FUNGAL SUSCEPTIBILITY TESTING OF BIO-BASED BUILDING MATERIALS

USING IMAGE ANALYSIS AS AN ASSESSMENT TOOL

Liselotte De Ligne

INTRODUCTION

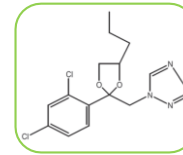**Market Value of Green Construction Materials, World Markets: 2013-2020**
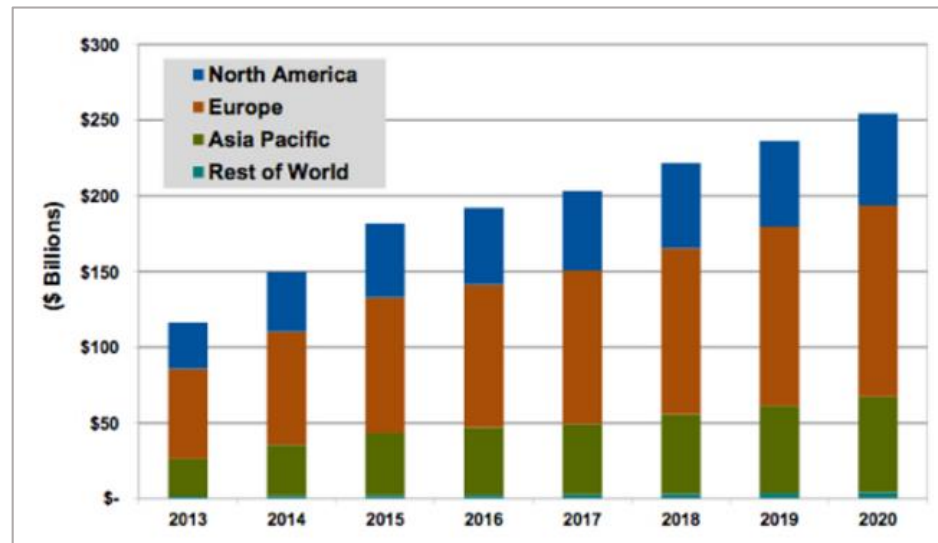
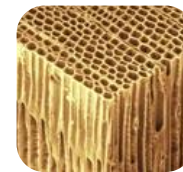*Source: Navigant Research, 2013. Materials in Green Buildings.*

PROBLEM STATEMENT

MATERIAL CHARACTERISTICS
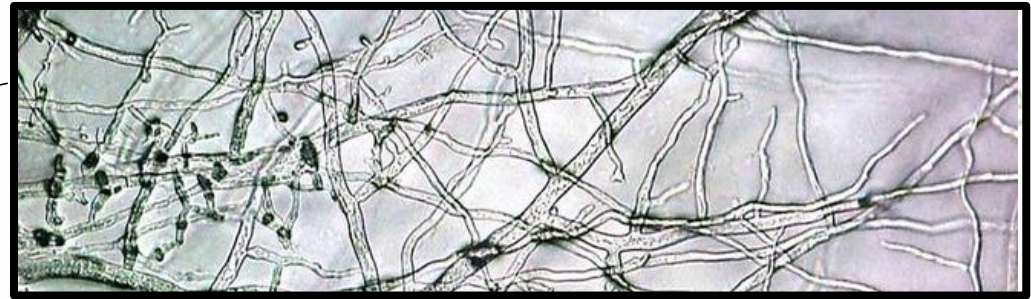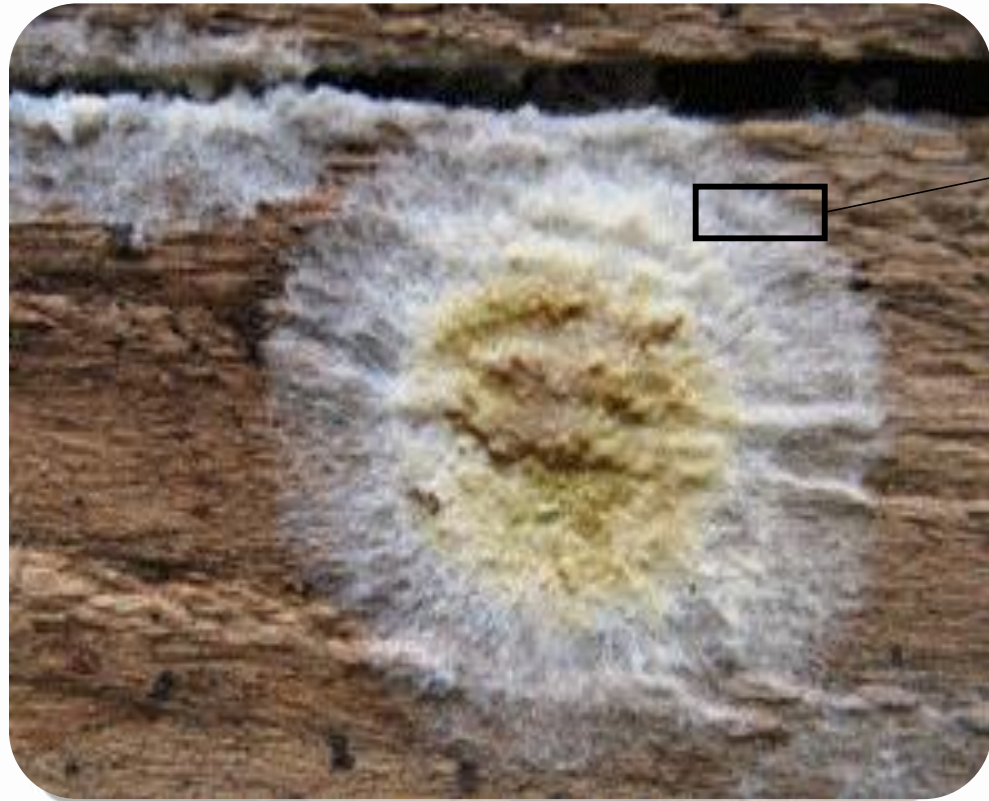
 Chemical components
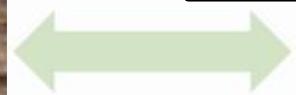
 Spatial structure

