



UNIVERSITI PUTRA MALAYSIA

***COMPARATIVE STUDY ON THE GROWTH PERFORMANCE
BETWEEN INDIGENOUS SWAMP AND MURRAH CROSSBRED
BUFFALOES***

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**COMPARATIVE STUDY ON THE GROWTH PERFORMANCE BETWEEN
INDIGENOUS SWAMP AND MURRAH CROSSBRED BUFFALOES**

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CERTIFICATION

It is hereby certified that I have read this project paper entitled “Comparative Study on The Growth Performance Between Indigenous Swamp and Murrah Crossbred Buffaloes”, by Jaizurah Vera Tingkas and in our opinion it is satisfactory in term of scope, quality, and presentation as partial fulfilment of the requirement for the course VPD 4999- Final Year Project.

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DEDICATIONS

This final year project is dedicated to my supervisor, Professor Dr Mohd Zamri Saad, my co-supervisors, Professor Dr Md Zuki Abu Bakar and Dr Hasliza Abu Hassim, statistical lecturer, Professor Mohamed Ariff Omar, my academician advisor, Dr Hafandi Ahmad, assistant director of Department of Veterinary Services and Animal Industry, Sabah, Dr Punimin Abdullah, assistant veterinary officer of Buffalo Breeding and Research Centre, Telupid, Sabah, Mr. Jonny Engkias, recordkeeper of Buffalo Breeding and Research Centre, Telupid, Sabah, Mrs. Irene Disuah and; my family and friends.

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LIST OF ABBREVIATIONS

kg : kilogram

kg/day : kilogram per day

% : Percentage

ADG : Average Daily Gain



ABSTRAK

Abstrak daripada kertas projek yang dikemukakan kepada Fakulti Perubatan Veterinar memenuhi sebahagian daripada keperluan kursus VPD 4999 - Projek Ilmiah Tahun Akhir.

**KAJIAN PERBANDINGAN PRESTASI TUMBESARAN DI ANTARA
KERBAU SAWAH DAN KERBAU KACUKAN MURRAH-SAWAH****Oleh****Jaizurah Vera Tingkas****2017****Penyelia : Prof. Dr. Mohd. Zamri Saad****Penyelia Bersama : Prof. Dr. Md. Zuki Abu Bakar****: Dr. Hasliza Abu Hassim**

Kebanyakan negara di Asia Tenggara telah melaporkan pengurangan jumlah populasi kerbau setiap tahun kerana mempunyai kawasan ragutan tanah yang terhad. Walau bagaimanapun, permintaan daging lembu dan kerbau di pasaran pada masa kini telah meningkat hasil daripada peningkatan jumlah populasi manusia. Sehubungan itu, produktiviti kerbau telah ditingkatkan melalui penambahbaikan genetik dengan tujuan untuk menghasilkan kerbau kacukan (sawah x sungai) yang

berupaya menghasilkan susu dan daging sekaligus. Kajian retrospektif ini telah dilakukan untuk membandingkan prestasi pertumbuhan di antara kerbau sawah dan kerbau kacukan Murrah, serta menentukan kebaikan menternak kerbau kacukan Murrah berbanding kerbau sawah dari segi prestasi pertumbuhan. Rekod untuk kedua-dua kerbau sawah dan kerbau kacukan Murrah yang lahir di antara tahun 2014 dan 2016 telah diperolehi dari Pusat Pembiakan dan Penyelidikan Kerbau, Telupid, Sabah, Malaysia. Pengenalai haiwan dan baka, berat lahir, berat cerai susu dan berat badan pada setiap tiga bulan telah diperolehi dan dianalisis dengan menggunakan ujian T sampel tidak bersandar. Semua anak kerbau telah diceraikan susu pada umur 3 bulan dan kemudiannya, dilepaskan ke kawasan ragutan yang berlainan dan jauh dari induknya. Setiap anak cerai susu telah diberikan makanan tambahan pada kadar 1 kg/ekor/hari. Purata berat lahir anak kerbau kacukan Murrah adalah 36.63 ± 5.18 kg lebih tinggi secara signifikan ($P < 0.05$) berbanding purata berat kelahiran kerbau sawah 34.69 ± 5.28 kg. Purata pertambahan berat badan harian sebelum cerai susu untuk kerbau sawah dan kerbau kacukan adalah masing-masing 0.73 kg/hari and 0.98 kg/hari sementara purata pertambahan berat badan selepas cerai susu masing-masing adalah 0.39 kg/hari dan 0.44 kg/hari. Oleh itu, berat badan pada setiap 3 bulan untuk kerbau kacukan Murrah adalah lebih tinggi ($p < 0.05$) berbanding kerbau sawah dari lahir hingga berusia 24 bulan. Kerbau kacukan Murrah dan kerbau sawah mencapai berat badan untuk pasaran sebanyak 250 kg masing-masing pada usia 15 dan 18 bulan, manakala berat badan untuk pembiakan sebanyak 385 kg masing-masing dicapai pada usia 26 dan 30 bulan. Secara kesimpulannya, kerbau kacukan Murrah mempunyai kadar pertumbuhan berat badan yang lebih cepat dan mencapai sasaran berat badan untuk tujuan pasaran dan pembiakan pada usia lebih awal

berbanding kerbau sawah. Oleh itu, penternak boleh mengurangkan kos penternakan dan memperolehi lebih banyak keuntungan dengan menjual kerbau campuran Murrah pada usia lebih awal sama ada untuk disembelih atau tujuan penternakan.

