RTC-TH Apr 2014 Update

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

Songkran and Water Splashing

Songkran is the annual water splashing festival in Thailand. It coincides with the hot season and traditional Thai new year. [**Note:** The modern Thai calendar New Year is Jan 1. But the traditional Buddhist calendar is used for religious and traditional observances.] In the old days, the holiday involved cleaning temples and washing Buddha statues. The water from the washing was collected and considered good luck. The original custom was to gently sprinkle people with the water as a blessing of good luck. You would dip your fingers in the water and gently flick the water from your finger tips.

'Tis the season to get soaked!

Somehow, modern times and perhaps tourism brought about a change. People go overboard to hose down and drench people. It's supposed to all be in fun. In the peak of the hot season, getting splashed or drenched may be a nice "cool me down." When some folks use super high pressure water guns strong enough to knock someone off a motor bike, we think it's gone a bit too far.

A "jumbo" sized biological water gun in action.

Starting 13 Apr, it is definitely NOT the time to go walking about with your best camera or cell phone. If you do, be prepared to protect them from water or get them drenched.

In some places, elephants are brought into play. As we said, it's all in fun, right? We just hope the elephants in question don't have a cold or sinus trouble during the festival.

In This Issue

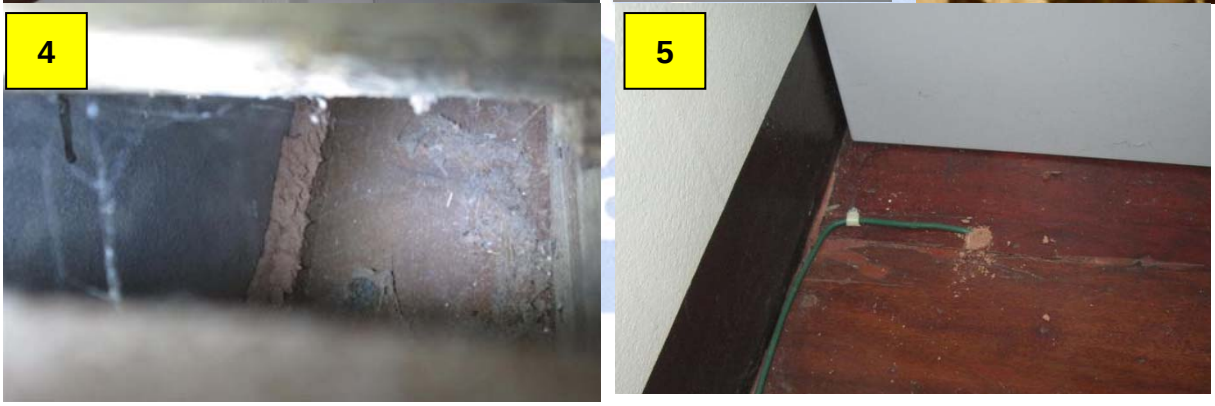
RTC-TH Co-founders

Saifon & Greg Lee

Uninvited Freeloaders

The humid tropics are a warm and inviting habitat for a great diversity of life. Among them are subterranean termites. They apparently found a crack in the concrete slab foundation of our house, moved in (unseen) behind some wood paneling in the living room (#1) and the underside of the stairs #2 and #3).

The underside of the wooden stairs is enclosed with paneling. Near the top edge, we spotted the dirt termite tubes (see photos 2 & 3 below). Lucky for us, they don't eat the wood used to make the stairs or the floors of the upstairs rooms.



However, that doesn't stop them from exploring and expanding the dirt tube network in their search for food. Photo #4 is a peek behind the paneling enclosing the underside of the stairs. Photo #5 shows the termite dirt tube material filling in the access hole in the 2nd floor office for the electrical grounding system. We are exploring our options to deal with this new problem.

Keeping Cool in the Hot Season

With high temperatures forecasted in excess of 40°C for this hot season, some ham radio friends in Canada wanted to know how we stand it. Well, other than finding a chair, the key to keeping cool is to minimizing your exposure to the heat.

An older, more traditional village home on pillars

The first step is avoidance: You can keep out of the sun by:

- Getting up and working earlier before the sun is up or gets high in the sky;
- Work in the shade whenever possible;
- Do not work outdoors in the heat of the day (at noon to mid-afternoon).
- Work late in the afternoon or early evening when the sun is lower.

