

AUTOMATED FOGPONICS SYSTEM FOR MUSHROOM CULTIVATION USING RASPBERRY PI, ENVIRONMENTAL SENSORS, AN LCD, AND SOLAR POWER

ABSTRACT

AUTHORS

John Carlo Magdaraog
Jessie Earl Monde Pernes
Dharey Earl Quirao
Ben Roman Salazar
Cedrik Angelo Turla

AFFILIATION

Bestlink College of the
Philippines

DISCIPLINE

Computer Science &
Engineering

KEYWORDS

*mushroom cultivation,
fogponics system, raspberry
pi, environmental control,
solar power, automated
agriculture*

ARTICLE ID

AASGBCPJMRA-AB20699

Mushroom cultivation requires suitable humidity, temperature, and air circulation. Traditional cultivation methods often rely on manual monitoring, which may be inefficient and labor-intensive. This study developed an automated fogponics system for mushroom cultivation using a Raspberry Pi, environmental sensors, an LCD, and solar power. The system used a fine mist to supply moisture, sensors to monitor temperature and humidity, automated controls for the fogger and ventilation, and an LCD to display real-time environmental data. The study used an experimental prototyping design to develop and evaluate the automated fogponics system. Local mushroom farmers, agricultural students, and home growers were selected through purposive sampling. Data were collected through surveys and prototype observation and were analyzed using frequency and percentage distributions. The prototype integrated environmental sensors, control modules, an LCD, and a solar-power system to regulate conditions considered important for mushroom cultivation. The reported simulations and prototype evaluation were described as consistent with the proposed framework and were used to refine component interaction and final assembly. Further testing under actual cultivation conditions is needed to assess temperature and humidity stability, energy performance, reliability, crop yield, and long-term operational safety.

RECOMMENDED CITATION

Magdaraog, J. C., Pernes, J. E. M., Quirao, D. E., Salazar, B. R., & Turla, C. A. (2026). Automated Fogponics System for Mushroom Cultivation Using Raspberry Pi, Environmental Sensors, an LCD, and Solar Power. *Ascendens Asia Singapore – Bestlink College of the Philippines Journal of Multidisciplinary Research Abstracts*, 8(6), 8.