 Moisture dynamics

PROBLEM STATEMENT

MATERIAL CHARACTERISTICS

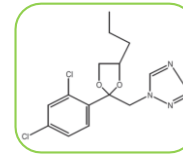...nts

Spatial structure

Moisture dynamics

PROBLEM STATEMENT

MATERIAL CHARACTERISTICS
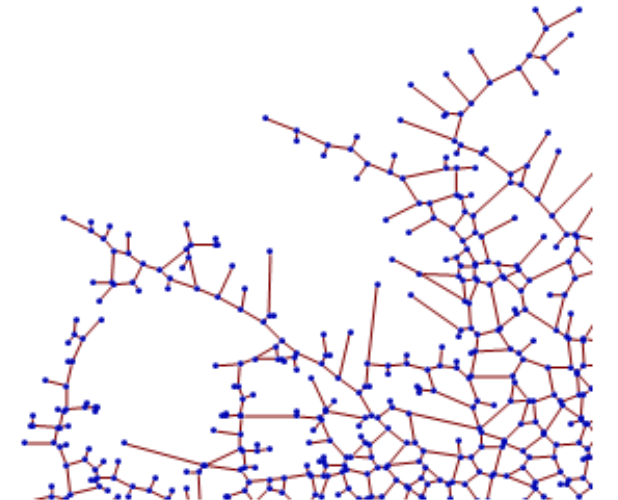
 Chemical components

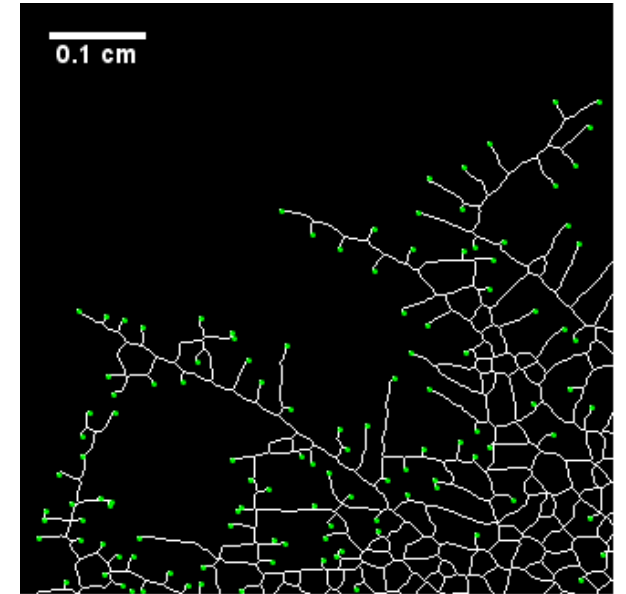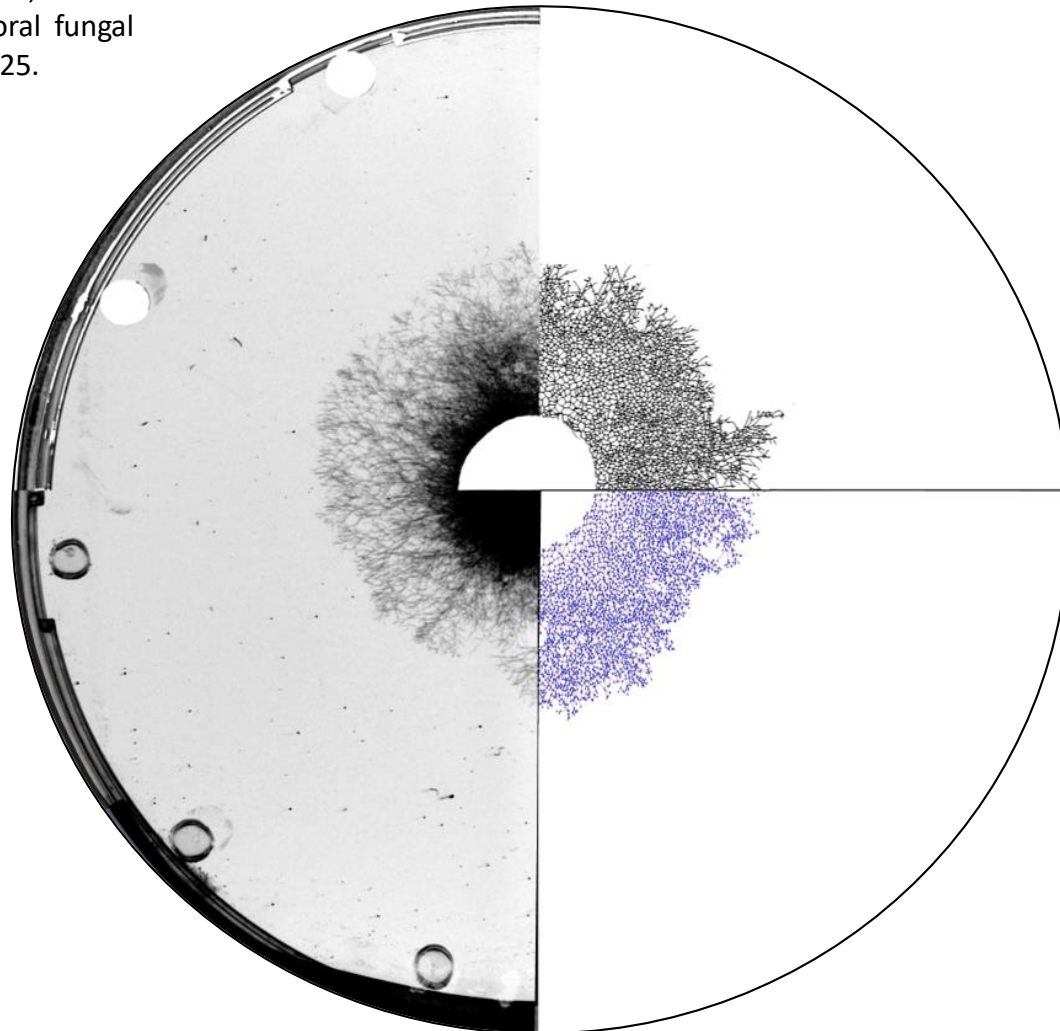 Spatial structure

