



**UNIVERSITI PUTRA MALAYSIA**

**THE EFFECT OF PARTIAL REPLACEMENT OF COMMERCIAL RABBIT  
PELLET WITH RICE SPROUT ON THE GROWTH PERFORMANCE AND  
DIGESTIBILITY IN RABBITS**

**AHMED SHAH MASOOD NASERI**

**FP 2015 173**

## CERTIFICATION

The project report attached here entitled:

**The effect of partial replacement of commercial rabbit pellet with rice sprout on the growth performance and digestibility in rabbits** and submitted by **Ahmed Shah Masood bin Naseri**

In partial requirement of SHW 4999 (project) for the award of the degree of **Bachelor of Agriculture (Animal Science)** is hereby accepted.

Student's name:

Ahmed Shah Masood bin Naseri

Matric No: 162120

Certified by:

\_\_\_\_\_  
Professor Dr Abdul Razak Bin Alimon

Project Supervisor

Department of Animal Science

Faculty of Agriculture

Universiti Putra Malaysia

Serdang Selangor

Student's signature

\_\_\_\_\_ Date

## ACKNOWLEDGEMENT

Alhamdulillah, praise to The Almighty Allah SWT. First and foremost, I would like to express my sincere appreciation and gratitude to my project supervisor Professor Dr Abdul Razak Bin Alimon for constantly guiding and encouraging me throughout this study. Thanks a lot for giving me advices and suggestions to bring this project to its final form.

I am very thankful to Mr. Faizal Yeop bin Shafie, veterinary assistant at Ladang 2 TPU, Universiti Putra Malaysia (UPM) Serdang for his co-operation in handling and supervising animal care and equipments.

In particular, I would like to express my endless gratitude to my beloved mother, Norwaja binti Nordin and father, Naseri bin Salleh for their spiritual advices, economic support and all their sacrifices.

Last but not least, my sincere thankful to my friends, colleagues and others who have provided assistance at various occasion. Their views and tips are useful indeed.

Thank you.

## TABLE OF CONTENTS

<b>CERTIFICATION</b>	<b>I</b>
<b>ACKNOWLEDGEMENTS</b>	<b>I</b>
<b>TABLE OF CONTENT</b>	<b>II</b>
<b>LIST OF TABLES</b>	<b>IV</b>
<b>LIST OF ABBREVIATIONS</b>	<b>V</b>
<b>ABSTRACT</b>	<b>VI</b>
<b>CHAPTER 1: INTRODUCTION</b>	<b>1</b>
1.1 Significance of Study	2
1.2 Research Hypothesis	2
1.3 Objective	2
<b>CHAPTER 2: LITERATURE REVIEW</b>	<b>3</b>
2.1 Fodder sprout	4
2.2 Growth Performance	4
2.3 Nutrient Digestibility	4
2.4 Housing	5
<b>CHAPTER 3: MATERIALS AND METHOD</b>	<b>7</b>
3.1 Experimental Site	7

3.2 Animals and Management	7
3.3 Dietary Treatment and Feeding management	7
3.4 Nutrient Digestibility and Growth	8
3.5 Experimental Design	8
3.6 Chemical Analysis	8
3.6.1 Determination of Dry Matter	9
3.6.2 Determination of Ash	9
3.6.3 Determination of Crude Protein	10
3.6.4 Determination of Ether Extract	11
3.7 Calculation of Nutrient Digestibility	11
3.8 Statistical Analysis	11
<b>CHAPTER 4: RESULT</b>	<b>12</b>
<b>CHAPTER 5: DISCUSSION</b>	<b>16</b>
<b>CHAPTER 6: CONCLUSION</b>	<b>18</b>
<b>APPENDIXES</b>	<b>19</b>
<b>REFERENCES</b>	<b>32</b>

## LIST OF TABLES

<b>FIGURES</b>		<b>PAGE</b>
Table 1	Nutrient composition of rice sprout and commercial rabbit pellet	12
Table 2	Feed intake of rabbit of different treatment	13
Table 3	Body Weight (mean $\pm$ SE) of rabbit of different treatment	14
Table 4	Body Weight Gain (mean $\pm$ SE) of rabbit of different treatment	15
Table 5	Feed Conversion Ratio(mean $\pm$ SE) of rabbit of different treatment	15
Table 6	Nutrient digestibility (mean $\pm$ SE) of different treatment	15

## LIST OF ABBREVIATIONS

°C	Celcius
%	Percentage
ANOVA	Analysis of Variance
DM	Dry Matter
CP	Crude Protein
CF	Crude Fibre
NDF	Neutral Detergent Fibre
ADF	Acid Detergent Fibre
ADL	Acid Detergent Lignin
EE	Ether Extract
g	Gram
kg	Kilogram
SE	Standard Error

