RTC-TH Jun 2013 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

www.neighborhoodlink.com/org/rtcth E-mail: rtc2k5@gmail.com

Rains Termite-nate the Dry Season

Prolonged rainfall, either light and steady, or intense and heavy is characteristic of the monsoon rains. Well, it seems that with the rain come the insects: mosquitoes, termites, and flying ants. At night, the light attracts them in droves! We keep in doors and avoid turning on lights. No sense inviting the termites to an all they can eat banquet at our house. On the farm, we turn on a light over the fish pond to invite the bugs for dinner; free food for our fish.

A simple, but effective termite trap is a light close to a pan of water. The termites fly about the light and some fall into the water. We feed these to our fish in the tank behind the garage.

We mentioned the *meng man* last month. Well, they were back in force. So Mom was up early to collect the free overnight delivery of these large flying ants.

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RTC-TH Co-founders

Greg & Saifon Lee

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Heavy Rain at Ban Na Fa

On __ June, steady rain persisted for more than 9 hours through the late afternoon and evening. The rainfall tally for that 24-hour period was more than 75 mm. The Nam Yang rose about 40 cm. The rainy season has begun. The increased silt appears to have come from the newly graded riverbanks and shallow berms built across the river's axis. (Notice the rills forming on the bank and the breached earthen berm in the photo below in the yellow circles.)

The Nam Yang as seen from the carport windows.

The formerly clear water turned muddy from the runoff entering the Nam Yang.

The swift flowing water quickly eroded the low earthen barrier across the Nam Yang at the Ban Na Fa bridge.

Within a day, the flow subsided and the water cleared due to the lack of silty runoff entering the river.

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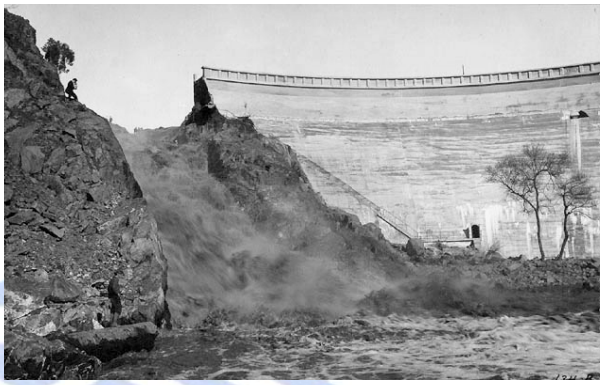
Learning About Flashfloods

Mention "flashflood" and most people picture a sudden flood in narrow canyons or dry streambeds. However, other sudden releases of water to normally dry areas can also produce a flashflood. Some of these events are:



A dam failure can create a flashflood.

- Dam or reservoir failure;
- Failure of a water tank, tower, or other storage facility;
- Breach of a levee or dike;
- Breach of a debris dam created by a landslide;
- Sudden clearing of any obstruction in a stream (e.g. debris or ice jam or a clogged culvert);
- Storm surges and tsunamis could technically be considered a special type of flashflood (though the inundations they cause are most often referred to as floods).

You need to be aware of a potential flashflood hazard anytime you are in a narrow canyon (or near the mouth of a narrow canyon), or downstream from any dam, reservoir or water storage facility (e.g. tanks and towers). In areas where landslides occur, the falling debris could create a dam. Any sudden breach of the debris dam could result in a flashflood. In those cases, you must be aware of landslides and landslide conditions before going into the area.

From North Thailand Climate Data During 54 years (1951 - 2004)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Tot
Tropical Cyclones	-	-	-	-	5	2	9	17	23	15	1	-	7
Thawangpha Rainfall (mm)	11.0	12.6	29.2	108.0	206.2	202.4	244.1	302.3	175.6	80.4	22.7	5.9	140
Seasons	Winter		Summer		Rainy (SW Monsoon)						Winter (NE Monsoon)		
Ave Temp	23.1°C		28.0°C		27.3°C						23.1°C		
Temp Range	17.1-30.8°C		21.4-35.8°C		23.7-32.2°C						17.1-30.8°C		
Ext Temp	0.8°C		44.5°C		20.3°C						0.8°C		
Rainfall (mm)	105.5		182.5		952.1						105.5		

The most common cause of flashfloods in northern Thailand tends to be storms. Convective thunderstorms can occur in the hot, dry season (Mar to Apr). Tropical cyclones occur mainly during the rainy season (May to Oct).

