

## **Fund for Innovative Teaching (FIT) FINAL Report on Agriculture Technology Outdoor Classroom**

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### **Background:**

The Outdoor Classroom was proposed as a place-based learning space for the Agriculture Technology program. Using the funding from the Fund for Innovative Teaching our department has created additional learning spaces in the area behind the greenhouses and barn at Chilliwack campus. The soil in this outdoor space consists of areas with compaction and with deposits from other sites (from construction of UFV Chilliwack campus). Below this is very young soil (entisol) typical of a river bed, with no organic layer. Cultivation therefore is very challenging. With the Outdoor Classroom we've begun to work around this significant challenge of our physical space in four ways.

### **Summary of work done:**

First, we've built series of raised beds to grow plants (Fig. 1). The beds consist of 15 beds that are 3-m long X 1-m wide, and 4 beds that are 10-m X 10-m. They have been/will be used by students to design, implement and evaluate studies on the effect of different nutrient inputs on cover crop growth (Agri 272), practice using insectary plants as part of a kale and Swiss chard planting (Agri 203), and hunt for arthropods, weeds, and diseases on vegetables and flowers (Agri 163). These beds allow us to grow plants on an annual basis and address short-term questions important to producers, specifically impact of inputs on yield and pests.

Second we have established long-term soil remediation plots coupled with a weather station (Fig. 2) to measure how various practices can alter soil properties, specifically increase productivity by building organic matter. These plots will be planted by students in Agri 311 in Fall 2019 and will be followed by those same students in Agri 371 in Winter 2020. Third, in Fall 2019 (once it starts to rain) and continuing through Winter 2020 we will be planting our agroforestry demo. In consultation with BC Ministry of Agriculture staff (lead by Dave Trotter, retired, BC Agri Abbotsford) we've decided that the demonstration will use Christmas trees as the long-term (harvest in 3 to 5 years) income generator. Students in Agri 142 and 247 will be tasked with researching options for annual income generation in Fall 2019. The Agroforestry demo will be an excellent learning opportunity for Agri 371, because one of the main learning outcomes for that course is practical ideas for improving both ecological and economic resilience of current agricultural practice. All of the materials for the agroforestry plots have been purchased with the funds from FIT and so planting is just pending the fall rains. Finally, with the funds from the FIT we have been able to expand the pollinator garden (Fig. 1). This garden was started by and continues to be expanded by students in Agri 371. On the first day of class in January 2019 we started Agri 371 in the garden, where it was warm enough that several different species of flies (an overlooked pollinator) were foraging. The long-term nature of the pollinator garden, the soil remediation and agroforestry plots allow us to incorporate long-term learning into some of our classes – i.e. the data generated in 2019 can be used by students in 2025 – on the same set of plots. This is a critical element of getting future producers to think about the long-term impacts of their practices on soil health and biodiversity.



Figure 1. Answering long-term questions with the pollinator garden (left) and short-term questions with the raised beds (right).



Figure 2. Looking west towards the Outdoor Classroom. The land in the immediate foreground is what the space looked like originally (mixed weed species are the main ground cover), in the middle of the picture is the weather station and soil remediation plots, behind those are the raised beds. The area around the beds is mulched with chipped material from UFV grounds.

**Meeting UFV's strategic plans and goals:**

In our original proposal we highlighted three of UFV's strategic plans and goals that the Outdoor Classroom was able to meet. First, we are able to meet the Education Plan goal of Prioritizing Learning Everywhere. However, this is NOT possible in the outdoor space in its original state (see above). So re-imagining the space as a multipurpose Outdoor Classroom – where we can grow on small

scale (raised beds) and demonstrate practices such as pollinator gardens and agroforestry, allows us to use the space for learning.

The second goal of “Integrate Experiential Learning” is already something we do in Agriculture. However, by having space for students to conduct a field experiment on campus during the Fall semester we were able to enhance our experiential offerings (especially for Agri 272). Also, having plants growing outside allows students space for collecting pests (Agri 163) and beneficial organisms (Agri 203 and 371). Logistically, the Outdoor Classroom makes for more efficient use of student’s time and money – it takes 10 minutes to walk down to the outdoor classroom, versus 30 to 45 minutes to drive to an off-campus site on an cooperating farm and there is no additional fuel costs.

The third goal, from Vision 2025: “a university in which learning drives the system and structure of the university, rather than the structure shaping the learning” is harder to measure. However, the Outdoor Classroom has allowed us (Agriculture) to begin some interesting collaborations. For example, in Summer 2018 and Summer 2019 we worked with Campus Rec and had participants in the CEP summer camps learn about planting and harvesting vegetable crops (Fig. 3) and observing pollinators. We collaborated with Science Rocks and had their participants measure chlorophyll content in leaves and then harvest veggies to take home. These collaborations with the summer camp programs provide ideas, in terms of both content and logistics, of how to collaborate with other programs at UFV. For example, students from EDUC 453 attended a class in the Outdoor Classroom where they learned about different ways they could incorporate nature activities into whatever outdoor spaces were available to them at their schools (e.g. parks or on-site gardens). We will be collaborating with the culinary program in Fall 2019 and IDS 300C in Winter 2020. We feel that the accessible nature of the Outdoor Classroom (i.e. we are growing food but not on a working farm where there are restrictions on where and what we can do for a number of reasons) means that students from other programs have access to a variety of experiential opportunities for learning about agriculture (Culinary), or plant propagation (IDS 300C) or other broader areas such as pedagogy (EDUC 453), right on campus.



Figure 3. Campus Rec summer camp participants harvesting kale as part of the Trades Explore camp. The raised beds were built with FIT funds and are an example of how we were able to plant and grow food in the field space behind greenhouse/barn despite the heavily compacted soil. These same beds were also used by Agri 163 in Fall 2018 for collecting pests and by EDUC 453 in Summer 2019 for learning about K-5 friendly activities.