

## Design 8: Chiang Rai, Thailand (ไทย)

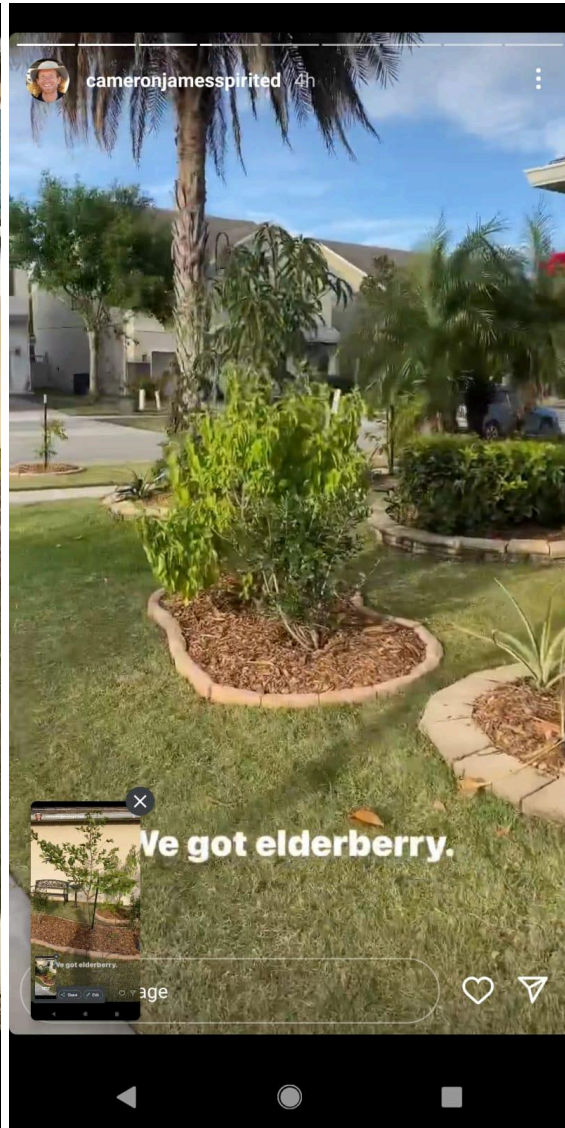


Created by: Annette Argabright and Allan C.

Framework Used: GOSADIMET

Date started: February, 2023

Date completed: May, 2023



In the center of the pattern, and dotted around the outer ring, are small flower gardens. They are like a hidden treasure in the middle of the maze of gardens.

Along the edge of the property, near the road, is a hedge row pattern of tree, nurse plant, shrub repeated down the edge.

The large kitchen garden is near the worker's residence. There, food for the staff and eventually the riverside property will be grown. Chickens will work the compost, located on the south side of the garden, which is slightly higher. Compost will be added from the chicken coop to the gardens. Water, captured from the coop roof, will irrigate the gardens.

Other small food forest gardens are north of the kitchen garden and north of the pond. A small kitchen garden east of the owner's house.

# Khun Tle's final design

- 1. STAFF HOUSE
  - 2. CANTEN and OFFICE
  - 3. PANTRY and WORKING
  - 4. GUESS HOUSE
  - 5. BATH HOUSE
  - 6. SWMMING POOL
  - 7. BOXING and GYM
  - 8. PRIVATE HOUSE
  - 9. FOOD MARKET
  - 10. SERVICE
- LAY - OUT PLAN  
SCALE 1:500



## Plant List

This plant list is what was sent to the client. It is part of the [larger plant list](#) that I researched and created for the Chiang Rai 1 property. Some plants were requested by the team and some I discovered in my research. I researched every plant for zones and maintenance as seen in the larger plant list.

For the current Chiang Rai 2 design, plant focus was on beautiful flowers, simple maintenance, and food. Medicinal information is included in the larger plant list.

