APICULTURE AS AN ASPECT OF NIGERIA’S ECONOMIC HISTORY

Dr. Ogbari C. C. Ama-Ogbari

Abstract

Bee farming or apiculture is a new field of economic activity that has come to stay. In the wake of calls from divergent quarters to diversity Nigeria’s economy, the agricultural sector becomes a ready alternative and bee farming has presented itself as a viable and profitable business. Although not yet practiced on a large scale, it nonetheless provides essential food and nutritional value, help in health care and provides employment for rural dwellers. Challenges are abound in bee farming, but there are also mitigating suggestions that could improve the business of apiculture. This paper therefore endeavours to highlight this nascent but valuable occupation as an aspect of economic history of Nigeria that could be exploited for economic diversification and growth.

The discovery of crude oil in Nigeria in the late 50s adversely affected the agricultural sub-sector of the Nigerian economy. The once booming agriculture in Nigeria especially in the 1940s and early 1950s became a shadow of itself. The groundnut pyramids in the North disappeared, cocoa products in the Western region declined drastically while palm products from the Eastern region were localised.

Although various governments have attempted to revitalise the agriculture sub-sector, Nigeria has not succeeded wholly in turning the fortune of agriculture for economic growth.

One aspect of agriculture in Nigeria that is neglected or an aspect that awareness has not been properly created is in the field of Apiculture or Bee farming. It is necessary to promote and encourage the art of Bee-farming to enhance economic growth in Nigeria.

Bees, the main player in Bee-farming are four winged flower feeding insects that live in all the crannies of the world. They are social insects and live in groups. Honey bees are important and beneficial economic insects, as they produce honey and pollinate crops.

Historically, throughout the length and breadth of civilization, honey bee colonies have provided source of honey for human consumption. It is on record that the first authenticated record of men pursing bees is a cave painting in Spain which was dated to about 8,000 years before the present era. However, the formal management of honey bee colonies for the commercial honey production is a more recent innovation. It is certain that the Ancient Egyptians kept bees specifically for the production of honey, at least 2,500 years before the present era. In contemporary times, the keeping of bees in movable comb hives (essentially the definition of modern bee keeping or farming) is a legacy of the innovativeness of the father of commercial bee keeping, Reverenced Lorenzo I. Langstroth who patented a hive in 1852 which has remained widely used up till today (Gills, 2007)

Today, many parts of Nigeria are involved in the deliberate process of Bee farming or Apiculture. Although apiculture is still young in the agricultural system, it is gradually growing especially when viewed against the background of the usefulness of honey, a valuable by-product of bee farming.
Historical Perspective of Bee-farming in Nigeria

Between 1000 and 1500 AD Arab travellers in West Africa, which included the present day Northern region of Nigeria were involved in trade. One of the valuable items of trade recorded was the use of honey as good and mead, and the presence of honey in the region acknowledged the existence of bee hives, from where honey was produced (Azaiki, 2013).

This discovery eventually progressed to bee-farming in Nigeria. Gradually, the practice of bee-farming spread to many areas and farmers adopted various methods. Traditional bee keeping in Zaria shows that hives were made in trees, while in the Ngamo area, beekeeping involves the use of plaited grasses. The honey combs are harvested after dark or after a full moon or before the appearance of a new moon. In the North Eastern region of Nigeria, the Kanuri people use calabashes in trees as bee hives (Apinondia, 2007). However, the natural nesting enclosures for bees are cavities in big trees, ant hills, rocks, under bridges, ceiling and disposed containers (World Book Encyclopedia, vol. II P 55). Similarly they are also found in grooves of trees in the forest.

Traditional bee hives constitute of wood or half quarter steel drums fitted with wooden top bars. Modern hives were introduced by the International Institute of Tropical Apiculture (IIITA) to Ibadan in farms at Ayepe, in Osun state, at Ilesha and in Dogon Dawa in the north.

The traditional honey harvesting practice in Nigeria involves allowing bees to breed in the wild and then finding and burning the hives to disperse the bees, usually killing the bees in the process. This practice reduces the population of the bees and is a sustainable economic venture as source of income/livelihood for rural dwellers.

Traditional beekeeping in trees is practiced by men, by climbing the trees. The climbing involves the use of ladder and ropes. In some parts of Southern and central states of Nigeria, pots are kept on the ground as a means of hives in bee-farming. In Eastern Nigeria, palm wine is used to attract bees to traditional hives. In Southern Bauchi clay or mud hives are used to keep bees.

