



PROSPECTS AND CHALLENGES OF APICULTURE BUSINESS IN NIGERIA-A REVIEW

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ABSTRACT

There is serious unemployment in Nigeria. The country is presently suffering economic recession which has affected organizations, businesses, families and homes. The need for an alternative source of national revenue apart from crude oil has become imperative for lots of Nigerians. Because of this government is encouraging projects that can promote self reliance so as to reduce the problem of unemployment and salvage the country out of economic recession. Among the projects that can induce self reliance is beekeeping. This review seeks to find out the business opportunities of beekeeping in Nigeria, various uses of honey and other bee products, the global demand for bee products, the species of bees best used for rearing and the constraints militating against the success of apiculture business. Beekeeping as an agroforestry practice has not been given much attention in the country. There is increasing demand for honey in Nigeria and the world at large but the practice of beekeeping in Nigeria is generally low. Apiculture is one of the most lucrative enterprises in many parts of the world. It is a profitable business that has no negative impact on the environment. It is a profitable and a viable enterprise that requires very little investment and produces quick returns. To overcome the challenges facing beekeeping in Nigeria, Government should assist interested beekeepers with soft loans and provide modern beekeeping equipments such as movable frame hives, bee suit and smokers at subsidized rates. Beekeeping practice should be adopted as a an integrated rural development approach and should be promoted by a well organized extension service to act as a link between apiculture specialists and rural beekeepers (Onyekuru, 2004). Improvement in honey production by beekeeping practitioners will be a sure way of adding market value to apiculture business and efforts should be made by Nigerian Export Commission to show case Nigerian honey in the world market.

Keywords: Apiculture, self reliance, Unemployment, economic recession, opportunities, challenges.

INTRODUCTION

Apiculture is the science of beekeeping. It is the art and science of rearing, breeding and managing honeybee colonies in artificial hives for economic gains. It can be learnt and practiced as a hobby, a part time or full time occupation. Bees do well in natural, undisturbed forests and on integrated farms where there is abundant water and flowering plants since noisy environment can disturb the bees (Goulson., 2003). Bees are social insects that live in groups.

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which has affected organizations, businesses, families and homes. The need for an alternative source of national revenue apart from crude oil has become imperative for lots of Nigerians. Because of this government is encouraging projects that can promote self reliance so as to reduce the problem of unemployment and salvage the country out of economic recession. Among the projects that can induce self reliance is beekeeping. According to Ajao and Oladimeji, (2013), beekeeping offers an unexploited succor capable of salvaging people from abject hunger and poverty. Ayansola, (2012) observed that beekeeping will help to reduce the

endemic poverty problem in Nigeria, especially in the rural communities. Beekeeping has a wonderful potential to boost Nigeria's export base. There is an increasing demand for honey and other bee products because of its great values in maintaining good health and in the treatment of various diseases. According to Anineme (2007), honey is highly useful and as a result, there is so much demand for it that it can be termed a money spinner. Ojo (2004) described the enterprise as a means of empowering youth economically because of its many advantages over other types of agroforestry practices.

There are 20, 000 species of honey bees, most of which are found in Asia. Only few of these species occur in other parts of the world. Two species are domesticated and used in beekeeping. *Apis cerena* in South East Asia and *Apis mellifera* world wide (Seeley, 2010).

Honeybees are of great economic importance because they do not only produce honey and bees wax but also act as primary pollinating agents of many agricultural and forest crops. It is due to pollination that crop yield increases, quality of seed and fruit improves (Moniruzzaman and Rahman, 2009). Beekeeping can provide food and livelihood security to the rural work force on an ecologically sustainable basis.

Bee Products and Their Uses:

Honey: This is a sticky, juicy and sweet substance produced by bees from nectar or secretion of flowers. It has a content of 80-85 % carbohydrates, 15-17 % water, 0.3 % proteins, 0.2 % ashes, and minor quantities of amino-acids and vitamins. Honey is used in some industries such as food, pharmaceutical, cosmetic and brewery industries as their raw materials for the production of their commodities, for example, drugs, body creams, lip balm, confectionaries etc. Honey is also used as a sweetener in food, alternative to sugar. It is used as medicine for various ailments, burns and wound dressing and general stomach problems.

