

Playing in the Rain''''

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I was born and raised in Manoa Valley where we had a farm at the base of Woodlawn. My family raised all kinds of animals here since 1938. Even as this area became urbanized, we continued to raise animals here into the late 1970's since we were 'grandfathered in' the agricultural zoning. It was a special time to growing up in Manoa when it was much farther away from the city, and we could even hear and see the Lurline passenger ship off of Waikiki from our home, without hotels obstructing our view.

My grandfather, Antone Teves, was raised in Ahualoa on the Big Island, one of the first homestead areas awarded in Hawaii as part of the American Homestead Act. He was one of eleven children and learned to live off the land at an early age. In the late 1930's, he brought his family to Honolulu seeking better opportunities like many families during the Great Depression.

We had corrals and paddocks as holding areas for livestock on our 3 acre homestead, including cattle, horses and goats, but would also tether cattle and horses on a very large empty field that ran from the base of Woodlawn all the way to Manoa River where the faculty housing now stands.

This land was owned by Richard Wong, an old friend of my grandfather. He also

owned the land where the Manoa Shopping Center now stands. Mr. Wong's father was known as Poi King, and most of this area was in wetland taro production a long time ago. Remnants of this past production can be seen on One Street where the old auwai or waterway fed the taro patches or lo'i.



Manoa Valley 2014

Today, you still can see it in the street names in this area such as Lo'i and also Kaloaluiki or 'small deformed taro', probably from the poor water circulation with deep mud. We would frequent one of these large deep mud holes right below our homestead, and ride our bicycles or run our horses into the mud hole. In later years, it was our dirt bikes.

In Manoa, we raised cattle, horses, pigs, goats, chickens, ducks, geese, and even pigeons. With my five brothers and two boy cousins next door, we had a team of livestock farmers and cowboys

my grandfather and father could depend on. It was a way for them to teach us the importance of hard work and also keep us busily engaged, although we still got into trouble or trouble found us.

My first job in the morning was to fetch our milking cow and bring her to the milk shed. My father would milk Nelly Belle before heading to work before 7 am. I would also tie her tail so it wouldn't swish in my father's face. On some mornings I would call for her and she would just traipse up the hill, while on other mornings I had to walk down the hill through the mud with knee-high rubber boots to fetch her. My job was completed as soon as I brought the milk pail to my Mom, who would pasteurize it, cool it down, and refrigerate it.

It was commonplace to see twenty head of cattle tethered in this area. Each day, a bunch of us would jump on my grandfather's jeep to carry a jeep-full of 10-gallon metal milk containers filled with water to each animal daily. Those milk containers came from a dairy operated by Frank Simoes, an old friend of my grandfather at the end of East Manoa Road in a hollow below the Chinese Cemetery, adjacent to Okimura and Okamura family farms where the famous Manoa lettuce grew. Today, this is a residential area with street names such as Pawaina and Pinao.

Areas adjacent to the Manoa Stream were treacherous places to tether animals because trees would clog the river at a bend near East Manoa Road and overflowed in this area, especially

on the first big rain of the winter. Especially dangerous is where the UH Innovation Center now stands. I still remember a really wet year with torrential rains when two horses drowned near that parking lot along the river.

I still remember when my grandfather took six of us to the University of Hawaii for a ride on his jeep. I must have been around 12 years old. As we drove down Maile Way, the entire left side of the road was nothing but pasture and paddocks with animals in them, much like at home. His prophetic words were, "One day, some of you will be attending this university." As it turned out my brother Tubby and I were the first from our family to attend and graduate from UH.

My grandfather used to bring in herds of goats from the Big Island, 50 to 100 at a time, for sale to the Filipino market in Honolulu. Families would line up down our road to buy a goat for \$50 each, and the one Ilocano phrase I learned at a young age was "Calding la ditoy!" or 'Goats for sale!'

