IDDS SISAKET Thailand 2017

Project Journey

Why?

In order to keep track of what was developed at each summit (both for your IDDS, the local continuity, and IDDSs, we need to understand what teams produced and if/how they plan to move forward with it after IDDS. **Please have complete the information below and turn into your design facilitator no later than 2 weeks after the summit.**

All project journeys will be uploaded to the IDIN Resource Library for public viewing. If you wish to read about past IDDS projects, you can search the resource library by going to "Document Type" and selecting "Presentations and Reports." About half of the projects from an IDDS tend to continue in one way or another. Some projects continue in the local innovation center, some continue with a global project team from IDDS or other people in the IDIN network, and some become class projects for further development. Some projects do not continue because project teams learn the solution is not a good fit or the users were not interested in it. Whether the project continues or not, we want to be sure to capture what was made, how it came to be, what lessons were learned, and if/how the team wants to continue working on it. This information will be helpful for anyone wishing to learn from the project and/or continue the project.

Outline for Project Journey

Below is an outline of information we need included in each project report. For each of the sections below, to the best of your ability, please document all raw data and process including activities and tools you used as you went through the design process.
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Project Name: Organic Methods for Apple Snail Management

Team Members: Teng, Munira, Tyler and Vanchan as well as Mook and Ben

Brief description of the project (2-3 sentences):

To create learning about rice farming and pest issues, collaborate with local farmers to understand their problems and find effective ways to reduce the invasive snail population and destruction of young shoots by juvenile snails.

Starting Context

What was the original problem framing brief you began with?

Golden apple snails are an invasive species that cause a lot of problems for rice farmers due to the amount of young paddy shoots destroyed by the juvenile snails.

What are some basic statistics about the town you worked in and the local or national context that are relevant to this project?

A foreign apple snail originally from South America, referred to as the golden apple snail in Southeast Asia, was introduced into Southeast Asia in the early 1980s either as a food source or aquarium pet, and escaped or discarded snails invaded rice paddies. All of the rice farmers in the communities we worked with were familiar with the snail.

Who was the original contact you worked with from the community?

The team worked with Bryan, Tui, Tui's dad, Onanang (Tyler's homestay mother), Sanith, Vanchan's homestay father, and an officer from Land and Development Office, and several other community members.

Gathering Information (Wed, July 26?)

What does research show about this particular challenge?

The snail problem has becoming more serious in Thailand over the years and the farmers we met expressed hope for an effective solution to this problem. The population has increased over the years to the point where it is now said to be the most important rice pest in Thailand (Janyapeth and Archawakom, 1999). This is because the snails lay many eggs (200 to 300 per packet and as many as 1200 at a time), which have a high survival rate, mature quickly (about 2 months), live a long time (4 to 5 years), and can survive for up to 5 months during drought or dry seasons (Mohan, 2002).

From your interviews, homestays, and observations what are you hearing/observing are the main challenges people are facing related to your project topic?

Farmers have few methods for dealing with too many invasive snails other than chemical treatment or collecting snails or destroying snail eggs, which are laborious and tiring processes, especially for farmers with larger farms. Not all farmers report losses due to snails, and it appears that some farmers have fewer problems, while others may not notice the losses. Many of the farmers are older and hire labor to work on their farms.

What did you observe was valuable to people?

There is widespread concern for health and well-being. Almost all farmers advocate for organic farming and expressed their concern about the use of chemical treatments. Many people expressed to us an interest to see an increase of valuable products from the rice field when addressing the problem. Some said we should try to decrease the cost of production from hiring labour and buying snail killer product.

What did you discover about community behavior and habits that is relevant for this project?
Some of the farmers are still missing the idea of organic in farming. Some farmer tend to use the chemical when the snail problem gets worse, and it's very hard to deal with it. Most farmers have heard of various remedies for snails and many have tried one or more techniques with little success. The problem may happen less for farmers using the broadcast method, although it's hard for them to know, because farmers use other methods such as heavy tilling that is known to reduce snail populations. The local government office has information on methods for reducing snails, such as through baiting, but these methods appear to be inadequate given the scale of the problem nor widely encourage.

What other insights did you discover about your original project?
Creating a market for snails might actually lead to an increase in snails, so a mechanism for finding on-farm value should be sought. Many farms are informal and do not make use of best practices, so addressing the snail problem for these farms may not have a significant impact, while it would for more commercial farms with more formal practices.

