DEVELOPMENT OF EGG FERTILITY SORTER

Design Project

JEANESSA MICKAELA M. MARALANG
MAC ARTHUR C. RAMILO

College of Engineering and Information Technology
CAVITE STATE UNIVERSITY
Indang, Cavite

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DEVELOPMENT OF EGG FERTILITY SORTER

Undergraduate Design Project
Submitted to the Faculty of the
College of Engineering and Information Technology
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In partial fulfilment
of the requirements for the degree
Bachelor of Science in ElectronicsEngineering

JEANESSA MICKAELA M. MARALANG
MAC ARTHUR C. RAMILO
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ABSTRACT

MARALANG, JEANESSA MICKAELA M. and RAMILO, MAC ARTHUR C. Development of Egg Fertility Sorter. Undergraduate Design Project. Bachelor of Science in Electronics and Communications Engineering. Cavite State University, Indang, Cavite. June 2019. Adviser: Engr. Nemilyn A. Fadchar.

The primary objective of this study was to develop an egg fertility sorter. Specifically, it aimed to design and construct an egg fertility sorter controlled circuit and to design and fabricate the egg fertility sorter incubator. It also aimed to develop the program for the control system of the device; and to test and evaluate the efficiency of the system through monitoring and accuracy though hatching of eggs.

The design project consists of raspberry pi 3B which is a microcomputer unit, LED light, microcontroller and camera for the image capturing, DC motor and convevor for the movement and sorter of the eggs, ultrasonic sensor for the detection and time capturing of eggs, pushbuttons and LCD display. It also used a web server for the real time monitoring of the sorter using mobile phone or computer.

The project was evaluated through sorting of eggs. Sorting of eggs was done in a small-scale farm in Brgy. Puypuy, Bay, Laguna to compare the sorting percentage of the device and the manual method.

The device sorter was more accurate by 10.41 percent compared to the manual method of sorting eggs.

Another evaluation took place at Indang, Cavite. The chicken eggs were sorted by the researcher's egg fertility sorter. The device sorted 26 fertile eggs and 24 unfertile eggs while the result in after hatching was 24 was fertile and 26 was unfertile. The accuracy of the device was 91.67 percent.

The cost of construction and evaluation of egg fertility sorter was P 14,000.00 and P 6,750.00 respectively for a total of P 20,750.00.

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DEVELOPMENT OF CHICKEN EGG FERTILITY SORTER

Jeanessa Mickaela M. Maralang
Mac Arthur C. Ramilo

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INTRODUCTION

Egg is a multicultural biological system, the structure and characteristics of which are connected by many relationships. For the developing embryo, any abnormality in the physical character of the egg can lead to a breakdown in the interactions of these parameters and can be cause of collapse in its main physiological function. Despite considerable efforts by the breeding companies, it has proved impossible to make laying hens produce eggs with identical physical characteristics, such that hatching requirements are better satisfied. A consequence of this failure is that between 20 to 40 percent of chicken eggs still fail to hatch (Narushin and Romanov 2002).

Fertility of chicken eggs can be monitored in different ways: by breaking and examining eggs in distinct points of incubation (unincubated, candled, and residual eggs); by isolating and examining the germinal disc of incubated eggs; by counting sperm trapped