank for the development of apiaries for their colonies. Lastly, the Association provides its members with a number of seminars and educational courses that they can attend.

3.6.1.4. Are there any trainings addressing beekeepers' needs towards running a business?

Poland

[School of Agricultural Vocational Training](#) in Pszczela Will

It is vocational school and a training centre for agriculture. The school includes a vocational secondary school that specialises in beekeeping.

Some of the subjects taught at the vocational beekeeping school are:

- 1) conducting apiary conventional and organic farming methods;
- 2) perform work related to plant and animal;
- 3) operating vehicles, machines and equipment used in agricultural production and beekeeping;
- 4) sales and marketing of agricultural and beekeeping products.

It's the only beekeeping vocational school in Poland and Europe with over 60 years of experience in educating beekeepers.

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Turkey

Turkey has used their beekeeping expertise to help other countries as well. One example is the Turkish Cooperation and Coordination Agency (TIKA) trained 140 women in flood-hit Pakistani northwestern region in beekeeping. TIKA sent experts to give a five-day training to the women in the region. They also gave the trainees more than 400 beehives, bee colonies, and useful equipment to start their beekeeping businesses.

3.6.1.5. What do beekeepers do regarding apitherapy and honey bee health?

Turkey

In 2010 the Turkish Apitherapy Association was established in order to support the improvement and modernization of apitherapy treatment methods.

Additionally, there is an official Apitherapy Certification Training Program in Turkey that aims to provide physicians who wish to practice apitherapy with the necessary certification that will ensure that they are qualified and will work in an efficient and productive manner. The training program includes both theoretical parts and practical aspects. There is the possibility to cover 80% of the theoretical part through distance learning. The rest is taught in classrooms. The course lasts 80 hours in total and participants who pass the exam at the end they get the certificate.

3.6.1.6. What are the methods and techniques used for honey extraction?

Poland

Apart from the modern ways of extracting honey, Poland is the only EU country to produce honey from wild beehives. Wild honey harvesting is a form of apiculture where the bees are kept in tree hollows in the forest. Honey produced in tree hollows is richer in pollen, wax and tree resin than the honey from man-made beehives.

3.6.1.7. Which are the management practices in beekeeping? How do beekeepers handle different situations?

Turkey

Beekeeping is a traditional agricultural activity that is performed in the majority of Turkish regions. In Turkey we find 20% of the world's bee species. Due to this diversity beekeepers tend to breed native to their region bees rather than commercial bee species. One of the main challenges is the erratic weather changes that affect some of the species, especially *Megachile mellifica*, which is the most important

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bee to produce pine honey and honeydew. In order to protect the species, the Turkish Ministry of Forestry has taken under protection the forests in Mugla Providence where this bee lives.

Poland

Poland has found another solution to the decrease of the global bee populations: urban beekeeping. Since 2014, urban beehives have been appearing across Poland, especially in Warsaw. In the Polish capital one can find a number of popular rooftops apiaries, such as in the Palace of Culture and Science, the Polish Parliament, and on the top of Regent Warsaw Hotel. The quality of honey is good and even better than the rural variations as pesticides are not used on the plants in urban beehives and traffic doesn't seem to affect the bees. Additionally, urban beehives are offering a larger variety of plant species than the countryside.

3.6.1.8. Which are the financial aspects of a beekeeping business?

Poland

In Poland honey exports were valued at over EUR 40 million in 2014 with almost 50,000 people working in the beekeeping industry.

3.6.1.9. How do beekeepers promote bee products in the market?

Turkey

The Armasad Beekeeping Fair takes place every year in Ankara and Istanbul provinces. The objective of the fair is to promote the Turkish beekeeping products in the country and abroad, to promote the beekeeping sector and help the development of the sector.

3.6.1.10. Do beekeepers know and use mobile beekeeping strategies? If yes, what strategies?

Turkey

Approximately 75% of the (double check) of the Turkish beekeepers are mobile beekeepers, with approximately 5.1 million of the bee colonies are subjected to traveler beautification. Mobile beekeepers are guided based on the location of the nectar sources and the meteorological conditions. A wide range of nectar and pollen types can be found in Turkey due to its variety of plants and plant covers. Turkish mobile beekeepers are using floral sources in the most efficient way and at the end of the year they have the highest honey production.

