

UNIVERSIDAD DE LA FRONTERA

Facultad de Ingeniería y Ciencias

Doctorado en Ciencias de Recursos Naturales



**DISSIPATION OF POLYCYCLIC AROMATIC
HYDROCARBONS USING PLANTS INOCULATED
WITH ARBUSCULAR MYCORRHIZAL FUNGI
AND SAPROTROPHIC FUNGI**

**DOCTORAL THESIS IN FULFILLMENT OF
THE REQUIREMENTS FOR THE
DEGREE DOCTOR OF SCIENCES IN
NATURAL
RESOURCES**

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**“DISSIPATION OF POLYCYCLIC AROMATIC HYDROCARBONS USING PLANTS
INOCULATED WITH ARBUSCULAR MYCORRHIZAL FUNGI AND
SAPROTROPHIC FUNGI”**

Esta tesis fue realizada bajo la supervisión del Dr. César Arriagada Escamilla perteneciente a la Facultad de Ciencias Agropecuarias y Forestales de la Universidad de la Frontera y ha sido aprobada por los miembros de la comisión examinadora.

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Thesis summary

"Polycyclic aromatic hydrocarbons (PAHs) are organic pollutants resulting from the incomplete combustion of natural or synthetic materials. They are known to be toxic and cause harm to living organisms due to their carcinogenic, teratogenic, and embryotoxic properties. PAHs consist of multiple fused benzene rings and are widely distributed in ecosystems, with soil hosting around 90% of emitted PAHs. Bioremediation, a cost-effective and environmentally friendly approach that employs biological agents, offers a solution to soil contamination by PAHs. Organisms like plants, saprophytic fungi (SF), and arbuscular mycorrhizal fungi (AMF) have shown to aid in the degradation or removal of PAHs from soil. This research suggests that specific fungal interactions, such as those involving AMF and SF, along with suitable plants, can be an effective bioremediation strategy for PAH-contaminated soils. However, fungal-plant compatibility is crucial for successful implementation. Further studies on the role of glomalin in PAH accumulation by AMF and its positive effects on plants could provide valuable insights for future research in this field."