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Effects of Rearing System, Breed, and Weather on the Blood Biochemical Parameters in Stocker Cattle (1)

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Abstract

This study analyzed the effects of rearing system, breed, and weather conditions on the blood biochemical values of 22 stocker cattle—purebred Taiwanese yellow cattle (TY) and crossbreeds with *Bos taurus* lineage (YX). Data were obtained from routine health assessments conducted between 2008 and 2009. Principal component analysis indicated that substantial variation (57.2%) was unex-plained by the first two components, implying multiple sources of variability. Nevertheless, rearing system was identified as the primary variable from the three factors affecting blood biochemical val-ues. Analysis of variance revealed significant ($p < 0.05$) seasonal differences in the 12 blood biochem-ical parameters, with glucose (Glu), calcium (Ca), lactate dehydrogenase (LDH), and alkaline phos-phatase levels (ALP) being sensitive to temperature and humidity. Crossbred cattle had significantly higher levels of five blood biochemical parameters, highlighting traits typical of temperate breeds with more nutrients from intake and faster growth speed. Additionally, the lower frequency of substandard globulin (Glo) values in TY explained their enhanced immune capacity, and likely the reason for better environmental adaptation.Significant differences between rearing systems were found in 13 blood pa-rameters of hematology (2 parameters) and serum (11 parameters), attributable to inadequate nutrient availability in grazing systems and stable supplies of forage and concentrate feeds in housing systems throughout the year, according to literature review and arguments, reflecting the difference of sources of intake had more effect on the stocker cattle than the breed. In summary, the growth and breeding performance of cattle are closely related to the blood biochemical parameters. Moreover, adjustments in feed composition could influence the physiological functions of beef cattle more significantly than the introduction of temperate breeds (*Bos Taurus*).

Key words: Taiwanese yellow cattle, Blood biochemical parameters, Grazing housing, Rearing system.

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