LafargeHolcim Awards
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Acknowledgement prize 2017

Cricket Shelter

Modular edible insect farm, New York City, USA

Main author

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Project data

Project group:	Materials, products and construction technologies
Client:	Art Works for Change
Project background:	Research and development
Planned start:	November 2018

Image 1: The UN has mandated insect-sourced protein a major component to solving global food production problems. This impacts people globally, as raising livestock is not possible at our current rate of consumption and resource extraction. A low-carbon protein source, crickets are a key option to provide people with required protein, considering the impending food crisis. The displayed circulation system articulated on exterior integrates the bio-units into one agricultural system for crickets.

Summary and appraisal of the project by the jury

This pavilion is a demonstration of an urban farming system that minimizes the ecological footprint of protein-rich food production. Animal meat production is extremely resource intensive. This project proposes an alternative that emits just 1 % of the greenhouse gas emissions and requires 0.001 % of the land to produce the same amount of protein annually when compared to beef production. The interconnected pods that comprise the structure include cricket habitats and their water and food supply connected via circulation tubes. The modular construction educates consumers on the use of the farming apparatus, which ultimately envisions a food supply chain decoupled from environmental destruction.

As provocative as this entry might seem, it is nonetheless commended by the jury for its radical approach to food systems. The project should be seen as a provocation to the status quo of meat production, which is carbon intensive. It proposes a form of protein that is less carbon intensive. The exuberant architectural expression was understood by the jury as a means of calling attention to the possibilities of insect farming, making it appear sanitary and futuristic, if not yet palatable.

Statements on the sustainability of the project by the author

Planet: Resource and environmental performance
Cricket Shelter is an urban farming system and temporary shelter that minimizes the ecological footprint of protein-rich food production. It is a well-established fact that industrialized animal agriculture accounts for one fifth of all greenhouse gas emissions, and with global demand for meat projected to double between 2000 and 2050, the industry's space requirements constitute one of the most significant drivers for deforestation in the world. This project proposes an alternative: with 1 % of the greenhouse gas emissions and requiring 0.001 % of the land to produce the same amount of protein annually as cattle farming, environmental destruction need no longer be the consequence of ensuring our food supply.

People: Ethical standards and social inclusion
Cricket Shelter operates as a hybrid typology providing an ultra-hygienic farming method for consumption of insects. As a modular structural system, it lends itself to simple construction and deconstruction in various site-specific orientations, making it easy to educate consumers on use and maintenance. As a shared farming system, in the spirit of community gardens, it contributes to the formation of inclusive, socially viable environments and the sustainable development of vacant lots. By bringing alternative agriculture practices and entomophagy into a given community's collective consciousness, Cricket Shelter contributes to the education and empowerment of the public with regard to their role in sustainable production and consumption.

Progress: Innovation and transferability
Cricket Shelter is a self-sufficient, interconnected system of structural pods which doubles as an optimal environment for supporting the lifecycle of crickets. Its flexible construction and mobility renders it accessible worldwide. The embedded ecosystem permeates the structural system, each independent module linked by tubes connecting the elements to render the crickets "free-range". Since insect farms often experience wide spread contamination, the adaptable circulation system articulated on the structures exterior can be modified to provide quarantine conditions and mitigate the effects of bacterial or fungal infection. In this way, Cricket Shelter offers a sanitary solution to current entomophagical activity without forsaking the ethics or the genetic advantages of the system.

