



Renewable Resources Extension

# Hawai'i Forestry News



Volume 1, Issue 1

Summer 1999

## Welcome to the first edition of HAWAII FORESTRY NEWS

You are invited to use this newsletter to:

- Be informed about the scope of the **CTAHR Forestry Extension Program**.
- Find out about upcoming **workshops** and **educational opportunities** for forestry in Hawaii.
- Learn what **forestry information** is currently available from the Cooperative Extension Service in Hilo and Renewable Extension in Manoa.
- **Discover other sources** of forestry material relevant to Hawaii but available elsewhere.

To be placed on (or removed from) our mailing list, see page 5 for subscription information. An electronic version of the newsletter will also be available.



*J. B. Friday (shown here girdling a tree with a machete) brings new energy and experience to Cooperative Extension's Forestry Program. (Photo: A. Kawabata)*

## A NOTE FROM OUR EXTENSION FORESTER

### The UH Manoa College of Tropical Agriculture and Human Resources Forestry Extension Program is a Year Old

A year has passed since I started work as the first university extension forester in Hawaii. Despite my previous background of eight years of work in forestry and agroforestry here, I have been constantly surprised and delighted by how many people throughout the state are growing trees and managing their forests.

I am brought back to earth, though, by frequent realizations of the enormous ecological problems we face in Hawaii. Just a few weeks ago I took my first ride through the "gorse barrens" of Mauna Kea, expansive areas choked out by a single invasive alien species. When I read articles on forestry from states having a well developed forest industry, I am reminded about how far we have to go. Today, though, it is exciting being involved at the onset of a new, sustainable forest industry and a reawakening of interest in conservation forestry, now called restoration ecology. I will continue to work with individual landowners and managers to get out the needed forestry information and link growers with research done at UH, by the US Forest Service, the Hawaii Agricultural Research Center, and other institutions. We are also developing a pro-active program of workshops and extension literature specifically for Hawaii. When I am not in the field I am reachable at the Cooperative Extension Service at the Komohana Agricultural Complex in Hilo. Please keep in touch.

*J. B. Friday  
Extension Specialist in Forestry*

## CURRENT FORESTRY AND AGROFORESTRY ACTIVITIES IN CTAHR

### Native and Polynesian-Introduced Multicropping Demonstration

Since 1995 on Moloka‘i, Cooperative Extension Agents Kali Arce and Alton Arakaki have been working on an innovative project to investigate growing **kamani** (*Calophyllum inophyllum*), **kou** (*Cordia subcordata*), **kukui** (*Aleurites moluccana*) and **milo** (*Thespesia populnea*) along with cash crops. **Alfalfa** and two varieties of red and pink **ginger flowers** were successfully intercropped and are doing well in the sunny areas. Other interplanting combinations with **anthurium**, **mamake** (*Pipturus albidus*), and **kava** (‘ava, *Piper methysticum*) are underway.

This project will also evaluate kukui for **nut production** and **oil content**. The other tree species will be evaluated for their wood qualities for **crafting** and **building**.

The assessment of **cash crops**, such as kava (used throughout Polynesia for its **pharmaceutical properties** and commercially for **herbal extracts**) and mamake (used as a **tea**) may prove that crops of high value with potential marketability can be successfully multicropped with native trees.

**For more information about this native and polynesian-introduced tree demonstration**, contact Kali Arce or Alton Arakaki, Cooperative Extension Service, PO Box 394, Hoolehua, HI 96729, Phone: (808) 567-6833.

### Herbicides for Weed Control Workshop

**Dr. Philip Motooka** of UH CTAHR taught a workshop on **weed control for dryland forestry** in Kona last December. Several herbicides were tested for effectiveness on **fountain grass**. Fountain grass, an alien invasive species, poses a fire hazard in dryland Hawaii forests.

Among herbicides which do not have residual effects and can be used in areas to be planted later:

- **Roundup** (glyphosate), when applied by a conventional sprayer, proved most effective in control of fountain grass. Even Roundup, however, was only moderately effective in controlling dry, woody grass.