What activities or tools did your team use to collect the information and gain insights? Please including any photos of your process (even of flip chart paper drawings).
We interviewed many villagers who have rice fields in the area, including ones who have a lot of rice fields compared to those who have one or two Rai of fields. We met with the person from the Department of Agriculture in Sisaket. We talked extensive with the members of the family that own and operate Raitong Organics Farm. We studied snails and tested methods in the rice fields and collected snails to make observations and run controlled experiments.

(Re)Framing the Problem (Thurs, July 27)
What are some of the main challenges in your project area that you notice people are facing?
Picking snails to reduce their population is usually too time consuming or expensive due the regular daily need and the large field areas.. In fact, there are too many snails occurring in too wide a variety of conditions to have people pick them or use machines such as robots to find them on all but the smallest farms. When pressed by rising snail

populations farmers may use cheap chemicals instead of trying other methods but don't want to. Farmers lack access to information and knowledge about alternatives. Furthermore, the flow of water from the other areas introduces snails across farms, indicating that a more systemic solution is needed. It is very challenging to prevent the snails from entering the rice fields.

Did the information you gather make you want to change your project completely? If so, how?
No, because it is a crisis for all the rice fields in many countries. In some areas the snails have taken over most of the rice fields.

What is the PATH statement you chose to focus on? What criteria did you decide is most important to include in it?
The statement we chose was "Nok and Som need a cost effective solution for their snail problems that works for farms larger than 5 rai without being labour intensive and respects the ecosystem." We included the personas that were must in a position to be receptive to and benefit from an organic solution. A low cost approach is important because the more informal farmers often make little income from or even lose money rice farming. And in all cases it's important to recognize the presence of nature.

What was the most challenging part about framing the problem for your team? What was the easiest part?
A lack of time to try the method ourselves. Recognizing that there are a limited number of farmers in a position to benefit from a solution right now, but knowing that number will grow in the future.

What activities or tools did your team use to frame the problem?
We primarily used the PATH tool provided.

Co-Creating a Solution (Fri, July 28)
What solutions already exist and why aren't people already using them?
Community members have tried a large variety of approaches. These methods were found to not work or not sufficiently so on their own to address the scale of the problem. For example, people have tried to use broken rice to attract snails which are then disoriented with tea leaves or local plants added to the water.. We verified that papaya leaves can be used to attract the snails to be trapped, but farmers need to spend time daily to collect the snails otherwise they will ran away. More than one farmer tried using ducks. In one case local wild dogs kill the baby ducklings. In another case the farmer stopped because she was losing money, which was a result of buying supplemental feed, which is expensive. Moldy rice husk was heard to kill snails but further investigation determined that it does not do so.

What resources are locally available that you could use to solve this problem?
Raitong Organics Farm as well as the Department of Agriculture in Sisaket are organizations that can serve as resources. Local farmers are willing to experiment and try solutions in their fields. Farms have numerous potential resources such as rice plants and rice in various forms, water, paddies, farming practices, staff, etc. The local communities have resources such as geese and ducks. The ecosystem has resources such as fish, wild birds, etc. Snails can be seen as a resource and become part of the solution and not just the problem, such as by being used as fertilizer on the farm.

Who in the community has shown the most interested in co-creating a solution with your team? Why do you think they are interested?
The family members that run Raitong Organics Farm by far have the most interest. Farmers that struggle to collect snails but don't want to use chemicals. The villagers who own few Rai since all of the rice they grow is to be eaten by the family, so if the snails issue happens in their fields, this will cause them to buy rice for their family. Some of the villagers who do not work as a farmer full time will have their regular job during the day, so the time spent in the field might be issue for them also.

What habits are available that you could leverage as a part of your solution?
Farmers routinely walk their fields and could do inspections or check on devices.. Different approaches to sowing rice leads to different levels of damage due to snails. Management of weeds involves regular adjustment of water levels in paddies that could possibly control snails as well, although a solution of this nature might reduce the snail populations and increase the weed populations and vice versa. Snails come when the water comes.

