

Agricultural waste management using bio-based technologies approach

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Agricultural waste management is one of the challenges facing small-scale farmers. It ranges from organic waste to wastewater. In finding solutions to manage waste, one can not only generate revenue but also protect the environment and avoid health risks. The Revenue Diversification pathways in Africa through bio-based, circular Agricultural Innovations (DIVAGRI project) are funded by the European Union's Horizon 2020 Research and Innovation Programme. European Commission (Grant Agreement number: 101000348 — DIVAGRI — H2020-SFS-2018-2020 / H2020-SFS-2020-2). The aim of the project is to utilise local resources optimally by turning waste into use to increase the viability and productivity of small-scale farmers by creating business opportunities. The project already tested and adapted to African conditions, seven bio-based technologies at pilot sites in five African countries, including South Africa. The seven bio-based technologies include desalination greenhouse, multifunctional constructed wetland, biogas digester, biochar kiln, subsurface irrigation, intercropping and mobile bio-refinery. The water treatment technologies proved effective (i.e. a desalination greenhouse and a multifunctional constructed wetland in treating greywater). The biogas digester and biochar kiln used other waste materials to produce energy and fertiliser in combining subsurface irrigation with intercropping improved production while the mobile bio-refinery added value to agricultural products at the pilot sites. The last phase in this project's lifetime (2021-2025) is to co-create and adopt bio-based technologies with farmers at the demo sites and to explore market opportunities that new value chains can offer small-scale farmers in cooperation and participation with the communities. The KwaNdaba Community of Practice (CoP) is one of the sites selected in KwaZulu-Natal, South Africa for a demo site. This project intends to demonstrate sustainable agricultural productivity, and natural resources use through agricultural innovations such as water and soil bio-based technologies to improve livelihood and reduce waste.