

NATIVE HAWAIIAN PLANT SOCIETY
PROPAGATION WORKSHOP HANDBOOK
JUNE 8, 1991

Bob Habely

Endangered Spec, Act Fed State
can be restrictive - get from cultivated
Stock.

Partnership state + NTBC
Seed Bank - seed source

Scarifying

must be big enough
knife - nicking + dangerous
can cut seed + kill it

better - file, grab it with vice
grip
multiple surfaces

Air layer - cut right below
node
5" oak sphagnum to get
moisty - 2 months
lower stem wound w/ hormone
(3" area around wound)
put moss mostly below cut
& put it on one edge of plastic
wrapper, secure w/ wire
bottom first then pack moss firmly
then wrap top

SAME Genus

Grafting - wedge grafting
- roots stock + scion SAME diameter.

Min. length 2" + 2 nodes
3-5"
1" if possible

critical to have sharp knife. Razor sharp
clean w/ soap + H₂O before use

to match cambium layer
if mis match
in size put
smaller on top
of larger

Scion lasts to 2 wks in frig but, ^{the} closer to time of
use the better

make sure at least one side has cambium match -
Parafilm - to cover graft, raffia soaked in H₂O
self sealing - to keep area dry
cover top w/ plastic bag - wet inside tied ^{over} below
graft union - leave 2 wks min (if molds inside
spray w/ very dilute clox solution)
fert. root stock before
avoid cutting scion near
node

PLANT NAME	COMMON PROPAGATION METHOD			DESCRIPTION	NOTES
	SEED	CUTTING	OTHER		
<hr/>					
GROUND COVER					
'Akia <u>Mikstroemia</u> <u>uva-ursi</u>	X			coastal to upland very drought tol- erant, common in landscaping on Oahu, becoming so on Maui	
<hr/>					
'Akulikuli <u>Sesuvium</u> <u>portulacastrum</u>		X		coastal, salt & drought tolerant, adapts to varied soil types, used to revegetate Kahoolawe	
<hr/>					
Alena <u>Boerhavia</u> <u>repens</u>	X		X	coastal, salt & drought tolerant, good for erosion control above splash zone	
<hr/>					
Bacopa <u>Bacopa</u> <u>monniera</u>			X	coastal but grows well in Kula, will take salt air, excellent ground cover, popular in commercial land- scapes	
<hr/>					
Hinahina <u>Heliotropium</u> <u>anomalum</u>			X	coastal, beautiful silver foliage & fragrant flowers, popular for leis, very rare but hope to reestablish through landscaping	
<hr/>					
'Ilima <u>Sida fallax</u>	X		X	coastal, silver- green foliage & orange flowers, becoming popular with landscapers, best when planted with pohuehue, hinahina, pa'u o Hi'iaka, drought tolerant	

NAME	SEED	CUTTING	OTHER	DESCRIPTION	NOTES
Pa'u o Hi'iaka <u>Jacquemontia</u> <u>ovalifolia</u>	X	X		Coastal, viney, green foliage & delicate blue flowers, ill die back every two years so don't plant alone (see above), drought tolerant	
Pohuehue <u>Ipomoea</u> <u>pes-caprae</u>	X	X		coastal, beach morning glory, good at holding sandy shoreline, host plant for Kauna'oa (dodder)	
Pohinahina <u>Vitex</u> <u>ovata</u>	X	X		coastal to dry upland, drought & salt tolerant, tolerates varied soil types, purple flowers & attractive grey foliage, lei making, medicine	
SHRUBS					
A'alii'i <u>Dodonaea</u> <u>viscosa</u>	X			coast to dry upland, very drought tolerant deep tap root, good for hedges, leis	
Ma'o <u>Bosxygium</u> <u>tomentosum</u>	X			coast to dry upland, grey-green leaves & bright yellow blooms, specimen plant	
Naupaka <u>Scaevola</u> <u>taccada</u>	X	X		coastal & upland varieties, drought & salt tolerant, hedges	
Noni <u>Morinda</u> <u>citrifolia</u>	X	X	X	coastal, dry to wet areas, large shiny green leaves, fruit yellow & foul smelling when ripe, resembles small breadfruit, very popular for medicine	air layer

