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EFFECT OF CASSAVA LEAF MEAL (CLM) SUPPLEMENTATION ON GROWTH PERFORMANCE OF BROILER CHICKENS

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By

Nur Laila binti Ab Aziz

A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia, in fulfilment of the requirements of SHW 4999 (Final Year Project) for the award of the degree of Bachelor of Agriculture (Animal Science)

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CERTIFICATION FORM

This project report entitled Effect of Cassava Leaf Meal (CLM) Supplementation on Growth Performance of Broiler Chickens is prepared by Nur Laila binti Ab Aziz and submitted to the Faculty of Agriculture in fulfilment of the requirement of SHW 4999 (Final Year Project) for the award of the degree of Bachelor of Agriculture (Animal Science).

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FCR- Feed Conversion Ratio

CLM- Cassava Leaf Meal

ND- Newcastle Disease

IBD- Infectious Bronchitis Disease

DMRT- Duncan Multiple Range Test

g- Gram

ml -Millilitre

UPM- Universiti Putra Malaysia

EFFECT OF CASSAVA LEAF MEAL (CLM) SUPPLEMENTATION ON GROWTH PERFORMANCE OF BROILER CHICKENS

By

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SUPERVISOR: ASSOC. PROF. DR. ISMAIL BIN IDRIS

ABSTRACT

Cassava (*Manihot esculenta)* is a perennial woody shrub in the *Euphobiaceace* family, native to South Africa but now grown in tropical and subtropical areas as a source of food to people and also livestock. The cassava may grow until 2.75 meters tall, with leaves divided into 3-7 lobes. The cassava often grown as annual and propagated from stem cuttings after the tubers have been harvested. Fresh leaves contain hydrogen cyanide which may be toxic, but may be treated by soaking, fermentation or sun dried. The cassava leaves must be treated to reduce

hydrogen cyanide, and they contains 20-30% protein which is the major source in feeding of animals. The treatment used in this experiment was by using sun drying and oven drying to reduce the hydrogen cyanide contents in cassava leaf. The cassava leaf was sun dried for about 24 hours and put in the oven for 1-3 days. The main objective of this project is to observe the effect of adding cassava leaf meal (CLM) to broiler diets on their growth performance. In this experimentation, feeding trials were conducted using three treatments to determine the effect of CLM on the broiler growth performance. The treatments are Treatment 1 (control), Treatment 2 (3 % of CLM added to the feed), and Treatment 3 (6 % of CLM added to the feed). The CLM added to the feed in each treatment starting from 22 days until 42 days. The feed intake and body weight were recorded weekly. The feed conversion ratio (FCR) recorded every week for each treatment. There is significant ($P<0.05$) difference of FCR for each treatment. For nutritional values, the feed sample from each treatment collected to conduct proximate analysis of each sample. The proximate analysis was observed the dry matter content, crude protein, and crude fat and crude fibre. From this experiment, Treatment 2 which is added 3 % of CLM in feed were effect on the growth performance of the chicken and have better FCR than Treatment 1 which is control, but for Treatment 3 not so good for broiler performance. In conclusion, the supplementation of cassava leaf meal were effects the growth performance of the broiler chickens.

KESAN PENAMBAHAN DAUN UBI KAYU (CLM) DI DALAM MAKANAN PADA PRESTASI PERTUMBUHAN AYAM PEDAGING

OLEH

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PENYELIA: PROF. MADYA DR. ISMAIL BIN IDRIS

ABSTRAK

Ubi kayu (Manihot esculenta) ialah pokok berkayu yang renek dalam keluarga euphobiaceace, berasal dari Afrika Selatan tetapi sekarang ditanam di kawasan tropika dan subtropika sebagai sumber makanan kepada manusia yg juga haiwan ternakan. Pokok ubi kayu boleh tumbuh sehingga 2.75 meter tinggi dengan daun dibahagi kepada 3-7 bahagian. Pokok ubi kayu biasanya ditanam tahunan dan ditanam melalui potongan batang selepas ubinya dituai. Daun ubi kayu yang segar mengandungi “hydrogen cyanide” yang mungkin beracun pada haiwan ternakan, tetapi boleh dirawat dengan proses rendaman, fermentasi atau pengeringan menggunakan matahari yg terik. Daun ubi kayu tersebut mestilah dirawat untuk megurangkan