Contributing factors to flashfloods are:

- Rainfall intensity and duration;
- Topography
- Soils
- Vegetation cover

You must keep alert to perceive a flashflood hazard. Here are some of the signs to watch and listen for:

- Sudden changes in water clarity from clear to muddy; (there may or may not be any floating debris);
- Sudden rising water levels or stronger currents;
- Build-up of clouds or sound of thunder (even at a distance from your location);
- Increasing roar of water up-canyon or upstream;
- Any deterioration in weather conditions (e.g. darkening skies or heavy clouds);

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- While along roads, look out for flooding at highway dips, bridges, and low areas. If you observe any of these signs, take the following actions:
- Seek higher ground immediately. Stay on high ground until the threat is gone. Usually flashflood water levels recede within 24 hours.
- Do not try to hike out of the canyon UNLESS you can go vertically up away from the canyon floor. Time is critical. You must get above the level of the floodwater as quickly as possible.
- If there is no trail going up out of the canyon, seek a ledge or rock crevice high above the water level. Find a way to secure yourself to the ledge or wedge yourself into the crevice.
- If you cannot get to high ground, take shelter behind a large rock outcrop. It can block the force of the water and debris and keep them from striking you directly.

Many times the national weather service announces the possible threat of flashfloods. You should monitor the weather reports and avoid flashflood prone areas if warnings are issued. When going into narrow canyons, carry a battery operated radio (and spare batteries) with you. Be alert for signs of possible flashfloods. Other handy things to take along are:

- A waterproof bag for your cell phone;
- A high-pitched whistle and flashlight (with spare batteries) to signal for help. They are better than shouting and save your voice.
- A length of rope (4-10 m);
- Rain gear (bright colored), high-energy emergency food, space blanket, and drinking water.

Awareness and Avoidance

Flashfloods are particularly hazardous due to their sudden appearance. A flashflood can be over almost in a matter of hours. They often occur due to heavy rains from thunderstorms. However, the collapse of a dam, reservoir, levee, or other kind of water barrier or container can produce a flashflood.

Avoid putting yourself unnecessarily at risk. Situational awareness is an excellent defense against flashfloods. Weather is a common source of the water for flashfloods. Terrain favoring flashfloods are steep narrow canyons. Residing or camping below dams, reservoirs, or large water tanks put you at risk.

When traveling to unfamiliar areas do your homework and research your destination. Upon arrival, talk with knowledgeable locals. There can be unique circumstances and experiences, which are "common knowledge" to them that do not appear in the published literature.

In flashflood prone areas outside narrow canyons, get to higher ground or climb to safety.

- Get out of flood prone areas (e.g. dips, low spots, washes, streambeds, on grade river crossings, etc.);
- Do not attempt to cross flowing streams;
- Avoid flooded areas and any flowing water;
- If driving, do not drive into floodwaters. You cannot see the road surface. The road could be washed out or damaged. Turn around and get to higher ground. Wait for the water to recede so you can see the road.
- If your vehicle stalls, leave it. Get to higher ground immediately. [Note: Keep an emergency kit in the car. Make it easy to carry in case you have to leave the car. DO NOT STAY IN / ON A FLOODED CAR. If the water gets close to 60 cm deep, the car may float away.
- Use extra caution at night when visibility makes it harder to see flashflood dangers.
- Do not park your vehicle or camp along streams and rivers during stormy conditions. [**Note:** Weather can change rapidly in mountain areas. It may be fair

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weather when you first arrive and set up camp. However, rain falling far from you might trigger a flashflood at your campsite.]

Flashfloods can occur within seconds or hours after the event responsible for the increased amount of water. It depends on the amount of water involved, the distance to your area, and the environmental conditions between the flood source and your location. Temper the guidelines in the chart below by knowing your local area conditions.

