CSIR NATURAL RESOURCES AND THE ENVIRONMENT
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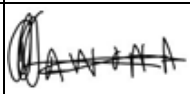
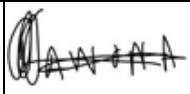
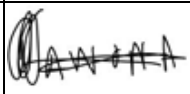
TITLE OF REPORT:	Developing a prototype for treatment of biowaste with microorganisms to produce biogas and compost.
AUTHOR/S:	Neville Tawona
TYPE OF REPORT, e.g. PG:	TAPPSA Conference Abstract
CSIR REPORT NUMBER:	

REVIEW AND APPROVAL

	ACTION	RESPONSIBLE PERSON	SIGNATURE	DATE
1.	**First draft complete**	Author: Neville Tawona		Jan 2014
2.	**Peer review**	Peer Reviewer Name: Bruce Sithole		Jan 2014
3.	**Editing**	Editor Name: Neville Tawona		Jan 2014
4.	**Final checking**	Author: Neville Tawona		Jan 2014
5.	**Contract Manager sign-off**	Contract Manager Name: Bruce Sithole		Jan 2014
6.	**Final sign-off**	Competence Area Manager Name: Douglas Trotter		

Developing a prototype for treatment of biowaste with microorganisms to produce biogas and compost.

Neville Tawona

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COMPETENCE AREA	**:**	Natural Resources and the Environment
DELIVERABLE/REPORT TITLE	**:**	Developing a prototype for treatment of biowaste with microorganisms to produce biogas and compost.
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PROJECT LEADER AND TEAM	**:**	Bruce Sithole, Neville Tawona, S.L. Kiambi, John Parkins, Prabashni Lekha
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UNIVERSITY OF KWAZULU-NATAL
SCHOOL OF ENGINEERING
DISCIPLINE OF CHEMICAL ENGINEERING

ABSTRACT FOR TAPPSA CONFERENCE

SPEAKER: Neville Tawona

SUPERVISOR: Dr. Bruce Sithole

CO-SUPERVISOR: Dr. S.L Kiambi

TOPIC: **Developing a prototype for treatment of biowaste with microorganisms to produce biogas and compost.**

Abstract

Waste management in South Africa faces many challenges. The growing population and the expanding economy results in increased volumes of waste being produced, thereby putting a burden on waste management facilities. South Africa is collaborating in an EU sponsored project whose objectives are to convert biowaste into valuable products. The project is part of an initiative that targets to develop environmentally appropriate and socio-economically sustainable biotechnological processes for converting biodegradable fractions of identified African and Mediterranean agricultural and industrial waste as well as fractions of municipal and animal solid waste into food, feed and value-added products. Our contribution is to develop an anaerobic digester to convert solid waste into biogas, and the indigestible component collected for use in the compost facility to produce biofertilizer. This project is based at EThekwini Municipality's Northdene Research and development centre, which is located within a residential area from which the biowaste is collected. The conversion technology to be developed will rely on simple and locally available equipment and naturally occurring microorganisms. The appropriate prototype will be assessed through selection of proper operating conditions to evaluate the performance of an anaerobic digester and to optimise the anaerobic microorganisms. Determination of the technical potential for the production of biogas from biowaste will be carried out using biochemical methane potential tests. Pilot scale trials will be performed on the selected equipment to produce biogas and compost. The biogas can be used to warm water for the fish project at Northdene during cold weather, and/or it can also be used to heat the reactor to the operating temperature and the compost can be sold as an organic based fertiliser.