

SOIL HEALTH CONTRIBUTIONS OF AGROECOLOGY – KUMENA PROGRAMME (ZAMBIA) CASE STUDY

KUMENA Programme Background

Title: Empowering Resource-Poor Rural Communities in Central Province (Kumena Project)

Location: Kabwe Province, Zambia

Partners: Caritas Kabwe and Caritas Zambia

Implementation period: 2017-2024

Donor: Scottish Government and SCIAF

Budget: £1,851,743

Funded by the Scottish Government, the Kumena project works with over 1,500 resource-poor farming families in three areas of Kabwe, Zambia, to sustainably increase their household income and food resources. The project, which began in October 2017, promotes the adoption of agroecological practices to increase soil health, crop yields and diversity, contributing to improved food security and nutrition, and increased incomes. Kumena also focuses on the well-being of women and girls, promoting respect for women's rights and their full participation in all project activities. It has worked to reduce gender-based violence and child marriage in the project sites. The project has increased access to clean water, and has supported environmental protection through community-led natural resource management.

Key results related to Soil Health:

- 722% increase in average maize yields (from 360 kg per hectare to 2,600kg per hectare).
- 202% increase in average household income (from \$112 to \$226)
- Increase in family food security from 6 – 11 months per year

Additional key results:

- Increase in girls attending school (up from 57.9% to 90.2%)
- Elimination of the practice of marriage of girls under 12 years old (0 cases in last 2.5 years)
- 831 households now have energy efficient cook stoves and 982 households use green charcoal made from agricultural waste.

Soil Health Report

Background: The “Kabwe Soils Report” was prepared by Dr Paul Hargreaves of Scotland’s Rural College (SRUC). The report compared soil samples from the Kumena programme taken in 2018 and 2022. Samples were taken from 75 farmers’ fields, and included farmers practicing Agroecology, and conventional farmers (using chemical inputs such as fertiliser). Composite samples were gathered from each field, and analysed at the University of Zambia’s Service Laboratory. Results were corroborated at SRUC’s own laboratory in Scotland. Soil was tested for Soil Organic Matter (SOM), pH levels, as well as for 3 key soil nutrients (Phosphorous (P), Potassium (K), and Magnesium (Mg)).

Results:

Soil Organic Matter (SOM):

- For farmers practicing Agroecological farming in the Kumena programme, Soil Organic Matter has increased in their soils, due to the regular application of compost and animal manure.
- For those practicing conventional (chemical) farming, SOM decreased significantly over the 4 year period.

Soil Chemistry:

- Farmers practicing Agroecology saw an increase in the availability of 2 of the 3 key nutrients, through

the incorporation of organic fertilisers (compost and manure). P increased by 3-3.37 mg/l and K by 28.38-41.67 mg/l on average, whilst Mg reduced slightly by 2-3.86 mg/l.

- On conventional farms, all 3 key nutrients reduced over the 4 years, despite regular applications of chemical fertiliser.
- For comparable gains in P to be achieved with chemical farming, an additional 400-600Kg/Ha. of chemical fertiliser would be required, with considerable additional environmental and economic impact.

Key messages:

- The promotion of agroecological practices sustainably improves soil health for resource-poor farming families in Zambia, which in turn delivers improved food security, nutrition, and income.
- Agroecological practices are cost effective, relying on on-farm resources and farmer knowledge. Conventional support, through the provision of subsidised chemical inputs, is costly and unsustainable, progressively degrading soil resources.
- Government and donor support aimed at improving food security, nutrition, income, and community resilience, must empower resource-poor farming families to adopt agroecological approaches.