“hydrogen cyanide”, dan mengandungi 20-30% protein iaitu sumber utama dalam pemakanan haiwan. Rawatan yang digunakan di dalam kajian ini adalah pengeringan menggunakan matahari dan pengeringan menggunakan ketuhar untuk mengurangkan kandungan “hydrogen cyanide” dalam daun ubi kayu. Daun tersebut telah dikeringkan dengan matahari lebih kurang 24 jam dan diletakkan di dalam ketuhar selama 1-3 hari. Objektif kajian ini adalah untuk mengkaji kesan penambahan daun ubi kayu dalam makanan ayam pedaging untuk melihat prestasi pertumbuhan ayam tersebut. Dalam kajian ini, percubaan pemakanan dikendalikan dengan menggunakan tiga rawatan untuk mengetahui kesan daun ubi kayu terhadap prestasi pertumbuhan ayam pedaging. Rawatan-rawatan tersebut ialah Rawatan 1(kawalan), Rawatan 2 (3% daun ubi kayu ditambah dalam makanan), dan Rawatan 3 (6% daun ubi kayu ditambah dalam makanan). Penambahan daun ubi kayu dalam makanan setiap rawatan bermula daripada 22 hari sehingga 42 hari. Pengambilan makanan dan berat badan direkod setiap minggu. Nisbah pertukaran makanan (FCR) juga direkod setiap minggu untuk setiap rawatan. Terdapat perbezaan ($P<0.05$) nisbah pertukaran makanan (FCR) diantara setaip rawatan. Bagi nilai pemakanan, sampel makanan diambil dari setiap rawatan untuk mengendalikan analisa proksimat. Analisa proksimat yang dikaji adalah kandungan bahan kering, protein, lemak, dan serat. Daripada kajian ini, Rawatan 2 yang ditambah 3% daun ubi kayu dalam makanan boleh memberi kesan kepada prestasi pertumbuhan ayam pedaging dan mempunyai nilai FCR yang baik berbanding Rawatan 1 iaitu kawalan, tetapi prestasi pertumbuhan ayam pedaging dalam Rawatan 3 menunjukkan tidak bagus. Sebagai konklusi, penambahan daun ubi kayu boleh memberi kesan kepada prestasi pertumbuhan ayam pedaging.

CHAPTER 1

INTRODUCTION

The feed supply is a major constraint in animal production due to high cost of conventional feedstuffs and the competition between man and animal for the same food. In an effort to reduce the cost, we have to use non-conventional feed that are low in cost of production. As we know, Malaysia have many agricultural by-product such as oil palm waste, pineapple waste, corn stover and cassava leaf.

One of the major sources of starch in Malaysia is cassava. Cassava leaf contains high dry matter content and crude fiber. Cassava leaf also have high of protein in young leaves, so it's suitable for monogastric animals. Within the limits of the feed offered, in order to maintain itself the non-ruminant animal must be obtain all essential nutrients in the available form. Thus the formulation must be complete and must account for both the animal's requirements and the characteristics of the feed.

Cassava (*Manihot esculenta crantz*) is a tropical root or tuber crop under the family *Euphorbiaceace*, was grown on mineral soil, especially in Johore. The cassava grown recorded about 2, 396 hectare in Malaysia in 2007 and about 38, 711 metric tonnes valued at RM 37.5 million. Cassava has a high production potential and can adapt to different types of soils. It is an energy source which could take the place of maize or other cereals used for feeding poultry. Cassava leaf contains high dry matter content and crude fiber. Cassava leaf also have high of protein in young leaves, so it's suitable for monogastric animals.

Cropping systems for cassava vary widely from one part of Asia to another. In commercialized production, sole cropping predominates, especially in Thailand, Malaysia and Sumatra. Where cassava is intercropped, the intercrop combinations usually include groundnut, rice, maize and vegetables. Cassava is also grown under plantations of coconut or rubber in parts of Kerala, Philippines, Thailand, Java and Malaysia. In such situations, yields are usually relatively low.

In Malaysia, rainfall is heavy averaging 2000-3000 mm per year. The rainy season commences in October, but planting and harvesting occur all year round. Planting is done on tractor-made ridges. The stem cuttings are usually laid horizontally and entirely buried, at a spacing of 1 x 1 m, but vertical planting is done on the peat soils. Sole cropping is the common practice, but cassava is sometimes intercropped with groundnut or maize. Cassava planting materials also obtained from the farmers' own field. Stems destined for planting are usually cut

into long lengths, tied in bundles and stored in shady conditions. Just before planting, they are cut to the normal planting lengths of 15-20 cm.

Cassava has not always been properly used because of highly toxic cyanide (HCN). Cyanide is responsible for many of the poor results obtained when using cassava to monogastric animals although only little accurate information on the effective incidence of the HCN rate on the performance of animals is available (*Gomez 1985*). The cassava leaf can be treated by soaking, fermentation and sun dried to reduce the HCN content.

The main limiting factor to the use of cassava leaves as animal feed is the presence of cyanogenic glucosides, which give rise to hydrocyanic acid (HCN) when the plant tissue is broken down by processing or during ingestion by animals. The cyanide levels in leaves are influenced by genetic, physiological, edaphic and climatic differences with the stage of maturity being perhaps the major source of variation (Ravindran 1995).

1.1 Objectives

The main objective of this project is to determine the effect of supplementing CLM to the diets on feed intake and growth performance of broiler chickens.

The general objectives are to be observed the Feed Conversion Ratio (FCR) of broilers fed with different levels of cassava leaf and to improve the used on non-conventional feedstuff in the livestock industry.

CHAPTER 7

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