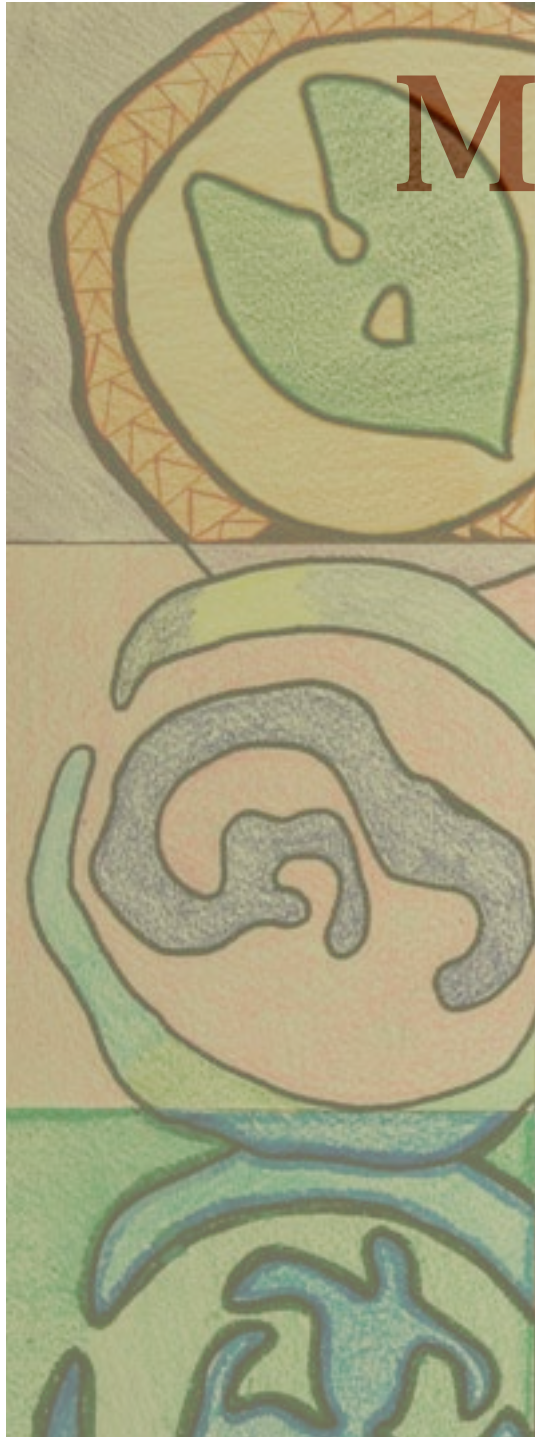


Mahi 'Āina



healing land. healing community.

Mahi 'Āina

The beauty is being able to nurture, indulge, and engage with the plants.

Reggae McGowen, *Planting As Political Activism*,
May 2014



The Mahi 'Āina curriculum is a project under the Kokua Kalihi Valley ROOTS program. This project was made possible by a generous grant from the Kellogg Foundation.

Final ROOTS @ KKV copyright 07.22.20

By Megumi Chibana

Mahi 'Āina

Pō'ai ke aloha
Kū i ko 'Ouaua
Uē ka lani Po'olipilipi
I ka lihi makani
He Haupe'epe'e
Pi'i ke kuamo'o
'O Māluawai
He waiwai ka 'ike
Kilohana i ka uka
Mai uka a he kai
Mai kahi lihi a kahi lihi
He hale ho'oulu
A he 'āina ho'oulu
E ulu, e ulu a mau loa

Encircled with aloha
That is embodied in those of 'Ouaua
The heavens cry the Po'olipilipi rain
At the edge of the wind
The Haupe'epe'e
Ascend along the ridgeline trail
Of Māluawai
Of great value is the knowledge
Of Kilohana in the uplands
From the uplands to the sea
From one edge to the other
It is a house of growth and inspiration
It is an 'āina of growth and inspiration
Grow, grow on forever

Written by No'eau Peralto
Waiākea, Hilo, Hawai'i
Hua, Kaulua, 2014

Mahi 'Āina

introduction to curriculum guide

When together, we lift up both 'aina and people, fortifying connections and relationships, we become witnesses to growth from an ancient and sacred reciprocity.

Ho'oulu 'Āina Alaka'i Handbook, 2017

Food is powerful. Throughout preparing and sharing food, we strengthen the roots that connect us to the land, the sea, our cultures, our community, our family, and to each other. The Roots Project strives to improve the social, physical, and mental health of the people of Kalihi Valley, and that of its visitors, through three key means:

Grow

At Ho'oulu 'Āina Nature Preserve in Kalihi Valley, community volunteers and visitors can become mahi 'āina, farmers of the land, by working in our community garden. Volunteers have the opportunity to participate in all phases of land stewardship, from agroforestry to growing and maintaining a garden organically. Working side by side, community members can forge an intimate relationship with the land, their food, and each other as they care for growing things all the way from 'āina to table.

Prepare

Roots supports the community coming together to work with food and medicinal plants. Whether in the garden side-kitchen at Ho'oulu 'Āina, the community kitchen at the KKV Health Center, at Kalihi schools and partner sites, on Third Saturday community workdays, or any other day of the week, diverse people of all ages and backgrounds can harvest and prepare food as a group. A happy, full kitchen creates a happy, connected community.

Share

With so many rich traditions to draw upon, Kalihi Valley and its visitors have an abundance of cultural knowledge to share. Roots knows that, by sharing dishes and meals, people are able to express important parts of their heritage and life experiences, even as they learn about the experiences of others. People come away from eating together with expanded minds and satisfied bellies. These social connections help to strengthen the health of our community. As we celebrate difference through experiencing a bright array of traditions, we better understand the things that we share in common.

This mahi 'āina curriculum guide is designed for teachers and communities to have access to content and activities that are unique to the Roots Project. Our hope is that the mo'olelo we share will strengthen the roots that connect us to the land, the sea, and other cultures. We also hope to inspire communities to begin growing their own food, collecting their own stories, and to begin transformational healing of land and people.

Contact Information

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Mahi 'Āina

introduction to curriculum guide

When together, we lift up both 'aina and people, fortifying connections and relationships, we become witnesses to growth from an ancient and sacred reciprocity.

Ho'oulu 'Āina Alaka'i Handbook, 2017

This curriculum guide is divided into chapters with the first section or **introduction** honoring the wahi pana of Kalihi and Ho'oulu 'Āina (the land where the Mahi 'Āina project is located) followed by the history of Kokua Kalihi Valley Comprehensive Family Services (KKV) and its relationship to Ho'oulu 'Āina.

The final part of the introduction is the **Pilinahā framework**, which gives an overview of the evaluation tool being used in each of the chapters.

Subsequent chapters are divided into **farming practices**; soil, beds, seeds, planting, maintenance, and harvesting. At the end of the guide is the **appendices** designed as a resource to support the curriculum – garden recipes and chants & songs.

The final piece within each farming practice chapter is the Pilinahā framework, which identifies four elements that create a healthy community. Story prompts are included that will help elicit mo'olelo from diverse groups of learners.

This curriculum guide is just one small piece of a much greater story. We hope it will bring inspiration, growth, transformation, and healing to communities. “When together, we lift up both 'āina and people, fortifying connections and relationships, we become witnesses to growth from an ancient and sacred reciprocity.”





Mahi 'Āina

Mahi 'Āina

introduction

Mo'olelo

In 2008, an unusual work crew broke ground on the three-acre organic garden at Ho'oulu 'Āina. A group of Micronesian elders had been attending classes at the KKV health clinic to learn how to manage their diabetes – a frequent health complication of disrupted traditional foodways.

Advised to “exercise,” this medical recommendation failed to resonate with the group of senior women. Finally one woman spoke up: their language and culture lacked a concept for “exercise” – the practice of repeated physical gestures simply for the sake of motion.

But the medical staff learned, they knew how to do the difficult labor of gardening: clearing dense brush, breaking soil, lifting and digging and planting and reaping. These elders cleared an acre of forest doing some of the hardest work possible, removing thick, choking bamboo, creating space on the land for the cultivation of food.

Since then, the garden has grown, and in its ten plus years, thousands of hands have worked the soil, and thousands of pounds of food have been distributed to Kalihi residents.

www.rootskalihi.com

Mahi 'Āina

introduction

Kalihi has always been a land of abundance, since traditional times when kalo, 'ulu, and 'uala filled the valley floor, supplying kanaka with the food they needed to live. Together we work to make these practices vibrant again.

www.rootskalihi.com

The mo'olelo (story) of Micronesian elders

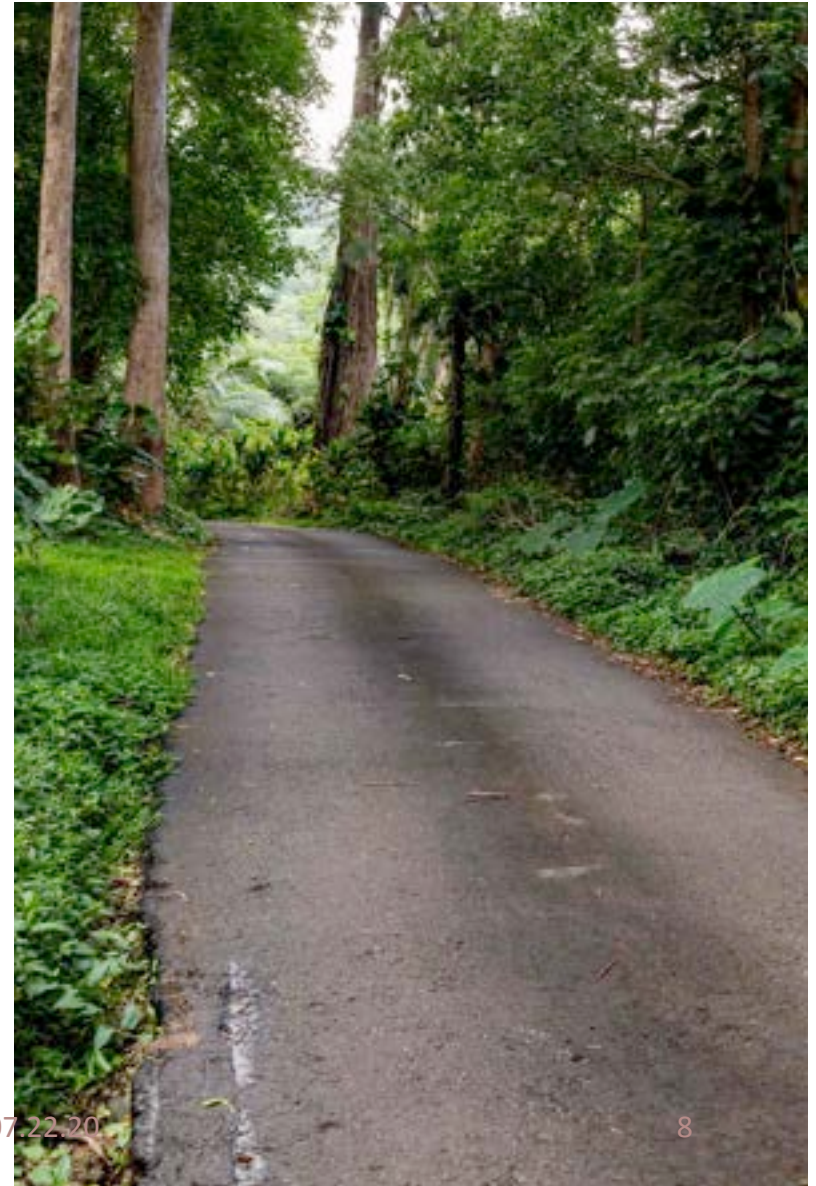
Understanding the value of working the land to cultivate food is not unique. Many immigrant families have moved from their homeland – where fishing and farming were once their customary practices – to be displaced in an urban concrete jungle.

The Kalihi community needed to have access to land to grow food they were familiar with. Kokua Kalihi Valley health center negotiated a lease on 99-acres in Kalihi Uka to reconnect the community to a land base. And so Ho'oulu 'Āina was born.

As you drive deep into Kalihi Valley, the road begins to narrow and where houses once populated the street, trees frame the winding road, welcoming residents and the occasional malihini (newcomer). A wooden bridge weathered with pock marks beckons you to gingerly traverse it. A battered, metal sign once stood regally at the entrance to the property - *This land is your grandmother and she loves you.*

Today the ko'ilipilipi rain gently falls from the dark, gray skies creating a slick surface on the asphalt driveway. The gradual incline meanders through a forested entrance where 40-foot tall koka trees line the road – silent warriors safeguarding this magical space.

