RTC-TH Jul 2011 Update

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Community-based environmental education for the self-sufficiency and sustainability of small rural family farms
ชุมชนตามสิ่งแวดล้อมศึกษาเพื่อการพึ่งตัวเองและยั่งยืนชนบทขนาดเล็กครอบครัวฟาร์ม

You may post questions / comments to the Discussion area of our website

Rainy Season is Rice Planting Season

The coming of the wet monsoon season is part of the natural rhythm signaling the time for us to plant our annual wet paddy rice crop for the family rice supply.

One paddy smoothed and ready for transplanting

Rice seedlings being collected for transplanting.

The seedlings are tied using bamboo "twist ties".

One paddy transplanted; others await smoothing.

In This Issue

Farm Friends

Pretty pollinators are a welcome sight on our farm. They add color and motion to the landscape. It's easy to lose track of time watching their erratic flight among the flowers. In addition to their basic work of pollination, they are also our key environmental watch dogs. Butterflies are particularly sensitive environmental indicators due to their sensitivity to pesticides. Bountiful beautiful butterfly numbers assure us of a farm free of toxic chemicals.

Most people think of flowers as decorative garden elements. We appreciate their color and beauty. We also use them to attract and sustain pollinators and beneficial insects. This is important for our B.U.G.S. (Biodiversity Ultimately Gives Sustainability) integrated pest management program on the farm and in our gardens. Studying nature is key to understanding how to bring balance to the farm and to minimize negative impacts to the local ecology. Dynamic natural balance is a moving target. After all, life is full of ups and downs.

Another welcome sight: a beneficial insect

Simple Soil Erosion Monitoring Methods

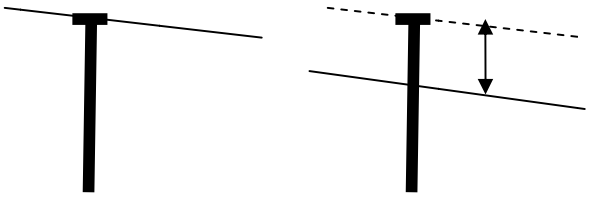
Rills are evidence of rapid soil erosion.

History shows a strong correlation between the decline of great civilizations and the loss of their agricultural soils (e.g. Mesopotamia, Sumer, Minoan, Greece, Rome and its North African colonies). In modern times, the former Soviet Union's rich soils and the US Central Plains have lost so much top soil that agricultural productivity is a shadow of better times.

The insatiable quest for monetary gain has led to continuous agricultural production relying on processes in stark contrast to natural cycles. Amish farms, which use little or no heavy farm equipment or synthetic chemical fertilizers, herbicides, or insecticides have lost very little of their top soil.

The rate of soil erosion can be rapid (as evidenced by rills and gullies) on steep slopes. But on gentler slopes, the loss soil erosion is often so gradual that it goes unnoticed. This is called "sheet erosion." By the time most people notice the loss, it is too late to do much about it. You can use these simple monitoring methods to see the gradual soil losses on your farm. [**Note**: See also the RTC-TH Technical paper "2006 Slope Management" at www.neighborhoodlink.com/org/RTC-TH_Tech/pages in the section RTC-TH Demonstration Farm.]

Choose some monitoring sites that will be undisturbed by any farm activity. The idea is to let the natural processes operate on the soil surface. You will need to have a reference marker for the initial soil surface at the start of your monitoring program. This can be a "pin" inserted in the soil so the top of the pin is even with the surface (see diagrams on the right).

