

# THE PERMACULTURE ACTIVIST

No. 24

A Quarterly Voice for the Permaculture Movement in North America

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## The Process of Creativity



### A Holistic Approach to Design

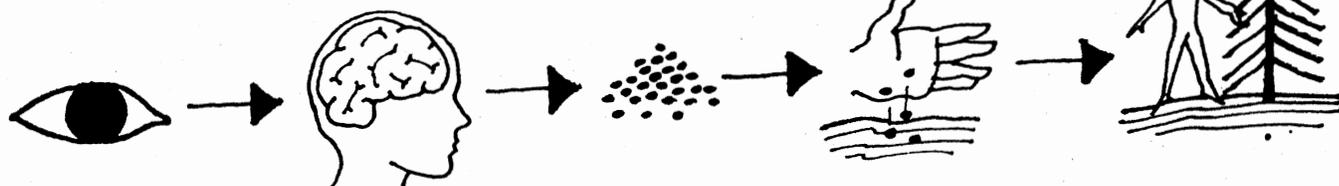
Patty Ceglia

Permaculture is an ethical approach to creating human habitat, based on universal Laws of Nature. In order to carry out this creative process in a truly ethical manner, it is necessary for the human/designer to possess the highest degree of integrity she or he can muster.

Design is the transformation of thought into form; the physical manifestation of ideas. How do we insure that our integrity will be maintained throughout the design process, resulting in an integrated and beneficial solution? How do we avoid compromising our ethics for reasons of budget, legal, resource, or other restrictions? How do we tap our whole creative capacity and invent ethical design solutions? We do this by using all of our human potential.

and appears to be "naturally" occurring. Examples of this are visible in the habitats of many indigenous peoples who are truly "one" with their environment. The degree of beauty inherent in functional design is evidence of how closely connected the designer is with nature.

The products of Bill Mollison's creativity are obviously the result of a profound vision. However, we cannot apply his techniques arbitrarily. Design is a big responsibility. The following method incorporates a focusing exercise to assist in our knowing how to act, how to design. It can be used for designing property, buildings, systems, technologies, etc. For illustration purposes, I describe the process as if designing an entire site.



Humans, by nature, are spiritual, mental, and physical beings. If we omit any of these characteristics from our design activity, we are functioning at less than our whole creative capacity. Many of us in Western society neglect to incorporate consciously the spiritual aspect of being into our creative activities. The design method I use integrates spiritual awareness with mental and physical abilities. No special training or experience is required on the part of the designer, only a desire to be wholly creative, wholly human. When sincerely employed, it has been my experience that this process produces results which far surpass the simplicity, complexity, efficiency, and beauty initially imagined; it can reflect personal integrity.

Design is an expression of the co-creative relationship between humanity and nature. Humans provide the direction or intent; nature provides the physical material and framework (Laws of Nature). Through design we have the opportunity to participate in this relationship with nature by applying the ethics we hold toward the earth as a whole, or macrocosm, to our given site, or microcosm. When these ethics are applied correctly, the design, once realized, is synaesthetic, eliciting a sensory response from its human occupants. Nature responds to the human input by taking on certain forms (growth). Humans respond to nature's input by experiencing joy and a heightened awareness (growth). When this level of interaction with nature is achieved, human intervention is not so apparent,

#### Step 1 - THE VISION Intent, Statement of Purpose



This step generates the designer's focus and will provide criteria for all decision-making throughout the design process. Write down all the qualities which will characterize your final design solution, and all the ethics which it will represent and comply with. Make a long list; include everything you think is important. Rather than copy the Ethics of Permaculture from the Designer's Manual, put them into your own words. Be specific; be ideal; be practical; be abstract (1). For example: "All building materials shall be in their natural organic state." or "This habitat should feel like a Garden of Eden." Use affirmative rather than derogatory language to state your ethics. This helps to support your endeavor.

Contemplate this list as a whole and invent a symbol or simple image to represent its meaning (the essence of your final design). A simple graphic diagram may suffice. An archetypal symbol may be appropriate. If you are so inclined, meditation is an excellent way to invent the symbol. Allow your intuition to surface. This symbol may come to you when you're not thinking about it, and it may even shock you. If so, analyze its essence and you will see that it is indeed the perfect representation.

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## FROM THE EDITOR

As permacultures are notoriously hard to photograph, so the mind map by which they come into being is hard to describe. This issue is an attempt at such a description. It points at the intangible process of creativity, surveys the ragged edges where permacultures take hold, invokes the future as a key to understanding the present, and leaves us finally with no consolation in the face of difficult work.

Permaculture is a dangerous occupation. Taken seriously it leads to a radical re-examination of all structures. Tom Ward reveals that most information circulating in society is disreputable hearsay, so far are we from the ground of nature and direct experience. Dan Hemenway and Craig Elevitch in generously sharing their work experiences lead us to wonder if the power and creativity which permaculture methods can generate are to be endlessly squandered in marginal climates among alienated people or if there is any place left in North American society for common sense, respect for nature, and humane values?

Design, as Patty Ceglia so clearly outlines, is a simple, direct process of translating our values, our feelings, and our needs into forms, structures, and systems in the landscape and in society. Creativity grows directly from our integrity as individuals. It is nurtured by contact with nature and humans "in good heart," as Bill Mollison reminds us, and we must, who would face the world's woeful dysfunction, remember to favor ourselves with regular doses of good company, fresh thought, and healthy land.

We have included in this issue an index to the preceding 23 issues of *The Permaculture Activist*. It begins on page 16. The index is a way for us to see where we have been and to make of these past seven years work a resource. Though conceived last year, most of the work of the index has been done in the past few weeks. It proved more elaborate than we first anticipated. We hope that it will prove itself useful to those of you who have access to back issues of *The Activist*. Many of the earlier issues are now out-of-print, but we continue to make them available as photocopies. Please see page 38 for ordering information.

