Rural Training Center-Thailand (RTC-TH)

SPRING FARM UPDATE

March 2007

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

Where there's smoke, there is fire.

Open flames appear on the upper west terraces.

Fire reaches the lower hillside to the west of the farm.

FIRE ON THE FARM

Disturbing news reached us about a fire on the farm. Apparently brush clearing fires from adjacent land to the west of the RTC-TH demonstration farm spread to one of our longan orchards.

Wildfires are a major concern, especially in light of global warming and forecasted regional climate changes. In this case, the fire was started for brush clearing on another farm. The question is why now?

Everyone knows it is the dry season; prime time for fires. Fuel moisture is low, humidity is low, and on this particular day, winds were blowing.

This relatively minor event points out the why wildfire controls, tools, and training are on the agenda for RTC-TH lessons. The firebreak was no match for the lofting embers that spread the fire to our farm. This also points out that even when you are prepared, the actions of your neighbors can affect you. Thus there is a need to spread the training to those around you; share the knowledge.

Wind-borne embers spread the fire to our orchard.

FIRE THREAT ASSESSMENT AND FIRE PLAN

The original fire threat assessment consisted of creeping and jumping fires. Typically in the tropical deciduous forest adjacent to the farm, low creeping fires burn off accumulated leaf litter during the dry season. Flames might get up to about 2 m, but rarely get to the tree crowns. The fuel texture (size) and amounts generally produce low intensity fires that do not destroy trees. The limited fire records for northern Thailand show the main ignition source for wildfires are from hunters (camp and cooking fires) and farmers (clearing brush).

Common wildfire hand tools are not found easily in Thailand.

Many of the most common hand tools used in wildfire fighting are not readily found in Thailand. The mountainous terrain of Nan Province often precludes getting crews in to even fight the fire. So the practice is often to let the fire burn out by itself. Obviously, when fire encroaches on the farm, this is not an acceptable strategy.

Example of a fire crew making a firebreak of mineral soil.

The draft fire plan for the farm involves prevention to minimize risk exposure.

- Fire breaks are the first line of defense along the property boundaries.
- Keeping fuel free or reduced fuel zones around structures.
- Keeping brush cleared or low to reduce fire intensity and duration to minimize damage to trees
- Preparing equipment and personnel to properly use firefighting hand tools.
- Networking with neighbors for training, preparedness, and fire avoidance.
- Establishing a farm weather station to assess fire hazards and threats.

Example of fire crews smothering fire with mineral soil.

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FISH POND FRAGILITY

This dry season is pointing out the obvious: water supply is critical for the fish ponds. To prepare for even drier times, we need to increase rainwater harvesting and seek supplemental water supplies for the farm.

In the memory of the farm, there has always been water for the fish ponds, even in the dry season. Current pond status reveals potential problems. Pond #1 water level is very low with some fish dying. Pond #2 shows increasing algae growth which can lead to lower dissolved oxygen levels. Pond #3 water level is about ½ of capacity.

Unfortunately, the delay in building 2 new water catchment ponds meant missing the water supply from the last rainy season. If filled to capacity, the new ponds could have supplied half the water for Pond #3.

Dissolved oxygen levels are a critical concern especially in the hot season. Intense sunlight and algae increase oxygen production during the day and could also lead to increase oxygen consumption at night. Lower water levels means water temperatures rise, reducing the ability to retain oxygen.

The long-range plan included using water from the new catchment ponds fed to the fish ponds by a gravity flow system siphon-aeration system that required not fuel consumption and few mechanical parts. Since construction can best be done in the dry season, we must wait until 2008 before any advance is made in this area. [Let's hope the ponds can last that long without drying out.]

At this time, no pond aeration equipment is on hand for use in the ponds. As an emergency, a water pump can be operated to artificially aerate the ponds. But this increases costs and works against sustainability.

The general economic slow down (following the flood) and rising overall costs for off-farm goods and supplies has negatively impacted the demonstration farm operating budget and plan for now. Limited funds and shifting priorities requires re-examining the 2007 demonstration farm plan in order to make the necessary adjustments.☯

Pond #2 in Fall 2006.

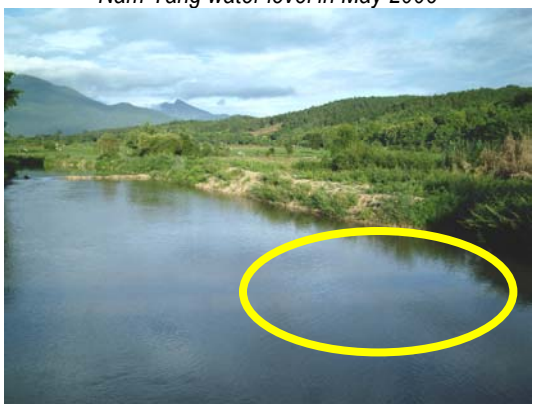
Pond #1: Low water level in Fall 2006.

