



RTC-TH Apr 2012 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

Drought in Nan Province



The water level is way below reservoir spillway (yellow arrow) near our Hill Top Jatropa Experimental Farm.

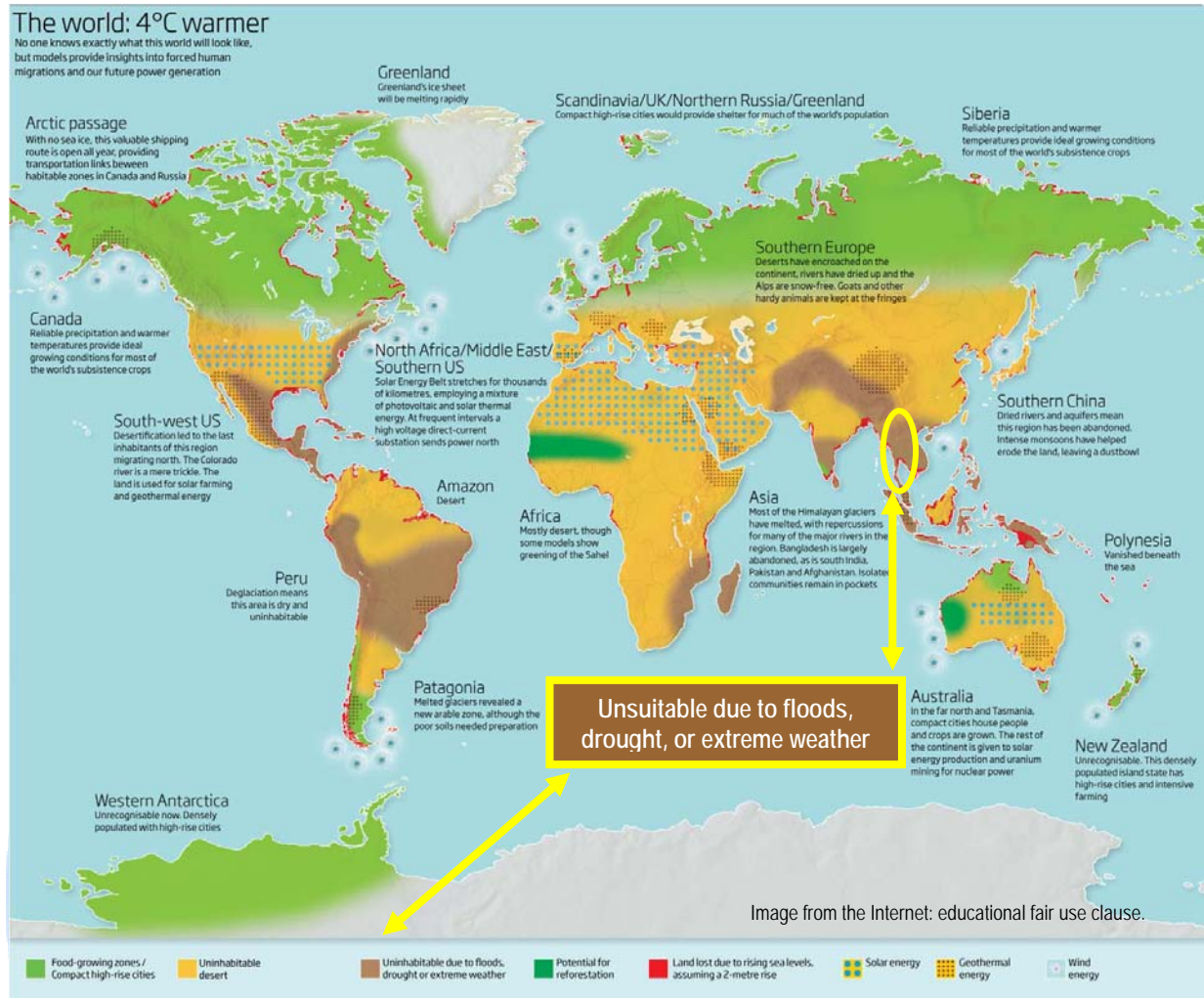
Recently, the Thai Disaster Prevention and Mitigation Dept declared 32 of 77 Thai provinces drought disaster areas. While Central Thailand struggles to recover from the flooding of 2011, northern Thailand now faces severe drought.

