



POTENTIAL BENEFITS OF INSECTS IN ALLEVIATING THE ADVERSE EFFECTS OF COVID-19 ON THE NIGERIAN ECONOMY

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ABSTRACT

This paper reviews areas of entomology that can be harnessed to boost the country's economy through job creation and foreign exchange earnings and on the long run ameliorate the adverse effects of the current global pandemic on the Nigerian economy. Products from apiculture such as honey and other hive products are known to have contributed largely to the economic development of advanced country like China producing 120,845,000kg selling \$235,314.29k, New Zealand (8,438,700kg selling \$230,182.52k), Argentina (63,521,900kg selling \$142,086.24k), Germany (26,317,300kg selling \$138,680.91k) and European Union (20,236,500kg selling \$133.307.87k). While the venture provides job opportunities for people of all classes, it also boosts productivity of other agricultural crops. The potential of sericulture to reduce rate of unemployment in Nigeria and also to contribute significantly to foreign exchange earnings as obtainable in sericulturally developed Asian countries was also unraveled. In conclusion, the paper intended to draw attention of government, policy makers and other stakeholders to potentials embedded in apiculture and sericulture with the aim of exploring them to assuage the effect of Covid-19 pandemic on Nigeria economy, especially in the present time.

Keyword: Covid-19, potentials, entomology, apiculture, sericulture

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INTRODUCTION

Like a wild fire, Covid-19 which emanated from wild animal market in China late 2019 began to spread to nations of the world and became a global pandemic. After the spread through East Asia, Europe and North America in early 2020, the pandemic started reaching African soil and Latin America (Kwaw *et al.*, 2020). Nigeria as an African country was not spared as the global pandemic eventually reached and affected her citizens and economy. Nigeria reportedly had the first confirmed case of the virus in late February 2020 in Lagos. It started to spread from there to Ogun State, the Federal Capital Territory (FCT) area of Abuja and other parts of the country.

In order to curtail the spread and adverse effects of Covid-19, just like many nations, Nigerian government introduced a lock-down measure. One of the implications of this is paralysis of the economic activities of the citizens. Consequently, the unfolding global crisis affected food system but more specifically, as reported by Kwaw *et al.* (2020), the lockdown policies reduced Nigerian GDP by US \$ 11 billion or 23% during the period of lock-down. Furthermore, an estimate of 11% decline in agri-food system GDP equally US \$ 1.6 billion and a temporary 9 % point increase in the national poverty count rate were reported (Kwaw *et al.* (2020). This consequently implies that 17 million people would be living below the poverty line during the period of lockdown and some would remain poor at the end of 2020.

To make the matter worse for the Nigerian economy, the prolonged covid-19 pandemic crisis during the year 2020 brought about a drastic fall in oil prices. This crisis automatically undoes years of moderate economic growth in Nigeria just like in other oil-dependent African Countries (IMF 2020). Nigeria main source of revenue is from oil which contributes more than 60% of government revenue (BudgIT, 2020; CBN, 2020). In the first quarters of 2020, oil prices have fallen by 45% to around US \$ 30 per barrel (Akanni and Gabriel, 2020). The 2016 recession which was spurred by fall in oil-prices between 2014-2015 and the first in 25 years gave rise to relatively manageable contraction of about 1.6% of GDP (World Bank, 2019). In economic slowdown as a result of drop in oil prices is enough to have deleterious effect and it is now clear that the continued spread of the pandemic and policy responses associated with it across the globe and within Nigeria are likely to have severe consequences on Nigerian economy and population. From the ongoing, with the second and third waves of covid-19 pandemic, it seems the crisis will continue beyond 2020. This implies that the global economic meltdown engendered by the pandemic will have consequences on oil-dependent economy, and Nigeria in particular. Moreover, it has been stated that diversifying Nigerian economy remains non-negotiable to reduce its overdependence on oil exploration as the main source of national revenue (Arndt *et al.*, 2018).

In the diversification of Nigerian economy, agriculture has often been said to have lots of potentials (Owan *et al.*, 2020). It has various activities and fields through which it can alleviate the current economic crisis. Among the numerous fields in agriculture with great potential for economic diversification is the application of entomological science (study of insects). Various insects are known to have relevance in human and livestock nutrition, raw materials for industries, medicine and biopesticides among others. These potentials through exploitation and exportation of insect products can generate employment opportunities for Nigerian citizens, generate revenue for households, reduce poverty intensity

and subsequently assuage the holocaust associated with the current pandemic. Therefore, this paper attempted to unravel the potentials of insects and its products in alleviating the adverse effects of Covid-19 on Nigerian economy.

