

# 丹麥養豬之廢棄物處理與動物福利

國立屏東科技大學

動物科學與畜產系

彭劭于 副教授

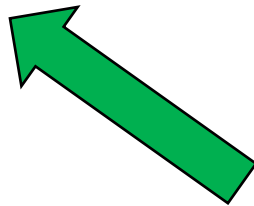
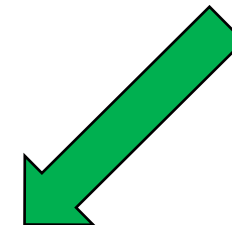
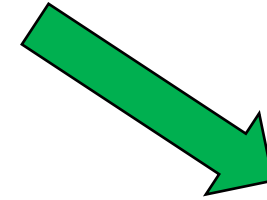
# Outline

**Wellbeing of feeding  
and management**

**Wellbeing of  
slaughtering**

**Incineration**

**Circular economy and  
biogas production from  
animal manure**





# Castration?

Stress? Cortisol, lactate

Until **7-10 min** after **pain killer** (Analgesics, Procainhydrochlorid) administration, the **3 days** old piglets are under castration.

1. Select Boar taints gene ?
2. Vaccine ?
3. X, y sperm separation

In Denmark, 4 in 1 machine

1. **Tail docking** ( by heating )
  2. **Iron agent with painkiller** (for castration after 7-10 min) injection by air pressure subcutaneously.
  3. Oral administration of **anti-coccidiosis** agent.
  4. **Ear marking**
- (All procedures are completed in 3 days old piglets)

Ultrasound scanning

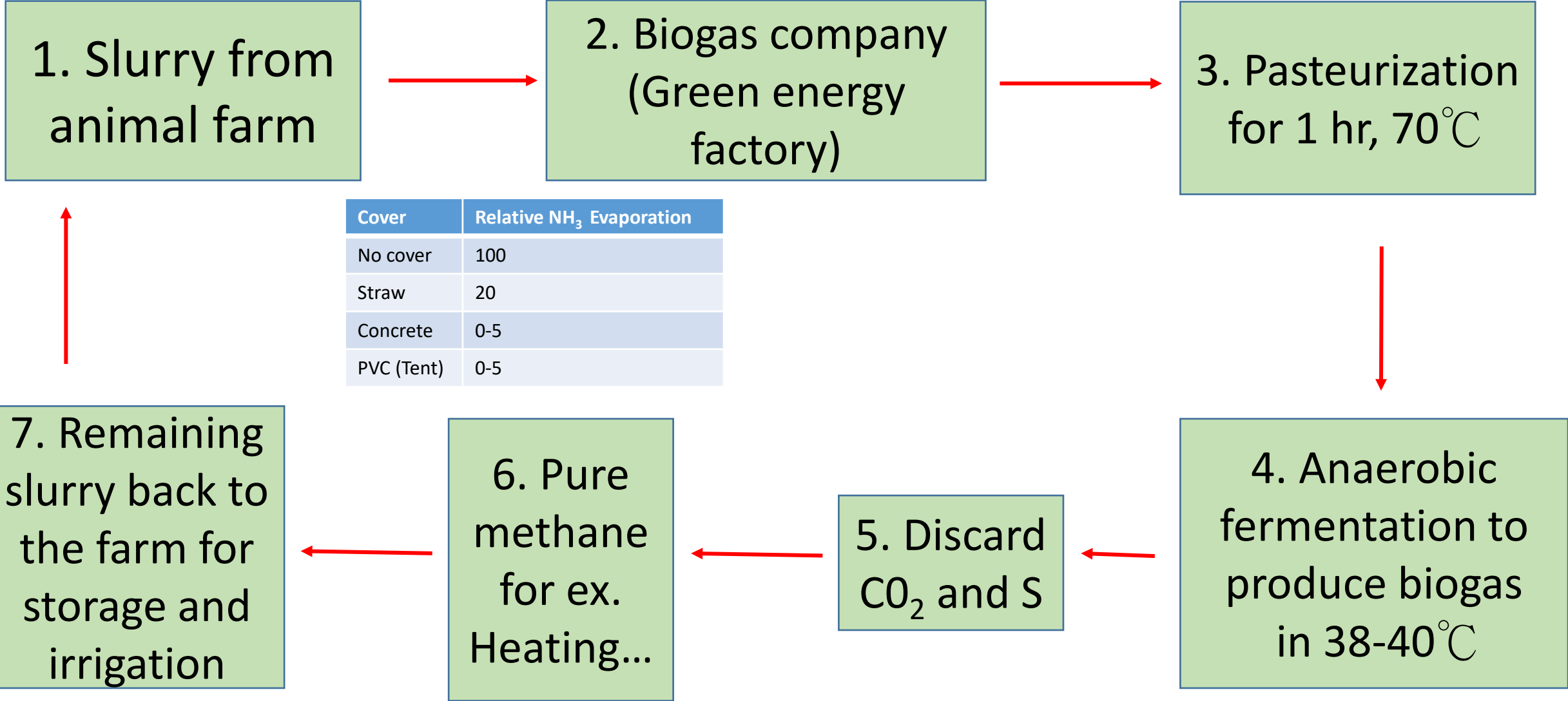
Identity number/radio chip

Fat and meat content of the carcass

127 parameters are measured

The data are registered in a digital system which can combine weight, quality, cutting and the payment to the farmer.

CT scans → obtain 3D reconstructions of the pig → predict fat, muscle, bone composition



< Transportation fee by biogas company)>

< Slurry= mix of manure + urine + water (rainfall and cleaning water)>

The benefits of the animal farms are:

1. The odor is reduced.
2. After heating and fermentation for 3-4 weeks in biogas company, the slurry becomes a better fertilizer (N- $\rightarrow$ NH<sub>3</sub>).
3. The slurry will become more homogenous, better for irrigation.



# Incineration

1. The **Salmonella** test is done from the final product.
2. **Fat** is regard as **biofuel** or **diesel**.
3. **Meat** and **bone powder** are into a **feed**.
4. **Skin** is into a **purse** or **bag**, etc.

**Service**

Cow: 80 Euro

Pig: 8 Euro

**Sale**

C1 meal : 0.02 Euro/Kg

C2 meal : 0.25 Euro/Kg

Fat : 0.5 Euro/Kg

*Thanks for your attention*