



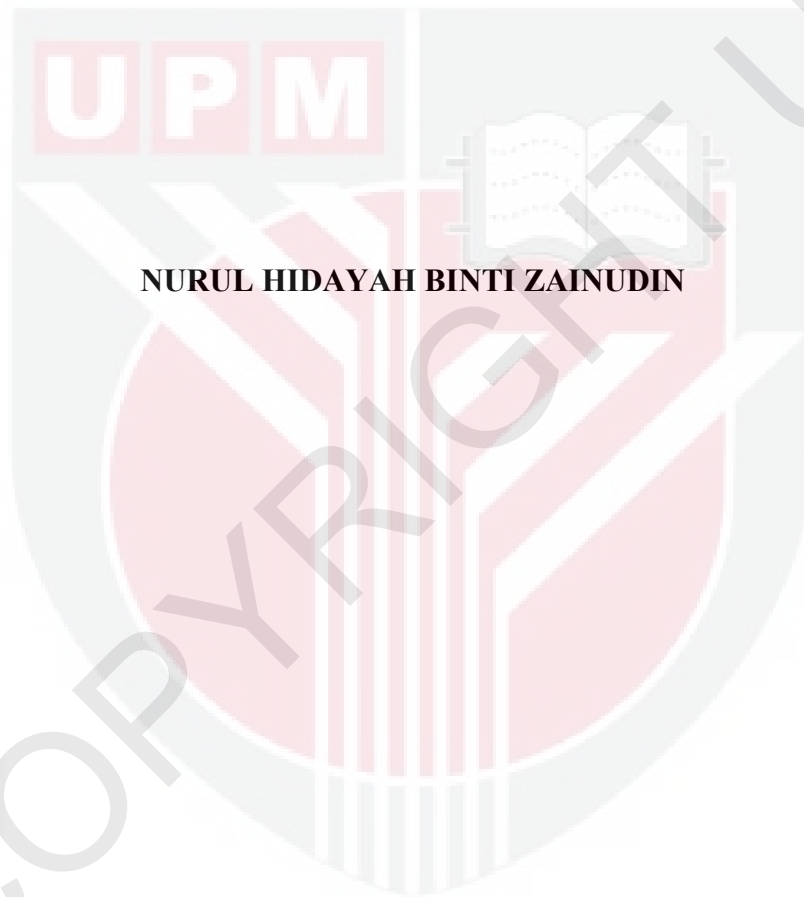
UNIVERSITI PUTRA MALAYSIA

**THE EFFECT OF COMMERCIAL FEED VERSUS KITCHEN WASTE ON
THE PERFORMANCE OF GUINEA FOWL**

NURUL HIDAYAH ZAINUDIN

FP 2017 93

**THE EFFECT OF COMMERCIAL FEED VERSUS KITCHEN WASTE ON THE
PERFORMANCE OF GUINEA FOWL**



NURUL HIDAYAH BINTI ZAINUDIN

FACULTY OF AGRICULTURE

UNIVERSITI PUTRA MALAYSIA

SERDANG SELANGOR

2016/2017

**THE EFFECT OF COMMERCIAL FEED VERSUS KITCHEN WASTE ON THE
PERFORMANCE OF GUINEA FOWL**

BY

NURUL HIDAYAH BINTI ZAINUDIN

174528

A Project Report Submitted To Faculty Of Agriculture,
University Putra Malaysia,

In Fulfillment Of The Requirement Of SHW 4999 (Final Year Project)

For The Award Of The Degree Of
Bachelor Of Agriculture (Animal Science)

DEPARTMENT OF ANIMAL SCIENCE

FACULTY OF AGRICULTURE

UNIVERSITI PUTRA MALAYSIA

2016/2017

CERTIFICATION

This project report entitled “The effect of commercial feed versus kitchen waste on the performance of guinea fowl” is prepared by Nurul Hidayah Binti Zainudin and submitted to the Faculty of Agriculture in fulfillment of the requirement of the course SHW 4999 (Final Year Project) for the award of Bachelor of Agriculture (Animal Science).

Student’s name:

Nurul Hidayah Binti Zainudin

Student’s signature:

Certified by:

.....

Assoc. Prof. Dr. Ismail Bin Idris

Project Supervisor

Department of Animal Science

Faculty Of Agriculture

University Putra Malaysia

Serdang Selangor.