Potentials of apiculture in assuaging covid-19 associated economic crisis in Nigeria

Apiculture otherwise known as beekeeping is the art and science of domesticating honeybees (*Apis mellifera*) for the production of honey and other bee products. Apiculture as a practice is relatively easy, acceptable by people of all ages, gender, religion and class. It is comparatively less expensive compared to other income generating activities (Islam *et al.*, 2016). Micah (2013) stated that 1-5 bee colonies do not require any extra land spaces and the maintenance is cheap and easy. In another development, Shakib and Sayad (2016) stated it is also one of the industries that are being promoted in the rural areas to improve off farm income and employment. Beekeeping provides the much-needed diversification in the agriculture production base.

Beekeeping as a practice with lots of benefits which include cheapness, as bees can produce their own food all year round, and availability of necessary materials for set up locally, the practice can be initiated easily with little labour and capital. It does not depend on importation of foreign equipment or input, and however, there is a readily available market for the end products both locally and internationally.

It is important to mention that beekeeping can be learnt and practiced as a hobby and on a part time or full-time occupation. It also has possibility of being integrated with other agricultural activities as well as in agroforestry. Some previous studies have established that beekeeping promotes conservation and rehabilitation of nature and natural habitats (Carruthers, 1992), cultivated land and watershed (Munthali, 1992) as well as increase pollination and agricultural productivity (Somerville, 1987; Lietaer, 2009; Bradbear, 2009).

Beekeeping provides an unexploited succor capable of rescuing people from abject poverty and starvation (Ajao and Oladimeji, 2013). This is made possible because of potential to boost income of people in rural communities and subsequently benefit the nation's economic

situation (Folayan and Bifarin, 2013). For examples, the quantity of honey produced from a bee hive in country like Turkey, Mexico, China, Argentina, Hungary, Australia and Canada are 10 kg, 27 kg, 33 kg, 40 kg, 40 kg, 55 kg and 64 kg, respectively (Vural, 2009). Honey production in these nations serves as part of their export commodities which in turn contributes significantly to their economic growth, the reason why they are developed countries. In 2019, China was the leading exporter of honey in the world producing 120,845,000kg selling \$235,314.29k followed by New Zealand (8,438,700kg selling \$230,182.52k), Argentina (63,521,900kg selling \$142,086.24k), Germany (26,317,300kg selling \$138,680.91k) and European Union (20,236,500kg selling \$133,307.87k) (WITS, 2019). Honey is a highly sought-after hive product because of its relevance in pharmaceutical, cosmetic and brewery industries as raw materials.

Nigeria being an African country has potential to boost her economy with proceeds from exportation of honey because of two reasons. Firstly, honey from Nigeria will command higher demand and prices in the world market for its medicinal and antimicrobial qualities. It has been certified that honey from the tropics has special attractive aroma superlative to the ones from other parts of the world because of the diversity of plants from where honeybees forage for nectar and pollens (UNCTAD, 2006). Secondly, in 2002, the world honey market was largely affected by EU ban on Chinese honey due to identification of antibiotics in it. China had been the largest exporter of honey to Europe before that time. This development brought about shortage of honey supply to Europe and honey prices increased rapidly (BBC News 12th July, 2002). It is however unfortunate that Africa is yet to take advantage of this, despite the superior quality of African honey, it is still absent in EU honey importations. As reported by UNCTAD (2006), only African countries like Kenya, South Africa, Tanzania, Uganda and Zambia meet up with the requirement in the world market.

Due to low little risk of contamination by chemical residue, the honey from Nigeria is of good quality and can attract higher prices in EU market. The price of honey in Nigeria ranges

from #100,000-#120,000 per ton. Therefore, if Nigeria were to export 2,000 tons of honey produced annually, the nation will make 200-240 million naira per year (Adediji and Omoba, 2016).