# Food Forest Abundance

## PLANT LIST



Trees	Latin Name	Thai Name	Symbol	Quantity	Uses
Avocado	<i>Persea americana</i>	อะโวคาโด	T	2	Food
Coconut	<i>Cocos nucifera</i>	มะพร้าว	T	2	Food
Custard Apple	<i>Annona reticulata</i>	น้อยหน่า	T	1	Food
Durian	<i>Durio zibethinus</i>	ทุเรียน	T	1	Food
Jackfruit	<i>Artocarpus heterophyllus</i>	ขนุน	T	2	Food
Longan	<i>Dimocarpus</i>	ลำไย	T	1	Food

	<i>longan Lour.</i>				
Lychee	<i>Litchi chinensis</i>	ลิ้นจี่	T	1	Food
Mango	<i>Mangifera indica</i>	Nam Dok Mai Mango	T	2	Food
Mangosteen	<i>Garcinia mangostana</i>	มังคุด	T	2	Food
Pomelo	<i>Citrus maxima</i>	ส้มโอ	T	1	Food
Rambutan	<i>Nephelium lappaceum</i>	เงาะ	T	2	Food
Rose Apple	<i>Syzygium jambos</i>	ชมพู่	T	1	Food
Sapodilla	<i>Manilkara zapota</i>		T	1	Food
<b>Shrubs</b>	<b>Latin Name</b>	<b>Thai Name</b>	<b>Symbol</b>	<b>Quantity</b>	<b>Uses</b>
Bastard Oleaster	<i>Elaeagnus latifolia</i>	ไอสเตร ออร์นากลุ่มนอกทาง	S	4	Nitrogen Fixer
Cacao	<i>Theobroma cacao</i>	โกโก้	S	5	Food
Indian Gooseberry	<i>Phyllanthus emblica</i>		S	4	Food
Jaboticaba	<i>Myrciaria cauliflora</i>	การพุด	S	5	Food
Key Lime	<i>Citrus x aurantiifolia</i>		S	4	Food
Mulberry	<i>Morus nigra</i>	หม่อน	S	4	Food
Natal Plum	<i>Carissa macrocarpa</i>	พลัมขนาดาล	S	4	Food
Pandan	<i>Pandanus amaryllifolius</i>	คราด	S	4	Food
Papaya	<i>Carica papaya</i>	มะละกอ	S	4	Food
Pigeon Pea	<i>Cajanus cajan</i>	นกพิราบ	S	6	Food, Nitrogen Fixer
Queen Crape Myrtle	<i>Lagerstroemia speciosa</i>		S	4	Pollinator

Ratchaphruek	<i>Cassia Fistula</i> Linn		S	4	Pollinator
Herbaceous	Latin Name	Thai Name	Symbol	Quantity	Uses
Cardamom	<i>Elettaria cardamomum</i>	กระวาน	H	14	Food
Cassava	<i>Manihot esculenta</i>	มันสำปะหลัง	H	14	Food
Cranberry Hibiscus	<i>Hibiscus acetosella</i>		H	14	Food
Dill	<i>Anethum graveolens</i>	ผักชีฝรั่ง	H	14	Food
Green Chiretta	<i>Andrographis paniculata</i>	สีเขี้ยว chiretta	H	14	Medicine
Ground cherry	<i>Physalis macrophysa</i>	เขอริ้กระเพาะ บัสสาวะ	H	14	Food
Holy Basil - Tulsi	<i>Ocimum tenuiflorum</i>	Basil ศักดิ์สิทธิ์, Tulsi	H	14	Food
Lantana	<i>Lantana camara</i>	ดอกช้ไก่	H	14	Pollinator
Lemongrass	<i>Cymbopogon citratus</i>	ตะไคร้	H	14	Food
Mexican Oregano	<i>Lippia graveolens-Kun th</i>	ออริกานอเม็กซิกัน	H	14	Food
Taro	<i>Colocasia esculenta</i>	เผด็จการ	H	14	Food
Turmeric	<i>Curcuma longa</i>	ขมิ้น	H	14	Food
Nurse/ Support	Latin Name	Thai Name	Symbol	Quantity	Uses
Kassod	<i>Senna siamea</i>	ชาวกะโหลกสีระชะ	N	9	Nurse, Nitrogen Fixer, Nurse, Biomass
Moringa	<i>Moringa oleifera</i>	มะรุม	N	9	Nurse, Biomass, Food
Plantain	<i>Musa</i>	กล้วยและต้นกล้วย	N	9	Nurse, Biomass, Food