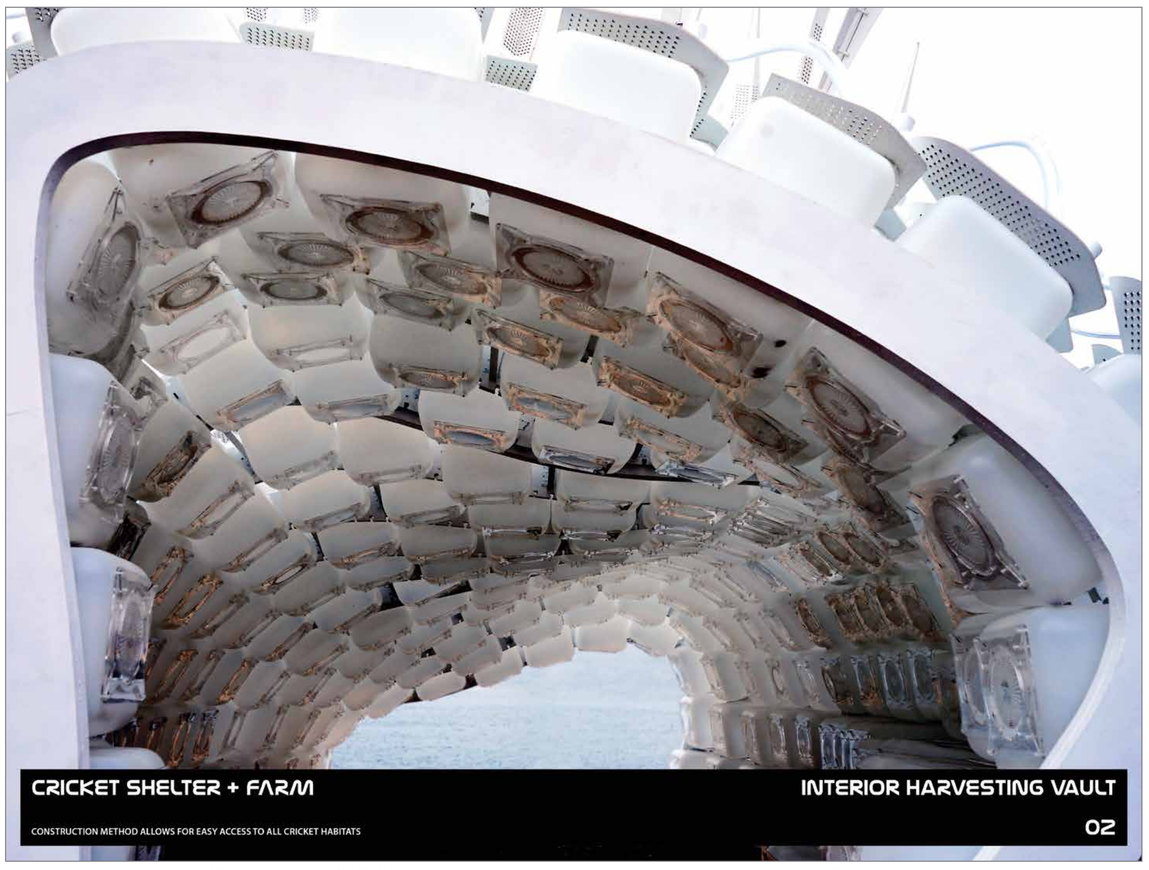

Image 2: Interior, housing 224 biounits for 22,000 crickets. Modular bio-units designed to fulfill cricket specific spatial needs, allowing them to thrive and reproduce within the system, and providing appropriate spaces for hibernation, easy harvesting, feeding, sorting the young from the old, breeding, and longitudinal circulation. As a modular unit it is accessible as a community agricultural tool, adaptable to any existing urban space: community gardens, empty lots, rooftops, and waterfronts.

Further authors

Maria Aiolova, Melanie Fessel and **Vivian Kuan,** architects; **Felipe Molina, Matthew Tarpley, Jiachen Xu, Mathew Mitchell, Wilson Francis Slagle, Weiqiao Lin, Madeline Laberge, John Andrew Mikesh, Molly Ritmiller, Liana Grobstein, Michael Chambers, Lissette Olivares, Cheto Castellano, Shandor Hassan, Christian Hamrick, Ivan Fuentealba, Sung Moon, Kamila Varela, Yucel Guven, Chloe Byrne, Miguel Lantigua-Inoa,** and **Alex Colard,** researchers; Terreform ONE, Brooklyn, NY, USA

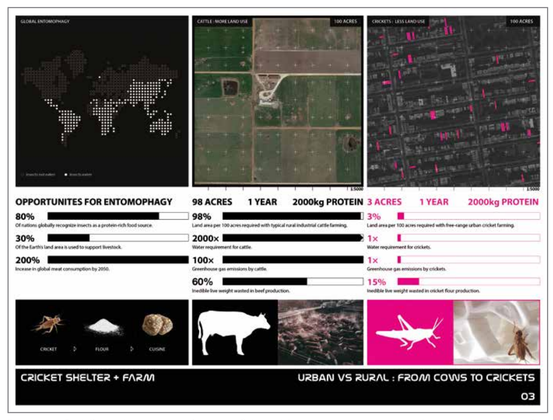

Image 3: Visual comparison of land/water use, greenhouse gas emissions, and waste between cow and cricket.

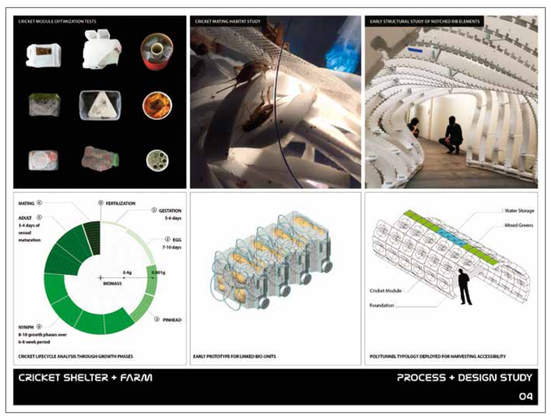

Image 4: Research on cricket life cycle and habits and its implications and expression in space and volume.