Apart from honey which serves as foreign exchange earnings, another benefit obtainable from beekeeping is pollination of crop and fruit trees by honeybee. Crops that benefit from this pollination are tomatoes, melons, watermelons, cucumbers, apple, peaches, pear, saffron, forage corn, cotton, cherry, grape, sunflower, bell pepper among others. The bee pollination service is estimated to worth more than ten times the value of hive products together. The productivity of these crops as enhanced by activities of honeybees can significantly contribute to foreign exchange earnings for the nation. As highlighted by Labe (2017), other beekeeping products with prospects for alleviating the current economic crisis engendered by Covid-19 pandemic are bee wax and propolis. Bee wax is used in production of cosmetics, candles, foundation sheet, polishes, adhesives, gum and water proof agent for wood and leather as well as temporary tooth filler in dental work. The second product, propolis is used as therapeutic and antibiotic agent as well as raw materials in producing cough syrups, toothpastes, lotions, skin soaps and skin oils; pollen used in treating rheumatism, goiter arthritis, eye and skin disease and royal jelly used to treat infertility and dressing of wounds.

Potentials of sericulture in assuaging covid-19 associated economy crisis in Nigeria

Sericulture is simply defined as the rearing of silkworm for the production of silk. It involves cultivation of mulberry plants (*Morus alba*) to feed silkworm (*Bombyx mori* L.) which in turn gives silkworm cocoons that are reeled into raw silk. It is an eco-friendly agro-based labour intensive and commercially attractive economic activity that falls under cottage and small-scale sector. Several activities involved in sericulture include mulberry cultivation, leaf harvesting, silkworm rearing, cocoon reeling, twisting, weaving, printing, dyeing, finishing and silk waste processing. The implication of this is that the venture has a great potential to generate employment and income for people. For example, in a study, it was observed that for every kilogram

of raw silk produced, 12 people mostly women are engaged in silk reeling, threading and weaving; fabrication of machines for both the small filature and the big time miller (Srinivasa *et al.*, 2005; Dandin *et al.*, 2005; Prakasam and Ravi, 2014).

Sericulture is the only cash crop that gives returns within 30 days (Kamili and Masoodi, 2000). In their study, Balokrishanappa and Rajan (2010) observed that sericulture is one of the prominent enterprises which provided full time employment to the entire family, offering high income and better standard of living. It is interesting to know that in China, sericulture employed 20 million households who cultivated 2 million hectares of mulberry in 22 out of 25 provinces while there were 1000 silk factories with 2.4 million reeling machines employing a million workers (Qiu, 2005). Also, in India, sericulture is an agriculturally based industry that has provided gainful employment for millions of people with an indirect effect of about 25% of farm income (Mattigatti and Iyenyas, 1995). The leading producer of silk in the whole world is China followed by India. The silk production from China is about 60% of the world production annually (Kumaresan *et al.*, 2003; US Geological survey, 2007). Sericulture as an enterprise has significantly contributed to the economic development of these two countries, part of the reasons for their economic growth and development. The contribution of sericulture to nation's economy has not only been noticed in China, India and Japan that have been known to be sericulturally developed nations but also in Korea, Brazil, Russia, Italy, France where it has

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become one of the most important cottage industries.

Nigeria can be added to this list if she is able to push back the frontier of knowledge of the venture and take it seriously. Although the production of silk garment in the nation especially by Yorubas has being in existence since 12th century AD where cocoon used for weaving by men were obtained from *Anaphe venata*, a lepidopterous insect feeding on *Triplochyton schleroxylon* leaf (Olajide *et al.*, 2009), however the practice of sericulture has been in the low ebb. The rearing of silkworm for cocoon and silk production is relatively new and it is still at the infant stage in Nigeria (Adeduntan, 2013). Owing to the fact that sericulture has huge potential to generate employment, it has been recommended for all developing countries like Nigeria where unemployment and under employment is a serious problem (Ayoade *et al.*, 2014). Therefore, government at all levels as well as other stakeholders should consider the rearing of silkworm and production of silk as an important agro venture that will not only bring respite to people but will also better our foreign exchange earnings.

CONCLUSION

Nigeria is blessed with very conducive environment where potentials in apiculture and sericulture can be adequately harnessed to address the present economic crisis engendered by the current global Covid-19 pandemic. Government at various levels is implored to take advantage of these potentials especially at this trying time to ease the effect of the pandemic on the nation's economy.

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