3.6.1.11. A best practice

Poland: A therapy house for hospital patients

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A special facility was built in the park of Dr J. Babiński Neuropsychiatric Hospital in Kraków. The “Apikultura” foundation built in 2019 wooden house with four beehives inhabited by harmless bees. The therapy sessions last one hour during which the patients that are undergoing psychiatric treatment sit and relax by taking deep breaths of the beehive air that is antiseptic as it has no bacteria, fungi, or viruses.

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3. Comparative Analysis and Conclusions

3.1. Local and National Associations

In all the partners countries as well in Poland and Turkey there are local and national associations that support the beekeepers. Most of the countries have more than one association and the majority of them provide training through courses, represent the interests of the beekeepers, promote and protect beekeeping and the beekeeping products, and provide financial and management guidance and support to beekeepers.

In some cases like in the UK local associations own extracting and other equipment which members can borrow, sometimes for a nominal fee, and often have a bulk buy system where members can buy equipment and consumables at special rates. Additionally, in Ireland and Turkey the associations offer affordable insurance cover to their members.

In Greece, the main purpose of the beekeeping association is to help the beekeepers in economic, social, and professional issues. In order to protect the authenticity of beekeeping products, the association participates or does scientific researches and empowers beekeepers to participate in beekeeping trade unions.

Regarding training all the associations provide some type of a training course. The Pancyprrian Beekeepers Association has gone one step beyond by founding the Beekeeping School, the only educational centre for beekeeping in Cyprus.

The case of Turkey is particularly interesting as it has an advanced innovative network of associations. Every beekeeper with more than 30 bee colonies has to register to their local beekeeping association. The local associations in the 81 Turkish provinces are being managed by the Central Beekeeping Association in Ankara. 98% of all the Turkish beekeepers are registered in the association, a significantly larger number than in the other countries. In Cyprus for instance, the 45% of the beekeepers is member of an association.

The innovative elements of the Turkish association are that the registered beekeeper:

- gets an Identification number and a card.
- is automatically insured for all their colonies, especially against transportation accidents in Migratory Beekeeping.
- can send samples to the Agriculture minister for laboratory analysis for free.
- can get a loan from the Turkish Agricultural Bank for the development of apiaries for their colonies.

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3.2. Knowledge about honey bees history

As the UK partner has highlighted it is difficult to measure the knowledge of the beekeepers with regards to honeybees history as anyone can become a beekeeper without the need to attend a relevant training course or the attainment of a qualification. Knowledge of the honeybees' natural history is important because without this understanding, beekeepers will struggle with their yearly management system and their potential honey harvest. For some of the partners countries that have long tradition in beekeeping the knowledge passes down from generation to generation. Such cases are Ireland, Greece, Cyprus, and Spain. Additionally, in Ireland and Greece relevant knowledge can be obtained from books, ancient to more recent ones. Overall, beekeepers seem confident with their knowledge and experience with honeybees.

3.3. Beekeeping Training

All partner countries mentioned some kind of training provided either from a public entity, an association, or private organisation. These training courses and seminars cover a large number of topics such as: queen breeding, bee feeding, health, safety, bricolage or production honeybees, colony management, harvesting and diseases and control diagnosis, bee biology, hive management, queen bee breeding, honey extraction, bees' illnesses, operating vehicles, machines and equipment used in agricultural production and beekeeping, sales, and marketing of agricultural and beekeeping products.

In the UK courses that specifically address running a beekeeping business are provided by private organisations such as the Spey Valley Bees.

Courses for young individuals and/or students can also be found in some of the examined countries. For example the Bee Farmers' Association (BFA) in the UK has developed a unique apprenticeship scheme that is probably the only beekeeping apprentice scheme world-wide and is open to 16 to 24-year-olds to help them make a successful career in the bee farming industry.