In an ambitious project such as this, some errors are bound to enter. We hope they have been few. For the many long hours of tedious abstracting, checking, typing, and proofreading which made this issue so demanding, my sincere thanks go to our editorial staff, pressed into service under extreme conditions: Beverly and Carl Winge, Cindy Walsh, and Daniel Blacklock.

Circulation of the paper, though small, continues to grow steadily, and we are gratified by the strong positive response to our recent issues. We remain utterly dependent on the vital life of the permaculture community for our continuation. The flow of good articles for publication is still intermittent. We are deeply grateful for material which you can share with the community. We would welcome any suggestions for improving our information and resource cycles.

Our best hope lies in the enthusiasm and commitment of creative and caring individuals. We need more helpers and we need to support those who are producing, designing, implementing, teaching, and documenting permaculture.

We are a permanent culture, or perhaps I should say, we could manifest one, given time and access to resources. The challenge now seems to me to be for each of us to manifest our

integrity and to learn as much as we can about the ways of a cooperative society.

The world that we would like to live in already exists. It is in our mind, and bits, pieces, and reminders of it may be found in every quarter. Permaculture teaches us how to assemble artificial ecosystems so that they naturalize and become regenerative--it's a bit of magic, that way. Everyone of good heart holds some part of the picture. Putting it together is the essence of community work, the soul of permaculture. Bring out your best vision, don't be afraid of it, and offer it 'round.

What's in your mind?

## Nepal Community Support Group (NECOS)

NECOS was set up April 1991 as a non-profit research and educational institute to pursue and promote the ethics and principles of Permaculture as adapted to the Third World/Nepali context. NECOS works to promote ecologically sound and sustainable community development activities by design, in ways that can assure self-determination through the understanding and meeting of basic needs (as a priority) and the preservation of the natural resources providing those needs. NECOS believes in investment in crucial resources of soil fertility, seed, biomass, information, and social services, and looks to create a worknet of experienced and dedicated practitioners willing to support local self-help schemes. NECOS hopes to set up a professional and cooperative consultancy offering:

- Development of working farms to demonstrate (seeing is believing) and provide training (learning technique), seed/seedlings (to do), and administration on a district scale;

- Education - integration of Permaculture principles, ethical education, practical ecology, etc. into the school system, involving children in problem solving;

- Training in Low External Input Sustainable Agriculture (LEISA) techniques, Permaculture, horticulture, weaving, beekeeping, and other subjects to increase village skills and allow income generation potential;

- Design work in villages, towns, cities, and common properties to fill the needs of the people and sustain the environment;

- Farmers' extension services - field days, seed banks, *in situ* training courses;

- Technical and social research into sustainable and traditional agriculture, appropriate technology, and social systems with a view to their value in development and sustained growth;

- Support to existing government and non-government organizations working towards similar ends;

- Demonstration in farmers' fields and on common properties;

- Support of human rights for underprivileged groups.

**Methods of work:** holistic, sustainable natural farming; increasing local skills and developing local industries; preservation and promotion of diversity in cultural, biological, and information systems; utilization of existing resources - indigenous farming systems and successful community structures; recycling of nutrients, information, and money, minimize inputs and maximize what can be achieved through self-development.

**Existing resources:** working sites in Western Nepal (Jajarkot and Surkhet) and Kathmandu have been developed by NECOS members over the past 3 years. We will draw upon these resources as models in the development approach. NECOS is linked through the international PC network.

NECOS, PO Box 3724, Kathmandu, Nepal, fax: 977-1-225277.

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# The Process of Creativity

Patty Ceglia, continued from Page 1

I suggest using a bound blank notebook to sketch and record this step plus all other ideas that come to you throughout the design process so that you can always trace back to the origins of your thinking.

Step 1 serves to impress upon the psyche a strong focus which will lead the designer forward like a guiding light. It defines the direction of the designer's progression so that she doesn't get lost in the process. This step acts as a metaphor or abstraction of the creative process, imitating and stimulating the creative brain activity which will render the final design solutions. It serves as a mechanism for developing integrity in our intentions so that our final design will reflect this.

In addition, this step releases our personal power. The present state of our environment is, from one perspective, the result of a lack of integrity on the part of those with material and social power, and the result of a feeling of helplessness and powerlessness on the part of the masses who follow. We are currently experiencing a physical manifestation of the impure mental state of human consciousness. Having demonstrated our destructiveness, we humans are now choosing to demonstrate our creativity. To reverse this pattern, we must raise our consciousness before applying ourselves in the physical world.

The purer our thoughts, the purer and more beautiful the physical forms we create and design.

## Step 2 - THE PROGRAM

This step defines the functions of the design.

Stipulate the projected physical function: What are the operations? What is being produced? What is being sheltered, contained? What technical functions are necessary? What resources are needed for these functions (water, soil, trees, animals, food, building materials, people (skills, labor, etc.)?)

Stipulate the projected economic function: What is being marketed (produce, skills, materials, etc.)? What exchange (trade and finance) is necessary? What budget parameters exist initially? What technical functions are there (transportation, etc.)?



Stipulate the projected social function: What are the relationships between people within the site context? What are the relationships between people outside of the site context (individuals, families, friends, community, cultures)? What are the technical functions required (communication, etc.)?

Stipulate the projected energy function. What energy is required (heat, light, power)? For what purpose (warmth, cooking, bathing, technologies)? For whom or what (people, animals, plants)?

Stipulate the projected time frame (if any): What are the limitations? What are the phases?

## Step 3 - ANALYSIS

This step defines the parameters of the design and documents the characteristics of its components (site, economic, social, energy).

For each of the following categories analyze component characteristics and separate them into advantages or constraints. Be objective. Don't dismay, constraints will be transformed into advantages wherever possible. Limitations produce creative solutions. The challenge is to achieve a balance.

