INTRODUCTION

- There is diversity in the space sector because there is diversity in the space environment.
- Some properties of space environment (microgravity environment) are:
  - absence of convection
  - absence of sedimentation
  - low shear
  - capability of supporting three-dimensional tissue formation.

ALL RESEARCH FIELDS OR ALL COURSE HAS APPLICATION TO SPACE

- Microbiologists study the behavior of microorganisms in the space environment as microorganisms can form biofilm which are mainly antibiotics resistant for playing essential roles in human health for novel therapeutics and vaccines.
- Botanists and agriculturists study the effects of space environment on plant growth and the development of new plant variety adapted to extreme condition, and the production of better agricultural products.

ALL RESEARCH FIELDS OR ALL COURSE HAS APPLICATION TO SPACE CONT’D

- Biotechnologists isolate the genes for better growth of plants under space environment and insert into the wild-type of plants for use on earth. This platform in relations to medicine has also made it possible to grow tissue samples outside the body; making the shelf life of blood banks longer, and granted insights to avoid the spread of cancerous cells.
- Pharmacists have discovered better crystals, longer shelf life of drugs, better delivery routes, better packaging of drugs and overall reduction in the cost of drug production as benefits of their studies under space environment.

AWAWARENESS ON THE VISIBILITY OF RESEARCH OF ALL FIELDS IN SPACE IS NEEDED

- All the mentioned research persons and fields are just to mention a few in benefits and applications to the space sector.
- Other non-science oriented courses such as law also have practical applications to space.

MICROGRAVITY RESEARCH IN NIGERIA

- This is done using simulated microgravity equipment called Clinostat won from the United Nations Office for Outer Space Affairs (UNOOSA) (United Nations, 2013). Research on plants were carried out at the Microgravity Simulations Laboratory of the Space Agency of Nigeria – National Space Research and Development Agency (NASRDA), Nigeria.
  - Many plants (wheat, sorghum, corn, rice, cotton, peanut, okra, cowpea, watermelon, cucumber) have been working on. They all showed positive response to simulated microgravity through their root curvature and 8 out of 10 plants had increased growth rate (Oluwafemi et al., 2013) under simulated microgravity while 2 (Cotton and Sorghum) showed decreased growth rate.
  - Development of new plant variety with better agricultural products can be achieved.

CONCLUSION

The space sector is now growing fast in the world, and space technologies are currently being used to achieve the Sustainable Development Goals (SDGs) in which microgravity research is part of it. From the various discussions and experimental examples given, it is evident that microgravity applications on plants and materials stimulates economic growth and improves the quality of life of people.

REFERENCES