The modern and/or scientific method of beekeeping is called Apiculture which is an improvement in the art and science of beekeeping for man’s economic and health benefits. It is the practice of honey bee rearing that combines the knowledge of the social behaviour and biology of the bees with that of the environment and the use of apiary equipment to maximise honey production and output of other bee hives production (BBC News: Stuck on honey, August 9th 2007). Apart from honey which is the most popular bee hive product, there are other by-products. These include bee venom, wax, pollen and propolis.

Management of Bee Hives

To manage the bee hives to achieve maximum profitability, it is necessary to understand the behaviour, characteristics, biology and anatomy of the bees. Every bee keeper needs to understand the process of the bee society, for instance how the bee colony is constituted and organized.

Insect bees come together to form temporary or permanent groups where they interact directly with one another. The group activities which these bees exhibit, are known as social behaviour. Each group or society of bees has an organizational structure and communication system. The efficiency of the society is made possible by giving individual bee specific role to perform. These roles are seen in the activities of the queen bee, drones and workers.
Bees, wasps, termites and ants are social insects that live in societies that are based on caste system. Each caste performs a specific task or series of tasks. The individual in each case shows structural physiological and behavioural adaptation right from the start. Their specialization is so extreme and specific that individuals cannot survive outside the society. In the insect caste system, the individual’s place in the society is already determined when its life begins (World Book Encyclopaedia vol II, 1960, P.156).

In the case of honey bees, they live in colonies throughout the year.

A colony of honey bee is a biological unit or family of bees. Any given colony consists of three different numbers of bees. The Queen or mother bee which is a fertile, egg laying female. The worker bees are infertile females. The drones which are male bees are always present in the reproductive season, but may be kicked out by worker bees during dearth or food scarcity. The composition is usually one queen to 60,000 workers and about 100 drones in an average colony (Olagunju, 2002, p. 115).

Other activities of humans such as cutting of trees or lumbering lead to deforestation thereby destroying bee habitat. Of recent, oil pollution of the land, water and even the forest habitat adversely affects the bees and their colonies. Also, the use of insecticide and weed spray also destroys bees and depletes the bee population.

The Development of Honey Bee and Hive Management

Honey bee eggs are pearly white. A bee starts to develop as soon as the queen lays the egg. After three days a tiny worm-like larva crawls out of the egg, the worker bee places larva food called royal jelly in the bottom of each cell. Royal jelly is a creamy substance rich in vitamins and proteins. It is formed by glands in the heads of young worker bees. When the larva is three days old, the workers begin feeding it on a mixture of honey and pollen called bee-bread (World Book Encyclopedia vol II 1960 p. 156).

The workers build a wax cap over the cell five days after the larva hatches. A great change then takes place. The worm-like larva becomes pupa and the pupa develops into an adult. The adult worker bee bites its way out of the cell twenty one days after the egg is laid, and then it begins to work in the hive. The drones take twenty four days. (Olagunju, p. 157).

In terms of hive management, for the success of bee farming, some equipments are necessary. There are various types of bee keeping equipments. There are also different models of hives as well as bee product processing equipment.

There are different types of traditional hives and such devices differ from place to place. In terms of modern bee management, there are three notable types, the Tanzania top-bar hives, the Kenya top-bar hive as well as the langstroth hive. Among the three hives, the langstroth hive is the most sophisticated hive in use. It is not popular in developing countries because of its high cost, high technology that requires precision and fineness and of course, maintenance. It has movable top bars with frames. (Olagunju, p. 158).

Basic equipment for hive management is the smoker. It is a metal fire box with a directional funnel hinged to the top. The top opens to give access to the inner fuel tank which is perforated to supply oxygen to aid in fuel burning.

There is a variety of fuel materials that can be used to produce gentle blue smoke needed for hive operation. Some include straw dusts, dry grasses, shavings and rags.
The good ones that produce bleu and durable smoke are coconut shell fibre, jute bag and dry cow dung. These flammables are the best used ones in honey harvesting (Njoku, Interviewed, 2007).

Bee dress is also necessary in the process of managing the bee hive especially with the aggressive African specie Apis mellifero Adasonii. The most important part of the dress is the veil that covers the face which is usually the target of the bees. The dress should be of loose fitting to distance the possible sting from reaching the target. Complete attire comprising of jungle boot, hand gloves (NEPA type) and gauntlets should be bee proof.