Examples of schools are:

- Beekeeping School of Cyprus that offers training on beekeeping to prepare beekeepers to organise, manage, and develop their apiary.
- School of Agricultural Vocational Training in Pszczela Will in Poland, a vocational school and a training centre for agriculture. The school includes a vocational secondary school that specialises in beekeeping.
- In Greece, a few private professional schools provide some courses leading to a public certification in beekeeping but not an entire curriculum in beekeeping.

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The Irish partner has pointed out an urgent need not only for more beekeeping-focused seminars and trainings for business purposes, but also for updated booklets and guides that will provide current trends and methods for profitable honey production.

3.4. Apitherapy

Apitherapy is a branch of alternative medicine that uses honeybee products, including honey, pollen, propolis, royal jelly and bee venom. In most of the countries examined in this report apitherapy is not widely practiced. Nevertheless, Spain and Turkey seem to be more advanced in the field. More specifically, in Spain there are companies that use the apitherapy as treatment for different health conditions. Moreover, the Spanish National Beekeeping Agency (A.E.A.) promotes the use of the apitherapy as a natural alternative to the traditional medicine means to deal with different illnesses and conditions.

In Turkey, in 2010 the Turkish Apitherapy Association was established in order to support the improvement and modernisation of apitherapy treatment methods. Additionally, there is an official Apitherapy Certification Training Program in Turkey that aims to provide physicians who wish to practice apitherapy with the necessary certification that will ensure that they are qualified and will work in an efficient and productive manner.

3.5. Honeybee health management techniques

The starting point for all beekeepers is to keep their colonies strong and healthy and most beekeepers will strive towards that aim. Diseases are a serious threat to the health of honeybees and beekeepers in all partner countries are taking actions to keep their bees safe, usually with the support of associations and the government. In the UK, for example there are courses specific to recognising pests and diseases that affect bees.

The most common threat in many of the countries involved in the project is Acari Varroa. The European Union suggests and partially funds beekeepers to tackle Varroa acarosis through the rational use of licensed beeswaxes, including substances proposed in organic beekeeping.

Additionally, in the UK there is even a certification 'The Honey Bee Health certificate' that beekeepers are encouraged to acquire. Also, bee inspectors from the Disease Assurance Scheme for Honeybees (DASH) conduct inspections to beekeepers to ensure that their colonies are healthy. Regular inspections happen in Ireland too. Also, Irish Beekeepers must notify at Department of Agriculture, Food and the Marine

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(DAFM) if they suspect outbreaks of certain pests or diseases in their bee hives or colonies. Furthermore, in Greece, Ireland and Cyprus, the government issues hygiene and safety guidelines.

Lastly, in Greece beekeepers must participate in informative events (seminars, workshops, etc.) which are prepared and implemented by Greek authorities.

3.6. Honey extraction

Different honey extraction methods have been identified in the national reports.

The Spanish partner mentioned the beekeepers in Spain honey extraction depends on the type of hive the beekeeper uses. Most used from professionals are Layens, but lately has been a changing tendency to other models like Langstroth or Dadant due to productivity reasons. Additionally, Spain is pioneer in the use of a method by air pressure, motivated by the idea of being less aggressive to bees and as natural as possible.

According to the Greek partner, most of Greek beekeepers follow the traditional way to extract honey from their beehives. Beekeepers in Greece proceed with honey extraction in specific seasons of year like summer and autumn. Harvesting takes place two times per year, the months of April/May and August in Cyprus as well. In the UK, honey harvests will generally be spring honey (in May/June), summer honey (August) and possibly late summer/autumn honey (September/October).

In the UK the extraction, storage, jarring and selling of honey have several legal requirements and all beekeepers must follow strict hygiene regulations when handling and extracting honey.

As the equipment is expensive in many cases beekeepers rent the equipment. In the UK, many local beekeeping associations will own extracting equipment which members are allowed to borrow, and this works well as beekeepers do not have to buy expensive extracting equipment. Furthermore, in the UK, some local associations and private enterprises operate a co-operative where the beekeeper can take their full honey supers to a facility, and for an appropriate fee they will be extracted for them. In Greece, few beekeepers have the right equipment to produce honey, so they have borrow it from others. In Cyprus as well, the majority of beekeepers do not own their own extraction factory or workshop, therefore they can rent facilities and equipment either from other beekeepers or from the association they belong to.