Relative Starting Times for Flashfloods		
Event	Rapid (in seconds or minutes)	Slower (in 1-6 hours)
Heavy rain or prolonged rainfall	Falling on bare rock or bare soil	Falling over forested area
Dam, reservoir or levee failure	If you are close to the location of the breach	If you are at a great distance (several tens of kilometers) from the breach
Collapse of a water tower, tank, or similar water storage device		Depending on the water volume involved and your distance, the impact may be minimal

If the authorities issue a flood warning and advise you to evacuate, do so immediately. Leave early enough to avoid being caught in the flood. Know the designated evacuation route. Avoid taking short cuts, as these may be flooded or blocked. Get to the safe area before access to it is cut off by the flood. The longer you wait the flood waters may rise and your vehicle may not be able to get through. [**Note:** It pays to prepare a family emergency plan. The family may not be together when the flood warning / evacuation order is given. Having emergency supplies prepared ahead of time makes for an easier and faster evacuation. Guidelines for family emergency plans and emergency kits are available from the Red Cross and other emergency services groups.] Continuously monitor the news for weather and emergency information.

It is hard to see a flooded road.

During a flashflood or flashflood warning:

- Avoid areas prone to flashfloods;
- Do not drive on a flooded road. It is hard to tell the water depth or road condition. You could be stranded or trapped.
- If walking in flowing water, stop and turn around when the water is ankle deep. The water can sweep you off your feet
- Do not allow children to play around storm drains, culverts, and streams.

If you come upon a flowing stream where water is above your ankles, STOP! Turn around and go another way.

History shows the majority of people who die in floods in Southeast Asia tend to be the very old or infants. During evacuations, parents carry infants in their arms. When entering swift flowing floodwaters, it is easy to lose grip on the infants. The tragic results point to a lack of awareness of the hazardous conditions during floods. In some cases, the infrequency of flashfloods means safety education gets low priority. Whatever the reason, we feel this often repeated human tragedy can be avoided by a viable Community-based Education effort.

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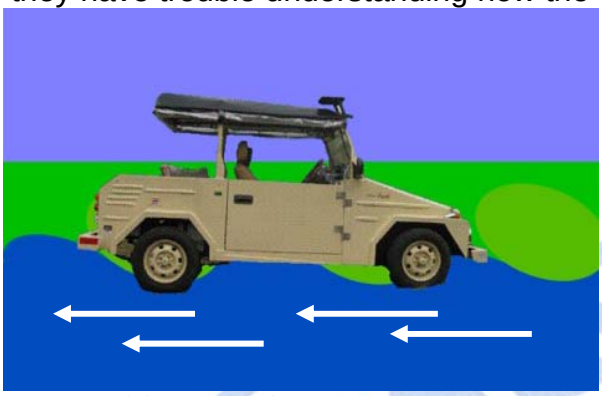
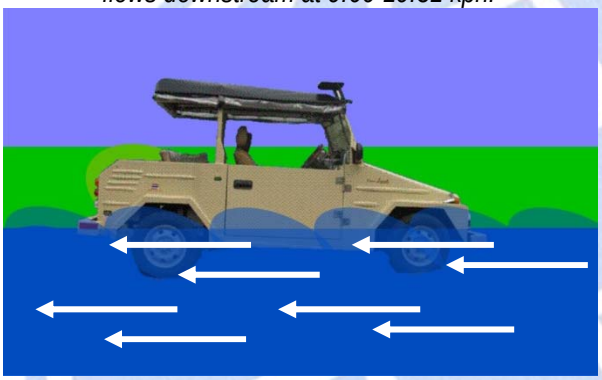
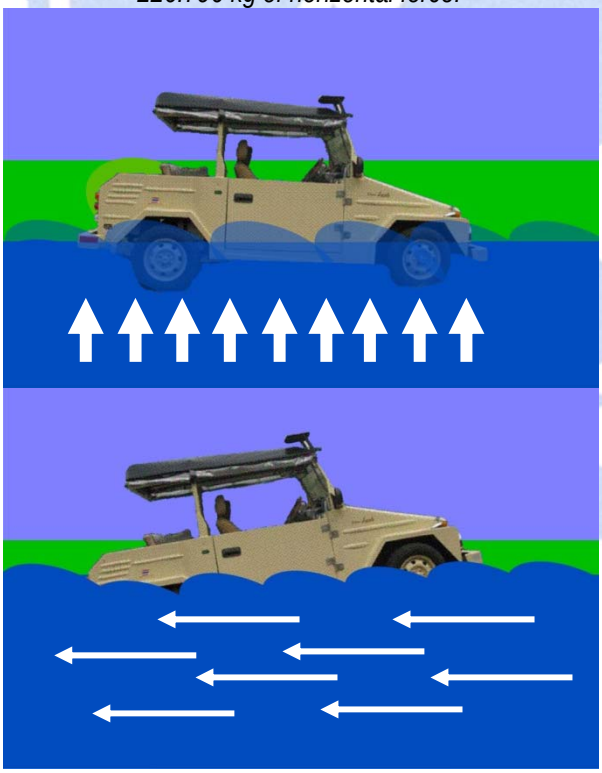
Many people do not realize the power of flowing water. The kinetic energy in flowing water is difficult to see. People can see the effects of the water's force. But they have trouble understanding how the water's force will act on their body. Never underestimate the force of floodwater. Even 15 cm (ankle deep) of fast-moving floodwater can knock you off your feet. A depth of 60 cm can float a car! NEVER try to walk, swim, or drive through such swift water. [**Note:** The muddy floodwater makes it hard to know the depth. And you cannot tell what the bottom is like.] If you come upon floodwaters, **STOP! TURN AROUND AND GO ANOTHER WAY.**



