Bundesministerium
für Ernährung
und Landwirtschaft

PHD PROGRAM OF BMEL

rePRISING: Reuse of pineapple residues at small farms to improve nutrient-cycling and income stability as well as to reduce agricultural GHG emissions

Country/countries	Philippines
Funding agency	Federal Ministry of Food and Agriculture - BMEL
Project management	Federal Office for Agriculture and Food – BLE
Project coordinator	Leibniz-Centre for Agricultural Landscape Research (ZALF)
Project partner(s)	University of the Philippines Los Baños (UPLB)
Project budget	155.650,06 €
Project duration	01.02.2020 – 31.03.2023
Key words	Pineapple residues, nutrient-cycling, greenhouse gas (GHG) emissions, income stability, soil fertility, carbon sequestration, climate change
Background	Agricultural production in the Philippines faces the same challenges as anywhere else in the world, namely a combination of (I) maintaining soil fertility, (II) reducing climate impact, (III) securing yield stability and achieving a (IV)

	high resource efficiency by closing nutrient cycles. The production of pineapples is particulary challenging in this respect. The Philippines is the worlds´s third largest producer of pineapples, producing more than 2.6 millionmetric tons a year. As a by-product of pineapple production, pineapple residues (PR ; ~90 to 150 t ha-1) form an important biological resource. Since it is costly and laborious to further utilize these residues for e.g., bioethanol, bromelain or biochar production, PR are commonly left at the edge of the field to rot or they are dired and burned, a common practice especially on small farms (< 2 ha). Reusing PR in terms of mulching and/or incorporation to replace mineral fertilizer might help to cope with the above mentioned challenges. Yet, to date there is no clear evidence for that.
Objective	The aim of this PhD-project is to demonstrate that returning PR (with or without secondary recycling through prior extraction of valuable constituents) to the field is principle suitable to maintain soil fertility, reduce the climate impact, secure yield stability and achieve high resource efficiency.
Short description	By comparing the common practice of a non-waste disposal at small farms with different PR reuse scenarios using a combination of field (small field trial) and laboratory experiments (incubation as well as pot experiments) rePRISING aims at identifying a best-practice approach which: (I) promotes the closure of local nutrient-cycles (C cycling and N/P/K use efficiencies) to maintain soil fertility and yields; (II) increases soil C sequestration and reduces GHG emissions during pineapple cultivation and (III) improves income stability through PR use. In addition, throughout the project particular attention will be paid to: (I) build up capacities (funded PhD student as well as undergraduate students from UPLB) to conduct state of the art gaseous C/N emission measurements and incubation and pot experiments. For this purpose, workshops and training courses at UPLB are integral components of the project. The project further aims at (II) strengthening the cooperation between ZALF and UPLB and (III) developing strategies for small farms holders to minimize the environmental impact of pineapple cultivation while fostering income stability (field days, etc.).