A Note from our Extension Forester

Dear Foresters and Tree Growers,

I have been scanning newsletters put out by other forestry extension programs around the country to get ideas for this one. Some are highly polished publications put out by a large staff of forestry specialists, researchers, and county agents. Others, such as the University of Alaska’s newsletter put out by former Hawai‘i forester Bob Wheeler, are more one-man operations. In this issue I try to put out information that is useful to Hawai‘i people who are growing trees or who are working in forestry or other natural resource fields.

As I work with tree growers around the state, I become more aware of the need for good information on forest economics. In this issue you will find reviews of several books on economics for the forest landowner. With the support of the RREA program, we are working on an economics extension bulletin specific to Hawai‘i and are planning a workshop on forest economics this spring. Economics requires integrating both the financial and the biological, and you will see updates on two forestry demonstration sites in this issue, along with an update on the state Forest Stewardship cost-share program. Lastly, an article describes how carbon offset forestry credits may greatly change the finances for forestry in Hawai‘i in the future.

Wishing everyone who needs it a rainy winter,

J. B. Friday
Extension Specialist in Forestry

Tree Improvement Workshop participants examine koa trials at Hamakua Research Station. (Photo: J. B. Friday)
State Forest Stewardship Program Funded

Rumors of the death of the Forest Stewardship Program are greatly exaggerated. While federal funding for the Stewardship Incentive Program was eliminated this year, the state-funded Forest Stewardship Program continues to be funded at a healthy level and continues to receive applications from interested landowners.

Many Types of Projects Funded

The Hawai‘i State Forest Stewardship Program provides financial and technical assistance to landowners and lessors to manage forest lands. While many landowners develop Forest Stewardship plans for timber production, eligible projects also may encompass ecosystem restoration, wildlife habitat, recreation, or water quality. Currently active Stewardship Program participants today are growing high value hardwoods on former agricultural lands, clearing invasive alien species from degraded native forests, and providing habitat for Hawaii’s endangered species.

50% Cost-share Reimbursement Available

Application to the program is a two-step process. Interested landowners first develop a short project proposal outlining the goals of the project and proposed course of action and submit it to the Hawai‘i State Division of Forestry and Wildlife. To be eligible, participants must own or lease at least 5 acres of land to devote to forestry and commit to forestry for at least 10 years. Proposals are reviewed quarterly by the Forest Stewardship Coordinating Committee. If a proposal is approved, the landowner goes on to develop a full management plan, usually with the help of a professional natural resources consultant. After the full plan is approved by the committee, the landowner is eligible for a 50% cost-share reimbursement for eligible practices. Forestry practices covered include reforestation, forest improvement, windbreak management, wildlife habitat improvement, recreation enhancement, and others. They do not cover non-forestry practices such as orchard establishment.

Find Out More

The Forest Stewardship Handbook outlines the requirements for the program in detail, including the requirements for the pre-proposal. For copies of the handbook or further information on the program contact the Division of Forestry and Wildlife, 1151 Punchbowl St. Room 325, Honolulu, HI, (808) 587-0166.

Tree Improvement Workshop (Continued from page 1)

offspring. Later that day participants traveled to Pepeekeo, where Nick Dudley showed off provenance trials and superior tree selection work done by HARC with the species *Eucalyptus saligna*, *grandis*, *urophylla*, *deglupta*, and the *grandis x urophylla* hybrid. While the bole form of the *Eucalyptus* species was generally good, the best-growing provenances grew significantly faster than worse ones.

New Seed Technology Manual

Participants in the workshop also learned about seed collection and handling and issues regarding seed importation. Perhaps most importantly, local tree growers had an opportunity to get together to share information and learn from each other. A manual developed for the workshop, *Seed Technology for Forestry in Hawai‘i*, is available and can be requested through the CTAHR Publications and Information Office (phone: 808-956-7046 or email: ctahrpub@hawaii.edu). A free downloadable version is also available at the CTAHR Website (http://www2.ctahr.hawaii.edu/oc/freepubs/).

Remember: “Good seed doesn’t cost, it pays!”