Other farm tools include cutlass, hive knife machetes, matches, and plastic containers with fitting lid, sharp cutting knife, torchlight, hive tool, bee brush smoker and fuel.

Swarming is another aspect of hive management. If a bee farmer is not familiar with swarming, a colony or colonies will be dispersed from existing hives. Swarming is the reproduction of another colony. Swarming occurs when the worker bees are able to gather plenty food which result in high population of the colony. When the colony is overpopulated some queen cells are prepared and the larva are fed on royal jelly to raise a young queen, the older queen leaves the colony with half of the colony population. This is called swarming, which is natural with bees.

A good hive management could be alert to recapture these swarming bees, to a hive to start a colony again instead of allowing them to the wild. A measure known as baiting or bait is adopted to recapture the swarming bees. Bait is an attractant used in attracting the bees which include honey bee wax, pineapple juice, raffia wine, palm wine, locust bean and cocoa bean juice (World Book Encyclopedia, p. 157).

Another aspect of bee hive management is to ensure that the hive is placed with the entrance facing the east, facing the rising sun for the bees early morning activities, secondly, it is advisable to approach the hive from behind or from the side and do the operations from these two locations. Thirdly, avoid noise making and sudden movements. Fourthly, if accidentally stung, remove the sting bee and smoke the spot to prevent more stings. Fifth, smoke the bees and self to make them calm. Finally, be careful with the use of fire, mostly in dry seasons and disposal to avoid fire outbreak.

Finally, honey is ready for harvesting when the comb is filled with capped honey. Bee keepers should remember that they are harvesting the food meant for the bees. They should have to make extra preparations to ensure that the bees are made comfortable. The under listed steps are necessary:-

1. Dress appropriately to harvest honey.
2. Carry smoker with appropriate fuel materials.
3. Smoke bees and self surrounding the entrance.
4. The hive tool should be used to knock the top bars gently to determine occupied or empty side of the hive.
5. If the bars are glued together with propolis, use the hive tool to harvest the propolis first. Propolis is a black substance bees produce to glue objects powerfully. It is also used by bees to seal holes.
6. If the combs are capped, harvest by brushing the bees to the side before harvesting the capped comb.
7. One or two centimetres of the honey comb should be left on the top bars to avoid making the bees hungry. This will also serve as a guide for the bees to build upon.
8. Close the hive carefully; all operations under harvesting must be done swiftly in the early morning or towards evening because during noon period the sun is high and the bees are more aggressive.

Importance of Apiculture (Bee Farming) and Use of Bee Products

Generally, there are unlimited uses of Bee products in Nigeria and at the international level. Most important resource from Bee farming is honey. Nigerian honey is in high demand. The reasons are that, the vegetation and environment from which the honey is produced is not as polluted as the environment in developed countries, besides it has been certified that honey from the tropics has special attractive aroma superior to the one from non-tropical regions of the world.

Ordinarily, it is shady to understand and appreciate the real value of bees, beekeeping, honey production and development. However, from history, man has reaped the benefits of bees although Nigeria has evidently not taken Beekeeping as a serious business. It is note worthy that an important part of Nigerian agricultural output and development is anchored on the contribution of small scale farmers. Therefore, the agricultural sector needs to include the service of non-conventional areas of agricultural business such as snail farming, fish farming, turkey farming, grass-cutter farming, poultry as well as bee farming. This will help the process of diversifying the Nigerian economy.

The honey bee is a successful and most effective pollinating agent for a range of crops. Entomologist Christopher O. Toole calculates that “as much as 30 percent of all human food is directly or indirectly dependent on pollination by bees” (Awake Magazine, 2007, p. 18). In Europe and Asia bees are needed to pollinate such crops as almond apples, plums, cherries and kiwis and farmers pay the beekeepers for the services each hive provides. In Nigeria, in Ibadan, Umudike (Abia State), in Adamawa and Bauchi and in Rivers State, bees have been pollinating crops. For instance, the Risonpalm Nigeria Limited benefited from the services of the honey bee with respect to boasting production and growth through the activities of pollination.

Historically, the Babylonians and Egyptians have been using honey for treatment of wounds, the infections of the eyes and skin as it acts as a disinfectant and counteracts inflammation, among others. It remains till today not only one of the cheapest curative substance but also one of the most effective. The Spaniards were in the Middle Ages, calling medicine honey (Olagunju, p. 115).