In Nan, 55,350 acres of crops were damaged valued at ~\$1.2 million and 216,000 people have insufficient water. The worst hit areas: the Provincial capital, Pua, and Thawangpha (where we are). Authorities have asked farmers to delay planting crops. We are making plans to hedge our bet by planting dry land or upland rice in part of the pasture in case we cannot start our paddy rice crop on time.



The water level of the Central Fish Pond is down about 1m from the start of the Dry Season in November.

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No one knows what will happen, but this is one view if the world was 4°C warmer.

The above graphic is not encouraging for Thailand. But this global view belies the fact that at local scales, there could be exceptions to the regional condition.

We gave top priority to soil, water, and energy. The RTC-TH S.O.W. (Save Our Water) program uses a combination of enhanced soil moisture storage (via composting and mulching), rainwater harvesting and water storage (via roof/tank/fish pond).

The photo below shows our farm viewed from the water tanks on the lower terraces above the west orchard. It seems our farm is in fairly good shape. The orchards and the fallow rice paddies are green. The rainy season begins in May, only 1 ½ months away and the fish ponds are still fairly full. 🌍



An Illustrated Thai Fruit Calendar

Summer is often associated with fruits. Thailand lies about 15° of latitude in the northern Tropics. The same type of fruit may ripen at different times of the year between northern and southern Thailand. If not available all year, it seems some fruits are available in months other than the traditional “ripening” season. Botanical research and experimentation has resulted in cultivation methods to induce 2 crops in some fruits. With modern highways and refrigeration, increasing regional trade, and expanded commercial retail marketing, it seems possible to have “fresh” fruits year-round. In about a 10-12 hour drive (or less), fruits from Bangkok wholesale markets can be in northern Thai markets overnight.



Fruits and vegetables sold in a small local market



Roadside stands are common in rural areas.



Thai Rose Apples in our tree in the garden

want to use any chemical treatments to get “out of season” production. The key is having sufficient water during the dry season. Drip irrigation is the most likely way to do this. We are researching fruits as likely candidates for this approach.

The brief calendar on the next page is organized alphabetically by common English name. The Thai name is in parentheses. A small photo is included. Availability is shown with an “X” for Thailand. The pale yellow shading

shows when we often see the fruit in the local markets in Nan. [Note: This list is not a complete list of fruits found in Thailand or our area.]

In an effort to reduce our off farm expenditures, we try to grow things we like to eat and then eat what we grow. On our farm and gardens, we have a wide variety of fruits: Jackfruit, 3 types of mangoes, 2 types of bananas, 2 kinds of Longan, avocados, pineapple, star fruit, dragon fruit (among others.)






























We are considering plans to try to grow some fruits in the “off season”. This could produce additional income by selling fruits at a higher price. We don’t



Papayas on our farm

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Community-based Environmental Education for the Self-sufficiency and Sustainability of Small Rural Family Farms

Images from the Internet: educational fair use clause

| Name | | J | F | M | A | M | J | J | A | S | O | N | D |
|-------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Banana (Khuai) |  | X | X | X | X | X | X | X | X | X | X | X | X |
| Cashew Nut (Mamuang-him ma phan) |  | | X | X | X | | | | | | | | |
| Coconut (Ma-phrao on) |  | X | X | X | X | X | X | X | X | X | X | X | X |
| Custard Apple (Noi-na) |  | | | | | | X | X | X | X | | | |
| Dragon Fruit (Geow Mangon) |  | X | X | X | X | X | X | X | X | X | X | X | X |
| Durian (Thurian) |  | X | X | X | X | X | X | X | X | X | X | X | X |
| Guava (Farang) |  | X | X | X | X | X | X | X | X | X | X | X | X |
| Jackfruit (Kha-nun) |  | X | X | X | X | X | X | X | X | | | | |
| Jujube (Phutsa) |  | X | X | | | | | | X | X | X | X | X |
| Langsat (Langsat) |  | | | | | X | X | X | X | X | X | X | X |
| Lime (Ma-krut) |  | X | | | | | | X | X | X | X | X | X |
| Lychee (Lin-chi) |  | | | | X | X | X | X | X | | | | |
| Longan (Lam yai) |  | X | X | | | | X | X | X | | X | X | X |
| Mango (Ma muang) |  | X | X | X | X | X | X | | | | | | |
| Mangosteen (Mangkut) |  | X | | | | X | X | X | X | X | | X | X |
| Papaya (Ma la kaw) |  | X | X | X | X | X | X | X | X | X | X | X | X |
| Passion Fruit (Saowaros) |  | | | | | | | | X | X | X | X | X |
| Pineapple (Sappa rot) |  | X | X | X | X | X | X | | | | | X | X |
| Pomelo (Som -o) |  | X | X | X | X | X | X | X | X | X | X | X | X |
| Pomegranate (Thap-thim) |  | X | X | | | | | | | X | X | X | X |
| Rambutan (Ngaw) |  | | | | | X | X | X | X | X | | | |
| Rose Apple (Chomphu pa) |  | | | | X | X | X | X | | | | | |
| Salak (Sala rakum) |  | | | | | X | X | X | X | | | | |
| Sapodilla (Lamut) |  | | | | | | | | | X | X | X | X |
| Star Fruit (Ma fuang) |  | | | | | | | | | | X | X | X |
| Strawberry (Sa thra buri) |  | X | X | X | | | | | | | | | X |
| Sweet Orange (Som) |  | X | | | | | | | | X | X | X | X |
| Sweet Tamarind (Ma tam wan) |  | X | X | X | | | | | | | | | X |
| Watermelon (Taeng mo) |  | X | X | X | | | | | | | | | |