 Moisture dynamics

IMAGE ANALYSIS

Vidal-Diez de Ulzurrun, G., Baetens, J. M., Van den Bulcke, J., Lopez-Molina, C., De Windt, I., De Baets, B., 2015. Automated image-based analysis of spatiotemporal fungal dynamics. Fungal Genetics and Biology 84 (2), 12–25.
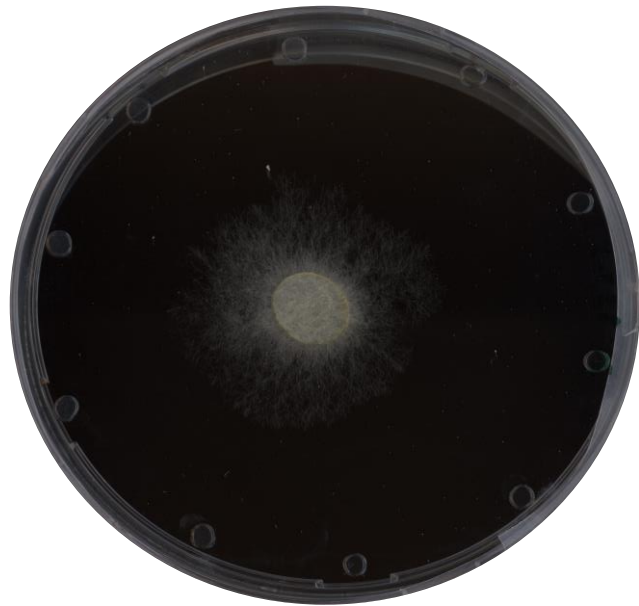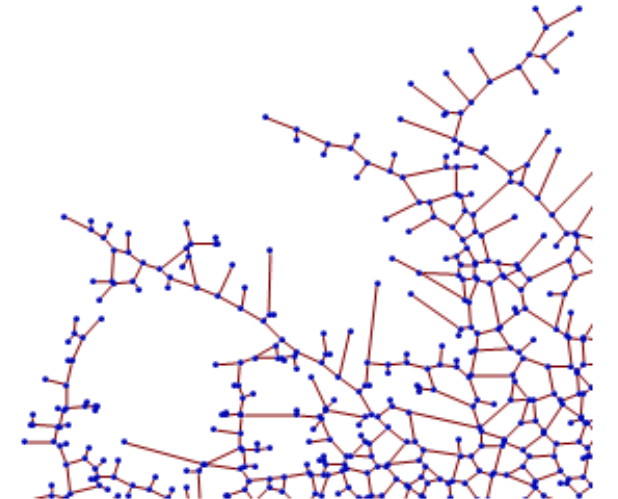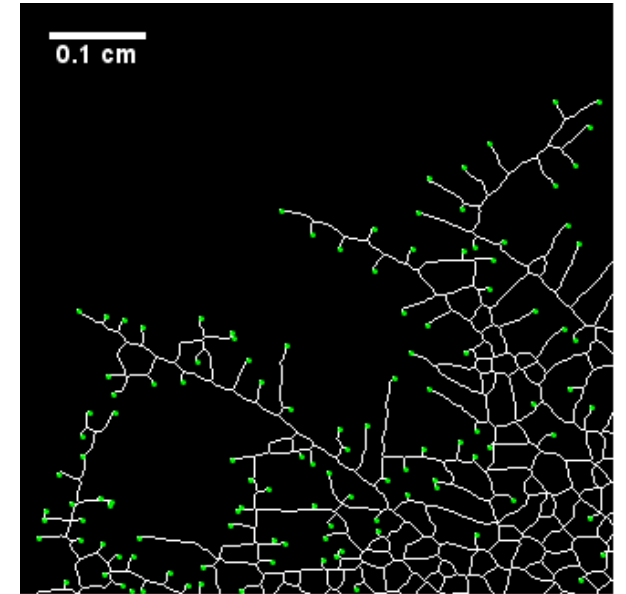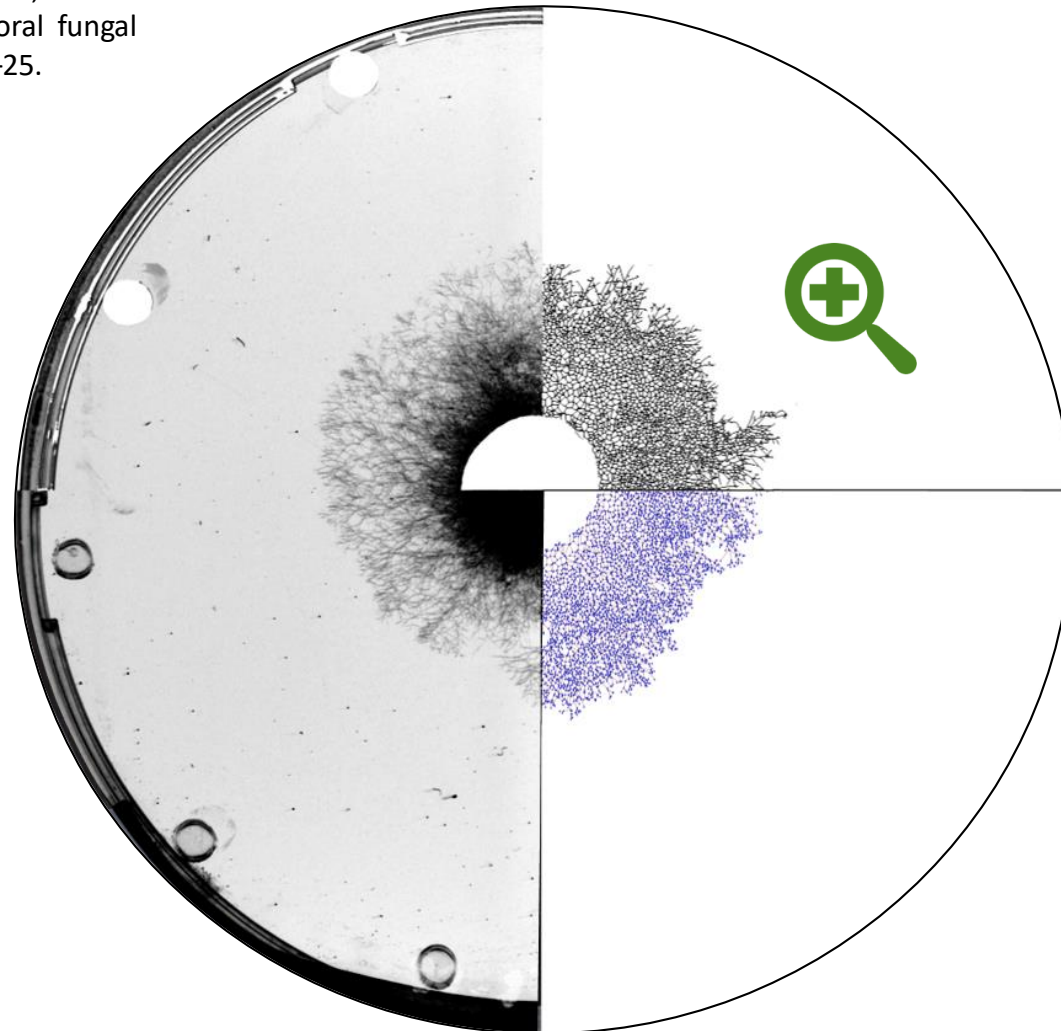