Date:

ACKNOWLEDGEMENT

First and foremost, I would like to thank to ALLAH for giving me strength and perseverance to do my best in completing this study. I am grateful and would like to express my sincere gratitude to my supervisor Associate Prof. Dr. Ismail Bin Idris for his invaluable guidance, continuous support in making this research possible. I really appreciate his guidance from the initial to the final that enables me to develop an understanding of this research thoroughly. Without his advice and assistance it would be a lot tougher to complete.

My sincere thanks also go to all lecturers and staff members of the Department of Animal Science, UPM, who help me in many ways and made my studies journey at UPM pleasant and unforgettable. Many thanks go to animal science members for their excellent cooperation, inspirations and supports during completing this study.

I acknowledge my sincere indebtedness and gratitude to my parents for their support, love, and sacrifices throughout my life. I am very thankful for their patience and understanding that were inevitable to make this work possible.

Lastly, I would like to thank to all people who have contribute to my final year project directly or indirectly. I would like to acknowledge their comment and suggestion which was crucial for the successful completion of this study.

CONTENTS

TITLE	PAGE
CERTIFICATION	ii
ACKNOWLEDGEMENT	iii
TABLES OF CONTENTS	iv
LIST OF TABLE	vi
LIST OF FIGURES	vii
ABSTRACT	viii
ABSTRAK	ix
CHAPTER 1 INTRODUCTION	
1.1 Background on study	1-3
1.2 Research problem	3-4
1.3 Research hypothesis	4
1.4 Objectives	4
CHAPTER 2 LITERATURE REVIEW	
2.1 Guinea Fowl	5
2.2 Nutrition	5-6
2.3 Commercial feed	6
2.4 Kitchen waste	7
2.5 Benefit of owning guinea fowl	7
CHAPTER 3 MATERIALS AND METHODS	
3.1 Experimental location	8
3.2 Experimental materials	8
3.3 Experimental design	8
3.4 Management of keets	9

3.5 Measurement	9
3.6 Statistical analysis	10
3.7 Methodology	10
CHAPTER 4 RESULT	
4.1 Feed Analysis	11-12
4.2 Weekly Body Weight	13
4.3 Weight Gain	15
4.4 Feed Intake	17
4.5 Feed Conversion Ratio	19
CHAPTER 5 DISCUSSION	
5.1 Live Body Weight and Body Weight Gain	21
5.2 Feed Intake and Feed Conversion Ratio	22
5.3 Growth Performance of Guinea Fowl Compared To Broiler Chicken	23
CHAPTER 6 CONCLUSION	24
LIST OF REFERENCE	25-26
APPENDIX	27-30

LIST OF TABLES

TABLE		PAGE
Table 4.1	feed analysis of commercial feed (T1) and kitchen waste (T2)	11
Table 4.2	Comparison body weight of broiler chicken and guinea fowl until 42 days	12
Table 4.3	Average mean of weekly body weight between T1 and T2 (12 weeks)	13
Table 4.4	Average mean of weekly weight gain between T1 and T2 (12 weeks)	15
Table 4.5	The average feed intake for two treatments from week 1 until week 12	17
Table 4.6:	The average feed conversion ratio of two treatments from week 1 until week 12	19

LIST OF FIGURES

FIGURE		PAGE
Figure 4.1	The comparison of the weekly body weight in T1 and T2	14
Figure 4.2	The comparison of the weekly weight gain in T1 and T2	16
Figure 4.3	The comparison of weekly feed intake in T1 and T2.	18
Figure 4.4	The comparison of weekly feed conversion ratio in T1 and T2	20

ABSTRACT

A study was conducted to compare the growth performance of guinea fowl by using two treatments which is commercial feed and kitchen waste. The aim of this research is to evaluate the effect of using kitchen waste as a feed on performance of guinea fowl. The main objective is to determine the effects of different types of feed that is commercial versus kitchen waste on the growth performance of guinea fowl. This research has been done in farm 2, Universiti Putra Malaysia.

A total of thirty guinea fowl used in this study and the guinea fowl were reared for 12 weeks. The Guinea fowl was divided into two groups which are fed by the commercial feed and kitchen waste. The flock behavior of the guinea fowl was monitored to ensure the keets show normal behavior. The behavior is important to observe to know the keets are comfortable or not. The parameter used in this study were weekly body weight, weekly body weight gain, weekly feed intake, and weekly feed conversion ratio. The body weight was taken each week to get results.

