A Solution for Improvement of Faecal Sludge Composting Process

Viet-Anh Nguyen*, Hong-Anh Do*, Jeroen H. J. Ensink**, Toshihiro Nakamiya***

*Institute of Environmental and Science Engineering (IESE), Hanoi University of Civil Engineering (HUCE).

**London School of Hygiene and Tropical Medicine (LSHTM), UK

*** LIXIL Corp. Japan

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Introduction

- Population: 91 millions
- 67% living in rural, mountains and island areas,
- Fecal sludge from dry toilet usually reuse for the crops,
- Unpleasant environment contributes to slow decomposition process due to poor microbial community.

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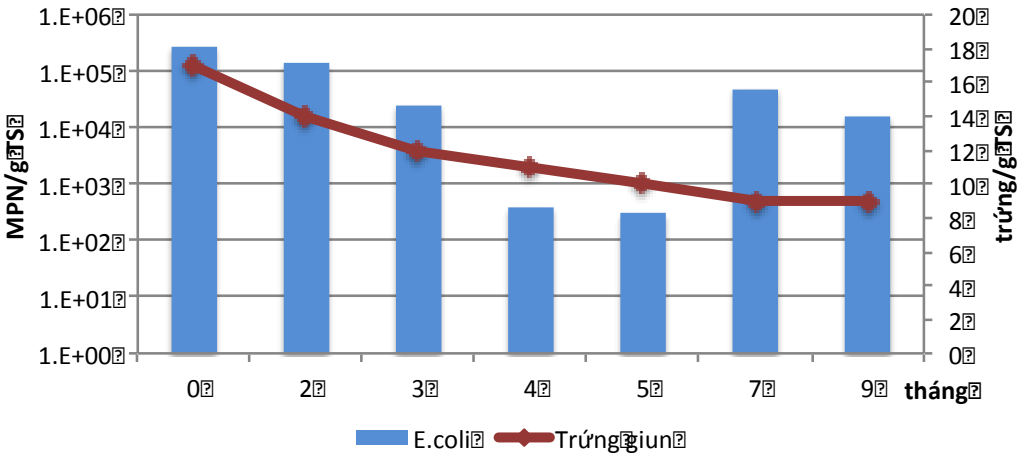
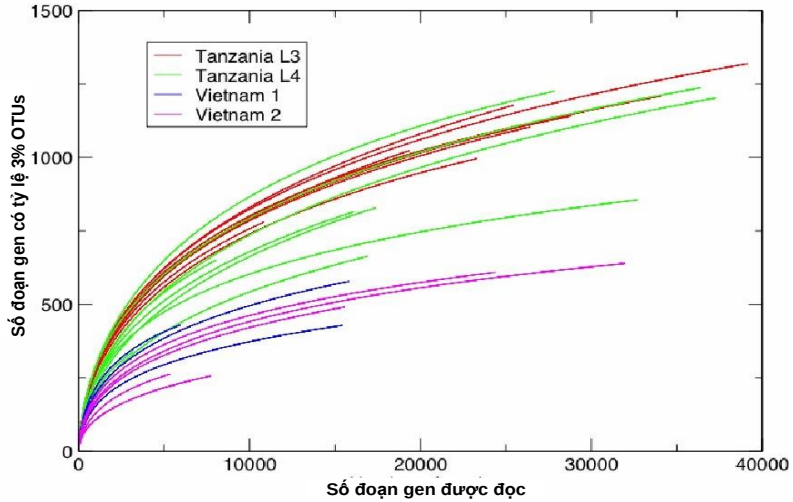
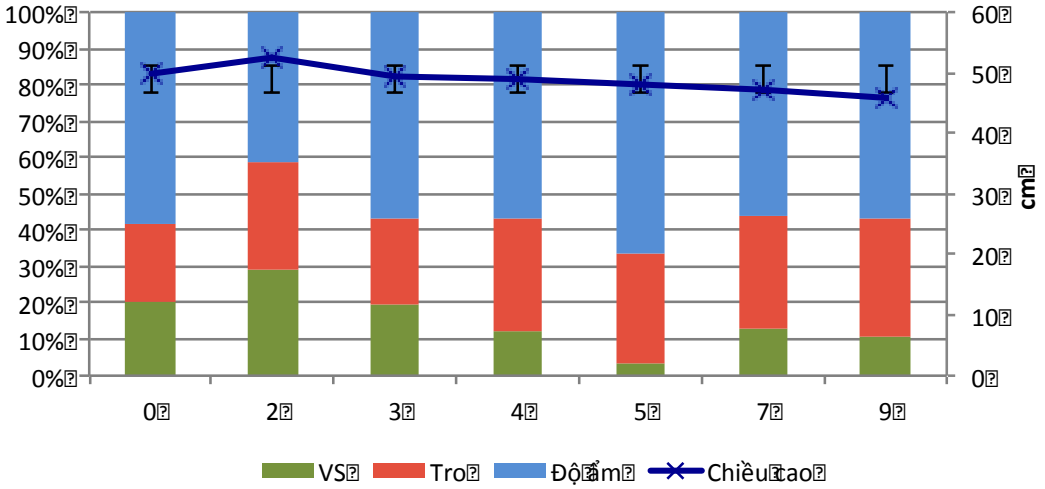
Introduction