What solution did you chose to create? And What activities or tools did your team use to design it?
The team chose to focus on an ecological and systemic approach by designing an integrated duck farming system for rice growers. Ducks are introduced to control snails, weeds, and other pests, duckweed is introduced to provide supplemental feed and nutrition to the ducks, reduce weeds, as well as provide nitrogen to the rice plants, and ducks are sold at the end of each season for meat in the market to provide additional income to farms. The team iteratively built a physical prototype, made idea sketches of the system components to refine features, and did financial projections to guide the proposed designs and materials to reduce cost and increase yields and profit. Additional interviews were conducted to check assumptions and adjustments were made.

Technology/Final Prototype (Thur, Aug 3)

What was the prototype your team designed? And how does it work?
We built a full scale physical prototype in a rice paddy with 10 ducks, a fence, and a hutch. Older ducklings are introduced into the hutch with access to a small run in the water with fencing to prevent dogs from killing them. Some supplemental feed is provided to mature the ducks and give them time to identify the hutch with safety and grow old enough to have a chance against dogs.. At the same time duckweed is introduced so that it has time to proliferate. Eventually the run is opened so that the ducks can feed in the paddies and return to the hutch for safety. This needs to happen after the rice is mature enough that ducks won't eat it. The run opens into the middle of the paddy so that dogs find it hard to get to them through the water. The run could also have entries that ducks can use but dogs cannot. Ducks are harvested at the end of the season and sold for meat. They would not survive through the dry season, so egg production is not part of this model.

What materials are needed to build it and how do you build it?
The prototype hutch was built from scrap wood, bamboo poles, and tin roofing held together with nails and large plastic zip ties and wrapped in plastic wind screen. The fencing was made with bamboo poles and plastic wind screen cut lengthwise to create two strips suitable for making meter high fences. The windscreen was connected to the poles with strong plastic zip ties.

How much did it cost to make it?
Just the cost of windscreen, nails, and zip ties purchased locally. All other materials were recovered scrap.

Who is the intended user of the prototype?
Raitong Organics Farm.

Lessons Learned (Thurs, Aug 3)
What feedback did you hear from the community about your prototype? What worked? What did not work?
The fencing and hutch have survived for some time in the face of much rain and wind and have protected the ducks from dogs. The ducks immediately started to eat the snails. Some of the rice in the paddy was too young and the ducks ate some of it. We had to buy older ducks, the only ones available, so some aspects of the cycle could not be tested as planned. Same goes for the introduction of duckweed, which was done, but not before the introduction of ducks as needed. We did not have a lot of time to do testing and take measurements during the summit, but some will be done afterwards by an intern from the summit staying on (Tony!).

What did you learn about the Bang Haan Wao that you think is important to remember when working with the town?
That there are people who want to engage and that they should be engaged more given more time. That rice farming is a strong cultural tradition that changes slowly and a way of life tied to provisioning and well being and identity. That there are many issues with rice farming, especially with informal farms.

What did your team learn about the co-creative design process?
That it's vital to work with community members to bring in their experience and learn about issues and opportunities despite the translation difficulties. That it can be hard bring community members into the design process when you are not sure where you are going. That it helps to have a physical prototype to engage people around. That venture design and financial projections encouraged new and important questions that the physical design did not.

Next Steps/Project Future (Thurs, Aug 3)
Do you think your project should continue? If so, how and why and who in the community is interested to continue working on it? If not, why not and what were key lessons that you learned that you would want others to know about who try to work on this project again?
Yes, it should definitely continue. Our projections show that yields can be improved as well as new sources of income can be created this way. The problem is vital for organic farms that cannot use chemicals and organic rice farming is growing and must grow in Thailand. Respecting the ecosystem and finding a systemic solution that can address the scale of the issue are essential to addressing this problem.

If you think the project is continuing: Who on your team wants to continue working on it? What is the 6 month plan and who is going to be responsible for what? What are some anticipated risks and challenges for this project's development? How much funding (if any) do you estimate you will need for your next steps and for what?
No one on the team is available to continue working on it. The project will continue through support from interns and through the innovation center at the farm once it starts to operate. Olin will work to recruit interns as part of the ADE Placement program. There are many aspects of the project that lend themselves to local community member engagement in the innovation center including high school students engaging in STEM with farming as a focus. Additional funding is not needed at this time as the first prototype is fully paid and still being investigated.

Contact Information
If someone wants to know more about this project, who should they contact? Please include name, phone number, and email, if possible.
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Who in Bang Haan Wao (if anyone) is interested to continue working on this project? Please include name, phone number, and email, if possible.
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