This beloved wahi pana (storied place) is called Ho'oulu 'Āina – a 100-acre nature park under the federally-qualified health center, Kokua Kalihi Valley Comprehensive Family Services (KKV). Ho'oulu 'Āina, which means to grow land or to grow because of the land – invites visitors to enter a pu'uhonua – a welcoming place of refuge where people of all cultures reconnect with rich heritages of land stewardship, deep connection to others, cycles of reciprocity, and mindsets of abundance.



Mahi 'Āina

introduction

KKV has been a community health center since 1972 when a group of elders saw the need for health care services in their community. In response to the absence of accessible health care for the immigrant populations, KKV was born.

Access to healthy food was and still is today a barrier for many of the families who live in Kalihi. Disconnected from land, they have limited access to the foods their family farmed for generations.

In response to the community's needs, KKV formally signed a lease agreement with DLNR in 2006 to mālama (care for) a 100-acre parcel in Kalihi. Now began the task of clearing land at Ho'oulu 'Āina to plant foods that the community was familiar with and had access to. Where invasive bamboo once claimed the land malunggay, afan, tapioca, 'ulu, and kalo were cultivated. The community – once displaced – now found connections and abundance in their new home.

This garden curriculum, Mahi 'Āina, was created for the community to share stories around food and cultural farming practices. Our hope is to uplift our Kalihi neighborhood – to have them see themselves as part of a larger whole, to connect to land and culture, to honor the voices of those who came before us, and to heal community.



Mahi 'Āina

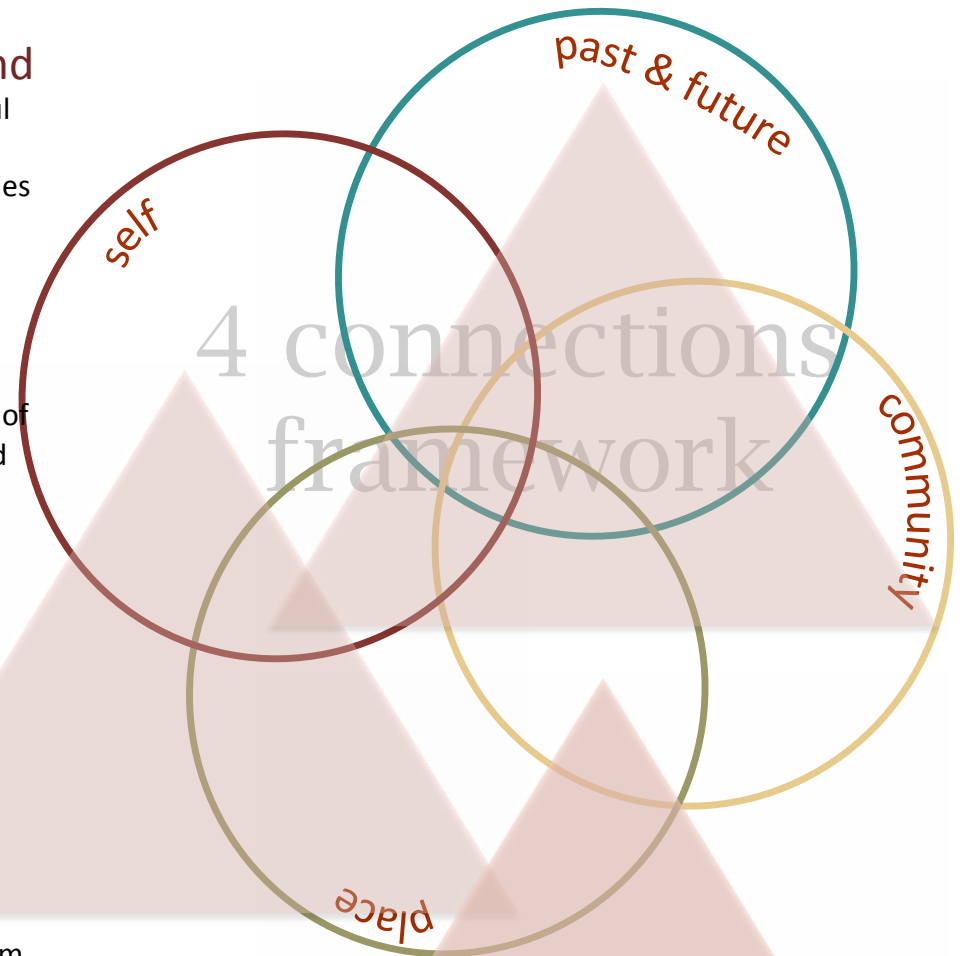
pilinaha framework

Like a kōkō (carrying net) where each strand of cordage has been skillfully lashed together to form a beautiful web of netting, so too has the evaluation tool or pilinahā framework been carefully developed. This framework exemplifies an intricate design that inspires community to begin weaving together their own stories of transformation.

In 2016, KKV decided to hold a series of formal and informal conversations with organizations, staff, and partners who were invested in the Kalihi community. They were invited to be part of a talk-story session to imagine what a healthy community would look like. From those discussions, four basic themes emerged, and the Pilinahā framework was born.

- Connection to place –
To have a kinship with 'āina – the land, which feeds us
- Connection to community –
To love and be loved; to understand and be understood
- Connection to past and future –
To have kuleana; a purpose in the world
- Connection to your better self –
To find and know yourself, including your gifts and kuleana

We find strength in these connections. The Mahi 'Āina curriculum will explore the vital connections that support personal, familial, cultural and community health as wholeness. Prompts are also included at the end of each farming practice chapter that will encourage story gathering and reflection.



Mahi 'Āina

lepo

soil

Mo'olelo

Nearly 1,000 years ago, our ancestors sailed across the vast Pacific Ocean to these lands, bringing with them plants and animals that would help sustain life. The soil they fed supported a food system so their 'ohana could thrive.

Over a period of several hundred years, our kūpuna developed an extensive agricultural system that included lo'i kalo (taro fields) and loko i'a (fishponds). These systems were designed to work in harmony with the land to optimize growing conditions for food.

As the population grew, the ahupua'a system was born, which followed the natural contours of the land, providing access to the resources of both land and sea.

In a Hawaiian world view, 'āina is not simply land but that which feeds, showing the deep intimate relationship between land, people, and food. At the time, the values set forth ensured that the present generation would be able to subsist entirely from locally-sourced food, and the natural resources would be preserved for future generations to thrive.

But in the mid-nineteenth century, the arrival of foreigners disrupted the traditional practices, and the agricultural systems that were in place. The transference of lands into European and American hands shifted the kanaka maoli communal land model to the concept of private land ownership. The kalo our ancestors had once harvested from lo'i kalo, and fish they had once accessed from loko i'a were now being tainted by big agriculture pesticides.

For years, the sugar and pineapple plantations used industrial methods of production to meet the rising demands to increase their yields.

Synthetic pesticides and fertilizers and shorter crop rotations resulted in the acceleration of soil depletion and overall pollution to the environment.

Eventually, the sugar and pineapple industries that once defined Hawai'i agriculture have mostly disappeared. But in their wake they left 'āina that was sick and in need of healing.

In the Mahi 'Āina program, we not only grow food, but we grow community. Through community efforts, we have created a resource of food, forest, knowledge, mo'olelo, and spirituality. We have reactivated the kanaka maoli mindset of growing food and medicine – chemical free. As we begin to strengthen the connection between people and land, we begin to heal Grandmother Earth and restore the soil back to health.

Mahi 'Āina lepo soil

*A nation that destroys its soils
destroys itself. Forests are the lungs of our
land, purifying the air and giving fresh
strength to our people.*

Franklin D. Roosevelt

Soil is the foundation of all organic

farming. Land that has been depleted of its bionutrients cannot sustain future sustainable processes. Imagine the land is like our body's digestive health system. When we eat well and encourage probiotic health, our na'au is healthy and happy. When we mālama (care for) the land and encourage organic processes, the 'āina is healthy and happy.

We begin our story of soil around Kilohana. This sacred space in Kalihi is where our ancestress Papahānaumoku or Grandmother Earth resides. Kilohana is her home where from various parts of her body, fertile lands are born.

Ancient mo'olelo tell us that from her brain, Papa gives birth to Laumiha or "intense silence." The ancient name for Kalihi bears her name – Kalihilihi-o-Laumiha. Kalihi becomes home to many plants and animals, which flourish from the sacred soil.

She is our kupuna who has not only given birth to these lands but to generations of kanaka maoli who have farmed them. As we feed the soil, we begin to heal Papa.



Mahi 'Āina *lepo* soil

“I am grateful for molasses because it feeds the microbes that feed the soil.”

Volunteer, 8-years-old

In the 50s, 60s, 70s, and 80s, Ho‘oulu ‘Āina’s soil was strip mined and sold to nurseries throughout the state. Large albizia trees and banyan root systems aggressively removed water from the soil, causing erosion and draining the watershed. Abandoned cars, appliances, and mounds of plastics were buried deep in the earth and eventually uncovered and removed.

The history of trauma to the land is a more recent story, which we can learn from and look to the past for answers. The ancestors of this land produced vast amounts of food to live sustainably for generations. As we look to the wisdom of those kūpuna and the story of the land, we begin to reconcile the hurt and look toward healing the earth.

For plants to flourish, rich healthy soil is needed. Fertile soil has nutrient-rich, organic matter pulsating with life. Organic matter is spongy-textured earth that is often found in the forest where it has lived for generations.

This type of soil is formed when plants and animals decay, creating a deep, rich earth called hummus. A handful of hummus has millions of tiny beneficial organisms that create a living soil.

Humus breathes new life into nutrient-deficient earth. It improves aeration and during drought periods will gradually release water to feed plants. Gardening with it allows plants to be wind resistant and less vulnerable to soil erosion. This life-giving force produces food that nourishes and heals the body!

Strengthening the soil for planting is an important task. There are safe practices that will reinvigorate Papa and allow her to flourish.

Traditionally, our ancestors gathered greens – old kalo leaves, hau and kukui and pressed these into the earth so they would eventually break down and replenish lost nutrients. At Ho‘oulu ‘Āina, we still practice this method of composting and have embraced other alternative methods of creating a robust soil.

One Kalihi community member recalls placing uluhe (false staghorn fern) in his garden bed. As the plant decomposed, the soil became healthier. The leaves provided nitrogen to the soil, and the thick stalks of the uluhe were an excellent source of carbon.

Mahi 'Āina

lepo

These are a few amendment options to consider when trying to create a strong and healthy soil. (Recipes can be found at the end of this guide.)

Bokashi – Bokashi can be translated as fermented organic matter. It is generally a mixture of wheat bran, molasses, and EM (effective microorganisms). Bokashi is an inoculant in anaerobic composting. It can be used to pickle kitchen waste and to feed animals. Bokashi can be added directly to soil, which will break down aerobic compost piles quickening the decomposition process and making compost less smelly.

Fermented Plant Juice (FPJ) - Fermented Plant Juice also known as FPJ is an amendment used in natural farming and gardening. Brown sugar draws juices from the plant, which serves as food for the microbes that carry the fermentation process. The end product is used as a spray to invigorate plants with healthy probiotics.

Composting – Composting is an easy way to nourish your soil and keep it alive and well. Compost also helps prevent pests from invading the māla. If you feed your soil with healthy compost, it will detract unwanted insects. Building a healthy, robust compost pile requires space; green yard waste; brown clippings; patience, and a whole lot of love!

Invasive Limu – Limu is an excellent source of nutrients for the soil. It is low in phosphorous and nitrogen but has over 60 trace elements that can make soil rich and fertile. Limu can also help prevent disease and fungus build up. Feeding your soil a compost tea made from limu is another way to make your soil happy!

Soil Sampling Tips...

Before you decide to grow vegetables, first test your soil to see if it's viable. This will help you determine if your soil has problems, if it needs fertilizer, what kind of fertilizer you need, and how much should you apply.

- 1. Clearing space.** Clear the surface of the land of as much plant growth as you can. Dig a hole about as wide as your spade and as deep as the layer you are sampling.
- 2. Gathering sample.** With the spade tip placed one inch outside the edge of the hole, cut down to remove a slice of one side of the hole wall.
- 3. Preparing sample.** Keeping the sample on the spade, use a trowel or knife to cut away the sides of the sample to leave a center section about 1 inch wide. This is your subsample of soil.
- 4. Collection.** Repeat step #3 until you have collected several subsamples.
- 5. Storage.** Place subsamples in plastic containers, mix them together well, and remove about 2 cups of this mixture. This is your composite sample to send to the laboratory for analysis.

Courtesy of the University of Hawai'i Mānoa CTAHR program

Mahi 'Āina lepo soil

Human dwellings and cultivated lands are here few, or scattered thinly over a great extent of probably the finest soil in the world.

Native Planters

We acknowledge that learning is reciprocal and embrace the 'ōlelo no'ēau handed down by our ancestors - *a'o aku; a'o mai*. We invite community to collaborate in the learning and to share stories of ancestral practices from their homeland.

