Efficient use of bio-slurry from biogas systems in Viet Nam

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CONTENT

• Biogas systems in Vietnam

• Bio-slurry uses: Advantages and Limitations

• Towards the efficient use of bio-slurry in Vietnam
Vietnam’s introduction:
- 2014 population: 90.7 million people;
- GDP 2014:
  - 184 Bil. USD;
  - ~2,028 USD/ capita/ year;
- 63 provinces and cities,
Biogas technologies are key measures for livestock waste treatments in Vietnam:

- **Nearly 550,000 biogas digesters built in Vietnam:** Belongs to individuals and organizations;
- **210,000 ones managed by MARD from 5 projects**;
- **The remainder (340,000) were built by farmers and companies**;

- **NATIONAL TARGET: 2 Mil. BIOGAS PLANTS**
VIETNAM BIOGAS POTENTIAL:

High potential for biogas construction (2014):

- Pig: 26.7 million heads;
- Poultry: 427.7 million heads;
- Cattle and buffalo: 7.75 million heads;
- Sheep & goat: 1.67 million heads,
- High demands of biogas digesters for livestock waste treatments regulated by the Law,
- National Plan to 2020: 80% farms with a environmental treatment system, every livestock household with a biogas digester,
High potential for biogas construction (2014):

- No. of livestock farms: 9,206
- No. of total livestock households: 9.5 million
- No. households raising pigs: 4.13 million
- No. of household raising Poultry: 7.86 million heads;
COMPOSITE BIODIGESTERS
BIOSLURRY USE: ADVANTAGES AND LIMITATIONS

1. Advantages:

• Bioslurry can not be directly discharged into water resources (imposed by Law) → Use of bioslurry is an alternative option

• Bioslurry may be a good quality organic fertilizer (*research, experiments, demos, etc.*)

• Technologies and demonstrations for bioslurry use are available (*directly watering crops or mixing with other agricultural wastes to produce organic fertilizers, etc.*)
2. Limitations:

- Many small households continued discharging bioslurry into water resources (*they don’t have gardens around the home. The field is very far from home, etc.*)

- Investment for using bioslurry is high, mainly due to labor cost → not as convenient as inorganic fertilizer. Bioslurry is a low nutrient source (*80% water and 20% solid slurry*)

- Technologies and demonstrations for bioslurry use are not set-up at commercial scale (*not economically viable???)*)
Demonstrate use of bioslurry compost for crops

Promote bioslurry compost fertilizer at the 14th International Agricultural exhibition
Demonstrate use of bioslurry compost for crops

Demonstration of compost-bioslurry on maize and green cabbage
1. LCASP’s findings:

- *Biogas is not a comprehensive solution for livestock waste treatment* (biogas plant has fixed capacity whilst the livestock heads changed frequently)

- *Bioslurry from biogas systems is not a good material for commercial organic fertilizer production*

- *Non-biogas means must be used together with biogas systems to ensure the Climate Smart Agricultural Waste Management Practices (CSAWMPs)*
LCASP’s proposed CSAWMP models:

1. Model 1: Pig farm → Livestock wastes → Underground waste storage tank → Machine to isolate solid material → (i) Solid material goes to organic fertilizer production; (ii) Slurry goes to biogas plants together with enough livestock wastes to produce gas.

2. Model 2: Pig farm → Livestock wastes → (i) Sufficient capacity of biogas plants to produce gas; (ii) Spare wastes go to compost making tank.
Machine to isolate dry matters from livestock wastes
Making compost fertilizers for crops

Animal waste

Micro-organisms

Agriculture waste

Composting
THANK YOU