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How can Microbiology improve the lives and livelihood in Nigeria?

*Education gives us knowledge of the world around us and changes it into something better.* - Kafoumba Doumbia

In a report by the National Bureau of Statistics, released in May 2020, it was stated that 4 out of every 10 Nigerians live below the poverty line. This means a sizable chunk of the Nigerian population cannot afford a decent life and standard means of livelihood. In relatable numbers, an approximate 82.9 million Nigerians are poor. And that's quite a number.

Man strives to live better and enjoy the benefits, to the maximum, of everything in his environment. This has led to different pursuits. One of these pursuits is the acquisition of knowledge through inquiry, and microbiology is an example of such inquiries. It is the inquiry into the nature - morphology, metabolism, physiology, reproduction, and genetics - of microorganisms. The understanding obtained from this kind of inquiry, like every other inquiry, has brought about innovations and improvement in the living experience of humans.

Not just that microorganisms are ubiquitous, they are connected in every way to the existence and survival of humans, here on earth at least. A richer understanding of these extremely tiny creatures would open doors to possibilities man could never have dreamt off. Well, many of these possibilities are already being explored with study of microbiology. But more importantly, how can we apply these to our immediate environment. How can we tap into this wealth of possibilities to improve the life and livelihood of Nigerians?

The interesting thing about microbiology is that we can start with what we have – no matter how small or irrelevant. Many Nigerians live on agriculture. They grow what they eat and sell some to get money. This means the starting point for the deployment of our knowledge of microbiology to better the lives of Nigerians should be at the baseline of agriculture.

Nigerians eat a lot of fermented foods. From the common and snack-like *garri* to the special cuisine *fufu* with *ugba* soup, many of the foods consumed by a local Nigerian are in part or wholly fermented. And from what we know, the fermentation process is chiefly mediated by microorganisms. Proper research, conducted into the microbiology of these organisms, provides us with information we can utilize to increase the productivity and efficiency of the production processes of these foods. The benefits of these researches do not stop at the availability of more food, but more nutritious foods and a refined production process which opens new opportunities for employment. Thus, an increase in sources of livelihood. The food processing industries, already, contribute a significant percentage of the income of local Nigerians. Boosting these sectors will open new doors, create more jobs, help the economy, and also reduce hunger.

Common to every society is the generation of waste. In fact, Nigerians generate a lot of it. The microbiology of waste management is a gateway to tap into the immense potential for sufficiency. Waste can become our new gold. And this gold will be available to all. Through bioconversion processes, we can convert our waste to fuel and energy, bioethanol, feedstocks, and starting materials for our industries. Agricultural waste is said to contain lignocellulosic materials, and from studies, we know that the action of microbes and certain enzymes can be used to convert this to ethanol and other valuable products. Productive utilization of our waste creates another industry, and thus, new sources of livelihood. And while generating income, we are also creating an environment that fosters safer and healthy living.

It was Louis Pasteur who said "the role of the infinitely small in nature is infinitely great!" He was able to make this profound statement because of his understanding of the infinite limit to the wealth that can be amassed from the study of those tiny living creatures we cannot see. There are many other areas where knowledge of microbiology can be used to improve the lives and livelihood of Nigerians. However, one important thing is we have to utilize what we have to get what we want.

With the resources we have in our hands and our knowledge of microbiology, we can generate wealth in a million and more ways and yet still live beautiful, healthy, and great lives even in Nigeria.