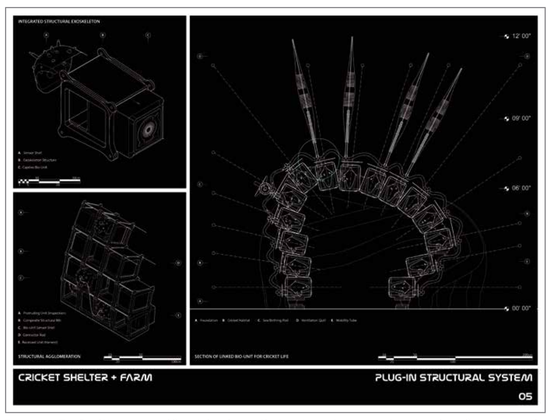

Image 5: Quills magnify chirping, linked arches and colonies for genetic propagation and electronic monitoring.

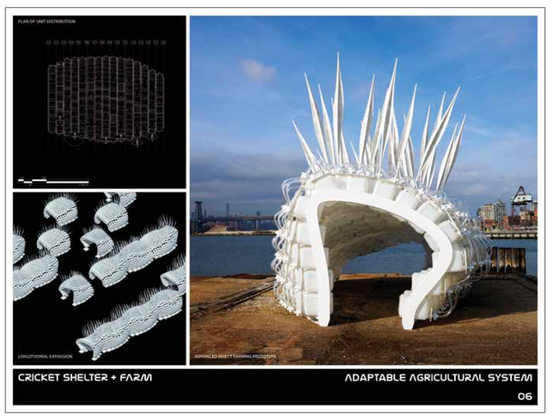

Image 6: Adaptable agricultural system, applicable for various urban conditions from empty lots to rooftops.

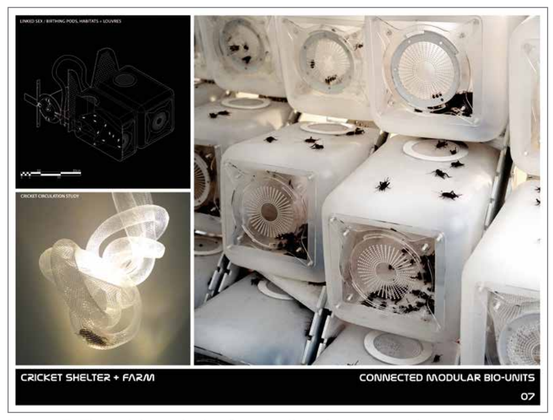

Image 7: The crickets desire for ventilated spaces and porous surfaces led to manipulations of the form.

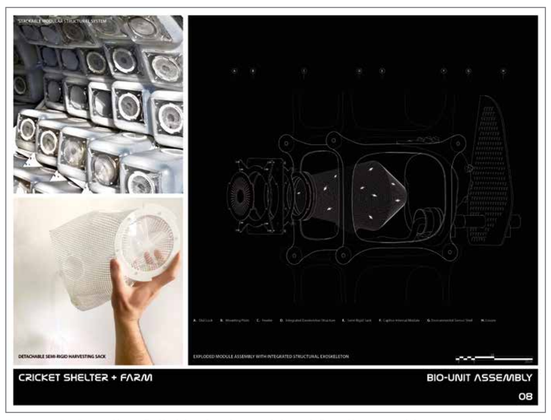

Image 8: Details of dial locked combined feeding and harvesting gates.

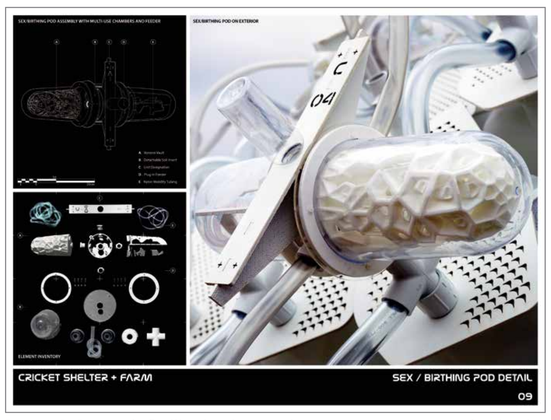

Image 9: Sex pods facilitating interaction to encourage reproduction integrated in a multi-use chamber.

Image 10: Typical shelter set up, adaptable to meet various site constraints.