

**THE PHYSIOLOGY AND PRODUCTION PERFORMANCE OF WEANED  
CROSSBREED MALE NEW ZEALAND WHITE RABBIT MAINTAINED  
AT DIFFERENT ENVIRONMENT TEMPERATURE**

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# INTRODUCTION

- ▶ Climate change can't be predicted anymore
- ▶ In Indonesia, rabbit were raised in many altitudes area, high and low land.
- ▶ An increase in environmental temperature from 20°C to 35°C causes the respiration rate of rabbit to increase from 40 to 200 times/minute (Yan and Li, 2008)
- ▶ Fully controlled housing system is expensive for small farmers
- ▶ Simpler controlled rabbit cage with manual heater and cooler, using thermostat as controller

## THE AIM

- ▶ To determine the physiology and production performance of weaned crossbred male New Zealand White rabbit which maintained at different environment (cage) temperatures

# MATERIAL & METHODE (1)

- ▶ Place: Cerme Village, Grogol District, Kediri Regency
- ▶ Duration: February until April 2017
- ▶ Materials: 18 male New Zealand White cross bred rabbits with age of 6-8 weeks and an average initial body weight of 1069-1101 grams
- ▶ Method: experimental with Completely Randomized Design consists of three treatments (cage temperatures) of  $T_1$  (23-25°C),  $T_2$  (27-29°C) and  $T_3$  (31-33°C) and six replications.
- ▶ Data analysis: Analysis of variance continued by Duncan's Multiple Range Test (DMRT).

# MATERIAL & METHODE (2)

- ▶ Individual battery cages 40x40x40 cm
- ▶ Feed: commercial pellet (BR-1, PT Wonokoyo) ( $\pm$  at 7.00 a.m) and field grass ( $\pm$  at 15.00 p.m); drinking water ad libitum
- ▶ Controlled cages temperatures
- ▶ By putting heater in the form of incandescent lamp(s) in each corner of the cage to increase temperature, will turn on if the temperature of the cages crossed the minimum temperature that has been determined, and will turn off if it passes maximum limit, used in temperature treatment of T2 (27-29°C) and T3 (31-33°C).
- ▶ By putting cooler in the form of a modified blower on one corner of the cage to lower the temperature. Box filled with ice blocks and blue ice. The blower will turn on if the temperature of the cage exceed the maximum limit (25°C) and will turn off if passes minimum limit (23°C).

# VARIABLES (1)

- ▶ Rectal temperature (°C) : 3 times (8 a.m; 12 a.m ad 16 p.m) for every two days
- ▶ Respiratory frequency (times/minute): 3 times (8 a.m; 12 a.m ad 16 p.m) for every two days
- ▶ Heat Tolerance Coefficient (HTC) by modified formula of Benezra

$$\text{HTC} = \text{Tb} / 39.5 + \text{Fr} / 60 \text{ (Benezra, 1954)}$$

HTC : Heat Tolerance Coefficient

Tb : Average rabbit body temperature (°C)

39.5 : Standard number of rabbit body temperature (Trisunuwati, 1989)

Fr : The average frequency of respiratory rabbits (times / minutes)

60 : Standard respiratory rate rabbit (Sumadi *et al.*, 2000)

## VARIABLES (2)

- ▶ Dry Matter Consumption (g)
- ▶ Daily weight gain (g)
- ▶ Feed Conversion

# RESULTS & DISCUSSION (1)

Table 1. Temperature (°C) & Humidity (%) of Cages Room

Week to	Temperature (°C)	Humidity (%)
1	27,60	63,33
2	28,19	60,33
3	27,57	62,29
4	27,50	62,05
5	27,33	63,29
6	27,14	63,05
Average ± sd	27,5 ±0,35	62,3 ±1,14



# RESULTS & DISCUSSION (2)

Table 2. Average temperature (°C) of cages in each treatment

Week to	T1	T2	T3
1	24.48	28.05	31.93
2	24.14	28.19	32.00
3	24.26	27.86	31.74
4	24.38	28.14	31.98
5	24.64	27.86	31.88
6	24.67	27.90	31.83
Average $\pm$ sd	24.4 $\pm$ 0.20	28.0 $\pm$ 0.14	31.8 $\pm$ 0.09

# RESULTS & DISCUSSION (3)

Table 3. Average animal body temperature (°C) during the study

Treatment	Repeated						
	1	2	3	4	5	6	Average±sd
T3	38.95	39.04	39.06	39.11	39.07	39.18	39.1 +0.08 <sup>a</sup>
T2	38.74	38.54	38.70	38.86	38.92	38.79	38.8 +0.08 <sup>b</sup>
T1	38.16	38.61	38.69	38.74	38.73	38.68	38.7 +0.05 <sup>c</sup>

