



Field Report

***ESSI Thailand RTC Summer 2005 News
(Rural Training Center)***

Vol. 1, No. 5

Aug 2005

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Community-based Environmental Education for Families and Sustainable Neighborhoods

ESSI RTC Volunteer Staff Training

ESSI volunteers conducted teach backs for Staff Training at the ESSI Rural Training Center. This is part of the long range plan to establish the demonstration farm and future RTC as an environmental education training facility for sustainable agriculture.

The RTC staff constructed a bamboo compost bin mid-way between the house and the cow pen. In addition to the household kitchen vegetable scraps and cow manure, they compost other farm cuttings.

They will use the compost in the longan orchards, fish ponds, rice paddies, and demonstration vegetable gardens. Composting reduces burning trash (thus reducing air pollution), reduces disposable trash volume, reduces the use of agricultural chemical fertilizers, and is a basic sustainable agricultural practice.

Local people recall composting as a common practice in the old days. But “experts” have touted the newer, modern chemical fertilizers by so much that farmers shifted to buying modern agricultural chemicals (e.g. fertilizers, insecticides, and herbicides). This added expense has severely impacted the meager budgets of small rural Thai family farms. Composting is essentially free and uses farm refuse. The savings can make a big difference for Thai farmers.



Reducing the use of synthetic agricultural chemicals is a high priority in the ESSI sustainable agriculture training.

Prior discussions with local officials revealed their concerns of the wide spread use of agricultural chemicals contributing to water pollution in the area. They expressed keen interest in the non-toxic pest control training in the ESSI REEEPP effort. This became another focus for ESSI RTC Staff training.

Flies and rats are a very common problem for farms and village households. The non-toxic pest control training covered fly repellent, making a pyramid fly trap, and a non-toxic rat bait.

The ESSI approach is to use commonly available, low-cost items in all of its programs. This makes it more suitable for poor rural families. Reducing the operating costs for small rural family farms is one step in moving them toward self-sufficiency.

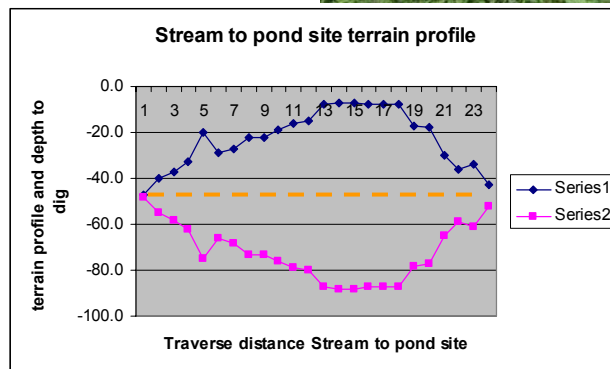
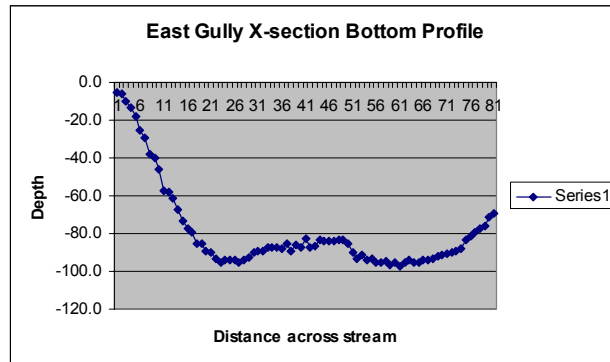
A fly repellent made from vinegar, pine cleaner, and water was demonstrated. The other items needed for this activity are a spray bottle, and an empty water bottle used as a measuring / mixing container. The repellent was applied around the home or to the cow shed area as a demonstration.

A large, empty water bottle was cut and made into a pyramid fly trap. Food scraps were placed under it for bait. Within minutes, trap contained the first few flies. The group had a short lunch. By the end of lunch, there were 9 flies in the trap. The ESSI RTC Staff were pleasantly surprised at the effectiveness of the trap. They also found it rather entertaining to watch the trap in action.

A non-toxic rat bait made with cement powder and flour was made and immediately put to use at the demonstration farm house. It is safe to use around other farm animals and children.

A non-toxic weed killer was explained but not demonstrated due to inclement weather conditions. It is effective when be applied directly to the leaves of the weed under hot, sunny conditions.





Water and soil conservation and management are key elements in the ESSI RTC sustainable demonstration farm. ESSI RTC Staff got trained in simple field reconnaissance methods to measure cross-sectional stream beds profiles, terrain profiles, and slope measurement for contour terracing.

The tools for the job included long tape measures, short tape measures, a spirit level, bamboo poles, and string.