Tithonia Diversifolia	<i>Tithonia Diversifolia</i>		N	9	Nurse, Phosphorus Fixer, Biomass
Flowers	Latin Name	Thai Name	Symbol	Quantity	Uses
Bluewings	<i>Torenia fournieri</i>	บลูวINGS	Flowers	8	Pollinator
Catmint	<i>Nepeta faassenii</i>	สระแหน	Flowers	8	Pollinator
Holy Basil	<i>Ocimum tenufflorum</i>	Basil ศักดิ์สิทธิ์, Tulsi	Flowers	8	Pollinator, Food
Lantana	<i>Lantana camara</i>	ดอกซีไ้	Flowers	8	Pollinator
Mexican Oregano	<i>Lippia graveolens-Kun th</i>	ออริกานอเม็กซิกัน	Flowers	8	Pollinator, Food
Safflower	<i>Carthamus tinctorius</i>	ดอกคำฝอย	Flowers	8	Pollinator, Food
Spider Flower	<i>Cleome gynandra</i>	ดอกไม้แมงมุม	Flowers	8	Pollinator



## **IMPLEMENTATION (การนำไปใช้)**

Allan and I were hired through Food Forest Abundance for our design services only. During the [Freedom Farm Academy](#) design of Chiang Rai 1 outside of the city, we built a relationship with the installer and manager of the property, Dr. Woody. A couple of designers within FFA have had the opportunity to travel to Chiang Rai 1 to visit the farm deepening those relationships.

The implementation team for Chiang Rai 2 will be managed by Dr. Woody and installed by employees of Chiang Rai 1, but we are not aware of their time frame. We will be available for questions during the implementation phase.

Updates on implementation will be added as it occurs. We will be designing Chiang Rai 3 so we can keep up with the implementation of this project.

## **MANAGEMENT (การจัดการ)**

### Food forest

The Food forest will include a rain garden water catchment system to help guide water flowing off of the elevated pathway. This will aid in irrigation of the food forest.

The owner wants to keep the food forest simple, with light maintenance, and lots of local flowers.

#### Maintenance:

- Several plants within this system will be considered “chop and drop” plants. They will need to be chopped quarterly and left in the system from which they are cut.
- Mild pruning can also take place at that time.
- Flowers can be cut for arrangements as desired.

## Market Garden

The market garden will primarily feed the employees and owner onsite. Excess can be used in the restaurant that will be located on the Riverside property.

Maintenance:

- The garden will require planting, watering, and harvesting at least three times a week. A washing station will be located within the packaging area. Food can be delivered to the kitchen for processing, or the restaurant.
- Compost will need to be lifted or turned every few days, when the chickens are not helping with that. Finished compost will be delivered to the gardens monthly, and the food forests quarterly to be spread.

## Chickens

Chickens will be a part of the market garden and will be combined with the compost system. They will be located on the south side of the garden, which is also at a slightly higher elevation. Small swales will be dug throughout the garden to allow rainwater, that is caught from the coop and compost roof, to flow through the garden for irrigation.

Maintenance:

- Chickens will require daily interaction with letting them out/locking them up at night
- Refilling the chicken's feed and water daily
- Gathering eggs daily, which will feed the staff and owner



<b>Location</b>	<b>Space per Chicken</b>	<b>Type of Chicken</b>
Chicken Coop	1-3 sq m per chicken	Regular sized chickens
Chicken Coop	.5 sq m per chicken	Small chickens such as Silkies
Chicken Coop	1.5 sq m per chicken	Large chicken breeds
Brooder	.14 sq m per chick	Newly hatched chicks
Brooder	.5-1 sq m per chick	4+ week old chicks
Free Range Broiler	.25 sq m per chicken	Broiler chickens
Confined Broiler Pen	.5 sq m per chicken	Broiler chickens
Chicken Tractor	2.5 rai per 500 chickens	Egg layers or broilers
Outdoor Enclosure	2.5-3 sq m per chicken	All chickens