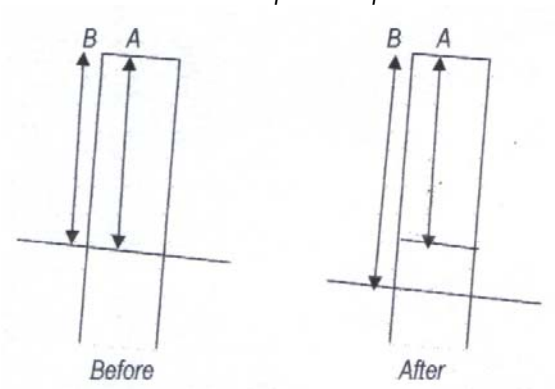


Before *After*

Keep a record of the date you placed the marker pin. Immediately after a rain go to check the maker. Measure the height of the top of the pin to the soil surface. This will be the amount of soil lost to erosion. It is important to avoid having anything obstructing the movement of water over the soil surface upslope from the marker pin. These obstructions would "protect" the marker pin and give inaccurate results. Any disturbance to the pin would also produce erroneous measurements.

If you also keep rainfall records for your farm, you can correlate the rainfall data with the soil erosion data. This can give you insights for your soil erosion management plans. For example, if rains tend to come from the SW, slopes facing that direction may get more rain on them increasing the potential for soil erosion. Priority should be given

"Off-the-shelf, home brewed" soil erosion monitoring tools: large nails (~20 cm long) and empty snack container with a removable plastic cap.



A modified empty snack container erosion monitor.

to those slopes for soil erosion mitigation strategies. Depending on the slope angle, this could consist of mulching, grass barrier strips, and terracing. Swales could be made if the topography is suitable.

Another simple monitoring device is to use an empty snack container with a removable plastic cap. Cut out the bottom of the container, but do not cut off the metal rim. It will make it easier to insert the container into the soil. Keep the plastic cap on the top.

To use this modified container as a soil erosion monitoring device, hold the container perpendicular to the soil surface. Press it into the soil surface deep enough so it will stand freely by itself and not fall over when it rains.

Remove the plastic cover and measure the height of the top rim to the soil surface INSIDE the container (A) and Outside the container (B). Replace the plastic cap. (At the start, A = B). This will be your base line measurement.

After a rain, measure the height of the top rim to the soil surface OUTSIDE (B) the container. If the OUTSIDE measurement is more than the INSIDE measurement (B > A), soil erosion has taken place.

If you have rainfall records for your farm, you can correlate them to the soil loss. [**Note**: Remember, weather station rain gauges off your farm may not be getting the same rainfall as your own rain gauge.] A description of the G.R.O.W. (Getting Real On-farm Weather) program is given in the RTC-TH Newsletter of 2010 Mar 06 on the main RTC-TH website (see masthead of this update report). The G.R.O.W. Handbook gives detailed information for weather observation procedures and instructions to make some basic weather instruments. [**Note**: The GROW Handbook is being revised. Watch for an announcement of its release date.]

Note: Weather observing is not rocket science. Illustrated weather observation lessons created for the Ban Na Fa Elementary School REEEPP (Rural Environmental Education Enhancement Pilot Program) are available at www.neighborhoodlink.com/org/RTC-TH_Tech/pages under the section heading RTC-TH REEEPP at Ban Na Fa Elementary School. Look for the lesson series listed as "2005 W1 to W5".

Soil erosion monitoring will tell you if erosion is occurring and how much is occurring. Gully erosion is very serious and can be dealt with using check dams (see the RTC-TH paper "2010 Check Dams" at www.neighborhoodlink.com/org/RTC-TH_Tech/pages in the section RTC-TH Demonstration Farm. [**Note**: The paper on dealing with sheet erosion is currently being revised. Please watch for an announcement concerning its release date.]

Flood Follow-up Photos

Here are some photos taken after the flood waters receded. They give a good perspective on the flood in meaningful terms to those unfamiliar with the area. These photo pairs give a clearer view of the enormity of the impact of the flood waters have along the banks of the Nam Yang and Nan Rivers.

Nam Yang at Ban Na Fa Bridge

The flooding Nam Yang looking upstream from the bridge at Ban Na Fa (top photo). Note the corn field on the right bank after the flood waters receded. Similar crop losses appear in other photos in this series.