Harvest-to-Market:

Adding Value to Hawaii’s Woods

Copies of the Hawai‘i Forest Industry Association’s May 1998 Conference Proceedings are available. Contact HFIA at (808) 933-9411 to order ($8 shipping & handling). The Renewable Resources Extension Program of the University of Hawai‘i CTAHR Cooperative Extension Service helped publish and distribute this document. A limited number of copies are available from our offices as well.
Economics Book Reviews

Tree farming can be a tough business, with very long term investments, variable prices and markets, and high up-front costs. Fortunately for us in Hawai‘i, tree farmers all over the US face the same problems and many books on business advice for the for the tree farmer have been written. While the tree species and markets are different, the financial principles are the same here as everywhere else in the world. The following books are all available from Forestry Suppliers.


This book contains all the financial formulas a grower needs when she is ready to sit down in front of the computer and analyze the finances of a forestry project. It is clearly written and full of examples but not light reading. Written by two professors, it would work well as a textbook for a forest economics course. Topics covered begin with basic principles of compound interest and then move on to financial criteria for evaluating forestry projects such as Net Present Value and Internal Rate of Return, using financial criteria to determine optimal rotation ages, analyzing silvicultural practices such as pruning and fertilization. Final chapters cover taxes and computer programs. “Basic Concepts” is broader in scope but similar in tone to “Essentials of Forestry Investment Analysis” by Haney and Gunter, the manual used in the series of forestry economics seminars given by Harry Haney in Hawai‘i in 1996.


In contrast to “Basic Concepts in Forest Valuation and Investment Analysis”, “How to Make Money” covers the entire business of tree farming. Vardaman owns and runs a private company buying and selling timber and has condensed his advice for landowners into this book. Practical rather than academic in tone, the book contains advice on how to choose a consulting forester, how to solicit bids for a timber sale, how to find markets, and how to minimize management expenses and taxes. Basic financial analysis is also covered. With examples drawn from private, non-industrial forest lands in the American south, this book shows the Hawai‘i reader how a well-developed forest economy operates. The author’s discussions of the timberland business make the important point that land with established trees is more valuable than bare land and affords opportunities for both buying and selling.


“Farming the Small Forest” covers a wide range of forestry topics of interest to the tree farmer. Sections include silviculture, harvesting, administration, forest uses other than timber, and forest stewardship. Information on economics is minimal beyond a simple compound interest formula and some advice on taxes. The examples presented are again largely drawn from the American south and Hawai‘i readers may be surprised by some of the dated sample costs given, such as $25 for a thousand pine seedlings.

Penny Levin New Service Forester in Hilo

As the new service forester with the state Division of Forestry and Wildlife in Hilo, Penny Levin is working with landowners and the community to educate people about forestry and the importance of forests to Hawai‘i’s economic and ecological health. Through the USDA Natural Resource Conservation Service, she will also be working with the Forestry Incentive Program, helping landowners interested in establishing small scale tree farms. Penny has worked for years in Hawai‘i on watershed health issues. Previously she worked with community-based watershed restoration and community use of non-timber forest products in Thailand. Penny replaces Beverly Harben, who has moved on to a job with NRCS in California. The service forester position is partially supported through a grant from the Hawai‘i Forestry and Communities Initiative and partially by NRCS. Penny may be reached at (808) 974-4388.

Welcome aboard, Penny.
Forestry Demonstration Sites Flourish

While trials and demonstrations of forestry trees have been done in Hawai‘i since the last century, few were established at lower elevations, since the land was slated for agriculture. With the recent interest in forestry as part of a mix of land uses, several forestry demonstration sites have been established by different agencies throughout the state. These afford interested landowners an opportunity to see common forest plantation trees grown under local conditions.

UH Manoa Forestry Extension Site

The high-value hardwood demonstration at Pepeekeo was planted in December 1998 on former cane lands owned by C. Brewer. The site is characterized by high rainfall (averaging over 150 inches per year) and deep, highly leached soils derived from volcanic ash. Maintenance has included three rounds of weed suppression and three rounds of fertilization (three ounces of 14-14-14 per tree per application), plus pruning of poorly formed trees. A major problem at the site has been poor drainage during periods of heavy rainfall. Deep ripping to improve drainage would help tree establishment on similar sites. The demonstration is a joint project of the UH forestry extension program and the UH Forest Production Biology project and is funded by the Renewable Resources Extension Program. For more information on the site, contact J. B. Friday.