- Chicken waste can be composted, bagged and sold as compost
- Feathers can be chopped up and fed to fish or made into feather meal

<b>Who</b>	<b>Feed</b>	<b>Notes</b>
Chickens	.11 kg per day	Depends on breed and weather. Need more calcium than protein
Roosters	.11 kg per day	Need more protein than calcium
Chicks	.34-.45 kg per week	They won't overeat. They drink more water than they eat food.
Broilers	Unlimited for 2-3 weeks, then feed unlimited for 12 hours on/12 hours off	Need high level protein

## Packaging

Packaging supplies will need to be ordered on a regular basis once the team decides what they will be selling. The team will create the maintenance plan for this.

## EVALUATION (การประเมิน)

<b>Design Idea</b>	<b>Tool Used</b>	<b>Final Result</b>
Luxurious and healthful property that could be used for guests	Visual observation	It will be luxurious with a focus on health, but for a small number of employees and the owner.
Guest rentals and restaurant	Verbal idea sharing	There will not be guest rentals or a restaurant on this property at this time.
There will be outdoor work cubicles set in the food forest.	Verbal idea sharing	The food forest will remain simple without cubicles at this time.
Secondary plans included a large food forest with winding paths and meditation areas.	Verbal idea sharing	The pattern of the simple food forest guilds and flower gardens create a peaceful maze.
An elevated path will encircle the pond and center buildings	Verbal idea sharing	Everyone agreed this should be a focal point of the property. It will be elevated to create a view of the gardens, food forest, and pond. It will also allow for water catchment.
Extra parking for guests and live in employees, with space for a truck to pick up produce/products	Verbal idea sharing	The space will not be open to the public, nor will the packaging facility be operational for some time. There is no need for additional parking or an enlarged drive for a larger truck.
Create a healthful and peaceful space for people care, growing food to share with the community, and bring in permaculture to care for the earth	Ethics	The goals involving the ethics have largely remained the same, except for the amount of people included in the fair share. The food will now be shared with staff, the owner, and possibly the restaurant at the riverside property.

<p>An aerial photograph of a site with five distinct zones overlaid in different colors. Zone 1 is a large blue area in the center. Zone 2 is a green area in the top right and bottom left. Zone 3 is a large yellow area on the right side. Zone 4 is a red area along the bottom and right edges of the central area. Zone 5 is a purple area on the left side.</p>	<p>Analysis</p>	<p>The zones did not change from beginning to the end of the design.</p>
<p>Smart Goals:</p> <ol style="list-style-type: none"> <li>1. July 2023 - food forest and gardens will be planted</li> <li>2. Nov 2023 - buildings will be completed</li> <li>3. Mar 2024 - the packaging facility will be up and running</li> </ol>	<p>Discussion between us and the team</p>	<p>These goals will be finalized by the team at a later date. The dates will be updated as the information becomes available.</p>