Last Pig Shed is Gone




"Here today, gone tomorrow" is an old saying that applies to the last pig shed on the farm.



The foundation slab was seriously undercut.

No one can deny the slow and powerful force exerted by water. The foundation drainage attempts to offset potential erosion problems proved inadequate. Other family members chose to build the pig shed here where we had planned a water retention pond. Too bad they lost their investment.

The Geographic Systems Model helps us avoid these types of problems and costs. We didn't invest in this project. But once the building was up, we took advantage of the roof and added the rain water harvesting tanks. 



The water tanks, concrete slab and pillar bases are all that remain of the #2 pig shed next to the Central Pond.

Slow Farm Fire Recovery

The recovery from the loss of the farm house has been long and slow. The main reasons for this are economic and cultural / political.

The continuing global financial crises (i.e. US and EU), the floods in 2011 and some changing government policies all played a role in delaying our farm house recovery plan.

Global Economics: Key factors are the weakening US dollar and the strength of the Thai Baht pushes the foreign exchange rate against us. When we first began our farm plans, the exchange rate was \$1 = 37 THB. Now the current exchange rate is \$1 = 30.46 THB (~an 18% reduction).



We repaired the toilet, but nothing fancy.

With the hot season and the rainy season conditions, getting a roof up was critical. Shelter from the elements is vital for health and safety on the farm. People need a place to rest and eat. Rather than rush into rebuilding, we made minimal repairs to have a working toilet and shelter using salvaged pig shed materials. The water supply pipes to the toilet were restored from both a well and the rainwater harvesting tanks. A simple platform in the area of the old outdoor kitchen is where people can sit and eat.

Unfortunately, the roof height wasn't enough to feed water to the 4 water tanks near the house. We need to make temporary rain catchers for the tanks. We have hopes to rebuild in the next dry season (starting in Nov 2012).



Temporary roof using salvaged materials.

Floods & Government Policies: In the complex web of flood recovery and retaining and attracting more foreign investment, Thai government policies are shifting away from subsidies and toward free markets. Consumer prices were up due to shortages from the flood (e.g. in some areas food increased as much as 25%), and may shoot up more when subsidies come off. News reports indicate fuel could rise by 17%, sugar by 50-100%, with general rises in costs for rice, energy, etc. Currently inflation is in the 3-4% range. The government hopes to keep it there. But with some costs increasing in double digit percentages, inflation may be rising.

The net result for us is this: When it comes to finances, belt tightening, resetting priorities, and strict budgeting are really all we can control.



A simple platform where workers can rest and eat.

REEEPP & Climate Change

At a recent international conference on world climate change, the lack of climate data for portions of the Earth came to the fore. Global satellite coverage has done much to advancing climate studies. Satellite data are often validated using ground weather station data. Unfortunately, there are many places on Earth with no weather station. This data gap makes it difficult (if not impossible) to assess and forecast climate change impacts for those areas.

Many areas without a weather station may have a school. Teaching weather observation lessons as an applied science program could be the start of creating local weather records. Over time, the data could be help document and assess local climate changes.

The RTC-TH REEEPP (the Rural Environmental Education Enhancement Pilot Program) can help fill this data gap. Weather observations lessons at Ban Na Fa Elementary School could be used in rural elementary schools world-wide. The lessons also include information on making simple weather instruments. The no tech / low tech approach for these lessons makes them readily adaptable for use in many remote rural areas using local materials.

