



Transforming Local Wastes Into Liming Materials: Enhancing its Influence on the Growth and Production of Brown Oyster Mushrooms



S&T in Natural Resources

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Key Findings and Policy Implications

- **Mycelia Growth:** Filter cake (T2) showed the fastest growth after 4 weeks.
- **Yield:** Agricultural lime (T4) had the highest yield, but filter cake (T2) came very close.
- **Stem count:** No major difference across treatments
- **Cap size:** Agricultural lime (T4) produced the biggest caps, but the alternatives also performed well
- Local waste products like filter cake and rice hull ash can be used to grow mushrooms aside to agricultural lime.
- These materials are cheap, readily available and may reduce farm costs.

- This helps more people especially in rural areas and may establish mushroom production though commercial agricultural is unlikely to acquire.

Background

Many farmers want to grow oyster mushrooms but they struggle to find agricultural lime, which is one of the most pertinent component of growing material in mushroom farming. Lime adjusts the acidity of the substrate. In this study, researchers explored on other

materials like filter cake (waste from sugar processing), rice hull ash, and wood ash. These are local waste materials that could be used aside to agricultural lime. By using these alternative materials, oyster mushroom production in various areas may not be compromised.

Research Objectives

- Find alternatives to agricultural lime for oyster mushroom farming.
- Test how filter cake, rice hull ash and wood ash affect the oyster mushroom growth and yield.
- Help farmers who don't have access to lime grow oyster mushrooms successfully.

Methodology

The researchers set up 5 different treatments using sawdust mixed with:

T1 – no liming material (control)

T2 – filter cake

T3 – rice hull ash

T4 – agricultural lime (standard)

T5 – wood ash

The researchers measured the oyster mushroom's mycelia growth, yield, number of stems (stipes), and cap (pileus) diameter.

Key Findings

The study revealed that while agricultural lime (T1) continues to be the most effective material for maximizing yield and cap size, the alternatives showed promising results that justify their use in its absence.

Table 1. Parameters obtained by tiger grass after six (6) months.

Treatment	Yield (grams)	Cap Diameter (mm)	Stipe Count
T1 – Agricultural Lime	1845.32	79.28	3.06
T2 – Control (No Lime)	1291.35	55.56	2.77
T3 – Filter Cake	1307.17	67.19	3.36
T4 – Rice Hull Ash	1037.10	60.70	3.55
T5 – Wood Ash	770.04	57.70	3.28

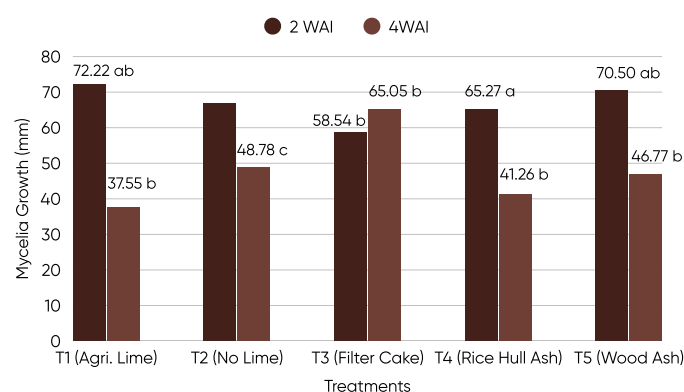


Figure 1. Mean mycelia growth (mm) at 2 and 4 weeks after inoculation of brown oyster mushroom using different liming materials.

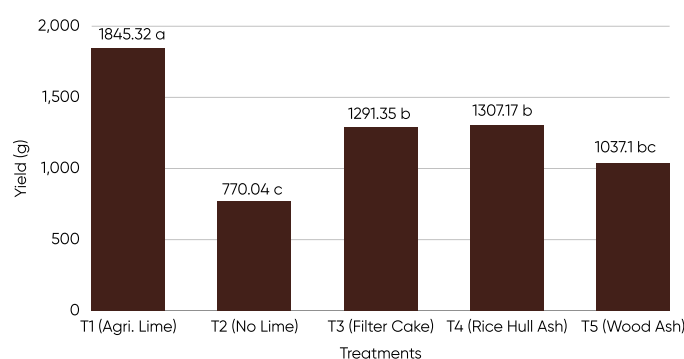


Figure 2. Brown oyster mushroom mean yield (grams) using different liming materials.

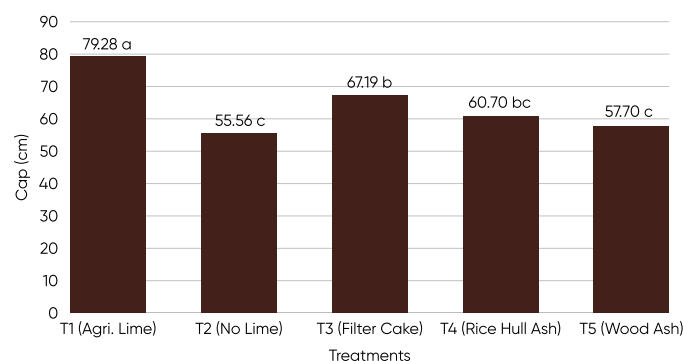


Figure 3. Mean pileus (cap) diameter (mm) of brown oyster mushroom (*Pleurotus cystidiosus*) using different liming materials.

Conclusion

Agricultural lime remains the gold standard for Brown Oyster Mushroom cultivation, providing the best environment for high yield and large cap diameters. Nevertheless, filter cake, rice hull ash, and wood ash are proven alternatives that can support mushroom production without compromising the fundamental morphological characteristics of the crop. These alternatives are particularly valuable for small-scale farmers in remote areas where commercial lime may be unavailable or costprohibitive.

Policy Recommendations

1. Train oyster mushroom growers to use filter cake, rice hull ash and wood ash.
2. Promote these materials through the LGUs agriculture offices.
3. Organize collection and sharing of these wastes in mushroom farming firms or entities.

Target Policy Actors and Beneficiaries



1. State Universities and Colleges
2. Local Government Universities

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Editor’s Note

This policy brief is based on results of the CSU-funded project “Yield Performance of Brown Oyster Mushroom (*Pleurotus cystidiosus*) Using Different Liming Materials” This project was implemented by the Cagayan State University – Piat Campus. The CSU – Piat Campus project team is composed of Yvette D. Medrano, Gerald M. Duza, Gerald L. Seridon, Nonito B. Pattugalan and Macluven T. Gonzales



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