UH Hilo Site

The University of Hawai‘i at Hilo College of Agriculture, Forestry, and Natural Resources Management established a forestry demonstration in 1995 as part of the forestry instructional program. The site is at the UH Hilo farm in Panaewa, which is on a thin organic soil over a‘a lava and also receives over 150 inches of rain a year. Native, Polynesian-introduced, and exotic trees are planted alone or interplanted with the nitrogen-fixing Acacia angustissima. The acacia is periodically cut back and the branches are applied to the trees as a nitrogen-rich mulch. Results to date show no overall beneficial effect of the intercropped nitrogen-fixing trees in most cases. Competition for other resources such as water, light, and mineral nutrients may override any benefits from additional nitrogen. The lack of much organic matter or mineral soil over the a‘a lava rock results in a low cation exchange capacity for the soil and high leaching and gaseous losses of the nitrogen supplied in the cuttings. Soil samples collected at the site during the spring of 1999 showed no increases in total nitrogen. Any beneficial effects of the nitrogen-fixing trees on the performance of the plantation tree species will prob-

Lines in the middle of the boxes show the median height of each tree species, boxes themselves show the middle 50% of the heights, lines show the range of 90% of the heights, and the dots show the range of 95%.
ably require a much longer time and be directly related to soil organic matter formation and build up.

Another UHH forestry plantation that has recently been added is a common garden planting of different ‘ohi’a (Metrosideros polymorpha) genotypes. For more information on the site, or the forestry program in general, contact Dr. Randy Senock, UH Hilo CAFNRM, 808-974-7676, or by e-mail at senock@hawaii.edu.

**New Forestry Information on the Web**

Several new publications on weed control for forestry have been added to the CTAHR website. *Woody Plant Control for the Home, Pasture, and Forest* by Philip Motooka and others and *Before You Buy or Apply an Herbicide...* by Charles Nagamine are available as *.pdf* files under the Weed Control section of the CTAHR publications website (http://www2.ctahr.hawaii.edu/oc/freepubs/index.asp).

The USDA Forest Services’ manual *Silvics of North America* (Agricultural Handbook No. 654) is now available online at http://willow.ncfes.umn.edu/silvics_manual/Table_of_contents.htm. While most of the trees covered are temperate, foresters from Hawai‘i and Puerto Rico have added a few chapters on tropical species, including koa (*Acacia koa*), maría (*Calophyllum calaba*), ironwood (*Casuarina* spp.), Spanish cedar (*Cedrela odorata*), laurel (*Cordia alliodora*), several *Eucalyptus* spp., silk oak (*Grevillea robusta*), Melaleuca, ohia lehua (*Metrosideros polymorpha*), monkeypod (*Pithecellobium* [note: now *Albizia* *saman*]), and kiawe (*Prosopis pallida*). Each article includes the ecology of the tree, preferred sites, life history, growth and yield information where available, pests and diseases, and uses. The articles are well researched and contain extensive references.

The USDA Forest Service’s Institute of Pacific Islands Forestry has been conducting forestry research in Hawai‘i and the Pacific since 1958. The bibliography of the Institute is now available online at http://www2.hawaii.edu/~dpenn/IPIFpubs.htm. Most publications, both those published by the Forest Service and those appearing in scientific journals, are available at the University of Hawai‘i Hamilton Library. Articles published by the Forest Service are available from PSW Station Publications Distribution, 3825 East Mulberry St., Fort Collins, CO 80524-8597, (970) 498-1719. Ordering information is given on line at http://www.pswfs.gov/Tech_Pub/dist.html.

**Tax Tips for Forest Landowners for 1999** by Larry Bishop of the USFS Southern Region is available at http://www.r8web.com/taxtips.

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**‘Awa Production Guide Published**

A new guide to ‘awa (*Piper methysticum*) production has been published by the Association of Hawaiian ‘Awa. Authors include Jerry Konaunui and Ed Johnston of the Association, Jim Henderson of Puu O Hoku ranch, Jeri Ooka and Scot Nelson of UH CTAHR, and Tom Osborn of the Secretariat of the Pacific Community. The guide covers establishment, maintenance, pests and diseases, and harvesting. Copies of the *‘Awa Production Guide* are available from the Association of Hawaiian ‘Awa (PO Box 636, Pepeekeo, HI 96783).

Tree species are *Eucalyptus deglupta* (age 30 mo.), *Gmelina arborea* (31 mo.), Narra (*Pterocarpus indicus*, 41 mo.), Kamani (*Calophyllum inophyllum*, 41 mo.), Kou (*Cordia subcordata*, 25 mo.), Milo (*Thespesia populnea*, 31 mo.), Ko‘a (*Acacia koa*, 31 mo.), Naio (*Myoporum sandwicense*, 15 mo.) Error bars between two treatments represent standard errors.