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3.7. Beekeeping management practices

There are significant differences in management practices between the different countries but also between beekeepers in the same country. For example, in Spain, we can identify two main management practices in beekeeping. The North and North-East of the country is characterised by amateur beekeepers whose farms are small and who do not change their hives after the honey collection process, so are always located in same place. On the other side, the Centre and Southeast has a higher grade of professionalisation and more beekeepers practice mobile beekeeping by moving their hives to zones with milder weather.

In Cyprus and Greece, no standardised management strategies were identified. In the case of Cyprus, as beekeeping is a traditional family business that passes from generation to generation of beekeepers managing the business comes from experience.

In Ireland, research showed that despite the fact that most of beekeepers own hives as a hobby, beekeeping management can be proved a very serious business. Management strategies in Ireland include health and safety risk assessment, medical emergencies, diseases control and diagnosis and honey labelling and selling in compliance with legislative requirements.

The management practices identified by the UK partner are:

- Rigorous Management System.
- Regular 7-day inspections of the bees from March to September
- Marking the Queen
- Swarm Prevention and Control: The biggest challenge facing beekeepers is preventing their bees from swarming. Swarming is the bees' natural method of reproduction. When the colony gets large, the old queen along with two thirds of the flying bees leave the nest to make a new home. The remaining bees in the original nest will make a new queen. Apart from the public nuisance a swarm can cause, the hive is unlikely to produce any more honey if a swarm is lost.

Swarm control is a main issue in Ireland as well.

Other important management practices include feeding bees, making and using nuclei, uniting colonies, queen rearing, queen introduction, carrying out a Bailey comb change and removal of honey supers.

The associations in all countries are providing support to their members in handling different situations, offering expertise and training on every aspect of beekeeping. For instance, the Irish Beekeepers Association is offering the Members' Handbook on Beekeeping, which aims to teach new beekeepers how to successfully manage a beekeeping business.

An important worldwide problem is the decrease of the global bee populations. Polish beekeepers have found a solution to that: urban beekeeping. Since 2014, urban beehives have been appearing across Poland, especially in Warsaw. The quality of honey is good and even better than the rural variations as

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pesticides are not used on the plants in urban beehives and traffic doesn't seem to affect the bees. Additionally, urban beehives are offering a larger variety of plant species than the countryside.

3.8. Financial aspects of a beekeeping business

Setting up a beekeeping business requires high capital costs in all the partner countries. Even hobby beekeepers starting out in beekeeping will spend many hundreds of euros buying equipment, consumables, and bees and this often continues year after year. Professional bee farmers, however, aim to run a profitable business enterprise, and this is where there is a vast difference in the approach to the management of honeybees.

More specifically, in the UK the cost to acquire 100 hives and bees requires a financial outgoing of €50,000.00. This is not very different in Cyprus where the Purchasing all the needed equipment, paying for medicines, maintenance, transportation, and other expenses can cost as much as 320€ per hive. In Ireland, one behive costs 200€ new and 140€ if it's DIY assembled. This amount does not include other costs like bees, equipment, etc.

The beekeeper has to take into consideration risk factors such as conditions like weather, closeness or distribution are key factors affecting competitiveness. For example, in the UK the unpredictable nature of the UK weather, and therefore of the honey harvest means it is highly unlikely that a prospective bee farmer will get funding from a bank for a start-up business. Additionally, due to unexpected weather conditions bee farmer in the UK often diversify their business, to ensure money comes into the business when the summer is a washout.

In Ireland The Department of Agriculture, Food and the Marine supports Irish beekeeping through a number of initiatives including providing aid to support the activities of national beekeeping organisations and provision of grant aid for capital investments by individual beekeepers in specialised beekeeping related equipment and structures. For that reason, provides two grant schemes for Irish National Beekeepers which are:

- Horticulture Grant Scheme 2020 Notice for Beekeepers
- Annual Grants to Irish National Beekeepers Federations

In Cyprus and in Greece the beekeeper before starting the business must take a training course which adds up to the starting costs.

