

Analysis of the Agricultural Crop Productivity Using Flying Sensors - Rainy season 2019 - 2020

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Introduction

The PROMAC II project is an ongoing project of NCBA Clusa introducing conservation farming practices to various locations in the Manica, Tete, and Zambezia provinces in Mozambique, with the objective to increase agricultural productivity. This project incorporates **flying sensor** (drone) activities in the PROMAC II project as a M&E indicator of the practices and as an innovative technology for providing technical staff with spatial information on crop development. **Flying sensor imagery can provide data at regular intervals with high spatial resolution and an additional camera for vegetation stress detection.** This information is used to analyze the productivity of selected areas.

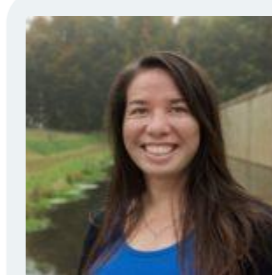
Methodology

Five locations in the Manica province are monitored using flying sensor imagery during the rainy season (2019-2020). The crop types cultivated at these locations are **soybean, maize, sesame and beans**. Flying sensor imagery is acquired at regular (monthly) intervals. Further imagery processing is conducted to achieve maps of the vegetation status and canopy cover. The approach for calculating agricultural productivity is based on light use efficiency models which converts canopy cover to biomass production and is tailored to each crop type with crop-specific parameters.

Results

Results are provided on the crop development during the growing season for vegetation status and canopy cover. These are found on the **online data portal** (<https://www.futurewater.nl/ncbaclusaportal/>). The assessment of agricultural productivity is presented with maps of crop yield. These indicate average values of yield from each field, and the spatial variability between fields. The latter provides a good assessment of the effectiveness of locally adopted interventions and the impact on production. **In the assessment the agricultural productivity is calculated for both PROMAC (with conservation agricultural practices) and non-PROMAC fields (with conventional practices).** A comparison is made in the different in average yields per crop type and variety (if relevant).

Mapping agricultural productivity results



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Flying sensor



16

flights taken



174 ha.

area monitored



32-148%

increase in
maize yield*



49%

increase in
soy yield*



20%

increase in
sesame yield*



3%

increase in
beans yield*

* PROMAC fields compared to conventional fields