

ABSTRACT

THE INFLUENCE OF STERILIZATION TIME ON THE THERMAL EFFICIENCY OF BAGLOG STEAMERS IN THE STERILIZATION PROCESS OF OYSTER MUSHROOM BAGLOGS

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*This study aims to analyze the effect of sterilization time on the thermal efficiency and effectiveness of baglog sterilization in the cultivation of oyster mushrooms (*Pleurotus ostreatus*) using an LPG-fueled steamer. Suboptimal sterilization poses a high risk of media contamination, which can significantly affect mushroom yields. The research utilizes a specially designed steamer consisting of a steam drum, burner, and sterilization chamber, equipped with precise temperature and pressure control systems. The experiment was conducted with sterilization durations of 2, 3, and 4 hours. Observed parameters included thermal efficiency, Specific Fuel Consumption (SFC), and the success rate of mushroom growth. Results showed that the highest thermal efficiency was achieved at 2 hours (64.30%), along with the lowest SFC value of 0,00003371 kg/kJ. Longer sterilization durations led to reduced energy efficiency and increased contamination. The most effective sterilization outcome was also observed at 2 hours, with an 80% success rate in mushroom growth and the highest total mushroom mass of 4890 grams. Thus, a 2-hour sterilization duration is considered optimal for this process. The study recommends adding thermal insulation to the steam drum and steamer to enhance energy efficiency and maintain consistent baglog sterilization quality.*

Keywords: *Sterilization, Thermal Efficiency, LPG Gas, Baglog Steamer, SFC*