

Morphometrics and carcass production of Kalimantan swamp buffalo under extensive production system (*kalang*)

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Abstract

Swamp buffaloes in Kalimantan Island are commonly kept in extensive production systems in wetland areas (*Kalang*). The changes in the wetland environment and social condition of wetland communities affect the ecosystem and the buffalo. This research aimed to obtain the body measurements of swamp buffalo in Kalimantan as indicators of meat producer and to compare the current with the preceding data. Surveys were conducted at slaughter houses to record heart girth (HG), wither height (WH), body length (BL), live weight (LW) and carcass percentage (CP). Results showed the average values of body measurements for males and females were as follows: HG 202 and 174 cm; WH 125 and 124 cm; BL 131 and 117 cm respectively. The LW for males and females were 380 and 312 kg; whereas their CP were 46 and 44% respectively. Compared to previous studies, the current body measurements are considerably similar; however, their LW and CP were lower. These results indicated that there was a decrease in the productivity of swamp buffaloes in lowland Kalimantan. Hence, an improvement of the existing production system is required that might involve conservation, maintenance and improvement of swamp environment, and introducing rotational mating system, feed supplement, and health care.

Keywords: *body measurement, buffalo meat, sustainable production system, swamp ecology*

Introduction

Swamp type buffalo (*Bubalus bubalis carabanensis*) constitutes 25% of the world's buffalo population and especially favored in South east Asia. Their main purpose is for agricultural labor, meat source and also kept as additional income for farmers (Pineda et al 2021). Kalimantan buffalo is a type of swamp buffalo which are kept in extensive or semi-extensive manners in wetland and also mountainous areas of South, East and Central Kalimantan, Indonesia. Referring to their habitat, 64% of these buffaloes were kept extensively in swamp areas while local communities regard them as *kalang* (Sumantri 2021). *Kalang* rearing system (a wooden structure in the middle of the swamp) is regarded as local wisdom of native people whom live in lowland Kalimantan in utilizing their environment for their livelihood (Rochgiyanti and Susanto 2017).

Other than as meat producer, Kalimantan buffalo has important roles in social aspect related to the human community and also biological importance related to the ecosystem (Rakhman 2009). Regardless of these facts, Indonesian buffalo population kept on decreasing within the decade. In South Kalimantan the buffalo population declines 63%; from 44,603 heads in 2009 to only 16,556 in 2019 (DGLS 2021). This decline is suspected due to diseases, reproductive issues and also due to the decrease in feed resources and their grazing areas (Hilmawan et al 2020). This remarkable decrease in buffalo population size is not only happening in Indonesia; but has become a common occurrence in South-East Asian region (Deb et al 2016).

Despite the phenomenon occurred in buffalo population, however, the demand for buffalo meat is increasing. This increase can be seen by the value of the Indian buffalo meat (IBM) importation; from 58 thousand tons in 2016 to 94 thousand tons in 2019 with main consumers were restaurants, catering services and meatball producers (Chang et al 2020). In South Kalimantan, IBM importation had decreased inter-island cattle trading, local beef production, and beef demand in wet market (Sumantri and Chang 2021). Regardless, buffalo meat has shown a great market potential; hence, attempts to improve Indonesian cattle productivity is needed. To date, the contribution of buffalo to the total national red meat production only account for around 3.7% (DGLS 2021).

Extensive buffalo rearing system is commonly occurred when there is enough land for pasture; such is in coastal or hilly areas; in marsh land, however, the rearing systems are more towards semi-intensive due to the limited feed resources (Momin et al 2016). Buffaloes are commonly kept in harsh environment and only given low quality feed such as natural plants in the pastures or agricultural by products in semi-intensive rearing system (Minervino et al 2020). Even though buffalo has more efficient ruminal fermentation system and nitrogen utilization compared to cattle (Wanapat et al 2000), the sub-optimum environmental conditions in extensive rearing systems had costed low productivity.

This research was conducted to observe the body measurements and carcass production of Kalimantan buffalo in wetland extensive rearing system. The results shall describe the productivity of Kalimantan buffalo in *kalang* rearing system (Photos 1,2,3). It will serve as a stepping ground for the improvements of production systems as an attempt to increase the productivity of Kalimantan buffalo.