

**‘a‘ali‘i**

**OTHER COMMON NAMES:** ‘a‘ali‘i kū makani, ‘a‘ali‘i kū ma kua, kū-makani, hop bush, hopseed bush

**SCIENTIFIC NAME:** Dodonaea viscosa

**FAMILY:** Sapindaceae (soapberry family)

**NATURAL SETTING/LOCATION:** indigenous, pantropical species, found on all the main Hawaiian Islands except Kaho‘olawe; grows in a wide range of habitats from dunes at sea level up through leeward and dry forests and to the highest peaks

**CURRENT STATUS IN THE WILD IN HAWAI‘I:** common

**CULTIVARS:** female cultivars such as ‘Purpurea’ and ‘Saratoga’ have been selected for good fruit color

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**Growing your own**

**PROPAGATION**

**FORM:** seeds; semi-hardwood cuttings or air layering for selected color forms

**PREPLANTING TREATMENT:** step on seed capsule to release small, round, black seeds, or use heavy gloves and rub capsules vigorously between hands; put seeds in water that has been brought to a boil and removed from heat, soak for about 24 hours; if seeds start to swell, sow immediately; discard floating, nonviable seeds; use strong rooting hormone on cuttings

**PLANTING DEPTH:** sow seeds ¼” deep in medium; insert base of cutting 1–2” into medium

**GERMINATION TIME:** 2–4 weeks

**CUTTING ROOTING TIME:** 1½–3 months

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained is best; tolerant of dry conditions

**SOIL pH:** 5.5–6.5

**LIGHT:** full sun

**WATER:** moderately drought tolerant

**TEMPERATURE:** tolerates dry heat; temperature 32–90°F

**ELEVATION:** 10–7700’

**SALT TOLERANCE:** good (moderate at higher elevations)

**WIND RESISTANCE:** good

**MANAGEMENT**

**FERTILIZER NEEDS:** medium

**RECOMMENDED SPACING:** 6–8’ apart

**ADAPTATION TO GROWING IN CONTAINERS:** yes, 2-gallon tubs or larger

**PRUNING:** responds well to pruning; do not cut back into old wood; prune after fruiting period to shape or keep short; can be shaped into a small tree or maintained as a shrub, hedge, or espalier (on a trellis)

**SPECIAL CULTURAL HINTS:** male and female plants are separate, although bisexual plants can also be found; males produce no seed capsules; if a certain “variety” (i.e., leaf size, capsule color, etc.) is desired, it is probably best to grow from cuttings or air layering; although drought tolerant, it will shed leaves during extreme drought conditions

**SUGGESTED COMPANION PLANTINGS:** low native shrubs from dry to moist habitats, such as ferns, ‘ilima, ‘akia, kupukupu, pōhinahina, ilie‘e, ‘ūlei, kulu‘I
‘a‘ali‘i

Plant characteristics

HEIGHT: 6–24’
SPREAD: 6–15’
GROWTH RATE: moderate to fast
GROWTH HABIT: spreading shrub to small tree

SEED CAPSULES

(flowers are insignificant)
SIZE: ¼–5/8”
COLOR: ranges from white/tan to pink and deep burgundy
SHAPE: 2- to 5-winged
TIME TO FRUITING: fruits produced in 2nd year after outplanting

FOLIAGE

TEXTURE: leathery, shiny
COLOR: native forms have green foliage, cultivars have bronzy green to purplish-red foliage
SHAPE: spatula shaped with blunt or pointed tips
FRAGRANCE: none

PESTS

COMMON DISEASES: mycoplasma-dodo-naea yellow disease (virus-like), nematodes, powdery mildew, root rot
OTHER PESTS: ants, aphids, caterpillars, mealybugs, scales, slugs, spider mites

Harvesting considerations

WHAT IS HARVESTED: fruit (winged papery capsules) and leaves
HARVESTING TECHNIQUES: cut plant tips only
BEST TIME OF DAY TO HARVEST: early morning
BEST WAY TO TRANSPORT FROM PICKING AREA: cloth bag or cardboard box

Notes on lei making

BEST FOR WHICH TYPE OF LEI: neck, head, wrist, ankle, horse
CLEANING OF PLANT MATERIALS: cold water soak
STORING RAW LEI MATERIALS: store in cardboard box and refrigerate at 40°F for up to 14 days
PREPARING FOR USE IN LEI: clip off wrinkled, limp, or poor-quality areas before adding to lei
STORING A COMPLETED LEI BEFORE WEARING: soak in water for 5 minutes, drip dry, wrap in 3 sheets of damp newspaper, place in cardboard box or ti leaf pū‘olo (package), and refrigerate
PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY: air-dry; capsules keep their color if kept out of the sun

References and further reading

**Growing Plants for Hawaiian Lei**

### ‘ākia

**Other common names:** kauhi, Molo-ka’i osmanthus  
**Scientific name:** Wikstroemia uva-ursi  
**Family:** Thymelaeaceae (‘ākia family)  
**Natural setting/location:** endemic to Hawaiian Islands; rare to scattered on clay flats, ‘a’a lava, dry low elevations on Kaua‘i, O‘ahu, Moloka‘i, and Maui  
**Current status in the wild in Hawai‘i:** uncommon to rare in the wild; most commonly used in landscaping  
**Cultivars:** prostrate and upright forms are available

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### Growing your own

**Handling cautions:** ‘ākia bark and fruits may be poisonous; sap burns skin and eyes

#### Propagation

**Form:** seeds; semi-hardwood tip cuttings; air layering  
**Preplanting treatment:** remove seeds from pulp, soak in water for 24 hours, discard nonviable floating seeds, and start in full sun with 1–2 seeds per container; select semi-mature tip cuttings and treat with medium rooting hormone  
**Planting depth:** sow seed ¼–½” deep in medium; insert base of cutting 1–2” into medium  
**Germination time:** 1–12 months  
**Cutting rooting time:** 7–8 weeks under periodic mist

#### Preferred production conditions

**General soil characteristics:** well drained  
**Soil pH:** 6.5  
**Light:** full sun  
**Water:** keep dry  
**Temperature:** 65–90°F  
**Elevation:** 10–1500’  
**Salt tolerance:** good  
**Wind resistance:** good

#### Management

**Fertilizer needs:** medium  
**Recommended spacing:** a minimum of 12” apart in rows such that a person can reach middle of plants  
**Adaptation to growing in containers:** yes, from 6” pots to large display pots and planter boxes

**Pruning:** can be kept shaped but drastic pruning may cause dieback; light heading back may be necessary  
**Special cultural hints:** avoid waterlogged soils; once established, keep on the dry side; not all plants produce fruits; propagate ripe fruits (red ones); plants from seed vary in growth form

**Suggested companion plantings:** low native shrubs from dry to moist habitats such as ferns, ‘ilima, ‘a‘ali‘i, kupukupu, pōhinahina, ilie‘e, ‘ūlei, kului
"ākia"

**Plant characteristics**

**HEIGHT:** 2–5’

**SPREAD:** 2–5’

**GROWTH RATE:** slow to establish

**GROWTH HABIT:** dense, spreading or sprawling shrub

**FLOWERS**

**SIZE:** to ½”

**COLOR:** yellow-green

**SHAPE:** tubular, four-part

**FRAGRANCE:** yes, resembling honey-suckle

**FLOWERS IN FIRST YEAR:** no; plants from cuttings will flower faster than seedlings (2–3 years)

**FLOWERING PERIOD:** year-round

**TIME TO FLOWERING:** 12–18 months to flowering and 2–3 years to harvestable size

**INDUCING AND MAINTAINING FLOWERING:** not known; flowering can occur year-round without special treatment if plant is not under stress

**FOLIAGE**

**TEXTURE:** waxy

**COLOR:** pale green; selected forms are dense with blue-green foliage

**SHAPE:** small, oval, short-stemmed

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** root rot, root-knot nematode

**OTHER PESTS:** scales, snails, slugs

**Harvesting considerations**

**WHAT IS HARVESTED:** branch tips, flowers, fruit

The lei shown also contains ‘a’ali‘i, pū‘ikiawe, ‘ūle‘i, palapalai, and ‘ōhi‘a lehua.

**Harvesting techniques:** pull and twist or cut

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** cloth bag

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle

**CLEANING OF PLANT MATERIALS:** cold water soak

**STORING RAW LEI MATERIALS:** place branch tips and flowers in water for 5 minutes before storing in ti leaf pū‘olo (package) or cardboard box for up to 7 days; place fruit in plastic container and store for up to 14 days; refrigerate at 40°F

**PREPARING FOR USE IN LEI:** clip off wrinkled, limp, or poor-quality areas before adding to lei; if sewing fruit, clip all stems; flowers and fruits can be used together or separately

**STORING A COMPLETED LEI BEFORE WEARING:** soak lei, drip dry and refrigerate; lei can be stored in ti leaf pū‘olo or cardboard box; fruit can be stored in plastic container

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** cannot be preserved

**References and further reading**


Rauch, Fred D., and David Hensley. 1997. “‘Ākia.” University of Hawai‘i, CTAHR, OF-12.