Bee wax: This is used in the manufacturing of cosmetics, candles, foundation sheet (for houses), and polishes.

- i. It is used in the adhesives and textile industries.
- ii. It is used as a raw material for making gum.

- iii. It is used in dental work as temporarily tooth filler.
- iv. It can also be used as a water proof agent for wood and leather.

Propolis: propolis produced by honey bee has some therapeutic and antibiotic usage. It is used to prepare cough, syrups, toothpastes, lotions, skin soaps and skin oils.

Pollen: This is used for making of perfumes.

Bee venom: This is useful for treatment of rheumatism, eye and skin diseases.

Royal jelly: This is used to cure infertility and dressing wounds.

Why Beekeeping can be Practiced by any Person:

Beekeeping is not difficult to embark upon because of the following reasons:

- a) Bee farming is relatively cheap to manage, as the major production is undertaken by the bees hence the insects can produce their own food all year round, while man only does the harvesting.
- b) It does not need large expanse of land, water, feed and fertilizer to thrive.
- c) Does not depend on importation of foreign equipments or inputs. Materials and technologies are readily available in rural areas in local forms.
- d) There is no need for daily care.
- e) It requires small capital to start up. Traditional bee farming does not necessarily require capital to start up. This means beekeeping can be practiced without the risk of debt.
- f) It can be practiced by any interested person from any field of discipline.
- g) There is increasing demand for honey and other bee products in both the local and international markets.
- h) Honey, as it is in the comb, is pure and clean. If harvested carefully, honey needs no further processing.
- i) Beekeeping can be undertaken by both the young, old, men and women. It is a gender inclusive activity.

Materials Required For Starting Up Beekeeping:

1. Hive: a hive is essentially a container provided by man for bees to nest in. hives

can be made out of bark or wood and other equipments (such as woven grasses, clay pots gourds and calabashes). Hives can be grouped into:

- a. Traditional hives
 - b. Intermediate level hives
 - c. High technology movable frame hives.
2. Bee suit, hand gloves and boot.
 3. Veil or hat: This gives maximum protection to the farmer.
 4. Smokers
 5. Honey extractors.
 6. Storage bottles
 7. Cutlass
 8. Funnel/ sieves.

Species of Bees:

1. *Apis mellifera* (**European bees**): most common species of bees used in beekeeping in Nigeria because they are the most widely spread and abundant specie of bees on earth (Goulson, 2003). It is a good honey producer, pollinate crops excellently, and has a gentle temper.
2. *Apis cerana* (**Asian bees**): This species yield small quantities of honey and therefore are not good to use in beekeeping. This specie of bees can leave the hive of the beekeeper and return to living in the wild. It is native to Asia.
3. *Apis florae*: This is otherwise called the little bees. It is of Asian origin. They move about often and hardly remain at a place for more than five months.
4. *Apis dorsata*: It is difficult to rear this specie has unpredictable behaviour and cannot live inside the hive.

Beekeeping as a Profitable Venture;

Beekeeping has been identified as a good venture capable of obliterating poverty and raising the standard of living of the people because of the following reasons:

1. The products are readily marketable and have long shelf-life: In Nigeria, the price of honey ranges from ₦100 – ₦120, 000 per ton. If Nigeria were to export 2,000 tons of honey produced annually, that will fetch the Nation 200 to 240 million naira per year

(Adediji and Omoba, 2016). According to Mbah (2012), about 255 liters of honey produced in Umuahia yields a net income of N151, 440.00. This quantity of honey do not meet up with the demand in Umuahia. The market for honey beverages in the US is worth about \$195million per year aside the processing and packaging of honey-by products such as pollen, propolis and royal jelly as food supplements, which generate more than \$1billion annually (Adeola *et al.*, 2011). Beekeeping is an important foreign exchange earner for those that export honey and beeswax. China is the number one exporter of honey in the world, selling \$246,550,000 followed by Argentina with \$212,637,000 (Chibuzo *et al.*, 2015). This means beekeeping is a profitable business that one can venture into and it has been a source of revenue and export for these countries. In Nigeria no special efforts has been made to export honey and other bee products. Since there is high demand for honey in the international market, venturing into apiculture business would turn someone into a millionaire.