Keep well hydrated. Most people want cold, iced, or cool beverages to drink. This is only temporarily refreshing, but the law of thermodynamics is working against you. Heat tends to move from high concentrations to low. Many Chinese drink warm or hot Chrysanthemum tea and use a hand fan. This is counterintuitive. The hot tea causes you to perspire. Fanning yourself accelerates evaporation from your skin and helps to cool you down.

A more modern brick / concrete house in the village

Older Thai homes are built off the ground on pillars or stilts. Air freely circulates under the house. The walls had large openings. They were door-like in size so a large portion of the walls let air cross ventilate the house. Cross ventilation is the key to keeping a house cool. Opening doors and windows, especially on the shaded side of the house, can make a big difference. It doesn't matter if the air is hot or not. The main thing is to keep the air moving.

Modern homes have lost this feature. Brick and concrete are the preferred housing materials. But these have high thermal storage capacity and work against keeping a house cool. As a result, many Thais now spend more on electric fans, air conditioning, and electricity.

A sheet metal roof shades the bathroom and office

Shading the house walls from direct sunlight reduces the heat buildup. It is a simple process. We put a shade roof over the 2nd floor outdoor balcony. It also shades the 2nd floor bathroom and one of the office walls. The open porch lets air circulate to the rest of the house via the office windows and the hall way door to the porch. The office has a balcony directly opposite the office window for cross ventilation.

The carport itself shades the south wall on the ground floor of the house. Inside temperatures are a good 5°C cooler as a result.

Trees shade the south facing wall of the carport radio station. We also get the added bonus of fresh fruit from these trees. During the year we get rose apples, start apple, lemon, dragon fruit, bananas, coconuts, guava, star fruit and maprao.

Our carport shades the south wall of our house

In Ban Na Fa, we are lucky. The Nam Yang River is a nice place to sit and soak in the water to cool down. Our house is next to the river. So we benefit from the cooling effect of the water. The cool breezes are most noticeable in the evening. With few mosquitoes in the hot, dry season, this bench in the shade of the fruit tress lets you enjoy watching the river.

Trees shade the carport south wall

For those with more time, swimming or sitting and soaking in the river's flowing water bring direct relief from the heat. For others, washing and fishing are opportunities to get in the water. Life in rural Thailand is closer to nature than for city folks. While nearly all the villagers enjoy the convenience of electricity, many remember living without it. They still know how to do without it.

A bench at our plant nursery overlooking the Nam Yang

We have only one air conditioner in the house. We got it when we first moved here 6 years ago. But we have acclimated and haven't used it very often for the past 3 years. But this year...

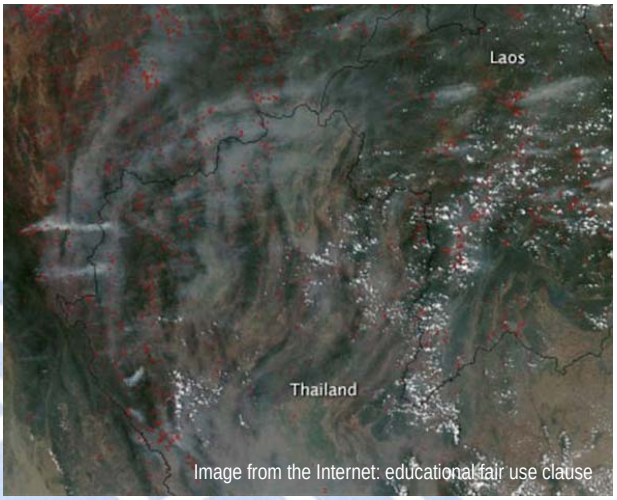
Children are out of school in the hot season and enjoy cooling off in the river.

Fishing, whether for food or fun, can give a welcomed respite from the heat.

Whatever happens this hot season, we know it will feel much hotter if we look at a thermometer!

A Break in the Smoke & Haze

As we mentioned in last month's Update report, land clearing is commonly done with fire. It is a low cost way to get rid of plant debris and to rid the fields of insect pests and diseased plant materials. But these short-term gains take a toll on air quality and human health. A recent NASA satellite view taken over Southeast Asia on 18 Mar clearly showed the smoke from fires in the region. (See photo on the right.)



Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Aqua satellite on March 18, 2014

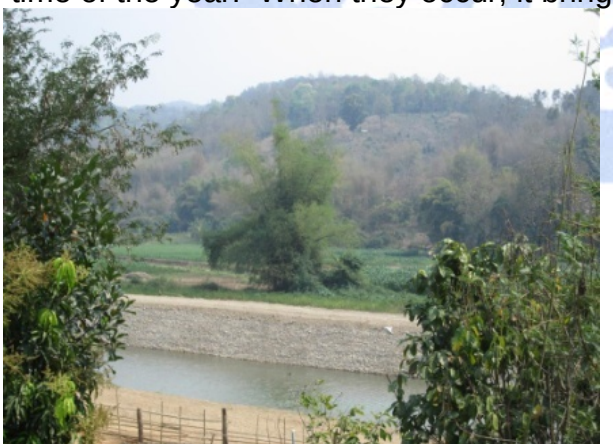
The Thai Meteorological Department (TMD) issued possible thundershower forecasts for Mar 21-23. Though listed as 10-20% chance of rain, just past mid-night 21 Mar, a thunderstorm dropped rain on Ban Na Fa.

The storm's wind and rain literally swept the smoke from the air. The fresh smell of the rain combined with the cool of the night was a very welcome respite from the acrid smoke and haze so typical of northern Thailand's hot, dry season.


(Earlier last month: Taken 06:59 hours)


Taken 07:__ hrs the morning after the storm, 22 Mar

The winds persisted through the day blowing out the local haze and smoke even more. Unfortunately, the benefits of thunderstorms are few and far between at this time of the year. When they occur, it brings some welcome relief.


(Earlier last month: Taken 14:02 hours)


Taken 16:00 hr in the breezy afternoon, 22 Mar.

Porch Ponderings: Why Burn?

According to recent World Health Organization (WHO) studies, Southeast Asia is now the most polluted region in the world. Deaths related to air pollution number with 3.3 million (indoor) and 2.6 million (outdoor). As we mentioned last month, clearing farm land with fire is wide spread at this time of the year. It also contributes to global climate change.

*Climate Change**

*Drought**

*Salinization**

*Desertification**

The changes are a challenge well beyond the capacity of any single small family farmer. Our position is for each farmer to do what they can to be part of the solution and not part of the problem. In northern Thailand, it begins with NOT burning to clear the land or dispose of crop residues and trash. It is a challenge for small farmers to balance the short-term gains of burning to the long-term gains of building and maintaining soil health for the sustainability of their farms.

*Sea level rise**

*Soil erosion**

*Images from the Internet: educational fair use clause

By not burning, farmers work to improve soil health and avoid having to buy expensive chemical fertilizers. These are some simple first steps out of poverty.

*Clearing by burning**

The Farmer's View: Plus / Minus of Burning Crop Residues	
Known Advantages	Largely Unknown Disadvantages
• Insect & disease control • Eases field work in the following season • Give a rapid addition of P (phosphorus) • Low disposal costs	• Less organic matter returned to soil • Less mulch cover to reduce soil erosion • Less soil biota and micro-organisms (means lower soil health) • Less fodder for animals which can return manure to the fields
Note: Farmers who burn crop residues may be largely unaware of the valuable soil nutrients they don't see going up in smoke. Ironically, many then have to spend money to buy the same chemicals (N, P, K, S; nitrogen, phosphorus, potassium, and sulfur) in an attempt to fertilize their fields to boost productivity.	

The chemical content of crop residues is set by a number of variable factors: soil type, crop type and species, past fertilizer use, climate in the growing season, etc. The table below shows average nutrient content of crop residues. While the amounts of N, P, K, and S may vary, the nutrients exist. They are present in the crop residues is freely and readily available on the farm. It will cost more to buy fertilizer from off the farm. Farmers should be aware of the soil nutrients they lose when burning and the loss of long-term benefits to soil health. They can use the knowledge to make better choices for their farm and situation. Rather than dictate what farmers should do, we feel each farmer should have the freedom to choose. We have to trust them

