

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

Part 12 of 24 **Staple Root Crops: Cassava, Taro, Sweet Potato & Uhi**

Acknowledgements: A special thanks to Hawaiian Sanctuary, County of Hawaii Research and Development and all others involved to make these classes a reality! We are still looking for support to complete and enhance this amazing FREE program. <http://hawaiiansanctuary.com/donate>

Introduction: Staple crops make up the base of our diet, supplying a large percentage of our energy and nutrient needs. In previous classes we covered the staple tree crops ulu, and green bananas. Taro, sweet potato, and uhi are canoe root crops that the polynesians brought with them to Hawaii. Cassava is a drought resistant tropical staple root crop worldwide.

Cassava:

Anatomy: Open shrub 8-10 ft

Niche in a Food Forest: Forest edge or clearings with full sun, can be an overstory for short term crops, such as daikon, bok choy, etc.

Varieties: There are bitter and non bitter varieties, non bitter are faster cooking and more popular, red stem, green stem and "yellow var. Exist locally.

Propagation: from woody cuttings 6 in long

Planting: often planted in mounds to make harvesting easier, 2-3 feet apart in rows 6-8 ft apart. Make sure to plant right side up (buds are above leaf scar).

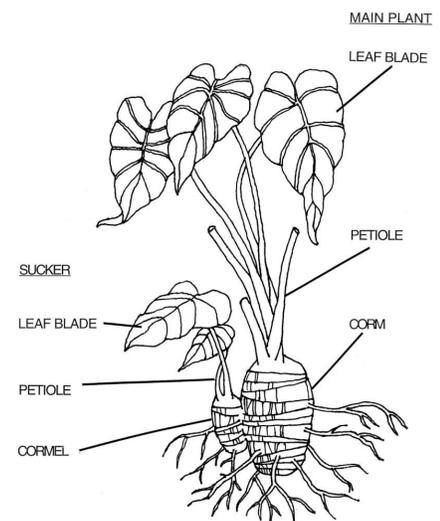
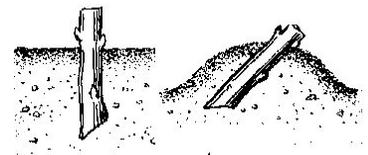
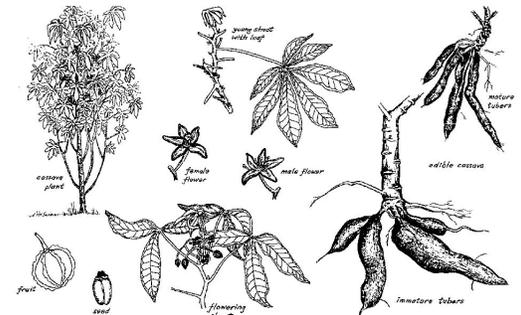
Cultivation: benefits from mulch and water but can produce on marginal soils and in drought conditions

Diseases / Pest Control: Needs protection from feral pigs. Few disease problems in Hawaii.

Harvest: After 9-12 months. A few roots can be harvested at a time to prolong harvest.

Usage: root: peel and boil, or bake, 45-60 min, Leaves cooked 1hr plus are nutritious

Storage & Preservation: Short shelf life of only a few days after harvest, can be frozen or made into flour. Can hold in the ground for a year, harvest a few roots at a time



Taro/Kalo in Hawaiian:

Anatomy: emergent herb 3 to 6 ft, root is called a corm.

Niche in a Food Forest: can tolerate partial shade so can be grown under and between many larger plants, commercially often grown in full sun.

Varieties: There is dry land taro and wet land taro. Many diverse Hawaiian varieties exist which need to be grown to be preserved. A few locally popular kinds are Lehua, Palauan, and Bunn Long a Chinese variety with a short cook time.

Propagation: from huli (top of plant) or side shoots, or cormlets (small corms)

Planting: planted 3-4 inches deep, mulch and fertilize well, 3ft apart in rows 4 ft apart

Cultivation: likes fertile moist soil so mulch deeply and fertilize for large corms.

Diseases / Pest Control: Needs pig protection. Leaves affected by a spot virus turn yellow then die, remove infected leaves and take away from patch.

Harvest: 10-14 months depending on variety and conditions.

Usage: Cook 20-60 minutes depending on variety, MUST COOK WELL or can irritate mouth and throat.

Storage & Preservation: shelf life about a week, refrigeration helps prolong, traditionally made into poi(cooked and mashed) and fermented.

Sweet Potato / 'Uala in Hawaiian:

Anatomy: Fairly aggressive sprawling vine, can climb.

Niche in a Food Forest: good groundcover(only when with pig protection) in full sun to partial shade.

Varieties: Yellow, orange, white and purple varieties are available, "Okinawan Purple" is popular locally.

Propagation: from tip cuttings 12 in long.

