

PENGEMBANGAN METODE PREDIKSI BOBOT BADAN SAPI MENGUNAKAN PENDEKATAN MANUAL DAN CITRA DIGITAL

INTISARI

Frediansyah Firdaus
21/485343/PPT/01167

Penelitian bertujuan mengembangkan metode prediksi bobot badan sapi potong menggunakan pendekatan manual dan citra digital. Penelitian dilaksanakan melalui dua tahapan, yakni meta analisis dan uji lapang, di Unit Pelaksana Teknis Terpadu, Fakultas Peternakan dan Pusat Inovasi Agroteknologi, Universitas Gadjah Mada. Pendekatan meta analisis, dilakukan melalui beberapa tahapan, pertama menentukan kata kunci pencarian. Tahap kedua, meninjau judul dan abstrak masing-masing paper. Tahap ketiga, mengabstraksi informasi dari paper yang dipilih. Tahap terakhir, menabulasi data. Meta analisis menggunakan software OpenMEE. Permodelan prediksi bobot badan sapi dilakukan menggunakan 507 ekor sapi dengan variabel dan kategorisasi hasil meta analisis, yang diinput pada prototipe aplikasi android. Uji lapang menggunakan 35 ekor sapi (35 ekor manual, 34 ekor citra digital). Bobot badan hasil prediksi, kemudian dilakukan penilaian akurasi. Hasil meta analisis pendekatan manual diperoleh 32 paper, dengan total sampel sejumlah 5.699 yang layak untuk proses sintesis kuantitatif dan 8 paper, dengan jumlah sampel 2.425, untuk pendekatan citra digital. Hasil meta analisis prediksi bobot badan sapi pendekatan manual diperoleh lingkar dada dan volume tubuh lebih baik dibandingkan panjang badan dan tinggi pundak. Pengkategorisasian berdasarkan bangsa sapi, jenis kelamin dan umur memberikan hasil korelasi yang lebih baik dibandingkan tidak dilakukan pengkategorisasian. Pada meta analisis citra digital, antara variabel tidak memberikan hasil berbeda nyata dalam memprediksi bobot badan sapi. Hasil uji lapang pada pendekatan manual, pengkategorisasian berdasarkan bangsa dan umur menunjukkan hasil yang berbeda nyata pada variabel lingkar dada, dan bangsa sapi pada variabel volume tubuh. Hasil uji lapang pendekatan citra digital, pengkategorisasian berdasarkan umur, menunjukkan hasil berbeda nyata. Disimpulkan, variabel lingkar dada dan volume tubuh menghasilkan nilai koefisien korelasi yang lebih tinggi, dibandingkan panjang badan dan tinggi pundak pada pendekatan manual, sedangkan pada pendekatan citra digital menggunakan variabel panjang badan. Pengkategorisasian berdasarkan bangsa, jenis kelamin dan umur, dapat menghasilkan nilai akurasi prediksi yang lebih tinggi.

Kata kunci: Bobot badan, Sapi, Ukuran tubuh, Citra digital, Meta analisis

THE DEVELOPMENT OF A BEEF CATTLE BODY WEIGHT PREDICTION METHOD USING MANUAL APPROACH AND DIGITAL IMAGE

ABSTRACT

Frediansyah Firdaus
21/485343/PPT/01167

The aim of the study was to develop a method for predicting body weight in beef cattle using a manual approach and digital imagery. The research was carried out in two stages, namely meta-analysis and field experiments, at the Integrated Technical Implementation Unit, Faculty of Animal Sciences and Agrotechnology Innovation Center, Universitas Gadjah Mada. The meta analysis approach, carried out through several stages, first determines the search keywords. The second stage, reviewing the title and abstract of each paper. The third stage, abstracting information from the selected paper. The last stage, tabulating the data. Meta analysis using OpenMEE software. Modeling the prediction of body weight of cattle was carried out using 507 cattle with variables and categorization of meta-analysis results, which were inputted to the prototype android application. The field test used 35 cattle (35 cattle manual, 34 cattle digital image). The predicted body weight is then assessed for accuracy. The results of the manual approach meta-analysis obtained 32 papers, with a total sample of 5,699 cattle which were feasible for the quantitative synthesis process and 8 papers, with a total sample of 2,425 cattle, for the digital image approach. The results of the meta-analysis of predicting body weight using the manual approach showed that chest girth and body volume were better than body length and hip height. Categorization based on breed, sex and age gave better correlation results than no categorization. In the digital image meta-analysis, the variables did not give significantly different results in predicting the body weight of the cattle. Field experiments results on the manual approach, categorization based on breed and age showed significantly different results on the chest girth variable, and cattle breed on the body volume variable. The results of the field experiments of the digital image approach, categorization based on age, showed significantly different results. In conclusion, the chest girth and body volume variables produce a higher correlation coefficient value, compared to body length and hip height in the manual approach, while in the digital image approach the body length variable is used. Categorization based on breed, sex and age, can produce a higher prediction accuracy value.

Keywords: Body weight, Cattle, Body measurements, Digital image, Meta analysis