

Experience and Perspectives of S. Korea

Int'l Conf. on Water Pollution Reduction and Climate Change Mitigation Experience on LWMEAP

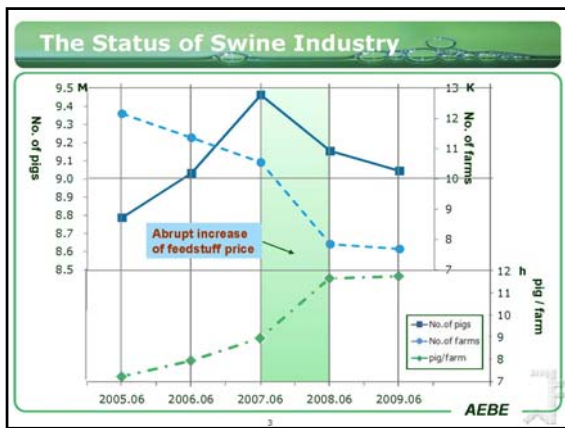
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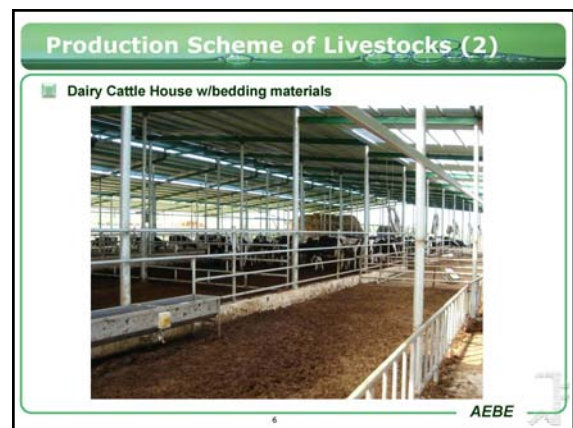
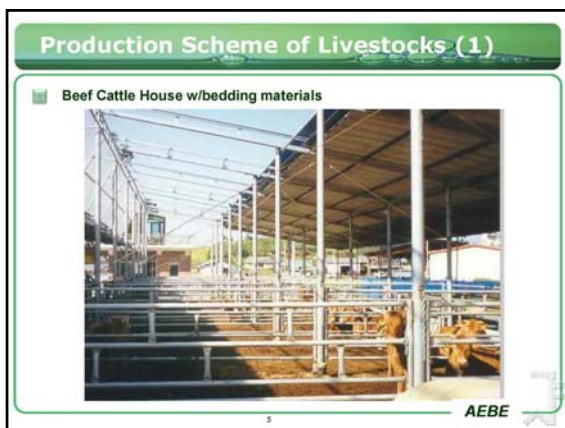


The Classification of Biomass Mgt System

Category by the Species and the Nature of Biomass

Livestock species	Production Practice	Management Scheme	End-product	Rearrangement of Overall Process
Beef cattle Dairy cattle Broiler Layer	w/ Bedding Materials	Composting with Mechanical Stirrer	Compost Quality Moisture content ≤ 45 % Organic matter > 40 % C/N ratio ≤ 35 % Heavy metal (Cd, As, Hg, Pb, Cr, Ni, Ca < 200 ppm, Zn ≤ 500 ppm), Cf	CO ₂ Abatement System
Pig	w/o Bedding Materials ↓ (slurry)	Composting with a Mechanical Stirrer and Storage – Farm-level Public Wastewater Treatment Facility – Concentrated System (100~200 t/d)	Compost (the same as above) Discharge into public waterway	CO ₂ Abatement System BGProcess as a Pretreatment System

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Production Scheme of Livestocks (3)

A-type or multi-Stacked Layer House

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Production Scheme of Livestocks (4)

Broiler House w/bedding materials

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Production Scheme of Livestocks (5)

SNU Pig House w/storage pit

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Production Scheme of Livestocks (5)

Pig House w/storage pit

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The Nature of Livestock Biomass

Solid Biomass

Liquid Biomass

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The Livestock Biomass Mgt System

