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Post-Harvest Disease and Pest Management of Rice in Longleng, Nagaland, Using Indigenous Technical Knowledge

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Abstract

Rice plays a vital role in supporting the livelihood and food security of the people in Longleng, Nagaland. However, post-harvest losses from pests and diseases continue to challenge farmers, affecting both their income and the quality of stored rice. Drawing from generations of experience, indigenous technical knowledge (ITK) offers Longleng farmers sustainable, eco-friendly methods to manage these losses. This article delves into these traditional practices, highlighting how the integration of indigenous wisdom with scientific insights enables local farmers to naturally and cost-effectively safeguard their rice harvest.

Introduction

In Longleng, Nagaland, rice farming is deeply rooted in the cultural and economic fabric of the community. While cultivation practices are well established, managing post-harvest losses is essential for maintaining food security and protecting farmer incomes. With limited access to chemical inputs, indigenous methods have become crucial for pest and disease management after harvest. Leveraging ITK offers farmers a reliable, eco-friendly alternative, particularly valuable in this region where natural and sustainable approaches align well with traditional practices.

Indigenous Tecnical Knowledges

1. **Bamboo-Mud Granaries:** Traditional storage units made of bamboo and mud are commonly used in Longleng to store rice. The porous nature of these materials allows for natural airflow, keeping humidity levels low and preventing mold growth and pest infestations. These granaries are a cost-effective, eco-friendly solution for rice storage.
2. **Neem Leaf Linings:** Neem leaves are placed inside rice storage bins or granaries. The bioactive compounds in neem, such as azadirachtin, act as natural insect repellents,

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deterring pests like weevils and rice beetles. This method is highly effective and sustainable, as neem trees are locally available and do not harm the environment.

3. **Sun-Drying and Smoke-Drying:** Before storage, rice grains are sun-dried to reduce moisture content, making them less susceptible to fungal growth and pest infestations. In some areas, smoke-drying using local firewood is also practiced. The smoke acts as a natural preservative and insect deterrent, adding a protective layer against pests.
4. **Ash Application:** Mixing rice grains with wood ash from local tree species creates an abrasive layer around the grains, deterring pests from moving and feeding. Wood ash also absorbs moisture, reducing the risk of fungal growth. This simple yet effective method leverages locally available resources to protect stored rice.
5. **Botanical Repellents:** Locally available plants like eucalyptus leaves, turmeric powder, and crushed garlic are used in rice storage. These botanicals release strong odors and volatile compounds that repel pests and inhibit fungal growth. For instance, garlic cloves are placed in storage containers, and turmeric powder is mixed with rice to act as a natural fungicide.
6. **Regular Inspection and Community Monitoring:** Farmers in Longleng regularly inspect storage units for early signs of infestation, such as droppings or webbing. This community-based approach helps identify and address issues early, ensuring timely intervention and minimizing post-harvest losses. Seasonal cleaning and traditional fumigation, such as burning neem leaves, are also practiced to maintain hygiene and reduce pest presence.

These traditional practices reflect Longleng's deep connection to nature, providing effective and sustainable solutions for post-harvest rice management without reliance on synthetic chemicals.

Results and Discussion

These indigenous methods have proven successful in minimizing post-harvest losses and preserving rice quality, especially in regions like Longleng where chemical options are less accessible. For instance, the effectiveness of neem in pest deterrence aligns with its scientifically documented insect-repellent properties, reducing reliance on chemical pesticides (Singh and Sharma, 2017). Practices such as sun-drying and wood ash application have also shown to control fungal contamination effectively, supporting both food safety and storage stability.

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Longleng's farmers demonstrate that blending traditional knowledge with minimal modern interventions can help sustain rice yields, improve grain quality, and reduce post-harvest losses. Further research on these practices may enhance their application and potentially allow for scale-up, offering an alternative to chemical-intensive pest management approaches.

Conclusion

Indigenous technical knowledge (ITK) in Longleng provides a sustainable, effective solution for managing post-harvest rice diseases and pests. By incorporating these methods, Longleng farmers can preserve rice quality and protect stored grains, supporting food security while respecting traditional practices and ecological harmony. As these practices gain recognition, they present a valuable example of sustainable rice post-harvest management that balances local knowledge with scientific insights.

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