

HOW CAN MICROBIOLOGY IMPROVE LIVES AND LIVELIHOOD IN NIGERIA

Up until the 17th century, causative agents of diseases and decay were unknown and were attributed to super natural powers. The discovery of minute, simple celled living organisms called Microorganisms invisible to the naked eye not only responsible for decay and diseases but also their contributions to the vital phases of the universe.

Microbiology is the study of the structures, functions and classification of these minute organisms (microorganisms). Microbiology has shown to be able to contribute enormously to improving lives and the means of securing the necessities of life in Nigeria and the world in general. Some of the ways microbiology has improved lives and livelihood in Nigeria include its application in the healthcare sector, improving the quality and maintenance of essential natural resources such as air and water, the food industries, conservation of wildlife and in the agricultural sector amidst others.

The essence of microbiology in the healthcare sector is paramount. Studying and exploiting the activities of microorganisms can be used to prevent and treat diseases, in developing new technologies and in pharmacy for production of drugs and antibiotics which in turn improves the lives of Nigerians by carrying out research on disease causing microorganisms, testing body fluids and tissues to diagnose infection, monitoring treatment and tracking disease outbreak, etc. Microbiology can also be used in veterinary medicine to relate pathogenic and nonpathogenic microbes and their effect on animals, to evaluate and monitor antibiotic resistance in food animals providing safer and wholesome food. These information can give advices to medical staffs and are either used to develop vaccines or improve the current treatment protocols.

Microbiology can be used to improve and maintain the quality of natural resources (air and water). In water treatment, microorganisms can be used in sewage treatment plants for removal of pollutants and pathogens, recovering nutrients and production of clean water. Similar to the water treatment, some air microorganisms break down huge range of organic compounds into non-toxic substances. In the fight against climate change, biofiltration can be developed as a newer and better way of cleaning volatile gases emitted into the atmosphere to replace chemical scrubbing of such gases.

Centuries after Loius Pasteur discovered that microorganisms were responsible for alcoholic fermentation; they have been used to carry out fermentation, transformation and preservation of food. Yeast, molds and bacteria are used in the production of local foods such as yogurt, bread, cheese, wine, beer, etc. Microbiology study the role of the microorganisms in these processes and can develop biotechnological techniques to improve production of wide varieties of better, safer and wholesome food under controlled conditions.

Agriculture is a major sector in the Nigerian economy, providing the main source of livelihood to the majority of Nigerians. Microbiology studies the vital roles of microorganisms in soil fertility, some organisms can help in pest and weed control and in developing green technologies to improve crop yield. These microorganisms are abundant, cheaper and safer to use than the chemical measures used in pest control.

Microbiology aims to understand the important role microorganisms play in the ecosystem and how it contributes to the lives and livelihood of humans. Knowledge of microbiology can also be used in industries, businesses and education amongst a wide range of careers. The improvement and exposure of microbiologists to studying more organisms related to human livelihood can help to enhance the means of securing the necessities of life of Nigerians.