

Food Microbiology and Food Market

March 20-21, 2019 | New York, USA

VIDEO PRESENTATIONS | DAY 1

JOURNAL OF NUTRITION & FOOD SCIENCES 2019, VOLUME 9 | DOI:10.4172/2155-9600-C3-095

The potential of spectro radiometer and satellites sensors (SPOT) to detect harmful algal blooms (HABs) on inland aquaculture fish dams: A case study in Vhembe district, Limpopo Province, South Africa

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Satellite remote sensing techniques have been proved to be the best methods for quantifying chlorophyll-a levels by inference algal concentrations in water reservoirs. Harmful algal blooms (HABs) are posing a significant threat to the many water bodies in South Africa, especially on inland aquaculture. This study aims at developing empirical remote

sensing models to estimate chlorophyll concentrations in small fish dams using Spot 6 and 7 Images. It is the first study to provide quantitative water quality information for Vhembe region's inland aquaculture from a time series of satellite remotely sensed data. The objectives of this study are to evaluate spatial and temporal distributions of algae in small-fish-ponds and to assess chlorophyll-a concentration in fish farming dams. Three fish ponds were identified: Nkowankowa, Tshifulanani, and Lwamondo; the concentration of Chl-a were found to be 0.056mg/L, 0.021mg/L and 0.065mg/L respectively. Reflectance curve was produced from both data sets. The curves show a high dominance of cyanobacteria blooms in fish ponds. Remote sensing can play a significant role supplementing in situ efforts which are time-

consuming and costly. This study presents the development and use of algorithms based on reflective characteristics of HABs to create a more accurate model for the fish ponds. The study was established to combine satellite remote sensing approaches including spectral analysis, spatial analysis and visual interpretation for chlorophyll detection and HABs monitoring.

Biography

Munyai joined the University of Venda as an undergraduate student in 2012. He completed his undergraduate degree in Bachelor of Environmental Sciences. He further enrolled postgraduate studies where he was fully involved in research on water quality and water supply. This is where he conducted a research study titled "Impacts of anthropogenic activities on the water quality of Luvuvhu River, Limpopo Province, South Africa". He is now an Msc researcher who is focused on remediation of Cyanobacterial blooms in fish ponds at Vhembe District, South Africa.

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