

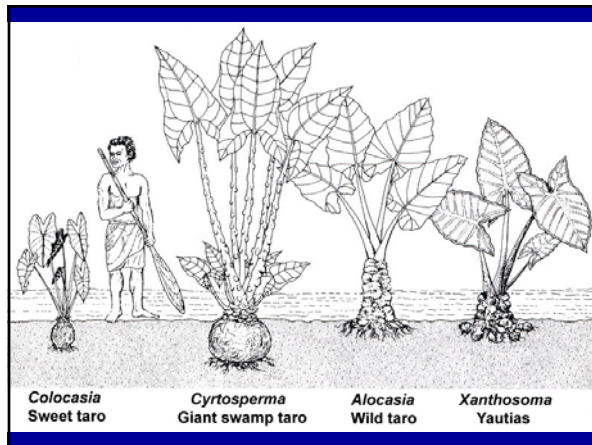


Lecture 27
Taro & Yam: Tropical Root Crops

Taro (Aroid family, Araceae)





The aroid family produced a number of important edible and ornamental plants.

The edible aroids are common food staples grown for their corms and leaves.

Corms are used as a starchy vegetable or to make a fermented product called poi.

Young leaves of *Colocasia* and *Xanthosoma* are edible. In Brazil the leafy material is separated from the veins and cooked as Portuguese cabbage (collards).

Taros are soft stem plants which grow in shady damp places and the swamps of the wetter tropics.

They are common in the Pacific islands of Oceania as a food crop.

All except *Xanthosoma* (new world) probably originated in southeast Asia and Indonesia.

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Alocasia macrorrhiza (Wild taro)

This is the most common species.

Corms are produced above ground.

Some types are high in calcium oxalate crystals which give a bitter taste and is irritating to the skin.

Used for hog feed but may be consumed by humans if no other food is available.

Harvest 12–18 months.

Cooking removes the oxalic acid.

Cyrtosperma chamessonis (Giant swamp taro)

Largest of taros; roots after 10–15 years often weight as much as 100–200 lb.

This is the taro of Micronesia.

Harvested after 1–4 years.

Is a prestige crop offered at feast, the bigger the tuber the more the honor.



Xanthosoma sagittifolium

Yautias, American taro, “new” cocoyam, also taro cong in New Guinea—incorrectly known as Chinese taro.

Has sagitate leaves.

Is increasingly grown in the Pacific.

Harvested in 6 months and can produce 8 t per acre.

Potato-like tubers are removed from around the mother plant.

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Colocasia esculenta (Sweet taro)

The New World name is “Dasheen”—a misnomer, which means “from China” (da Chin) in French.

The African name is Old Cocoyam.

The best tasting taros.

Common in many Pacific Islands.

The famous Hawaiian poi, (a fermented paste-like purple product made from sweet taro starch) is a major ingredients of Hawaiian luaus (pig feast).

Very digestible.

Has peltate leaves.

Harvested in 8–12 months and can produce 3–11 t corms per acre.

Does not store well.

Taro Production (2001)

Continent	1000 tonnes	Chief countries
World	8,976	
Africa	6,749	Nigeria (3,886), Ghana (1,700), Ivory Coast (365)
North America	23	Dominica (11), Trinidad Tobago (9), US (3)
South America	4	French Guiana
Asia	1,927	China (1,538), Japan (231), Philippines (97)
Oceania	273	Papua New Guinea (172), Fiji (38), Solomon (34)

Ecology

Adapted to the wet tropics, requires damp, shady places.

Daily average temperature of 70–80°F is required.

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Culture

Often grown in taro pits.

These are pits dug to the fresh water "lens" near the ocean.

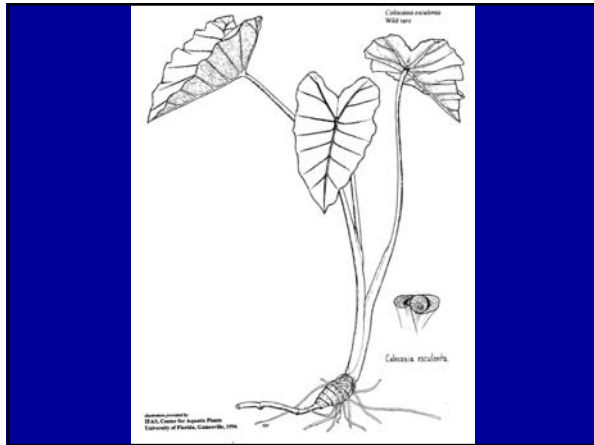
This is layer of fresh water that floats above the sea water in Islands.

