UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

LOGISTIC GROWTH MODEL FOR GROWTH PATTERNS OF RABBITS

NOR HASLIZA BINTI SABRI
2014651628 K15/49
NUR AZIRA BINTI AZMAN
2014856484 K15/49
NUR HAZWANI BINTI ABU BAKAR
2014488448 K15/49

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

A mathematical model is considered to study the behavioral growth patterns of rabbits. The Logistic Growth Model that described the basic dynamical features of the weight increase is developed. By using this Logistic Growth Model, the weight of any rabbit over a period of time based on the nutritional value of the feed can be predicted. The model have solved analytically by using separation of variable, monotone function, integration and factorization. The results are obtained by developing a MATLAB programming which is presented graphically. From the result it can be seen that sweet potato with the nutrient 75g have fastest growth pattern. Meanwhile, maize grain with the 125g have slow growth pattern in rabbit. These results show the selection of the best feed for rabbits proves beneficial because it can help to predict the weight over period of time with the suitable nutritional value of feed. The minimum nutrient of feed that given to the rabbit is the best result compared to the maximum nutrient of feed.

1 INTRODUCTION

1.1 Research Background

Research by DebMark (1999) illustrated that people are generally has different reasons for raising rabbit such as for education, meat, business, bi-products they produce, for example as fishing worms and fertilizer, enjoyment. The scientific name of rabbits is Orytolagus cuniculus (UTHSC) and in mammalian category of the order of Lagomarpha. Carneiro et al. (2011) argued that the domestic rabbit is one of the most recently domesticated species (most likely within the last 1,500 years) and is characterized by an exceptionally high phenotypic diversity with more than 200 breeds recognized worldwide.

Moreover, rabbits are usually attractive, clean and easy to handle. For instance, it is not difficult to having rabbit as a pet because rabbits can adopt to the environment easily. Although rabbits are seldom bite to people who taking care of it, but it can give a great effect it the deep scratches do not treat wisely. Besides, rabbits are not generally aggressive toward people and they are easily startled if they tend to be curious. A study by DebMark (1999) show the availability of rabbit meat is influenced by the growth of rabbits.

Cushing (1997) stressed that a mathematical is the process of creating a mathematical representation of some phenomenon in order to gain a better understanding. Physical systems which may be specially designed for such a purpose can be observed, studied and measured. According to Laham et al. (2012), a mathematical model have been used widely to estimate the population dynamics of animals for so many years as well as the human population dynamics. There are many types of mathematical models such as Linear Growth Model, Exponential