Growing Plants for Hawaiian Lei

**hala**

**Other Common Names:** pandanus, pū hala, screw pine, walking fences

**Scientific Name:** *Pandanus tectorius*

**Family:** Pandanaceae (screw pine family)

**Natural Setting/Location:** indigenous to the Hawaiian Islands; found in the lower forest areas and along the wetter shorelines on all main islands except Kaho’olawe; also native throughout Polynesia and Oceania

**Current Status in the Wild in Hawai‘i:** common

**Cultivars:** mostly variegated forms used in landscaping; smooth-leaf variety recommended for ease of harvesting

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**Growing your own**

**Handling Caution:** most green forms have sharp, saw-toothed leaves

**Propagation**

**Form:** seeds; cuttings (large stem cuttings may be used)

**Preplanting Treatment:** separate the fruit segments, soak seeds in water for 24 hours; no rooting hormone needed for cuttings

**Planting Depth:** sow seeds on surface; plant base of cutting vertically 3–4” into medium or place cutting into medium at a nearly horizontal angle, leaving the top exposed

**Germination Time:** 3–5 months

**Cutting Rooting Time:** 3 months

**Preferred Production Conditions**

**General Soil Characteristics:** well drained best; tolerant of a wide range of soils including coral sands

**Soil pH:** 6.5–7.0

**Light:** full sun

**Water:** drought tolerant but thrives in areas where groundwater is present

**Temperature:** 60–90°F

**Elevation:** 10–2000’

**Salt Tolerance:** good

**Wind Resistance:** good

**Management**

**Fertilizer Needs:** heavy

**Recommended Spacing:** 20–30’ apart in landscape, 4–5’ apart if managed for foliage

**Adaptation to Growing in Containers:** yes, will grow in just about any container, but quickly develops into a large plant

**Pruning:** head back (cut back) to keep within picking height; remove yellow and brown leaves

**Special Cultural Hints:** male and female flowers are produced on different trees (dioecious); male trees have drooping clusters of very fragrant male flowers called hina-no; female trees have compact greenish heads of female flowers that mature into the pineapple-shaped composite fruit

**Suggested Companion Plantings:** ‘ūlei, ‘ākia, ‘ilima, ma’o, loulu, naupaka kahakai, ‘ōhi’a lehua, ferns
**Plant characteristics**

**HEIGHT:** to 30’

**SPREAD:** to 20’ (wide-branched)

**GROWTH RATE:** moderate

**GROWTH HABIT:** open, round-headed tree with stilt-like props

**FLOWERS**

**SIZE:** male inflorescence 1’ long surrounded by narrow bracts, female flower insignificant

**COLOR:** white

**SHAPE:** male flower spikes oblong, female spherical

**FRAGRANCE:** yes, male flowers

**FLOWERS IN FIRST YEAR:** no

**FLOWERING PERIOD:** male trees flower about every 60 days, female trees flower about 1–3 times per year

**TIME TO FLOWERING:** ~7 years from seed, 1 year from cutting

**FOLIAGE**

**TEXTURE:** leathery, tough, with saw-toothed edges

**COLOR:** dark green to variegated yellow and green

**SHAPE:** sword-shaped leaves up to 6’ long, prickles on margins and midrib

**FRUIT**

**SIZE:** fruit ~8”, fruitlets 1–2” long

**COLOR:** green to yellow, orange, red

**SHAPE:** fruitlets wedge-shaped

**FRAGRANCE:** woodsy

**PESTS**

**COMMON DISEASES:** none

**OTHER PESTS:** ants, mealybugs, mosquitoes, rats, scales, whiteflies

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**Harvesting considerations**

**WHAT IS HARVESTED:** fruits, leaves, male flowers

**Harvesting Techniques:** pull leaves, do not cut; cut fruits; wear gloves

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** cloth bag

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**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**VASE LIFE:** 1 month for leaves, 3 weeks for fruits, 4 days for flowers

**CLEANING OF PLANT MATERIALS:** spray flowers and leaves with water; soak fruits in lemon (or lime) water for 5 minutes

**STORING RAW LEI MATERIALS:** flowers and fruits can be refrigerated at 40°F for up to 7 days, leaves for up to 30 days

**PREPARING FOR USE IN LEI:** clip flowers and leaves before sewing; break fruitlets from fruit, pierce, and sew

**STORING A COMPLETED LEI BEFORE WEARING:** mist flowers and leaves with water and store in paper box; place fruits in sealed plastic container or bag without misting; refrigerate

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**Preserving a Lei for Long-term Storage or Display:** air-dry

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**References and further reading**


**hinahina**

**OTHER COMMON NAMES:** beach heliotrope, hinahina kūkahakai

**SCIENTIFIC NAME:** *Heliotropium anomalum* var. *argentum*

**FAMILY:** Boraginaceae  
(borage family)

**NATURAL SETTING/LOCATION:** shoreline areas; *H. anomalum* is widely distributed throughout Polynesia; *H. anomalum* var. *argentum* is endemic, occurs in sandy coastal sites on Ni‘ihau, Kaua‘i, O‘ahu, and Moloka‘i but is apparently rare on Maui and Hawai‘i

**CURRENT STATUS IN THE WILD IN HAWAI‘I:** scattered to locally common

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**Growing your own**

**PROPAGATION**

**FORM:** seeds; tip or hard stem cuttings 2–3” long

**PREPLANTING TREATMENT:** no seed treatment needed; no rooting hormone needed for cuttings, but misting helps

**PLANTING DEPTH:** sow seeds on surface of medium; insert base of cutting 1–2” into medium

**GERMINATION TIME:** 1–3 months

**CUTTING ROOTING TIME:** 2–4 weeks

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** sandy, porous

**SOIL pH:** 6.0–7.5

**LIGHT:** sunny location

**WATER:** moderate to light

**TEMPERATURE:** 60–90°F

**ELEVATION:** 10–900’

**SALT TOLERANCE:** good

**WIND RESISTANCE:** good

**MANAGEMENT**

**FERTILIZER NEEDS:** light

**RECOMMENDED SPACING:** 3–5’ on center

**ADAPTATION TO GROWING IN CONTAINERS:** yes, 6–8” plastic pots

**PRUNING:** will improve appearance, but not required for production purposes

**SPECIAL CULTURAL HINTS:** keep on well-lit, dry side; too much shade or water makes plant leggy and not as silvery; root rot usually results from overwatering and waterlogged soil

**SUGGESTED COMPANION PLANTINGS:** native coastal plants such as ‘īlima, ma‘o, naupaka kahakai, nehe, pōhinahina, ‘ākia, hala
**hinahina**

### Plant characteristics

**HEIGHT:** 6–18"

**SPREAD:** 3–5'

**GROWTH RATE:** moderate

**GROWTH HABIT:** low, mat-like

#### FOLIAGE

**TEXTURE:** silky and soft with flat-lying hairs

**COLOR:** gray green to silver

**SHAPE:** semi-succulent, sword-shaped; wider near the tip than the base

**FRAGRANCE:** mild

#### PESTS

**COMMON DISEASES:** root rot, nematodes

**OTHER PESTS:** ants, aphids, mealybugs, thrips

### Harvesting considerations

**WHAT IS HARVESTED:** leaves, flowers

**HARVESTING TECHNIQUES:** pick carefully or cut

**BEST TIME OF DAY TO HARVEST:** any time

**BEST WAY TO TRANSPORT FROM PICKING AREA:** brown paper bag

**AVOID CONTACT WITH THESE PRODUCTS:** smoke, car exhaust, ripening fruits, wilting flowers

### Notes on lei making

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**CLEANING OF PLANT MATERIALS:** cold water dip

**STORING RAW LEI MATERIALS:** wrap in dry newspaper, place in a sealed plastic container, and refrigerate at 40°F for up to 14 days

**PREPARING FOR USE IN LEI:** clip off wrinkled, limp, or poor-quality areas before adding to lei

**STORING A COMPLETED LEI BEFORE WEARING:** wrap lei in dry newspaper, place in a sealed plastic container, and refrigerate

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

### References and further reading


The bottom lei shown also contains ti.
Growing Plants for Hawaiian Lei

‘ilima

**OTHER COMMON NAMES:** ‘ilima papa

**SCIENTIFIC NAME:** *Sida fallax*

**FAMILY:** Malvaceae (mallow family)

**NATURAL SETTING/LOCATION:** indigenous to Hawaiian Islands and widespread throughout Pacific islands to China; found in coastal areas, arid lava fields, and dry to mesic (medium-wet) forests; the official flower of the City and County of Honolulu

**CURRENT STATUS IN THE WILD IN HAWAI‘I:** common

**CULTIVARS:** ‘ilima-lei; ‘ilima-ku-kula; ‘ilima-ku-kahakai (‘ilima papa); ‘ilima-koli-kukui

Growing your own

**PROPROPAGATION**

**FORM:** seeds; cuttings

**PREPLANTING TREATMENT:** soak seeds in water that has been brought to a boil and removed from heat, let sit for about 8–24 hours; use medium rooting hormone on cuttings

**PLANTING DEPTH:** sow seeds ¼" deep in medium; insert base of cuttings 1–2" into medium

**GERMINATION TIME:** 1–3 months

**CUTTING ROOTING TIME:** 1–3 months

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained

**SOIL pH:** to 7.5

**LIGHT:** sunny location

**WATER:** dry (beach form) to moderate (upland form)

**TEMPERATURE:** 60–90°F

**ELEVATION:** 10–2000'

**SALT TOLERANCE:** good (moderate for higher elevations)

**WIND RESISTANCE:** good

**MANAGEMENT**

**FERTILIZER NEEDS:** light

**RECOMMENDED SPACING:** 2–4' apart, depending on growth form

**ADAPTATION TO GROWING IN CONTAINERS:** yes, 1-gallon pots or large planters

**PRUNING:** head back (cut back) to maintain size and shape and induce more flowering branches, but not too severely; prune dead wood

**SPECIAL CULTURAL HINTS:** requires good drainage, high sunlight, and minimal fertilization, especially with N; plants grown from seed will have leaf, flower, and habit variations; many variations naturally occur, therefore care should be taken to select the correct type to meet specific needs

**SUGGESTED COMPANION PLANTINGS:** ‘ākia, hinahina, pōhinahina, ma’o
Growing Plants for Hawaiian Lei

**Plant characteristics**

**HEIGHT:** 6”–7’

**SPREAD:** depends on type; upright 3–6’

**GROWTH RATE:** fast

**GROWTH HABIT:** many plant and flower forms; shrub shapes vary from low growing and sprawling to erect, dense to sparse

**FLOWERS**

**SIZE:** ¼–¾”

**COLOR:** yellow-orange, reddish brown

**SHAPE:** round, cup-shaped; rotate, petals broadly obovate

**FRAGRANCE:** none

**FLOWERS IN FIRST YEAR:** yes

**FLOWERING PERIOD:** year-round

**TIME TO FLOWERING:** 3–4 months

**INDUCING AND MAINTAINING FLOWERING:** remove spent flowers

**PESTS**

**COMMON DISEASES:** root rot, leaf spot (rust fungus), lesion and reniform nematodes, damping off of seedlings

**OTHER PESTS:** ants, aphids, scales, slugs, snails (in wet areas), thrips, whiteflies

**Harvesting considerations**

**WHAT IS HARVESTED:** flowers

**HARVESTING TECHNIQUE:** pull carefully to avoid bruising

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** cardboard box

**AVOID CONTACT WITH THESE PRODUCTS:** smoke, car exhaust, ripening fruits, wilting flowers

The lei shown also contains ti.