## ABSTRACT

Rabbit has the advantages of being herbivorous animals, as they can use the protein from the leaves, efficiently convert high fibrous foods, has a fast growth rate and available in variety of breeds. Fodder sprout are one of the feed sources of animal that can be used in feeding of rabbit. There are many advantages using fodder sprout as an animal feed because of their special characteristic such as ease to establishment, good competitive ability, high productivity, require less fertilizer, persistent to local pests and diseases. In addition, the fodder sprout has good nutritive value and reasonable palatability to animals. The objectives of this study were to determine the effect of partial replacement of commercial rabbit pellet with the rice sprout on growth performance and nutrient digestibility. Four treatment diets were formulated to contain rice sprout level of 0%, 20%, 40 % and 60%. Sixteen male weaned rabbits were used for experiment. They were randomly divided into 4 groups of 4 rabbit per treatment, in a Completely Randomized Design (CRD). The rice sprout and commercial rabbit pellet was fed at restricted level. Total feed given were 10% of body weight on dry matter (DM) basis. Analysis of rice sprout on DM basis indicated that it contained 17.68% DM, 5.64% ash, 10% CP, 2.09% EE, 31.55% NDF, 17.59% ADF and 5.56% ADL. The dry matter (DM) and crude protein digestibility were significantly different ( $p < 0.05$ ) while crude fibre (CF) and ether extract (EE) were not significant different ( $p > 0.05$ ). The feed intake and FCR were significantly different compared to control treatment. The body weight gain was not significant different between the treatments. As conclusion, the findings generally indicated that the rice sprout only improve the feed intake and nutrient digestibility in dry matter and crude protein.



## ABSTRAK

Arnab mempunyai kelebihan sebagai haiwan herbivor, kerana mereka boleh menggunakan protein dari daun, boleh menukar makanan berserat tinggi, mempunyai kadar pertumbuhan yang cepat dan boleh didapati dalam pelbagai baka. Makanan bercambah adalah salah satu sumber makanan daripada haiwan yang boleh digunakan dalam memberi makanan kepada arnab. Terdapat banyak kelebihan menggunakan makanan bercambah sebagai makanan ternakan kerana ciri khas mereka seperti mudah hidup, keupayaan berdaya saing baik, produktiviti yang tinggi, memerlukan baja yang kurang, tahan kepada perosak dan penyakit. Di samping itu, makanan bercambah mempunyai nilai pemakanan yang baik dan boleh diterima untuk haiwan. Objektif kajian ini adalah untuk menentukan kesan penggantian sebahagian pelet arnab komersial dengan padi tunas terhadap prestasi pertumbuhan dan penghadaman nutrien. Empat diet rawatan telah digubal untuk mengawal tahap bercambah beras 0%, 20%, 40% dan 60%. Sebanyak enam belas arnab jenis jantan yang telah bercerai susu telah digunakan untuk eksperimen. Arnab secara rawak dibahagikan kepada 4 kumpulan 4 arnab setiap rawatan, dalam Rekabentuk Rawak Lengkap (CRD). Padi tunas dan pelet arnab komersial telah diberi makan pada tahap yang dihadkan. Jumlah makanan yang diberikan adalah 10% daripada berat badan pada bahan kering (DM) asas. Analisis bahan kering padi tunas menunjukkan bahawa ia mengandungi 17,68% DM, 5,64% abu, 10% CP, 2,09% EE, 31,55% NDF, 17,59% ADF dan 5,56% ADL. Foraj (DM) dan protein mentah penghadaman berbeza secara ketara ( $p < 0.05$ ) manakala serat mentah (CF) dan ekstrak lemak (EE) tidak ketara berbeza ( $p > 0.05$ ). Pengambilan makanan dan FCR berbeza secara ketara berbanding dengan kawalan rawatan. Keuntungan berat badan tidak ketara berbeza antara rawatan. Sebagai kesimpulan, kajian menunjukkan bahawa umumnya padi tunas hanya meningkatkan pengambilan makanan dan penghadaman nutrien dalam bahan kering dan protein mentah.

# CHAPTER 1

## INTRODUCTION

Rabbits are herbivore animals and can survive by relying entirely on forages and high fiber feed. As herbivorous animals, rabbits have the advantages such as can be use the protein from the leaves, efficiently convert high fibrous foods, has a fast growth rate and are available in variety of breeds. The rabbit could also contribute significantly to solving the problem of meat shortage. Empirical evidence found that rabbits could subsist on inexpensive diets based on forages under small-scale farm conditions in arid and tropical regions (Ruiz-Feria *et al.*, 1998).

