URINE DRIP FERTIGATION OF TOMATOES A SOLUTION TO CHEMICAL FERTILIZERS:
A case of Madimba Settlement, Lusaka, Zambia

PRESENTED AT THE 5TH GLOBAL DRY TOILET CONFERENCE,
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InSPURE PROJECT OBJECTIVES

• Develop 3-Dimensional Climate Adaptive Ecosystem, Economical, Social-culture, Sustainable Urban-Rural Improvement strategy

• Suitable to low, Marginalised communities & Fragmented Urban Sprawl and its Ecosystem.

Objectives

• To improve peri urban climate Adaptive Resealince technological options (Sant., Eco-Valuation, Livelihood

• Understand the septic system in relation to climate change effects; ground water contamination.

• Understand urban Adaptation livelihood Options
InSPUR Urban Adaptive Project Components

- Improve peri urban and Rural WASH
- Raise awareness on Dry Toilets Waste Re
- Introduce Sanitation Loan schemes
- Improve Tenure Security
- Capacitate SMEs, CBOs in Service Chain
- Improve Livelihood Urban Greening
- Influence Evidence Based Policy
- Increase PPP Urban/Rural Dry Sanitation
- Urine Drip Fertigation of Tomatoes
Main objective
Explore data on the effectiveness of human urine drip fertigation of Tomatoes in a greenhouse and set strategies, which will:
- Directly or indirectly provide diverse opportunities for chemical fertilizers.
Specific objective
Collect information on human urine drip fertigation.
Determine the growth rate and production rate of Tomatoes
To identify and determine factors led to non-exploitation urine as fertilizer
• URINE DRIP FERTIGATION OF TOMATOES

• Promoting Green House Tech.
• Supported by Helsinki University Student Union 2013
• Training Women in Re-Use
• Collect Urine & H-manure from 100 Dry Toilets Sup. GDTAF.
METHODOLOGY AND APPROACH - URINE DRIP FERTIGATION OF TOMATOES

• GREEN HOUSE CONSTRUCTED & 500 POLYTHENE WATER TANK ERECTED

TRAINING OF WOMEN SMALLHOLDER URBAN AGRICULTURE

• TRAINING CBES SMEs IN SANITATION SERVICE CHAIN

• A 1,200 URINE STORAGE TANK
EXPERIMENTAL URINE DRIP FERTIGATION

Twenty six (26) weeks comparative

Humanurine drip fertigation and

Liquid chemical fertilizers (poly-feed and Muilt –K)

Greenhouse –Urine & Demonstration Farm
we Use H-manure
CONCEPTUALISE: GREEN HOUSE TECHNOLOGY

- Retention time of three months in a 1,200Lt
- Temperature between 20°C, ∞ 45 °C at ambient temperature.
- Land size of 20m x 8m = 160m² Green House
- Planted 325 seedlings of tomatoes with spacing of 150cm in the width and the seedlings spacing of 30cm apart.
- Lime application based on 100g/ m² ≤ 160 m²
  =? 100 = 1, x = 160, » 16000g ÷ 1000 = 16kg of Lime.
CONCEPTUALISE: GREEN HOUSE TECHNOLOGY

Application ratio 1:3, part urine 3 parts of water.

325 seedlings transplanted on 7th July, 2014

Green house of 160m² x 0.7L = 112 litres of urine

Tank of 500 liters and the mix ratio of 1 part
112 litres (L) + (112x3) = 336 litres of Water
= 448 litres with tank
Allowance of 500L - 448L = 52L.
GREEN HOUSE TECHNOLOGY CONSTRUCTION
WOMEN TRAINING IN GREEN HOUSE
500 LITRE POLYTHENE TANKS & DRIPS PIPES
URINE DRIP FERTIGATION OF TOMATOES IN GREEN HOUSE
HAVERSTING DRIP FERTIGATED TOMATOES
HAVERSTING DRIP FERTIGATED TOMATOES

Harvesting 12\textsuperscript{th} Sept. to 31\textsuperscript{st} Dec, 2014
8 weeks 46 Boxes
10,243 actual fruits excluding wastage.
Box v = L = 44cm, w = 33cm, H = 30cm = 43560cm\(^3\).
It is evident, Urine Drip fertigation best Solution Chemical Fertilizer.
Poly feed and Muilt-K
KEY LESSONS URBAN ADAPTATION

Acceptance HUre as fertilizers
Influenced by Awareness, Local
environmental Social-economic, cultural beliefs.
Changing mind set human urine.
Legally recognised
RECOMMENDATION ON URBAN ADAPTATION

Formation policies on Hure utilization

Embrace indigenous Ideologies local Knowledge

Increase awareness

Hure is Innovative initiatives to increase food security
THANK FOR YOUR ATTENTION