02 ZERO HUNGER

End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
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64
Publications in SCOPUS

41
Course units

5%
Percentage of all Taiwan publications

894
Students who chose the course units

Research

Unmanned Ground Vehicles and Agriculture

The Russo-Ukrainian War has prompted countries to carefully examine the issue of food self-sufficiency. The average age of Taiwanese farmers is close to 65, which is a major motivation for researching how to reduce manpower and labor in agriculture, fishing, and animal husbandry with the assistance of technology, as well as reduce our dependence on pesticides for the sake of the environment. In a related study, the agricultural self-driving vehicle team, under the supervision of Professor Shean-Jen Chen of NYCU's College of Photonics, applied “smart photonic laser pest-control technology” in orchards, using AI image-recognition technology and lasers to suppress pest populations. This laser technology can be used in tandem with unmanned ground vehicles, which can replace manpower and operate 24 hours a day, reducing both labor and pesticide costs and increasing the agricultural yield. The research team was awarded the Ministry of Science and Tech 2021 Future Technology Award for its innovative work.

3D Modeling Provides Early Warnings of Farming Risks

In response to the challenges in farming caused by climate change, the laboratory of Professor Mang Ou-Yang of NYCU’s College of Electrical and Computer Engineering set out to change farmers’ methods of watering, fertilizing, harvesting, and other farming practices based on the rule of thumb. To do so, the team created a “lightweight drone swarm” equipped with optical photographic equipment to scan 3D images and frequency spectra of fruit trees’ leaves, branches, and flowers. They covered trees of different varieties and in various locations, along with their surrounding areas, thereby compiling a 3D model of fruit tree growth. The data can be used to analyze the growth of fruit trees, fruit maturity, severity of pest and disease damage, to help farmers accurately apply corresponding measures and thus reduce agricultural losses. Furthermore, optical spectrum analysis can assist the farmers to identify the fruit sweetness and moisture at the current time, helping farmers determine when to conduct non-invasive fruit grading or begin their harvest.

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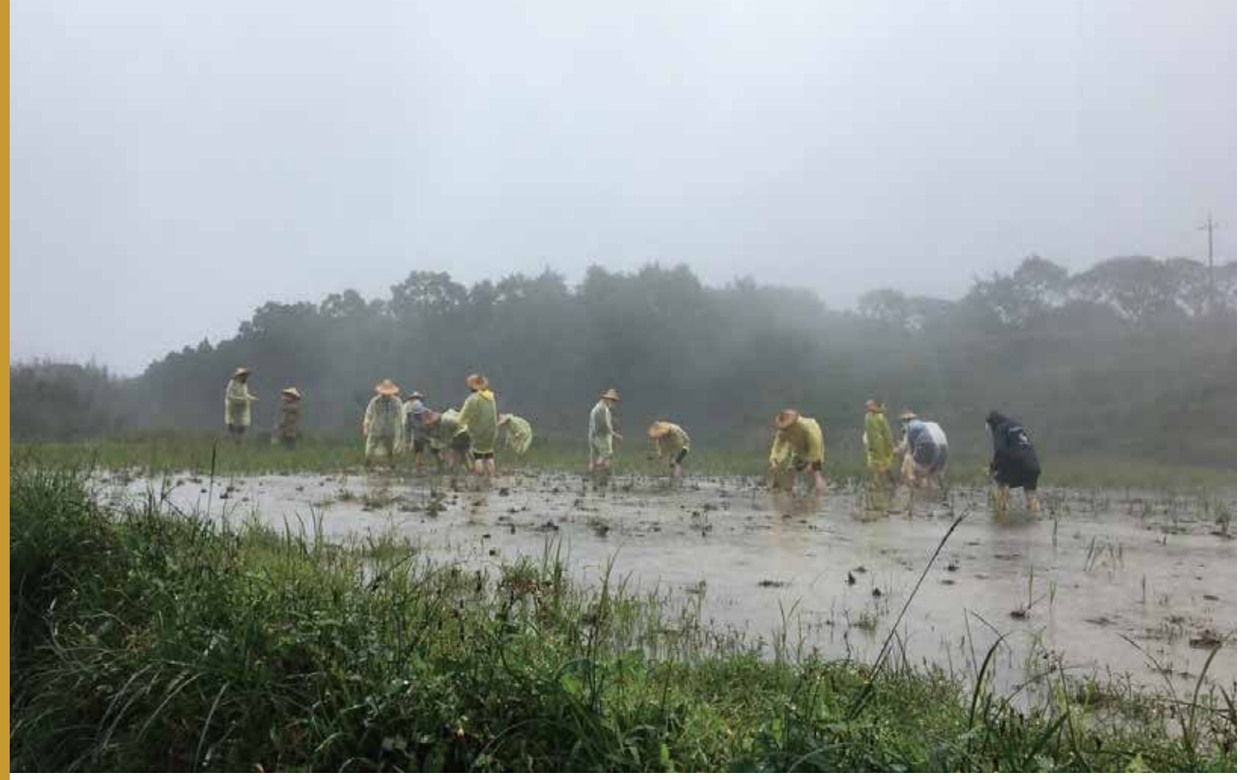
Social Impact

