

## ABSTRAK

# STUDI AWAL EFEKTIVITAS JAMUR PADA BUAH NANAS SEGAR MENGUNAKAN CAHAYA ULTRAVIOLET DENGAN VARIASI PANJANG GELOMBANG DAN WAKTU BERBASIS ARDUINO UNO

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Buah nanas di Indonesia berpotensi sebagai komoditi andalan ekspor yang cukup besar, namun ada beberapa permasalahan yang terjadi diantaranya terkait kualitas buah nanas tersebut. Buah nanas diketahui mengandung air dalam jumlah yang cukup banyak sehingga sangat baik bagi pertumbuhan jamur salahsatunya jamur *Penicillium sp.* Penelitian ini bertujuan untuk melakukan studi awal efektivitas sinar ultraviolet terhadap laju pertumbuhan jamur dengan variasi panjang gelombang dan waktu. Alat sterilisasi yang telah dirancang dapat meningkatkan kualitas buah nanas dengan mengurangi pertumbuhan jamur. Pengambilan data dilakukan dengan membuat media jamur pada cawan petri menggunakan *potato dextrose agar* (PDA) sebanyak 15 ml, kemudian disuspensi jamur *Penicillium sp* sebanyak 1 ml tiap cawan. Jamur yang tumbuh pada cawan diberi perlakuan penyinaran ultraviolet dengan variasi panjang gelombang 189 nm, 254 nm, dan 310 nm. Variasi waktu 10, 15, 20 menit dan intensitas 20, 30, 40, 50, 60, 70, 80, 90 lux. Pengurangan jamur dapat dihitung menggunakan alat *Colony Counter SC5*. Hasil penelitian menunjukkan pengurangan jamur efektif seiring pendeknya panjang gelombang, lamanya waktu, dan besarnya intensitas. Variasi panjang gelombang 189 nm, lama penyinaran 20 menit, dan intensitas 90 lux paling efektif dalam mengurangi pertumbuhan jamur.

**Kata Kunci:** Ultraviolet, Sterilisasi, Nanas, *Penicillium sp*, Arduino Uno

## **ABSTRACT**

### **PRELIMINARY STUDY OF THE EFFECTIVENESS OF MUSHROOMS ON FRESH PINEAPPLE USING ULTRAVIOLET LIGHT WITH VARIATIONS IN WAVELENGTH AND TIME BASED ON ARDUINO UNO**

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*Pineapple in Indonesia has the potential as a major export commodity, but there are several problems that occur, including related to the quality of the pineapple. Pineapple is known to contain a large amount of water so it is very good for the growth of mushroom, one of which is *Penicillium sp.* This study aims to conduct a preliminary study of the effectiveness of ultraviolet light on the growth rate of mushroom with variations in wavelength and time. Sterilization device that has been designed for improving the quality of pineapple fruit by reducing mushroom growth. Data collection was done by making mushroom media in petri dishes using potato dextrose agar as much as 15 ml, then suspension of *Penicillium sp* mushrooms as much as 1 ml per cup. Mushrooms growing on plates were treated with ultraviolet irradiation with various wavelengths of 189 nm, 254 nm, and 310 nm. Variation of time 10, 15, 20 minutes and intensity 20, 30, 40, 50, 60, 70, 80, 90 lux. Mushroom reduction can be calculated using the Colony Counter SC5 tool. The results showed that mushroom reduction was effective with shorter wavelength, length of time, and intensity. Variations in wavelength of 189 nm, irradiation time of 20 minutes, and intensity of 90 lux were most effective in reducing mushroom growth.*

**Keywords:** *Ultraviolet, Sterilization, Pineapple, Penicillium sp, Arduino Uno*