Site —

Natural resources:

water (surface, ground, rainfall);

earth (soil);

landscape (topography);

climate (seasonal temperatures, solar

orientation, wind, etc.);

vegetation (existing, native, forest, etc);

animals (wildlife).

Legal requirements:

zoning; building codes.

Access and circulation:

vehicular/pedestrian;

existing/potential roads.

Existing infrastructure:

utilities (power, sewer, gas, etc.);

water (well, municipal).

Neighboring property:

any interference;

potential sharing/bartering;

power lines and gas pipeline;

noise, air, water pollution.

History of site:

nature;

pollution;

people (emotional discharge, warfare/

peace);

earth energy.

Examples of constraints — poor drainage, prior use of pesticides, etc.

Examples of advantages — long seasons, natural windbreaks, abundant building materials, etc.

## Methods of Site Analysis

Direct observation; hard data collection (maps, reference material, soil tests, local people); dowsing; meditation (taps the spiritual realm of nature, providing clearer perceptions and understanding of what we experience with our senses.) (2,3)

Economic—Examine the proposed economic structure, identifying resources, problems, needs: skills; labor requirements and potential; finances; market/trade; time requirements or limitations.

Social—Examine the proposed social structure, identifying resources, problems, needs of: individuals, family, community, cultural issues, public/privacy issues.

Energy—Examine existing systems, identifying needs, yields, and wastes; natural resources to be tapped on site; potential alternatives.

## Step 4 - RESEARCH

Research the potential of each individual component from Step 3 (site, economic, social, energy). How can you satisfy its needs, its application or function, its relationship to other components? Research the introduction of new components from Step 2 or initiate and research new ones.

Methods include: observation of nature, deduction from nature; listing characteristics of components; the concept of guilds; incremental design (1).

## Step 5 - SCHEMATIC DESIGN

Determine the best interrelationships between components based on needs and benefits, and cooperation versus competition. Develop plan(s) of relative placement and access between major components. Attach an approximate scale to individual assemblies relative to each other and the site.

Methods: Bubble diagrams depict components in the form of bubbles cut out of paper. Illustrate the scale of components by the size of the bubbles. Move them around on a sheet of paper to arrive at relationships between them. Show access and direction between bubbles with arrows.

Tracing paper: Use a short roll of paper for sketching small scale drawings.



Use the paper liberally; be free with your thoughts. Develop the progression of your thoughts so that you can trace back to the source of any one idea.

Don't be put off by legal requirements. Be creative about circumventing them. Variances may be possible. Some areas of the country are more lenient than others.

Apply the Zone and Sector Method (1). Apply the concept of Succession. Base all decision-making and evaluate all schemes on their compatibility with your "vision" from Step 1.

### Step 6 - DESIGN DEVELOPMENT

After a general lay-out is arrived at, refine the specific designs of components within the design; refine the access and interface between components. Apply size and distance. Develop a schedule for implementation.

Methods: Continue sketching on a wider roll of tracing paper; overlay when necessary. Enlarge the scale of your sketches. Apply mechanical drawing when you're ready, using a scale for accuracy and dimensions. Again, base all decision-making and evaluate all schemes on their compatibility with your "vision" from Step 1.

### Step 7 - DOCUMENTATION

Drawing is like a language. It is for our own reference and for those others involved. Most likely we are communicating with a small number of people for our own private purposes. Thus the language can be our own—whatever makes sense to us and is communicable to those others involved.

Methods:

Mechanical drawings, or free-hand tracings of them, to scale.

Site plans—use a "birds eye view"; draw what you would see from above the property; use an engineer's scale to conform to reference maps you are using.

Construction drawings—dimensioned plans, elevations, sections, and details as required; use an architect's scale.

### Step 8 - IMPLEMENTATION

Implementation follows the sequence laid out in the design schedule, but is subject to ongoing change because the site, its structures and inhabitants, are a living, growing entity.



### Rules of Thumb

If any of the steps of this process are neglected, confusion, frustration, waste of time, and lack of direction may take place. This process is "designed" to be focused, creative, efficient, educational, and fun and to promote growth. In other words, it is a permaculture method.

When you get stuck, can't make a decision or find a satisfactory solution, trace your steps backward until you find the root of the problem and start over.

Until the documentation stage, don't spend time laboring over neat drawings of a developing design because you may get attached to the idea, good or bad. Be sketchy, diagrammatic; use color. Be free. Use symbolic or simple graphic images and written descriptions rather than detailed explanatory ones. Start at a small scale; work your way up to a larger scale.

The design process should generate its own solutions, structure, technologies, connections, and aesthetics. Don't automatically copy someone else. Never apply a technology, a building "type," an assembly, or a style just because you've seen it before. Break down design components to their essence, their bare bones function, before designing a solution. This is the creative process. For example, rather than design a "house," design a shelter from cold and weather, a place to eat, to sleep, etc. For example, rather than design a "bathroom," design a place to clean the body, a place to relax the body; a place to eliminate body wastes. Do these opposing functions really belong in the same space?

Are current "appropriate technologies" really appropriate? Many create pollution in their manufacture or cause some other side effect. The present decade will see the rise of technologies which will more directly and thoroughly work with the Laws of Nature, demonstrating a clearer understanding on the part of the human inventor.

Trust your inventiveness. Don't complicate functions. Due to a lack of spiritual development as humans, our imaginations are restricting our creativeness. The most creative minds have incredible imaginations. You don't have to be a physicist. Many alternative solutions to today's environmental problems will arise from the "grassroots" level (the masses). The intentions here can be purer, uninhibited by the demands of professional funding sources (universities, large corporations, etc.) which presently rule the powers that be. Limited thinking is a result of social condi-

tioning—religious dogma, commercial advertising, repressive educational systems, etc. Expand your mind. Drop limited thinking. Censor your external influences (newspapers, television, peer pressure, etc.) These influences limit the creative mind.