2. The pollination service rendered by the honeybees from beekeeping results in increased crop production and abundant harvest: over \$30million is made by American beekeepers from renting out bees for crop pollination. The use of bees in biological (non- pesticide) control of agricultural pests is also an industry generating \$20millio in the US per year (Fabunmi, 2010). Honey bees were first used for pollination in the USA in 1895, when *Apis mellifera* bees were used to pollinate pears in Virginia (Ahmad *et al.*, 2007).
3. In Nigeria, there is a better environment for establishment of bee colonies as the environment is not as polluted as the environment in the industrialized nations. According to United Nations Conference on Trade and Development “UNCTAD (2006), it has been certified that honey from the tropics has special attractive aroma superior to the one from non-tropical regions of the

world. Beekeeping for honey production has been identified as one of the activities that could provide a means of livelihood and reduce poverty among rural dwellers in Nigeria (Babatunde *et al.*, 2007). Beekeeping is a very successful venture because of its potentials for honey production due to excellent flora. According to Akinwande *et al.*, (2011) honey production has always been on the decline and never satisfies local demand.

4. A typical colony of bees can produce 80-120 pounds of surplus honey and 10 pounds of pollen in a year depending on the country and environmental factors (Standifer, 2007). So if a single colony of bees can produce this quantity of honey, the high demand for honey in the international market makes it an excellent opportunity for business. This also imply that if one should start up with more than one hive, the person will make more profit as the quantity of products that will be gotten will increase, consequently bringing an increase in revenue.
5. The major cost of apiculture business comes from the cost of items like; beehive, smoker, bee suit (Protective cloth) and centrifuge. Once the enterprise has been set up, little or no expenses are required to maintain the enterprise as the bees can fend for themselves without the intervention of the beekeeper. These items are required in modern beekeeping but in traditional beekeeping, the farmers use local tools and so, little or no money is usually spent setting up the enterprise.
6. Honey has multiple market opportunities. If an export market collapses, people will still have some chance to sell their products within their towns and villages at home. Beekeeping creates an economic incentive for rural people to conserve their natural

forests. In 2002, the world honey market was largely affected by EU ban on Chinese honey, following the identification of antibiotics in samples of Chinese honey. China was the largest supplier of honey to Europe. This ban led to a shortage of honey in Europe and honey prices increased rapidly (BBC News, 12th July, 2002). This condition presented an ideal opportunity for developing countries like Nigeria. The gap left by China could be filled by other Countries like Nigeria if they were organized to do so. African honey is absent in EU honey imports. The demand for chemical residue free honey presents opportunities for honey producers in Countries like Nigeria. In Nigeria honeybees remain relatively disease free and the environments are not polluted. The honey harvested in this country is of good quality and can achieve good prices in EU market.

7. The increasing demand for bee's products to meet international standards; the world market demands increasingly that honey be certified free from chemicals and other residues that may have been introduced during management or environmental pollution. This demand opens up opportunities for honey producers or beekeepers. Currently, only five African countries meet up with the requirement in the World Market. The countries include; Kenya, South Africa, Tanzania, Uganda and Zambia. Only four Asian Countries like China, India, Taiwan and Vietnam meet up with the requirement (UNCTAD, 2006). Chinese domestic honey consumption has been ranked first in the world. China is the world's largest country of beekeeping, honey production and export (Ahmad *et al.*, 2007).