0.1 cm

IMAGE ANALYSIS

Vidal-Diez de Ulzurrun, G., Baetens, J. M., Van den Bulcke, J., Lopez-Molina, C., De Windt, I., De Baets, B., 2015. Automated image-based analysis of spatiotemporal fungal dynamics. Fungal Genetics and Biology 84 (2), 12–25.
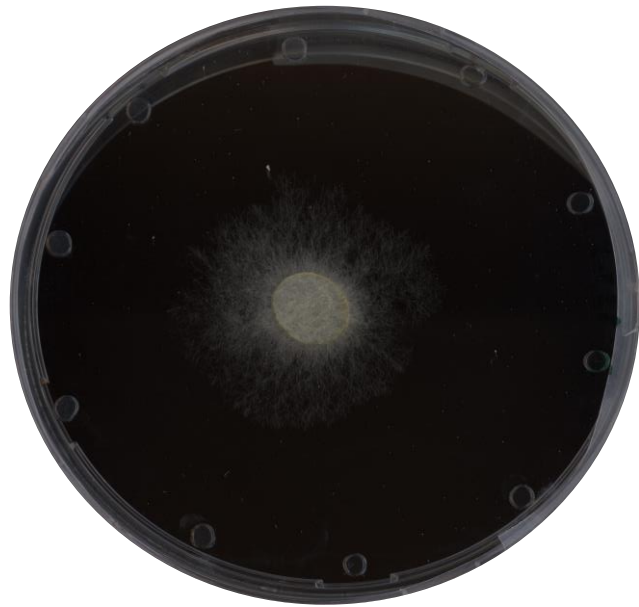