These “real world” hands-on lessons give students the opportunity to use their classroom lessons to do useful tasks that help their communities. They also gain insights to applied science that can make a difference in their lives. Admittedly, there are limitations to the data they gather.

There may be errors and gaps. Even official government weather stations do not have complete data sets. Equipment fails, human error creeps in, and records can get lost or destroyed in disasters. Students are not weather experts or scientists....yet. When confronted with no weather data for an area, some data may allow weather professionals to get a handle on the local conditions or where they may want to set up a station.

The RTC-TH weather observation lessons can also be used as English lessons. This helps rural education. English is the lingua franca of international science, technology and commerce. The lessons are free for personal and educational use and can be found at http://www.neighborhoodlink.com/RTC-TH_Tech/pages

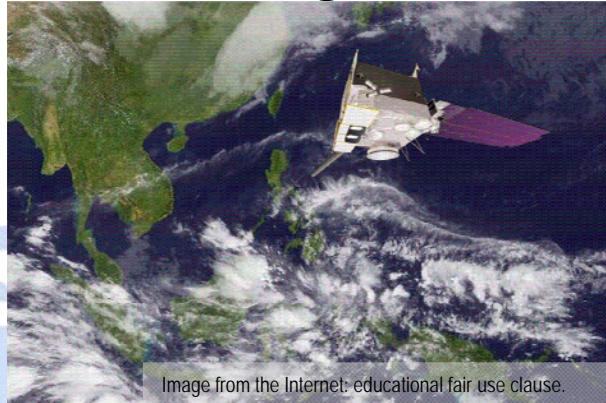


Image from the Internet: educational fair use clause.
Satellites cover the globe; weather stations don't.

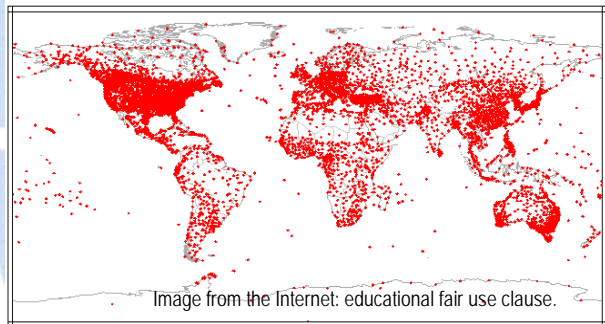


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Elementary students measuring rainfall.

The Cow Shed is for Composting



The cow shed was built too close to the boundary.

The loss of the pig shed meant the compost enhancement work needed to move. Having a roof was critical, and luckily the cow shed was available.

The cow shed fell into disuse when a relative abandoned their efforts at raising cows. We rented the pasture for a season to a friend who kept horses. But since then, the cow shed was used only occasionally to temporarily store bulk items.

We had considered using the cow shed as an interim farm weather station and a ham radio operating site. But the close proximity to high fire hazard from the west nixed these ideas. We finally opted to build a rain water harvesting tank to make use of the roof area.



There is no space for the firebreak.

The fire danger is very real. In the photo below you can see the boundary fence is only about 1m from the building. The compost materials are dry and could readily be set afire from sparks and embers coming across the fence line. Logic dictates minimizing exposing ourselves to the risk of fire. But other family members play down the risk and make use of the building. To compound the risk, they have no fire plan. They



prefer to cross that bridge when they come to it. Emergency preparedness training clearly states “Once an emergency happens, it is too late to prepare.” At this point I “hope for the best and prepare for the worst”. I am mentally prepared for the loss of this structure to fire. This is made easier by the fact we didn’t invest in the cow shed. Once the building is gone, the plan is to extend the west firebreak road along the fence line to and along the paved road. That would complete the western perimeter firebreak road. Another component of the fire plan is to set up a series of water tanks along the western boundary. These would have a dual function: drip irrigation and fire fighting. These would be constructed as funds and time permit. 🌐

The Wonder of Weeds

Weeds may be the unsung heroes of the plant world. Most people think of weeds as noxious nuisance plants. But the terms “noxious” and “nuisance” are value loaded with cultural bias and negative connotation. After all, noxious is in the eyes of the beholder.

Weeds are “pioneer” species. They boldly go into hostile environments where most other plants can’t get a toe-hold. Bare soil is often hot, dry, and lack soil nutrients and life.