Estimated % Nutrient Content of Crop Residues								
Crop	N (nitrogen)		P (phosphorus)		K (potassium)		S (sulfur)	
	%	Kg/rai	%	Kg/rai	%	Kg/rai	%	Kg/rai
Rice	0.65	1.04	0.215	0.344	1.7	2.72	0.75	0.12
Corn	0.60	8.03	0.20	2.68	1.22	16.06	0.08	1.07
Soybean	0.58	2.64	0.18	0.91	1.73	4.18	0.12	0.59
Note: Very little research has been done on soil nutrients in rice straw. Unpublished papers indicate Si (silica) lost through burning could be as much as 8.8 kg/rai. Si and K play important roles in the early stages of rice growth.								

to make decisions. We just want to be sure they are given the facts.

The Plus / Minus of Not Burning Crop Residues	
Advantages	*Disadvantages*
• *Recycle soil nutrients in crop residues as mulch (reducing soil moisture loss and soil erosion)* • *Composting crop residues to build soil organics for the long-term sustainability of crop productivity* • *Reduce cost for agricultural chemicals* • *More soil organics increases soil moisture retention and improves drought resilience* • *Improved soil resists soil erosion* • *Improved soil means healthier crops (so less need for agricultural chemicals) and higher productivity*	• *Possible to allow crop pests and disease to get to next year's crop (if not composted)* • *Lose much of the K (potassium) from ash of burnt crop residue*

Burning is one of the fastest and easiest ways to remove organic plant matter from the farm. It is a basic fact that tropical soils are characterized by low organic content.

Of the soil nutrients needed to grow rice, rice straw contains 93% of the N, 25% of the P, 20% of the K, from 5-60% of the S. This is nearly 33% of the N and nearly all the K needed to grow rice. So it doesn't make sense to remove these by burning.

Composting is our preferred approach

Farmers have a range of choices for how they can return organics to the fields. The direct ways include (in order of RTC-TH preferences rather than burning):

- Composting (with worms and EM bacteria)
- Composting
- Mulching (with EM bacteria)
- Mulching
- Leaving crop residue in place after harvest with no further "treatment"
- No till / Low till field preparation (no plowing)

Composting with worms is our preferred method of increasing soil organics. Spreading worm compost on the farm also distributes worm eggs. Increasing the worm population on a farm is always a good idea. Proper composting eliminates pathogens and insect eggs.

Worm composting helps boost farm worm populations

Of the soil nutrients in the crop residues, only K (potassium) is not retained as well as the other nutrients. However, composting fallen fruit and fruit peels can make up for this and add valuable trace elements as well. (See "*On-Farm Materials for "Fortified" Compost*", 2011 Feb Update, p, 4).

Adding biochar to compost is another way to enhance the soil. This increases soil moisture retention capacity.

Water is critical to most life forms on Earth. This is why we focus some of our attention on increasing soil moisture retention. The hot, dry season in northern

Thailand slows down many life cycle processes. Forest leaf litter and organic matter in compost piles break down and slower without moisture.

The SW monsoon is the main time for us to get water. Mulch protects bare soil from raindrop impact (the first step of soil erosion.) Composted soils tend to resist soil erosion. Check dams, planted flow paths and diverting surface flow into swales (shallow basins) are ways to start storing water in soil. Composting in swales will increase the soil water retention capacity as well.

Check dams slow water flow to reduce soil erosion and increase water soaking into the soil

Ecosystems studies revealed the vital role played by soil bacteria and microbes to overall plant health, soil nutrients, and plant abilities to absorb those nutrients. Adding organic matter is fundamental to improving soils in northern Thailand. This will improve the soil habitat for the beneficial soil organisms.

Bacteria and micro-organisms can be added to the compost. We make and use EM (effective micro-organisms) bacteria with organic matter from our farm. (See "Help for Our Fishpond", 2011 Jun Update, pp. 9-10.) We are strong advocates of nutrient recycling on the farm. We had a problem with one of our fishponds. We gathered all the dead fish. With the help of the Thai Dept. of Agriculture and an aquaculture specialist, we used the dead fish to make several barrels of EM bacteria. [**Note**: Any organic matter can be used to make EM bacteria].

Making EM bacteria using dead fish

A common way to indirectly return organic matter to the fields is using rice straw as animal bedding and fodder. The bedding can be composted. As fodder, the rice straw is converted to manure. The manure can be added to the compost piles or spread in the fields.