PLANT NAME	SEED	CUTTING	OTHER	DESCRIPTION	NOTES
Ti <u>Coccoloba</u> <u>terminalis</u>		X	X air layer	sealevel to upland, not salt tolerant, wide variety of sizes, lei making, many traditional Hawaiian uses	

TREES					
Hau <u>Hibiscus</u> <u>tiliaceus</u>	X		X to 6 feet long	coastal, 2 common forms--upright tree (common in parks) & thicket (hedges & windbreaks)	

Kamani <u>Calophyllum</u> <u>inopbyllum</u>	X			lowland tree, large large seeds, fragrant flowers	

Kou <u>Cordia</u>	X			lowland, common street tree, orange tubular flowers, messy when leaves and seeds drop, prized for wood	

Kukui <u>Aleurites</u> <u>moluccana</u>	X			popular landscaping tree, found sealevel to upland, seeds used for oil & lei-making, messy when leaves and seeds drop	

Loulu <u>Elitichandia</u> spp.	X			Our only native palm, large fan-shaped leaves, varieties range from shoreline to higher & wetter elevations	

Ma'o hau hele <u>Hibiscus</u> <u>brackenridgei</u>	X		X	lowland to dry up- lands, shrub to small tree, yellow bloom is state flower, drought tolerant	

NAME	SEED	CUTTING	OTHER	DESCRIPTION	NOTES
Milo <u>Thespesia</u> <u>populnea</u>	X			common shoreline tree, drought resistant, yellow hibiscus-like flowers, prized for wood, messy when leaves & seeds drop	
Wiliwili <u>Excoecaria</u> <u>sandwicensis</u>	X			coast to dry upland deciduous, flowers white to red, seeds used in lei making, very drought tolerant	
VINES					
'Awikiwiki <u>Canavalia</u>	X			very rare, dry coast vine with 3-lobed leaves & maroon pea- like flowers	

PLANTING MEDIA RECIPES

SEEDLINGS:

1. Commercial potting mix with lots of drainage
2. 2/3 fine sifted cinder, 1/3 commercial potting mix
3. Fertilizer options:
 1. Mix in 1 T. balanced fertilizer (10-30-10) per gallon of media before potting
 2. liquid fertilizer (like Miracle Grow) after first set of true leaves appear

CUTTINGS:

**** NO FERTILIZERS ****

1. 3/4 vermiculite, 1/4 commercial potting mix
2. 1/2 vermiculite, 1/4 peat moss (+ 1 1/4 T. dolomite per gallon of peat moss to balance PH), 1/4 perlite #2
3. Perlite only (mist systems only as drains too quickly for non-mist propagation)

ROOTED CUTTINGS, TRANSPLANTING:

1. 2/3 cinder, 1/3 commercial potting mix
2. Commercial potting mix (for wet land species only)
3. Fertilizer options: 1 rounded T. per gallon of mix, slow-release type recommended for long term potting

FERTILIZERS:

Any well balanced N-P-K blend such as 10-30-10 or 16-16-16. Avoid high Nitrogen fertilizers. Hawaiian plants do not require high levels of fertilizers. Compost and composted manure are excellent additions to potting mixes.

