

NEWS



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Championing Net-Zero Emissions : Institute of Environmental Engineering’s DIYGreen Urban Farming System Revolutionizes Sustainable Living



DIYGreen Zero-Waste Circular Urban Farming (Photo credit: DIYGreen)

Edited by Chance Lai

As the global community confronts the environmental challenges posed by global warming and climate change, achieving net-zero emissions has become a shared objective for governments worldwide. However, this ambitious goal requires collective action from individuals and corporations alike.

In response, a team led by Professor Jehng-Jung Kao from the Institute of Environmental Engineering at National Yang Ming Chiao Tung University (NYCU) has introduced the innovative “**DIYGreen Zero-Waste Circular Urban Farming System (DIYGreen system)**.” This system empowers individuals to cultivate vegetables, herbs, and other crops on balconies or rooftops, even without access to traditional land.

The DIYGreen system incorporates **recycled bottles** as its base, coupled with a low-maintenance design and a resource-recycling approach. Users only need to water the plants once a week to enjoy high-quality, sustainable crops with “**zero food miles**.” This innovation offers households a practical way to reduce energy consumption and carbon emissions and serves as an ideal solution for family activities and corporate ESG sustainability practices.

The DIYGreen system uses recycled bottles as its foundation. (Photo credit: DIYGreen)

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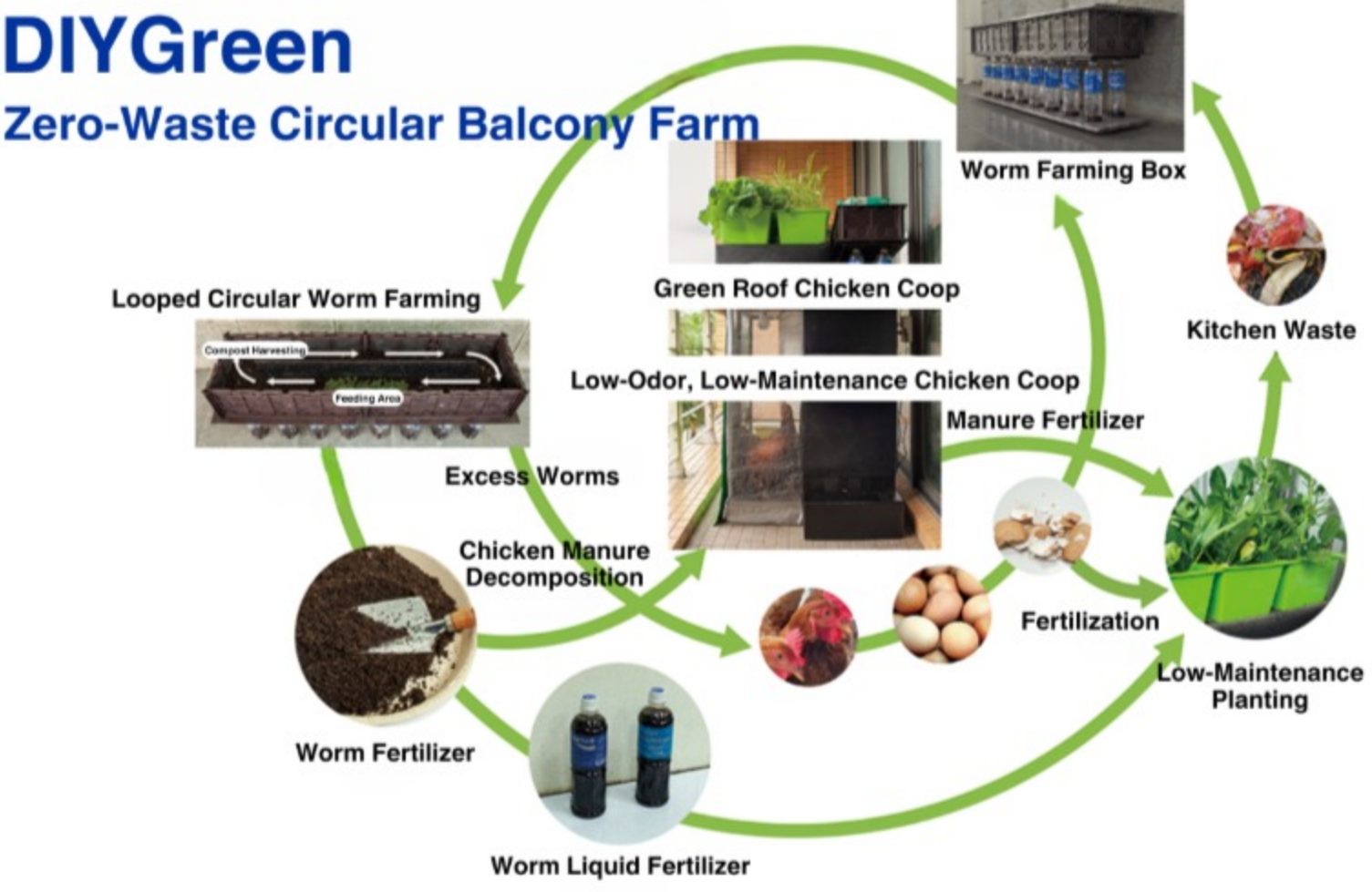
A Multifaceted Solution for Environmental Benefits

Professor Kao highlights the system’s remarkable environmental advantages, including improved urban microclimates, mitigation of the heat island effect, rainwater harvesting for plant growth, and reduced strain on downstream drainage systems. The extensive reuse of recycled bottles promotes circular economy principles, while the system’s byproducts, such as vermicompost and black soldier fly fertilizers, enhance soil quality, delivering multiple layers of positive environmental impact.

Featuring a capillary micro-irrigation design, the DIYGreen system is user-friendly and adaptable. Users requiring as little as 25×25 centimeters of space can install pot- or frame-style garden kits in corridors, balconies, rooftops, or even on the ground. The modular system allows for flexible area expansion based on individual needs. Moreover, users can raise earthworms to compost kitchen waste into organic fertilizer or use black soldier flies to process food waste, providing a comprehensive and efficient solution to traditional waste management challenges.

Low-Maintenance, Odor-Free Chicken Coop: Creating a Zero-Waste Circular System

In addition to urban farming, DIYGreen introduces a “low-maintenance, odor-free chicken coop” designed for rooftops and balconies. By using vermicompost as bedding, the coop effectively neutralizes odors from chicken droppings, addressing a common issue with traditional coops. The system supports unattended maintenance for at least a week, making it an ideal addition to the zero-waste urban farming ecosystem for city households.



The DIYGreen Zero-Waste Circular Balcony Farm concept revolves around integrating sustainability, innovation, and practicality into urban living. (Photo credit: DIYGreen)

Since its launch, the DIYGreen Zero-Waste Circular Urban Farming System has garnered significant interest from schools, communities, and tech companies. This year, Professor Kao’s team introduced remote training courses to educate seed teachers on integrating the system into campus education. Students can now experience the entire farm-to-table process, starting with planting seeds and culminating in harvesting their crops.

Professor Kao emphasizes the importance of promoting sustainable living, encouraging more families to join the initiative and contribute to Taiwan’s environmental improvement. With its low cost, ease of use, and educational value, the DIYGreen system exemplifies NYCU’s sustainability and innovative technology leadership. Looking ahead, NYCU remains committed to driving sustainable innovation, offering intelligent solutions to the global challenges of climate change, and advancing toward a net-zero future.

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Back

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