



Evaluation of the SaniC in Bolivia

Delivery report for the sWASH & grow project. Coordinated by RISE and co-financed by VINNOVA, UDI program (step 3), Sep 2020 – Aug 2022.

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Abstract/Executive summary

According to FAO (1998), the Valle Alto region in Cochabamba has a series of problems that limit agricultural production, most notably water deficit and low land productivity. The report notes that the low productivity of the land is due to the low natural fertility of the soils and their salinity and sodicity.

Cliza's fecal sludge pilot plant seeks to sanitize sludge from septic tanks and sludge from wastewater treatment, taking advantage of resources and promoting a circular economy. As a result of the process, a liquid product is obtained that can serve as a complementary fertilizer and soil improver.

This study seeks to generate technical and economic information to promote the use of a liquid ecofertilizer (ECF). For this purpose, two trials (on potato and corn) were established in two pilot sites for the evaluation of the product in the Valle Alto. Soil sampling was carried out before planting and during harvest. The definition of the treatments or volumes of ECF to be applied in the trials was determined based on a review of the literature on the use of wastewater and sludge in agriculture.

The original report is written in Spanish and can be found as an attachment to this report.

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1. Introduction and Background

This report is a delivery within the project “sWASH & grow – scaling off-grid WASH innovations”. The project is coordinated by RISE with 40% co-finance from [VINNOVA](#) (the Swedish Innovation Agency).

The objective of sWASH & grow is *“to develop tools that improve the opportunities for innovators and aid organizations to bring more circular, inclusive and sustainable innovations to those in need”*.

The project involves 28 partners from Sweden, Bolivia, Lebanon and South Africa representing private-, public-, academic- and NGO-sectors. The goal is to improve the conditions for innovators (sellers) to be able to meet relief organizations’ (buyers) demands. Through the project, innovative solutions will be tested in real environments, upscaled and exported.

Implementation focuses on:

- Identifying success factors for off-grid solutions.
- Contextualizing methods for testing, demo and validation that respond to buyers’ requirements and meet the needs of the most vulnerable.
- Quality-assured tools for developing and scaling up innovations based on requirements, needs and price.
- Communicating results to stakeholders in the innovation system.

sWASH & grow brings together major global buyers, the innovation system's support functions and the innovation companies, together in a partnership aligned with Agenda 2030 and SDG 17. More specifically, the project contributes to SDG 6 and 9 on clean water and sanitation and will have an impact on SDGs 2, 3, 7, 12 and 13 on zero hunger, health, energy, production, and climate.

2. Purpose and Objective of this deliverable

The purpose and objective of this report is to contribute to the validation of the SaniC pilot plant from “Advanced Aerobic of Sweden AB” (A2T) placed in the Municipality of Cliza in Bolivia.

Cliza's fecal sludge pilot plant seeks to sanitize sludge from septic tanks and sludge from wastewater treatment, taking advantage of resources and promoting a circular economy. As a result of the process, a liquid product is obtained that can serve as a complementary fertilizer and soil improver.

The original report is written in Spanish and can be found as an attachment to this report.

3. Description of the deliverable

This study seeks to generate technical and economic information to promote the use of a liquid ecofertilizer (ECF). For this purpose, two trials (on potato and corn) were established in two pilot sites for the evaluation of the product in the Valle Alto. Soil sampling was carried out before planting and during harvest. The definition of the treatments or volumes of ECF to be applied in the trials was determined based on a review of the literature on the use of wastewater and sludge in agriculture.

Results were measured through the following variables: plant height, number of stems, yield, stem diameter, number of rows per ear corn, number of kernels per row and number of ear corns per square meter.

4. Results/Outputs of this deliverable

None of the variables showed effects of the ECF on the plants' growth or crop yield.

Differences in the percentages of organic matter and macronutrients in the soil were identified between different ECF applications.

5. Conclusions and impact

The increased amount of organic matter and macronutrients isn't being used by the plants.

The lack of nutrient utilization might be due to the high content of salts in the soil.

The weather conditions throughout the season may have had a higher effect than the ECF application. The rain season was highly concentrated in a number of rain events, often flooding the crops.

This lack of rainwater induced farmers to use irrigation water from other sources, this may have had an effect on crops salinization.

6. Appendices

Appendix 1: *(The original report in Spanish):* EVALUACION DE RESPUESTA A LA APLICACIÓN DE UN ECOFERTILIZANTE LÍQUIDO EN CULTIVOS DE MAIZ Y PAPA EN LA REGION DEL VALLE ALTO DE COCHABAMBA, *AguaTuya*