Table 1: Imported honey in China

Year	Import (KG)	Amount (USD)
2016	6,031,955	72,771,567
2015	6,517,661	74,819,215
2014	5,791,684	58,629,975
2013	4,856,713	42,932,079

Source: Chinese Agricultural Trade Fair “CATF”, 2017.

The imported honey are from New Zealand, Australia, Germany, Thailand, France, Malaysia,

Chile, Italy, Portugal, Swiss, Spain, Canada, Greece, Bulgaria, Turkey, Hungary and Brazil.

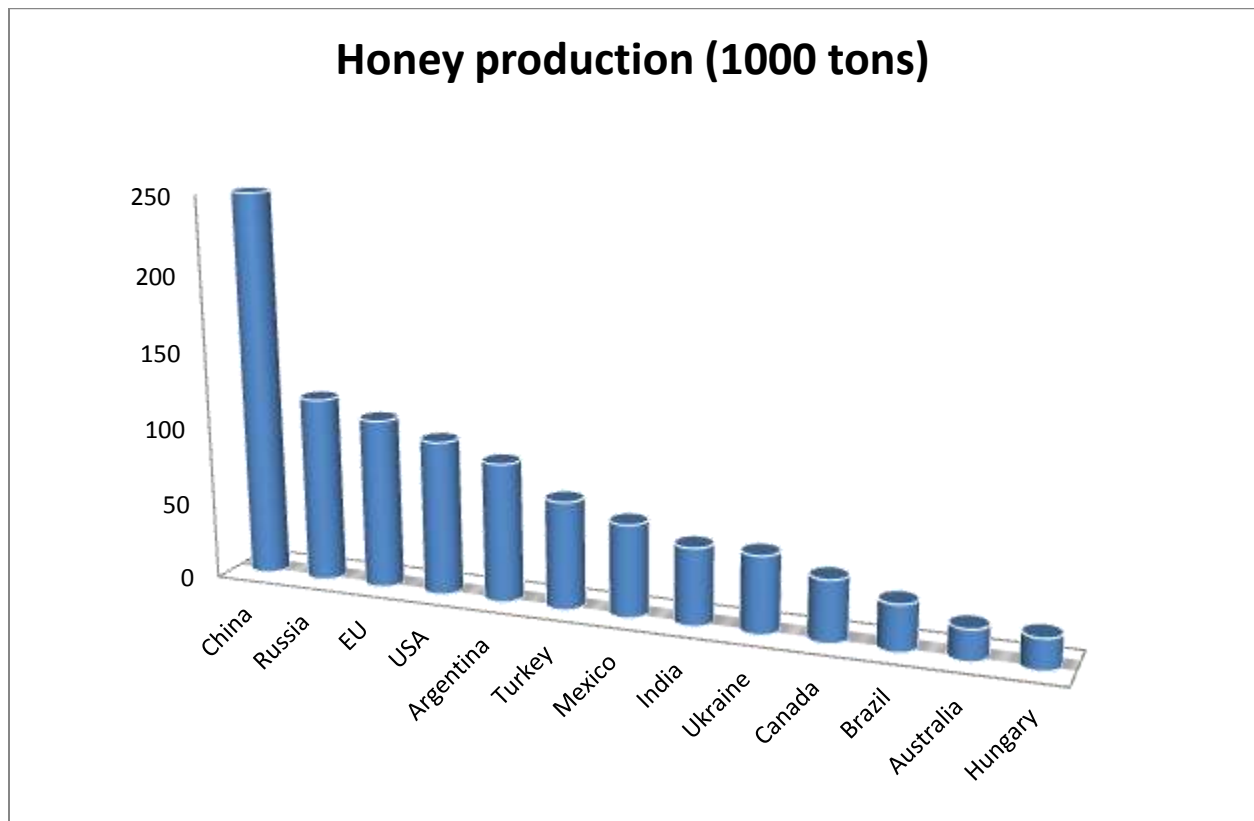


Figure 1: Major Honey Producing Countries
Source: Ahmad *et al.*, (2007)

China is the world’s largest honey market with an annual production of 250,000 tons of honey followed by Russia and Europe with over 100,000 tons. While Australia and Hungary with less than 50,000 tons of honey. By implication, if there are more efforts in the production of honey in Nigeria, the Country will be capable of competition in the world market.