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**Eucalyptus grandis**
Carbon Sequestration Conference Presents Various Role Models

The Hawai‘i Forestry and Communities Initiative (HFCI) and Trees for Life sponsored a conference on carbon sequestration credits for forestry on November 9th, 1999. Participants learned how sequestering carbon in forests can help combat global warming, what financial incentives for growers exist and what projects have taken advantage of them, and what some possibilities for Hawai‘i are.

Many scientists believe that increased carbon dioxide emissions from burning fossil fuels and burning vegetation during land clearing are contributing to the carbon dioxide buildup and thus to global warming. Growing trees fix carbon dioxide from the atmosphere into the cellulose and lignin that make up wood. If new trees are planted, the carbon taken up as they grow will offset some the emissions from burning fossil fuels.

Carbon Offset Credits as an Income Source

Spurred in part by the Kyoto Protocol regarding global warming, some industries have already begun efforts at limiting net carbon emissions by subsidizing forestry projects. A market in carbon sequestration credits is developing internationally, with carbon producers offering subsidies of $10 to $40 per ton of carbon. Dr. David Brand, state forester for New South Wales, explained carbon offset forestry programs in Australia and noted that forestry projects of the future may be seen as primarily providing environmental services with timber as a side product. Mr. Tim King of the Upper Columbia outlined a carbon offset forestry program in Washington state managed by the RC&D. In this project, over fifty private landowners banded together to offer carbon credits to local power companies to support their reforestation work. Mr. Mark Powell of Winrock (formerly of NFTA in Maui) described a project in Bolivia where local authorities earned carbon offset subsidies by sparing a tract of rainforest from being logged.

One question raised during the conference was whether carbon credits would be extended only to special carbon offset forestry projects or whether any forest plantations would be eligible. Philosophically it makes sense that people be required to do additional projects to sequester more carbon and not just be paid for doing business as usual. Enforcing additionality does not seem practical, however, and the system may be evolving to giving credit to anyone growing trees or reforesting barren areas.

A second question involved the minimum economic size for a carbon offset forestry project. The Upper Columbia RC&D included participants with as little as 1.5 acres. However, the administrative costs of establishing a carbon offset forestry program were estimated to be $100,000 to $200,000, clearly too much for small landowners to go it alone.

Opportunities for Hawaiian Forestry

Hawai‘i has two distinct advantages when it comes to carbon offset forestry: a year-round growing season and a stable political climate. Forest plantations in Hawai‘i can sequester from five to 20 tons of carbon per acre per year, growth rates that temperate countries can’t match. Few other tropical places have the social and political stability to insure investors that the forest plantations established will not be cut over in the near future.

Opportunities for tree growers in Hawai‘i to obtain carbon offset credits will no doubt exist in the future as carbon markets develop. Growers were urged to document their progress in reforesting the land. Knowing the volume of wood produced (and hence the amount of carbon sequestered) will help growers document their accomplishments when credits become available. The State of Hawai‘i is also interested in taking advantage of carbon credits to help with reforestation costs for state lands.

To Learn More

For more information on carbon offset forestry, see the Winrock web site at www.winrock.org/REEP/forest_carbon_monitoring_program.htm. For more information on global warming, see www.hotearth.net.

koa pod (Acacia koa Gray)
Urban Forestry Grants

Kaulunani, a program of the DLNR Division of Forestry and Wildlife, awards federally funded urban forestry grants. It seeks to increase the participation of the community in Hawaii’s urban forest by providing financial support in the form of cost-share grants for urban forestry activities such as Arbor Day, tree planting and maintenance, and education and training programs.

**Eligible Applicants:** Any non-federal organization operating within Hawai‘i seeking to improve Hawaii’s Urban Forest may apply.

**Maximum Grant Request:** $10,000 and must be at least equally matched with non-federal dollars or in-kind contributions.

**For More Information:** Call Jackie Lee Rayla (672-5167) or Teresa Trueman-Madriaga for details (672-3383). Email: jralya@hawaii.rr.com or ttm@lava.net.

**200 Grant Deadlines:** February 15th, May 15th, August 15th, and November 15th.

The Kaulunani Urban and Community Forestry Cost-Share Grant Program provides one way for you to take action and to get involved. The Kaulunani Council challenges and encourages you to participate.

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http://www2.ctahr.hawaii.edu/forestry/

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