PESTICIDES:

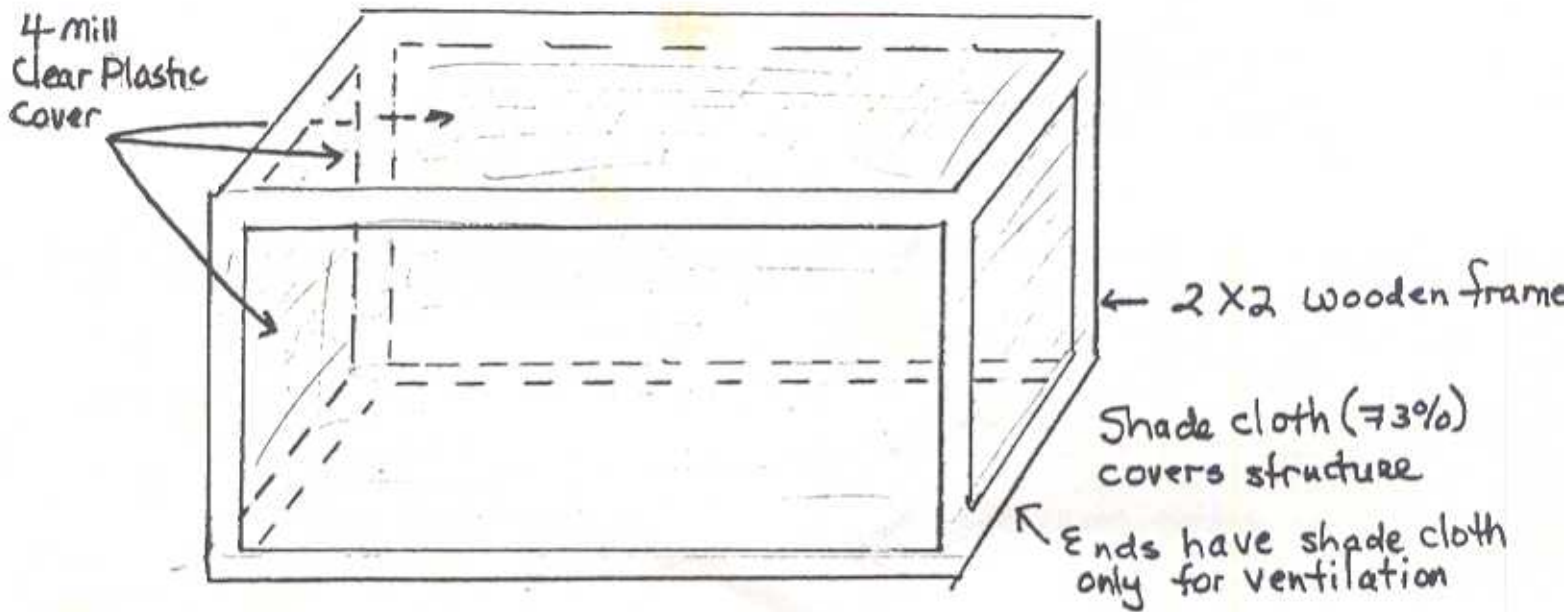
Hawaiian plants are susceptible to attack by insects. This is more of a problem in container culture than in the landscape due to the work of natural predators. The best defense is a healthy plant. Make sure your plant is not stressed by lack of water, fertilizers, or too small a container. Also, it must get the proper amount of sunlight. If a pesticide is needed, we recommend environmentally sound products such as Safer's Insecticidal Soap. Safer has many products such as fungicide, miticide, and weed spray. You should always test these products on a small part of the plant first as a few species may be sensitive to them.

Aphids — Diatomaceous earth works by scratching the insect's body, causing it to dry out and die. It should be sprinkled on and under leaves, and must be reapplied if it gets wet.

