

Mycoremediation of Nitrogen Using *Pleurotus Ostreatus*: A Microcosm Experiment

By: Wren Pettett

This study investigates the potential of *Pleurotus ostreatus* for mycoremediation, focusing on its ability to reduce nitrate levels in agricultural runoff. Building on previous research that highlighted the effectiveness of *P. ostreatus* in controlled environments, this experiment aimed to replicate those results under more natural conditions to assess its viability for future field applications. Organic substrates, primarily hay, were inoculated with *P. ostreatus* and exposed to varying concentrations of sodium nitrate in microcosm setups.

While all experimental samples, including control groups, exhibited robust fungal growth, we were unable to confirm that the colonizing fungus was indeed *P. ostreatus*. Despite this, the fact that fungi colonized the substrate is promising for two key reasons: firstly, it demonstrates that the substrate, which consisted of common field hay, is highly conducive to fungal colonization. Secondly, it suggests that even if *P. ostreatus* proves not to be the ideal candidate, other fungi naturally present in the environment might still play a significant role in nitrate removal.

Unfortunately, tannin leaching from the organic matter caused discoloration that compromised the reliability of photometric measurements for nitrate reduction, preventing the collection of quantitative data. However, the observations from this study are valuable, indicating that with refined methodologies to mitigate artifacts like tannin leaching, mycoremediation could be a viable and scalable approach to mitigating nutrient pollution. Future research should focus on optimizing experimental designs to enhance data reliability, paving the way for effective field applications of mycoremediation.