Overall, the costs that the beekeeper has to take into consideration in the examined countries include:

- The cost of business establishment
- The cost of bee colony

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- The cost of beehives
- The cost of basic equipment
- The cost of primary packaging
- The cost of training
- The cost of medicines, bee feed, etc.
- The cost of a warehouse
- The cost of business running (working capital)
- The cost of additional bee colonies
- The cost of additional beehives
- The cost of specific equipment
- The cost of primary packaging
- The cost of specific training, consultancy, etc.
- The cost of basic infrastructure (legislation requirements)
- The cost of medicines, bee feed, etc.
- The cost of business marketing and promotion
- The cost of transportation
- Exceptional costs
- The cost of business expanding (capital for investments)
- The cost of additional bee colonies
- The cost of additional beehives
- The cost of different type of bee and or honey products
- The cost of additional specific equipment
- The cost of primary and secondary packaging
- The cost of specific training, consultancy, etc.
- The cost of expanding infrastructure (production, packaging, warehouse, etc.)
- The cost of medicines, bee feed, etc.
- The cost of extra workers
- The cost of vehicle purchasing and using
- The cost of business marketing and promotion
- The cost of loan
- Exceptional costs

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3.9. Promotion of beekeeping products

Beekeepers promote their products in various ways. These products include mainly honey, royal jelly, propolis, pollen and beeswax.

One common way to promote beekeeping products is through the participation in local, national, and international fairs and large events. Such events exist in:

- Cyprus: 3 honey festival a year, the biggest festival is called Honey and Beekeeping festival and it takes place at the village of Odou, in the Larnaca mountains.
- Ireland: 2 Annual National Honey Shows at Gormanston and at Fota and multiple large public events such as The National Ploughing Championships, Bord Bia Bloom in the Park, The RDS Horse Show, Tullamore Agricultural Show amongst others.
- Spain: honey festivals that are carried out in different autonomous communities each several months as well as medieval fairs where honey producers can sell their products.
- Greece: beekeepers participate in the traditional flea markets and domestic festivals.
- Turkey: The Armasad Beekeeping Fair takes place every year in Ankara and Istanbul provinces.

Other ways that beekeepers use to promote their products are:

- Digital media: In recent years several beekeepers use the internet, either using personal sites or blogs and through the social media like Facebook, Instagram, YouTube, etc. to reach out to potential customers. Many honey producers have their own website for their businesses which shows that beekeeping is becoming more popular and modern.
- Having their own shop: In Spain, beekeepers can promote their products for sale in different ways. One is by selling their products as suppliers (to shops, supermarkets or brands) or by direct sale with their own shop.
- Beekeeping Associations: In Cyprus, the Pancyprrian Beekeeping Association (PBA) publishes every 6 months their own magazine for beekeeping, in which events, seminars, festivals and beekeeping businesses are presented.

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3.10. Mobile beekeeping

From the countries included in this report only Turkish beekeepers engage widely in mobile beekeeping practices. Approximately 75% of the Turkish beekeepers are mobile beekeepers. Mobile beekeepers are moving based on the location of the nectar sources and the meteorological conditions. A wide range of nectar and pollen types can be found in Turkey due to its variety of plants and plant covers. Turkish mobile beekeepers are using floral sources in the most efficient way and at the end of the year they have the highest honey production.

In the UK, mobile beekeeping (or migratory beekeeping) is practiced by relatively few hobby beekeepers but it is important for those wishing to maximise their honey harvest. As for professional bee farmers in the UK, they can earn money if they use their bees for pollination services, mainly for orchard crops of pears, apples, plums, and cherries in spring. Additionally, in the UK this national pollination service is organised and administered by the BFA and involves BFA members moving hives to specific crops for agreed time periods, under contract with the grower.

Lastly, in Spain mobile beekeeping is more common in the Centre and Southeast parts of the country where beekeepers are moving their hives to zones with milder weather conditions.

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