AND NOW FOR SOMETHING COMPLETELY DIFFERENT

Indoor garden or open greenhouse? Take a look at this innovative, award-winning design for a community garden in Japan and decide for yourself

Photographs: Shinkenchiku-sha
Words: Stephanie Marion
Community and food gardens can be difficult to design, as the aesthetics of the scheme must often give way to practical concerns. A group of graduate students from the College of Environmental Design at University of California, Berkeley, has overcome these issues with flair, however, designing and building an extraordinary vertical growing space that is equal parts open building and enclosed garden, both beautiful and functional.

Next We Grow began as an entry for the annual LIXIL International University Architectural Competition. The sustainable design challenge is hosted by the LIXIL/Hit Foundation in Japan, which promotes research into sustainability and renewability in the building industry, and provides grants and training. The foundation runs a site in Hokkaido called Memu Meadows, where the winning entries are actually built.

Professor Dana Buntrock of the Berkeley Department of Architecture, and Chair at the Center for Japanese Studies, was invited to enter the fourth LIXIL competition, and chose a team of two Taiwanese, two Chinese and one American graduate student to tackle the topic, ‘A Space for Enjoying Hokkaido with All Five Senses’. Their initial concept centred on the idea of ‘A House of Food, for Food’, which led to Next We Grow. A meeting of East and West, the idea combined experience of renewable materials in California, where the students are studying, with an understanding of horticulture and community in Asia, where many of the team are originally from.

Initial ideas

“The project revolves around the lifecycle of the foods of Hokkaido,” explains team member Yan Huang, “which helps to determine the elements that make up the Nest, including growing, harvesting, storing, cooking, dining and composting. The fertile farmlands of Hokkaido provide abundant and varying foods, and create a horizontal agricultural landscape. The Nest, on the other hand, creates a three-dimensional frame, which elevates this landscape vertically.”

The construction covers 85m², and is made of a plastic skin with a corrugated base and wood frame. The Nest is made from a concrete base with wood frame and corrugated plastic. The Nest is a hollow concrete with a corrugated base and wood frame, which uses smaller pieces of wood to generate a larger column,” says Jan. The timber frame could also “mimic the vertical spatial experience of a Japanese larch forest, from which food is traditionally hung to dry.”

Team members Hsiao-Wei Chang, Jizheng Dong, Yan Huang, Baxter Smith and Hsin-Yu Chen discovered that their entry had won in March 2014, and some of them flew to Japan to prepare for the build. There, they were lucky enough to receive guidance from the competition’s chief juror, architect Kengo Kuma, who is known for reinterpreting traditional Japanese architectural elements using natural materials. Also a professor at the University of Tokyo, his work includes the Stadium for the 2020 Olympics.

Under the supervision of Takumi Saikawa from Kengo Kuma & Associates (KKA), the Berkeley team modified the initial design into a more specific set of construction drawings, with many improvements. “It took considerable effort to identify a way to join materials, influenced by both local carpentry practices and the Japanese material market,” explains Yan. “We were also under a considerable time constraint with the entire building process to take only six months to complete.” The project broke ground in September 2014 and two members of the team, Hsiao-Wei Chang and Hsin-Yu Chen, stayed in Japan to oversee and document the construction process.

Space to grow

The completed Nest displays all the ingenuity and innovation the team’s design promised, with clever, original yet simple ideas implemented throughout: turning it from a design prompt into a functional, usable space.

The exterior structure is a cube of planting proportions, which becomes a beacon of soft light on cold winter evenings. The funnel-shaped roof harvests rainwater and snowmelt – collected water is delivered to tanks that are used to irrigate plants.

The most striking element inside is the central tea platform, which includes a sunken fireplace.
for making tea. Placed around it are low wooden benches for people to sit and interact, or simply enjoy the structure. Surrounding this area are planters, integrated into the floor, into which vines have been planted. Netting and hemp rope is attached behind them, which will guide the climbers upwards to create a green membrane that eventually wraps around the tea area.

On the third and fourth levels there are two types of planters, in which local vegetables are grown. The plants here can take advantage of the improved light and thermal environment, prolonging their growing season. “The planters are hung from the wood structure in areas with sufficient sunlight, and are used for growing beans, lettuces and shallow root vegetables such as daikon radishes,” says Yan Huang. “Pumpkins, cucumbers and eggplants require a lot more sun than shade-tolerant plants like beet, lettuce and potato, and are therefore placed towards the southern part of the Nest.” Many of the other smaller planters dotted about the structure contain autumn wheat.

Clever construction

The concrete block at the base of the building has many functions. As well as creating a ‘microtopography’, it helps to block the prevailing northwest wind, and its thermal mass helps ease the daily temperature fluctuations. It also features small openings that can be planted up.

Inside, at this ground floor level, shelves are built into the lower concrete walls for food storage. A kitchen is also embedded into the wall, along with a log oven, water tanks and compost toilet. “This allows us to maximise the ground floor area as community dining space, with a large table for many guests. People come in, gather, prepare and enjoy the local food together.”

The polycarbonate skin lets light in and heats the space during winter. “We were aware of the short growing season in this area of Hokkaido, so by working with transparent plastic corrugated sheets we were able to extend the usability of the Nest for plants and people. The sheets capture heat from the sun, creating a greenhouse environment,” explains Yan. “During the hot season, sliding panels on the façade and roof can be opened to promote cross-ventilation.” During autumn and winter, with the panels open, fish and vegetables can be hung to dry on the wood frame, echoing the traditional, local ‘cold wind drying’ method for food preservation. This openness also helps the building interact with the surrounding scenery.

Structural and mechanical engineers, as well as a versatile contractor, were joined by local farmers and growers on the project, which was completed by the end of November 2014. Members of the original design team returned to Memu Meadows for the launch party, where Kengo Kuma himself said a few words about the finished Nest. “I believe Kuma-san is pleased with the project,” says Yan Huang. “I was in Tokyo this summer and met up with Saikawa-san, who told me that Kuma-san likes the project a lot, and even introduced the Nest to his mentor. We have not had a chance to go back and visit, but the project looks like it’s in pretty good shape. The fifth year LIXIL winning team from Oslo had its celebration party in there just last month!”

For more details on Nest We Grow, the LIXIL JS Foundation and its annual competition, go to www.lixiljsfound.com