The importance and benefits of honey are countless. For example, the consumption of honey sharpens the mind. In Christian fasting and by Muslims at Ramdan, it is eaten to break the fast. In Nigeria, all the traditional medicine and traditional healers use honey in some of their preparations.

Diabetes and Pile are two illnesses caused by excessive sugar intake. Honey however is suggested by medical experts in place of sugar. Pharmaceutical industry uses honey in preparation of some drugs because of its efficacy.

Dr. Peter Daniel Onozutu, a traditional medical practitioner in his pamphlet “Wonders of Nature” stressed the need on trado-medication for a healthy living, eradication of one hundred and fifteen sicknesses and diseases through the use of herbs, roots and honey. Similarly, Dr. Leopold Okokoh, a traditional medical practitioner, in his book “Natural Health Care” highlights natural remedies for hundred deadly diseases and recommends herbs and honey for cure of diseases and illness (Okokon, 1999).
Studies also show that honey is a potential destroyer of germs. Besides, honey is a near complete food and takes care of the body better than food items combined as it has almost all the essential food nutrients in the right proportion without any known adverse side effects. Dr. P.E Welsen opines that the effects of honey in the diet make children to grow faster, remain healthier…. and sharper (quoted from Dokun Olagunju, p. 33).

Also GNW Thomas opines that in heart weakness, I have found honey to have marked effect in reviving the heart action and keeping patients alive. Generally tired muscles are stimulated by honey which provides the energy needed by the brain and heart inclusive.

Medically, it has been attested that honey soothes sore throats, eases cough and helps digestion. It is also believed that the old remedy will calm nerves, help sleeplessness and even ease the pain of arthritis.

On human body, honey has long been noted as a way of improving the skin and general good looks. It can be applied direct to blemishes and used on spots and black heads.

The economic importance of Bee farming cannot be ignored as its impact is directly felt by Nigerians, especially those that are engaged in this occupation. Bee farming is planning a new future for rural systems in Nigeria, using bee-keeping and apitherapy as the pivot of sustainable human development. Bee-keeping, and training, help to create jobs for the rural people. The job creation potentials of beekeeping are in two folds-secured livelihoods for rural people through honey production and jobs for urban-based individuals and corporate bodies packaging and marketing honey or using honey as raw materials for cosmetics and pharmaceutical products. Agricultural development such as bee-farming is also the basis of any meaningful economic empowerment for the poor rural dwellers.

The Use of Bee Products in Nigeria

As noted earlier, the most valuable product of bee-farming is the honey. Honey is a form of sugar. It is produced in liquid form by honey bees, from nectar and enzymes secreted from the bodies of honey bees. Its composition is very complex, containing a variety of biochemical compounds including vitamins, amino-acids, enzyme, minerals, etc. Other materials found in honey include pollen grains and royal jelly. Honey is an instant energy producing food fondly used now by athletes and footballers. It is used in wine production as honey drinks and preservatives. It takes care of liver disorder. It is sold to the cosmetic industry and has a high economic value and one of the most acceptable trade commodities.

Bee wax is an important product from bee-farming, it is a yellowish substance, newly built, comb can also be rendered as good wax along with capping. It is a fatty acid; its chemical property is complex and unique. Bee wax is a multi industrial raw material used in making polish for wood, leather, ointments, cosmetics, brass casting, highly valued church candles, printers ink and skin cream. It provides waterproof in shoes, bee wax is used also for allergies such as hay fever.

Another product from bee-farming of value is the pollen. Pollen grains from some selected flowers are gathered by bees to make bee-bread. It has a high market value, used as food and medicine for anaemia, constipation, insomnia and depression. It is very rich in protein, enzymes and minerals.

Propolis is another substance produced from bee farming. It is a blackish and at times brownish substance that bees produce to glue objects strongly together. This product is used as anti-biotic and also to prevent and cure sinusitis. It enjoys high demand from pharmaceutical manufactures.
Royal jelly is another by-product of bee-farming. It is a special food prepared for the bee queen. This product is very valuable to man. It is used to cure barrenness in humans. It has a high concentration of protein that can be manufactured into capsules for aiding fertility. It is also used for heart complaints.