In order to eradicate goats from the Volcano National Park, the National Park Service would run them off the cliff at Hilina Pali. There would be thousands of them, so my grandfather worked out an arrangement with a friend, Gordon MacKenzie, who would capture them and haul them to the Hilo Wharf.

My grandfather also got George Hansen, the boss of Young Brothers

(YB) to allow us to construct a little chain link corral near the bow of the barge to contain about 100 goats on their trip from Hilo to Honolulu. The only condition was that we had to be at the wharf ready to receive them before the barge docked.

It was inevitable that a few would escape by climbing up the chain link fence and they would jump from roof to roof of cars on the barge. Our job was to apprehend them before YB workers attached the ramp to the barge so they wouldn't run around the docks and create chaos. We would climb up the side of the barge, which was so exciting, and rope them.

The goats didn't like the rain in Manoa and some would catch colds and die, so my grandfather tried to sell them as quickly as possible. If the veterinarian, Dr. Chung came over to care for sick or injured animals, we all had to be there to watch and learn, because the next time this same malady occurred, we were expected to take care of it such as injecting, worming, treating and sewing up wounds or even making casts.

In addition to raising animals in Manoa, we also raised cattle in Kipapa Gulch in Central Oahu in the '50's, Lualualei and in the back valleys from Hahaione to Kamilonui in Hawaii Kai in the 60's, and Kuliouou Valley up to the late '70s. The herds in Kipapa and Hawaii Kai would exceed 300 head of cattle. We started to downsize to less than 100 in the late 70's as urbanization swallowed a lot of the prime ranch lands in Honolulu and

Oahu as a whole, while pineapple and sugar held the rest, but changes were about to happen in these areas as well.

I remember carrying rolls of barbed wire wrapped in old army blankets into the back of Kuliouou Valley with my brothers as we fenced 160 acres there. If the area was accessible, we could use pack horses to haul fencing supplies into the mountains, while other times we had to carry everything in on foot. In fencing, the trick was to dig a hole for a fence post where you wouldn't hit a rock or lining up trees, especially strawberry guavas where you could nail barbed wire onto trees and not have to dig a hole.

When each of us was born, my grandfather gave us a horse, and we would learn to ride at a very early age. Before long we rode bare back with nothing more than a piece of rope tied to the neck and looped around the nose, called a 'panuku'.

Many of the horse terminologies my grandfather used were in Hawaiian, even horse colors. Although he was pure Portuguese, he could understand Japanese and Hawaiian, which was important in communicating with first generation Japanese or Issei, and even Hawaiians, many who spoke their native tongue in those days.

We could trade our horse in for another one at any time since he used to bring herds of Molokai Ponies from Molokai to sell in Honolulu. When the next shipment of horses arrived, it was a

good time to trade in your horse for a faster and smarter one, and take the pick of the herd.

We always had the fastest horses on Oahu and would sweep all the timed or gymkhana events, especially relay races, barrel racing, pole bending, and keyhole race, especially at 4-H Horsemanship Shows. Even expensive Quarter Horses were no match for the Molokai Pony in short distance races and quick turning events, although they dominated in the quarter mile.

According to my father, the Molokai Pony was a Welsh breed and probably came from England, although some people I've spoken to think they were brought from Mexico. Although the first horses to Hawaii arrived around 18031, I don't know if these were some of them.

In the 1950's, they would roam East Molokai in herds from Waialua to Halawa Valley. Because they were isolated in this area, they interbred and maintained this short stature and pure blood. Most of them were less than 13 hands high, considered a very small horse, but they were tough, sure-footed animals and were easy keepers because they didn't eat a lot. They were also excellent climbers in rough terrain and were fast on their feet.

We would ride like the wind through the hills and flats of Manoa, even up to Manoa Falls, and our friends would hang out at our house so they could ride them. We would play Cowboys and Indians with horses and tie each other

upside down in the mango trees when we captured the other side.

My grandfather used to say, "These horses can stop on a dime, and give you nickel change!" I experienced this when I went flying off the front of one of them. I remember when my grandfather brought in about 50 Molokai Ponies in a barge shipment, and we spent the whole day hauling them from the wharf to Manoa.