When mulching or using rice straw directly applied to fields, be sure to do this early enough to allow it to decompose before planting. While we prefer no till or plowing of soil, we make an exception for plowing wet rice paddies. (The soil erosion is minute.) We also plant green manure and plow it under with manure and EM bacteria prior to planting our rice.

A hired tractor plows our wet rice paddies

Modern agriculture has disrupted the natural cycle by accelerating food production. An attempt to revitalize the soil using synthetic chemical fertilizers gave very positive short-term gain. People are only now beginning to recognize the long-term losses to true soil vitality. World population is increasing faster than our ability to produce food. So don't burn. Keep the nutrients on the farm and make your farm more productive and sustainable! Your future, the the rest of the world, depends on it.

Road Loads & Scenes

On a recent road trip, we saw some rather large loads being hauled. Some of these are fairly common in Thailand, but no so common in the US. So we thought we would share the sights with you.

One of the few pick-up truck trailers we've seen

Not a road hog (the truck is in its proper lane).

A large tree being moved to a new "home".

Baled straw on the move (hopefully well tied down)

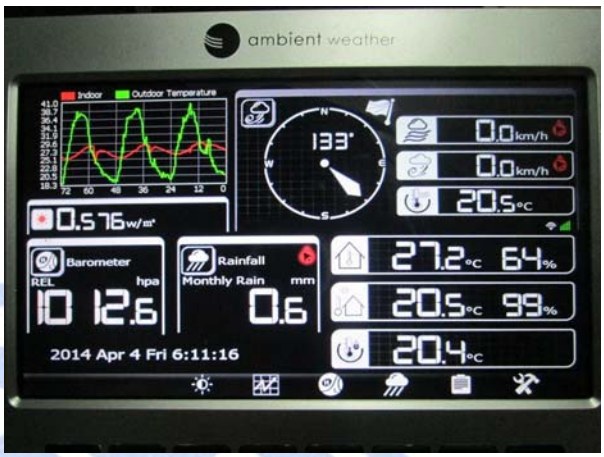
A Roadside "Hardware" Store

In Nan Province, there are not many large hardware stores like Lowes or Home Depot. But there are villages that specialize in certain items. On the north side of Phrae mueang, there is a cluster of roadside stands selling knives and tools of all kinds and descriptions. These are all hand made in local villages.

Stands for several vendors are side by side

Knives and tools for the farm and kitchen

Birth of the RTC-TH G.R.O.W. Station



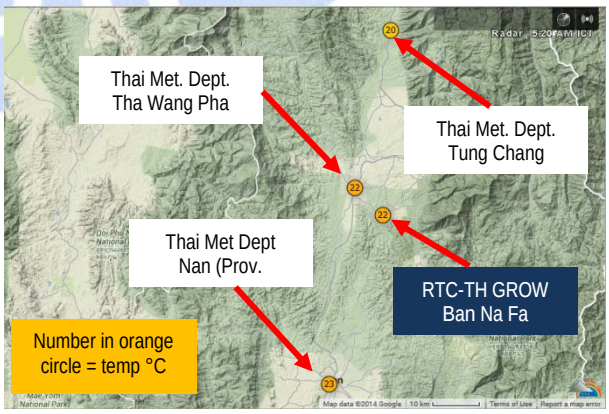
It has been nearly 5 ½ years since we moved to Ban Na Fa. Finally, we can proudly announce the birth of our Getting Real On-farm Weather station. Well, to be perfectly honest, it isn't on the farm, yet. The Ambient Weather WS-1000 wifi OBSERVER weather station unit is mounted on a short mast on the carport ham station roof. This puts it about 1 km from the farm. This will be much better than trying to use the Thai weather station data in Tha Wang Pha which is 8 km away. In mountainous terrain, weather conditions can vary greatly in a short distance.

We created the card (on the left) for our weather station. It shows the programs making use of the weather station data.

In addition to our own programs, the weather station is part of our public / community service efforts. Rural areas are underserved in terms of weather stations. Increasing concern about monitoring global climate change requires more data.

No one person can solve the major problems facing our world. But in the RTC-TH, we think much, talk less, and do more. This is how we become part of the solution rather being part of the problem.