## Principles Evaluated

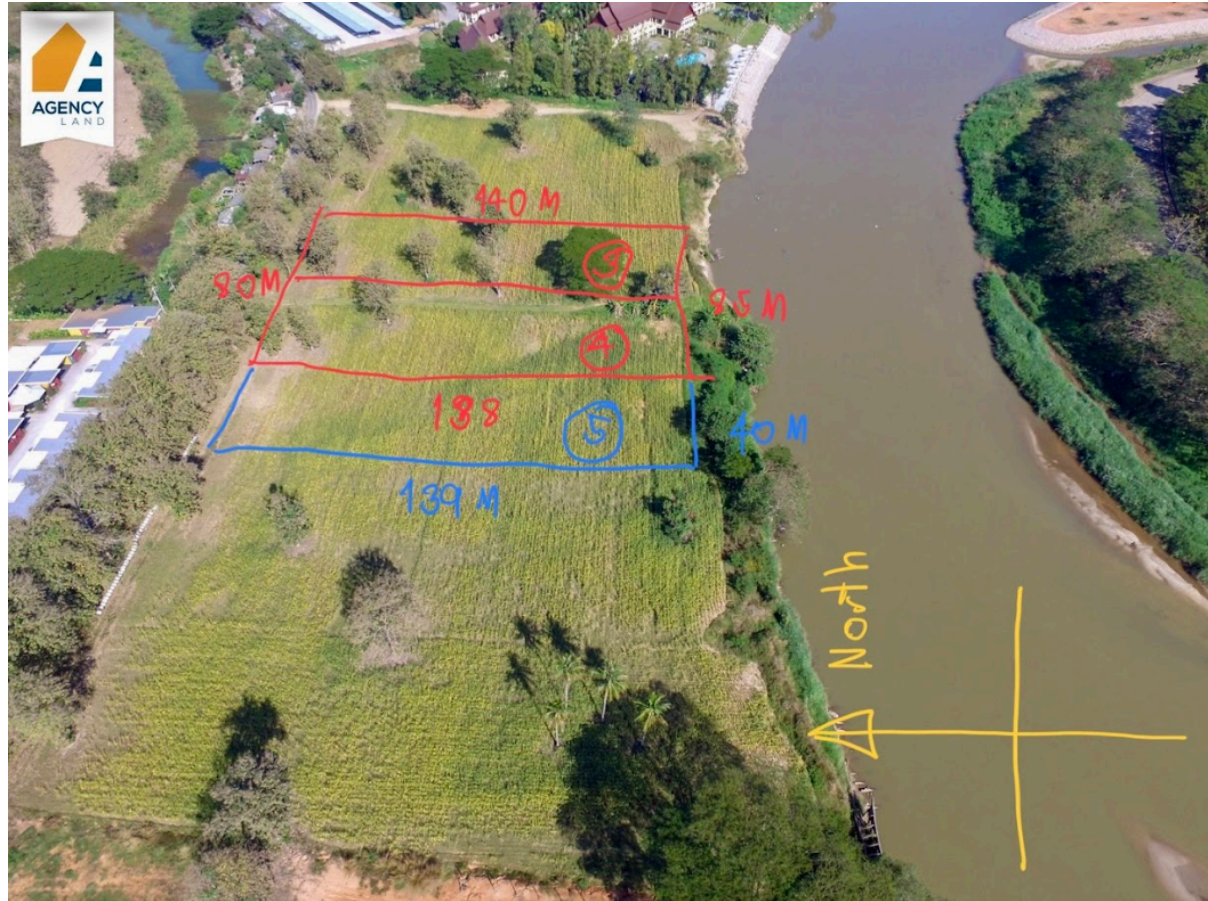
Goal	Principle Use	End Result
<p>We will use careful observation to help guide us to make wise decisions to work with the patterns of this land.</p>	<p>Observe and Interact</p>	<p>Observation of this property, as well as the client, resulted in the healthful focused design.</p>
<p>Rain gardens will be seeping water into the water table to be stored for the plants in the food forests.</p> <p>The packaging system will be storing the energy of the nutritious food to share with others.</p> <p>By keeping cars along the driveway and parking, it will protect the peaceful energy on the rest of the property.</p>	<p>Catch and Store Energy</p>	<p>We are only approved to install a rain garden to capture the water flowing off of the elevated pathway, but it will still help to irrigate the food forest.</p> <p>The packaging system will be added at a later date and we will not be part of that system.</p> <p>The parking lot has been simplified, but it will still keep cars along one side of the property only.</p>
<p>There will be healthful, and peaceful yields from the peaceful environment.</p> <p>There will be yields of food and beauty from the flowers in the food forests and market garden.</p>	<p>Obtain a Yield</p>	<p>This has been achieved with this design by maintaining the existing peaceful environment and adding the path, food forests, and garden.</p> <p>There will definitely be yields of food and flowers, but less than what we originally envisioned.</p>
<p>We began the design with a bird's eye view of the property and the client's vision. From that pattern, as well as the</p>	<p>Design from Patterns to Details</p>	<p>We maintained this even though we needed to often take steps back to redefine the patterns of the land, the architect's ideas, and the team.</p>