The field training included doing a cross-sectional stream bed profile for a possible future water diversion project. This basic calculation is one step in the assessment of the stream flow capacity.

A terrain profile was another step in this process. The task was to determine the amount of digging needed for a diversion ditch to a possible pond site.

The field survey data were put into an Excel spreadsheet, and plotted as a simple line graph. In the graph shown at the bottom of the page, the blue plot is the terrain profile; orange line is the slope of the ditch; pink plot shows the depth to be dug.

This training exercise produced usable results directly applied to the operation of the demonstration farm. This is characteristic of the ESSI training approach of P.A.L. (Practical Applied Lessons) in contrast to the traditional classroom paper exercise. By working outdoors, students can see the connection between the theoretical / academic parts of the lesson to the real world application.

In this particular exercise, the terrain profile enables the farm manager to estimate the amount of work needed to dig the diversion ditch. This helps to better allocate limited resources and

better estimate the time needed to complete the task.

The construction of two hillside demonstration garden beds was an opportunity to apply slope measurement for contour terracing. In northern Thailand, many hillsides are being clear cut to gain more farm land. Unfortunately, this often results in increase soil erosion.

ESSI RTC Staff made two “leveling” sticks using small bubble spirit levels and bamboo sticks. The bamboo sticks are “calibrated” to permit percentage slope measurements. These simple tools enable the Staff to measure slope angles and determine contour alignments.

The terraces permit growing crops on slopes while minimizing potential soil erosion. As with any job, terracing a slope can be a single, massive effort, or it can be a gradual process. It all depends on the resources of money, labor, and time available to do the job. These are individual decisions for the farmer to make. ESSI favors the gradual, continual process of terracing over time. The main idea is to make the farm sustainable. Clear cutting a slope to plant a large field at the expense of losing the soil is clearly not a sustainable practice. Doing a series of small terraces and using compost can produce higher crop yields with less land. This is clearly a more sustainable practice and can lead to re-establishing the self-sufficiency of small rural family farms.

These garden beds show the slope contour terrace method. The garden was sited close to the house of the resident ESSI RTC Staff. They will grow their family vegetables here using compost. Non-toxic pest controls and other gardening practices will be tested here. It will serve as another sustainable agriculture demonstration.

In the future, ESSI RTC will use similar terrace garden beds to experiment with growing other varieties of vegetables for the local markets





A small check dam is an important water and soil conservation tool. ESSI RTC Staff learned to make, site, install, and maintain simple check dams.

The check dam training took place in two gullies on the demonstration farm. The larger gully was more than 2 m deep and 8 m wide. Check dams were installed at points that were 1 m or less in depth, and less than 1 meter wide--- but in one case where the gully was 8 m wide. The smaller gully was less than 2 m deep and 1 m wide.

The Staff made the check dams using bamboo grown on the farm and common farm tools. They cut and split the bamboo into various sized strips to weave a loose “V” shaped “net – fence”. The net – fence is held in place by 3 stakes (also made of bamboo). After properly siting the check dam, plant debris is pushed up against the bottom of the net-fence on the upstream side.

A check dam slows water flow in the gully. It does not to stop the flow entirely. Slowing the water flow reduces its ability to remove soil. It also gives the water more time to soak into the soil. So check dams are both soil and water management tools.

The training took place during the summer rainy season. Within a week of building and installing the first 4 check dams on the larger gully, the rains came. The rain fell continuously for 3 days. All 4 check dams held and were doing their work, effectively eliminating the danger of soil erosion at a dike for a rice paddy at the mouth of the gully.

Look carefully at the bottom photo. Notice the reddish color of the water behind the check dam. This indicates the high sediment load in the stream. As the water comes through the check dam, there is less sediment and the water is a lighter color. **[Note:** The check dam in this photo is located near the potential water diversion site. Diverting this storm runoff to a water collection pond would add to the water resources of the RTC demonstration farm.

Recent climate change reports for Thailand indicate the dry seasons are getting drier, and the wet seasons are getting wetter. The future in Nan Province means water may become a critical resource in the dry season.

The ESSI RTC resident Staff on the demonstration farm initiated a preliminary effort at rain water catchment. These preliminary efforts helped provide data to explore a more concentrated rain water collection effort. Future plans include a rain gutter collection system and larger cement water storage tank for the resident family farm house. The overflow from the family storage tank would go to a nearby fish pond.

A study was initiated on a potential site for a rainwater catchment pond to augment the farm's fish pond and rice paddy irrigation system.

A passive solar water heating system was introduced at the ESSI RTC demonstration farm. Once installed, the resident Staff family will have hot water for bathing and washing. To get hot

water requires the use of cooking gas or firewood. The sun provides free energy to heat water. This exploratory effort will provide hard data on the potential for solar hot water heating at the farm.