Water weighs 28.3041 kg per 0.028316 m³, typically flows downstream at 9.66-19.31 kph.



As water rises 30 cm, a vehicle stalled in water absorbs 226.796 kg of horizontal force.



If the vehicle displaces 680.388 kg of water, every 30 cm of increase in water depth reduces the vehicle weight by 680.388 kg. A vehicle weighing 680.388 kg is now like a boat. In water 60 cm deep, most vehicles just float in the floodwater.

Here's some basic floodwater math:

- Water weighs 28.3 kg / 62.4 lbs. per cubic foot and typically flows downstream at 3.7-7.4 km per hour.
- When a vehicle stalls in the water, the water's momentum is transferred to the car. For each 30 cm the water rises, 227 kg. of lateral force are applied to the car.
- But a bigger factor is buoyancy. For example, if a vehicle displaces 682 kg of water, each 30 cm water rises up the side of the vehicle reduces the vehicle weight by 682 kg. In effect, the vehicle is like a boat and floats.

Don't walk through swift flowing water

Don't drive into swift flowing water.

Warning: Heavy rains can also cause landslides and mudslides.

See "Rapid Recon Landslide Hazard Relative Risk Assessment" at www.neighborhoodlink.com/RTC-TH_Tech/page

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Reconnected to the World

We finally got an ADSL Internet line for our village location. The dedicated EchoLink computer is set up in Sam. Plans are in the works to connect the computer to a VHF radio for a Link node. The internal layout for Sam is being finalized. Generally, VHF operations are slated from the front end of Sam and HF at the rear. In the photo on the right, the trailer front is toward the left.

We are still working on the station grounding. We plan to use 5 ground rods. A stainless steel plate is the station ground bus panel. Copper cable (16 sq mm cross section) will be used to bond the grounding system components. Once the station ground is done, the antennas can go up.

EchoLink computer moves into Sam

For now, EchoLink is our primary operating mode. Since rejoining the GERC and POARC weekly nets, we have managed to make direct EchoLink contacts (in alpha order) in: Australia (4), Austria (1), Canada (2), China (3), Germany (3), Greece (1), India (3), Italy (1), Japan (2), Malaysia (1), New Zealand (1), Oman (1), Peru (1), Philippines (1), South Africa (1), Sweden (1), Thailand (2), Turkey (1), United Kingdom (2), United States (47).

Dengue Fever Fears

The Bangkok Post reports the Thai health ministry predicts 100,000 cases of Dengue fever and more than 100 deaths. This is a 300% increase over last year. So far 39,029 cases have been treated and 44 deaths attributed to the disease. About half the patients are less than 15 years old.

Aedes mosquitoes are the primary dengue vector. They are commonly found in the urban centers of Southeast Asia.

The Thai Health Ministry is urging the public to eliminate mosquito breeding sites. Aedes mosquitoes prefer clean water for breeding. This ranges from rain water in tires, empty bottles, and even vases with flowers in homes.