Aesthetics are the product of creative thinking and of a true understanding of natural laws. We do not have to be artistic. We simply have to be original thinkers with a respect for natural order. Beauty is an inherent human need. If our vision is beautiful, our design solutions will be beautiful.

All the steps of this process can be used again in microcosm when you are designing a specific component—an assembly, a house, a technology. Start with a vision and repeat the process again.

It's been my experience that this creative method raises the designer up to a state of enthusiasm. One feels exuberant! The original meaning of the word, enthusiasm, is feeling or translating the divine in our experience. It's fun!

The more you meditate on your symbol, site, etc., throughout the design process, the more expediently the process will flow. This is permaculture — efficient, wasteless, one with nature.

Remember, being creative is the act of channeling universal life-force.

The more alive and aware we are, the deeper our understanding, the stronger our vision, the more creative we become.



1. Bill Mollison, *Permaculture—A Designers Manual*, Tagari, Australia, 1988.
2. Machaelle Small Wright, *Perelandra Garden Workbook - A Complete Guide to Gardening With Nature Intelligences*, Perelandra, Ltd., Jefferson-ton, VA, 1987.
3. Michael J. Roads, *Talking With Nature*, 1987, & *Journey Into Nature-- A Spiritual Ad-venture*, 1990, H. J. Kramer, Tiburon, CA.

This article was delivered as a workshop at the 5th Annual Eastern North American Permaculture Conference at Heathcote Center, Freeland, MD, in September 1990. Patty Ceglia, for ten years a practicing architectural designer, has spent the past two years transferring her skills to permaculture design. She recently established Human Habitat, a consulting cooperative offering architectural, economic, and agricultural planning for the establishment of spiritually-oriented, self-reliant communities.

# Permaculture Design for Private Person Near Georgian Bay, Ontario

Dan Hemenway

*The following example has been condensed from the introductory chapters of a design report prepared by Dan Hemenway. Attached to it are the statement of design goals, followed by the table of contents of the full report, along with a listing of the figures and diagrams which completed it. The design and and its details are copyright by Dan Hemenway, Jacksonville, Florida, USA. All rights reserved.*

The client is a single craftswoman in her late 40's who has moved to the remote community of the Inlet in Northern Ontario to establish a lifestyle less enmeshed in the economic system and in keeping with her economic, ecological, social, and other personal values emphasizing restraint and Earth care.

Client enters this project intending to live alone. By the time she receives this design she will have lived on site through one winter, more or less. The experience of the first winter should provide useful insights in interpreting this design.

The only building on the site is a one-story schoolhouse, rectangular in shape, 59' by 42' in external dimensions. It consists of two former classrooms of roughly 22' X 42' separated by a hall about 12' wide. Each room includes five large windows. Ceilings are 12' high. Building walls appeared from one-test boring to be uninsulated—insulation is assumed to have been blown in by this time. The siding is in fair condition and with insulation its replacement can be deferred.

A very large furnace, disused for ten years, occupies much of the basement. The pump and waterlines from a drilled well (east of the building near the property boundary) are in the cellar. Much of the cellar is crawl space because the bedrock protrudes into it.

The building features two porches. Steps to both were dangerously deteriorated at the time of the site visit and are presumed repaired at this time. The roof is of good structural condition and was re-shingled when Client bought the property. The west face of the roof features the old school bell tower minus the bell, which has long since been salvaged. Client likes the bell tower. We did not find any further value to it for the purposes of this permaculture design, however I am sure that the local pigeons find it useful. I suppose they can be regarded as emergency food reserves.

Energy-wise the site is very difficult. The solar orientation of the building approaches optimum, however this benefit is severely tempered by the weather, which is often, if not generally, cloudy. The building is drastically exposed in a windy locale and cold wind is likely the main energy drain. Water is not a potential source of energy on site, and thin soil, with much exposed rock on a small site, limits biomass production to minor levels.

The availability of a good deep well provides for immediate water needs and long-term backup to the roof catchment proposed in this design. Because apparently good quality water is available, development of the water portion of the design can proceed in an unrushed fashion.

The building is situated on the highest point of the property in the northeast corner very close to the northerly boundary. It

is thought that some of the more-or-less level ground at the base of the slope is part of the site, but according to the previous owner, this is in contention.

The site also slopes to the west of the building, creating where the two grades meet a diagonal hip from the southwest corner of the proposed greenhouse to the corresponding corner of the lot. Like the northerly and easterly portions of the prop-

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erty, much of the westerly portion consists of ledge outcrops with some deep cracks and pockets within and between them. There appears to be deeper soil near the road suitable for the establishment of trees.

Open land suitable for gardening is located on the westerly slope. The dominant woody vegetation is hawthorn (*Crataegus sp*). Sumac (*Rhus sp*), somewhat stunted, has established between some of the rock outcrops and in rock pockets. On the portions of the site where there is soil, it is very coarse sand. Poor vegetative growth suggests infertility; an assumption supported by the observation that where the previous owner discharged urine and greywater onto the soil, relatively lush

growth resulted, suggesting a ready remedy. No pH tests were performed, however, all indications are that this is a very acid soil environment.

The population of the Inlet is about 100 people. The Inlet originated as a company town for the logging and sawmill industry. A sawmill was located within sight of the school-house. Lumber was shipped down the inlet to Georgian Bay where it could be thence transported to any Great Lakes port.

Photographs of the region taken at the onset of logging showed dense forests of fairly large diameter trees. With repeated logging, the thin and fragile soil washed away exposing bedrock and silting in former lakes and ponds to form

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numerous bogs and acid swamps of minimal biological productivity. As a result, the mill closed and subsequently burned (was burned?). People who had somewhere else to go, went. Those who didn't, stayed. As a result the town is somewhat depressed and impoverished, producing a grim and resigned aspect to some of the homes and families. Probably it was never a very happy place.

