

**OCCURRENCE OF KERATINOPHILIC FUNGI FROM
DIFFERENT AGRICULTURAL SOILS**

THESIS

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ABSTRACT

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Keratinophilic fungi are considered as one of the ecologically important groups of fungi because of their capability to degrade keratin. However, these microorganisms are also responsible for cutaneous skin infections known as dermatophytosis, which accounts for 25% of global skin mycoses worldwide, hence, this study. The study aimed to determine the physico-chemical properties of soils collected from the selected areas of Cavite. Second is to isolate keratinophilic fungi then identify them based on cultural, morphological, and physiological characteristics. Lastly, is to correlate the physico-chemical properties of the soil to the occurrence of the fungi.

Soil samples were collected from selected farms of Amadeo, Indang, and Tagaytay City, Cavite. Fungal isolation was done through serial dilution technique and spread plate method on mineral salt medium (MSM) baited with sterilized horse hair. Occurrence of fungi was then correlated to the physico-chemical properties of the soil samples such as temperature, pH, and moisture content.

The highest temperature was recorded from Barangay Mataas na Lupa, Indang, and Barangay Halang, Amadeo (23.67 °C) and the lowest was from Barangay Tolentino-East, Tagaytay City (21.5°C). As for the pH, the highest was from Barangay Mataas na Lupa (7.03), and the lowest was from Barangay Tolentino-East (5.25). For moisture content, Barangay Mataas na Lupa had the highest record (3.2%) while the lowest was from Cavite State University farm (1.5%). Forty three isolates were non-dermatophytic that

belonged under the following genera: *Aspergillus*; *Penicillium*; *Cladosporium*; *Acremonium*; *Beauveria*; *Paecilomyces*; *Fusarium*; *Phoma*; and *Absidia*. Only one isolate was unidentified. Scatter plots showed an inverse relationship between the physico-chemical properties of the soil to the occurrence of keratinophilic fungi. However, statistical analysis showed that there was no correlation between them. This suggests that the occurrence of the keratinophilic fungi was also influenced by other conditions, which might be limiting to other physico-chemical properties of the soil, such as the nutrients needed by these microorganisms to grow.

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INTRODUCTION

Information and knowledge on the presence of harmful or pathogenic microorganisms in the soil of the Philippines are usually scanty. Thus, the occurrence of these organisms is usually neglected by the public. One of these microorganisms is known as the keratinophilic fungi, in which keratinophilic means “keratin loving” (Sharma & Rajak, 2003). These microorganisms are considered as one of the ecologically important group of fungi because of its capacity to degrade keratin (Sharma & Rajak, 2003). Some of their species are known to be saprophytes of the soil and plant debris, while the other species are known to colonize or parasitize keratinous tissues (Gugnani, 2000) that can lead to superficial or deep fungal infections called dermatophytosis. The treatment of these infections is challenging, specifically to pregnant women, children, and elderly because of their increased tendency for acquiring adverse effects (Kaul, *et al.*, 2017). Moreover, the infections caused by these microorganisms account for nearly 25%