We placed them in paddocks on our homestead, and my grandfather and father would separate the tame or trained ones from the wild ones. We would watch intently and we could tell there was an art to this, and you couldn't just go in the paddock and grab one of them.

My grandfather was like a horse whisperer and could look into a horse's eye and tell you it's life history, whether it was abused, or skittish, or lazy, or not to be trusted, just like humans. We realized that day that if you looked into a horse's eye, it could tell you a lot about the animal. Another part of the horse that told you a lot was its ears. If it put its ear's backward, it was on alert and ready to kick you, bite you, or buck you off.

You could tell by the length of its fetlocks, or the portion from its hoof to the ankle joint whether it would give you a comfortable ride or a rough one. From the frog of a scab-like, hoof-like oval on its leg, you could tell the health of the animal, and by the color of its hoof, you

could tell whether it had soft or hard hooves. White hooves were more susceptible to hoof rots, especially in Manoa, while black ones were more tolerant to stinky bacterial rots, and striped ones were somewhere in between. You also learned to keep their hooves clean to prevent rots as well.

One of our neighbors across the street, the Arizumi's, owned Manoa Bakery and we would pick up 55 gallon drums of old pastries each week to feed to our pigs, but Aunt Millie Arizumi always made it a point to wrap some fresh goodies in newspaper on the top of the drum, such as Apple Pie, biscuits, donuts, or long johns.

I know what pastries can do to your waistline after seeing 3" thick back fat on some of our pigs which we slaughtered at home when we cooked Kalua pig in an *imu* in the back yard, and even *lauau* for the holidays. Aunt Millie made the best chocolate chip cookies, and gave us a huge bag every Christmas. My grandfather taught a lot of the neighbor's kids to ride and train horses, and the Arizumi's were no exception.

Most of these special places and situations are just memories, and both my grandfather and father are gone, but I thank them for this special lifestyle and unique experiences they created for us that few families were able to experience in Hawaii, especially on Oahu. To have one foot in the city and another in the country gave us access to both worlds.

I guess they wanted to teach us the importance of hard work, and being self-reliant as we had many chores each day, always arriving late to Little League baseball practice at Manoa Field each day, much to the dismay of our coach, Pop Eldredge. That was until he visited to our homestead and saw what chores we had to perform each day. The ethic of hard work is getting rarer each day as many try to find the easy way out and not have to 'live by the sweat of your brow.'

In Manoa, if there's one thing you can count on each day, it's the rain. Tuahine is the name of the famous misty rain of Mānoa Valley and it's often accompanied by an arching rainbow and light breezes. The tiny windblown droplets of the Tuahine rain will sometimes reach beyond the valley walls as far as south of Punchbowl.

We each had to learn the Manoa Elementary School song. 'Rain Tuahine O Manoa', written by my Aunt Moni Teves's grandmother, Julia Walanika Paka. My Aunt still lives next door to my Mom in Manoa, and was married to my father's brother, Uncle Freckles, who passed away several years ago.

Lyrics to Rain Tuahine o Manoa include:

*Wehiwehi nei pua na`u e kui
Ke kipona `ia me ka ma`o
A he pua kapu `ia nâ ka manu
Nâ ka `i`iwi polena o ka uka*

*Kaulana e ka ua i Wa`ahila
I ka hehi i ke oho o ke pili
Ho`okahi no `oe o laila*

Me ka rain Tuahine o Mānoa

Interpretation: *These flowers I'll string as an adornment, combined with the yellow flowers of the cotton shrub (ma'o), a blossom sacred to the birds, the honeycreepers of the uplands.*

Famous is the rain at Wa'ahila falling upon the pili grass, you are the only one there, with the Tuahine rain of Mānoa.

In the Hawaiian realm, there's more than one meaning to a song or phrase, referred to as *kauna* or hidden meaning. One meaning of this song is a women crying for her loved one, and when she really starts crying, watch out below because Manoa River will swell and overflow its banks, inundating lower Manoa all the way to the University of Hawaii.