Long ago, Kalihi's valley floor was filled with agricultural terraces. One observer wrote, "Human dwellings and cultivated lands are here few, or scattered thinly over a great extent of probably the finest soil in the world."

The first step in creating community abundance starts with the soil. Imagine if everyone in our community had a compost bin in their yard. The nutrient-rich soil that would be produced from it would be used as a food source for the plants that would be grown.

Creating a nutrient-rich soil is the first step in creating a kinship with 'āina. If we can feed ourselves, we can begin feeding our community.



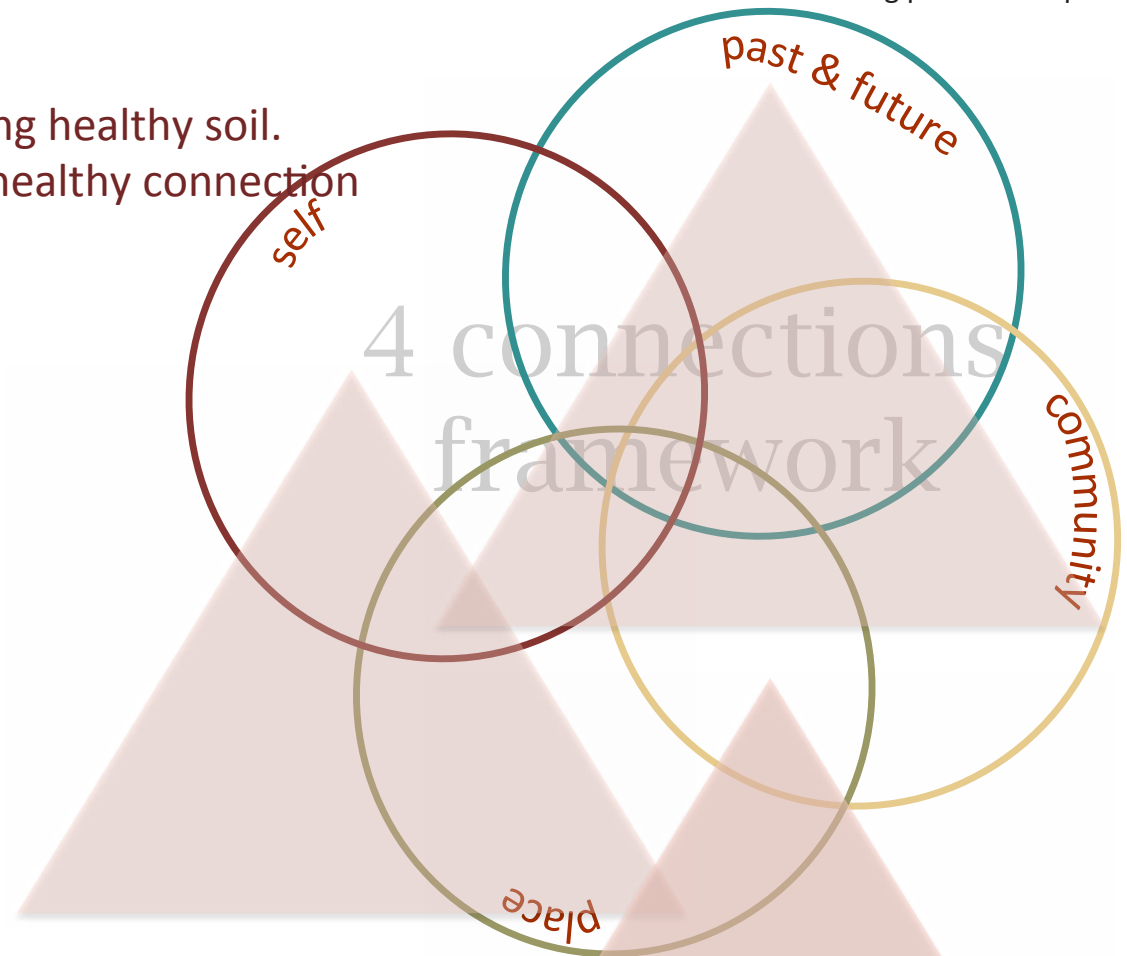
Mahi 'Āina

lepo
soil

Amendments are used to create strong healthy soil.
How does your family build a strong healthy connection
to the land?

Story Prompt

Use the story prompt to reflect on your own experience and the content that was introduced in the farming practice chapter.





Mahi 'Āina *mala* beds

Mo'olelo

About 100 miles north of Manila in the Phillipines is a city called Munoz. A group of senior citizens come together there to create a garden space in a very busy city. With little resources, they found a patch of wasteland and created garden beds by recycling abandoned tires, plastic bottles and old tins. The beautiful garden they created produces fresh vegetables and medicinal herbs, which helps feed and heal their community.

Nana Regina and her family have been making medicine for the community for generations.

“This is the substitute for tablets that you buy in the pharmacy,” she says. “And we cannot afford to buy.”

What little money they save from not having to buy vegetables and medicines, they have created a community fund to help pay for funeral expenses when a community member dies.

Nana Regina and the other elders have peace of mind knowing their community will have a proper funeral, and that the food and medicine they grow helps to heal their community.

Citation: Urban Vegetable Farming in the Phillipines, youtube.com

In the Mahi 'Āina program, we create spaces for food to grow, using natural materials from the land or recycled plastics and rubber. 'Ohe is used to fence kalo, protecting it from predators such as wild pigs. In Pasifika garden, a large plastic toy car is reused to grow herbs and green onions. Bamboo is recycled to create terraces in the Mahi 'Āina garden where peppers, kale, and chard grow.

We invest in our community by making available organically grown food and medicine accessible to all.

mala

beds

Whether it's recycled plastic, an old tire, a repurposed container or a bucket, a garden bed is like a hale (house) to house and shelter plants. These intentional structures are designed to grow food and medicine in a safe environment.

In a māla, beds can help keep pathway weeds from creeping into the garden's soil. They can also help prevent soil from compacting, provide good drainage, and serve as a barrier to pests such as slugs and snails. The sides of a raised garden bed can keep valuable soil from eroding or washing away during heavy rains.

In the Mahi 'Āina program, we build garden beds that will allow plants to thrive. We observe the contours of the land and the flow of water. Observation is key to understanding the patterns of the space and deciding where and how to "build" your māla.

In most gardens, pathways are created to allow for easy access. Walkways and paths are created to connect and lead to living spaces.



Mahi 'Āina mala beds

Na pu'e 'uwala ho'ouwai.
Moveable mounds of sweet potato.

'Ōlelo No'eau, #2290

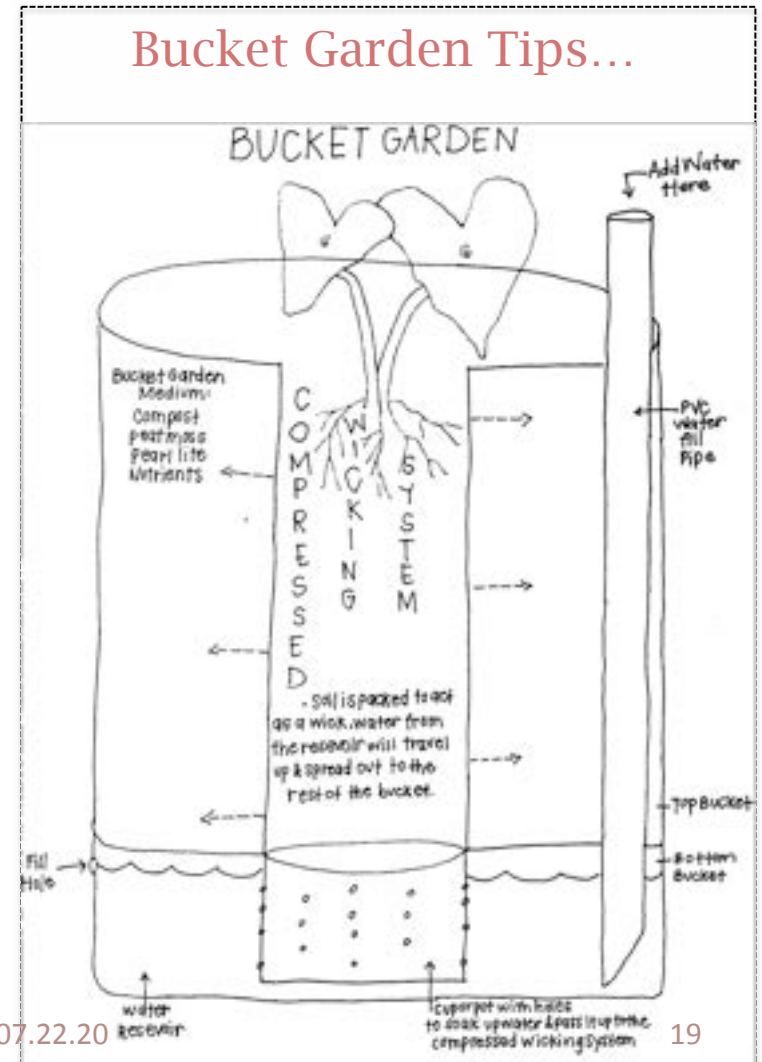
Specific garden beds are often designed to address the cycle of specific plants. The 'uala (sweet potato) is a fast growing plant, which is typically cultivated in dirt mounds or rocky terrain.

Build a mound of dirt to house the 'uala slip. Place the 9"-12" leaf cutting in well composted soil. Planting in above ground mounds makes harvesting the tuber easier.

As the plant grows, so do the vines. The crawling vines, if left unattended, have a tendency to take root wherever they find soil. By intentionally weaving the vines in a "wiliwili" style back into itself, the energy of the plant is concentrated in the tubers.

If you do not have garden space to create mounds for planting 'uala, a container is just as efficient. Bucket containers are often used when space is limited. Sometimes sand is mixed in with the soil to keep it loose and allow the soil to breathe. Keep the container in a sunny area on your lanai and water your 'uala daily.

Grow plants your family uses to cook with. Once your bucket garden takes off, add to it with other edible plants. As you feed your family, you may want to share with a kupuna next door who may not have access to fresh produce.



Mahi 'Āina *mala*

Ewe hanau o ka 'aina.
Natives of the land.

Yams are another great food source especially in the Micronesian community. In Pohnpei, yams are considered a “prestige” food. The more often a man can grow yams and contribute to the traditional feasts the quicker he can move up in status.

In that community, yams are planted underneath 'ulu or hibiscus trees and the vines are trained to grow up and over the tree. In other Micronesian islands – Yap and Marianas – trellises are built to guide the vines as they wind up the lattice work. These structures provide a space for the vines to cling to. Gently entwining the vines around the trellis and guiding it upwards helps the tuber increase in size.

People who were born and dwelt on the land.

'Ōlelo No'eau, #387



In traditional Hawai'i, intentional spaces were designed to “house” plants and fish. Lo'i kalo lined the valley floor of Kalihi. Stream water was diverted into lo'i fields to feed and water kalo. The kalo fields were a structure in itself sheltering kalo and keeping it cool and safe from encroaching weeds.

Fishponds were another form of intentional structure, which were engineered to grow fish and limu. The mākāhā (a wooden grate) was built into the wall of the fishpond. The young pua i'a (fish fry) would enter the fishpond, feed on the abundant limu, and grow to an adult fish too large to leave through the narrow slats of the mākāhā.

Mahi 'Āina *mala*

The lo'i kalo and loko i'a were structures built for the purpose of feeding community.

Today many of those spaces have been covered over and replaced with buildings and newly constructed homes. Society has moved away from building intentional structures for growing food to producing massive concrete jungles for urbanization and human growth. The value sets our ancestors lived by to create 'āina-specific spaces have largely disappeared.

In the Mahi 'Āina program, we are trying to reverse that trend by recreating intentional spaces at Ho'oulu 'Āina. We have an assortment of structures on property that include raised beds, trellises, garden boxes, and bucket containers.

Trellises are lashed together to form a framework for plants such as wing beans and 'ipu to climb. Garden boxes are built to grow plants with a shallow root system such as bok choy and lettuces. Large black containers hold precious 'awa that helps control the spindly root system.

The idea is, as your garden grows, your 'ohana benefits and in turn others in the community will benefit. Imagine multiple families growing food and sharing with neighbors. Growing healthy food. Growing healthy community.