Planting: often planted in mounds or ridges, 6-12 inches apart in rows 3-4 ft apart

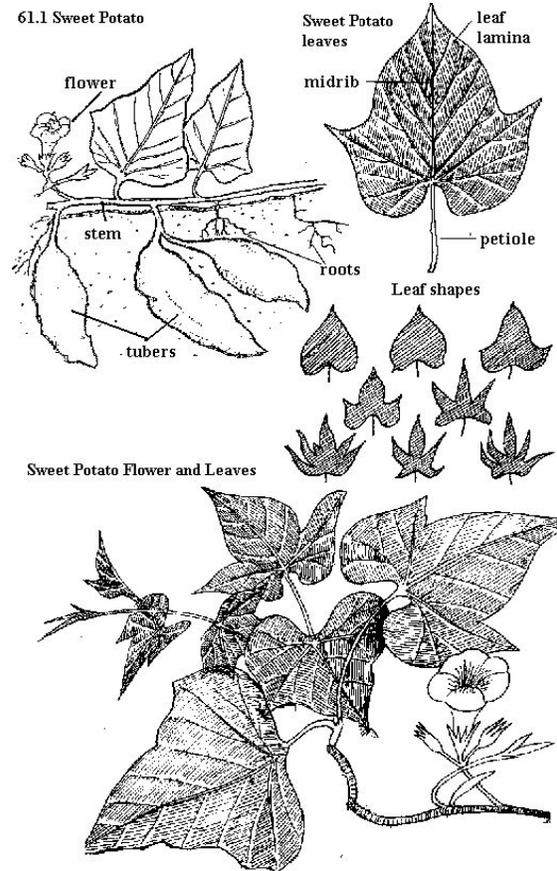
Cultivation: coiling vines back on themselves periodically makes for larger roots directly under plant, too much N = many vines and few roots.

Diseases / Pest Control: Needs pig protection. Rats can eat roots as well. Roots not dug can get borers.

Harvest: 3-6 months, need to be harvested when ready or will rot and be eaten by pests.

Usage: Quick cook time of 5-10 minutes, boil, steam, fry, etc. as a potato.

Storage & Preservation: Can keep for 1 to 2 months.



Yam / Uhi in Hawaiian: Dioscorea alata & other species

Anatomy: Vigorous climbing vine dies back at the end of growing season.

Niche in a Food Forest: Can be grown up ulu or other large trees.

Varieties: Dioscorea alata, Dioscorea esculenta "mountain yam", Dioscorea batatas, Dioscorea bulbifera(edible cultivar of air potato) WARNING: wild uncultivated air potato is bitter and poisonous and very invasive.

Propagation: From bulbils formed on the vine above ground, or from sections of root.

Planting: Need trellis, fence or other plants to climb.

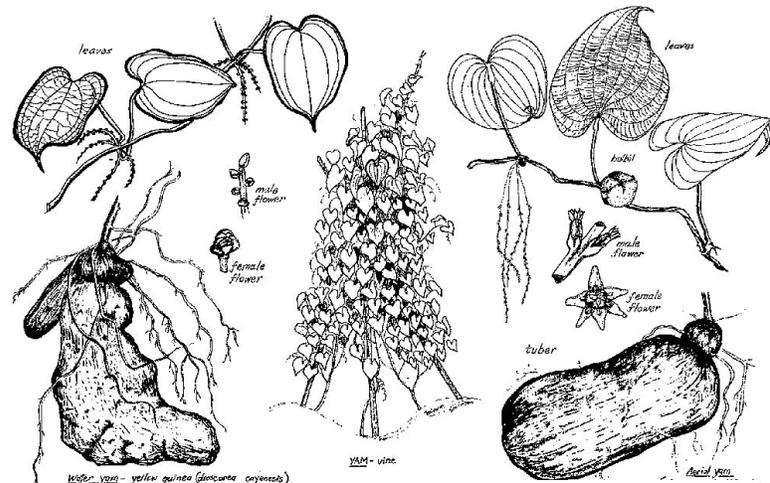
Cultivation: Mulch and fertilize for larger yields, can be very productive.

Diseases / Pest Control: Protect from pigs.

Harvest: After vines die back they are ready to harvest.

Usage: Cook like a potato, very similar in taste and texture.

Storage & Preservation: Roots store extremely well 2-6 months.



Further Reading: Specialty crops for pacific islands at agroforestry.org

Next Class April 6th Part 13. Staple Tree Crops (carb/protein mix): Peach Palm, Breadnut, Jackfruit & Malabar Chestnut. Common staple crops in their homelands perfectly suited to our environment. They deserve to be more widely grown and used here.

Contact: Malama Aina Permaculture: Edible Landscape Design, Education & Nursery
Providing consultation, design, install, maintenance and edible plants

Past class handouts available at Hawaii-Permaculture-Institute.weebly.com

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