Included with the WS-1000 wifi weather station was the opportunity to a join www.wunderground.com Personal Weather Station (PWS) program to link our station to the Internet. To see our station data real time, visit the website and search for our station **INANCHOM2** This www.wunderground.com also archives our data and makes it available internationally. This gives us a free back-up service for our weather data.



The Lone EmComm Ham

A remote rural ham might be the "last ham standing" for emergency communications after a disaster

Hams living in remote rural areas may face a basic choice when disaster strikes: Lay low and hide or step up to the plate and become an emergency communications (EmComm) station. We are counting on the general ham spirit of community or public service to shine through. This has been a long-standing tradition for radio amateurs from the very beginning of ham radio.

Unlike hams in more developed areas, rural hams may not have the benefit of EmComm training or being part of an EmComm group. Many hams are hobbyists. Getting involved in EmComm might not be high on their list (if it is on their list at all). The RTC-TH EmComm slogan is "Ready to Serve and Sustain Our Community". Preparation is the foundation for this commitment. And this brings into play the slogan from our Emergency Preparedness program: "Prepare for the worst, hope for the best."

With only one licensed ham in the RTC-TH EmComm program, we are faced with this simple fact: our EmComm efforts must be geared for single-handed operations. We have to run lean and make everything count. Simplicity in form and function is the overarching rule.

For example, we cannot deploy our resources for mutual assistance. Our basic preference is to get our station on the air. In order to deploy, we must shut down our station. This is because we have limited resources. Our main radios are assigned to Station #3 in Ban Na Fa.

RTC-TH EmComm procedures are much more simplified for single-handed use in minimalist conditions

Sam is the Na Fa Station with our main radios

The only licensed operator can only be in one place at a time. Thus, we see our main EmComm role as compiling and relaying information *in English* to the outside world.

All of this seems a far cry from the many emergency ham radio volunteer groups responding the major disasters. But the RTC-TH EmComm program operates on the basis of doing what we can with the resources at hand. While limited in contrast to larger EmComm organizations, we focus on our local village and operate within our means.

Sparky, the Batt-mobile (our all electric demonstration vehicle) is an example of our efforts at single-handed ham operations. A handheld transceiver is the primary radio assigned to Sparky. We tap into Sparky's batteries for this radio and increase

the duty cycle beyond the built-in radio batteries. Portable antennas and push-up masts supplement the normal vehicle mounted antennas. All of these antennas expand the capabilities of the original radio antenna. The antenna system shown in the photo on the right can be set up in 15 minutes by one person. All of these enhance the capability of a small handheld transceiver.

Sparky w/ a 2m VHF beam antenna on a push-up mast can increase the operating range of an HT

Sparky is also fitted with radio racks for our HF and mobile VHF radios. All necessary power, grounding, and antenna connections are installed with appropriate antennas stored onboard. It is a simple matter of undoing 4 simple connectors (i.e. power, ground, antenna, and lights/fans) to remove the radios from our Ban Na Fa station. The same connector fittings are used in Sparky, Sam (serving as the Ban Na Fa Station) and our Station #2 in Ban Wang Wa. [**Note:** When Station #1 is set up at the Farm, the same types of fittings will be used there as well.] The plan is to extend these inter-operability features to our planned bicycle and pedestrian operating modes as well. This is our plan for optimum flexibility and resilience for our EmComm operations.

If EchoLink® is RF enabled; Sparky can be a rover unit.

To increase operational flexibility, we plan to upgrade our EchoLink® station from a User node to a Link node. This means we can use a handheld radio to use the EchoLink® system based at the station from a remote location. We could conduct local scout trips in the vicinity of the station and still be operating the station remotely. If we lose the Internet connection, the back-up plan is to operate VHF simplex or use HF. Mark N7YLA has suggested expanding our system to use the Narrow Band Emergency Messaging System (NBEMS) which only requires a notebook computer (no Internet connection) and VHF simplex radio to rapidly and accurately send messages digitally over the airwaves.

A short roof antenna mast is an easy way to get height

When it comes to antennas, height is important. But lone EmComm hams have to balance safety and single-handed operations when raising antennas. Short masts on a roof may be easier to manage than a taller mast at ground level. Selecting effective antennas is the key to optimizing radio performance.