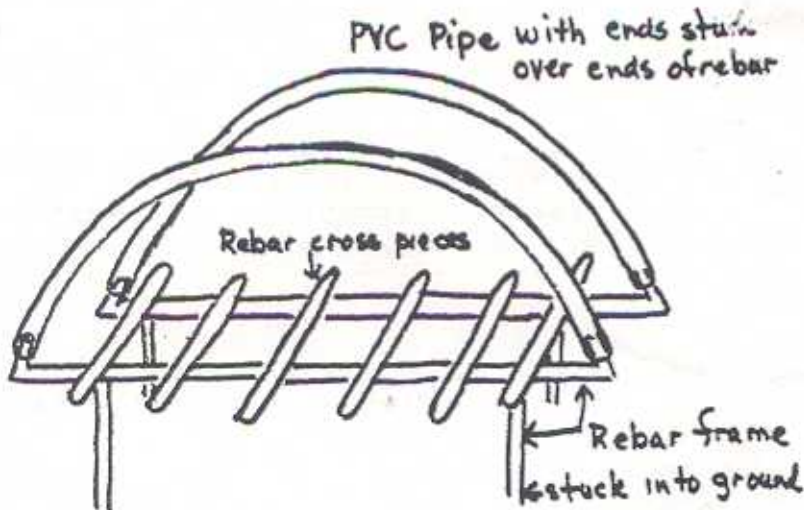
NOTE: Five-gallon buckets are good for mixing small batches of media

NORMAN'S BOX

Covers 2 17" square flats
Sits on table or bench

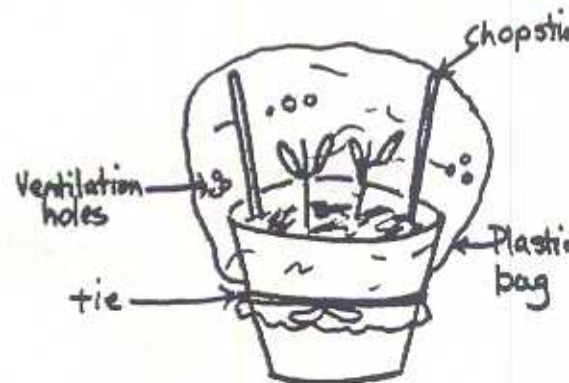


Shade Cloth Covered Seedling Bench



Make longer structure by adding on Rebar frames
Place seedling flats on rebar cross pieces
Cover frame with shade cloth lengthwise
Make PVC Pipe cover 6 feet long so that one width of shade cloth covers it

Flower Pot covered by Plastic Bag for cuttings



Note: Container plants should not be left on the ground for long periods of time as they tend to root in the ground. Raise them on wood pallet or wire-covered bench to allow roots to become air pruned

Hawaiian Native Plants and Water Conservation

Parker Gambino

One of the major overlooked resources of the planet is the bewildering variety of biochemical substances made by plants. Aside from the obvious (agricultural crops as sources of food and fiber), mankind has also been able to exploit various species for pharmaceutical and other bioactive chemicals; often these serve as models for further development via synthetic manipulations that can yield entire families of related beneficial substances. Considering that our current knowledge of plant biochemistry derives from a relatively small number of species that we only partially understand, the remaining unexplored potential of the plant kingdom is truly staggering. This is the great value of biodiversity: by maintaining the great variety of nature's organisms, we retain the opportunity to derive benefits from them. Conversely, when species are lost through extinction, the potential usefulness of their unique assets is permanently gone.

By now the worldwide biodiversity crisis is well known to anyone who reads or watches the news. It is a major challenge to prevent the situation from further deterioration: at high government levels throughout the world, the extreme urgency of current problems makes it difficult for leaders to dedicate adequate resources to long range planning. For most of us at the individual level, a lifestyle consistent with the conservationist ethic will require some adjustments and sacrifices. I believe that most people are willing to make these adjustments and sacrifices provided they have a clear understanding of the long range consequences of their behaviors, are motivated to act, and are provided with a clear and sensible course of action.

Maui has run into a brick wall regarding its water resources. The historical developments leading to our situation, which are beyond the scope of this article, are fertile grounds for debate and argument. Regardless, we now recognize the consequences of our past and current behaviors, and we are motivated to act. Here I offer a contribution to the development of a course of action, based on the value of Hawaiian native plants, and particularly their relevance to water conservation.