The raising of rabbits can be divided into three purposes which are commercial breed for meat production, fur for wool production and as a pet purpose (Mcnitt *et al.*, 1996).

Fodder or animal feed is any feedstock used specifically to feed domesticated livestock such as cattle, goats, sheep, horses, chickens and pigs. "Fodder" refers particularly to food given to the animals (including plants cut and carried to them), rather than that which they forage for themselves in pasture and grazing land. It includes hay, straw, silage, compressed and pelleted feeds, oils and mixed rations, and also sprouted grains and legumes. The fodder system that is focusing on here is a hydroponically grown.

Fodder sprout are one of the feed sources of animal that be used in around the world. There are many advantages using fodder sprout as an animal feed because of their special characteristic such as ease to establishment, good competitive ability, high productivity, require less fertilizer, persistent to local pests and diseases. In addition, the fodder sprout has good nutritive value and reasonable palatability to animals (Peer, D.J, and S. Leeson, 1985b). The example of common fodder sprout is barley and wheat. One more valuable fodder sprout that has potential to be use in

Malaysia is rice sprout. In Malaysia, paddy grows in area of approximately 680,000 hectares which produce about 2,500,000 tons of paddies per year (Department of Agriculture of Malaysia, 2009).

### **1.1 Significance of Study**

Rice sprout has not been used as an animal feed for the domestic animals. No research has been done on the nutritive value of rice sprout. Therefore, this study will give information on nutrient content of the rice sprout, and its effect on growth and nutrient digestibility in rabbit.

### **1.2 Research Hypothesis**

The overall growth performance and nutrient digestibility of rabbit (New Zealand White) fed varying levels of rice sprout is similar to that fed rabbit pellets

### **1.3 Objective**

The general objective of the research is to determine the effect of feeding rice sprout on growth performance and nutrient digestibility in rabbits

1. To determine the nutritive value of the rice sprout.
2. To determine the nutrient digestibility of rice sprout.
3. To determine the feed intake, feed conversion ratio (FCR) and growth of the rabbit in varying levels of rice sprout

## REFERENCES

1. Eustace, A., Iyayi, O., Oluwakemi, O. and Odueso, M. (2003). Response of some metabolic and biochemical indices in rabbits fed varying levels of dietary cyanide. *African Journal of Biomedical Research*, 6(1): 43-47
2. Hillier, R.J. and T.W. Perry, 1969. Effect of Hydroponically Produced Oat Grass on Ration Digestibility of Cattle. *Journal of Animal Science*, 29: 783-785.
3. Iyeghe-Erakpotobor, G.T, Aliyu, R. and Uguru, J. (2005). Evaluation of concentrate, grass and legume combinations on performance and nutrient digestibility of grower rabbits under tropical conditions. *African Journal of Biotechnology*, 4 (20): 2004-2008
4. McNitt, J.I., Cheeke, P.R., Patton, N.M. and Lukefahr, S.D. (1996). *Rabbit production*. Interstate publishers Inc., Danville, IL.
5. Lebas, F., Coudert, P., Rochambeau, H. de and Thébault, R. G. (1997). *The Rabbit - Husbandry, Health and Production*. FAO Animal Production and Health Series No. 21.
6. Lei, Q. X., Li, F. C. and Jiao, H. C. (2004). Effects of dietary crude protein on growth performance, nutrient utilization, immunity index and protease activity in weaner to 2 month-old New Zealand rabbits. *Asian-Aust. J. Anim. Sci.* 2004. Vol 17, No.10:1447-1451.

7. Peer, D.J. and S. Leeson, 1985a. Nutrient content of hydroponically sprouted barley. *Animal Feed Science and Technology*, 13: 191-202.
8. Peer, D.J. and S. Leeson, 1985b. Feeding value of hydroponically sprouted barley for poultry and pigs. *Animal Feed Science and Technology*, 13: 183-190.
9. Ruiz-Feria, C.A., Lukefahr, S.D., and Felker, P. (1998). Evaluation of *Leucaena leucocephala* and cactus (*Opuntia* sp.) as forages for growing rabbits. *Livest. Res. Rural. Dev.* 10:1-11.D
10. Wang, S. C. (1999). The effect of different nutrient levels on growth performance of meat rabbits. *Chinese Journal of Rabbit Farming* 6:20-22.
11. Tang, L. M. (1987). Effects of dietary energy and protein on production performances of growing rabbits. *Chinese Journal of Rabbit Farming* 6:21-23
12. Trubey, C.R., C.L. Rhyckerd, C.H. Noller, D.R.Ford and J.R.George, 1969. Effect of light, culture solution and growth period on growth and chemical composition of hydroponically produced oat seedlings. *Agron. J.*,61: 663-665