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle

**CLEANING OF PLANT MATERIALS:** no water

**STORING RAW LEI MATERIALS:** wrap in dry tissue paper, place in cardboard box, and refrigerate at 40°F for up to 2 days; no water

**PREPARING FOR USE IN LEI:** take calyx (green, leafy base) off, then sew; if using calyx and flowers, remove lower leaves, leaving 4 or 5 with flower buds

**STORING A COMPLETED LEI BEFORE WEARING:** wrap lei in dry tissue paper, place in cardboard box, and refrigerate; no water

**PRESEVERING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

**References and further reading**


kauna‘oa

**OTHER COMMON NAMES:** kauna‘oa, kauna‘oa kahakai, kauna‘oa lei (endemic); kauna‘oa-pehu (indigenous); western field dodder (introduced); dodder

**SCIENTIFIC NAME:**
- *Cuscuta sandwichiana* (endemic);
- *Cassytha filiformis* (indigenous);
- *Cuscuta campestris* (introduced)

**FAMILY:** Cuscutaceae (dodder family) (*Cuscuta*); Lauraceae (laurel family) (*Cassytha*)

**NATURAL SETTING/LOCATION:** kauna‘oa kahakai is found in coastal areas on all the main Hawaiian Islands; kauna‘oa-pehu is found in lowlands

**CURRENT STATUS IN THE WILD IN HAWA‘I:** scattered to locally common

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**Growing your own**

**HANDLING CAUTIONS:** may irritate eyes

**PROPAGATION**

**FORM:** seeds; stem segments placed on plants will attach to and parasitize them

**PREPLANTING TREATMENT:** remove seeds from pulp and rinse

**PLANTING DEPTH:** surface-sow seeds

**CUTTING ROOTING TIME:** plant is rootless

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** sandy or rocky soil, cinders, or tree bark of host plant

**LIGHT:** full sun

**WATER:** keep moist

**TEMPERATURE:** heat tolerant, 75–90°F

**ELEVATION:** 10–300’

**SALT TOLERANCE:** good

**WIND RESISTANCE:** good

**MANAGEMENT**

**FERTILIZER NEEDS:** fertilize host plant; spray parasite with weak foliar formulation

**ADAPTATION TO GROWING IN CONTAINERS:** can parasitize a container-grown host

**PRUNING:** break off unwanted growth

**SPECIAL CULTURAL HINTS:** needs host plant; may kill host plant if left unchecked

**SUGGESTED COMPANION PLANTINGS:** grows on many native and introduced plants; legumes are good hosts; *C. sandwichiana* may prefer woody shrubs or trees with bushy growth habit, such as noni
kaunaʻoa

**Plant characteristics**

**HEIGHT:** will layer upon itself up to 4” thick

**SPREAD:** unlimited

**GROWTH RATE:** rapid

**GROWTH HABIT:** parasitic vine

**FOLIAGE**

**TEXTURE:** filamentous stems (no leaves)

**COLOR:** stems slender, yellow to orange, lack chlorophyl

**SHAPE:** stringy

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** none known; can transmit viruses to host plants

**OTHER PESTS:** none known

**Harvesting considerations**

**WHAT IS HARVESTED:** vines

**HARVESTING TECHNIQUES:** cut

**BEST TIME OF DAY TO HARVEST:** any time

**BEST WAY TO TRANSPORT FROM PICKING AREA:** brown paper bag

**AVOID CONTACT WITH THESE PRODUCTS:** smoke, car exhaust, ripening fruits, wilting flowers

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**CLEANING OF PLANT MATERIALS:** cold water soak, drip dry

**STORING RAW LEI MATERIALS:** wrap in dry newspaper, store in plastic container, and refrigerate at 40°F for up to 10 days for Cassytha filiformis and 2 days for Cuscuta sandwichiana; no water

**PREPARING FOR USE IN LEI:** remove other plant material that it was growing on; Cuscuta sandwichiana tends to be more woody so harder to work with than Cassytha filiformis

**STORING A COMPLETED LEI BEFORE WEARING:** wrap lei in dry newspaper, store in plastic container, and refrigerate. no water

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

**References and further reading**


Growing Plants for Hawaiian Lei

**kou**

**OTHER COMMON NAMES:** cordia  
**SCIENTIFIC NAME:** Cordia subcordata  
**FAMILY:** Boraginaceae (borage family)  
**NATURAL SETTING/LOCATION:** Polynesian introduction, native of Malaysia; found on Kaua‘i, O‘ahu, Maui, and Hawai‘i

**CURRENT STATUS IN THE WILD IN HAWAI‘I:** naturalized in a few dry coastal areas; commonly used in landscaping

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**Growing your own**

**PROPAGATION**

**FORM:** seeds (almost always seed-propagated); cuttings  
**PREPLANTING TREATMENT:** soak fruits in water for 48 hours; use medium rooting hormone on cuttings  
**PLANTING DEPTH:** sow seeds on surface to ½" deep; plant base of cutting 1–2" into medium  
**GERMINATION TIME:** 20–50 days, ready to plant in the garden in 8 months

**REFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained  
**SOIL pH:** 6.0–7.5  
**LIGHT:** full sun  
**WATER:** drought tolerant, tolerates semi-moist conditions  
**TEMPERATURE:** 60–90°F  
**ELEVATION:** 10–2000’

**SALT TOLERANCE:** good  
**WIND RESISTANCE:** good

**MANAGEMENT**

**FERTILIZER NEEDS:** heavy  
**RECOMMENDED SPACING:** 10–15’ apart minimum  
**ADAPTATION TO GROWING IN CONTAINERS:** not recommended  
**PRUNING:** prune to reduce size and induce lower branches

**SPECIAL CULTURAL HINTS:** its hardwood is highly valued; may hybridize with geiger tree (Cordia sebestana), producing intermediate fruits, foliage, and flowers  
**SUGGESTED COMPANION PLANTINGS:** low-growing plants such as ferns, kupukupu, ‘i‘lima, ‘ākia, naupaka kahakai, hina, and hala
**kou**

**Plant characteristics**

- **Height:** 15–25'
- **Spread:** 6–20'
- **Growth Rate:** fast
- **Growth Habit:** small, erect, evergreen tree

**Flowers**

- **Size:** 1–2" in diameter
- **Color:** apricot-orange
- **Shape:** funnel-shaped
- **Fragrance:** none
- **Flowers in First Year:** no
- **Flowering Period:** year-round
- **Time to Flowering:** 2–3 years
- **Inducing and Maintaining Flowering:** flowers throughout the period of vegetative growth

**Pests**

- **Common Diseases:** none serious
- **Other Pests:** kou was once very common along the shorelines of Hawai‘i; it became very rare in the late 1800s due to the impact of introduced pests such as the kou leafworm (*Ethmia nigroapicella*); isolated trees can be seriously defoliated by this caterpillar, especially along windy coastal areas; seed-attacking weevils can also be a problem

**Harvesting considerations**

- **What is harvested:** flowers
- **Harvesting Techniques:** pick flowers that have fallen to the ground
- **Best Time of Day to Harvest:** morning, when flowers have freshly fallen

**Notes on lei making**

- **Best for Which Type of Lei:** neck, head, wrist, ankle
- **Cleaning of Plant Materials:** no water
- **Storing Raw Lei Materials:** place in cardboard container and refrigerate at 40°F for up to 2 days; no water
- **Preparing for Use in Lei:** choose flowers that are fully open
- **Storing a Completed Lei Before Wearing:** wrap lei in tissue paper, place in cardboard container, and refrigerate; no water
- **Preserving a Lei for Long-Term Storage or Display:** air-dry

**References and further reading**


Growing Plants for Hawaiian Lei

**kukui**

**OTHER COMMON NAMES:** candelnut tree (the official state tree of Hawai‘i and flower of Moloka‘i)

**SCIENTIFIC NAME:** *Aleurites moluccana*

**FAMILY:** Euphorbiaceae (spurge family)

**NATURAL SETTING/LOCATION:** native to Malaysia; Polynesian introduction, widespread on all main Hawaiian Islands except Kaho‘olawe

**CURRENT STATUS IN THE WILD IN HAWAI‘I:** common in mesic (medium-wet) valleys

**CULTIVARS:** many plant types, varying in seed and leaf type and shape and tree size

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**Growing your own**

**HANDLING CAUTIONS:** sap may cause irritation

**PROPAGATION**

**FORM:** seeds; volunteer seedlings can easily be transplanted

**PREPLANTING TREATMENT:** scarify seed (scratch seedcoat with file), soak in water for 24 hours

**PLANTING DEPTH:** sow 1” deep in medium

**GERMINATION TIME:** 1 month

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained

**SOIL pH:** 5.0–7.5

**LIGHT:** semi-shady to full sun

**WATER:** keep moist

**TEMPERATURE:** 50–90°F

**ELEVATION:** 10–2000’

**SALT TOLERANCE:** good (moderate at higher elevations)

**WIND RESISTANCE:** moderate

**MANAGEMENT**

**FERTILIZER NEEDS:** heavy

**RECOMMENDED SPACING:** 25–30’ apart

**ADAPTATION TO GROWING IN CONTAINERS:** not recommended

**PRUNING:** prune to reduce size; tree will naturally shed lower branches while growing, most likely in response to shading

**SPECIAL CULTURAL HINTS:** allow plenty of space between plants; extra maintenance required during season when abundant fruits drop

**SUGGESTED COMPANION PLANTINGS:** plant shade-loving species underneath (palapalai and maile)
kukui

Plant characteristics

**HEIGHT:** 30–60’

**SPREAD:** to 25’

**GROWTH RATE:** moderate to fast

**GROWTH HABIT:** tree with round canopy

**FLOWERS**

**SIZE:** clusters to 10”

**COLOR:** white

**SHAPE:** tubular in clusters

**FRAGRANCE:** none

**FLOWERS IN FIRST YEAR:** no

**FLOWERING PERIOD:** seasonal to year-round

**TIME TO FLOWERING:** 3–4 years

**FOLIAGE**

**TEXTURE:** smooth on top, fuzzy underneath, and covered with whitish down

**COLOR:** pale green to green

**SHAPE:** variable, broadly pointed to narrow, maple-leaf shaped

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** fungal leaf spots and root-knot nematodes

**OTHER PESTS:** ants, mealybugs, scales

Harvesting considerations

**WHAT IS HARVESTED:** flowers and leaves with 1–2” stem (seeds also are used in lei, but this is not covered here)

**HARVESTING TECHNIQUES:** cut

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** plastic bag or container

Notes on lei making

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**VASE LIFE:** 3 days for flowers, 7 days for leaves