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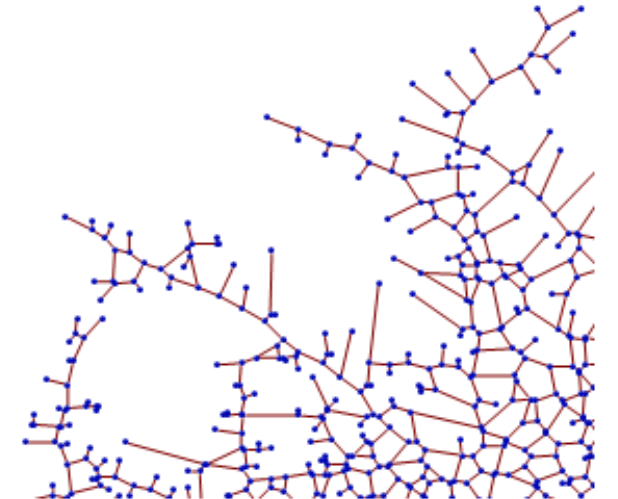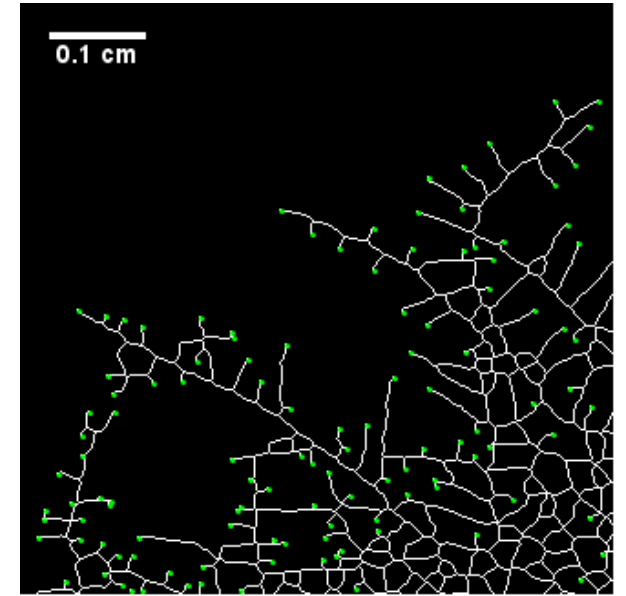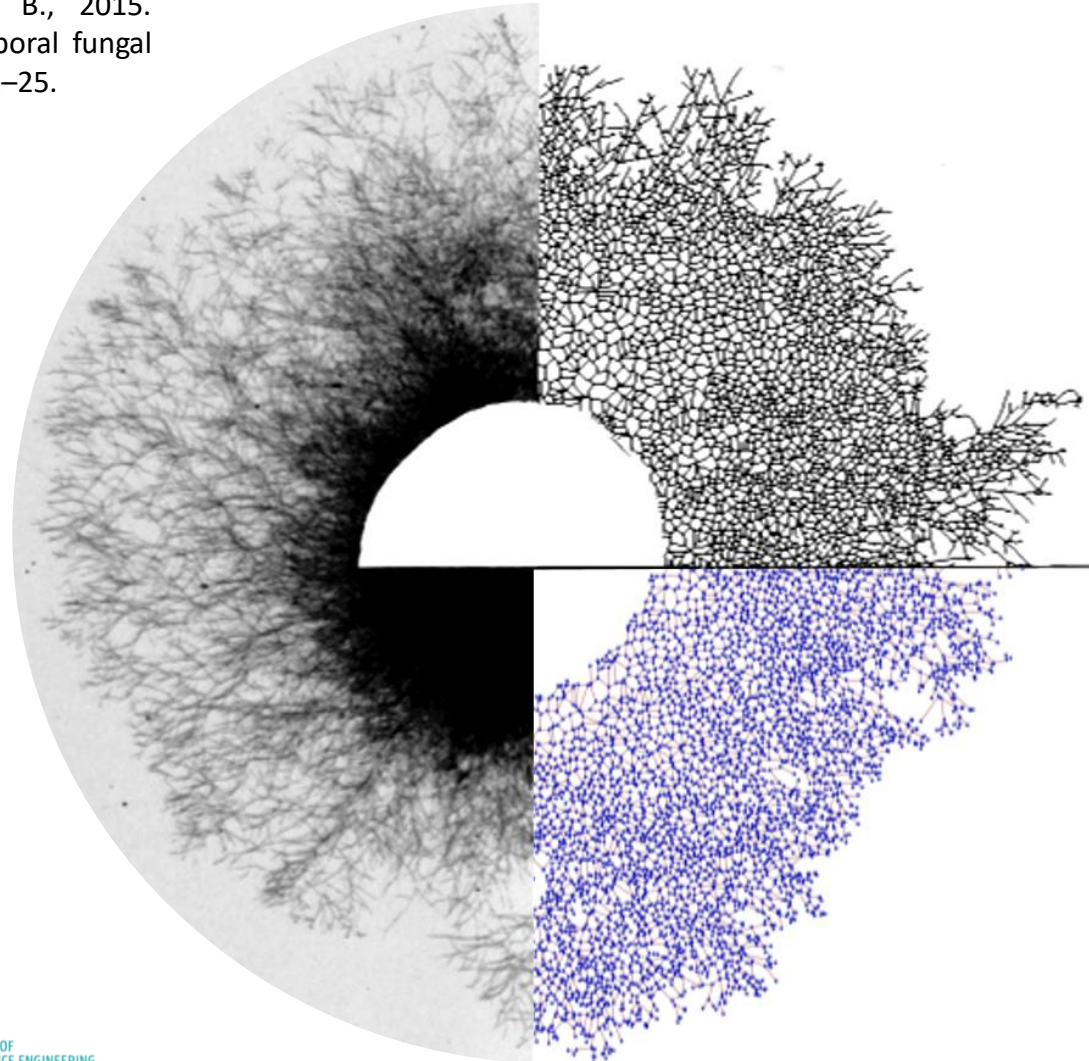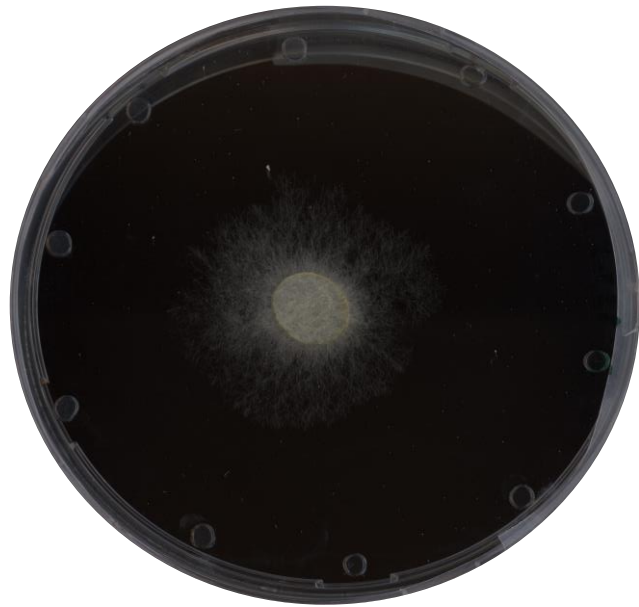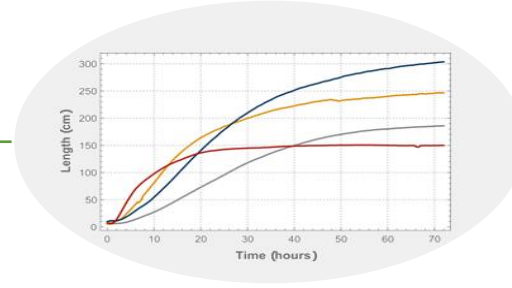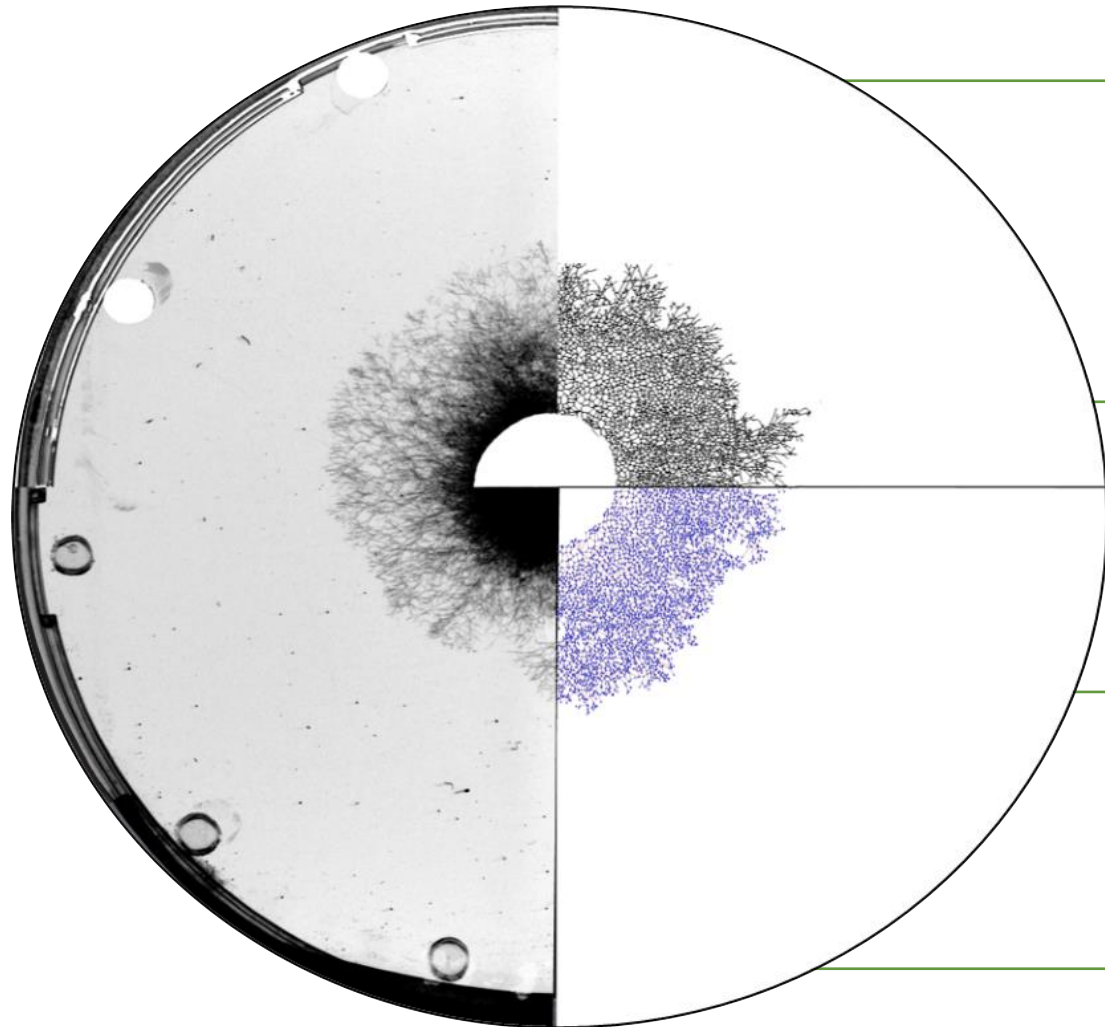
IMAGE ANALYSIS