Requirements for Bee honey Export

Honey Authenticity: Honey authenticity has two different aspects. The first aspect of honey authenticity is in terms of its content, that it is 100% real honey and has not been contaminated by sugar syrup. The second aspect of honey authenticity is in terms of its description; the geographical and

botanical origin. Both aspects, content and origin are required for honey to be authentic.

Honey Adulteration: In some Countries like Nigeria, pure honey is sometimes adulterated by adding some quantity of water and cane sugar. Experienced consumers are able to taste the difference between these and pure honey. Laboratory tests are needed to prove the difference.

Certification: All honey traders and importers in the world market require certification for the honey they intend to buy. The global honey market especially the EU requires imported honey to be certified that it is free from chemicals, antibiotics and other residues. This makes EU the hardest market for potential exporters to access. Beekeepers in rural areas of Nigeria harvest honey from indigenous, wild honeybees that are uncontaminated by diseases. For this reason, Nigerian beekeepers do not apply medicine to their bees and are able to harvest residue free honey that is in short supply in the international market.

Challenges of Apiculture Business in Nigeria:

Bee farming in the world over, and indeed Nigeria is faced with challenges, most of which are man-made:

1. **Ignorance and Fear:** Ignorance of the profitability of beekeeping and the fear of being stung by the bees deter people from venturing into apiculture business. In Nigeria honey is mostly produced by beepers who are the poorest and most marginalized in the society. These people are disconnected from the market due to poor roads and remote locations. Getting honey out of the villages to towns is difficult and expensive. The beekeepers in such areas have no knowledge of the final market.
2. **Bush burning:** The processes of bush burning threaten the bee population because the heat from the fire if not controlled could lead to a severe destruction of the honey bee that resides in that environment. An entire bee colony is usually destroyed during bush burning. Also fire is a threat to bee flora.
3. **Application of pesticides and Insecticides:** These chemicals are usually applied by farmers on their farms to get rid of insects. Bees are also insects, therefore the

application of these pesticides and insecticides are harmful to the bees if they are located in the area where these chemicals are applied. The bees could even die when foraging in search of food in flowers contaminated with these deadly chemicals.

4. **Bee killing:** Some bee hunters at night burn the bee hives on the trees in order to collect the honey and in the process, the bees are burnt to ashes. This activity reduces the population of bees and prevents the reproduction of young bees.
5. **Lack of flowering plants associated with deforestation:** The destruction of forest through the cutting down of trees can gradually lead to decline of honey bee flora, as bees feed on nectar and pollen from flowers of plants, this can lead to low production of honey because the forage bees have to fly longer distance in search of nectar and pollen.
6. **Lack of modern beekeeping equipments associated with its high cost:** The equipments include modern beehive, smoker, honey extractor, bee suit etc.
7. **Pest and predators:** The existence of pests is a major challenge to the honeybees and beekeepers. These include; ants, wax moth, bee eater birds, spiders, honey badger, monkey, small hive beetles and lizards.
8. **Absconding of bees:** Honeybee colonies sometimes abandon their hives at any season of the year for different reasons. This may be due to lack of forage, incidence of pests and predators, bee diseases and bad weather condition. Regular absconding of bees has contributed to low colony establishment. Because of this, many people find it difficult to work with bees.
9. **Inadequate technical skills:** The technical capability of the traditional beekeepers is weak. To manage the bee hives to achieve maximum profitability, it is necessary to understand the behaviour, characteristics, biology and anatomy of the bees. This is lacking in traditional beekeepers. Technical constraints facing beekeepers in developing countries like Nigeria is lack of knowledge

of appropriate methods for managing bees, lack of skilled trainers, materials and training possibilities, and lack of dissemination of new research information.