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Objectives

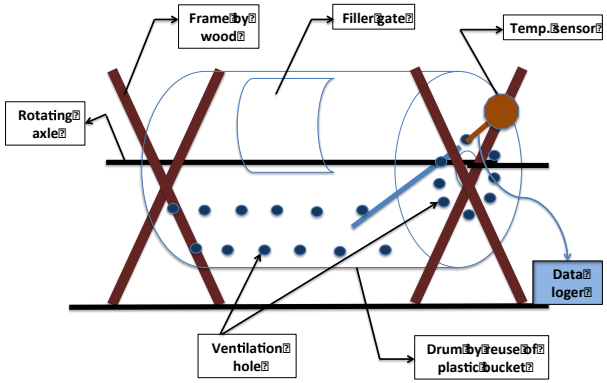
- To improve decomposition process and pathogen die-off,
- To reduce storage time,
- To assess the feasibility of improved solution.

Approach Methodology

- Using other adding materials instead of traditional ash and lime,
- Supplementing the useful microorganism for decomposition process,
- Giving aerobic conditions to the composting process

Material and Methods

- Fecal sludge from urine diverting toilet (FS)
- Sawdust (SW)
- Food waste (FW)
- The ratio of mixture: FS:SW:FW = 2:1:1
- C/N rate in range of 25:1 to 30:1
- The first 4 weeks, the drums is rotated with 3 times/week,
- From week 5th to week 16th: 1 time/week.



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Material and Methods

Temp.

E. Coli

TS, VS, TOC, T-N

Helmith egg

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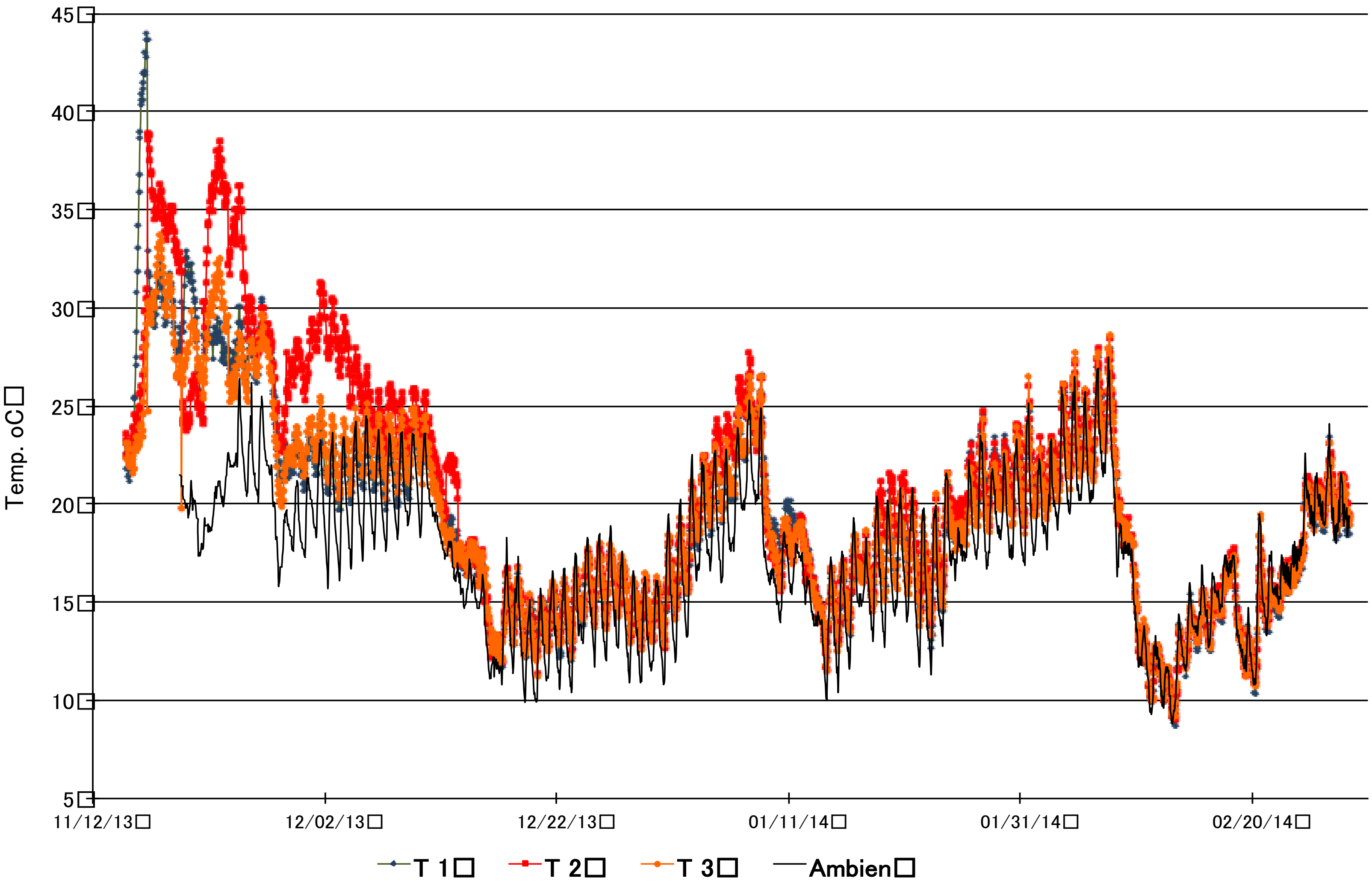
Results and Discussions



