

CHAPTER 3

RESEARCH METHODOLOGY

1. Design Of Sorter Device

This project uses several tools and sensors such as TCS3200, ESP8266, mini breadboard, step down, servo and Arduino UNO. The device is a cube that have three parts. There are top part, middle part, and bottom part. The top part functioned as a place to put on the tomatoes. On the top there is a servo to move the tomato to check the RGB value. The second part there is a servo and a TCS3200 sensor. In this part the tomato's RGB value is checked before the tomato is separated. The third part or the bottom part there is only a servo to directing the tomatoes to the separating space.

2. Collections Data Process

Data collection's process obtained directly from the agriculture expert, Richardus Indra Gunawan, S.TP., M.Si from Hidroponik Agrofarm Bandungan (HAB). Besides that, journals are taken from websites to substantiate this journal. The websites are attached in the attachment page. The acquired data from the expert and the journals that are use as references for tomato classifying. The tomatoes are classified into three ripeness level, there are ripe, half-ripe and unripe. Then the tomatoes are separated manually based on the ripeness level. After that the tomatoes are put into the sorting device to acquire the rgb value, and the rgb value is saved and use for reference to classify the tomatoes.

3. Determine The Classification Of Tomato Ripeness Levels

The process to determine the tomatoes' ripeness level is done using two methods, there are using RGB and grayscale value. Later with doing the compatible analyzing method to classifying the tomatoes and accuracy level.

4. Create Database

Database is functioned as a place to save and process the data. This project is using MySQL as a place to save the data of the classified tomatoes result.

5. Testing

After all the sensors and the device are done and prepared, the next step is to test the accuracy level of the device for tomatoes classifying. The tomatoes classification process is done by two methods, namely using RGB and grayscale values. The next process is to calculate accuracy level from those two methods. Besides that also the acquired time for sorting one tomato.