Effective control may require a combination of a mechanical control and herbicides.

- For weed control in rights-of-way where residual activity is desired, **Velpar** (hexazinone) was the best performer.

Dr. Motooka demonstrated **drilling and injection** of herbicides to control weedy tree species at a workshop at the Komohana Agricultural Complex in Hilo in April. Drilling holes in tree trunks with a gasoline-powered drill allows the application of more herbicide than spraying herbicide notches cut with a machete. Herbicides used for injection or notch application included **Roundup** (glyphosate), **Remedy** (triclopyr), and **DMA4** (dimethylamine salt of 2,4-D).

- Holes were drilled every 12 inches around the circumference of the tree trunk, notches were cut every 4 inches.
- Herbicides were used at **100% concentration** and were injected at a rate of approximately **4-ml per hole** for **drilling treatments** and **1 ml per notch** for **notching treatments**.
- Tree species treated by drilling or notching included *Trema orientalis* (**gunpowder tree**), *Melochia umbellata* (**melochia**), *Schefflera actinophylla* (**octopus tree**), *Spathodea campanulata* (**African tulip tree**).
- After four weeks **all gunpowder trees showed complete defoliation** with all herbicides. All three herbicides also **had visible effects on the other species treated**, although defoliation was slower and less complete than on the gunpowder trees.
- **Defoliation was slower** on trees that were **notched** with herbicides sprayed into the cuts.
- Basal bark application of a ready to use solution of **Pathfinder II** (triclopyr), streaking the bottom 12 inches of trunk, caused defoliation of *Psidium cattleianum* (**strawberry guava**), *Schinus terebinthifolius* (**Christmas berry**), and *Filicium decipiens* (**fern tree**) after six weeks.

**For more information on herbicide control for woody plants**, contact Dr. Philip Motooka, Cooperative Extension Service, PO Box 208, Kealahou, HI 96750, Phone: (808) 322-4896. E-mail: pmotooka@hawaii.edu.

## TROPICAL FORESTRY INFORMATION available at our Hilo CES Office

The World Bank recently published three extension bulletins for tropical forestry, which give both practical tips and good general principles in 6-8 pages.

- **Seed Collection** provides information on why it is essential to collect good seed, how to select superior trees, and on seed handling and storage.
- **Essentials of Good Planting Stock** discusses what good planting stock is, nursery management practices, and the use of root trainers vs. plastic pots.
- **Site Analysis and Outplanting** provides information as to how soil and micro-sites affect tree survival and growth and how these can be assessed in the field.

These bulletins are out of print now but copies are available from the Hilo CES Office.

The American Pulpwood Association has published two brochures for forest landowners.

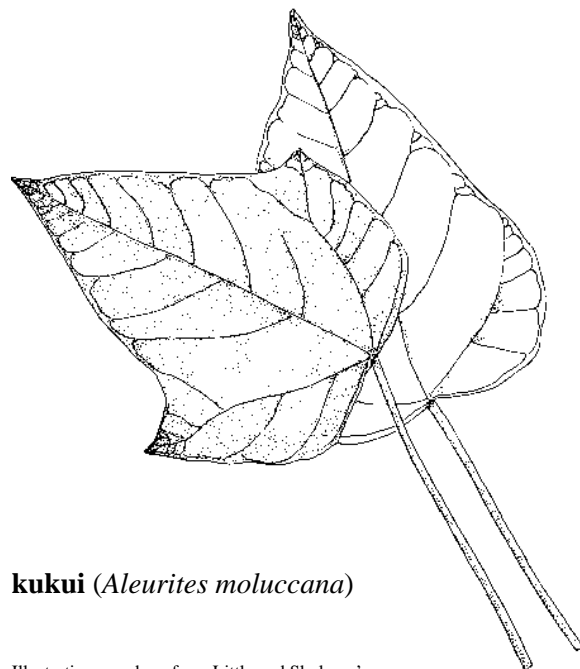
- **Tips to Consider When Selling Your Timber** gives points to consider when planning a timber sale, writing a management plan, and what should be in a timber sale contract.
- **How to Choose a Quality Logger.** Although Hawaii does not yet have a program for continuing education for loggers, this brochure gives landowners useful guidelines on selecting a logger.