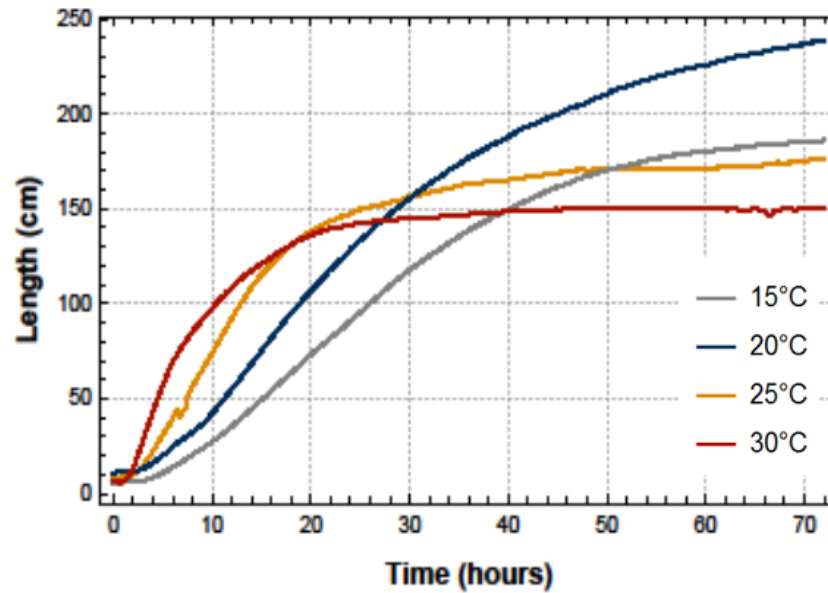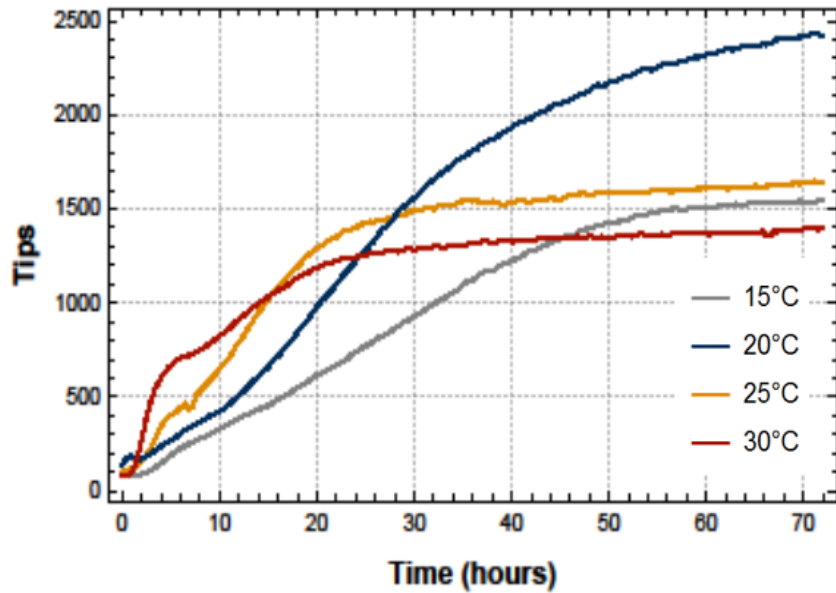Quantification of fungal growth dynamics

Completely automated

Inexpensive

Versatile

IMAGE ANALYSIS

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Completely automated
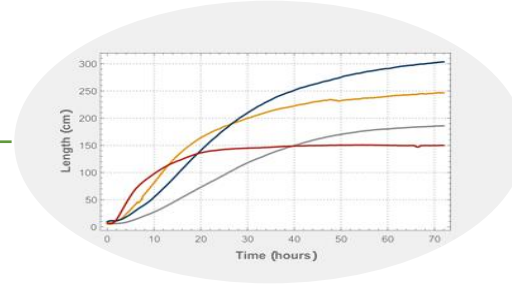
Inexpensive