Mahi 'Āina

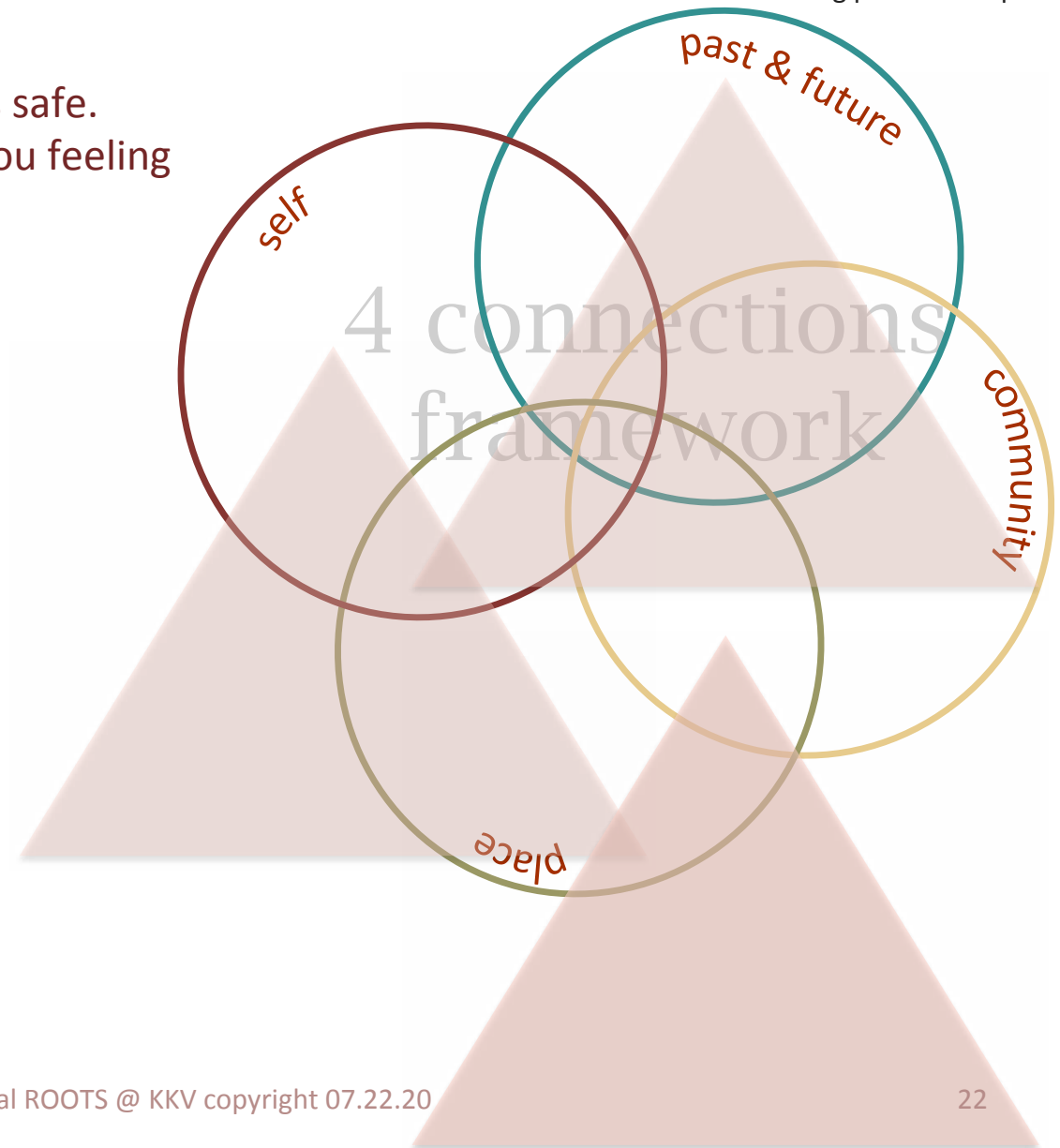
mala

beds

Garden “structures” help keep plants safe.
What “structures” in your life keep you feeling
safe and protected?

Story Prompt

Use the story prompt to reflect on your own experience and the
content that was introduced in the farming practice chapter.





Mahi 'Āina

'ano'ano & huli

seeds

Mo'olelo

In a little rural town in Central Kenya, an elder farmer deliberately tends to his crops. His grandchildren take turns visiting him on weekends to help out at the farm. Jonah has been a farmer for the past eight decades, but as the years slip by, he is starting to slow down. Years ago, his granaries produced grains to fill all three vats. But nowadays he is lucky if only one is full.

“Our agricultural officer was on the radio for three consecutive morning shows telling us to buy these seeds that will yield double as much since they are hybrid,” Jonah retorts. “He even came to church last Sunday accompanied by officers from seed companies and repeated what he had been saying on radio. In fact, there was a raffle competition where some congregation members won 4kg bags of seeds. They promised to be coming more often, and to replace the grain bags if the seeds failed to germinate. They called it seed insurance.”

Seed saving traditional practices are not as common today as they were in the past when the farmer used to sort, preserve, store and exchange seeds. As a young farmer, Jonah would require his children to sort seeds. The best seeds were used for food. Less viable seeds were used for animal food and other seeds that did not make the cut were composted. “For almost five decades before this new commercial seed revolution, we would select the best produce and preserve it as seed.”

In the Mahi 'Āina program, we collect viable seeds to share with our community. These seeds are carefully gathered, dried, and stored. In colorful patterns and shapes our seeds hold the stories from generations past. We mahalo the seeds and ask that they continue to sustain us and bless us with abundance.

Mahi 'Āina 'ano'ano & huli seeds

“Seeds are the one thing that are the only genuine promise we have of the future. Seeds contain the power of creation.”

Prominent nun and activist Sister Joan Chittiseter

The story of Jonah is not unique. The seed industry has become a very lucrative market with four major seed companies possessing the bulk of the business. In Hawai'i, agricultural giant Monsanto frequently uses the islands as a testing ground for their new products. Monsanto is the largest biotechnology and agrochemical company in the world. Here, they grow crops such as papayas, corn, and coffee, which flourish in the wet, fertile climate of Hawai'i. With 1381 fields in the state, Monsanto tests chemicals, GE crops, and sells seeds to other agricultural companies seeking better crops.

But more and more communities similar to Jonah's are reclaiming the way they grow and cultivate seeds. Determined to be seed sovereign and self sustainable, communities are now transforming their stories to one of hope and resilience.

For many early civilizations, the tiny seed has been the keeper of stories and traditions. It holds the memory of the forbearers and their connection to land and ancient wisdom. The seed is one of the most sacred gifts handed down by the ancestors.

There are a variety of seed types that are cultivated nowadays. Generally, the three different types of seeds are 1) hybrid seeds, 2) genetically modified organism (GMO) seeds, and 3) open-pollinated and heirloom seeds.



Mahi 'Āina 'ano'ano & huli seeds

“You can't save seeds without starting them properly; that's where seed saving and sharing begins.”

Reggae McGowen, *Planting As Political Activism*, May 2014

Hybrid seeds are cross-pollinated with each other to produce the best characteristics of each parent plant. The problem is that hybrid plants do not produce seeds that are identical to the parent plant. Large seed companies have been patenting hybrid plants, which gives them exclusive rights to the seeds. Farmers are then required to continually purchase these seeds – an unsustainable practice.

GMO seeds are produced in laboratories to make new plants and organisms. The techniques use DNA from other species to create a new type of plant often resistant to pests and pesticides. Farmers have been forced to grow GMO plants, which have been linked to serious health problems. Using GMO seeds, contributes to dependence on the system and does not foster self sufficiency.

In the Mahi 'Āina program, we intentionally choose open-pollinated and heirloom seeds to plant. Open-pollinated seeds come from plants that produce seeds that are just like their parent plants. All heirloom seeds are open-pollinated plants but what makes them distinct is that farmers have been saving these seeds for generations. “Using and sharing heirloom seeds is undoubtedly a political statement,” writes Marcos Bendana in *Planting As Political Activism*, “and assists in perpetuating cultures while honoring ancestors.”



Mahi 'Āina 'ano'ano & huli seeds

The sacredness of the seed—how in its purity,
it is the source and renewal of all of life.

Anonymous

As a small independent community farm, we do not support large seed companies, but we do support smaller seed companies who share our philosophy. One of those companies is Baker Creek – an heirloom seed company. The seeds we purchase from them do not seed in Hawai'i and sometimes we like to try varieties that we can later save as Kalihi seed.

We believe in seed sovereignty. Seed sovereignty is a way for our community to reclaim our independence to grow our own food, using viable seeds we have collected from our land. To ensure that our seeds are untainted, we must collect and store our own seeds.

Every seed has a special character. By intentionally placing energy and aloha into the care of that seed, it in turn will grow into food that will feed the community. Cultivating seeds with aloha will give birth to the perfect seed.

When we can begin to grow our own seed, we can begin to become more self sufficient. It's not enough for a farmer to know how to prepare soil, plant, and harvest. They must also know how to propagate and cultivate seeds.

Like farmers elsewhere in the world who exchange seed, our traditional practice is to share huli – the stalk of the kalo plant. This practice allows us to perpetuate the genealogy of that particular variety of kalo, but more importantly it allows us to feed our community and our lāhui.



Mahi 'Āina 'ano'ano & huli seeds

*The sacredness of the seed—how in its purity,
it is the source and renewal of all of life.*

Anonymous



In Hawaiian tradition, kalo is one of the most sacred plants of the people. A gift created by nā akua (the gods). It connects us to our ancestors and when we eat and grow kalo we are deepening our relationship to those kūpuna.

Kalo is often grown in a lo'i (wet field) with fresh water that flows from the stream or spring, but the land in Kalihi no longer has a lo'i system. At one time, water was abundant running continually throughout the ahupua'a. Wai was so plentiful that large 'auwais were built to remove water from the over-saturated fields to return to the stream.

We still grow kalo but it is grown in mounds where nā akua generously water the soil everyday. Once our kalo is harvested, we remove the huli from the corm to replant.

Every farmer has a different method of preparing their huli for planting. Uncle John Lind on Maui will plant his huli in a small, dry māla plot. When the huli has a few leaves, he transplants it to a lo'i.

Mahi 'Āina

'ano'ano & huli

seeds

In Kalihi, we have a similar practice, but we place the huli in pots to strengthen and mature. We also soak the huli in a solution called EM (effective microorganisms), which inoculates the huli with healthy microorganisms and prepares them for the next phase of planting.

Typically it takes 3-4 days for huli to be prepared for outplanting. The process to gather seed and prepare seeds for storage takes more time.

Seed storage can be challenging. Fleshy seeds do not store well. Dried seeds stored in a cool, dark area in airtight containers in a temperature controlled environment will keep seeds viable.



Seed Gathering Tips...

- 1. Seeding plants.** Allow your plant to mature and seed.
- 2. Gather.** Gently gather the flowers that have seeds. Or if the plant produces beans harvest the pods.
- 3. Separating seeds.** Gently remove the seeds from their casing. Winnowing is one method used to separate seeds.
- 4. Sifting seeds.** Seeds can be sifted gently between your thumb and index finger. You can use the magic of a gentle breeze to separate viable from non-viable seeds. Simply sift the seeds between your fingers in a circular motion. The wind will blow away the non-viable seeds.
- 5. Saving seed.** If you are saving seed, store the viable seeds in a small paper bag and then store in a re-sealable bag. Place the bag in an airtight container and store in a cool dark place.

Mahi 'Āina

'ano'ano & huli

seeds

*Through the seeds, speak
the voices of our ancestors.*

Anonymous

In Kalihi where the air is moist and the temperature fluctuates often, we have created a seed apothecary where our seeds are stored in a temperature controlled environment. We try to create a home for our seeds where we can infuse aloha and good mana into the care of them. "Our seeds are listening!"

One example of seed saving comes from a community volunteer, Uncle Mike. Uncle Mike was given daikon seeds from his grandparents. He keeps these seeds stored in his refrigerator and harvests them when he is ready to germinate a few to share with others.

Saving seed is a political act of food sovereignty. As we begin to build a foundation of healthy, vibrant seeds, we begin to strengthen our communities.

In our Mahi 'Āina program, we choose to build a bank of seeds that are healthy, viable and untainted so that we can share them with others. Our huli holds the memories of our ancestors and the genealogy of this place. We must perpetuate the legacy our ancestors left for us. That, is our kuleana.