Pond #2: High algae levels in Spring 2007

Pond #3: Low water level Spring 2007.

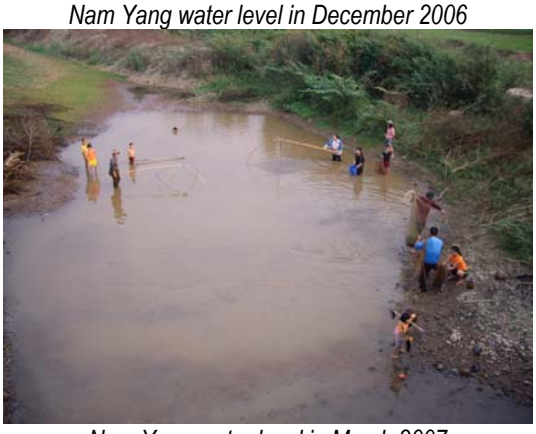
The fish ponds on the farm are a vital element for sustainability plans.

Nam Yang water level in May 2006



Nam Yang water level in July 2006

Nam Yang water level in December 2006



Nam Yang water level in March 2007

WATER WOES and WORRIES

Global warming and regional climate change models indicate hot seasons will get hotter, longer, and drier. The rainy seasons will be shorter, but wetter and more intense. These predictions inspired the RTC-TH GROW project (Getting Real On-farm Weather).

Local, site specific weather data are needed as input for rainwater harvesting and water holding pond planning. The monsoonal rainfall pattern meant about 80% of the annual water supply.

The water levels of the Nam Yang flowing past Ban Na Fa dramatically shows the seasonal fluctuation in water levels. These photos show the differences in a year. The yellow circle in the photo marks a similar area of the river in all photos.

- The top photo is of the 2006 dry season (ending in May).
- Second photo shows the middle of the wet season in July.
- Third photo shows the start of the middle of the winter (start of the dry season).
- The bottom photo shows the water levels near the end of the dry season 2007.

Local residents said the Nam Yang was noticeably drier this past dry season than in recent memory. Farmers with fields close to the river often pump water to irrigate their fields. Many farther away or upslope from the Nam Yang flood plain did not plant dry season crops this year.

The RTC-TH strategy is to harvest / store rainwater, improve soil moisture retention, and begin to seek out crops with lower moisture requirements. The low-cost methods focus on composting, mulching, and gully water diversion. High-cost methods involve land terracing, roof gutter / tank arrangements, and excavating water holding ponds. It may be necessary to explore the possibility of drilling a deep water well on the farm. Water purifications and pasteurization systems are also planned.☯

PROGRAM PLAN REVIEW

Recent events and changing economic conditions in Nan Province call for reviewing the RTC-TH annual plan for some mid-year corrections. A full review of the programs may not be completed until Fall 2007. However, delays in construction plans for the 2007 dry season have essentially pushed some major projects into 2008. These delays cascade into other smaller projects. The effects of those changes need to be assessed carefully so we can keep the overall program on track.

The weather station is a high priority as these data are input to several critical planning functions (e.g. rain water harvesting, composting / mulching, and soil moisture retention enhancement).

Water remains a top priority. Without it, the farm cannot exist. The fish ponds are a critical element in the water plan. But current conditions indicate we need a back up water supply to maintain the ponds.

A growing area of concern is livestock feed and feed alternatives. More emphasis will be put on producing feed as opposed to purchasing feed from off farm. Recent price increases have seriously impacted the pig and cow rearing efforts. We are reassessing the livestock plan and are considering reducing the size of the operations in this area.

Energy costs are also rising. We are shifting priority from a battery charging solar PV station to bio-fuels. We are studying two plans and need to determine if both can be funded and when they can be implemented. One involves construction in the dry season. The other involves planting as we enter the wet season. Both will probably started in 2008.

G.R.O.W.

Getting Real On-farm Weather

Local on-site weather data is needed for rainwater harvesting calculations to optimize the bounty of the wet monsoon.

The fishponds are critical to the farm water plan.

Produce more livestock feed or keep less livestock?

I.F.S.

Independent Fuel Systems

Energy is a major off-farm expense. Renewable energy produced on the farm is an important element in the self-sufficiency and sustainability of small rural family farms.

The best made plans of mice and men often go awry.