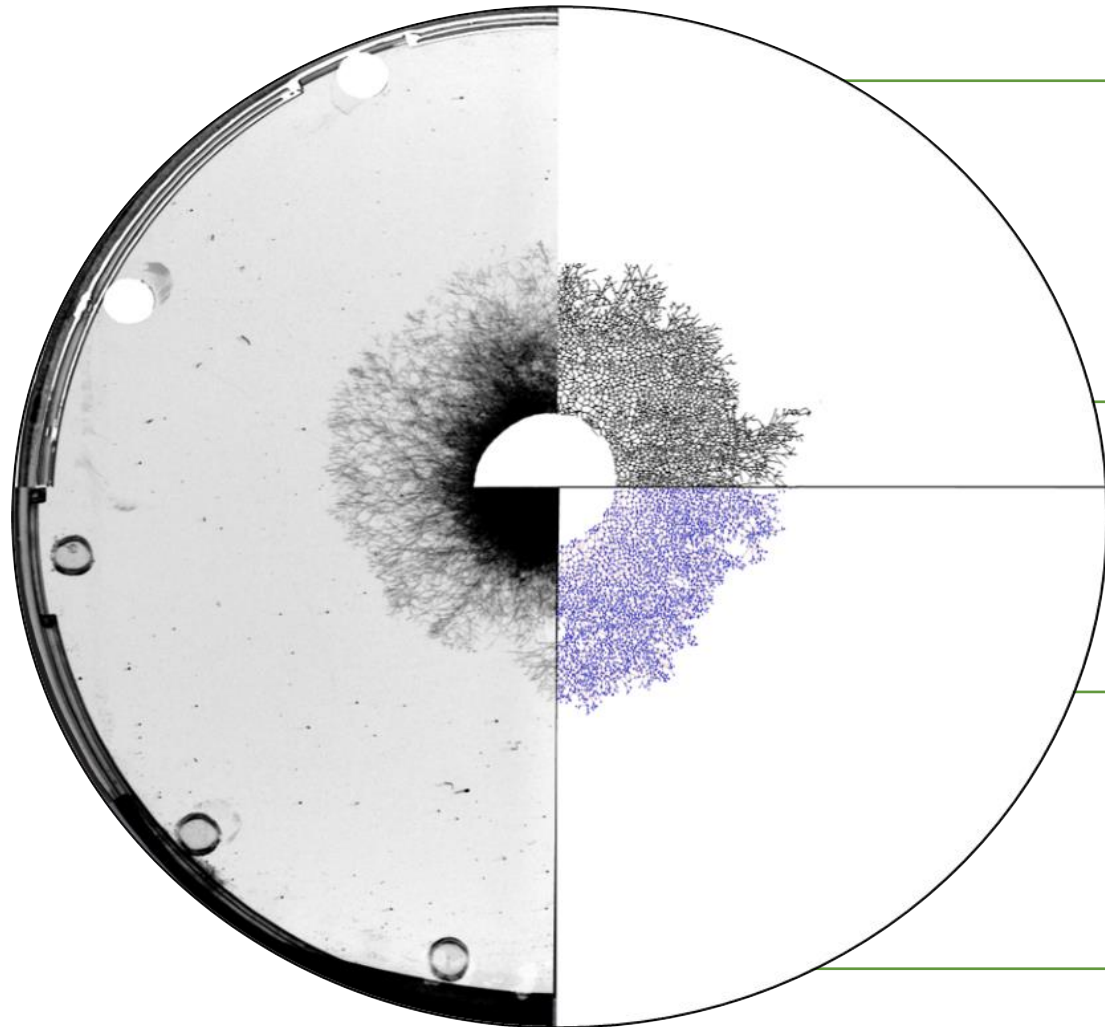Versatile

IMAGE ANALYSIS

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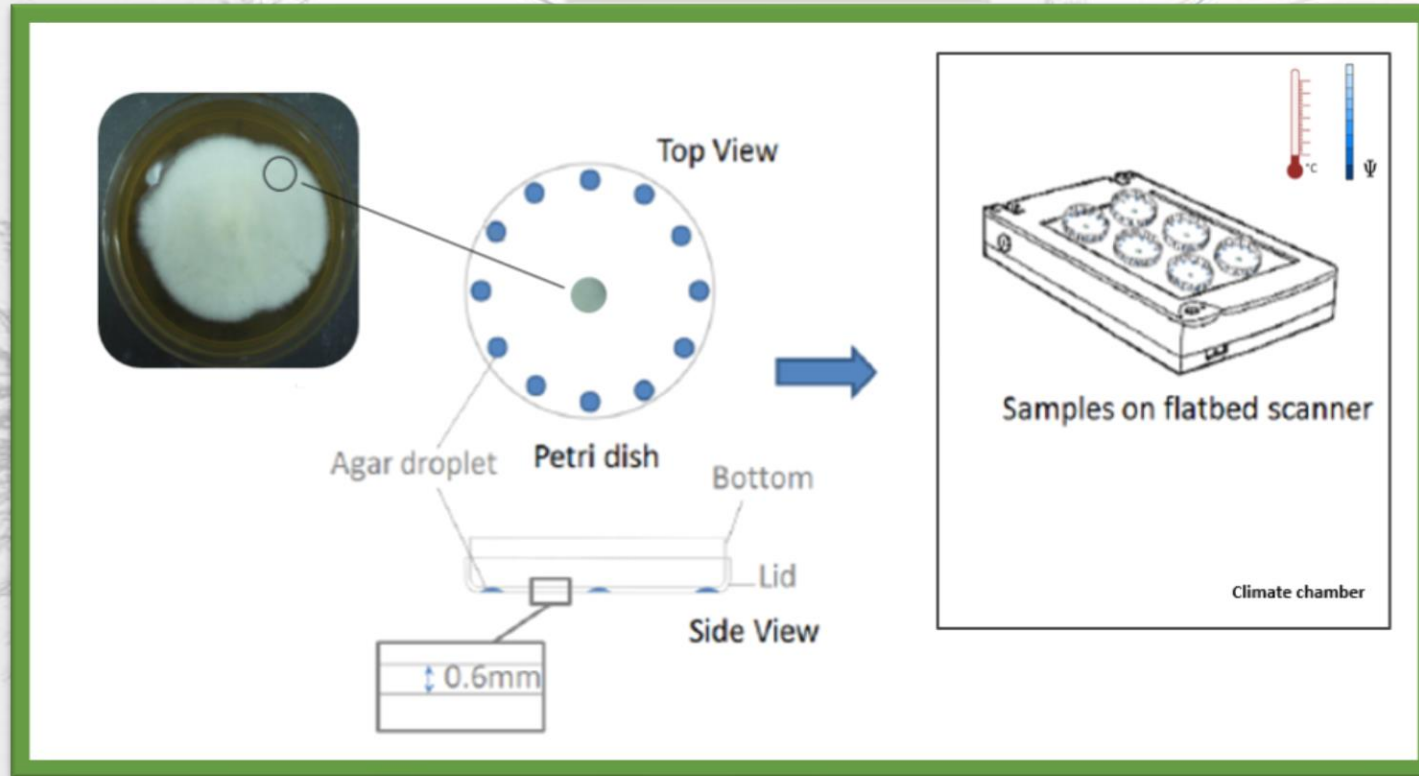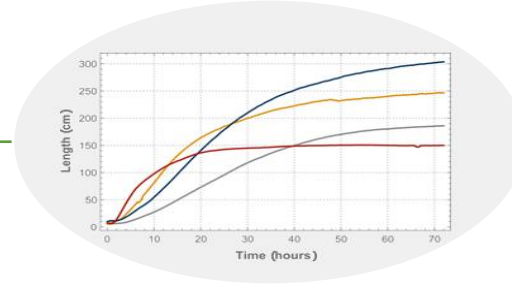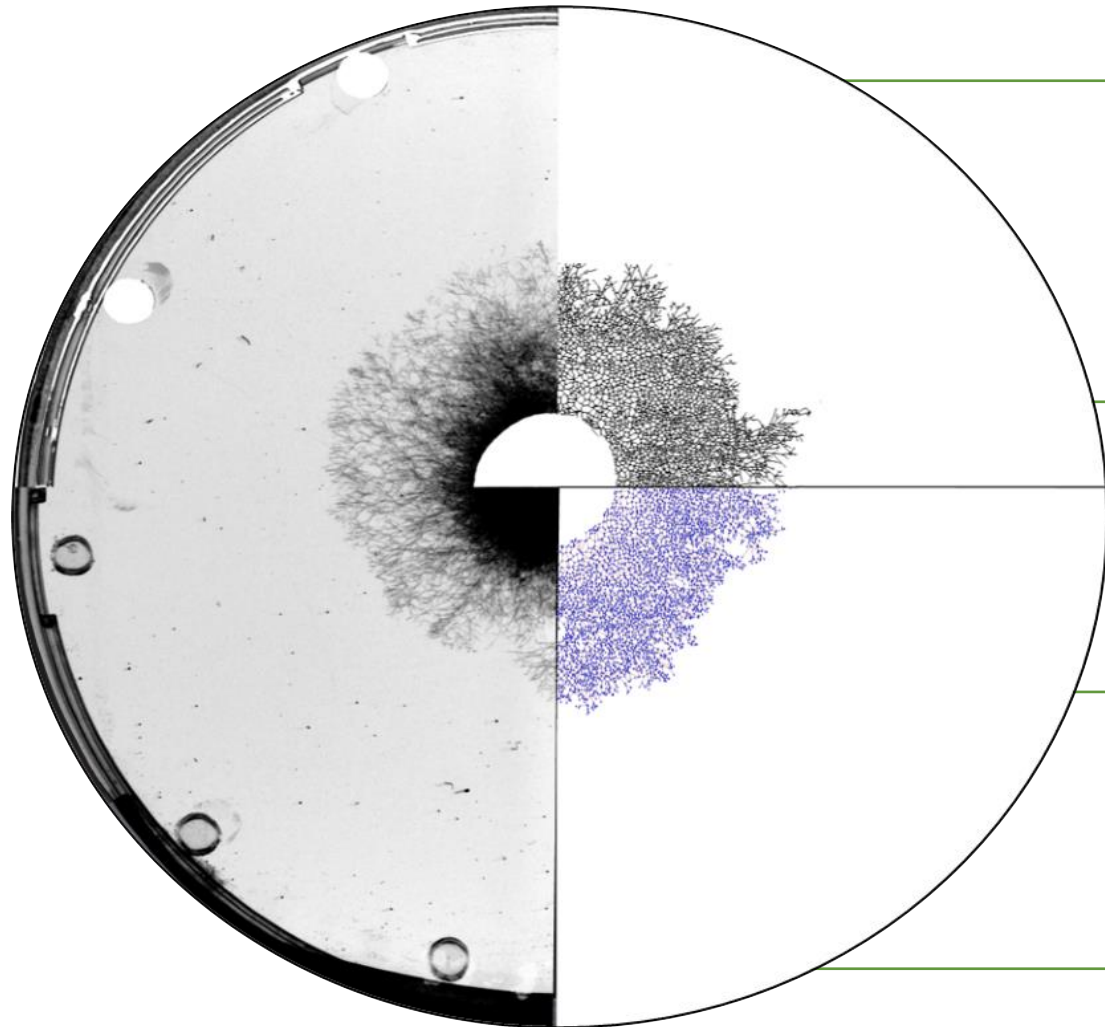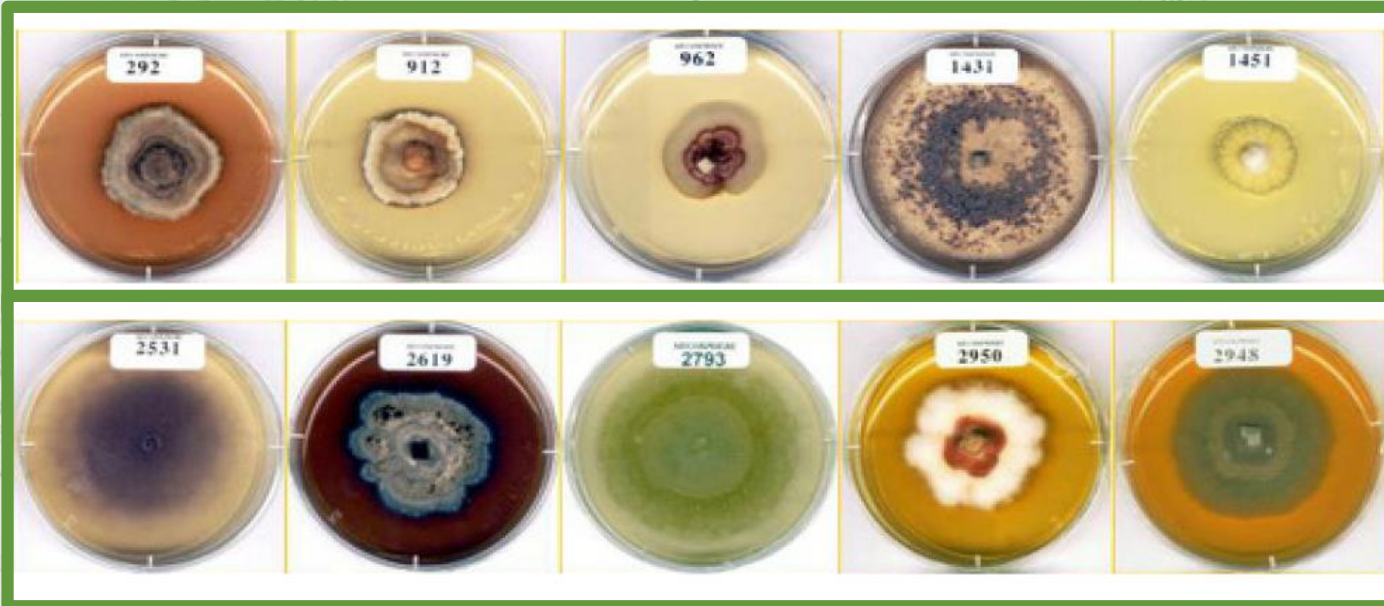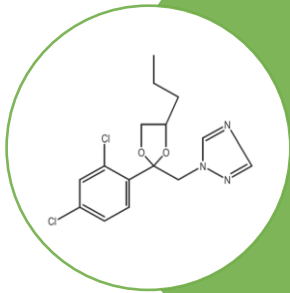
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CHEMICAL COMPONENTS VS. FUNGAL SUSCEPTIBILITY