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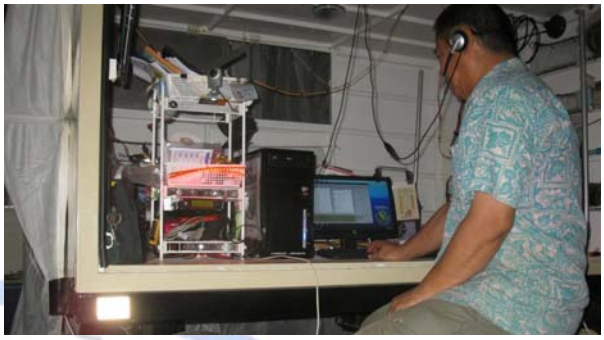
LED Lighting for Sam's Radio Racks

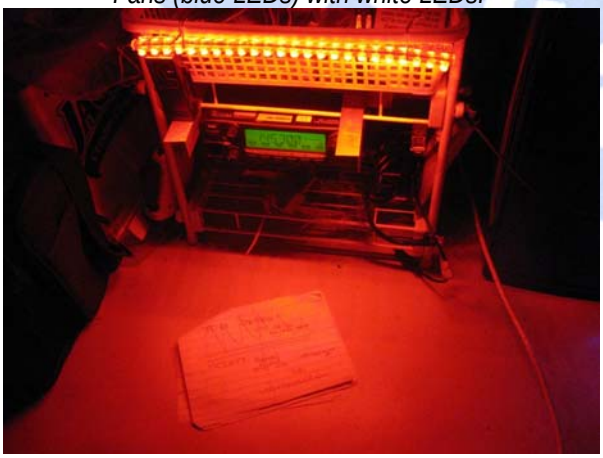
We put the VHF and HF radio racks in Sam. We opted to use LEDs (light emitting diodes) to light the racks for night operations. They use less energy than other types of lighting. We wanted to conserve battery power. Red and blue light are best for saving night vision. The cooling fans have blue LEDs in them. If the cooling fans are not needed, we can use the LED strip lights only.



Radios and EchoLink Computer in Sam

Fans (blue LEDs) with white LEDs.

Fans with red LEDs.



Red LEDs only

Fans with blue LEDs only

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Making Brooms

The bridge over the Nam Yang at Ban Na Fa is a great place to dry the grass stalks used to make a traditional Thai broom. We came across this scene one day in the dry season. This grass has very tiny seed heads. When sufficiently dry, a worker gathers a bunch of stalks and beats it against the concrete. The dried seeds are so tiny they appear as a dust cloud in the cleaning process (see yellow circle in the photo below on the right). The seeds create a carpet of light grey-green powder on the bridge and drift down to the waters of the Nam Yang.

Drying grass talks for broom making

The grass grows wild. It is free for the picking. All it takes is someone with initiative to gather, dry, thresh, and make the brooms. It is an good example of a local cottage industry. Sometimes the grass stalks form the broom handle. Fancier brooms can have a bamboo or wood handle. The prices range from ___ to ___ THB (Thai Baht). Most homes will have several brooms, usually assigned to indoor or outdoor use. We often send our old worn out brooms to the farm for use. They ultimately end up in the compost bin.

The seed heads contain fine seeds.

Beating a dried bunch of grass to dislodge the seeds.

These threshed stalks are ready for the broom maker

A finished broom

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The Nam Yang Is…

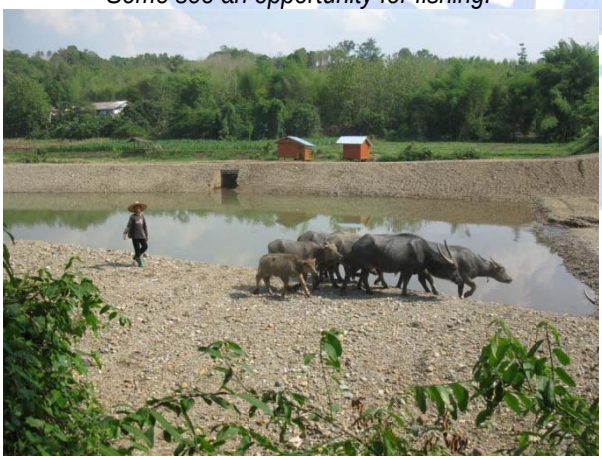
The Nam Yang is many things to many people. Before the dredging began, even at the lowest flow, there was water for fishing, washing, and food gathering. During the dredging process, some people were excitedly talking about what they saw happening. Some people saw it as a fishing opportunity. Others saw the creation of new swimming holes. The dredging cleared the vegetation, so it will be several weeks before people can gather plant food from the river. However, the Nam Yang can be whatever is in the eyes, imagination, and mind of the beholder. For the children, it's a great way to cool off in last days of summer vacation.