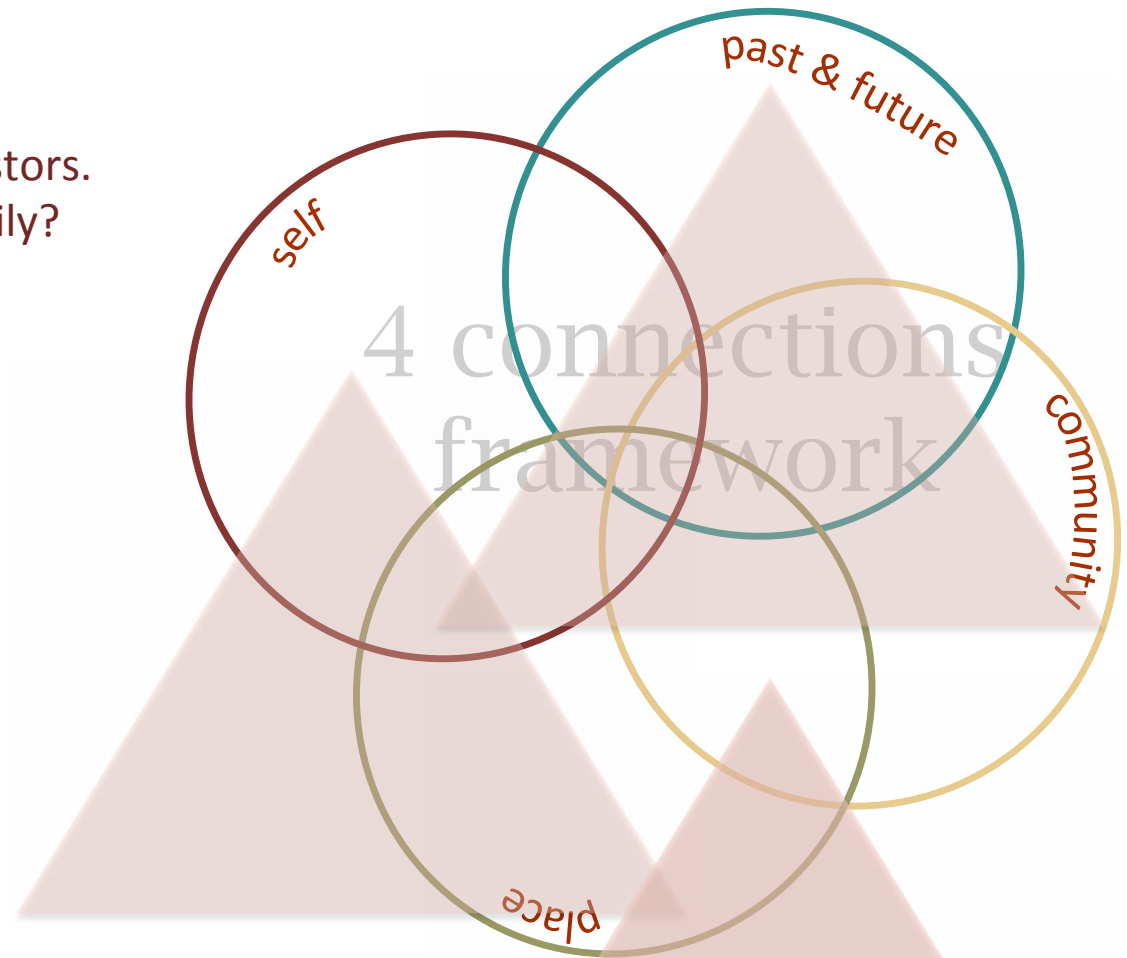
Mahi 'Āina

'ano'ano & huli

seeds

Story Prompt

Huli holds the genealogy of our ancestors.
What seeds hold stories for your family?





Mahi 'Āina *kanu* planting

Mo'olelo

In a traditional Hawaiian mo'olelo, the god Kū lived among the people as a human. He was married with wife and children. As the seasons progressed, food became scarce. Concerned about his family's welfare, Kū decided to reclaim himself as a god to prevent his family from starving.

On the hōkū moon, Kū went to his wife and held her tightly. "I must leave you for the sake of our family. Do not try to search for me for I will always be within reach. Tomorrow you will find an 'ulu tree. Nurture it well for it will provide for you and our 'ohana. Once the tree has sprouted keiki, then share the saplings with the rest of the people. I leave to ensure the perpetuation of our family and our community."

Kū's wife wept as she bid her husband farewell. The next day, she gazed upon their fields and discovered a beautiful 'ulu tree with lovely white sap dripping down the fruit.

With great joy, she harvested the 'ulu and cooked it over a fire and shared it with her family. As her husband had directed, she gathered the keiki saplings and distributed them among the people. From that day forward, 'ulu grew abundantly in Hawai'i always a staple for the community.

In the Mahi 'Āina program, we have developed an agroforestry project that is committed to growing 'ulu. With the help of community volunteers, breadfruit is planted in rich, fertile Kalihi soil. Our dream is to grow food that the community desires and by growing 'ulu we honor our ancestors and bring abundance back into the community.

Mahi 'Āina *kanu* planting

*The way of cultivation is not easy.
He who plants a garden plants
happiness.*

Franklin D. Roosevelt

In this Hawaiian mo'olelo, the god Kū sacrifices his life to plant an 'ulu tree for his family so they would have food to eat. He also tells his wife that once the family's 'ōpū's are full, they must share keiki 'ulu plants with the rest of the community.

This selfless act of sacrifice for family, land, and community illustrates a value set of our belief system. It is the foundation from which our Mahi 'Āina program has grown. We believe that once you plant a plant, you are making a promise to take care of it so it will grow healthy and happy and eventually the food it grows will be shared with others.

Planting and growing food must be intentional and our kūpuna understood that. They studied the patterns of the moon and its relationship to the land and planting. This knowledge was handed down through generations reflecting the intimate knowledge the farmer had with his plants.



Planting Tips...

- 1. Transplanting seedling.** Take the individual pot with new soil and make a space in the soil by inserting your forefinger along the side of the pot. Gently press the soil with the back of your finger. A perfect hole is a slightly angled hole that leans toward the center of the pot.
- 2. Plant seedling.** Lay seedling in the newly made hole, leaning it towards the center of the pot.
- 3. Root preparation.** If the seedling has long roots, place roots in the hole, gradually spinning them into a circular shape to rest in the hole.
- 4. Soil mounding.** Gently cover the roots with the leftover soil. Avoid packing the soil or mounding it up around the stalk of the seedling.

Mahi 'Āina *kanu* planting

In our Mahi 'Āina program, our farmers continue that tradition by planting during the phases of the moon. As the moon waxes or begins to grow, water from the plant moves from its root to its trunk. During the bright full moon, water is pulled into the leaves of the plant. The best time to harvest lā'au lapa'au or Hawaiian medicine is during the full moon when the leaves of the plant is at its highest potency.

A Ni'ihau kupuna, Kumu Lolena, said she used to plant sweet potato slips under the full moon light because the sunlight during the day was far too harsh for the slips to survive.

As the moon wanes, water begins to move toward the root of the plant. Generally this is not a very good time to plant or harvest. However, one exception is planting our root crop seed. Gravity pulls the tap root down, helping to germinate the seed. In our Mahi 'Āina program, we usually reserve this time to take care of our plants. Pulling weeds, mulching and amending the soil are just a few ways we can maintain the integrity and keep our plants happy.

During the final phase when the moon is new and dark, the water in the plant returns to its roots. We use this time to continue caring for our plants, but we also use it as a time to begin planning and organizing the work for the next moon phase.

In the late 1800s, sugar plantations developed a variety of cane that was hardier and sweeter and resistant to pests. The culture of monocropping sugarcane became very lucrative to all but a few. This practice of growing a single crop on the same land year after year in the absence of rotation through other crops was unheard of by the Hawaiian.



Mahi 'Āina

kanu planting

While sugar cane was being commodified, kalo was still being planted and cared for by the Hawaiian farmer. To the Hawaiian planter, kalo was not a commodity but a family member who he tended to as his “beloved children,” and kalo as with many of the other plants was the embodiment of the Hawaiian gods.

In Hawaiian culture, certain plants and animals represent the kinolau or body form of a particular god. Kāne represents kalo, sugar cane, and bamboo. The sweet potato, gourd, and pua'a are associated with the god Lono. Coconut and breadfruit is Kū, and the banana and he'e are body forms of the god, Kanaloa. It only makes sense that by ingesting food that embodies a particular god, it allows you to commune more deeply with that akua and receive the mana from that plant or animal.

Traditional planting practices are still practiced today. One method is called lā hehi lo'i or day of treading. Men, women, and children wade into a lo'i to prepare the field for planting. As they hehi (stamp) the mud, it makes the soil firm and watertight. In traditional times, people were “dancing, rejoicing, shouting, panting, and making sport.” The owner of the patch would prepare a feast of fish, pork, and poi in which everyone indulged after a day of hehi. The next day huli was planted. This tradition is still practiced by many kalo farming groups today.



In the Mahi 'Āina program, we have a different style of planting. We utilize the pu'epu'e method to plant upland kalo. At one time, 'auwai once removed water from our overly saturated lo'i and carried it into the stream. But the water no longer flows the way it used to. So kalo is planted in muddy mounds inside an 'ohe (bamboo) fence to protect it from wild pigs. Food and medicine crops are grown near the pens of kalo – for easy access.

Mahi 'Āina *kanu* planting

To ensure he had a variety of food, the farmer practiced a method called intercropping. Intercropping is when two or more crops are grown together in the same space in a beneficial manner to increase yields. The aim of intercropping is to maximize yields in a small space by utilizing resources which would have not been completely utilized by a single crop.

Companion planting is another organic farming principle, which involves plants being planted in close proximity of each other to benefit one another. The plants aid each other in pest and disease control, providing nutrients, offering shade, pollination, plant resources, and weed suppression.

In the Mahi 'Āina program, most of our planting practices include intercropping and companion planting. We often plant marigolds around the perimeter of garden beds to repel pests. Papaya trees are sometimes strategically grown in the area. The colorful, pungent papaya fruit will attract birds thereby decreasing their interest in the food growing in the māla.

Some plants have such a strong odor like onions and garlic that they grow better on their own. Their pungent smell will sometimes offend other plants and interfere with their growth and fruiting.



Mahi 'Āina *kanu* planting

In Micronesia, cassava is planted at an angle in the soil to make harvesting easier.

Tools are an essential part of the planter's equipment. The kind of plant you decide to grow helps determine the type of tool you will need. If you are planning to plant kalo, a digging stick such as an 'ō'ō will help form deep holes. A hand trowel might be used for more shallow garden plants such as bok choy or kale. Sturdy shovels would be more useful for planting larger trees such as 'ulu or mountain apple. It's important to have a variety of tools in your arsenal to make your work lighter!

Industrialization of the world's food system has changed the way food is grown today. But more and more communities are taking control of the way they grow food. Planting on a community scale means we are returning to our roots by growing healthy foods and medicines our ancestors consumed.

If we can continue to plant kalo and bring Hāloa back to our kitchen tables, we can reclaim the way we grow food. We can begin to plant food and medicine plants that represent our community. And most importantly we begin to bring the mana back into our food.



Mahi 'Āina

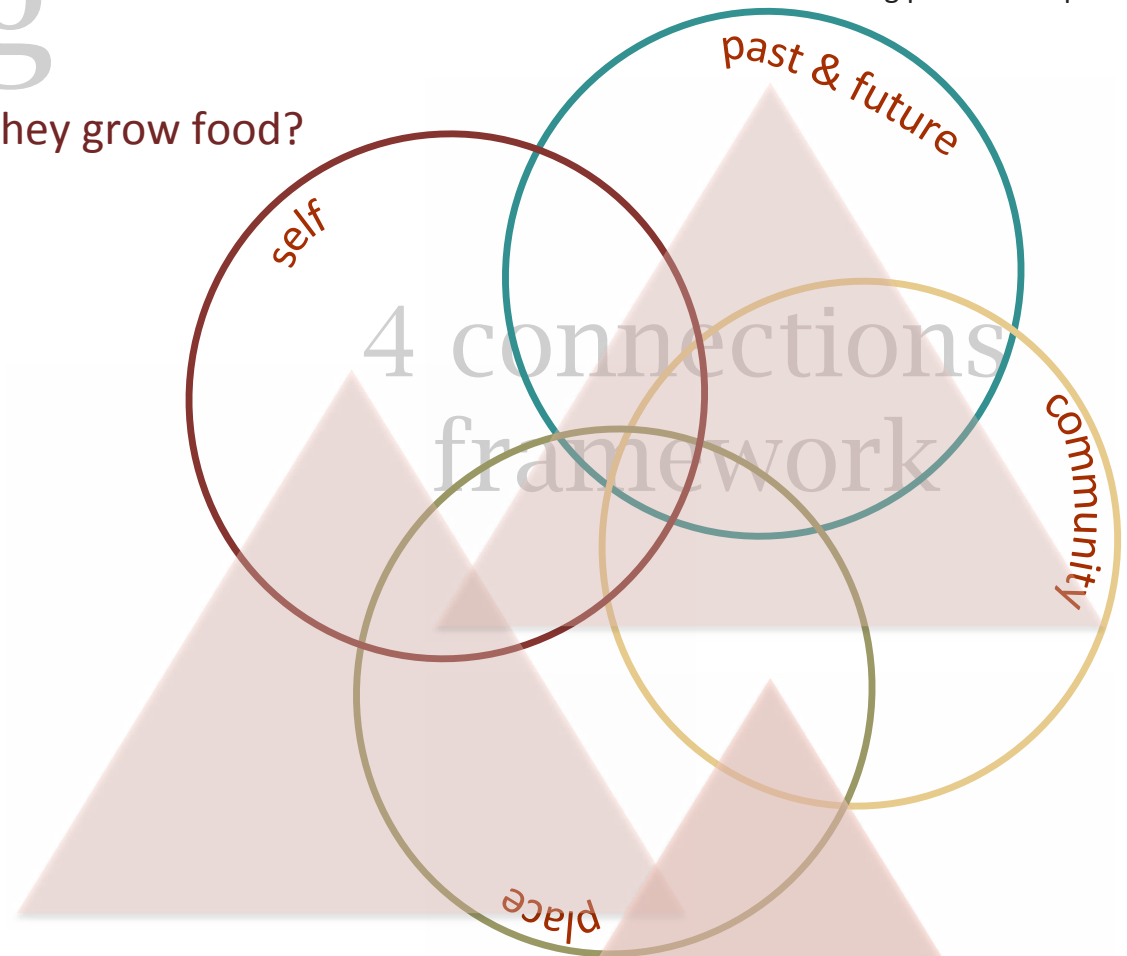
kanu

planting

Story Prompt

Use the story prompt to reflect on your own experience and the content that was introduced in the farming practice chapter.