The feed given to the keets were formulated from the kitchen waste and also the commercial feed. For the kitchen waste, the food waste has been collected from the restaurant and the unwanted substance was removed. Then, the kitchen waste was washed or cleaned with water to remove the dirt and oil. It is to make sure the quality of the kitchen waste to be given to the keets. Besides that, the kitchen waste were dried under the sun and then put into the oven to make sure it dry properly. Finally, the dried kitchen waste then was grind into smaller particles and given directly to the keets.

The mean body weight and body weight gain for treatment 1 which is commercial feed shows slightly higher compared to the treatment 2 which is kitchen waste but not significantly different. For the feed intake and feed conversion ratio also showed no significant different in most week but slightly significant different in few week because the factors of adaptation period, food waste, and weather.

In conclusion, the commercial feed showed a better performance result compared to the kitchen waste. But, the kitchen waste still can be used a feed source in order to cut the feed cost in poultry industry.

KEYWORDS: Guinea fowl, kitchen waste, commercial feed, body weight, weekly body weight gain, weekly feed intake, weekly feed conversion ratio.

ABSTRAK

Kajian ini dijalankan adalah untuk membezakan prestasi pemsaraan ayam mutiara dengan menggunakan dua jenis makanan iaitu makanan komersial dan sisa makanan. Tujuan utama kajian ini dijalankan adalah untuk mengkaji kesan penggunaan sisa makanan kepada prestasi pemsaraan ayam mutiara. Objektif utama kajian ini dijalkan pula adalah untuk menentukan kesan kedua-dua jenis makanan yang digunakan iaitu makanan komersial sisa makanan ke atas ayam mutiara. Kajian ini telah dijalankan di ladang 2, Universiti Putra Malaysia.

Sebanyak tiga puluh ekor ayam mutiara telah digunakan dalam kajian ini dan telah dipelihara selama 12 minggu. Ayam mutiara tersebut telah dibahagikan kepada dua kumpulan iaitu satu kumpulan sebanyak lima belas ekor telah di beri makanan komersial dan satu kumpulan lagi diberi sisa makanan. Tingkah laku ayam mutiara tersebut akan di pantau untuk memastikan mereka menunjukkan tingkah laku yang normal. Tingkah laku mereka amat penting untuk memastikan mereka berada dalam keadaan yang selesa atau tidak. Parameter yang ingin dikaji dalam kajian ini ialah berat badan mingguan, kenaikan berat badan mingguan, jumlah pengambilan makanan mingguan, dan kadar pertukaran makanan. Berat badan ayam mutira akan diambil setiap minggu untuk mendapatkn keputusan.

Jenis makanan yang diberikan kepada ayam mutiara ialah sisa makanan dan juga makanan komersial. Untuk sisa makanan, sisa telah diambil di restoran yang terpilih dan kemudian bahan- bahan yang tidak diperlukan akan dasingkan. Kemudian, sisa makanan tersebut telah dibasuh dan dibersihkan dengan menggunakan air untuk menghilangkan kotoran dan minyak. Ia juga bertujuan untuk memastikan kualiti sisa makanan yang

diberikan kepada ayam mutiara. Selain itu, sisa makanan tersebut telah dikeringkn terlebih dahulu di bawah cahaya matahari dan kemudian dimasukkan ke dalam oven untuk memastikan is kering dengan sempurna. Akhir sekali, sisa makanan yang telah kering di proses menjadi kecil dan diberikan kepada ayam mutiara.

Keputusan menunjukkan berat badan mingguan dan kenaikan berat badan mingguan bagi kumpulan 1 iaitu makanan komersial adalah lebih tinggi berbanding sisa makanan tetapi perbezaan tersebut tidaklah begitu ketara. Bagi pengambilan makanan mingguan dan kadar pertukaran makanan mingguan juga menunjukkan perbezaan yang tidak terlalu ketara bagi kebanyakan minggu tetapi terdapat perbezaan yang agak ketara bagi beberapa minggu disebabkan oleh factor masa untuk meyesuaikan diri dengan makanan baru, pembaziran makanan, dan juga cuaca.