My Mom named her oldest grandchild after the mists of Manoa. On the morning of her birth, my Mom called Tutu Mary Pukui, who lived across the valley from us on the western wall, and mentioned to Tutu that the mists were sitting on the mountain tops of Manoa.

Tutu Pukui looked out her window and was surprised to find the mist encircling her home. With this meeting of minds, Tutu gave her the name 'Kaohukaukuahiwi O Manoa' or 'the mist that rests on the mountain tops of Manoa'.

Growing up in Manoa, if you stopped working every time it rained, you wouldn't get any work done. We learned to look at the rain as our friend and

companion, and worked around and with the rain each day, even riding our horses in the river, and playing in the mud.

For most, the rain is a blessing and keeps our surroundings lush and green, but to others it can be a curse, especially when it wreaks havoc on your farm with difficult-to-control plant diseases.

I've learned from one of my mentors, Dr. Jim Gilbert that the key to disease control is to grow a healthy plant, and it starts by having healthy, resilient soil and also knowing what a healthy plant looks like. But when there's a perfect storm with ideal weather for diseases, some diseases can be unstoppable.



Taro Leaf Blight in all its glory. Winter 2012

The peak of winter with cool weather and light or no winds signals the return

of an old nemesis, Taro Leaf Blight (TLB) or *Phytophthora colocasiae*. Taro Leaf Blight can spread like wildfire, and weeds in the field can also aggravate the problem by hindering air circulation.

Taro leaves can melt away, adversely affecting both the quality and quantity of taro. Poi made from diseased plants will lack the viscosity or stickiness found in high quality poi. Under ideal conditions, this disease is rampant and unstoppable, and we've seen our share of this disease on Molokai. It prefers cool weather, wet conditions, and little or no wind over extended periods.

Taro leaf blight is believed to have caused famines in ancient times, and we still haven't found a good strategy to control it. The disease has caused major epidemics in Dominican Republic, Puerto Rico, American Samoa, and more recently, West Africa. Taro is an important subsistence crop in many parts of the world, and vital to the survival of native cultures.



Huli Bank in my garden with mixtures of Hawaiian and Hybrid varieties – December 2014

Researchers at the UH College of Tropical Agriculture and Human Resources have attempted to cross Hawaiian taro varieties with leaf blight tolerant varieties from Pacific islands including Yap, Palau, Guam, and Pohnpei. The selection of cultivars with resistance to TLB is based on research and trials conducted in the Pacific.

Taro Leaf Blight (TLB) Disease Resistance of Selected Cultivars

Cultivar	Origin	%TLB
Oglang	Yap	1
Gilin	Yap	1
Kugfel	Yap	1
Pwetepwet	Pohnpei	2
Thailand	Guam	7
Sushi	Yap	8
OI	Yap	10
Dirratengadik (P20)	Palau	10
Homestead (P4)	Palau	>10
Ochab (P5)	Palau	>10
Kerdeu (P6)	Palau	>10
Ochelochel (P7)	Palau	>10
Moalech (P8)	Palau	>10
Ngeruuch (P10)	Palau	>10
Dirrioasch (P13)	Palau	>10
Moded (P15)	Palau	>10
Ngetmadei (P19)	Palau	>15

References: Wall & Weicko 1999, Trujillo 1995

The challenge in breeding taro is to capture the good characters without the bad ones. Some of the bad characters inherited from Pacific cultivars when crossing with Hawaiian taro include runners on the corm, poor taste, poor poi souring qualities, and susceptibility to diseases in which Hawaiian taros are resistant. Taro with runners can take over a lo'i or water patch in a short time,

but may have potential in dryland or mala systems for leaf production.