**CLEANING OF PLANT MATERIALS:** cold water soak

**STORING RAW LEI MATERIALS:** place leaves on a damp paper towel and store in a plastic container; pick partially open flowers, soak in water for 5 minutes, wrap in paper towels, and place in sealed plastic container; refrigerate at 40°F, 7–14 days

**PREPARING FOR USE IN LEI:** choose small leaves and buds

**STORING A COMPLETED LEI BEFORE WEARING:** soak lei in water, drip dry, wrap in damp newspaper, place in cardboard or plastic container, and refrigerate

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

References and further reading


**kuluʻī**

**OTHER COMMON NAMES:** none

**SCIENTIFIC NAME:** *Nototrichium sandwicense*

**FAMILY:** Amaranthaceae (amaranth family)

**NATURAL SETTING/LOCATION:** endemic to Hawaiian Islands; found in dry forest and lava fields on all main islands; rare on Oʻahu

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**CURRENT STATUS IN THE WILD IN HAWAIʻI:** scattered to sometimes common

**CULTIVARS:** there is typically only one cultivar found in nurseries, but over 20 varieties have been described

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**Growing your own**

**PROPAGATION**

**FORM:** seeds; cuttings 4–6" long are generally easier and faster than seeds

**PREPLANTING TREATMENT:** treat cutting with medium rooting hormone

**PLANTING DEPTH:** sow seeds on surface or slightly (¼") below; plant base of cutting 1–2" deep in medium (perlite and vermiculite)

**GERMINATION TIME:** 1–3 months

**CUTTING ROOTING TIME:** 2–4 weeks, 2–3 weeks with rooting hormone under mist

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**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained, rocky

**SOIL pH:** 6.5–7.0

**LIGHT:** from shade to sunny location (depends on biotype)

**WATER:** keep dry, tolerates moisture

**TEMPERATURE:** 50–90°F

**ELEVATION:** 10–2500' or more

**SALT TOLERANCE:** moderate to poor

**WIND RESISTANCE:** good

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**MANAGEMENT**

**FERTILIZER NEEDS:** medium

**RECOMMENDED SPACING:** 5–6’ apart

**ADAPTATION TO GROWING IN CONTAINERS:** yes, plastic pots or large planters

**PRUNING:** older plants may become straggly; prune to manage size and shape and stimulate vigorous new shoots

**SPECIAL CULTURAL HINTS:** additional careful fertilizing will create larger leaves and longer petioles

**SUGGESTED COMPANION PLANTINGS:** ‘ākia, maʻo
**Plant characteristics**

**HEIGHT:** 3–15’  
**SPREAD:** 5–10’  
**GROWTH RATE:** moderate  
**GROWTH HABIT:** spreading, multi-stemmed shrub to small tree

**FLOWERS**

**SIZE:** spikes ½–3” long (to 5”), ⅛–¼” diameter  
**COLOR:** white  
**SHAPE:** spikes with many flowers  
**FRAGRANCE:** none  
**FLOWERS IN FIRST YEAR:** no  
**FLOWERING PERIOD:** summer  
**TIME TO FLOWERING:** 2 years

**FOLIAGE**

**TEXTURE:** densely hairy  
**COLOR:** silvery to green  
**SHAPE:** elliptic to lance-shaped  
**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** root rot  
**OTHER PESTS:** ants, mealybugs, scales

**Harvesting considerations**

**WHAT IS HARVESTED:** leaves, flower spikes  
**HARVESTING TECHNIQUES:** cut  
**BEST TIME OF DAY TO HARVEST:** early morning  
**BEST WAY TO TRANSPORT FROM PICKING AREA:** brown paper bag

The lei shown also contains ‘a’ali‘i, ‘ōhi’a lehua, pala‘ā, and cup-and-saucer plant.

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse  
**CLEANING OF PLANT MATERIALS:** cold water soak  
**STORING RAW LEI MATERIALS:** soak in water for 5 minutes, drip dry, wrap in dry newspaper, and refrigerate in paper box at 40°F for up to 10 days  
**PREPARING FOR USE IN LEI:** clip off the wrinkled, limp, or poor-quality areas before adding to lei  
**STORING A COMPLETED LEI BEFORE WEARING:** soak lei in water, drip dry, place in paper box, and refrigerate  
**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

**References and further reading**


kupukupu / sword fern

**OTHER COMMON NAMES:** ʻōkupukupu, niʻaniʻau

**SCIENTIFIC NAME:** Nephrolepis cordifolia

**FAMILY:** Nephrolepidaceae (sword fern family)

**NATURAL SETTING/LOCATION:** tropics; indigenous to Hawaiian Islands in dry to wet forests and lava fields

**CURRENT STATUS IN THE WILD IN HAWAIʻI:** common

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**Growing your own**

**PROPAGATION**

**FORM:** divisions; spores; tissue culture

**PREPLANTING TREATMENT:** remove old leaves and bulbs from division

**PLANTING DEPTH:** sow spores on surface; with divisions, keep root crown just below soil level

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** moist, well drained; tolerates a range of soil and climatic conditions but generally likes cool, moist, shady locations; can grow in the soil or on lava, tree trunks, or hāpuʻu

**SOIL PH:** 5.5–6.5

**LIGHT:** full sun to partial shade

**WATER:** keep moist, tolerates occasional drought

**TEMPERATURE:** 40–90°F

**ELEVATION:** 10–4000’

**SALT TOLERANCE:** poor

**WIND RESISTANCE:** moderate

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**MANAGEMENT**

**FERTILIZER NEEDS:** light; supplemental N may be beneficial

**RECOMMENDED SPACING:** 8–12” on center

**ADAPTATION TO GROWING IN CONTAINERS:** yes, 5-gallon tubs

**SPECIAL CULTURAL HINTS:** remove old fronds

**SUGGESTED COMPANION PLANTINGS:** ʻōhiʻa lehua, koa, wiliwili
kupukupu / sword fern

**Plant characteristics**

**HEIGHT:** 24"

**SPREAD:** 24–36"; may spread indefinitely

**GROWTH RATE:** slow to establish, then moderate

**GROWTH HABIT:** upright fern, spreading groundcover

**FOLIAGE**

**TEXTURE:** stiff

**COLOR:** yellowish green to dark green, glossy

**SHAPE:** pinnately (once) divided and sword-shaped

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** none known

**OTHER PESTS:** ants, mealybugs, scales, slugs

**Harvesting considerations**

**WHAT IS HARVESTED:** fronds

**HARVESTING TECHNIQUES:** cut

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** cloth bag

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**VASE LIFE:** 5–7 days

**CLEANING OF PLANT MATERIALS:** cold water soak

**STORING RAW LEI MATERIALS:** wrap in several sheets of wet newspaper and store in plastic container in refrigerator at 40°F for up to 14 days

**PREPARING FOR USE IN LEI:** clip off the wrinkled, limp, or poor-quality areas before adding to lei

**STORING A COMPLETED LEI BEFORE WEARING:** soak lei in water for 5 minutes, shake off excess water, wrap in wet newspaper, place in plastic container, and refrigerate

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** cannot be preserved

**References and further reading**


**maʻo**

**OTHER COMMON NAMES:** Hawaiian cotton, huluhulu

**SCIENTIFIC NAME:** *Gossypium tomentosum*

**FAMILY:** Malvaceae (mallow family)

**NATURAL SETTING/LOCATION:** endemic to Hawaiian Islands; found in arid, rocky, or clay coastal plains on all main islands except Hawaiʻi

**CURRENT STATUS IN THE WILD IN HAWAIʻI:** uncommon to rare; most commonly used in landscaping

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**Growing your own**

**PROPAGATION**

**FORM:** seeds; cuttings 6–7" long, ¼" diameter

**PREPLANTING TREATMENT:** remove seeds from lint; scarify seeds by scratching the seedcoat, or put them in water that has been brought to a boil and removed from heat, and soak for 24 hours; use medium rooting hormone on cuttings

**PLANTING DEPTH:** sow seeds ¼–½" deep in medium; insert base of cutting 1–2" into medium

**GERMINATION TIME:** 2 weeks or longer

**CUTTING ROOTING TIME:** 1–2 months

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**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained

**SOIL pH:** 6.5–7.5

**LIGHT:** full sun

**WATER:** keep dry

**TEMPERATURE:** 60–90°F

**ELEVATION:** 10–400'

**SALT TOLERANCE:** moderate to good

**WIND RESISTANCE:** good

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**MANAGEMENT**

**FERTILIZER NEEDS:** medium; do not overfertilize with N

**RECOMMENDED SPACING:** 6–10' in rows

**ADAPTATION TO GROWING IN CONTAINERS:** yes, 2- to 5-gallon tubs, but grows better in the ground

**PRUNING:** plants may become straggly, therefore prune to manage size and shape and stimulate vigorous new shoots

**SPECIAL CULTURAL HINTS:** avoid water-logged soils

**SUGGESTED COMPANION PLANTINGS:** kuluʻi, ‘ilima, other dry-forest or coastal scrubland plants
**Plant characteristics**

**HEIGHT:** 2–5’

**SPREAD:** 5–7’

**GROWTH RATE:** moderate

**GROWTH HABIT:** sprawling shrub

**FLOWERS**

**SIZE:** 2–3” diameter

**COLOR:** bright yellow

**SHAPE:** cup-shaped

**FRAGRANCE:** none

**FLOWERS IN FIRST YEAR:** from cutting, yes; from seed, no

**FLOWERING PERIOD:** summer

**TIME TO FLOWERING:** 1–2 years (depending on culture)

**INDUCING AND MAINTAINING FLOWERING:** not known

**FOLIAGE**

**TEXTURE:** smooth to slight fuzz

**COLOR:** silvery-green to gray-green

**SHAPE:** deeply lobed leaves are wider than they are long

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** root rot, leaf spots, root-knot nematodes

**OTHER PESTS:** ants, aphids, mealybugs, rose beetle, whitefly, scales

**Harvesting considerations**

**WHAT IS HARVESTED:** leaves and flowers

**HARVESTING TECHNIQUES:** cut

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** cloth bag

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**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**CLEANING OF PLANT MATERIALS:** cold water soak, except flowers, which need no water

**STORING RAW LEI MATERIALS:** refrigerate at 40°F for up to 10 days (leaves), 2 days (flowers)

**PREPARING FOR USE IN LEI:** clip off wrinkled, limp, or poor-quality areas before adding to lei; also remove calyx (green, leafy base) from bud being sewn

