

ECHO Greenhouse Project Proposal

Overview

Like a number of universities, the University of Tokyo has its own **sustainability initiative** (Todai Sustainable Campus Project; TSCP). However, the current approach is limited to reducing scope 1 and 2 carbon emissions through energy conservation. Moreover, this approach does not involve any direct student participation in promoting sustainability.

Campus farms, a type of collaborative sustainability project, provide students with hands-on experience of the food system. Campus farms are frequently found in western universities, and can reach a scale large enough whereby they supply ingredients to cafeterias and require full-time farm managers.

On Komaba I Campus, there is currently **one vegetable garden** near the Northeastern exit. However, it is jointly maintained by the Beautification team (美化チーム) and Komaba nursery school (駒場保育園), rather than as a student initiative.

Consequently, we propose to revamp the greenhouse near the back gate as a student-led campus farm, and thereby increase student engagement in sustainable on-campus activities.



3 Pillars of Komaba Campus Farm

#1 Eco-consciousness

We will always plant in accordance with the **season**. In **summer** we would consider plants such as tomatoes, zucchini, eggplants, and leafy greens such as rocket, green bell pepper, and cucumber. In the **winter**, root vegetables such as daikon, carrot, and also snow peas can be grown. We can either grow these plants from seed or buy seedlings. We will also give preference to seeds that are resistant to certain diseases, such as early/late blight in tomatoes. In line with **sustainable farming principles**, we will avoid the application of synthetic agrochemicals.

#2 Student-led initiative

Assuming that no equipment is available to us at the greenhouse, the budget for initiating this project based on rough estimates is **34,000 yen** in total. The detailed breakdown is in Appendix 1. We will finance the project either through the **personal contribution** of ECHO members or **funding from Gakuyukai** (学友会). Furthermore, **seven ECHO members** living near Komaba are dedicated to overseeing the growth of plants daily, according to a **shift schedule**. We also have a regular **weekly meeting**, where we can discuss overall farm management. Once we receive permission to use the greenhouse, we will formally ask professor Raquel Moreno-Peñaranda to become our **faculty advisor**, as she showed support for our initial Cornbeanie farm project proposal.

#3 Community engagement

Campus farm is **not a business**. All products will be distributed for free with the “**Produced in Komaba** (駒場産)” tag to students and professors in front of the cafeteria. Furthermore, we will actively involve all members of the Komaba I campus community, not only ECHO members, to ensure that the campus farm can bring larger educational impacts. We will recruit **student farmers and professors** by publicizing our project on Facebook and Komaba lodge and university bulletin boards. Also, we will design a **poster**, host a **workshop**, and open a booth at the **Komaba festival** to publicize the concept of food sustainability. One important aspect of sustainability in food is lowering our carbon footprint by consuming locally produced vegetables as much as possible.

Timeline

STAGE 1: Preparation

- Research type of plants, seed labelings, fertilizers, soil, maintenance, methods of pest control
- Consult people with experience in the greenhouse (e.g. Professor Okada)
- Recruit volunteers (student farmers) (e.g. Post on Komaba Lodge Facebook group)
- Assess the facilities (electricity, water, drainage system) in the greenhouse and modify if necessary
- Repair broken glass panels
- Remove plants and clean the interior
- Install insect screening around open areas, such as the door, air vents, water systems
- Buy seeds and equipment
- Prepare the soil

STAGE 2: Planting & Growing (July and beyond)

- Get compost from the Beautification team
- Start planting
- Maintain the greenhouse
- Monitor the growth and modify the techniques or factors that are out of line
- Manage the recruitment process
- Replan our budget if necessary
- Spread our idea of the greenhouse

STAGE 3: Harvest

- Analyze the quantity and quality of yield after harvest
- Understand the factors that caused issues with yield (if there exist any)
- Plan to sort out any issues faced
- Supply our yield
- Survey participants and other students and professors of Komaba I Campus
- Plan for the next annual cycle

Appendix 1: Budget Breakdown

Equipment/Material	Purpose	Estimated cost (JPY)
Cleaning supplies (Broom, bucket, disinfectant, glass cleaner, sponges, etc)	To keep the facility clean and organize the bushes and grasses surrounding the greenhouse	Depends on whether the university already has this equipment
Compost	To grow plants	0; Provided by the Beautification team
Germination trays	To germinate seeds in	4,000; Depends on the scale of cultivation
Glass	To replace broken panes	Depends on the current greenhouse condition
Gloves	For gardening safety	1,000 for 10 pairs
Hand washing tubs and hand wash	To ensure no spread of bacteria	3,000
Insect screening	To prevent pests from entering the greenhouse	3,000
Pitchfork	To overturn soil	3,000
Planting soil and/or pots	To plant more mature plants in (in planting beds, depending on the set-up in the greenhouse)	Depends on the condition of soil beds in the greenhouse, whether there are soil beds or whether we will require pots
Porous watering hose	To water plants	4,000 for 15 meters
Potting mix	To germinate seeds in	5,000; Depends on the scale of cultivation
Seeds/seedlings	For planting	2,000; Depends on species and quantity
Shade cloth	To shade plants from the summer sun	3,000
Shovel	For turning over soil and compost	5,000
Smaller shovels	For planting etc	1,000 for 3-4 shovels
Spray bottle	To water germinating seeds	1,000
Tight plastic / reflective material	To allow light, stop heat and moisture from escaping	2,000
Watering cans	To hand-water plants	2,000
Water Hoses	For water access	Depends on the existing water supply and hose condition

Appendix 2: Case of Michigan State University - Student Organic Farm

The Michigan State University's The Student Organic Farm was started in 1999 by a group of students who were interested in learning to grow food sustainably. At the time, there were no classes in organic agriculture at MSU, and students wanted to acquire knowledge through a hands-on, experiential format. In other words, they strove to apply their classroom learning in the context of a working farm.

The aim of the farm was to provide a place where students could come and volunteer, work, visit, and have input on the development of the land and farm. Over the years, the farm has developed into a place where many different groups participate in growing their own food, which in turn has created many learning opportunities.

In 2020, this Student Organic Farm achieved:

- 23 Undergraduate Student Members
- 1,291 Hours of Learning Time
- \$220,405 total sales¹
- Over 200 Unique Plant Varieties Grown
- Thousands of pounds of food donated to the campus food bank



Source: <http://www.msuorganicfarm.org/>

¹ Even though this Student Organic Farm sold the produce and generated funds to run the farm, we do not plan to sell any produce from Komaba.

Appendix 3: Case of the University of Arizona - Rooftop Greenhouse

The University of Arizona's Student Union created a Rooftop Greenhouse that teaches, nourishes, and empowers students. Twice a week, University of Arizona's students harvest cucumbers, tomatoes, and bell peppers from the Rooftop Greenhouse and send the vegetables down to the Campus Pantry, where approximately 500 students, faculty, and staff pick up free groceries. This mostly student-run, environment facility is the first rooftop campus greenhouse in the U.S. that can produce food year-round, with ten times the productivity of an outdoor garden.

Students learned and discussed:

- Locally grown produce and urban agriculture
- How to manage plant nutrition
- Greenhouse management techniques
- How and where our food comes from
- Food politics, sustainability, health, and the environment
- Food systems and relations with culture



Source:

<https://news.arizona.edu/story/rooftop-greenhouse-teaches-nourishes-and-empowers-students>