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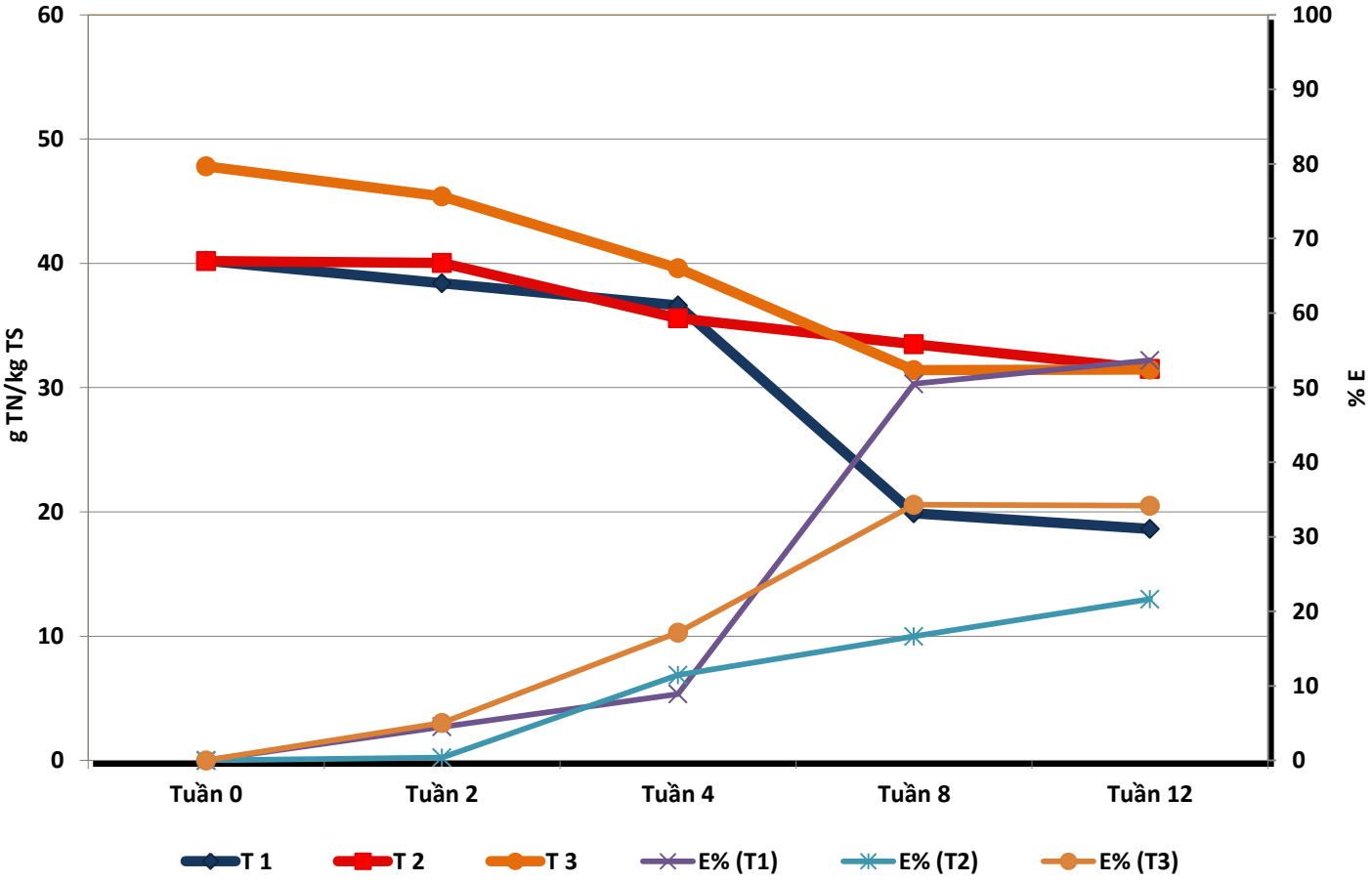
Results and Discussions



