

## Plant Aloha, Sustainable Farming Series

[hawaiiansanctuary.com/plantaloha](http://hawaiiansanctuary.com/plantaloha)

Thursday January 19, 2017

Wade Bauer of Malama Aina Permaculture facilitating



Hawaiian  
Sanctuary

## How to Grow a Complete Diet with Permaculture Principles: Tropical Subsistence Gardening. 24 part permaculture class series

### Part 3 of 24 **Guilds, Companion Planting & Polycultures**

How to group plants together to fill all available niches, overstory, understory, shrubs, emergent herbs, groundcovers and vines, obtain extra yields and promote synergy.

**Acknowledgements:** special thanks to Hawaiian Sanctuary, County of Hawaii Research and Development (Plant Aloha's main grant funder) and all others involved for helping obtain grants providing the venue and support to make these classes a reality! We are still looking for support for this amazing FREE program. Please give what you can: [hawaiiansanctuary.com/donate](http://hawaiiansanctuary.com/donate)

**Introduction:** it's not the number of species that determine the productivity and resiliency of a system but the number of beneficial interconnections between them. So our job in large part is assessing each plant's needs and attributes and placing them where they support each other. Right plant right place.

**Guilds:** groups of plants that support each other's needs. Classic example: corn, beans, squash. Often these plants play different roles, eg, providing shade, nitrogen fixer, weed suppressant (groundcover), trellis, tap rooted, shallow rooted, etc. Some combinations should be avoided shallow rooted trees and root crops together.

**Companion Planting:** usually refers to vegetable gardening but similar concept, companions may help nearby crops by, aiding growth, repelling pests, attracting beneficial insects, acting as trap crop, and more.

**Polyculture:** many different types of crops being grown together, vs. monoculture only one crop. The increased diversity makes gardens and farms less susceptible to losing crop production, "not putting all of our eggs in one basket" even if several crops fail there are others as backup.

**Agroforestry:** a land management practice combining crops with trees and sometimes animals.

**Food Forests:** like Agroforestry but includes more layers like a natural forest.

**Identifying and Filling available niches:** working with nature (everything modifies its environment), observation

**Niches in Time:** natural succession, field to shrubs to climax forest, ex. radish in garden

**Niches in Space:** filling voids, "Nature abhors a vacuum" if there is bare ground nature will grow something there. If you are clearing areas it is vital that you chose what you want to grow in those areas or nature will chose for you. What else could grow here?

### Two Examples of a guilds at the Hawaiian Sanctuary

**1. Fruit tree establishment guild:** nitrogen fixing perennial peanut groundcover, crotalaria coppice, lemongrass border, pumpkin, tomato, pineapple, papaya, etc. Sometimes gliricidia at wider spacing 20+ feet as coppice.

**2. Banana guild:** avocado or coconut overstory, banana, chayote, edible hibiscus, okinawa spinach, turmeric, crotalaria/pigeon pea/gliricidia coppice, perennial peanut, hona hona.

**Forest Layers** (some examples are listed for each layer)

**Emergent Palms:** Tall Coconut, peach palm

**Overstory:** Avocado, breadfruit, breadnut, jackfruit, mango, malabar chestnut, pili nut

**Understory:** Banana, citrus, cacao, papaya,

**Shrubs:** Chaya, edible hibiscus, katuk, cassava

**Emergent Herbs:** chili pepper, taro, pineapple, eggplant, amaranth, turmeric, ginger

**Groundcovers:** perennial peanut, okinawa spinach, Brazilian spinach, pumpkin, sweet potato (with pig protection)

**Climbing Vines:** chayote, lilikoi, uhi, air potato

**Designing a successful Polyculture Food forest:** we need to know...

How tall, how wide, how long does it live, what are its needs (sun, partial sun, shade, fertility, drainage, moisture etc.) what are its management practices (eg. does it need to be pruned?)

**Further Reading:** “Permacopia vol.1 Endemic, indigenous & Polynesian plant species of Hawaii”

“Permacopia vol.2 An encyclopedia of plants for a sustainable future in Hawaii” D. Hunter Beyer

**Homework:** Identify plants in as many of the layers as possible. Look for niches that are unfilled, a empty fence, area without groundcover, think about what could grow there.

**Next Thursday:** January 26, 2017

Part 4. **Building Soil with Mulch & Nitrogen Fixers:**

Learn how to turn the “weed trees” and plants around you into food for the plants you want to grow using “chop and drop”. Nitrogen fixing coppice crops including, pigeon pea, crotolaria, ice cream bean, and gliricidia, will be covered.

Go to the Plant Aloha [webpage](#) or email: [plantaloha@hawaiiansanctuary.com](mailto:plantaloha@hawaiiansanctuary.com) to register for upcoming classes.

**Wade Bauer contact information:**

**Malama Aina Permaculture: Edible Landscape Design, Education & Nursery**

Consultation, Design, Install, Maintenance, Edible Plants & Work Exchange.

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Class handouts and links to further educational materials available on the

**Malama Aina Permaculture website:** [hawaii-permaculture-institute.weebly.com](http://hawaii-permaculture-institute.weebly.com)

**GROW FOOD**



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