The previous owner of the schoolhouse used it principally as a summer house. There may be an increase in the number of summer homes in the area as people with high incomes in Toronto and other Ontario cities range further to find affordable (by their standards) and available land for summer accommodations. This will bring more income and therefore more economic opportunity to the area. It will also increase the feeling of impoverishment and disaffection among those remnant mill

families, now living on welfare, who are unable to benefit from the influx of money. Security of person and property is an issue in this design.

Access to the nearby town by land is a long, circuitous drive several miles in the wrong direction to a road which eventually connects to a highway which can be taken back over a bridge that crosses the river and thence to a road connecting to the town. The town is but a few minutes from the Inlet by water.

While transportation by small boat can probably be arranged when the river flows freely, during ice season and during spring runoff, the water route may not be easily managed. The design therefore emphasizes management practices favoring a good store of provisions at hand at all times, careful planning of overland trips to stack as many functions on them as possible, ride-sharing if possible, and maximum on-site production.

The Inlet experiences a cold maritime climate roughly intermediate between that experienced by Parry Sound on the SSE and Sudbury on the NNE. Dominant winds during the September site visit were from the south and west. Locals say that they swing around to come from the west and northwest during winter.

Mean winter snowfall is about 100 inches, with serious snow starting in November, leveling to about two feet a month during December, January, and February, and dwindling to about a foot during March, on the average. Winters are cloudy with the probability of a sunny day 9% in December, 24% in February, and 20% in April. Summer sun is somewhat better, peaking at about 30% sunny days in July and August and dropping off to about 20% in October. Thus, as mentioned above, solar energy is not a major asset of this location.

Winter temperatures can drop to lower than  $-40^{\circ}\text{F}$  and freezing temperatures normally can occur every month except July and August. Available data do not include the duration of the

frost-free period. A fair guess would be 90 days. Short season gardening strategies clearly apply. Moreover, space heating may be needed every month of the year in many, if not most, years.

Client has agreed to begin monitoring temperature, wind and precipitation to establish an experience base to use in the interpretation and refinement of this design. Local suppliers of heating fuel may have data to supplement these records. A chart of phenological data should be integrated with these records.

#### Design Goals

This design seeks to optimize comfortable self-reliance for Client as she lives on the site. A major concern is keeping living quarters warm and comfortable by the most affordable and sustainable means, while minimizing dependence on re-

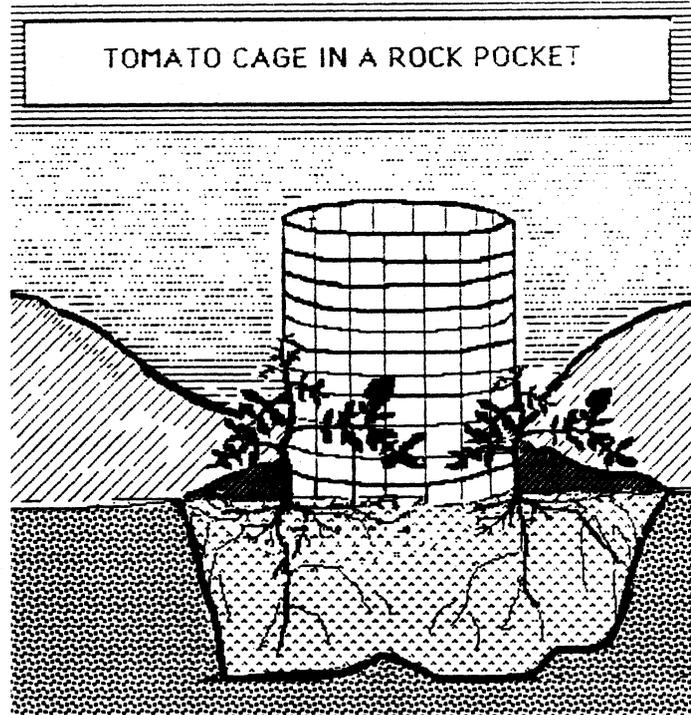
mote sources of energy and sources associated with environmental degradation. While it is not expected that Client will opt to live solely on foods grown on site, the potential will be outlined in the design so that she can be self-sufficient in food if necessary for any reason. Water supply is organized to minimize or eliminate dependence on the electric pump.

The design points the way to enhancing the ecological attributes of the site, enriching the soil, stabilizing bare and eroded areas, enhancing habitat for small wildlife, and engendering a diversity of plant life through utilization of micro-habitats and micro-climates. The design offers options for generation of cash crops, products, and services as well as suggesting opportu-

nities for barter and cooperation with others in the community. And the design intends to aid the development of functional workspaces and lovely, convenient, and comfortable residential space.

As the design is implemented, it will become increasingly self-managing so that after the first several years, Client's work related to the site and its facilities will decrease as will the need for cash and resources to maintain and develop them.

Throughout the design process, I have consulted Client's answers and comments on the Permaculture Client Design Survey (Appendix XI), which states her goals and interests more fully. There is no need to repeat that information here. The survey is also a part of the design as it guides Client's further development and refinement of the work I have done based on ongoing experience and building on the thinking and research she has done in answering many of the survey questions. The survey is also an ongoing tool, indicating information, observation, and thinking still required to adapt fully to the site and its context. It is important eventually to answer all of the questions on the Survey.  $\Delta$



drawing copyright Dan Hemenway

# The Answer Game

Tom Ward

When I started working and living at Aprovecho Institute in September, 1988, people there noticed that whenever I was asked a question, I gave an answer. They started to doubt that I actually knew the answers to all questions and so began to ask the source of my information, perhaps in order to determine the veracity of the answers. Thus was born The Answer Game.

Those readers that have taken Permaculture Design Courses, especially those taught by Bill Mollison, may remember the common disclaimer that "Everything I tell you is a lie!" or "All I have to tell you is a bunch of lies!" Both of these statements are examples of an oxymoron, a statement that contradicts itself.