Does your family have a special way they grow food?





Mahi 'Āina

Mahi 'Āina

malama

maintenance

Mo'olelo

On the island of Tutuila in American Samoa, a legend unfolds about a mother and her daughter. They lived in a little village where food was abundant. Taro, 'ulu, and other food crops covered the tiny land, bringing great joy to the people.

But as the years progressed, the people of Tutuila became lax and stopped tending their gardens. Months went by and food became scarce and the village people grew hungry.

Taro fields were cracked and dried. 'Ulu trees drooped against the harsh sun, baring no fruit. Niu – the village relied on for drink and ceremony – sagged against the blue sky. The conditions were harsh and the people grew anxious.

The mother finding no other way to feed her daughter, leaped from a sea cliff where the two changed into a shark and turtle. They made their way to the village of Vaitogi where they became humans and were fed by the great chief who lived there. Every now and then mother and daughter return to their aquatic forms, but leave the village promising to protect the people. Until today, the people of Vaitogi have dedicated a song to shark and turtle – the guardians of their village. Whenever they sing the song, shark and turtle appear, acknowledging their love for the land and people of Vaitogi.

Laumei faiaga, faasusu si au tama
Carless turtle, milk your baby
Aumai se lauti o laulelei, e lavalava le laumei.
Bring the tea leaves, to dress the turtle.

Mahi 'Āina

malama

maintenance

Malama or Aloha 'Aina is a shared responsibility we have to care for and protect that which feeds our body and soul.

Hoa 'Āina O Mākaha

This mo'olelo describes love for a land where food was once plentiful, but the people neglect their responsibility to care for it and food becomes scarce. In a moment of despair, a mother and her child leap into the ocean only to be transformed into family guardians. The pair find another homeland where they are fed and honored to this day.

A large part of growing food is maintenance or mālama 'āina. For the farmer, the land is like a child to be cared for, loved, and pampered. Farmer and land are inseparable and the pilina formed between the two is one of mutual respect and aloha. If the crops are not tended to, then food will not grow.

To ensure that plants are well taken care of, mālama practices are put into place. In the Mahi 'Āina program, staff and volunteers come together regularly to hand weed. In large areas where weeds are profuse, wood chips form a barrier to help control unwanted weeds. Landscape fabric or weed mat is not often used because the material is made from petroleum products, which can leak toxic chemicals into the māla. Weed whacking equipment is used to maintain walkways, trails, and paths.

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Mahi 'Āina

malama

maintenance



Pruning is another form of a mālama practice. In Kalihi, large albizia and koka trees cover the land. These trees are eventually repurposed into canoe, hale posts and beams as well as countertops.

In other areas of the property, large fruit trees need pruning. By removing dead or diseased branches, it prevents insects and other organisms from entering the tree.

The moon phase determines the best time to prune. On 'ole moons, we prune when the moon is waxing so the plant will grow back vigorously. If we are trying to slow the growth of the tree, we prune when the moon is waning. The idea of pruning a tree is to thin out its canopy, which increases air flow and sunlight. A happy tree equals a disease-free tree.

Mahi 'Āina

malama

maintenance

The industrial production and use of fertilizers, pesticides and herbicides have replaced cultural and natural ways of mālama.

In the 70s, GMO-giant Monsanto developed and patented the glyphosate molecule and marketed it as Roundup. Roundup, a widely-used herbicide, was designed to kill weeds. But the popular product has been linked to cancer. Some governments are restricting its use and some school districts are banning it.

Its use skyrocketed after the production of genetically modified seeds, which can tolerate the chemical. Large industrial farms have been known to spray Roundup over their fields without destroying their crops

In our Mahi 'Āina program, we oppose any type of chemical use on the land. The most natural way to maintain a clean, healthy garden is to weed by hand, use tools when necessary, and to use organic methods of fertilization.

We know that herbicides and other non-organic methods of weed control deplete nutrients from our soil. It also depletes microbial diversity within the soil and general biodiversity.

Organic methods of maintenance promote biodiversity. Biodiversity boosts our ecosystem productivity. No matter how large or small a species, each has a role and creating a non-toxic, healthy space is the way for each specie to find strength to flourish.

Maintenance Tips...

- 1. Assess the land.** What kind of overgrowth are you dealing with? Is the ground level? Are there trees or bushes in the way that will block sunlight or get in the way of other parts of the garden? What kind of soil do you have? Is it clay, rocky, hard, soft? Observe what kinds of bugs and animals are around. What is the history of the land?
- 2. Envision.** Sometimes spaces call out to you to be planted with certain items, in a certain way. Activate your imagination.
- 3. Get the tools you'll need.** These might include: pick, shovel, hoe, rake, sickle, machete, 'ō'ō, your hands, or gloves. This is also the moment to get your friends and community involved so that the work can be shared.
- 4. Positive thoughts.** Some people find weeding and clearing land to be relaxing and a good stress relief. Have positive thoughts and intentions. As you begin to heal the land, the land will heal you.
- 5. Repurpose.** One culture's weed is another's food or medicine. Be maka'ala (alert)! These plants should be left in place or transplanted. When you pull up weeds, shake the dirt off the roots. Plants that have been uprooted, should be composted.

Mahi 'Āina

malama

maintenance

Once plants have been weeded and fed a healthy dose of nutrients, safety protocols need to be applied. Cordoning off the area helps signal humans that plants are in the ground. Creating barriers around plants will provide limited protection from birds and other animals.

Another safety protocol is to train community volunteers in plant identification. Not all weeds are the same. In Kalihi, many of the weeds that grow among the plants are actually medicine used by the community for healing purposes. Knowing and understanding what grows on your land will help you make sensible choices when you're having to weed a certain area. The important thing is that you have to be willing to take your time and do it right.

Mulching is another great mālama garden practice. The purpose of mulching is to block the sunlight from feeding the weeds. It also retains moisture and helps to water the plant. As the mulch breaks down, it becomes compost and helps to feed the plant.

In ancient days, the kalo farmer took great care in tending to his taro. The kalo received water daily. If it was not watered by the constant flow of the 'auwai, kalo received its drink from akua irrigation – water from the heavens. Constant and consistent aloha helped the kalo flourish.

In the Mahi 'Āina program, we practice kūpuna plant care. We farm content in the knowledge that the food grown will feed our community. We farm for peace. We farm for love of the land and people. We farm knowing that one day we will leave a legacy to our grandchildren. We farm knowing that the plant we tended to with our love and our mana will eventually feed our nation. Caring for our plants means we will have food for tomorrow.



Mahi 'Āina

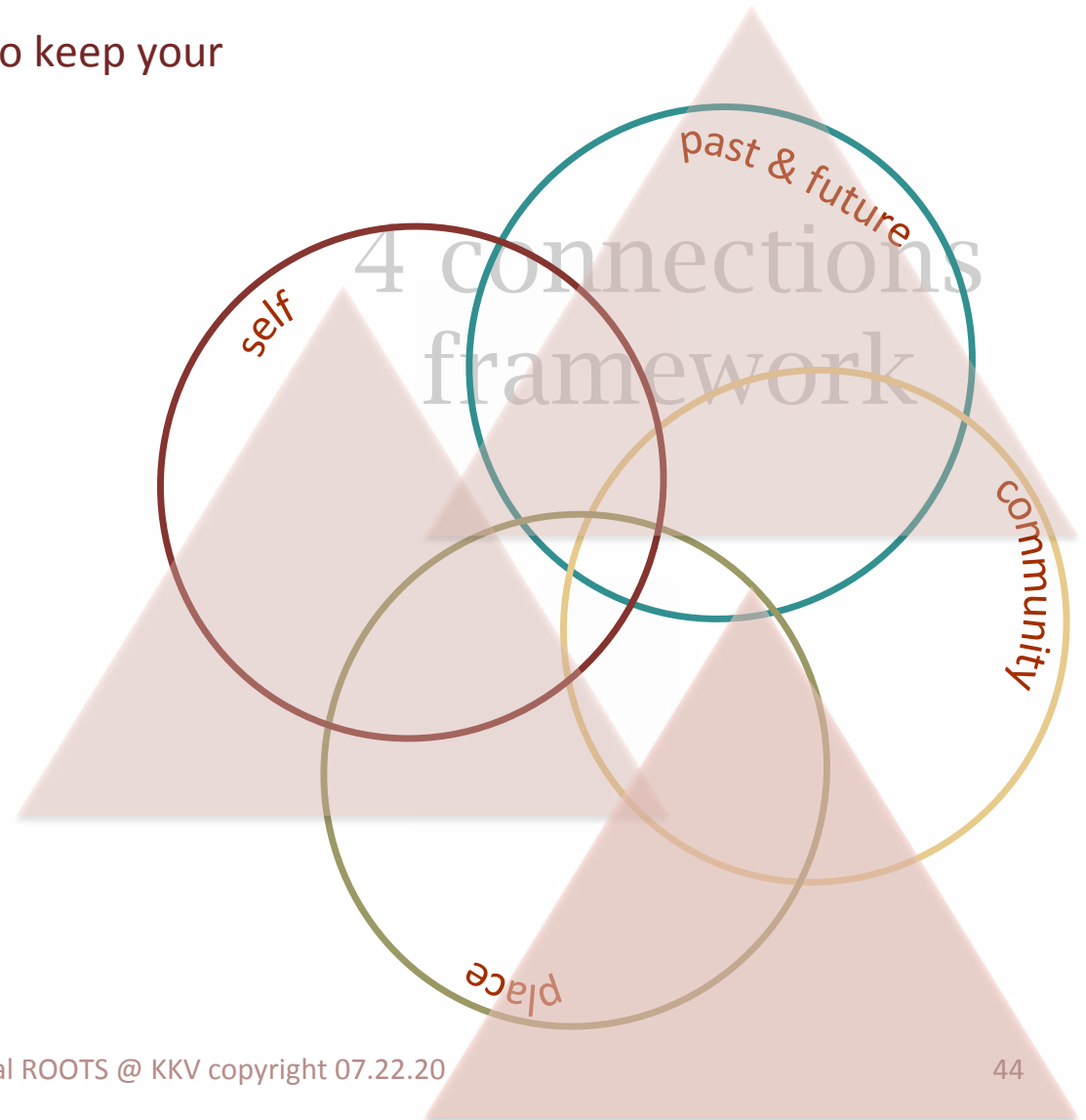
malama

maintenance

Story Prompt

Use the story prompt to reflect on your own experience and the content that was introduced in the farming practice chapter.

What kinds of practices do you hold to keep your community healthy?



Mahi 'Āina

'ohi

harvesting

Mo'olelo

In Kalihi, a kupuna tends to a garden bed at Ho'oulu 'Āina where he is weeding an area to plant bok choy.

Uncle Martin is 85-years-young, and he struggles to uproot a weed that looks like a ginger plant. Successfully freeing the root from the soil, he tosses the plant aside and turns his attention to the next stubborn one.

Uncle Martin has been a gardener most of his life, but he was unfamiliar with the growing conditions or healing properties of turmeric – what Hawaiians refer to as 'ōlena. It wasn't until he was diagnosed with prostate cancer that 'ōlena became Uncle Martin's best friend. That stubborn plant that refused to be removed from the earth was now a healing plant for Uncle Martin.

He consulted with a Hawaiian practitioner of herbal medicine who created a regiment for Uncle Martin of drinking 'ōlena daily in large quantities.

As a dedicated farmer and patient, Uncle Martin learned all he could about 'ōlena and devoted his time to cultivating it.