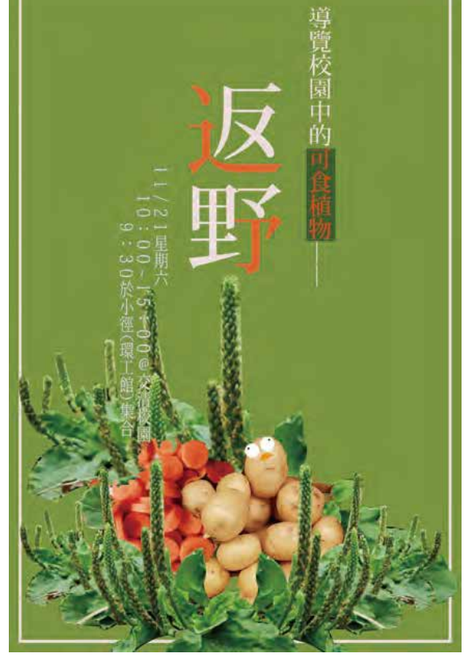
Sixth Fuel Factory - Sustainable Living

The Big Chimney area of Hsinchu's Sixth Fuel Factory was restored and repurposed thanks to the joint efforts of NYCU and the local government. The project aimed to inspire local residents to live sustainably. With that goal, the Sixth Fuel Good-Neighboring Team collaborated with the Permaculture Sustainable Living Team to promote some “good neighborly” spirit through the establishment of the “Sustainable Community Canteen,” in hopes of restoring a mutually supportive and resilient lifestyle by creating an environment for people to plant vegetables and fruit trees and raise chickens for eggs. A shared refrigerator was set up and sustainable dishes were developed with the aim of encouraging people’s warm human interaction through sharing food.

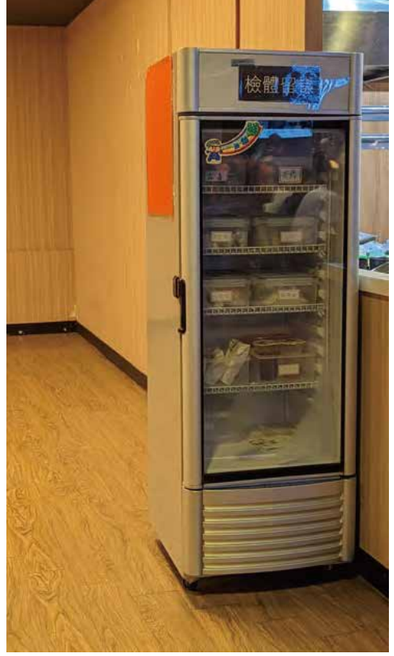
A Regional Revitalization Salon in a Historic Hakka Building

The historical Zhongxiao Shrine building of NYCU’s College of Hakka Studies provided the venue recently for the launch of *Second-Generation Regional Revitalization—New Life of Hakka Villages*, a book written by NYCU students with the guidance of professors. For the launch, many young second-generation farmers (tea, honey, olives, and organic produce), second-generation workers (charcoal factories, horticulture industry), and second-generation businessmen (cafe and restaurant owners) who have returned to their hometowns were invited to discuss how best to face the challenges posed by inheritance and innovation as well as local and international development. Going forward, the College of Hakka Studies will continue to offer a platform where the local youth can access information from the industry, government, and academia, to help them thrive and keep making positive changes.





“Return to the Wild” campus tour poster



Food Management Committee

Student Cultivation

Offering Interdisciplinary Agriculture and Fishery Courses

Through its research projects and the establishment of agriculture and fishery-related courses such as “Anthropology of Agriculture and Aquaculture,” “Agriculture and the Economic Environment,” and "New Agriculture Innovation Technology and Industry," NYCU guides students to explore the developments and trends of global agriculture and fishery. The aim is to broaden their vision of traditional agriculture and fishery industries, to encourage them to care for farmers and fishermen as well as sustainable agriculture and fisheries, and to inspire the students to dedicate their expertise to the agriculture and fishery industries. They may do so, for instance, through technology, economics, regulations, marketing, activist networks, ethnic development trajectories, food safety, or the global food system.

Stewardship

Providing More Affordable, Healthy, and Diverse Food Options

To provide students and faculty members with an affordable, healthy, and diverse dining environment, NYCU has established a Food Management Committee to manage food-related matters. The restaurants that operate on campus are considerate of students’ financial concerns and most of them offer preferential student prices ranging from 10% to 20% below the market price. Diners are surveyed each semester on how they feel about the restaurants, various performance evaluations are carried out, and regular testing is conducted on the food to ensure food safety. In recent years, considering the university's growing number of international students, the contracted restaurants also include some providing Japanese, South Asian, Korean, American, and vegetarian options.

Tour of Edible Plants on Campus

“Foraging” is one of the most primitive ways for humans to obtain food, and it represents a body of knowledge that is still passed down and used in Taiwanese villages today. Students of NYCU's Department of Humanities and Social Sciences organized a “Return to the Wild” campus tour recently, which introduced participants to common edible wild plants and helped them learn how to forage and identify such plants. The event included an introduction to the book *Against the Grain: A Deep History of the Earliest States*, which reflects on the definition of human progress and the choices we make throughout our lives today.