**STORING A COMPLETED LEI BEFORE WEARING:** soak leaves, drip dry, and refrigerate in plastic container; place flowers dry in sealed plastic container and refrigerate

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry leaves; flowers cannot be preserved

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**References and further reading**


**Growing Plants for Hawaiian Lei**

**maile**

**OTHER COMMON NAMES:** none  
**SCIENTIFIC NAME:** *Alyxia oliviformis*  
**FAMILY:** Apocynaceae (dogbane family)

**NATURAL SETTING/LOCATION:** endemic to Hawaiian Islands; found in most vegetation zones on all main islands except Ni’ihau and Kaho’olawe  
**CURRENT STATUS IN THE WILD IN HAWAI‘I:** occasional to common

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**Growing your own**

**HANDLING CAUTIONS:** milky, sticky sap may cause allergic reaction, stain clothes

**PROPAGATION**

**FORM:** fresh seeds; hardwood cuttings 3" long with at least one node  
**PREPLANTING TREATMENT:** remove seeds from pulp, soak in water for 12 hours or refrigerate in water for 3 days; use medium rooting hormone on cuttings  
**PLANTING DEPTH:** sow seeds ¼–½" deep in medium; insert base of cutting 1–2" into medium, keeping node beneath surface of medium  
**GERMINATION TIME:** 1–3 months  
**CUTTING ROOTING TIME:** 8 weeks

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained  
**SOIL pH:** 6.5–7.5  
**LIGHT:** shade  
**WATER:** keep moist  
**TEMPERATURE:** 40–90°F  
**ELEVATION:** 10–6000'  
**SALT TOLERANCE:** poor  
**WIND RESISTANCE:** moderate

**MANAGEMENT**

**FERTILIZER NEEDS:** medium  
**RECOMMENDED SPACING:** 2–3' apart  
**ADAPTATION TO GROWING IN CONTAINERS:** yes, 5-gallon tubs or larger  
**PRUNING:** not necessary  
**SPECIAL CULTURAL HINTS:** may be cultivated on arbor, trellis, or other support; can grow in lowlands if care is taken to provide shade  
**SUGGESTED COMPANION PLANTINGS:** tree for climbing
maile

**Plant characteristics**

**HEIGHT:** to 15’

**SPREAD:** 6–8’

**GROWTH RATE:** moderate

**GROWTH HABIT:** vine to shrub; extremely variable, depending on variety

**FOLIAGE**

**TEXTURE:** glossy

**COLOR:** dark green

**SHAPE:** variable, sword-shaped to oval

**FRAGRANCE:** yes

**PESTS**

**COMMON DISEASES:** fungal leaf spots, rust spots, root-knot nematodes, damping off (seedlings)

**OTHER PESTS:** ants, aphids, scales

**Harvesting considerations**

**WHAT IS HARVESTED:** leaves with pliable bark of young stems

**HARVESTING TECHNIQUES:** ‘u’u—strip the bark from the woody stem

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** plastic bag

**AVOID CONTACT WITH THESE PRODUCTS:** smoke, car exhaust, ripening fruits, and wilting flowers

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**CLEANING OF PLANT MATERIALS:** quick cold water dip

**STORING RAW LEAVES MATERIALS:** soak, drip dry, place leaves and skin of young stems in plastic container, refrigerate at 40°F for up to 14 days

**PREPARING FOR USE IN LEI:** if hīpu’u (tying together in the knotted pattern), strip bark and leaves from woody stem close to tip, then tie

**STORING A COMPLETED LEI BEFORE WEARING:** mist lei, shake excess water off, then place in plastic bag or container and refrigerate

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

**References and further reading**


The lei shown also contains kukui.
Growing Plants for Hawaiian Lei

māmāne

OTHER COMMON NAMES: mamani

SCIENTIFIC NAME: Sophora chrysophylla

FAMILY: Fabaceae (pea family)

NATURAL SETTING/LOCATION: endemic to Hawaiian Islands, scattered in dry shrublands and forests to mesic (medium-wet) forests; dominant element of vegetation in the high peaks of east Maui and Hawai‘i; not found on Ni‘ihau and Kaho‘olawe; rare on O‘ahu

CURRENT STATUS IN THE WILD IN HAWAI‘I: rare to common

Growing your own

PROPAGATION

FORM: seeds

PREPLANTING TREATMENT: scarify seeds by scraping seedcoat or soak in water for 24 hours or until swelling occurs

PLANTING DEPTH: sow ¼–½" deep in medium

GERMINATION TIME: 2–14 weeks; if no preplanting treatment, can take 1–6 months

PREFERRED PRODUCTION CONDITIONS

GENERAL SOIL CHARACTERISTICS: well drained

SOIL pH: 6.0–6.5

LIGHT: full sun

WATER: keep dry

TEMPERATURE: 40–80°F

ELEVATION: 500–8000'

SALT TOLERANCE: poor

WIND RESISTANCE: good

MANAGEMENT

FERTILIZER NEEDS: medium

RECOMMENDED SPACING: 3–5' (shrubs), 10–15' (trees)

ADAPTATION TO GROWING IN CONTAINERS: not recommended

PRUNING: not necessary

SPECIAL CULTURAL HINTS: propagate from seeds collected at elevation similar to the one where plant materials will be grown; numerous varieties and subspecies have been proposed; because there are island-specific varieties, it would be prudent not to grow different island stock without consideration of potential genetic effects (e.g., inadvertently crossing Hawai‘i stock with Maui stock)

SUGGESTED COMPANION PLANTINGS: low-growing plants, ground cover
### Plant characteristics

**Height:** to 45'

**Spread:** 3–20'

**Growth rate:** slow

**Growth habit:** shrub to medium tree, depending on seed source and growing conditions

### Flowers

**Size:** ¼–1" long, ½–¾" wide

**Color:** yellow or pale yellow

**Shape:** pea-flower shape, borne in small clusters

**Fragrance:** none

**Flowers in first year:** no

**Flowering period:** spring, summer

**Time to flowering:** 2–5 years

**Inducing and maintaining flowering:** not known

### Pests

**Common diseases:** none

**Other pests:** ants, spider mites, thrips, Chinese rose beetle

### Harvesting considerations

**What is harvested:** flowers with 1–2" of stem

**Harvesting techniques:** snap

**Best time of day to harvest:** early morning

**Best way to transport from picking area:** plastic container

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The lei shown also contains yarrow and protea.

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### Notes on lei making

**Best for which type of lei:** neck, head, wrist, ankle, horse

**Cleaning of plant materials:** cold water soak

**Storing raw lei materials:** place stems in water after picking, then place in sealed plastic container and refrigerate at 40°F for up to 3 days

**Preparing for use in lei:** clip off wrinkled, limp, or poor-quality areas before adding to lei

**Storing a completed lei before wearing:** optional to soak and drip dry before placing lei on damp newspaper or paper towel in a sealed plastic container and refrigerating

**Preserving a lei for long-term storage or display:** cannot be preserved

### References and further reading


Growing Plants for Hawaiian Lei

moa

OTHER COMMON NAMES: whisk fern
SCIENTIFIC NAME: *Psilotum nudum*
FAMILY: Psilotaceae (whisk fern family)

NATURAL SETTING/LOCATION: indigenous to Hawaiian Islands, found in moderately dry to wet environments in rock crevices, on trees, and on the ground
CURRENT STATUS IN THE WILD IN HAWAI‘I: common

Growing your own

PROPAGATION

FORM: spores or divisions

PREPLANTING TREATMENT: sow spores as soon as they are ripe; to tell if they are ripe, place a frond in a paper bag and hang it for 24 hours; the spores that fall to the bottom of the bag are ready for sowing; keep moist or use vermiculite and peat covered with moist paper towel to germinate spores

PLANTING DEPTH: surface-sow spores on black cinder or hāpu‘u; keep root crown of division just below soil level

SPORE GERMINATION TIME: 3–6 months

PREFERRED PRODUCTION CONDITIONS

GENERAL SOIL CHARACTERISTICS: well drained, moist, rocky soil, or on hāpu‘u trunks
SOIL pH: 6.0–7.5
LIGHT: full sun to shade
WATER: keep moist

TEMPERATURE: 60–90°F
ELEVATION: 10–4000’
SALT TOLERANCE: poor
WIND RESISTANCE: good

MANAGEMENT

FERTILIZER NEEDS: light
RECOMMENDED SPACING: 6” apart

ADAPTATION TO GROWING IN CONTAINERS: yes, pots with (or without) other plants, hāpu‘u trunks, or rocks
PRUNING: remove older, dead stems
SPECIAL CULTURAL HINTS: keep divisions in moist shade for first 2 weeks; greener and more lush in humid areas and at specific times of year
SUGGESTED COMPANION PLANTINGS: trees and hāpu‘u
**moa**

**Plant characteristics**

**HEIGHT:** to 24”

**SPREAD:** clumps up to 24”

**GROWTH RATE:** moderate

**GROWTH HABIT:** clusters of slender, erect, bright green stalks

**FOLIAGE**

(no leaves; “naked,” bright green, branching stems)

**TEXTURE:** coarse

**COLOR:** green to yellow-orange

**SHAPE:** thin branches

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** none known

**OTHER PESTS:** none known

**Harvesting considerations**

**WHAT IS HARVESTED:** branches (stems)

**HARVESTING TECHNIQUES:** cut, don’t pull

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** plastic bag

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**VASE LIFE:** 7–14 days

**CLEANING OF PLANT MATERIALS:** cold water soak

**STORING RAW LEI MATERIALS:** soak stems in water for 5 minutes, drip dry, wrap in damp paper towel and store in a sealed plastic container, refrigerate at 40°F for up to 30 days

**PREPARING FOR USE IN LEI:** clip off the wrinkled, limp, or poor-quality areas before adding to lei

**STORING A COMPLETED LEI BEFORE WEARING:** soak lei in water for 5 minutes, drip dry, wrap in damp paper towel, store in a sealed plastic container, and refrigerate

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

**References and further reading**


The top lei shown also contains bougainvillea, palapalai, and dusty miller. The bottom lei shown also contains palapalai.
Growing Plants for Hawaiian Lei

ʻōhiʻa lehua

OTHER COMMON NAMES: lehua, ʻōhiʻa

SCIENTIFIC NAME: Metrosideros polymorpha

FAMILY: Myrtaceae (myrtle family)