Epistemology, the study of the limits and value of knowledge, is of importance to designing lifestyles and agroecologies. We should be aware of what the quality of knowledge is that we may want to apply to designing. Yet, it seems that all philosophical and epistemological rigor eventually runs up against contradiction, dilemma and paradox.

Our mealtime games of questions and answers, once we had some form of discrimination, led to some interesting observations.

First we delineated five classes of answers:

- 1) intuited or made up on the spot;
- 2) an educated guess, requiring some basis for deduction;
- 3) from personal experience and corroborated by the experience of others;
- 4) from the documented experience of several reliable sources, but without personal assurance;
- 5) repeated from a disreputable source.

We found that the most common answer given to a question was a class

INVENTED

EDUCATED GUESS

EXPERIENCE & CORROBORATION

GOOD SOURCES

DISREPUTABLE HEARSAY

FALSE

TRUE

five. Class three was the most valued answer, and class one answers were rarer than we would have predicted. Of course, these classes are discrete divisions on a continuum axis (see the second diagram).

None of these classes say anything about true or false! Conversations with the wider net of Aprovechables also yielded another axis of reality: resonance or dissonance. So here are some diagrams to help map out the nature of reality, and three examples of the five classes of answers.

To the question: How do I test reality?

- 1) know what question to ask, automatically;
- 2) guess what to ask; deduce;
- 3) use a personally practiced and commonly applied question;
- 4) ask merely the question that others have asked;
- 5) ask a misleading question.

To the question asked of one's mother: Where do I come from?

- 1) from under that pile of slate, where I found you;
- 2) that cold and special winter night;
- 3) I gave you birth;
- 4) the twining of DNA code strands;
- 5) you were created by God.

To the design question: What plant where?

- 1) somehow it seems. . .
  - 2) what should work is. . .
  - 3) what works and has worked is. . .
  - 4) the chart in the standard text suggests. . .
  - 5) my pesticide salesman says. . .
- So watch your questions and your

answers! Try applying this game to the answers you collect and soon you may be fascinated with mysticism and the modern science of chaos and relativity.

The first diagram (above) shows the classes on a two-dimensional chart with a vertical axis of true/false.

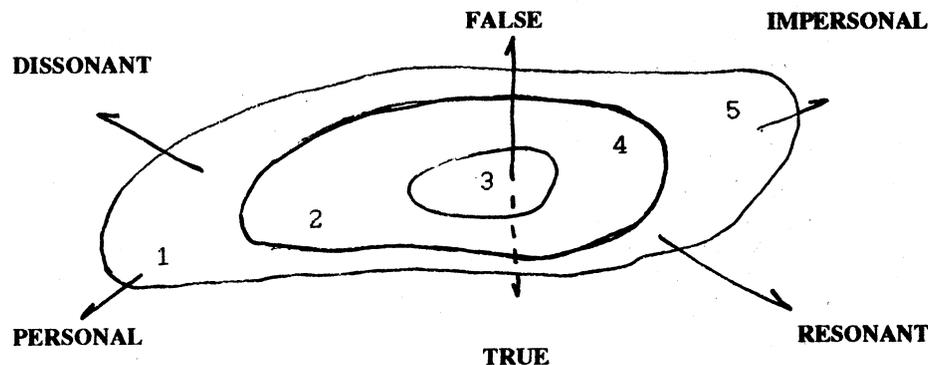
The second diagram (below) shows a possible three axes of personal/impersonal, true/false, resonant/dissonant. Δ

## Chickens in Apple Orchards: Reinventing the Wheel...

The following piece appeared recently in a national alternative agriculture newsletter. As an example of the kind of knowledge long taken for granted among permaculturists, and now being "discovered" by researchers of "sustainable agriculture," it raises the question for us: Can we wait another decade for conventional science to make up its mind that permaculture design has merit? Dr. Gage apparently still curls up his nose at "natural" fertilizer, calling it "toxic". Maybe next year's expensive research will reveal that chicken manure improves the apple harvest, too. One wonders if he will ever discover how delicious apple-fed chicken might be.

## "Growing Apples Without Pesticides: Fact or Fiction?"

A LISA (Low-Input Sustainable Agriculture) project, conducted in an experimental orchard at Michigan State University's Kellogg Biological Station and on a commercial farm, is testing new and old non-synthetic and non-chemical ways to prevent the pests that have long plagued apple growers. The research, led by Dr. Stuart Gage, an entomologist at Michigan State University, shows, for example, that the "wormy apple" problem due to codling moths can be reduced substantially by the use of techniques that disrupt the mating of moths—such as devices tied on branches that emit a female moth sex pheromone.



Taking a cue from history, the research on the Kellogg Station in 1990 indicated that damage by the plum curculio pest was 25-40% lower in rows where chickens were fenced in directly under trees and foraged continuously from July to September than in rows where there were no chickens. The chickens eat pest larvae in the soil and in apple drops. Further investigation in 1991 will determine how much chickens contribute to this reduction in plum curculio damage. Actually, chickens do more than that.

For example, they can replace the need for herbicides to control vegetation, a significant problem in orchards with dwarf trees. According to Dr. Gage, "The foraging and trafficking of chickens, combined with the toxicity (sic) of their manure, keep down weeds and grasses that would otherwise compete with the trees for nitrogen and moisture." Gage emphasizes, however, that these are preliminary first year results. By controlling the vegetation, chickens also eliminate habitats for tree-damaging rodents.