Washing even in the Nam Yang low flow season

Cooling off in the "new" Nam Yang river

Some see an opportunity for fishing.

Even non-swimmers enjoy the cool waters.



The cleared banks become a water buffalo highway.

The narrow path on the bank is now a wide dirt road

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June Farm Scenes

Rains bring green back to the farm

The rains came in late May. They started as isolated thunderstorms; brief, intense cloud bursts. Later the rain fell in both light and heavy prolonged showers. The typical monsoon trough appeared on the weather charts in mid-Jun. The prolonged periods of rainfall feel more typical of the monsoons. The water helped green up the farm and began to refill the ponds.

Water is a prime concern for us. Without much irrigation water for our farm, rain in the watershed and the subsequent subsurface flow to our fishponds are the key to our existence. Rainwater harvesting and storage in our water tanks is limited in contrast to the storage capacity of the fishponds. The past drought during the hot / dry season saw water levels drop in the fishponds, but we never ran out of water.

The West Fishpond →

This is the smallest of our fishponds. It is stocked mainly with Thai catfish. Somehow strays get into the pond and we get a mix of some tilapia and assorted common Thai river fish. The tilapia enter via the overflow from the West Gully Holding pond where they perform mosquito control work.

← The Central Fishpond

This is the largest pond. It was the first dug on the farm in the earliest days. It is primarily stocked with Tilapia but has some Thai catfish and assorted common Thai river fish. We aren't sure but some of the mix might come from large batches of fry during annual restocking.

The East Fishpond →

This was the last fishpond dug on the farm. It is the second largest pond and has a mix of Tilapia and Thai catfish. Of our ponds, this one has the lowest water retention rate. It was a former rice paddy we converted to a fishpond in our effort to increase our farm's water holding capacity.

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Extracting Stuck Ground Rods

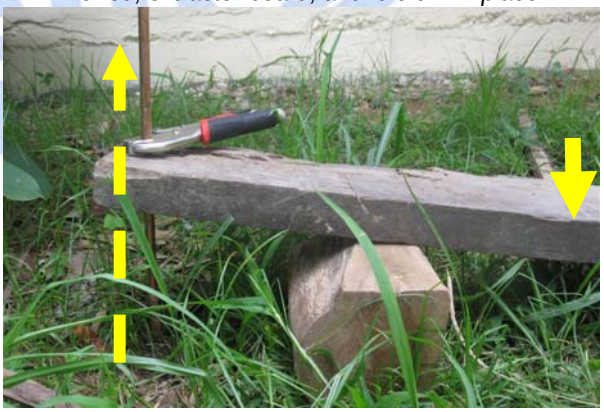
We encountered a problem setting the ground rods for our Ban Na Fa radio station. Our plan was for a 5-rod array in a "V" formation centered at the base of the tip up mast. Each ground rod is just over 2 m long. One leg of the "V" ended at a ground rod next to the stainless steel plate station ground bus panel. These first 3 ground rods went in easily. We pre-soaked the ground and then drove in the rods by sledgehammer. However, the 2 rods in the second leg struck rocks half way down.

Other hams suggested using an old car bumper jack to extract the stuck rods. This type of jack isn't readily available here. So we drilled a hole in a thick plank and slid it down the stuck rod. Using a fulcrum we tried to use leverage to extract the rod. Friction wasn't enough. So we added a vise grip to the Assembly. That did the trick. Slowly, inch by inch we extracted the two stuck rods. We relocated them. One rod struck another rock half way in and had to be recovered. Finally, all ground rods were secured and ready for bonding.

Checking the hole size in the extractor board

The rod, extractor board, and fulcrum in place.

Friction was inadequate so we added a vise grip.



A simple push on the lever pulls the rod out 1 inch.

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