NATURAL SETTING/LOCATION: endemic to Hawaiian Islands in a wide range of habitats: lava fields, dry to wet forests, and bogs; found on all islands except Niʻihau and Kahoʻolawe

CURRENT STATUS IN THE WILD IN HAWAIʻI: common in the rainforest

CULTIVARS: many plant forms (polymorphic); also, other species can be used, such as M. tremaloides, M. macropus, M. rugosa

Growing your own

PROPAGATION

FORM: seeds, cuttings, or air layering (varies in ability to be propagated by cuttings; some types are harder to root than others)

PREPLANTING TREATMENT: seeds will keep if refrigerated, but fresh ones are best; no seed treatment needed; use medium or strong rooting hormone on cuttings

PLANTING DEPTH: scatter seeds on surface and cover with ¼" of medium; insert base of cutting 1–2" into medium

GERMINATION TIME: 1 week to 3 months

CUTTING ROOTING TIME: 2–4 months, or 4–6 weeks with rooting hormone under mist; air layers take 3–7 months to root, but using 3% IBA on girdled area wrapped with sphagnum moss will produce roots in about 2 months

PREFERRED PRODUCTION CONDITIONS

GENERAL SOIL CHARACTERISTICS: well drained

SOIL PH: 6.5–7.5 (slightly acid)

LIGHT: sunny location

WATER: keep moist but well drained; do not allow to completely dry out

TEMPERATURE: 40–90°F

ELEVATION: 100–7000'

SALT TOLERANCE: poor (slight tolerance in coastal varieties); plant its relative pohutukawa instead in low-elevation saline conditions

WIND RESISTANCE: good

MANAGEMENT

FERTILIZER NEEDS: medium

RECOMMENDED SPACING: depends on type, generally 5' apart or more

ADAPTATION TO GROWING IN CONTAINERS: yes, 2- to 3-gallon plastic tubes

PRUNING: prune to reduce size, induce lower branches, and stimulate vigorous new shoots; prune after flowering

SPECIAL CULTURAL HINTS: young seedlings are very sensitive to transplanting; keep root disturbance to a minimum; best germination is in 50% shade; plant in fields when 1½–2 years old; fuzzy-leaf variety resists Chinese rose beetle; plants grown from seed vary in leaf size and shape, flower color, etc.; some growers plant seeds on hāpuʻu log

SUGGESTED COMPANION PLANTINGS: low-growing plants such as maile, palapalai, ferns
‘ōhi‘a lehua

**Plant characteristics**

**HEIGHT:** 3–80’

**SPREAD:** 10–30’

**GROWTH RATE:** slow

**GROWTH HABIT:** low shrub to tall tree

**FLOWERS**

**SIZE:** 1–2” clusters

**COLOR:** red, yellow, salmon, pink

**SHAPE:** pom-pom

**FRAGRANCE:** none

**FLOWERS IN FIRST YEAR:** no

**FLOWERING PERIOD:** year-round

**TIME TO FLOWERING:** takes 4–5 years to flower from seed; flowers faster from air layer and cutting

**FOLIAGE**

**TEXTURE:** extremely variable, from smooth and waxy to fuzzy

**COLOR:** reddish-gray to shiny green, silvery underneath, dull green to bright green

**SHAPE:** simple, oval to ovate

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** root rot, collar rot, leafspots, nematodes, damping off (seedling), rapid ‘ōhi‘a death

**OTHER PESTS:** ants, aphids, mealybugs, scales, twig borer, two-spotted leafhopper, ambrosia beetle

**Harvesting considerations**

**WHAT IS HARVESTED:** young leaves at tips (liko), flowers, buds, seed pods

**RECOMMENDED HARVESTING TECHNIQUE:** cut

**Notes on lei making**

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** paper or cloth bag

**VASE LIFE:** 2 days for flowers; 14 days for leaves and seed pods

**CLEANING OF PLANT MATERIALS:** cold water soak

**STORING RAW LEI MATERIALS:** soak flowers for 5 minutes and place face up in wet newspaper, place in paper box, and refrigerate

**STORING A COMPLETED LEI BEFORE WEARING:** soak lei in water, drip dry, wrap in paper or cloth bag, and refrigerate

**STORING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

The lei shown also contains ‘a’ali‘i, moa, pūkiawe, and wāwae‘iole.

**References and further reading**


pa‘iniu

OTHER COMMON NAMES: astelia, kaluaha

SCIENTIFIC NAME: Astelia menziesiana

FAMILY: Liliaceae (lily family)

NATURAL SETTING/LOCATION: endemic to Hawaiian Islands in moist to wet forests and bogs on all main islands except Ni‘ihau and Ka‘ho‘olawe; epiphytic or terrestrial

CURRENT STATUS IN THE WILD IN HAWAI‘I: common (rare on O‘ahu)

Growing your own

PROPAGATION

FORM: seeds, division

PREPLANTING TREATMENT: remove seeds from pulp, put in water that has been brought to a boil and removed from heat, let soak for about 24 hours

PLANTING DEPTH: sow seeds ¼” deep in medium; for divisions, keep root crown just below soil level

GERMINATION TIME: 3–5 weeks

PREFERRED PRODUCTION CONDITIONS

GENERAL SOIL CHARACTERISTICS: well drained, potting soil, orchid mix, or hāpu‘u

SOIL pH: epiphytic; terrestrial forms grow in bog conditions; preferred soil pH is not known, but likely acidic

LIGHT: part to full shade

WATER: keep moist

TEMPERATURE: 40–50°F

ELEVATION: 2000–5000'

SALT TOLERANCE: poor

WIND RESISTANCE: poor

MANAGEMENT

FERTILIZER NEEDS: light

RECOMMENDED SPACING: 2–3’ apart

ADAPTATION TO GROWING IN CONTAINERS: yes, 5-gallon tubs

PRUNING: not necessary

SPECIAL CULTURAL HINTS: treat like an epiphytic orchid or bromeliad; male and female flowers occur on separate plants

SUGGESTED COMPANION PLANTINGS: hāpu‘u
pa‘iniu

**Plant characteristics**

**HEIGHT:** to 36"

**SPREAD:** to 36"

**GROWTH RATE:** slow to moderate

**GROWTH HABIT:** herbaceous, succulent

**FOLIAGE**

**TEXTURE:** waxy on top, sometimes fuzzy underneath

**COLOR:** green on top, sometimes white, golden, or silver underneath

**SHAPE:** long and tapered

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** none known

**OTHER PESTS:** mealybugs, spider mites

**Harvesting considerations**

**WHAT IS HARVESTED:** leaves

**HARVESTING TECHNIQUES:** cut the bottom leaves and leave the top ones

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** paper or cloth bag

The lei shown also contains pūkiawe, ‘ōhi’a lehua, wāwae’īole, and palapalai.

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**VASE LIFE:** 7 days

**CLEANING OF PLANT MATERIALS:** cold water soak

**STORING RAW LEI MATERIALS:** refrigerate at 40°F for up to 14 days or longer

**PREPARING FOR USE IN LEI:** clip off wrinkled, limp, or poor-quality areas before adding to lei

**STORING A COMPLETED LEI BEFORE WEARING:** soak lei in water for 5 minutes, drip dry, wrap in damp newspaper, place in any type of container, and refrigerate

**PRESEVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** air-dry

**References and further reading**


**palaʻā**

**OTHER COMMON NAMES:** lace fern, palae, palapalaʻā

**SCIENTIFIC NAME:** *Sphenomeris chinensis*

**FAMILY:** Lindsaeaceae (lace fern family)

**NATURAL SETTING/LOCATION:** indigenous to tropics, subtropics, and Hawaiian Islands, where it is likely to be found in road cuts and clearings on all main islands

**CURRENT STATUS IN THE WILD IN HAWAIʻI:** common

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**Growing your own**

**PROPAGATION**

**FORM:** division

**PREPLANTING TREATMENT:** remove old leaves

**PLANTING DEPTH:** keep root crown just below soil level

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained

**SOIL pH:** 6.0–7.0

**LIGHT:** can be grown in sun, but prefers shady areas

**WATER:** keep moist, tolerates some drought

**TEMPERATURE:** 60–90°F

**ELEVATION:** 10–4000'

**SALT TOLERANCE:** poor

**WIND RESISTANCE:** poor

**MANAGEMENT**

**FERTILIZER NEEDS:** light

**RECOMMENDED SPACING:** 1–2’ apart

**ADAPTATION TO GROWING IN CONTAINERS:** yes, 5-gallon tubs

**PRUNING:** remove dead fronds

**SPECIAL CULTURAL HINTS:** plant close together to keep weeds out

**SUGGESTED COMPANION PLANTINGS:** other forest plants that provide shade
# palaʻā

## Plant characteristics
- **Height**: 3–4’
- **Spread**: 3–4’
- **Growth Rate**: fast
- **Growth Habit**: fern, groundcover

### Foliage
- **Texture**: smooth
- **Color**: green
- **Shape**: pointed lacy fronds
- **Fragrance**: none

### Pests
- **Common Diseases**: none known
- **Other Pests**: caterpillars, scales

## Harvesting considerations
- **What is harvested**: mature fronds (fully expanded)
- **Harvesting Techniques**: cut, don’t pull
- **Best Time of Day to Harvest**: early morning
- **Best Way to Transport from Picking Area**: paper or cloth bag

## Notes on lei making
- **Best for Which Type of Lei**: neck, head, wrist, ankle, horse
- **Vase Life**: 5 days
- **Cleaning of Plant Materials**: cold water soak
- **Storing Raw Lei Materials**: place in sealed plastic container and refrigerate at 40°F for up to 30 days
- **Preparing for Use in Lei**: clip off wrinkled, limp, or poor-quality areas before adding to lei
- **Storing a Completed Lei Before Wearing**: soak lei, drip dry, wrap in damp newspaper, place in sealed plastic container, and refrigerate
- **Preserving a Lei for Long-Term Storage or Display**: cannot be preserved

## References and further reading

The lei shown also contains ‘ōhi’a lehua, wāwae‘ileole, and kulu‘ī.
Palapalai

**Other Common Names:** palai

**Scientific Name:** Microlepia strigosa

**Family:** Dennstaedtiaceae (dicksoniaceae family)

**Natural Setting/Location:** indigenous to the Hawaiian Islands in the understory of rain forests on all main islands; also native to India, Malaysia, Taiwan, Japan, and South Pacific islands