A few spiral bound copies of Little and Skolmen's **Common Forest Trees of Hawaii** (USDA Forest Service Agricultural Handbook No. 679, 1989) are still available for distribution. As most foresters, woodworkers, and tree growers in Hawaii know, Little and Skolmen is **the definitive guide to trees in Hawaii**. The authors provide one-page descriptions, line drawings, and summaries of the ecology and management for the most common 150 trees of Hawaii, native and introduced. Introductory chapters also cover forest ecology and forestry in Hawaii.

The USDA Forest Service **International Institute for Tropical Forestry** in Puerto Rico has an excellent series of leaflets on **tropical trees**. Information summarized in these 4-18 page leaflets includes habitat, native and introduced ranges, climate, soils and topography, associated forest cover, life history, flowering and fruiting, seed production and dissemination, seedling development, vegetative reproduction, growth and yield, rooting habit, reaction to competition, damaging agents, special uses, and genetics, plus literature cited. Many are native forest trees of Puerto Rico and are not found widely outside the Caribbean, but others are pantropical.

**A WARNING:** Some of the species listed (marked with an asterisk\*), such as *Fraxinus uhdei* (**tropical ash**), *Paraserianthes falcataria* (**albizia**), and *Spathodea campanulata* (**African tuliptree**), are **problem weeds in Hawaii**.

Following is the list of leaflets by species. Where appropriate, common names for Hawaii have been added. The number following the species name is the publication number for the USDA Forest Service (add the prefix SO-ITF-SM- to each number). For example: *Acacia auriculiformis*, **northern black wattle** would be: SO-ITF-SM-86.



**kukui** (*Aleurites moluccana*)

Illustrations used are from Little and Skolmen's *Common Forest Trees of Hawaii* (USDA Forest Service Agricultural Handbook No. 679, 1989).