In the year following his diagnosis, he was committed to learning the protocols of the plant: Pule or prayer should be offered before harvesting; take only what you need to heal; by caring for and harvesting the plant yourself, the cycle of mana between plant and patient is unbroken.

After following his practitioner's regiment for a year, Uncle Martin learned from his doctor that the tumor in his prostate had all but disappeared. Uncle Martin continues to consume 'ōlena daily whether he is sprinkling his rice with the golden powder, chopping the root to include in his soups, drinking it in smoothies, or eating it raw. He is a believer in the magical root.

Today, Uncle Martin has slowed down a bit and doesn't visit the farm as often as he used to. But one day he appeared unannounced to harvest 'ōlena. Our farmers had just harvested two wheel barrow full of the golden nugget. Uncle Martin was invited to gather 'ōlena from the wheel barrows.

"I no like," he said. "I harvest my own." With that, Uncle Martin grabbed his two five-gallon buckets and headed to the 'ōlena patch he had planted the previous year. Uncle Martin still sees the value in harvesting your own 'ōlena and understands the healing connection between plant and kupuna.

Mahi 'Āina

Honor the hands that harvest your crops.

'*ohi* harvesting

Dolores Huerta

Uncle Martin's story is one of hope

and a fierce desire to heal. Harvesting a plant is the ultimate connection between plant and farmer. For centuries, the act of harvesting was not only done for practical purposes but the act itself was and is to this day a sacred one.

Harvesting is ceremonial. The ceremony surrounding the harvest of food and medicine is essential (as in Uncle Martin's story) to the perpetuation of life.

In the Mahi 'Āina program, we have created space to honor ceremony and the practice of harvesting food and medicine. Whether through pule or offering, we have established a ritual that honors the plants we have gathered and our ancestors who have provided for us.

In many ways, plants go through stresses from transplanting to feeling settled in their new home of nutrient-rich soil only to be removed from it. We try to keep our plants happy by talking to them and reassuring them that they are loved. We try to create an incubator of aloha where plants will feel nurtured.



Mahi 'Āina '*ohi* harvesting

Happiness is the harvest of a quiet eye.

Austin O'Malley

Nurturing plants and people is the way we heal community. We are part of a health center and much of what we harvest is distributed to our programs, patients, and café. At times urban Kalihi can be a food swamp, so our community struggles to access clean, organic, healthy food. Sharing food grown on healthy land connects people to healthy choices.

Harvesting food sustainably is one way to connect people to good clean food. The more we harvest sustainably, the less impact we have on our plants. Less impact equals healthy, happy plants!



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Mahi 'Āina 'ohi harvesting

Harvest is a joyful time of gathering the produce from the land.

Sunday Adelaja

Having the right garden tools makes harvesting easy and plants happy. Like humans, plants experience tears and scarring. A great tool to have in the garden is a pair of scissors. Scissors minimize the stress on the plant. A cleaner cut will help reduce the amount of disease the plant can contract and decrease the amount of healing the plant has to do on its own.

Our customary protocol is to always ask permission before harvesting whether it's through pule or silent prayer. When harvesting, always hold happy thoughts. Thoughtful and kind conversations and feelings of aloha will be transferred to your plant. That plant now holds your mana!

Harvesting and sharing in the abundance of food brings families and communities together. The act of eating food grown from the land and harvested by our own hands is a political act – a way for us to become less dependent on industrial foods.

Harvesting Tips...

- 1. Tools used.** Use scissors as opposed to hands when harvesting. This will minimize stress in the plant.
- 2. Be aware.** Be wary of how much you harvest. It is best to have multiple harvests from a single plant. Take into account how much you and your 'ohana will use and think about how much could go to waste.
- 3. Permission needed.** Always ask the plants for permission before harvesting. You can ask permission in a manner that follows your particular cultural protocol.
- 4. Positive thoughts.** Always offer good thoughts when harvesting. Good intentions and aloha will place good energy into the food or medicinal plants.
- 5. Sharing is caring.** Share your harvest with your family. There may be a kupuna living in your neighborhood who may not have access to fresh fruits and vegetables. This is the opportune time to connect with community through food.

Mahi 'Āina 'ohi harvesting

*Ke Hō'ole mai nei 'o Haloa
Haloa will nullify it.*

When the poi bowl is open, there should be no arguing
for this will displease Haloa.

Mary Kawena Pukui, *The Polynesian Family System in Ka'u Hawai'i*, 193

By bringing community together over harvest and food, we can affect great change. Sharing of food brings people together. It allows for stories to be shared over dinner tables and connections to be made.

Feeding the soil, caring for the land, and planting healthy organic food brings abundance to community. Abundance connects us to land and culture, honors the voices of our kūpuna, leaves a legacy for our mo'opuna, and brings health to an already vibrant community.



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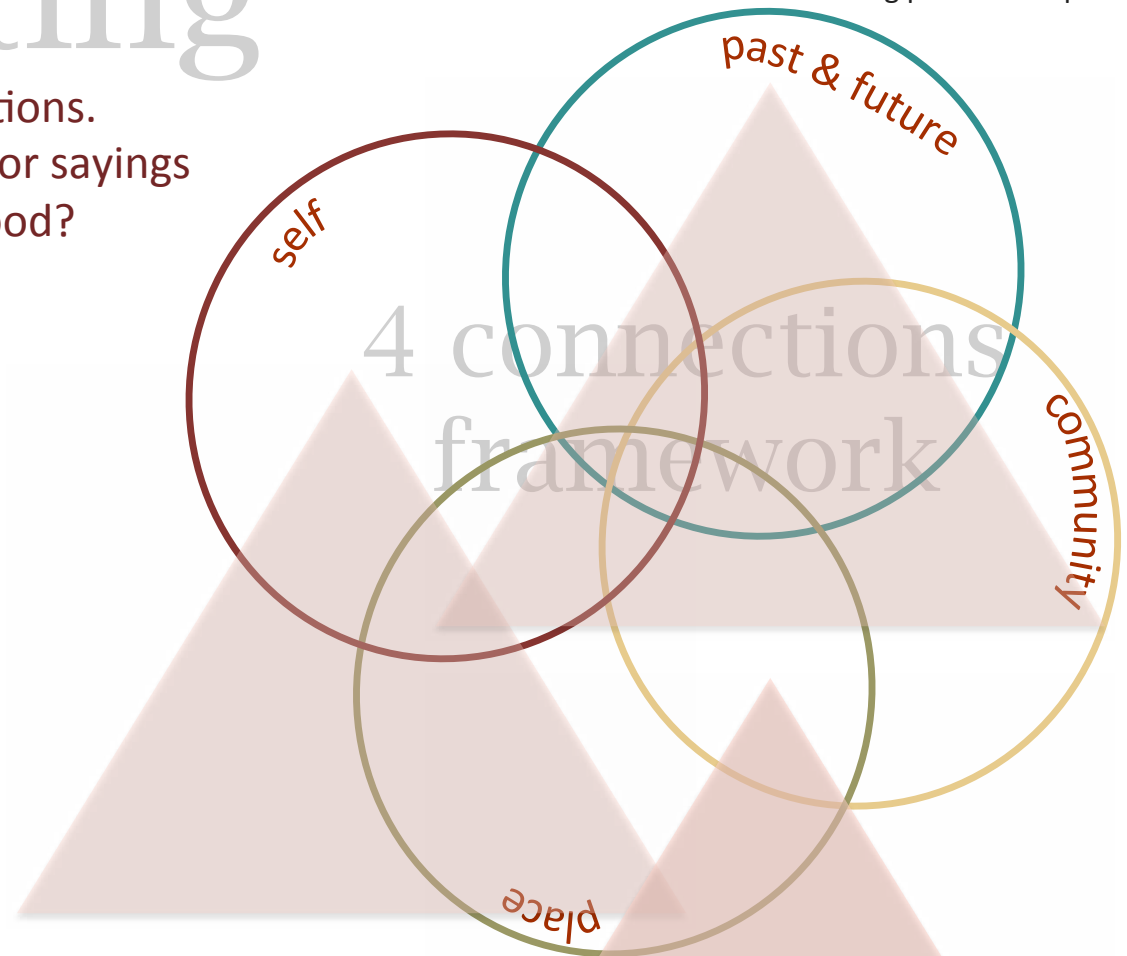
Mahi 'Āina

'*ohi* harvesting

Cultural protocols honor family traditions.
Are there any songs, chants, prayers or sayings
your family may have used around food?

Story Prompt

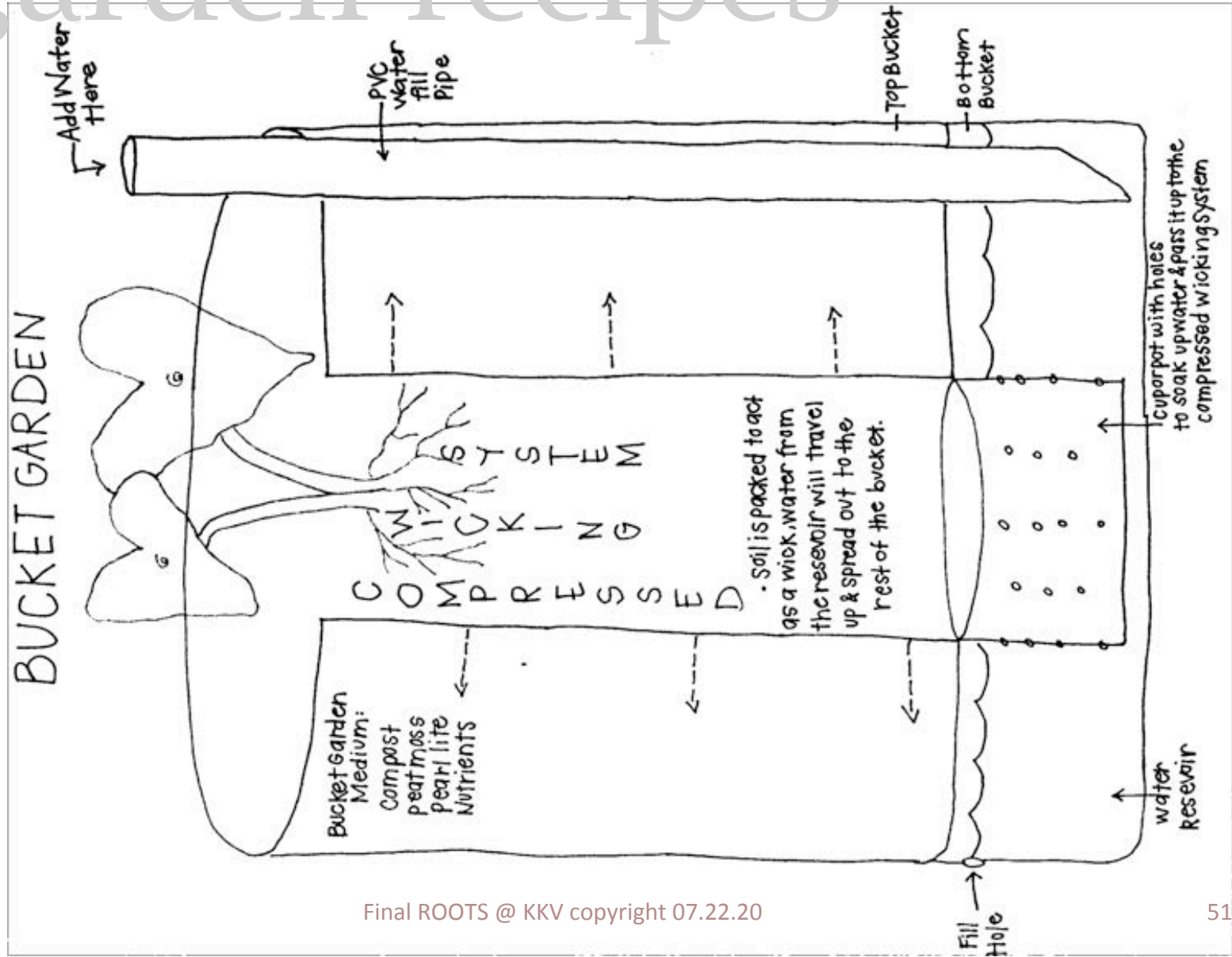
Use the story prompt to reflect on your own experience and the content that was introduced in the farming practice chapter.



Mahi 'Āina

mala recipes

garden recipes



Mahi 'Aina

garden recipes

Bokashi

BOKASHI Recipe

• Dry Ingredients

- 20 lbs wheat mill run
- 2 cups rock dust
- 2 Tbsp mineral salt

• Wet Ingredients

- 1 or 1 1/2 Gallons of Rainwater
- 3oz Effective Microorganisms
- 3oz Molasis
- optional: Kelp & Humic Acid

You Will Need...

- All the ingredients in the recipe...