To date, some of the hybrids have improved on TLB tolerance but do not possess sufficient tolerance to keep the disease in check when conditions are ideal for the disease. Ancient Hawaiian cultivars, originally numbering in the hundreds, are believed to originate from approximately five ancient introductions into Hawaii from the South Pacific, and therefore are closely related. None of them show any tolerance to leaf blight. In fact, the softer leaves favored for making dishes such as squid luau are especially susceptible, such as Apuwai and Lau Loa Ke'oke'o.

Aside from the tolerant varieties listed previously, other taro cultivars from the following countries were used to increase leaf blight resistance in Hawaiian taro:

- Indonesia – Java 48, Java 74, Java 75, Kuat, Ketan 36
- Papua New Guinea – PH 15, PH 21
- Thailand – Bangkok
- Nepal – C81081

There are cultural management strategies to slow the disease. Windy weather seems to create unfavorable conditions for TLB in Hoolehua, so one strategy is to plant in windy areas when the disease is present. Another way is to space plants farther apart, such as two feet. Air circulation can curb the spread of disease and disrupt propagation of the disease.

From my experience, the proper pH and especially the Calcium status of the soil are critical. An important component of the cell wall, low Calcium will decrease the thickness of the cell wall making them more susceptible to leaf penetration by leaf blight organism. High doses of nitrogen can throw off the nutrient balance especially as it relates to Calcium. Lush growth makes for a fast-growing, floppy leaf that is very susceptible to leaf blight due to thin cell walls that are easily ruptured.

Frequent, low doses of conventional nitrogen or organic sources with slow release nitrogen will help. For more information on Taro Leaf Blight, you can download this publication:

<http://www.ctahr.hawaii.edu/oc/freepubs/pdf/PD-71.pdf>

Going Green Onion

Green onion is an important flavoring and garnish used in many island delicacies from poke to saimin, and we can't seem to live without it. Known as the Welsh or foreign onion, it's a member of the Lily family and known by its Latin name, *Allium fistulosum*. Green onion is actually a perennial, but we usually grow it as an annual.

What distinguishes the true green onion from other onion species is when cut it has a perfectly round leaf, while other onion species have leaves resembling the other phases of the moon. A good green onion will have a light pungency and a pleasant sweetness to it.



Green Onions in the Garden

Native to Northwest China near the North Korean border, and cultivated in China since 200 BC, green onion is still the most important onion of these areas. It's grown in many parts of the world as a home garden vegetable. In Oriental medicine, parts of green onion are used to treat fever, inflammation, headaches, stomach aches, and diarrhea. Diluted pressed juice is used to control aphids, a common pest of vegetables in China.

There are green onion varieties adapted to a wide range of conditions from Siberian cold to hot humid conditions of Bangladesh and Java, and most of them can be grown in Hawaii. Planted by seed or vegetatively by divisions, varieties have single or multiple stems. Multiplier or dividing types will tiller or make many stems from a single stem or seed planted. The Japanese have developed many single stem bunching onion selections for different uses.

Classified into three groups based on their growth characteristics, they include 'Kaga', 'Senju', and 'Kujyo'. Both Kaga and Senju types have large diameter leaves, and usually hilled with soil or

mulch to produce long white shanks prized for pot soups. Kujyo types are prized for their long thin green leaves usually eaten raw, but also added to soups such as saimin.

Green onion prefers neutral soil of pH 6-6.5 and higher elevations of 600 to over 2000 feet for optimal growth, although it's widely adapted. It likes well drained soil and is very susceptible to water-logging. Green onion root systems can scavenge for food much better than bulb onions with its long root, but as a family, they don't compete well with weeds.

Onion thrips are a major pest, causing unsightly silver-white lines on the leaves by piercing and rasping the leaf surface. Difficult to control, they thrive in hot weather and live under the leaf sheath where the leaves branch.



Larger diameter green onion are favored for soups, sukiyaki, and hekka dishes.

Part of their life cycle is also spent in the ground. At high populations, the plants lose lots of water from feeding damage and will dessicate. Using seed instead of divisions, and planting in new areas away from old planting areas can help to

minimize thrips since they can live in planting material. Other occasional pests include the beet armyworm and the serpentine leaf miner.