Plants native to the Hawaiian Islands have taken many years to evolve into forms that could survive here. There are many island climate zones, based on variable factors such as rainfall, wind, and seaspray; originally each climatic zone had its own community of plants adapted to conditions there. In times of reduced availability of water, plants adapted to the dry ("xeric") conditions of leeward portions of the islands are prime candidates for useful propagation. A planting dominated by such plants is called a "xeroscape" (pronounced zero-scape).

For Hawaiian native plants, there is bad news and good news. The bad news is that we have created our own local biodiversity crisis, with many plant species extinct or quickly dwindling.

Humans have removed native plants from nearly all of the lowlands and replaced them with non-native plants. The good news is that there are remnants available to work with. Some questions relevant to my proposal are answered below.

How can xeroscape plants be used? They can be used as landscape plantings where the availability of water is a limiting factor. Potential sites on Maui would include private lands, such as dry-side resorts and residences, and public lands, such as parks, preserves, and highway roadsides. Plantings around government buildings are an especially good opportunity to provide prominent demonstration of institutional commitment to water conservation.

What native Hawaiian plants are suited to xeroscape use?

Where can these plants be obtained?

How can the resources of native plants be developed further? There is a great need to have our accumulated knowledge of plant propagation assembled into a system for efficient retrieval of information. Additional research topics need to be identified and investigated.

How will we find people qualified to contribute to the development of native plants? At every level of government, and in private organizations such as the Hawaii Native Plant Society, there already are people working on various aspects of this problem. Collectively, we already know a great deal about how native plants could be best used to promote water conservation, and we have the capacity to add to our knowledge through research and development of our native plant resources.

What other values might native plants possess? Our view of the value of native plants should not be restricted to their potential for water conservation. Important other facets include use as potential cash crops (koa), as plants of cultural or medical significance, as habitat for other native creatures such as birds and insects, and as sources for genetic improvements for agricultural crops (for instance, raspberry breeders would love to transfer our native akala's traits of few thorns and large fruit size to commercial stock).

What can we do? Include native plants in our own horticultural plans, and support private and government programs that encourage local and global biodiversity.

What can our leaders do? Pursue a win-win policy of water conservation through the development and promotion of native plants for local landscaping. Provide prominent demonstration projects to encourage dissemination of the xeroscape message and technology.

A xeroscapic native plant program cannot provide the total solution for Maui's water crisis. It is a complex problem that requires a comprehensive water management program. But by using native plants to conserve water we can both do good and do well. It is a significant positive step that can garner widespread support by virtue of its multiple beneficial effects. I encourage our leaders to take this opportunity to adopt and promote a policy under which we can all work together for the public welfare.

LANDSCAPING
WITH
NATIVE HAWAIIAN PLANTS

Using native plants for low-maintenance beautification

Prepared by HO'OLAWA FARMS
Native Hawaiian Plant Nursery
P.O. Box 731, Haiku, Hawaii 96708
(808)572-4835

The use of native plants for landscaping purposes is on the upswing. It is no longer something enjoyed only by the avid gardner.

Why the sudden interest in plants that have been a part of Hawaii for hundreds of years? As it turns out native plants have some practical advantages that make them useful for landscaping. They display a unique combination of beauty and self-sufficiency: A dazzling range of texture and form. Hardiness is yet another quality found among the native plants, they are adaptive to the various soil types and many species are drought tolerant.

But what is really driving the increase use of the native plants is a subtle shift in social attitude: The interest here is not just in preserving our natural plant heritage.

Many people are realizing that a more satisfying environment can be created by incorporating the best of Nature into our lifestyle. The result is a genuinely new concept in landscaping: Low-maintenance, natural landscaping that is more in keeping with the indigenous flora of Hawaii.

Native plants can be used in a variety of landscape arrangements including ground-covers, on embankments to control erosion, or in rock gardens to save water and limit weeds.

Homeowners and landscape contractors are finding that not only do native plants offer a refreshing alternative to traditional hard-edged gardening, but they are considerably less effort to maintain: Less fertilizing and trimming, and less watering.