## SPECIES LIST

<i>Acacia auriculiformis</i> , northern black wattle	86	<i>Inga fagifolia</i> , guama, Spanish oak	72
<i>Acacia farnesiana</i> , aroma	49	<i>Inga vera</i> , guaba	39
<i>Acrocomia media</i> , prickly palm, corozo	68	<i>Juglans jamaicensis</i> , West Indian walnut	73
<i>Agathis robusta</i> , Queensland kauri	10	<i>Khaya nyasica</i> , East African mahogany	9
<i>Albizia lebbek</i> , siris	7	<i>Khaya senegalensis</i> , West African mahogany, dry zone mahogany	5
<i>Albizia procera</i> , white siris	6	<i>Laguncularia racemosa</i> , white mangrove	3
<i>Alchornea latifolia</i> , achiotillo	60	<i>Leucaena leucocephala</i> , koa haole, ipil-ipil	52
<i>Andira inermis</i> , cabbage angelin	20	<i>Maesopsis eminii</i> , musizi	8
<i>Anthocephalus chinensis</i> , kadam	1	<i>Mammea americana</i> , mamee apple	22
<i>Araucaria heterophylla</i> , Norfolk Island pine	11	<i>Mangifera indica</i> , mango	63
<i>Artocarpus altilis</i> , breadfruit	71	<i>Magnolia splendens</i> , magnolia	80
<i>Avicennia germinans</i> , black mangrove	4	<i>Melicoccus bijugatus</i> , genip, quenepa	48
<i>Azadirachta indica</i> , neem	70	<i>Moringa oleifera</i> , horseradish tree, marungay	61
<i>Bucida buceras</i> , ucar	18	<i>Ochroma pyramidale</i> , balsa	41
<i>Bursera simaruba</i> , gumbo limbo, almacigo	35	<i>Ormosia krugii</i> , palo de matos	83
<i>Byrsonima spicata</i> , maricao, golden spoon	36	<i>*Paraserianthes falcataria</i> , albizia, moluccan sau	31
<i>Casuarina equisetifolia</i> , short leaf or horsetail ironwood	56	<i>Petitia domingensis</i> , capa blanco	66
<i>Catalpa longissima</i> , yokewood	37	<i>Pinus caribaea</i> , Caribbean pine	53
<i>Ceiba pentandra</i> , kapok, silk cotton tree	29	<i>Pinus palata</i> , Mexican weeping pine	54
<i>Citharexylum fruticosum</i> , fiddlewood	34	<i>Pithecellobium dulce</i> , opiuma, Manila tamarind, kamachile	40
<i>Clusia rosea</i> , autograph tree	39	<i>Pouteria multiflora</i> , jacana, bully tree	62
<i>Coccoloba uvifera</i> , sea grape	74	<i>Prestoya montana</i> , sierra palm	62
<i>Cocos nucifera</i> , coconut	57	<i>Prunus occidentalis</i> , almendron	79
<i>Cordia sulcata</i> , white manjack, moral	77	<i>Pterocarpus officinalis</i> , bloodwood	87
<i>Cupania americana</i> , guara, candlewood	44	<i>Pterocarpus macrocarpus</i> , Burma padauk	19
<i>Cyrilla racemiflora</i> , swamp cyrilla, leatherwood	78	<i>Rhizophora mangle</i> , red mangrove	2
<i>Dalbergia sissoo</i> , Indian rosewood	24	<i>Roystonea borinquena</i> , Puerto Rican royal palm	55
<i>Enterolobium cyclocarpum</i> , ape's earpod, guanacaste	15	<i>Senna siamea</i> , pheasantwood, Thailand cassia	33
<i>Eucalyptus deglupta</i> , rainbow gum, Mindanao gum, kamarere, bagras	16	<i>Sloanea berteriana</i> , motillo	84
<i>Ficus citrifolia</i> , jaguey blanco, shortleaf fig	75	<i>*Spathodea campanulata</i> , African tulip tree	32
<i>*Fraxinus uhdei</i> , tropical ash, fresno	28	<i>Spondias mombin</i> , hogplum	51
<i>Genipa americana</i> , jagua	58	<i>Swietenia macrophylla</i> , Honduran mahogany	81
<i>Gliricidia sepium</i> , mother of cocoa, madre de cacao, kakawate	50	<i>Swietenia mahagoni</i> , West Indies mahogany	46
<i>Guaiacum officinale</i> , lignum vitae	67	<i>Syzygium jambos</i> , rose apple, ohia loka	26
<i>Guarea guidonia</i> , American muskwood	17	<i>Tabebuia donnell-smithii</i> , primavera, goldtree	25
<i>Guazuma ulmifolia</i> , Guacima	47	<i>Tamarindus indica</i> , tamarind	30
<i>Hernandia sonora</i> , mago, toporite	13	<i>Tectona grandis</i> , teak	64
<i>Hibiscus elatus</i> , mahoe	14	<i>Terminalia catappa</i> , false kamani, Indian almond	23
<i>Hura crepitans</i> , sandbox, molinillo	38	<i>Terminalia ivorensis</i> , idigbo	12
<i>Hyeronima clusioides</i> , cedro macho	45	<i>Thespesia grandiflora</i> , maga	21
<i>Hymenaea courbaril</i> , algarrobo, locust	27	<i>Thespesia populnea</i> , milo	76
		<i>Zanthoxylum flavum</i> , aceitillo, yellow-sanders	85
		<i>Zanthoxylum martincense</i> , espino rubial	42

(NOTE Add the prefix SO-ITF-SM-xx to each number.) Please limit requests to species you are interested in. For a complete set, contact: International Institute for Tropical Forestry Publications USDA Forest Service PO Box 25000 Rio Piedras, Puerto Rico 00928-5000.