**Current Status in the Wild in Hawai‘i:** common

**Growing your own**

**Propagation**

**Form:** division of clumps

**Preplanting Treatment:** remove old foliage

**Planting Depth:** keep root crown just below soil level

**Preferred Production Conditions**

**General Soil Characteristics:** well drained

**Soil pH:** 6.5–7.5

**Light:** can be grown in sun, but prefers shady areas

**Water:** keep moist

**Temperature:** 40–90°F

**Elevation:** 750–6000'

**Salt Tolerance:** poor

**Wind Resistance:** moderate

**Management**

**Fertilizer Needs:** light

**Recommended Spacing:** 2–4’ apart

**Adaptation to Growing in Containers:** yes, 5-gallon tubs

**Pruning:** remove dead fronds

**Special Cultural Hints:** plant close together to keep weeds out; fronds resemble those of the leatherleaf fern

**Suggested Companion Plantings:** other forest plants that provide shade
**palapalai**

**Plant characteristics**

**HEIGHT:** 2–5’

**SPREAD:** fronds grow to almost 5’ long

**GROWTH RATE:** moderate to fast

**GROWTH HABIT:** clumping, trunkless fern

**FOLIAGE**

**TEXTURE:** delicate hairy fronds

**COLOR:** light green to dark green, depending on maturity

**SHAPE:** pointed, lacy fronds

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** none known

**OTHER PESTS:** none known

**Harvesting considerations**

**WHAT IS HARVESTED:** fronds

**HARVESTING TECHNIQUES:** cut, don’t pull the mature fronds

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** paper or cloth bag

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck, head, wrist, ankle, horse

**VASE LIFE:** 5 days

**CLEANING OF PLANT MATERIALS:** cold water soak

**STORING RAW LEI MATERIALS:** soak for 5 minutes, drip dry; either place whole fronds between paper in sealed plastic container or break fronds down, wrap in newspaper, then place in sealed plastic container and refrigerate at 40°F for up to 30 days

**PREPARING FOR USE IN LEI:** clip off wrinkled, limp, or poor-quality areas before adding to lei

**STORING A COMPLETED LEI BEFORE WEARING:** soak lei, drip dry, store in sheets of damp newspaper, place in sealed container, and refrigerate

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** cannot be preserved

**References and further reading**


pōhinahina

OTHER COMMON NAMES: beach vitex, kolokolo kahakai

SCIENTIFIC NAME: Vitex rotundifolia

FAMILY: Verbenaceae (verbena family)

natural setting/location: indigenous throughout the Pacific including the Hawaiian Islands, where it occurs on sandy beaches, rocky shores, and dunes on all islands except Kahoʻolawe.

current status in the wild in Hawaiʻi: common

Growing your own

propagation

form: seeds, cuttings (matured terminal or upper piece of leafy, matured stem)

Preplanting treatment: scarify seeds by scraping the seedcoat; use medium rooting hormone on cutting

planning depth: sow seeds ½” deep in medium; insert base of cutting 1–2” into medium

germination time: 15–30 days if scarified, 36 months if not scarified

cutting rooting time: 3–4 weeks

Preferred production conditions

general soil characteristics: well drained, rocky, sandy

Soil ph: 6.0–7.0

light: sunny location

water: keep dry

Temperature: 60–90°F

Elevation: 10–1000’

Salt tolerance: good

Wind resistance: good

management

fertilizer needs: light

Recommended spacing: 2–3’ in row, 4–6’ between rows

adaptation to growing in containers: yes, 8” pots to 5-gallon tubs, but planting in the ground is better

Pruning: prune to manage size and shape and to stimulate compactness

special cultural hints: plant close together to keep weeds out; thins out during winter months; can get leggy with too much water and fertilizer and not enough sun

suggested companion plantings: dry-area plants or coastal plants (maʻo, ʻūlei, hinahina)
pōhinahina

**Plant characteristics**

**HEIGHT:** 1–4’

**SPREAD:** 3–6’

**GROWTH RATE:** fast

**GROWTH HABIT:** low-growing, mat-forming shrub

**FLOWERS**

**SIZE:** inflorescence 1–3” long, flower less than ½”

**COLOR:** bluish-purple

**SHAPE:** funnel-shaped flowers in spikes

**FRAGRANCE:** none

**FLOWERS IN FIRST YEAR:** yes, from cuttings

**FLOWERING PERIOD:** year-round

**TIME TO FLOWERING:** 1–2 years from seed, faster from cuttings

**INDUCING AND MAINTAINING FLOWERING:** flowering can occur year-round without special treatment if plant is not under stress

**FOLIAGE**

**TEXTURE:** downy, fuzzy

**COLOR:** pale green

**SHAPE:** oval

**FRAGRANCE:** spicy when crushed

**PESTS**

**COMMON DISEASES:** powdery mildew, leaf spots

**OTHER PESTS:** ants, mealybugs, scales, whiteflies

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The lei shown also contains bougainvillea and palapalai.

**Harvesting considerations**

**WHAT IS HARVESTED:** branch tips with or without fruit and flowers

**HARVESTING TECHNIQUES:** cut stems

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** paper or cloth bag

**References and further reading**


### pūkiawe

**OTHER COMMON NAMES:** maiele  
**SCIENTIFIC NAME:** *Styphelia tameiamiae*  
**FAMILY:** Epacridaceae (epacris family)

**NATURAL SETTING/LOCATION:** indigenous to Hawaiian Islands; scattered dominant vegetation in wind-swept coasts, deserts, rain forests, frost-prone mountain slopes, and bogs on all main islands except Niʻihau and Kahoʻolawe.  
**CURRENT STATUS IN THE WILD IN HAWAIʻI:** scattered to common

### Growing your own

#### PROPAGATION

**FORM:** seeds; air layering  
**PRETREATMENT:** soak seeds in vinegar for several hours followed by hot-water (120°F) soak for several hours  
**PLANTING DEPTH:** on surface of medium  
**GERMINATION TIME:** 1–2 months  
**AIR LAYERING ROOTING TIME:** 6–12 months

#### PREFERRED PRODUCTION CONDITIONS

**GENERAL SOIL CHARACTERISTICS:** well drained  
**SOIL pH:** 6.5–7.5  
**LIGHT:** sunny location  
**WATER:** keep moist  
**TEMPERATURE:** 60–75°F  
**ELEVATION:** 50–10,000'  
**SALT TOLERANCE:** moderate (coastal types)  
**WIND RESISTANCE:** good  

#### MANAGEMENT

**FERTILIZER NEEDS:** light  
**RECOMMENDED SPACING:** 3–4' apart  
**ADAPTATION TO GROWING IN CONTAINERS:** yes, 1-gallon tub or larger  
**PRUNING:** prune to maintain size and shape

**SPECIAL CULTURAL HINTS:** size, shape, and growing conditions depend on propagation source; water well in good drainage conditions
### Plant characteristics

**Height:** 2–12’

**Spread:** 3–6’

**Growth Rate:** slow to moderate

**Growth Habit:** erect, spreading shrub

**Fruit** *(flowers inconspicuous)*

**Size:** fruit ½–¼” wide

**Color:** dark red to pink, sometimes white

**Shape:** round

**Fragrance:** none

**Foliage**

**Texture:** leathery

**Color:** green

**Shape:** small and variable

**Fragrance:** none

### Pests

**Common Diseases:** none known

**Other Pests:** none known

### Harvesting considerations

**What is harvested:** branch tips, with or without fruit

**Harvesting Techniques:** snap or cut tips

**Best Time of Day to Harvest:** early morning

**Best Way to Transport from Picking Area:** paper or cloth bag

### Notes on lei making

**Best for Which Type of Lei:** neck, head, wrist, ankle, horse

**Vase Life:** 5–7 days

**Cleaning of Plant Materials:** cold water soak

**Storing Raw Lei Materials:** soak in water for 5 minutes, wrap in damp newspaper, then place in plastic container and refrigerate at 40°F for up to 14 days

**Preparing for Use in Lei:** clip off wrinkled, limp, or poor-quality areas before adding to lei; make sure leaves are removed from lower stem so that when you will (twist) it, it doesn’t jab you or the wearer

**Storing a Completed Lei Before Wearing:** soak lei, drip dry, wrap in damp newspaper, place in paper or plastic container and refrigerate

**Preserving a Lei for Long-Term Storage or Display:** air-dry

### References and further reading


The lei shown also contains crown flower and dusty miller.
Growing Plants for Hawaiian Lei

**ti**

**OTHER COMMON NAMES:** kī, la‘i

**SCIENTIFIC NAME:** Cordyline fruticosa

**FAMILY:** Agavaceae (agave family)

**NATURAL SETTING/LOCATION:** Polynesian introduction; extensively cultivated and common in mesic (medium-wet) valleys and mesic forests on all Hawaiian Islands except Kaho‘olawe

**CURRENT STATUS IN THE WILD IN HAWAIʻI:** common

**CULTIVARS:** tremendous variation in color and form, such as variegated, red, orange, pink, yellow

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## Growing your own

### PROPAGATION

**FORM:** cuttings preferred (large stem pieces may be used); air layering; seeds (growing from seeds results in great variation in plant size and leaf color and shape)

**PREPLANTING TREATMENT:** use medium rooting hormone on cuttings, or none

**PLANTING DEPTH:** sow seeds ¼” deep in medium; insert base of cutting 3–5” into medium

**GERMINATION TIME:** 2–6 weeks

**CUTTING ROOTING TIME:** 2–4 weeks

### PREFERRED PRODUCTION CONDITIONS

**GENERAL SOIL CHARACTERISTICS:** will grow in just about any soil as long as pH and salt levels are not too high.

**SOIL pH:** 5.5–6.5

**LIGHT:** green ti can be grown in full sun to partial shade

**WATER:** irrigation required in dry areas

**TEMPERATURE:** 60–90°F

**ELEVATION:** 10–2000’

**SALT TOLERANCE:** poor

**WIND RESISTANCE:** requires windbreaks in windy areas to prevent shredding

### MANAGEMENT

**FERTILIZER NEEDS:** heavy

**RECOMMENDED SPACING:** 18–24” in rows, 18–24” between rows, with a larger 36” aisle every 3–6 rows

**ADAPTATION TO GROWING IN CONTAINERS:** yes, large containers

**PRUNING:** prune to about 1’ height when main stem grows to point where harvesting becomes difficult; leave 3 new shoots to grow, and remove all smaller shoots

**SPECIAL CULTURAL HINTS:** plants can be cut back and 2 or 3 new shoots per stem allowed to grow; best grown in drier climates with irrigation to avoid fungus and bacterial leaf spots; remove inflorescences as they emerge to direct energy toward new leaves; the common green ti rarely if ever produces seeds; leaves can be harvested in first year

**SUGGESTED COMPANION PLANTINGS:** tall plants for shade and windbreak
Growing Plants for Hawaiian Lei

**ti**

**Plant characteristics**

**Height:** to 20’

**Spread:** 3–4’

**Growth rate:** moderately fast

**Growth habit:** upright shrub

**Foliage**

**Texture:** smooth and glossy

**Color:** green most common; red, pink, and orange variants occur

**Shape:** long and narrow

**Fragrance:** none

**Pests**

**Common diseases:** Cercospora fungus, Pseudomonas bacteria, leaf spots

**Other pests:** caterpillars, mites, pigs, rodents, rose beetles, scales, slugs, snails, stem borers, thrips, two-spotted leafhopper

**Harvesting considerations**

**What is harvested:** leaves

**Harvesting techniques:** pull or snap leaf off stem; at least 3 leaves should be left on plant to produce energy for further growth

**Best time of day to harvest:** early morning

**Best way to transport from picking area:** large plastic bag

The lei shown also contains Geraldton waxflower.