Note: Different superscript in the same column showed highly significant difference (P <0.01)

# RESULTS & DISCUSSION (4)

Table 4. Average respiratory frequency (times/minutes)during the study

Treatment	Repeated						Average±sd
	1	2	3	4	5	6	
T3	154	154	141	156	163	147	152.6 ±7.71 <sup>a</sup>
T2	128	132	136	129	127	142	132.3 ±5.69 <sup>b</sup>
T1	80	81	74	74	76	76	77.4 ±3.15 <sup>c</sup>

Note: Different superscript in the same column showed highly significant difference (P <0.01)

# RESULTS & DISCUSSION (5)

Table 5. Average HTC of the animals during the study

Treatment	Repeated						
	1	2	3	4	5	6	Average±sd
T3	3.54	3.55	3.33	3.59	3.70	3.44	3.5 ±0.13 <sup>a</sup>
T2	3.11	3.17	3.25	3.13	3.10	3.34	3.2 ±0.09 <sup>b</sup>
T1	2.32	2.33	2.21	2.21	2.26	2.26	2.3 ±0.05 <sup>c</sup>

Note: Different superscript in the same column showed highly significant difference (P <0.01)

# RESULTS & DISCUSSION (6)

Table 6. Average Dry Matter Consumption (g) of the animals during the study

Treatment	Repeated						Average±sd
	1	2	3	4	5	6	
T1	68,27	67,53	69,70	67,92	68,79	69,84	68,6±0,95 <sup>c</sup>
T2	65,64	63,88	65,71	67,26	66,58	66,90	66,0±1,22 <sup>b</sup>
T3	63,28	62,55	63,55	65,91	64,68	64,12	64,0±1,18 <sup>a</sup>

Note: Different superscript in the same column showed highly significant difference (P <0.01)

# RESULTS & DISCUSSION (7)

Table 7. Average Daily Gain (g) of the animals during the study

Treatment	Repeated						Rata-rata
	1	2	3	4	5	6	
T1	27,24	26,40	29,02	28,60	26,36	29,02	27,7±1,26 <sup>a</sup>
T2	22,86	22,19	22,19	20,83	21,38	21,36	21,8±0,74 <sup>b</sup>
T1	20,12	19,98	20,10	19,79	20,81	20,29	20,1±0,35 <sup>c</sup>

Note: Different superscript in the same column showed highly significant difference (P <0.01)

# RESULTS & DISCUSSION (8)

Table 7. Average Feed Conversion of the animals during the study

Treatment	Repeated						
	1	2	3	4	5	6	
T1	2,50	2,55	2,41	2,39	2,61	2,42	2,4±0,09 <sup>a</sup>
T2	2,90	2,92	2,97	3,24	3,13	3,17	3,0±0,14 <sup>b</sup>
T3	3,18	3,13	3,16	3,32	3,12	3,16	3,1±0,07 <sup>b</sup>

Note: Different superscript in the same column showed highly significant difference (P <0.01)

# CONCLUSION

- ▶ The animals would have optimal growth at the environment temperature nearly comfort zone and in this study it was 23-25°C.



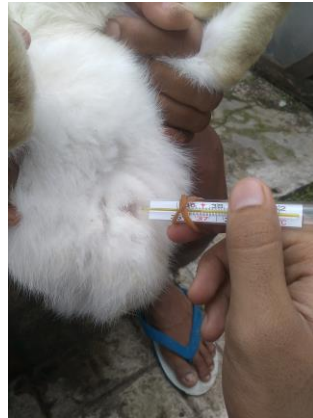
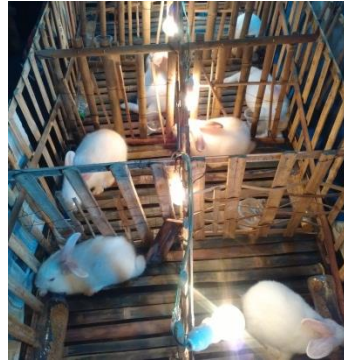
# DOCUMENTATION (1)



Following clockwise direction:

- Thermometer
- Hand tally counter
- Weighing the concentrate
- Field grass

# DOCUMENTATION (1)



Following clockwise direction:

- Cages of T1
- Cages of T2
- Cages of T3
- Measuring rectal temperature

**THANK YOU**

The image features a white background with pink geometric shapes. On the left, a pink triangle points towards the center. On the right, a pink triangle points towards the center. A thin vertical pink line is positioned to the right of the text.