But weeds are very adept at taking hold and living under those conditions. This is the miracle work of weeds: They improve the soil making life possible for other plant species and soil organisms. One of the first things they do is shade the ground. The lower soil temperatures lets moisture stay around a bit longer. And that also helps soil organisms to take hold and thrive. As weeds go through their life cycle, they add organic plant material to the soil. This supports other soil organisms who also improve the soil. Weeds are the start of plant succession.

Managing weeds on a sustainable farm means not using agricultural herbicides (especially synthetic ones). For dedicated organic farmers it also means not using biocides of any kind. Since weeds are part of the natural order of things, what can be done? If weeds are established, do not let them do to seed. When composting or mulching, avoid putting any weeds with seeds into the pile.



Vacant land turns into a weed haven.

Transplanting the desired plants through the mulch gives them a head start with little or no competition from weeds. If any weeds make it through the mulch layer, they will be few and far between. This makes them easy prey for hand weeding. Drip irrigation below the mulch layer optimizes water utilization and minimizes moisture losses by evaporation. 🌍



Natural vegetative succession from bare soil to forest.

Nam Yang Is Almost a “Non-Yang”



The Nam Yang at Ban Na Fa is almost a non-entity in contrast to what it was during flood season. The 2 top photos are looking upstream from the bridge at Ban Na Fa. (Note: Our house in the village is on the left.) The bottom photos of the Nam Yang show the view looking downstream from the same bridge.



Half-way through the hot-dry season and life along the Nam Yang at Ban Na Fa has slowed to something just above a fast trickle. 🌐



*Changing channels: Blue was the main channel in the dry season Mar 2011.
The yellow line is a channel carved out during the Jul 2011 floods.*

Risky Riding on Thailand's Rural Roads



Thais call Thailand “the land of the free.” And freedom on the highways, roads, and by-ways is often revealed when you try to count how many people can fit in the back of a truck.

The most common truck in the rural areas is the pick-up truck. It's the obvious choice for farmers. But when it comes for taking the family to town, it leaves a lot to be desired. But Thais are, if nothing else, pragmatic. They make do with what they have.



It is amazing to see students going on field trips, traveling for competitions or to take exams. They pile on to trucks with their bags and go. American parents would be appalled and likely to call a lawyer.



Riding in trucks this way is “normal” and extends into adulthood, work and family shopping trips.

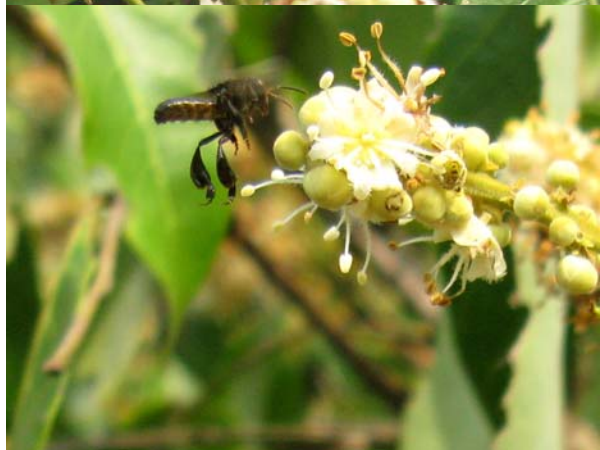
There are accidents and fatalities. In fact, recent traffic fatalities of foreign students on holiday have prompted surviving parents to ask their embassies to post notices warning of the dangerous road / vehicle conditions for tourists in Thailand. Many lament never hearing of any warnings in the travel media. We wonder what happened to personal responsibility and commonsense? 🌐



Our Longan Pollinators



Longan blossoms draw pollinators to our orchard.



Springtime and our attention turn to... pollination! The longan orchard is abuzz with hard working insects. They are the often unnoticed, unsung, and unpaid (at least not in money) workers on our farm.

Longan pollen transfer is done by a combination of autogamous self-pollination, wind or insects.

The flowers begin to discharge pollen from 2-5 days of their appearance and opening. When the blossoms appear, most will open before 0600 / 6am.

Pollen is released all day, but reaches a peak about 1000 / 10am. Longan nectar is highly attractive to bees. Nectar production peaks about 0600 / 6am. Bee foraging tends to reach a peak about mid-morning.

The forest on the border of the upper terraces is a prime source for our native pollinators. When our orchards are not in bloom, native bees forage for food in their natural forest habitat. 