Diseases include purple blotch, an *Alternaria* fungus attacking leaves with its characteristic purple blotch on the base of the stalk. The key in controlling many disease problems is to grow a healthy plant, and make sure your nutrition program is well tuned for the different seasons.

By growing them in close spacing, leaves can be kept small. Seed varieties grown in Hawaii include Koba and Fragrance, while many local types are grown by division. Shallots are sometimes grown for it leaves, including the Hawaiian onion or Akakai and the Filipino shallot.



Akakai, grown for generations in Hawaii as a green onion is also known for bulbs with a light sweet pungency.

Major green onion production areas in Hawaii include the Leeward Coast valleys of Oahu, from Lualualei to Waianae. Growing them in pots in proximity to your kitchen assures a

steady and readily available supply of green onion.

The Rarest of Orchids

You would think the rarest orchids would be found deep in the steamy jungles of the Amazon or even in an isolated island such as Irian Jaya. Found in one of the most isolated places of the world, it just happens to be right here in our Molokai forest reserve above Kaunakakai.

Hawaii has only three endemic orchids, *Ke Kino o Kanaloa* or the Hawaiian Jeweled Orchid, *Awapuhi a Kanaloa* or the Hawaiian Widelpip Orchid, also known as the Hawaiian Twayblade, and *Puahala a Kane*, the Hawaiian Bog Orchid. Although their flowers are not large and showy, they are precious jewels nonetheless.

Of these, *Puahala a Kane*, *Platanthera holochila*, is the rarest. Listed as endangered species under the U.S. Endangered Species Act, only 33 *Puahala a Kane* plants remain in the wild; 25 on Molokai, one on Kauai, and seven on Maui. It's believed the first orchids reached Hawaii by traveling across the Pacific in the form of a seed on muddy feet of migrating birds such as the Golden Plover.

From the bogs of Southern Alaska to the bogs of Hawaii, including Alaka'i on Kauai, and Pepeopae on Molokai, they evolved into a community of orchids unique from their continental cousins. Threatened by wild pigs, the last

Puahala a Kane are being protected by enclosures. Although one seed capsule of this orchid can produce 1000 seeds, the challenge was finding the right environment and media or food source to germinate and grow them in the hopes of returning them to the wild.

Steve Perlman, research biologist and exploratory botanist from the Pacific Tropical Botanical Garden on Kauai, worked with orchid experts in Hawaii for over 25 years to propagate them, but despite the best efforts of experts, none of them were successful. It seemed as though these plants would slip into extinction in our lifetime.



Puahala a Kane *Platanthera holochila* Photo: Lyon Arboretum

These plants required special mycorrhizal fungi to grow well, and by attaching to the roots of orchids actually

extended the root systems, allowing plants to scavenge for food over a larger area of the forest floor. This symbiotic relationship is common in many other orchids in their native habitat, especially in their early stages of germination and growth.

In 2002, Perlman enlisted the help of Dr. Lawrence Zettler, professor and director of the Orchid Recovery Program at Illinois College and an expert in mycorrhizal fungi, in figuring out a way to grow Puahala a Kane. Collecting the native fungi and getting it to grow on these orchids was a formidable challenge. After repeated attempts, the fungi failed to grow on the orchids in the lab.

The dilemma was 'should we use a fungi from somewhere else, and introduce it to Hawaii with these Hawaii natives?' This was a no-no in the eyes of many, including the orchid conservation community, and they concurred with the experts on the matter.

Another strategy was to grow the seeds on a seaweed-based gelatin called agar spiked with plant nutrients in place of the fungi. The gorilla ogo, *Gracilaria salicornia* and its *Gracilaria* cousins are one of the sources of this agar. The experiment worked, and growing in this medium for a year, the plants were pampered on a level that rivaled an intensive care unit for infants.

From a small Midwest laboratory, 85 of the largest seedlings were carried to