Removing structure

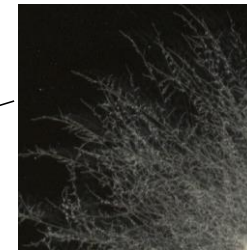Automated fungal growth assessment procedure
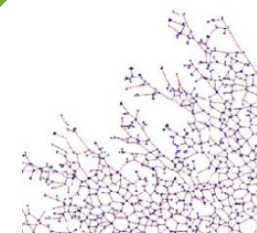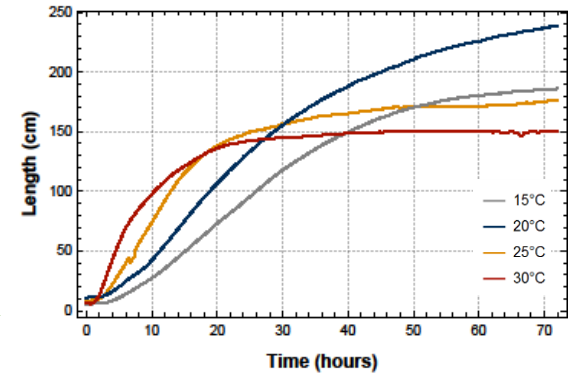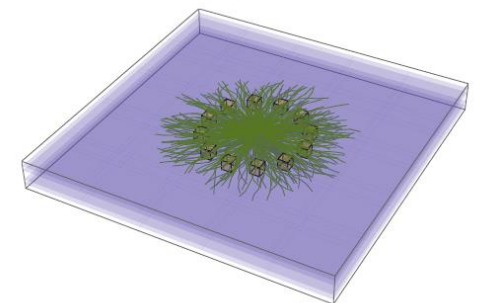
Fungal growth model

bio-based material

sawdust

paste

inoculated paste

image

processed image

in vivo fungal growth measures

in silico fungal growth measures

THANK YOU FOR YOUR ATTENTION!

QUESTIONS?