10. **Market problem:** The current marketing system is facing many problems which include; lack of reliable market information on supply, demand and market prices for bee products in the country. While Nigeria has problems in marketing their honey, beekeepers in most parts of the world are in a difficult situation of having bee populations that are free from diseases and predators. Nigerian honey has little risk of contamination by chemical residues. This could enhance greatly its quality and value in the world market. In Nigeria, honey is the only major product that is exploited while the other by-products are not fully tapped. This is evidently clear that Nigeria has not taken beekeeping as a serious enterprise.
11. **Adulteration of honey:** Most times farmers tend to adulterate the pure honey with water in order to increase the quantity of the product. In some parts of the country, it is difficult to get the pure honey. Sometimes cane sugar is added to honey. Informed consumers are able to taste the difference between these and real honey. This makes it difficult to buy and sell honey at appropriate time and required amounts, thus causing losses to honey traders in particular and the nation in general.

Solutions to the Problems

1. Beekeeping can be undertaken by any one if the person has the determination and courage to work with bees. Working with bees requires a gentle touch and calm disposition. It requires basic understanding of the honey bee's behaviour during the various seasons and during handling and moving. Awareness campaign should be carried out to enlighten people on the benefits of beekeeping as this could encourage more people into the business.
2. Indiscriminate bush burning should be avoided especially where there are bee hives. People should always look at bees as insects with great economic value and feel that if they are destroyed a lot of valuable products that could have been gotten from them are also destroyed.
3. Controlled application of pesticides and insecticides should be adopted by the farmers. The hives should be moved away before spraying.
4. Modern ways of honey harvesting using bee smoker should be adopted by beekeepers.
5. Bee flora should be planted around the apiary to save the bees the stress of flying to longer distances in search of nectar and pollen. The farmers should avoid cutting down flowering plants around the apiary.
6. Farmers who are into beekeeping should form co-operatives through which they can assist themselves by purchasing modern beekeeping equipments for their fellow members at reduced or subsidized rate. Government and NGOs should assist farmers by providing them with these equipments.
7. The problem of pest and predators should be controlled through the personal efforts of the beekeeper by way of good management practices including hygiene.
8. Bee hives should be baited with appropriate attractants like sugar solution and sweet fresh palm wine.
9. Government and NGOs should organize seminars and workshops where beekeepers will be adequately informed of the new innovations in beekeeping and properly trained on the modern ways of beekeeping.
10. An efficient and effective marketing system for bee products is required in the country in order to encourage production. Since honey produced in Nigeria is chemical free, efforts should be made to ensure that the honey produced in the country is free from impurities like; sand and ash in order to meet up with the requirements for the world market.
11. Beekeepers and honey traders should be honest in their business and avoid selling adulterated honey to consumers who actually need pure honey. Not all the consumers may need pure honey, so

adulterated honey should be kept for those who need them.

CONCLUSION

Apiculture is one of the most lucrative enterprises in many parts of the world. It is a profitable business that has no negative impact on the environment. It is a profitable and a viable enterprise that requires very little investment and produces quick returns.

Recommendations

1. Government should assist interested beekeepers with soft loans and provide modern beekeeping equipments such as movable frame hives, bee suit and honey extractors at subsidized rates.

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2. Beekeeping practice should be adopted as an integrated rural development approach and should be promoted by a well organized extension service to act as a link between apiculture specialists and rural beekeepers (Onyekuru, 2004).
3. Improvement in honey production by beekeeping practitioners will be a sure way of adding market value to apiculture business and efforts should be made by Nigerian Export Commission to show case Nigerian honey in the world market.
4. For beekeeping to be transformed from a subsistence activity to a business, the rural beekeepers must have access to a market chain that is reliable and efficient (UNCTAD, 2006).

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