<p>feel of the land, the design began to take shape.</p>		
<p>There are significant edges that blend into patterns in this property. Those edges defined the space for cars, the raised pathway, the food forests, and market garden.</p>	<p>Use Edges and Value the Marginal</p>	<p>The edges are what we originally saw in this land and we were able to maintain them, and add to the pattern of having distinct edges.</p>
<p>The patterns the land presented (the defined perimeter edge, the wildness of the pond, the water flow, the energy) created the design.</p>	<p>Work with Nature Rather than Against it</p>	<p>We were able to maintain the patterns and build on them with the elevated pathway, the gardens, and the food forest.</p>

## TRACKING (ติดตาม)

In early March 2023, we were asked to design the riverside property, Chiang Rai 3.



While we were preparing the proposal and concept design, the owner purchased more land nearby and changed the priority to that land, Chiang Rai 2. Notes from that meeting which was our initial interview are [HERE](#).

With the new land we envisioned a food jungle with meandering paths, a second pond, and guest cabins with a market garden nearby. Unfortunately that sketch was lost, but it was quickly altered after meeting with the architect to include a larger parking lot and a restaurant.



This was quickly altered after meeting with the Sam Sam team to remove the restaurant, the guest cabins, and the larger parking lot.

Future phases of this property could include:

- Packaging Facility
- Guest Accommodations (probably not though)
- More food forest guilds
- More work or living spaces for the staff of the nearby riverside property

Updates:

Updates for this design will be in about 3, 6, and 12 months from the completion date.

<b>Time Frame</b>	<b>Date</b>	<b>News</b>
3 months	Dec 2023	The Thailand team is involved in construction on the 3rd project and has not begun this project
6 months		
12 months		

## Design Image Bibliography and Resources

- Google Earth (photos and land measurements)
- Climate change - latitude, Oregon State University, Climate Resilience
- [Topographic Map](#)
- Land Development Department, [www.ddd.go.th.com](http://www.ddd.go.th.com) (link does not work-this is the information on the soil photo)
- Weatherspark.com
- Wikipedia
- Photos by Annette Argabright, Allan Campbell, Sam Sam team
- Suncalc.org
- Permaculture Design by Aranya
- [StudioMiti](#) - Architecture, Khun Tle-architect
- Affinity 2

## **Reflection (ภาพสะท้อน)**

Allan and I work well together and maximize on our strengths while balancing our weaknesses. During this project, we were both balancing several other projects and designs.

Bi-weekly meetings were held with the Sam Sam team and Allan and I. Separate meetings were held between the team and the architect or the architect and Allan. Communication would have gone more smoothly if we could have had one meeting with everyone weekly throughout the process. Meetings with Dr. Woody to discuss the implementation process and plant selection would have also been very helpful.

There was a bit of confusion between Chiang Rai 1, 2, and 3, as I'm sure you have also felt as the reader.

Choosing plants was challenging because of different planting zone systems. Once I figured out where they overlapped, I was able to pull plants from our analogue climates to match theirs. The large plant list I did for Chiang Rai 1 took several days/hours to complete, but many new plants were discovered along the way.

Finding climate data for north Thailand was sometimes difficult, but with diligent research I was able to find just about everything. While it was difficult to design somewhere that far away, it was a wonderful experience.

Despite the delays and challenges, Allan and I both enjoy working with the Sam Sam team. It has allowed us to build a relationship with them and learn a little about their culture. Being able to research the region in Thailand and learning more about the plants gave me more insight into climates in southeast Asia and opened my eyes to plants and foods I had never heard of.

With Khun Marcel being from Germany, Khun Jenny from China, and the rest from Thailand, we received fascinating perspectives and stories about Thailand and all of Asia.

Both Allan and I hope to be able to travel to Chiang Rai to see all of the properties we have and will design for this lovely group of people. And we look forward to the next design of Chiang Rai 3, the riverside property.