\* **WARNING! Potentially a weed species under Hawaii conditions!**

**UPCOMING EVENTS**

**Tree improvement and Seed Technology  
Forestry Workshop  
July 9th and 10th, 1999**

The Hawaii Agriculture Research Center and the UH College of Tropical Agriculture and Human Resources will be holding a workshop on tree improvement and seed technology for forestry. The workshop will be taught by Mr. Nicklos Dudley, Forester, HARC, and Dr. J. B. Friday, Forestry Extension Specialist, CTAHR, with financial support from the Hawaii Forestry and Communities Initiative and the Hawaii State Department of Labor and Industrial Relations.

Topics will include:

- The science of **tree improvement**
- Examples of **successful programs** in Hawaii with koa and eucalyptus species
- Tree **seed collection and handling**, and
- **Availability of tree seed** for forestry projects.

The workshop will include evening **classroom sessions** at the Komohana Agricultural Complex in Hilo on Friday July 9th from 6 to 8 pm and an all day **field trip** on Saturday June 10th from 8 am to 4 pm. We will be visiting provenance trials for koa and eucalyptus species.

Workshop size is limited to 25. **Register with J. B. Friday.** A registration fee of \$10.00 will cover transportation from Hilo to field sites and a box lunch.

*This newsletter is published by the Hawaii Renewable Resources Extension Program. To subscribe, call, email, or write to us at:*

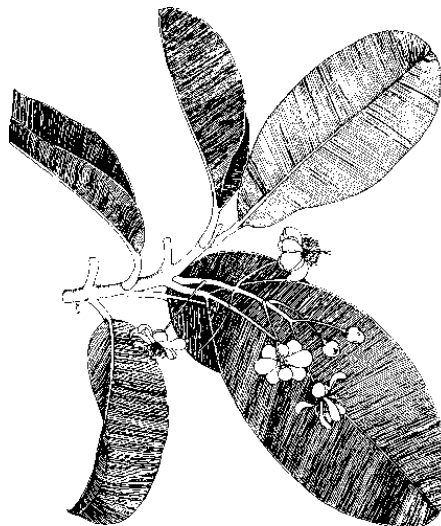
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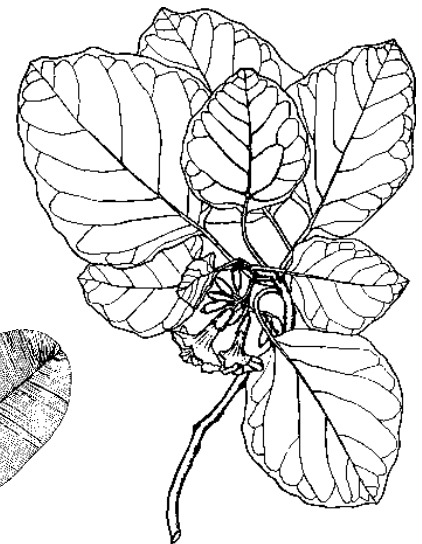
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**milo** (*Thespesia populnea*)



**kamani** (*Calophyllum inophyllum*)



**kou** (*Cordia subcordata*)



**CTAHR**

College of Tropical Agriculture & Human Resources  
University of Hawaii at Manoa

**Forestry extension at the University of Hawaii is supported by the USDA Renewable Resources Extension Act program (RREA), the Hawaii Forestry and Communities Initiative (HFCI), and a grant from the Fund for Rural America (FRA) Program, USDA.** Passed by Congress in 1978 and administered by the USDA, RREA provides grants to states to disseminate information to the public on forestry, rangeland, and other natural resource issues. The goals of Renewable Resources Extension include development of a stewardship ethic, an appreciation of biodiversity, and a knowledge base that will sustain natural resources. RRE works through existing extension programs to incorporate key natural resource concepts.

Samir A. El-Swaify, RRE Coordinator

JB Friday, Extension Specialist in Forestry

Advisory Committee: Bill Cowern, Nick Dudley, Lisa Ferentinos, Charlotte Nakamura, Mike Robinson.

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