



Upland Taro

Taro is an important food crop in Hawaii, the Pacific Islands, and Asian countries. In Hawaii, taro leaves are used as a vegetable in laulau, and taro corms are made into poi. Corms are also boiled, steamed, and baked, and may be fried to make chips. Taro can be grown under two distinctly different cultural management systems: upland (dryland) taro planted in non-flooded, rainfed areas, and lowland (wetland) taro grown in waterlogged or flooded fields. Much of the taro grown in Hawaii is wetland taro, but upland taro production is rapidly increasing. "Upland taro" includes all varieties or cultivars of *Colocasia esculenta*, commonly called taro, and *Colocasia esculenta* var. *globulifera*, locally called dasheen or araimo, that are planted under non-flooded conditions.

Soil

Upland taro can be grown on a wide range of soil types, but best results are obtained on deep, well drained, friable loams with pH 5.5–6.5. Rocky or stony soils should be avoided to prevent deformed corms and difficult harvesting.

Climate

Upland taro can be grown throughout the year in Hawaii. It is best adapted to a warm, moist environment. Evenly distributed rainfall is ideal. Supplemental irrigation is necessary in dry, low-rainfall areas.

Soil preparation

Soil preparation for upland taro is similar to that for most upland crops, such as corn. Existing vegetation is turned under with a moldboard or disc plow, or by spading. Incorporate phosphate fertilizer, if required, during cultivation; also, most soils benefit from adding compost. After a few days to allow for decomposition, break soil clods by harrowing or rotovating or, in small gardens, with a hoe or rake. After the soil has been pulverized, the surface may be smoothed in preparation for

planting. Upland taro can be planted on ridges, in furrows, or on flat ground. Prepare rows, and use a guide string to plant 18–24 inches apart within rows 18–24 inches apart.

Propagation

Planting materials called "huli" (sets) are prepared from suckers or main plants. These consist of the upper 1/8–1/4-inch section of the corms or cormels and the first 10–12 inches of the petioles. Dasheen also can be planted using hulis, but the small, unmarketable cormels are more commonly used. These are planted after the dormancy period, when shoots (sprouts) come out of the growing tips. Huli and cormels can be planted by hand, using hand trowels or "pineapple planters," to a depth of at least 6 inches in the ground.

Varieties

Several varieties of taro can be used for upland planting. The most common and easily accessible varieties in Hawaii are 'Lehua Maoli' and 'Bun Long'. 'Lehua Maoli' is an excellent "poi" taro, while 'Bun Long' is an excellent table taro that is also grown for making taro chips. Dasheen varieties are 'Tsurunoko', 'Miyako', and 'Akado'. A few unnamed dasheen varieties are also grown in Hawaii.

Fertilizers

Upland taro requires good soil fertility. For home gardens, apply a 7-30-20, 10-20-20, or similar analysis fertilizer at 2³/₄–3 lb per 100 square ft before planting. Broadcast the fertilizer over the soil surface and work it into the soil by harrowing, rotovating, or raking. At two, four, and six months after planting, apply 1 lb per 100 square ft area of 16-16-16 or similar fertilizer as side-dressing. Alternatively, side-dress with 1¹/₄ lb per 100 square ft three and six months after planting. These levels of fertilizer are based on results obtained on relatively poor (infertile) soils. For a fertilizer program more

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*Replaces Instant Information/Home Garden Vegetable Series no. 18, 1978, and CTAHR Fact Sheet HGV-18, January 1997.

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appropriate to your soil conditions, contact your local Cooperative Extension Service office to send soil samples to the CTAHR Agricultural Diagnostic Service Center for analysis and fertilizer recommendation.

Irrigation

Water availability can drastically affect the yield of upland taro. It thrives under moist soil conditions and can withstand prolonged waterlogging. Soils growing dasheen, on the other hand, should not be allowed to become waterlogged for any extended length of time. For best results, maintain soil moisture at or near field capacity (moist but fully drained) throughout the growing period. Irrigation water can be applied by furrow, sprinkler, or drip irrigation.

Weed control

Taro is very susceptible to weed competition, especially during the first 3–4 months after planting, when the leaf canopy is being formed. During this time, control weeds by hand pulling or cultivating with a hoe or other implement. After the crop has attained the maximum vegetative stage, the lush foliage will shade out weed growth, and cultivation for weed control should be minimized to avoid injuring the roots and the developing corms.

Pest and disease control

Several insects attack upland taro in Hawaii. The most common and important are the leafhoppers (*Tarophagus proserpina*) and aphids (*Aphis* spp.). These insects usually do not cause serious damage unless they are present in large numbers. They damage the taro plants by sucking sap from the petioles and leaf blades. Leafhopper damage can be distinguished by the presence of numerous brown to black spots on the petioles, caused by stains from sap that has oozed from puncture holes on the petioles. Aphids are easily observed on the young leaves. The taro root aphid, however, is not easily observed because it may be confined to the below-ground parts of the plant. Most taro insect pests can be controlled by spraying with insecticides*, but the taro root aphid is difficult to control in this way.

*Read any pesticide's label carefully to ensure that its use on taro/dasheen is allowed, and follow the label directions.

Among the diseases that affect upland taro in Hawaii, leaf blight caused by *Phytophthora colocasiae* is the most prevalent. Its incidence is influenced greatly by climatic conditions and is most serious during wet seasons. Its presence usually diminishes during the dry months of the year. To control leaf blight, apply fungicides*. A wetting agent (surfactant, or "sticker") is recommended for better leaf coverage of the fungicide*. Leaf blight can be recognized by the formation of purplish to brownish circular water-soaked spots on the surfaces of the leaves. A clear yellow liquid is exuded from the spot. Other diseases of upland taro are dry rot caused by *Sclerotium rolfsii* and phyllosticta leaf spot caused by *Phyllosticta colocasiophyla*. These can be serious in upland taro but seldom occur in well managed upland taro plantings.

Harvesting

Upland taro is ready for harvest 8–10 months after planting. As harvest time approaches, the leaves turn yellowish and the petioles are short, usually less than 2 ft long. The corms protrude from the ground. Dasheen is ready for harvest when all or most of the cormels have become dormant; that is, when the leaves have dried. Time of maturity varies with location, varieties used, soil fertility, and water availability. For home use, taro may be harvested as required over a period of several weeks. Dasheen can be harvested and stored for a considerable length of time. However, the corms should be thoroughly cleaned, washed, and drained before storage. Storage under refrigerated conditions will prolong the life of the corms. Poi taro cannot be stored for any considerable length of time without seriously impairing its quality, whether for poi or table use.

Leaves used for luau or laulau can be harvested at any time during the growth of the crop. Only the young leaves are harvested, and the taro is allowed to continue to grow.

Ramon S. de la Peña

Department of Agronomy and Soil Science

For more information about taro, order the CTAHR publications *Taro, Mauka to Makai* and *Taro Diseases: A Guide to Field Identification*. Call 808-956-7046 or send email to ctahrpub@hawaii.edu to request an order form. For more about the taro root aphid, request a free copy of CTAHR publication IP-1. On the World Wide Web, visit <http://www.ctahr.hawaii.edu>.