



校園落葉、樹枝回收再利用技術模組開發

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摘要

近年，都市農業蓬勃發展。許多學校的教師指引學生種植農作物，從中學習食物從何而來。這不僅帶給學生自給自足的成就感，更培養他們正確的飲食觀念，形塑個人健康飲食習慣。其中，校園內種植蔬菜最為常見，使用的栽培介質主要為泥炭土和椰纖，且經常搭配有機肥。由於安全和環境美觀的考量，學校在颱風季節或樹木生長旺盛時，會進行樹木修剪。此外，季節變換時，學校會有大量的落葉和樹枝。這些材料若不處理，會佔去大量的空間。但如果運用堆肥技術，將它們轉化為有用的堆肥或栽培介質，這不僅環保，還符合循環經濟的理念。樹林分場在 111 年使用 66 公升的堆肥桶，加入樹枝、落葉碎片、米糠和黃豆粉進行發酵，所得的堆肥用於盆栽種植小白菜，其效果比市售有機肥更好。到了 112 年，為了更貼近校園實際需求，改用尿素肥料調整堆肥的碳氮比，以減少氣味。考量到校園中樹枝和落葉體積龐大，特地設計了使用預鑄輕質混凝土磚的堆肥箱進行發酵，可成功達到堆肥高溫期，這不僅可以縮短堆肥的腐熟時間，還有助於減少病原菌。完整的箱體結構也可以降低水分和熱能的損失。利用本場開發之堆肥箱，成本低，能有效地將校園的樹枝和落葉轉化為高品質的堆肥。

關鍵字：堆肥箱、循環經濟、環境永續

Campus Fallen Leaf and Branch Recycling Technology Module Development

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Abstract

In recent years, urban agriculture has become more popular, especially in schools. Teachers are now teaching students how to grow crops and understand where their food comes from. This not only gives students a sense of self-sufficiency but also helps them develop healthy eating habits. Growing vegetables on school campuses is the most common practice, using mainly peat soil and coconut fiber mixed with organic fertilizer for cultivation. For safety and aesthetic reasons, schools trim trees during typhoon season or when they're growing vigorously. Seasonal changes also lead to a lot of fallen leaves and branches, which can take up a lot of space if not managed. However, by using composting technology to convert these materials into useful compost or cultivation media, schools can be environmentally friendly and follow the principles of a circular economy. In 2022, the Shulin branch used a 66-liter compost bucket, adding branches, fallen leaf fragments, rice bran, and soybean flour for fermentation. The resulting compost was used to grow Chinese cabbage in pots and proved to be more effective than commercially available organic fertilizers. In 2023, to better meet the campus's needs, urea fertilizer was used to adjust the compost's carbon-nitrogen ratio to reduce odor. Considering the large volume of branches and fallen leaves on campus, a special compost box made of lightweight concrete bricks was designed for fermentation, successfully reaching the high-temperature composting phase. This not only shortened the decomposition time but also reduced the presence of harmful bacteria. The complete box structure minimized moisture and heat energy loss. This low-cost compost bin effectively transforms campus branches and fallen leaves into high-quality compost, supporting the school's sustainability efforts.

Keywords: Aompost Bin, Circular Economy, Environmental Sustainability