Kesimpulan, makanan komersial menunjukkan keputusan yang agak baik berbanding sisa makanan, tetapi perbezaan tidaklah terlalu ketara. Oleh itu, sisa makanan tetap boleh digunakan sebagai sumber makanan sebagai langkah untuk mengurangkan kos makanan di dalam industri ternakan ayam.

KATA KUNCI : Ayam mutiara, sisa makanan, makanan komersial, berat badan mingguan, kenaikan berat badan mingguan, pengambilan makanan mingguan, kadar perukaran makanan mingguan.

CHAPTER 1

INTRODUCTION

1.1 Background on Study

The term “guinea” fowl is the common name of the seven species of gallinaceous birds of the family Numididae, which is indigenous to Africa. It is well adapted to the realities of life on African continent. The strains descended from the helmeted guinea fowl, *Numida meleagris*. In many parts of the world, guinea fowls are raised mainly for their gamey flesh and eggs. Guinea fowl has a taste similar to other game birds and has many nutritional qualities that make it a worthwhile addition to the diet. The meat of a young guinea is tender and of especially fine flavor, resembling that of wild game. The meat is lean and rich in essential fatty acids. Guinea fowls have a high yield of 80% after processing with excellent meat to bone ratio. Other people raise them for their unique ornamental value. Of the three domestic varieties (the pearl, the white and the lavender), the purplish coloured pearl is the most common. The rearing of guinea fowl is a potential alternate poultry system. There are several breeds of guinea fowl, but the most common are: a. *Numida meleagris*, the common or red-wattles guinea fowl, which is a domestic strain of guinea that has acclimatized throughout the world. b. *Numida ptilorhyncha*, which carries a collarets of feathers on the upper part of the neck. The common guinea is a bird that weighs about 2 kg when mature. Selection of breeders for egg and meat production traits, as practiced with chickens, would likely result in considerable improvement. Guinea fowl can begin to lays as early as 16-17 weeks. In the wild, guinea fowl eat a variety of foods but most important are weed seeds, and waste grain which fall to the ground after harvesting of crops. Some common guinea fowl diet includes fruits, berries, seeds, grass, spiders,

insects, worms, molluscs and frogs. Since one of the main sources feed of wild guineas is insects, guineas have gained popularity for use in reducing insect populations in gardens and around the home, especially because unlike chickens, they do not scratch the dirt much and do very little damage to the garden. Suitably formulated diets (starter, grower and finisher) for guinea fowl are available from commercial feed millers. The starter diet should be fed to keets until 4 weeks of age, followed by grower diet 1 to 10 weeks of age, then the second grower diet up to the time that the birds are marketed or until they are selected for breeding. Breeding birds are switched to the breeding diet approximately 2 weeks before eggs are expected. These diets will be supplemented by range feed. The starter diet should contain 24% protein and should be fed for the first 4 weeks. Grower ration of 20% protein should then be fed until 8 weeks of age and a finisher diet containing 16% protein fed until market age (14-16 weeks). At this age they should have reached average live weight of 2 kg. The nutritional characteristics of guinea fowl feed is close to those for chicken, but percentage of lysine and methionine recommended for growth and laying feeds are slightly higher for guinea fowl. In intensive rearing conditions, feed conversion ratios (FCR) are between 3.1 and 3.5 for slaughter at 12 to 13 weeks and mean live weight of 1.2 to 1.3 kg (Say, 1987). Guinea fowls may be sold alive by the farmers to the poultry processors and or prospective farmers. The birds are dressed if sold to the hotels and restaurants. The birds are usually dressed and scalded in the same way as chickens, except in very special cases where they are marketed like game birds with the feathers left on as is the case in the United States. At this age their live weight is 1.25 to 1.47 kg with dressed weight of 1.02 and 1.25 kg. It, however, appears that the most appropriate market age is 12 weeks of age. Guinea fowl meat is drier and leaner than chicken meat and has a gamey flavour. It is largely

a specialty meat which needs to be marketed accordingly. Producers need to be certain of the demand before embarking on large-scale production. There is also some demand for live birds for hobby farmers and enthusiasts.