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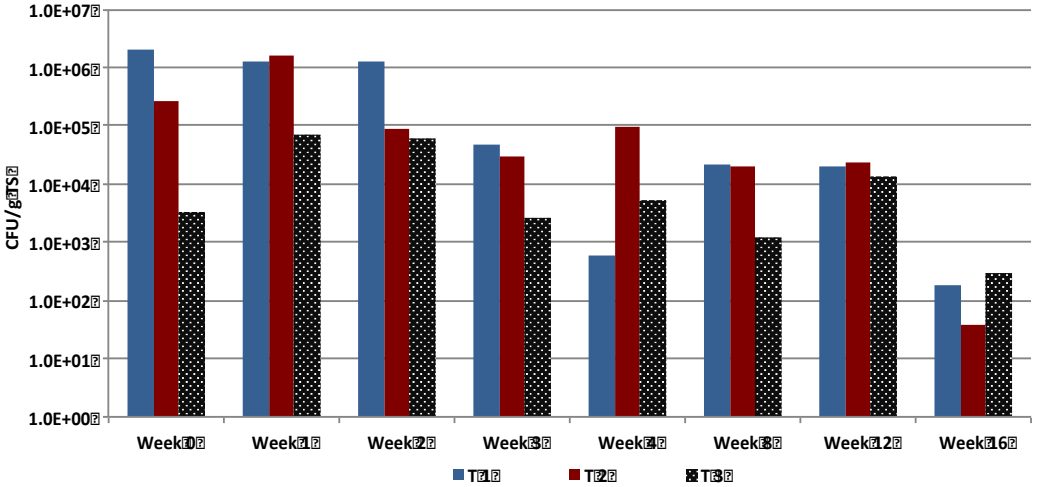
Results and Discussions

After 16 weeks of incubation

- E.coli in T1 were 4 log reduction, from 10^6 to 10^2.
- T2 were decreased 4 lo from 10^5 to 10^1
- T3 were 1 log reduction, from 10^3 to 10^2.



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Conclusions and Recommendations

- Pathogen reduction in samples with bio-additive is more than in sample without bio-additive,
- The local bio-additives Sagi-bio provides condition to increase temperatures in drums rapidly and reached a high level of 44^{o}C, compared with yeast,
- **Practice oriented view:**
  - Goal: hygienically safe fertilizer for farmers.
  - Faecal sludge treatment at household scale:
    - Composting drum
    - Ecosan toilet with Screw Mixing Tube
  - Co-composting for Faecal Sludge Treatment at Septage Treatment Station
  - Co-composting of Septage and Sewage Sludge.

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Thanks for your attention

Hong - Anh Do (MSc, PhD stud.)

Institute of Environmental Science and Engineering (IESE),
Hanoi University of Civil Engineering (HUCE)

E.mail: honganh_dhxd@yahoo.com, anhdh@nuce.edu.vn