

## The Use of Drones in Measuring Environmental Impacts of the Forest Garden Approach

**Authors :** Andrew J. Zacharias

**Abstract :** The forest garden approach (FGA) was established by Trees for the Future (TREES) over the organization's 30 years of agroforestry projects in Sub-Saharan Africa. This method transforms traditional agricultural systems into highly managed gardens that produce food and marketable products year-round. The effects of the FGA on food security, dietary diversity, and economic resilience have been measured closely, and TREES has begun to closely monitor the environmental impacts through the use of sensors mounted on unmanned aerial vehicles, commonly known as 'drones'. These drones collect thousands of pictures to create 3-D models in both the visible and the near-infrared wavelengths. Analysis of these models provides TREES with quantitative and qualitative evidence of improvements to the annual above-ground biomass and leaf area indices, as measured in-situ using NDVI calculations.

**Keywords :** agroforestry, biomass, drones, NDVI

**Conference Title :** ICSAFS 2020 : International Conference on Sustainable Agricultural and Food Systems

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** May 14-15, 2020