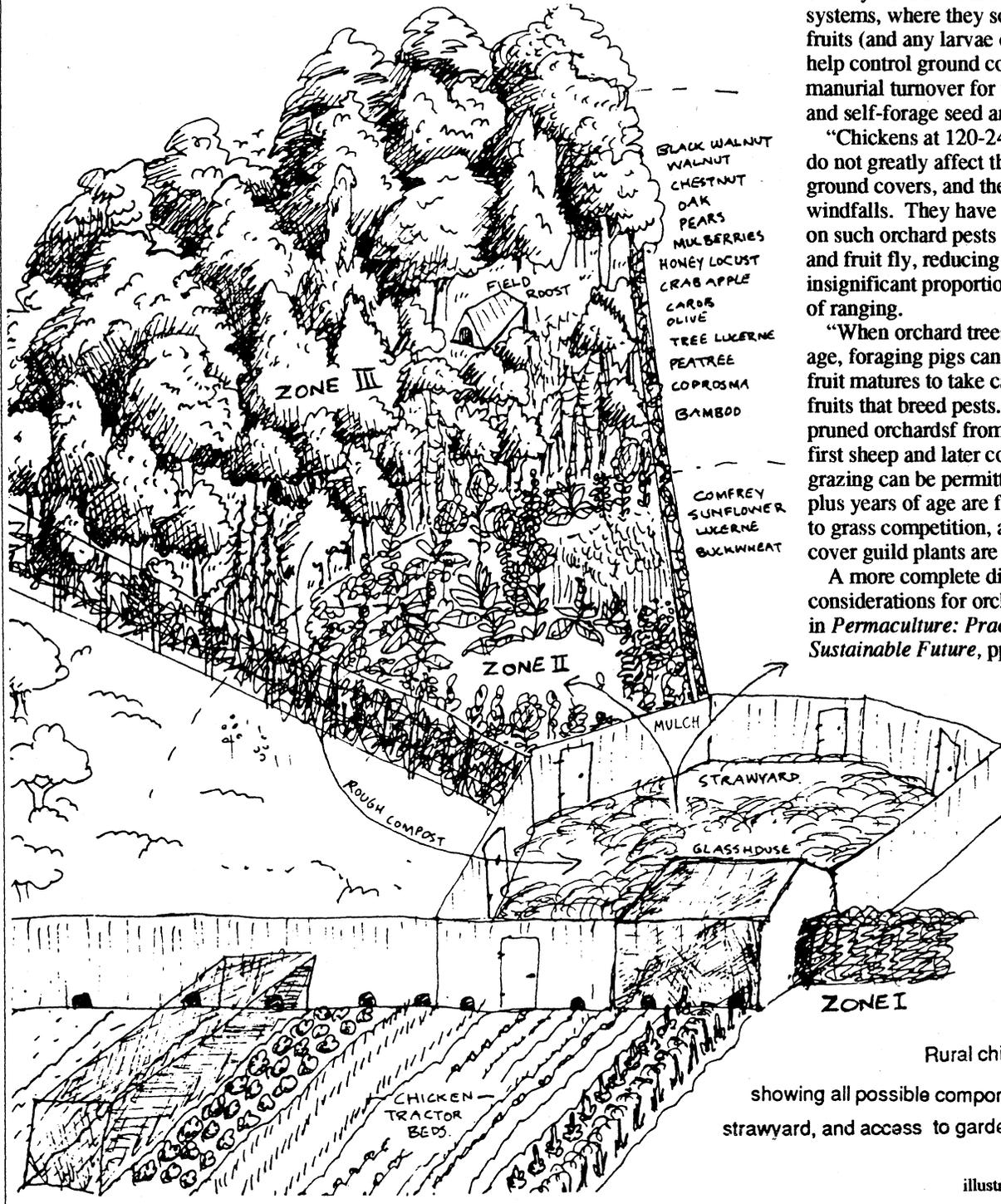
*Reproduced from Alternative Agriculture News, March 1991, an informative and well-intended monthly published by the Institute for Alternative Agriculture, 9200 Edmonton Rd., Suite 117, Greenbelt MD 20770, \$15/yr.*

Compare Mollison (1988), "Once young orchard trees and their associated plant guild species have established, small livestock can be introduced into the orchard system. Initially, bantams and small poultry breeds can be on range. Poultry have several functions in orchard systems, where they scavenge most soft fruits (and any larvae or pupae of pests), help control ground covers, provide a manurial turnover for the orchard trees, and self-forage seed and greens.

"Chickens at 120-240/ha (70-100/ac) do not greatly affect the density of ground covers, and they scavenge most windfalls. They have a well-tested effect on such orchard pests as codling moth and fruit fly, reducing their incidence to insignificant proportions over a few years of ranging.

"When orchard trees are 3-7 years of age, foraging pigs can be introduced as fruit matures to take care of windfall fruits that breed pests. In standard-pruned orchards from 7-20 years of age, first sheep and later controlled cattle grazing can be permitted. Trees of 10-plus years of age are far less susceptible to grass competition, and thus ground cover guild plants are less needed."

A more complete discussion of design considerations for orchards may be found in *Permaculture: Practical Design for a Sustainable Future*, pp 423-425. Δ



Rural chicken forage layout showing all possible components (greenhouse, strawyard, and access to gardens and orchards).

illustration by Andrew Jeev

# Plant Establishment in the Arid Coastal Tropics

Craig Elevitch

This design addresses the agricultural planning of a 3-acre homestead in an arid, wind-swept area near the southwest coast of the Island of Hawai'i. The design emerged out of two conversations with the client and a one-hour site visit. The following is a synopsis of planning for the first phase of agricultural development. It is adapted from a report given to the client.

## Observations and Directions

At first glance, the site, which is almost entirely covered by rough a'a lava, seemed barren, exposed as it is to the hot sun and near-constant trade winds. (*Ed. note: a'a is a rough, porous, lightweight volcanic rock of great surface area, which breaks easily and is readily worn or crushed by wind, water, earthquake, and the action of biologic or mechanical agents.*) Even though the land appeared infertile, there were clues to bringing it into production which I observed on my visit to the site after a period of rainfall. There was moisture on the ground especially in sheltered pockets of soil, where small weedy shrubs and grasses had gained a foothold.