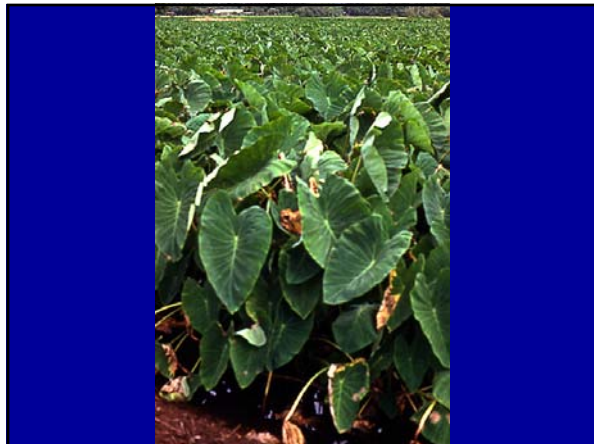
Some salt water seepage but taro can grown in brackish water.

Pits are weeded and organic matter, often mulch is added.

In dry land production cormlets of 6-month-old plants are planted in trenches.

On good to average soils with fertilization *Colocasia* and *Cyrtosperma* yields 12,000 to 15,000 lb. of corms/year.





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Yams, Dioscoreaceae

The true yams are any of the economically useful plants of the genus *Dioscorea* producing tubers or rhizomes, originating in the New and Old World.

Note: in the US moist types of sweetpotato are called yams, but this is a misnomer. The name reflects the African word *iyami* which originally referred to *Dioscorea*.



True yams are ubiquitous lowland tropical food plants; large scale cultivation is limited to West Africa, Southeast Asia including adjacent parts in tropical America especially the Caribbean, the Pacific islands of Oceania, and southeast Asia.

Also grown in China and Japan.

Yams are a staple foodstuff and also important as a secondary (famine) food.

Wild yams are also a source of pharmaceutically active steroidal compounds and offer a standby food in the presence of food scarcity.

There are at least 200 species of *Dioscorea* in the Pacific, many never fully described or classified.

In addition there are species native to both the Old and New World.

Old World Yams

D. alata (Water yam) Probably native to China.
 Propagated from planting root tops.
 Stems twine to right.

D. bulbifera (Air potato) Stem twines to left.

D. esculenta (Chinese yam)

New World Yams

D. trifida (Yempi)

D. cayenensis

There are also a number of wild, sapogenic-bearing *Dioscorea* used as precursors for steroidal drugs such as cortisone.

These include *D. composita*, and *D. floribunda*.

Tubers are harvested after 3–4 years.

At present source is wild tubers collected in Mexico but there has been some interest in cultivation.

***Dioscorea* Production (2001)**

Continent	1000 tonnes	Chief countries
World	38,614	
Africa	37,124	Nigeria (26,201), Ghana (3,670), Ivory Coast (3,000)
North America	431	Haiti (197), Jamaica (145), Costa Rica (18)
South America	549	Brazil (235), Colombia (226), Venezuela (88)
Asia	224	Japan (200), Philippines (24)
Europe	2	Portugal (2)
Oceania	283	Papua New Guinea (230), Solomon (30), New Caledonia (11)

Morphology

The yam plant is a deeply rooted, climbing, dioecious perennial vine with distinctly veined cordate leaves.

It is a monocot.

Roots vary from the size of potato to 100 lb.

The tubers are coarse, dry to mealy, tender, crisp, to mushy and are equivalent in food value to the potato.

Ecology and Culture

A tropical plants adapted to 70–80°F.

Requires high rainfall but can withstand more drought than cassava.

It is usually grown on trellises.

Seed pieces are the top part of the tuber where vine is attached.

Uses

Yams constitute a prestigious food in Pacific Islands- and culture is a prestigious activity.

Prestige increases with the size of the yam and ability to provide it in traditional feasts.

Yields up to 6 t/acre, but crop is locally consumed so world data has been limited.

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