Nam Yang at the Bridge near Ban Kong

Flooding in the area of the sand & gravel quarry near Ban Kong (top photo). Post flood water levels are shown in the bottom photo using various trees for reference.

Extensive flooding of the fields to the left and right of the main river course is more evident when seeing the post flood water levels of the Nam Yang near the Ban Kong Bridge. If the flood waters recede quickly enough, rice crops seem to recover. Corn seems much more vulnerable and doesn't seem to tolerate being flooded. The corn fields that tended to survive the flood were on higher ground that experienced only a shallow amount of flooding.

If a picture is worth a thousand words, then these contrasting photo pairs may be worth exponentially more. We don't have any flow rate data for the flood waters in the Nam Yang or Nan river. But basic fluvial principles indicate that flow velocity increases with total water volume, increased depth. The increased velocity also means more and large sediments can be transported by streams and scouring the stream beds.

Nam Yang at Hwy 1080 Spillway

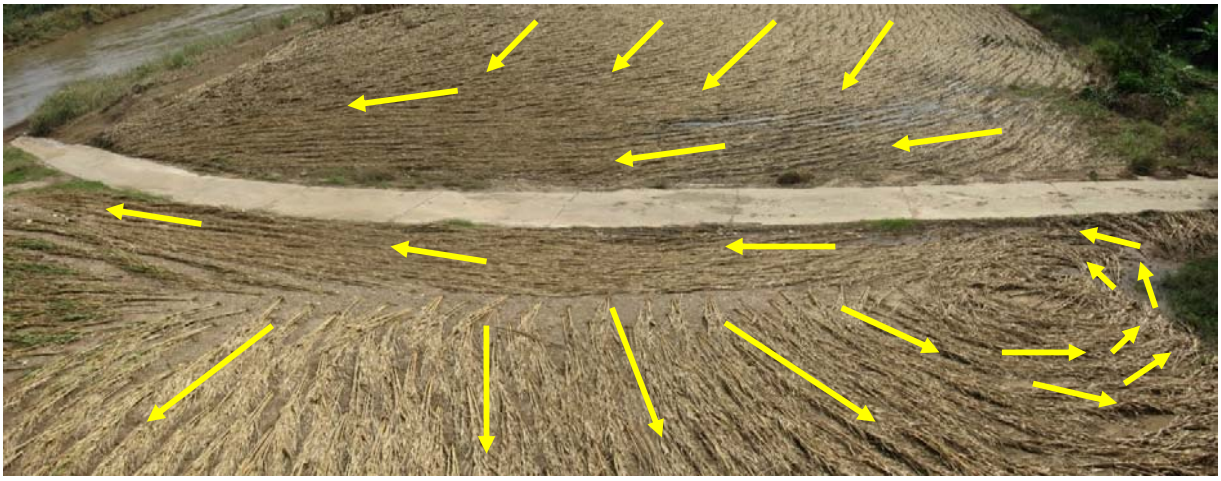
A very noticable difference in the flood stage (top photo) and post flood water levels.

On the other side of the Hwy 1080 bridge, the differences of Nam Yang in flood and post-flood are evident.

Nan River at Hwy 1148 Bridge

Many rai (traditional Thai land measurement unit = about 1,600 sq m) of corn were lost. Corn seemed the most notable flood destroyed crop immediately adjacent to many streams and rivers. Red arrow marks lost corn.

Looking at the terrain of the flooded corn field near the Hwy 1148 bridge and the pattern of the flood damaged corn shows the flow pattern of the flood water. The corn stalks knocked down by the swift flowing flood waters reveals the flow direction of the water as it receded. The photo below is annotated with arrows showing the flow path.



