

# INCREASING LOCAL SHEEP GROWTH PERFORMANCE THROUGH RAPID SELECTION AT FATTENING FARM



Yamin, M., Sumantri, C., Rahayu, S., Duljaman, M.,  
Aditia, E.L., Baihaqi, M., and Dagong, A.M.I.

The First International Seminar on Animal Industry  
IPB-IICC, Bogor, 23-24 November 2009



# INTRODUCTION

## Background



### **Advantages of local sheep:**

Prolific, well adapted to marginal env including diseases, quick yielding & lower investment than cattle, better meat flavor and better skin quality than imported sheep

### **Disadvantages:**

Much slower growth and large variability (daily gain: 60-70 g/head/day, range 20-200 g/head/day) vs imported meat sheep (high 200-250 g/head/day)



- Sheep fattening farms have recently been growing rapidly to produce better quality of sheep meat.
- This bussiness has some advantages i.e quick yielding, lower in investment and higher in profit than in breeding farms.
- However, the fattening bussiness can make a crucial loss of good quality of local sheep because they can be sold easily.

**Therefore:** selection needs to be conducted to increase the average daily gain



FROM THIS



TO THIS



TO THIS

# Objectives

- To select fast growing sheep based on daily gain
- To evaluate better selection criterion on daily gain
- To evaluate effectiveness of selection methods
- To calculate Estimated Breeding Value (EBV)
- To calculate selection period





# METHODS

## Experimental location:

- Fattening sheep farm, 'Tawakal', Caringin Bogor.
- Meat Lab, Department of Animal Production and Technology, Fac of Animal Science, IPB.

## Experimental Time:

- July to September 2009

## Experimental Animals:

- 169 male lambs (less than 1 year old male) selected from 1071 sheep population on the farm





## Rapid selection:

- Physical judging by experienced person
- Measurement of daily gains
- Selecting fast and slow growing sheep
  - fast growing:  $\geq 150$  g/head/day
  - Slow growing:  $\leq 50$  g/head/day

EBV (Estimated breeding value) =  
showing inheritance level of daily gain  
trait (increase of g/head/day) for each  
generation

$$EBV = h^2 (P_1 - \mu);$$

$P_1$  = mean of daily gain of selected sheep

$\mu$  = mean of their population







# RESULTS & DISCUSSION

## Population Average and Percentage of Selection

- Population of one hundred and sixty nine (169) young male sheep (less than one year old) have been selected, with the average daily gain was  $98.5 \pm 43.6$  g/head/day.
- Number of selected sheep results:
  - 13 heads of fast growing sheep having  $>150$  g/head/day
  - 11 heads of slow growing sheep having  $<50$  g/head/day
- It is therefore selection percentage =  $13/169 = 7,6\%$ . Other work on Batur's sheep it was 50% based on DG fast growing sheep of 250 g/head/day. It shows that the selection conducted in this work was quite effective.

# Average Daily Gain of Fast Growing vs Slow Growing Sheep

Sheep Group	Body Weight (Mean $\pm$ SD) (kg)	Daily Gain (g/head/day)
Fast Growing (FG)	34,57 <sup>a</sup> $\pm$ 3,98	173,78 <sup>a</sup> $\pm$ 26,34
Slow Growing (SG)	26,58 <sup>b</sup> $\pm$ 5,62	53,85 <sup>b</sup> $\pm$ 15,71

- Average daily gain of Population was  $98.5 \pm 43.6$  g/head/day
- Large difference in ADG between sheep groups and population also shows that the selection was quite effective.



**FAST GROWING SHEEP**

**SLOW GROWING SHEEP**



## Differences in Girth, Length and Height of Sheep between Sheep Group

Sheep Group	Girth (cm)	Length (cm)	Height (cm)
CT	76,4 <sup>a</sup> ±3,29	69,8 <sup>a</sup> ±4,33	63,5 <sup>a</sup> ±3,19
LT	67,9 <sup>b</sup> ±2,69	61,8 <sup>b</sup> ±3,58	60,3 <sup>b</sup> ±2,39

Selection Criteria in order: Girth → Length → Height

# Selection Differential and Breeding Value

$$SD = (173,78 - 98,5) = 75,28 \text{ g/head/day}$$

$$EBV = h^2 \times SD = 0,25 \times 75,28 = 18,82 \text{ g/head/day}$$

→ indicating the increase of ADG for each generation would be 18,82 g/head/day.



If we would have future ADG 150 g/head/day from present ADG 98,5, we need to mate them to same quality of ewes and we would need  $= (150-98,5)/18,82 = 2,7$  generations or about  $2,7 \times 1,5$  years = 4,1 years.



# Conclusions & Recommendations

- It is concluded that this selection approach (rapid selection) can be recommended as a selection method in the farm levels especially at sheep fattening business. Implementation of this selection continuously can increase growth performance of local sheep as well as sustainability of good quality and quantity of lamb for fattening business.
- Future Work: Establishment of Village Breeding Centre to develop the selected sheep for breeding improvement. The centre should be able to be managed by the local farmers/groups in cooperation to private sectors and government to have more profitable and sustainable sheep business as well as to achieve meat selfsufficiency towards food security.



# Acknowledgments

- DGHE (Dikti)
- LPPM-IPB
- Fapet IPB
- Dept of Animal Production and Technology, Fapet IPB
- H. Bunyamin & Staff from Tawakal Farm



**Thank you for your attention**