**Notes on lei making**

**Best for which type of lei:** neck, head, wrist, ankle, horse

**Vase life:** 14 days

**Cleaning of plant materials:** hand-wash under cold, running water; soapy water may be needed

**Storing raw lei materials:** fresh leaves can be stored in a plastic container with water and refrigerated at 40°F for 30 days or frozen for much longer

**Preparing for use in lei:** if traditional ti lei, then clean, tie, and strip leaves; if done in wili (twisting) or hilo (braiding) pattern, you need to freeze, boil, microwave, iron, or pūlehu the leaf to soften it

**Storing a completed lei before wearing:** if traditional ti lei, place in sealed container and refrigerate; if wili or hilo pattern, wipe down with cloth, wrap in dry newspaper, and store in freezer

**Preserving a lei for long-term storage or display:** air-dry or freeze

**References and further reading**


Growing Plants for Hawaiian Lei

‘ūlei

OTHER COMMON NAMES: ‘ūlei

SCIENTIFIC NAME: Osteomeles anthyllidifolia

FAMILY: Rosaceae (rose family)

NATURAL SETTING/LOCATION: indigenous to Hawaiian Islands in a wide variety of habitats such as coastal cliffs, lava fields, dry shrublands, and semi-dry forests on all main islands except Ni‘ihau and Kaho‘olawe; also occurs in the Cook Islands and Tonga

CURRENT STATUS IN THE WILD IN HAWAII: scattered to locally common

Growing your own

PROPAGATION

FORM: cuttings 3–6” long; seeds (plants from seed will have varying amounts of flowers and fruits)

PREPLANTING TREATMENT: soak seeds in water for 48 hours; use strong rooting hormone on cuttings; mist is helpful

PLANTING DEPTH: sow seeds ¼” deep in medium; insert base of cutting 1–2” into medium

GERMINATION TIME: 1–3 months

CUTTING ROOTING TIME: 1–3 months

PREFERRED PRODUCTION CONDITIONS

GENERAL SOIL CHARACTERISTICS: well drained

SOIL pH: 5.5–6.5

LIGHT: sunny location

WATER: keep moist; tolerates drought once established

TEMPERATURE: 40–90°F

ELEVATION: 10–7600’

SALT TOLERANCE: moderate (coastal varieties)

WIND RESISTANCE: good

MANAGEMENT

FERTILIZER NEEDS: light

RECOMMENDED SPACING: 3–5’ apart in rows

ADAPTATION TO GROWING IN CONTAINERS: 2-gallon tubs or larger, but planting in the ground is better

PRUNING: prune to reduce size, maintain shape, and to keep full and bushy; avoid cutting old growth

SPECIAL CULTURAL HINTS: provide room to spread; seed-produced plants result in variable growth forms
Growing Plants for Hawaiian Lei

Plant characteristics

HEIGHT: 1–15’
SPREAD: 5–15’
GROWTH RATE: moderate
GROWTH HABIT: prostrate to slightly upright, spreading shrub

FLOWERS

SIZE: ½”
COLOR: white
SHAPE: round
FRAGRANCE: yes
FLOWERS IN FIRST YEAR: no
FLOWERING PERIOD: winter through spring
TIME TO FLOWERING: typically 1 year from cutting and 2–3 years from seed
INDUCING AND MAINTAINING FLOWERING: can be maintained under good light conditions; under shaded conditions, flowering is sparse to non-existent; prune for new growth on which flowers are borne

FOLIAGE

TEXTURE: leathery leaflets, shiny, smooth, fine
COLOR: green
SHAPE: divided into leaflets
FRAGRANCE: none

PESTS

COMMON DISEASES: none known
OTHER PESTS: ants, aphids, mealybugs, scales, thrips, twig borer

The lei shown also contains ‘ākia, ‘a’ali‘i, pūkiawe, and ‘ōhi’a lehua.

Harvesting considerations

WHAT IS HARVESTED: fruit, flowers, leaves

INDUCING AND MAINTAINING FLOWERING: can be maintained under good light conditions; under shaded conditions, flowering is sparse to non-existent; prune for new growth on which flowers are borne

BEST TIME OF DAY TO HARVEST: early morning

BEST WAY TO TRANSPORT FROM PICKING AREA: paper or cloth bag

STORING A COMPLETED LEI BEFORE WEARING: soak lei, drip dry, wrap in damp newspaper, place in plastic container and refrigerate

Preserving a lei for long-term storage or display: air-dry leaves only

Notes on lei making

BEST FOR WHICH TYPE OF LEI: neck, head, wrist, ankle, horse

CLEANING OF PLANT MATERIALS: cold water soak

STORING RAW LEI MATERIALS: soak in water for 5 minutes, wrap flowers in paper towel and place in plastic container, wrap leaves and fruit in damp newspaper and place in plastic container, refrigerate at 40°F for up to 14 days

PREPARING FOR USE IN LEI: clip off wrinkled, limp, or poor-quality areas before adding to lei

References and further reading


**wiliwili**

**OTHER COMMON NAMES:** coral tree, Hawaiian erythrina  
**SCIENTIFIC NAME:** *Erythrina sandwicensis*  
**FAMILY:** Fabaceae (pea family)

**NATURAL SETTING/LOCATION:** endemic to the Hawaiian Islands; found in arid lowlands and dry forests on leeward slopes of all main islands including Kaho‘olawe and Ni‘ihau

**CURRENT STATUS IN THE WILD IN HAWAI‘I:** formerly common; now population almost completely wiped out due to an invasive pest, the Erythrina gall wasp

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### Growing your own

**HANDLING CAUTIONS:** thorns on branches and trunks, but sometimes thornless; seeds reported to be poisonous

**PROPAGATION**

**FORM:** seeds; cuttings 2–4’ long

**PREPLANTING TREATMENT:** put seeds in water that has been brought to a boil and removed from heat, let soak for 24 hours, discard floating, nonviable seeds; or, scarify seeds by scratching seedcoat

**PLANTING DEPTH:** sow seeds ½” deep in well-drained medium, place in full sun; amount of cutting inserted into medium varies with its length

**GERMINATION TIME:** 7 days

**CUTTING ROOTING TIME:** 1 month

**PREFERRED PRODUCTION CONDITIONS**

**GENERAL SOIL CHARACTERISTICS:** well drained  
**SOIL pH:** 5.5–7.5  
**LIGHT:** sunny location  
**WATER:** drought tolerant; deep and infrequent watering  
**TEMPERATURE:** 50–90°F  
**ELEVATION:** 10–1800’  
**SALT TOLERANCE:** good  
**WIND RESISTANCE:** moderate

**MANAGEMENT**

**FERTILIZER NEEDS:** medium  
**RECOMMENDED SPACING:** 20’ apart

**ADAPTATION TO GROWING IN CONTAINERS:** not recommended

**PRUNING:** prune when young to manage size and shape and direct growth

**SPECIAL CULTURAL HINTS:** give plenty of room, keep out of high-traffic areas, and keep dry; leaf drop usually coincides with flowering

**SUGGESTED COMPANION PLANTINGS:** low-growing, drought-tolerant plants
Growing Plants for Hawaiian Lei

wiliwili

**Plant characteristics**

**HEIGHT:** 18–50'

**SPREAD:** 25–30'

**GROWTH RATE:** generally fast; rapid in winter, slow in summer after leaves fall

**GROWTH HABIT:** tree

**FLOWERS**

**SIZE:** 1½"

**COLOR:** red, orange, white, pale green, pale yellow

**SHAPE:** beak-like, in clusters

**FRAGRANCE:** none

**FLOWERS IN FIRST YEAR:** no

**FLOWERING PERIOD:** summer, right after leaves fall

**TIME TO FLOWERING:** more than 5 years from seeds; around 4 years from cuttings

**INDUCING AND MAINTAINING FLOWERING:** normally only flowers during the summer

**FOLIAGE**

**TEXTURE:** slightly hairy on underside

**COLOR:** green

**SHAPE:** compound leaf with large, triangular leaflets

**FRAGRANCE:** none

**PESTS**

**COMMON DISEASES:** powdery mildew

**OTHER PESTS:** ants, aphids, Chinese rose beetle, Erythrina gall wasp, leaf-eating caterpillars, mealybugs, root-knot nematodes, spider mites, scales, seed borers, stinkbug, twig borer

The lei shown also contains globe amaranth, ʻōhiʻa lehua, and bougainvillea.

**Harvesting considerations**

**WHAT IS HARVESTED:** flowers with 1–2" stem (seeds are not discussed here)

**HARVESTING TECHNIQUES:** cut or snap

**BEST TIME OF DAY TO HARVEST:** early morning

**BEST WAY TO TRANSPORT FROM PICKING AREA:** paper bag

**Notes on lei making**

**BEST FOR WHICH TYPE OF LEI:** neck

**CLEANING OF PLANT MATERIALS:** no water

**STORING RAW LEI MATERIALS:** place in paper box and refrigerate at 40°F for up to 3 days; no water

**PREPARING FOR USE IN LEI:** clip stem off, then sew

**STORING A COMPLETED LEI BEFORE WEARING:** store lei in paper box without refrigeration or water

**PRESERVING A LEI FOR LONG-TERM STORAGE OR DISPLAY:** cannot be preserved

**References and further reading**


