

ABSTRACT

The cultivation of Black Soldier Fly larvae is increasing because in addition to helping to decompose organic waste, the larvae produced also have economic value to be used as fodder for poultry and fish. The quality of the environment in the cage can affect the growth process of Black Soldier Fly larvae. The temperature of the cage, the humidity of the feed, and the pH level of the feed that are not appropriate can reduce the breeding yield of BSF larvae. Breeders must measure these parameters to analyze the optimal environmental quality to maximize the growth of BSF larvae. Of course, it will be quite inconvenient if periodic measurements are carried out manually. One solution is to design a monitoring system that is placed in an Internet of Things (IoT) based enclosure.

In this final project, a monitoring system is designed to determine the value of environmental quality in BSF larval cages. This design uses a temperature sensor SHT20, humidity sensor SEN0193, and a Depoinnovation pH sensor. The data obtained from the sensor readings are then sent to the Antares IoT database or platform. The test results obtained for the average value of SHT20 sensor accuracy is 99.51%, the average accuracy of the SEN0193 sensor is 98.76%, and the average pH sensor accuracy is 99.39%. Then the results of testing the communication system obtained the average value of the speed of sending sensor data to Antares of 2598 bps, the average delay of sending sensor data to Antares of 1404 ms or 1.4 seconds, and no packets were lost in the delivery. The data can be viewed or accessed via the Android mobile app along with a description of each parameter. The application also adds a harvest time management feature to make it easier for users to save the start date and end date of the cycle.

Keywords: *BSF Larvae, Environmental Quality, Monitoring, Internet of Things, Mobile App*