1.2 Research Problem

There are many researches on the effect of diets especially commercial feeds on chicken, so we take this advantage on doing this experiment. Most of people always focus on the production of the chicken instead of other kind of poultry especially guinea fowl. The guinea fowl has a lot of nutritional value and also benefit just like other species of poultry, but people do not know the information about this kind of poultry species. As we know the market price of the guinea fowl is higher compared to chicken, so the farmer can get the advantage to increase their income. On the other hand, this experiment will be done to reduce the cost of feed on the rearing of guinea fowl. It is because the period on rearing the guinea fowl is longer compare to the chicken, so the feed cost will also increase. From this experiment, the comparison between the uses of commercial feed versus kitchen waste was investigated in order to cut the cost of feed and show the pro and cons on the feed use. The uses of kitchen waste that used on the diet help to lower the cost of feed without reducing the nutritional value that can affect the performance of the guinea fowl.

1.3 Research Hypothesis

The uses of commercial feed versus kitchen waste help in lower the feed cost and affect the performance of guinea fowl.

1.4 Objectives

The general objectives of this study are to investigate the effect of commercial feed versus kitchen waste on the performance of guinea fowl.

Specific objective:

The study aimed to determine the effects of different types of feed that is commercial versus kitchen waste on the body weight, weekly body weight gain, weekly feed intake, and weekly feed conversion ratio of the guinea fowl.

REFERENCES

- Al- Ruqaie (2007). Performance, Nutrients, Utilization and Carcass Characteristic and Economic Impact of Broiler Chicken Fed Extruded. *Journal of Animal and Veterinary Advances* (2011), 10(16): 2062-2066
- Belshaw, R. H., (1985). Guinea fowl of the world”world of ornithology”. Minirod Book Services, Hampshire,England.
- Bonds, H. (1997). Alternative Farming: A “United Nations” of alternatives farming on the Mornington Peninsula: www.independentnewsgroup.com.au/archive/helmi/, pp 1 4. Date accessed: 10 April 2016.
- Bogdanov, I.A. (1997). Seasonal effects on free- range egg production. *World Poultry-Misset* 13: 47-49.
- Davis, S.E., Curtis, R.D. and Carmer, S.G (1993). Multiple concurrent stressors in birds. Effects on weight gain, feed intake and behavior. *Poultry Science* 68: 501-509.
- Dieng, A., Gue’ye, E.F., Mahoungou-Mouelle, N.M. and Buldgen, A. 1999. Effect of diet and poultry species on feed intake and digestibility of nutrients in Senegal. *Livestock Research for Rural Development* 10 (3): 5-9.
- Embury, I. (2001). Raising guinea fowl. *Agfact*. A5.0.8. New South Wales Agriculture Publications, New South Wales, USA, pp 4.
- Esonu, B.O., (2000). *Animal Nutrition and Feeding: a functional approach*. Published by Rukzeal and Ruksons Associates Memory Press, Owerri, Imo.
- Freeman, C.P. (1984). The digestion, Absorption and Transport of Fats Non-Ruminant In: J. Wiseman (Editor), *Fats in Animal Nutrition*. Butterworths, London.

- Kusina, J.F. and Kusina, N.T. 1999. Feasibility study of agricultural and household activities as they relate to livestock production in Guruve District of Mashonaland Province with emphasis on poultry. University of Zimbabwe, Zimbabwe, pp 93.
- Mandal, A.B., Pathak, N.N. and Singh, H. (1999). Energy and protein requirements of guinea keets (*Numidia meleagris*) as meat birds in a hot Climate. *Journal of the Science of Food and Agriculture* 79: 523-531.
- Microlivestock, (1991). Little known small animals with promising economic future. Board on Science and Technology for International Development. Washington, DC: National Academy Press, Washington, pp 115-125.
- Nwagu, B.I. and Alawa, C.B.I. 1995. Guinea fowl production in Nigeria. *World Poultry Science Journal* 51: 260-270.
- Oakland Zoo, 2001. Animals A-Z. Helmeted guinea fowl. Available: www.oaklandzoo.org/atoz/azguinea.html), pp 1. Date accessed: 10 september 2016.
- Robinson, R. 2000. Regulatory Impact Analysis. Canadian Food Inspection Agency. Ontario. Canada, pp 3.
- Somes, R.G. 1996. Guinea fowl plumage color inheritance, with particular attention on the dun color. *The Journal of Heredity* 87 (2): 138-142.