**NARRATIVE REPORT**

**(AGRICULTURE)**

**INTRODUCTION**

Agriculture is a term used to describe the various ways in which crop plants and domesticated animals support the global human population by providing food and other essential products. It involves the cultivation of crops and the raising of animals for food, fiber, fuel, and other resources critical to human survival and prosperity (Harris & Fuller, 2013).

The agricultural sector is currently facing a range of challenges that threaten food security, livelihoods, and sustainability. Some of the most pressing issues include climate change, pests, and other environmental and economic factors.

Agriculture today faces several challenges, including the under-utilization of natural resources, pest infestations, crop mismanagement, and inefficient farming practices, all of which hinder productivity and sustainability. Biomass from trees, often discarded after timber harvesting, could be repurpose for bio-energy, composting, or construction, reducing waste and promoting sustainability. Similarly, the need for more efficient methods to assess seedlings could save farmers time and labor, improving crop yields.

**INITIATIVES**

With the challenges and problems that agricultural production is facing today, there are solutions, projects, and research that are developed. The university has explored various studies on agricultural and botanical topics, including the use of bamboo leaf briquettes and the potential of bamboo shoots for various applications. An image processing system using Matrix Laboratory (MATLAB) software was employed to determine the physical properties of high-quality seeds, while research on the inventory of mushrooms in Mt. Arayat focused on their nutraceutical potential. Additionally, the availability and volume of banana production, alongside the prevalence of water lilies in Luzon, were studied for their potential as feed extenders for livestock and raw materials for handicrafts. Other plant-based research included the potential of balakat leaf powder, indigenous plants as molluscicides to control the golden apple snail, and plant powder extracts. The university also examined the impact of different interstock lines on a grafted tamarind orchard, which was established with 256 trees, and analyzed pod quality and shell thickness to identify possible correlations between nutrient concentrations in leaves and pod shells, such as nitrogen, phosphorus, potassium, and calcium. Tree height, canopy data, flush, and flower density were recorded over a period from November 2020 to May 2021.

**R4D THRUSTS AND PRIORITIES**

* Development of innovative management approaches againsts fests such as the Golden Apple Snail.
* Development of Science and Technology - based production management strategies for agriculture.
* The utilization of bamboo in various technologies aims to minimize waste and unlock its full potential.
* The development of prominent commodities like bananas focuses on establishing their potential as feed extenders for livestock and as raw materials for creating handicrafts.
* The use of diverse plants and fruit-bearing trees to create food products promotes both food security and sustainability.

**RECOMMENDATIONS**

Developing integrated pest management (IPM) strategies that reduce reliance on chemical pesticides and address pest resistance. It will explore the biological control agents, natural predators, and plant-based pest repellents. In addition, the Innovative water saving technologies and techniques for optimizing water use in agriculture.

**References:**

R. Harris, D., & Q. Fuller, D. (2013). *Agriculture: Definition and Overview*. In Encyclopedia of Global Archaeology (Claire Smith, Ed). Springer, New York. Pp 104-113. https://discovery.ucl.ac.uk/id/eprint/1429869/1/Harris\_Fuller\_AAM.pdf