Interestingly, the venom of the bee sting is also useful. A collection of it is processed into liquid, built into ample of 5ml. Each serves as a dose for arthritis. Similarly, the stings when collected are used to produce vaccine against the haemolytic, haemorrhagic and nervous disorder; and occasional sting experienced by a bee keeper stimulates anti-bodies that prevent stroke or paralysis, internal haemorrhage and red blood cell ailments.

The broods are young bees that are yet to fully metamorphose into imago. They have abundant protein content and are thus widely used as food in developed countries. Japan, for instance, is the leading exporting country serving United States and Canada. This canned food is prepared in various forms. It is referred to as ‘young bee’.

In Nigeria bee farming is not yet on a large scale farming. Thus the honey is the only major product that is exploited, while the other by-products are not fully tapped.

Challenges to Bee Farming

Bee farming in the world over, and indeed Nigeria is faced with challenges, most of which are man-made. Foremost of these obstacles is deforestation which involves the destruction of the forest through the cutting down of the trees in large areas. This process of deforestation is caused by human activities such as wood logging or lumbering. This destruction of forest gradually leads to the decline of honey bee flora, as the bees survive through nectar and pollen, and this consequently leads to reduced production of honey. This is because the forage bees have to fly longer distance for pollen and nectar to cope.

A similar challenge to bee farming is bush burning. This is the process where farmers or people burn their farms or any vast land. This is mostly carried out during the dry seasons for easy clearing and cultivation. 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. Also the fire is a threat to bee flora, due to the environmental effect caused by the increasing rate of the flames.

Another notable obstacle to bee farming is the application of pesticide and insecticide by farmers on farms. These chemicals are used to fumigate the environment to get rid of insects. Bees are also insects. Therefore the applications of insecticide are also harmful to bees if they are located in the environment. Besides, the bees could even die when foraging in search of food in flowers contaminated with these deadly chemicals.

Some of the activities of multi-national companies are also detrimental to the bees. This occurs when these companies use dynamites and grenade to excavate the surface of the soil in the process of oil exploration, and in the event of this the forest and environment in which the bees live are destroyed.

Some methods adopted in the process of bee hunting are inimical to the bees. 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 prevents the reproduction of young bees. Crude oil spillage is another factor which leads to pollution of the land, water and the forest habitat. It affects the bees as their source of drinkable water is contaminated.
Appraisal and Conclusion

The subject matter of this discourse is bee farming or apiculture in Nigeria. Although bee farming is a new field of economic activity, its usefulness in terms of the valuable by-products, and the provision of employment cannot be overlooked.

In Nigeria where intense effort is being suggested to diversify the economy to agriculture, the field of bee farming should be seriously considered by government, corporate bodies and individuals.

Even as bee farming grows from its infancy destructive tendencies and inimical practices that will affect the bees and bee farming should be checked, monitored and curtailed.

The suggestions advanced in this study are not exhaustive but they should be seriously considered if we are to maximise bee farming in Nigeria and position it to compete favourably with other sectors of the economy.

Recommendations of Probable Solutions to Challenges of Bee Farming

In spite of the problems and challenges of bee farming, the future of bee farming is still bright because Nigeria is still blessed with abundant natural resources such as rich vegetation and floras.

However, to achieve positive results, the recommendations suggested below are worthy of consideration.

The government should set up and encourage forest and game reserve throughout the federation to prevent total destruction of the forest resources. This would preserve the forest including wild life. It is suggested that an enabling law be passed to properly check deliberate deforestation by individual and cooperate bodies.

Care should be taken in the application and use of chemicals in form of pesticide and insecticide to avoid destruction of the bees in the environment.

Bee hunters are advised to stop burning bee hives. Modern bee hives facilities are provided by government that would train people in the field of apiculture. This will not only prevent the destruction of bees, it will also improve the economic standard of local people and provide job opportunities for the people.

Oil companies involved in seismic survey are advised to apply descent safety measures that will not destroy the environment. Besides, oil spill should be avoided, and if it occurs, immediate steps should be taken to clean up such spills.

All these measures suggested involve the total commitment of government and especially the rural dwellers to check and monitor the ‘enemies’ of bees.
References


Peter Daniel O. “*Wonders of Nature*” Power Behind Nature vol. I, Best Herbal Centre, GRA, Lagos

“Pollen, the dust of life” Awake, April, 2007


Wekhe, S. N. & Ochenna V. (1974). (eds.) *Agriculture*; Rivers State Newspaper corporation, Port Harcourt

World Book Encyclopaedia vol. II Field Enterprise Educational Corporation 1960, U.S.A