The Pa Khuang Bridge on Hwy 1080

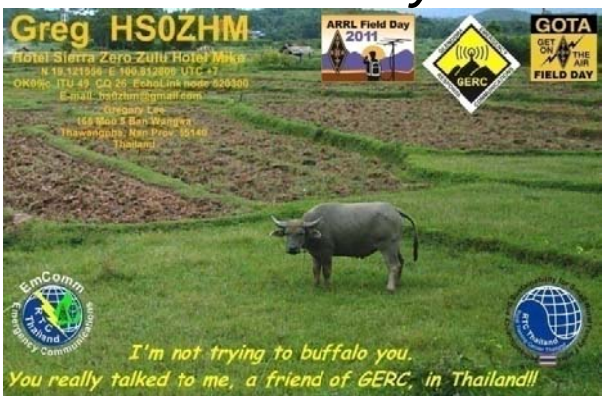
View of the Nan River in flood looking downstream from the Pa Khuang bridge (top) and after the flood (below). Notice the buildings on the left bank with the floating pump station and the power pole on the right bank.

The section of the highway just south of the bridge during and after the flood. Note the reference points.

It seems obvious that knowing the levels of past flood waters is a clear warning sign to help you avoid building or living in a flood prone area. Yet history shows people persist in returning to rebuild and farm the same land that is known to periodically flood. Everyone has their own reasons for doing so. It is a freedom of choice issue for us, and we opt to avoid land that tends to flood.

RTC-TH EmComm Supports GERC Field Day 2011

The RTC-TH EmComm Echolink® station (node #520300) participated in the 2011 Field Day with GERC (Glendora Emergency Radio Communications) group supporting another Echolink® demonstration. The event was held at Horsethief Canyon Park, San Dimas, CA. The GERC hams set up a remote 2m VHF simplex radio link to the Echolink® gateway station at N7YLA's node 358124. From there, the internet connection to Thailand enabled exchanges with Field Day participants in the park.



The RTC-TH 2011 Field Day QSL card. The tag line reads "I'm not trying to buffalo you. You really talked with me, a friend of GERC, in Thailand!"

Some experienced hams (amateur radio operators) do not consider the mix of radio / internet communications technologies. A long standing tradition in ham radio is its' ability to get through when many other forms of communications fail during disasters. The internet depends on phone lines and fiber optic cable networks so is vulnerable to failure. The recent triple whammy in NE Japan (the earthquake, tsunami, nuclear power plant failure) revealed a significant change in the field of emergency communications. In the immediate areas of the disasters the normal communications failed. But much of the country was "wired in" and the communications by cell phone and internet made a noticeable difference in the lower amount of HF (high frequency) emergency radio commonly used for international communications in previous disasters of similar magnitude.

The GERC Field Day 2011 "station" K6U.

The RTC-TH and GERC operate on the assumption that radio contact from within a disaster area with an Echolink® enabled radio station outside the disaster area could help speed emergency communications with the outside world. In times of emergency, any and every means to effectively communicate should be tried. A good emergency communications plan doesn't put all the eggs in one basket.

Shade is at a premium in southern California.

A Glimpse of City Traffic

Last month we showed you country roads. Once it the city, the mix includes vendor push carts, darting pedestrians, small and large delivery trucks stopping to load/unload, larger long distance trucks, buses (mini and not so mini) with all the gaps between these different sized vehicles being filled with weaving motobikes. You have to wonder how many of them lose their knee caps in traffic?

Various sized motorbike-based vendors add to the mix.

City driving is a mix of push carts, motorbikes, trucks.

After school, samalors overflow with students

City rush hour traffic is mad mixture of vehicles

Trucks, motorbikes, and mini-buses fill the streets.

Small motorbikes are involved in 80% of traffic accidents.

It's hard to imagine earning a living this way.

LP gas bottles common for cooking gas at home.

Load of lumber from the hills headed for the mill.

A "lumbering" motorbike in city traffic.

Saw this traffic mix on a major N-S highway.

Pigs on a group "tour" to the city (standing room only)

Evening traffic in some areas grinds to a slow crawl as street food vendors and customers increase congestion.