- Wide shallow mixing tub
- 1 gallon measuring bottle with a half gallon line marked
- 1 Tbsp & 1 oz & 1 cup measuring utensils
- Heavy Duty Trash bags
- A cool, dry, dark bin safe from insects, pests, & sunlight for storage.

How to Use BOKASHI

- Sprinkle some in your compost pile & cover it.
- Kitchen scraps bucket? Sprinkle some in between layers!
- When planting add some BOKASHI to help your plant grow!
- Break down dog/pet poop faster! Sprinkle some BOKASHI on that too!

Basically, BOKASHI will break down what you put it on/in & make nutrients available to plants.

How to make BOKASHI

- ① Mix dry ingredients in shallow tub
 - Weigh out 20 lbs wheat mill run
 - 2 Tbsp mineral salt
 - 2 cups Rock Dust
- ② Add & Mix Wet Ingredients in a bucket
 - 1-1 1/2 Gallons of Rainwater
 - 3oz Effective Microorganisms
 - 3oz Molasis
- ③ Slowly Add bucket to dry mix
 - Constantly moving dry mix, stop & swoosh bucket to get everything at the bottom.
- ④ Thoroughly Mix, making sure there's no dry pockets, mixing the bottom & corners.
- ⑤ After mixing, empty BOKASHI into heavy duty trash bag, making sure not to make pun. Hves. push all the air out, tie a knot & store in a cool, dry, dark, protected bin.
- ⑥ Let sit for 2-3 weeks to propagate microbes
 - After each use, squeeze out air & keep in a protected cool, dry & dark bin.

Mahi 'Āina

mala recipes

You Will Need : plants that grow in abundance on your 'āina, a mixing bin, organic or brown sugar, bucket, heavy duty plastic bag, scissors, T-shirt/mesh, rope, scale, strainer/cheese cloth, glass bottles with a screw on cap or a cap with an air tight seal for storage.

References : natural.farming.hawaii.net
ctahr.hawaii.edu > Pdf
cgnfindia.com > FPJ

Fermented Plant Juice

HOW to Make
FPJ.

- Harvest plants before the sun rises
- DONOT wash plants weigh plant matter
- CUT zinnias into mixing tub.
- weigh sugar, same amount as plant matter (1 to 1 ratio)
- MIX plants & sugar together until plant is translucent.
- Transfer into bucket. fill ONLY halfway
- put trash bag on plant matter, push down to get air out
- Add water, to top of bucket.
- Let sit for 3 days (Anaerobic)
- After 3 days, remove bag & Replace with a T-shirt & Rope.
- Let sit for another 3 days (aerobic)
- After 3 days strain & store in a glass bottle, in a cool, dark place.

Juice

HOW to USE

- FPJ:
 - ALWAYS use RAINWATER
 - 1/2 oz per Gallon
- USE on stressed out plants, seed planting soil, or as a FOLIAR.
- Foliar during early AM, or late PM

Nutrients:

- COMFREY: source of Nitrogen, phosphorus, potassium & calcium.
- Good for fruit trees, flowers & veggies, increase their production.
- Fast developing plants like kono hand, have growth hormones that are very active & can improve any weakness or health issues & help a plant through recovery.
- Mugwort is useful during germination through vegetative growth, helps crops become strong & grow fast.

Mahi 'Aina

mala recipes

garden recipes

Natural Spray Recipes

① Soapy Water:

A few drops of Dawn or a natural soap to a gallon of water.

② Hot Pepper Spray:

1/2 cup of peppers to 1 pint of water, dilute to 3oz per gallon

③ Neem Oil spray:

2 1/2 teaspoons to a gallon (doesn't effect beneficial insects)

④ Stinky Plant Spray:

1/2 cup of plants (garlic, onions, or marigolds) to 1 pint of water

⑤ Bug Juice spray:

1/2 cup of pests w/ 2 cups of warm water, blend, strain dilute 1/4 cups Pests to 2 cups water.

when to spray : early in the morning, before the sun hits

the plants

• Late afternoon after the sun has set

Never in the middle of the day.

• After rain

where to spray : spray especially under the leaves of the plant.

Mahi 'Āina

oli and mele

Chant and song

'O Kameha'ikana

traditional

'O Kameha'ikana ia 'o ka ino ulu
Wahine akua a Wakea
O Haumea wahine o uka o Kalihi
Noho i kalihi hele i kai
Komo i ka ulu, he ulu ia,
Loaa ia kino hou, he ulu
O ke kino ulu; o ka pahu ulu o lau ulu ia nei
O ka lala ulu o Kamehaikana
O Kamehaikana ko inoa ulu, a lau ulu
He lau ke kino o ia wahine o Haumea

For Kameha'ikana
Sacred wife of Wakea
Haumea, a woman of upland Kalihi
She lives in Kalihi, she goes to the ocean
She enters the breadfruit, she is a bread fruit
This new body form of hers is born, a
breadfruit
The body, the trunk, and leaves of a
breadfruit are here
The breadfruit branches are Kameha'ikana
Kameha'ikana is the breadfruit name, many
breadfruit
The body of this woman Haumea is multitude

This oli was recorded in an article in the newspaper "*Ka Na'i Aupuni*." The personification of Haumea is captured in a *ko'ihona*, a genealogical chant. The reference to breadfruit in this story is a *kinolau*, body form, of Haumea. In ancient times, the 'ulu was a form of the goddess Haumea and was worshipped in the name of Kameha'ikana.

Adapted from the Mele Ko'ihonua

Mo'olelo o ko Wakea ma Noho ana ma Kalihi Ka Loaa ana o ke Akua Ulu o Kameha'ikana

Mai Ka Mo'olelo Hawai'i Kahiko

Hoomakaukau ia e J.M. Poepoe no Ka Na'i Aupuni

May 2, 1906-June 18, 1906

Final ROOTS @ KKV copyright 07.22.20



Mahi 'Āina

oli and mele

chant and song

Pule Mahi'ai a 'Ouaua

Composer: Hina Wong-Kalu



'Ae...

E ala e

E ala e

E ala ho'i

Aloha e ka honua nui a Kane

Ka honua nui a Haumea

'O ka'u e hea a'e nei

He heahea i ka ulu o ka nahelehele

A luna nei au i ka ma'ukele

Ka waonahela pi'i aku i Kilohana

No ka hana a Kuka'o 'o, Kukulia

Kukeolowalu

I alualu i ka 'alae a Hina, Hina'ohi'alaka,

Hina a ka malama

'O ka malama, ka mahina

Ka'ika'i ana i ka mahi'ai o kanaka

No Laka o nei(a) uka

Ka hua, ka hana a ia wahi lima nei e

He aloha la

He aloha e

Mahi 'Āina

oli and mele

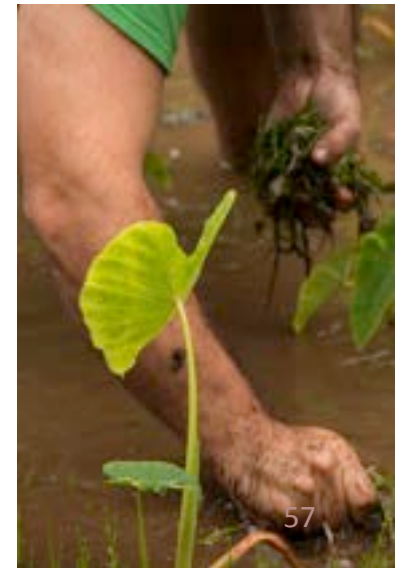
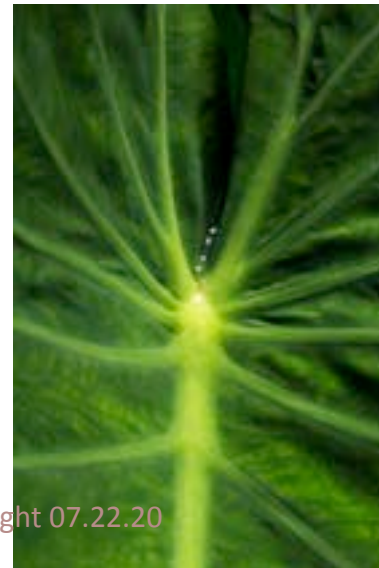
chant and song

Kapu ka Hāloa traditional

This oli is a segment from the Kumulipo and is generally used when planting kalo.

Kapu ka Hāloa
Kū ma ka pe'a
Kanu iā Hāloa
Ulu hā Hāloa
'O ka lau o Hāloa
I ke ao lā, puka!

Sacred is Hāloa
Standing by the sacred house
Plant Hāloa
A long taro stalk grows
The leaf of Hāloa
in the daylight, emerges!



Mahi 'Āina

oli and mele

chant and song

Ewe hanau o ka 'aina.

Natives of the land.

People who were born and dwelt on the land.

'Ōlelo No'eau, #387

Pule Ola Lō'ihī

traditional

A prayer for long life.

<p>'O kau ola e ke akua E nānā mai kāu mau pulapula E ola a kaniko'o A haumaka'iole A pala lau hala, A kau i ka pua aneane ē, A laila, lawe aku 'oe ia'u I ke alo o Wākea ē</p>	<p>Bestow life, o akua Look at us your descendants Grant us, health until the cane is sounded And we grow bleary-eyed as the rat And withered like that of the hala leaf Until the extremity of old age is realized Then take me to dwell In the presence of Wākea</p>
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Mahi ‘Āina

oli and mele

chant and song

Ewe hanau o ka ‘aina.

Natives of the land.

People who were born and dwelt on the land.

‘Ōlelo No‘eau, #387

Noho Ana traditional

Noho ana ke akua i ka nāhelehe

I ālai ‘ia e ke kī‘ohu‘ohu, e ka ua koko

E nā kino malu i ka lani malu e hoe

E ho‘oulu mai ana ‘o Laka i kona mau kahu
‘O mākou nō, ‘o mākou nō, ‘o mākou nō, a!

The gods dwells in the woodlands
Hidden away in the mist in the low-hanging
blooded rainbow

O beings sheltered by the heavens
Clear our paths of all hindrance

Inspire us o Laka and dwell on your alter (Laka
brings growth to her stewards)

Whenever we offer this chant, we remember Laka and her special relationship to Kalihi. We let go of the obstacles that we hold for ourselves, acknowledging the “*ua koko*”, that sacred misty rainbow, as our bridge across those obstacles. We acknowledge all the ancestors who lived and worked on this land before us, the “*kino malu*”. We depend on Laka to strengthen us as caretakers. And, finally, we look to those that work alongside us as our companions on this journey.



Mahi 'Āina

oli and mele

chant and song

Ewe hanau o ka 'aina.

Natives of the land.

People who were born and dwelt on the land.

'Ōlelo No'eau, #387

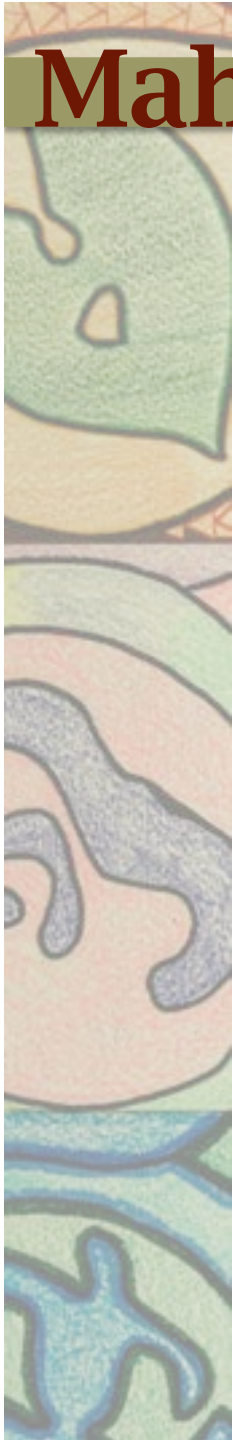
Upu A'e

Composer: Puni Jackson

Upu a'e ka 'ano'i i uka 'o Maluwai He wai momona	Passion shows itself in the forest
He wai huahua'i	Sweet waters Spring waters bubbling forth
He waiwai 'ikea i ka 'ohu o nā 'ōpua 'Ohu'ohu Kilohana kāu kehakeha Lani ha'aheo o nā pua O'ahu Ahuwale nā kini ho'oulu Ahuwale ke aloha 'āina ē	A treasure known to assembly of clouds Kilohana is majestically clouded Proud sovereign of O'ahu's children The multitudes grow openly Our love for the land cannot be denied



Whenever we offer this chant, we remember Laka and her special relationship to Kalihi. We let go of the obstacles that we hold for ourselves, acknowledging the "ua koko", that sacred misty rainbow, as our bridge across those obstacles. We acknowledge all the ancestors who lived and worked on this land before us, the "kino malu". We depend on Laka to strengthen us as caretakers. And, finally, we look to those that work alongside us as our companions on this journey.



Mahi 'Āina