Kata kunci: sawah, kerbau kacukan Murrah, berat badan, berat badan harian



ABSTRACT

Abstract from project paper for submission to Faculty of Veterinary Medicine in fulfilment of the requirements for the subject VPD 4999 – Final Year Project.

COMPARATIVE STUDY ON THE GROWTH PERFORMANCE BETWEEN INDIGENOUS SWAMP AND MURRAH CROSSBRED BUFFALOES

by

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2017

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: Dr. Hasliza Abu Hassim

The Southeast Asia has been reporting annual reduction in the buffalo population with limited land availability for rearing purposes but the demand for beef has increased as a result of increasing human population. Therefore, enhancement in buffalo productivity was done through genetic improvement with the intention of producing dual-purpose crossbred buffaloes (Swamp x River) both for milk and beef productions. This retrospective study was conducted to compare the growth performance and to determine the benefits of the rearing crossbred compared to

swamp buffaloes. The records for both swamp and crossbred buffaloes that were born between 2014 and 2016 were acquired from the Buffalo Breeding and Research Centre, Telupid, Sabah, Malaysia. The animal identification and breed, birth weight, weaning weight and the body weights at three monthly intervals were recorded and analyzed using independent T-test. All calves were weaned at 3 months old and were released into paddocks to graze. Supplemented feed was provided at the rate of 1 kg/animal/day. The average birth weight of crossbred buffaloes was 36.63 ± 5.18 kg, significantly ($p < 0.05$) higher than the average 34.69 ± 5.28 kg birth weight of swamp buffaloes. The average pre-weaning daily weight gain for swamp and crossbred buffaloes was 0.73 kg/day and 0.98 kg/day while the average post-weaning daily weight gain was 0.39 kg/day and 0.44 kg/day, respectively. Therefore, the 3-monthly body weights of Murrah crossbred buffaloes were significantly higher ($p < 0.05$) than that of swamp buffaloes until the end of the study at 24 months old. The Murrah crossbred and swamp buffaloes achieved the targeted market weight of 250 kg at 15 and 18 months old, respectively while the targeted breeding weight of 385 kg at 26 and 30 months old, respectively. In conclusion, the Murrah crossbred buffaloes showed faster growth rate and reached targeted market and breeding weights at earlier age than that of swamp buffaloes. Thus, farmers can reduce the rearing cost and earn more profit by selling crossbred buffaloes at an earlier age either for slaughter or rearing purposes.

Keywords: Swamp, Murrah crossbred, body weight, average daily gain

1.0 INTRODUCTION

Malaysia has two types of Water buffaloes, also known as Asian buffaloes, and further classified as indigenous Swamp buffalo (Kerbau Sawah) and the imported River buffaloes (Johari, 2005). Buffalo serves many purposes such as meat production, milk production and draught power mainly for paddy land preparation and pulling of carts for oil palm bunches within the oil palm plantations. Generally, swamp buffaloes are for meat production while Murrah buffaloes are for milk production. In Sabah, buffaloes are primarily used as a 'sogit' (penalty) to the those who commit a breach of native customary laws [Native Courts (Native Customary Laws) Rules, 1995].

In 2014, the total number of buffalo population in Malaysia was 122,943 heads in which 51.4% of the total buffalo populations in Malaysia were found in Peninsular Malaysia, 43% in Sabah and 5.6% in Sarawak (MOA, 2015). Therefore, Sabah has the highest population of buffalo among states in Malaysia (43%), followed by Perak and Pahang each with 11.2% of the buffalo population in Malaysia (MOA, 2015). Nevertheless, buffalo population is decreasing yearly at an alarming rate. This is mainly due to the decreased use of buffaloes for draught power in paddy land preparation following extensive farm mechanisation. Also, urbanisation and the use of areas for cultivation lead to a decreased in grazing land, thus subsequently reduced the number of buffalo population.

Generally, there is an increased demand for beef and milk, including buffaloes among the fast-growing population of Asia with the decreased in the availability of land for rearing livestock (Cruz, 2012). The meat self-sufficiency level in Malaysia is less than 30% for over 10 years from 2006 to 2016 thus, Malaysia is highly dependent on the imported meat. Therefore, the Department of Veterinary Services Sabah is attempting to revive the buffalo rearing industry through genetic improvements. This is achieved via crossbreeding of the local swamp with Murrah buffaloes with the hope that the resulted crossbred animals are bigger in size with better milk production than the native swamp buffaloes. This is following a conclusion of a study that highlighted that crossbred buffaloes grow faster, mature earlier and produce more milk compared to local buffaloes (Salas et al., 1999). Later, Timsina et al. (2015) reported similar findings that milk yield from crossbred buffaloes is significantly higher than the local buffaloes. Furthermore, they have longer lactation period, hence farmers harvest more milk and generate more income (Tismina et al., 2015). Crossbred buffaloes also matured earlier and have shorter calving interval, hence produce more calves in their lifetime (Tismina et al., 2015).

1.1 Objectives

This study was conducted:

1. To compare the growth performance between the indigenous swamp and the crossbred buffaloes
2. To determine the benefit of rearing crossbred compared to swamp buffaloes

1.2 Hypotheses

Null hypothesis, H_0 : There is no difference in the growth performance and the benefit of rearing crossbred compare to swamp buffaloes

Alternate hypothesis, H_a : There is difference in the growth performance and the benefit of rearing crossbred compare to swamp buffaloes

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