SNU Composting Facility w/Solid Biomass & w/ Front ATAD

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The Livestock Biomass Mgt System

■ SNU Composting Facility w/Solid Biomass & Front ATAD

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The Livestock Biomass Mgt System

■ Composting Facility w/Solid Biomass & w Storage at Sidewall

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The Livestock Biomass Mgt System

■ Composting Facility w/Solid Biomass @ middle for a longer span

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The Livestock Biomass Mgt System

■ Batch Static Pile Composting Facility w/Solid Biomass

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The Livestock Biomass Mgt System

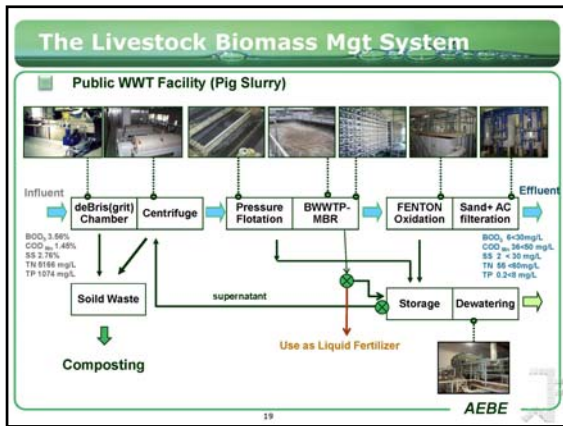
■ Public WWT Facility (Pig Slurry) @ 会山市

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The Livestock Biomass Mgt System

■ Public WWT Facility (Pig Slurry) @ 鎌原郡

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The Application of Livestock Boimass

Paddy Crop (Liquid Fertilizer)

	TRT	CF	LF
完全米收量 (kg/10a)	489	466	
白米收量 (kg/10a)	403	404	
米質 (蛋白質含量,%)	7.3	6.8	

Liquid Fertilizer	Physicochemical Constituents, %					
	T-N	P ₂ O ₅	K ₂ O	CaO	MgO	NaCl
	0.107	0.01	0.18	0.01	ND	0.02

From : KAAS, 2005

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The Application of Livestock Biomass

Fall Cucumber w/Liquid Fertilizer

	TRT	CF	LF
Cucumber (Kg/10a)	2,169	2,342	
Tomato (kg/10a)	4,514	5,628	

From : KAAS, 2005

Brix	Tomato in market	LF Tomato
1	7.3	6.2
2	6.7	6.3
3	6.6	7.3
4	-	9.0
5	-	8.8
6	-	6.9
平均糖度	6.87	7.53

From : SNU, 2007

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The Application of Livestock Biomass

Pear w/Liquid Fertilizer

Poplar tree

Willow tree

Chestnut tree

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The Application of Livestock Biomass

Crop Cultivation w/Liquid Fertilizer

Turfgrass Cultivation w/Liquid Fertilizer

	TRT	CF	LF
Turf Color index	1.8%	3.3%	
Chlorophyll content	13%	20%	

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General Tips for Environment-Friendly Livestock Practice

- Less flushing water (ground water)**
 - More quantity treated. Reserve GW for a next-generation
- Insulated roof for ruminant animals and their waste**
 - Stay out from water pollutants by heavy rainfall in a tropical area
 - Reduce excessive heat stress to animals by radiation

$$t_{sa} = t_o + \frac{\alpha I_s}{h_o} - \frac{\epsilon \Delta R}{h_o}$$

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General Tips for Environment-Friendly Livestock Management

- Construction of the retain walls(berm) along the perimeter of the structure**
 - ➔ Pause water pollutants for some time, and scraping them and composting when changed
- May change the production practice which place the bedding material on the floor for ruminant animals in a concentrated regions**
 - ➔ Less GHG emission and reuse of bio-waste (compost)

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IkSan Eco-City Plan

Integration of Crop-Animal Farming IkSan City and SNU



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平生欺誑男女群
 彌天罪業過須彌
 活陷阿鼻恨萬端
 一輪吐紅掛碧山

元稹 雜興