Using the natural establishment of plants on the site as a model, I suggest the following principles and their implementations which would aid in plant establishment.

1) **Creating Beneficial Microclimate:** Vegetative protection from wind and full sun (in most situations).

2) **Using Existing Microclimate:** Exploitation of soil pockets, surface depressions and protected areas for plant establishment.

3) **Conserving Water:** Extreme water conservation by drip irrigation on a need-only basis, mulching, and use of all available greywater.

4) **Selecting Appropriate Plant Species:** Selection of plants that are suited to the climate and rainfall in the area.

5) **Timing and Placement:** Creation of favorable conditions for plant establishment, use of plant succession, and beneficial plant relationships.

6) **Accumulating Organic Matter:** Trapping available nutrients on site in living organic matter for production of fertilizer and mulch.

## General Site Characteristics

The three-acre site is undisturbed land covered partly by paho'ehoe, but mostly by rough a'a lava. (*Ed. note: Paho'ehoe is smooth- to ropey-surfaced lava laid down in large impermeable sheets.*) The surface of the a'a is loose rubble to a depth of 1-2', holding no moisture to speak of, and therefore is a very poor plant medium. The rainfall in the area is 25-30", with most precipitation occurring in the winter and an expected dry period of 6-8 months. The elevation is 600-640', average temperature, 75-80°F (24-27°C). The property is exposed to trade winds out of the ENE, at an average speed of 10-13 knots/hour (19-24 km/hr). Expected frequency of the trade winds is



Design site, W. coast of Hawai'i Island. Windswept lava flow (1907) colonized by hardy plants.

50-80%, with more persistence in summer than in winter. This property is also exposed to Kona storms out of the southwest which occur several times per year, usually in the winter. These storm winds are potentially damaging to vegetation and structures.

Due to the inhospitable environment, vegetation on the property is sparse, represented by plants observed such as indigo, fleabane, grasses, ferns and moss, most of which are low-growing weedy exotics which tolerate the harsh conditions. The existing plants have established themselves in pockets of soil

protected from full sun and wind; this natural planting strategy should be imitated.

## On-Site Water Resource

A catchment system is composed of two main parts: 1) the catchment area (roof, surface of tank, ground-based watershed, etc.) and 2) the water storage (tank, pond, etc.). Three numbers are important in dimensioning any system: the water requirement, average rainfall, and longest anticipated dry spell.

Calculations for these would of course be included here. (*Ed. note: For detailed information on calculating required roof area and storage capacity, see "Living with Catchment" and "Rainwater from Roofs," Activist vol. 6, no. 3.*)

## Windbreak

First priority in developing the property is installation of windbreaks which will greatly improve microclimate on the site. The main benefit will be the reduction of water evaporation and transpira-

tion from plants. Other anticipated benefits will be reduced risk of crop damage by wind, and habitat for bees and beneficial birds and insects. I anticipate that the ambient temperature inside the windbreak will increase somewhat. In order to enhance the environment for many potential crops as well as for human comfort, shade trees should be planted.

Secondary functions of the windbreak will be to produce edibles, green manure, cut flowers, etc., depending on client needs. Also, the windbreak will serve as a privacy and noise buffer against neigh-

boring properties and the road.

I recommend planting a windbreak using low, medium, and tall plant species, arranged so that a cross section of the windbreak takes on the form of an inverted "V". This form will prevent the occurrence of destructive turbulence on the leeward side of the windbreak. I recommend a careful choice of species which have several uses: biomass pro-

duction, edible fruit and vegetables, natives, medicinals, animal fodder, nursery stock for later sale, timber production, honey production, and appropriate bird habitat.

Windbreak specifications would be listed here.

#### Windbreak Species Selection

Initially, I anticipate using trees which are extremely drought-tolerant and fast-growing. Later, as the wind is abated somewhat and abundant biomass and shade become available, other species may be planted into the windbreak. I would recommend starting with ironwood, *Casuarina equisetifolia*, which meets the above criteria for growth and drought tolerance. Ironwood grows to about 70-100', and will form the backbone of the windbreak. It fixes nitrogen through an association with a root fungus, *Frankia*, and will produce abundant leaf fall, which, with the addition of millipedes and worms may be transformed into soil in a few years.

Medium size trees (20-30') I would recommend are the nitrogen-fixing *Acacia confusa*, and *A. auriculiformis*, *A. holosericea*, and *A. pendula*. These all produce abundant green matter even in desert conditions and are good fodder and timber species. As the windbreak evolves, these medium-sized trees could be replaced by drought and wind tolerant fruit trees such as mango, avocado, and even tropicals such as sapodilla (*Mannikara zapota*), jackfruit (*Artocarpus heterophyllus*), and soursop (*Annona muricata*). Neem (*Azadirachta indica*) may be considered as a later addition.

Promising small trees (up to 20') are the natives koa'ia (*Acacia koaia*), a nitrogen-fixer, and a'ali'i (*Dodonaea eriocarpus*), an attractive understory tree of the native forest. Guava (*Psidium guava*) and haole koa (*Leucaena leucocephala*), another nitrogen-fixer, could also be expected to do well. The possibility of planting less drought-tolerant shrubby plants in the lee of the windbreak exists, and can be planned in the future.

The site plan (see illustration) shows placement of windbreaks for both the trades and Kona storms. The spacing within rows of windbreak plants should vary depending on species. For low-growing plants, the spacing should be about 3-4', medium-height species 4-6', and tall species 6-12'. The spacing between rows should also vary between 4-10' based on the expected sizes of neighboring species.

#### Plant Establishment and Irrigation for Windbreak

As mentioned above, tree seedlings and crannies, be supplied with about a shovel-full of compost, and also be mulched heavily.

Local resources and prices would normally be included here.

A standard irrigation system for the site would include an automatic six-station delivery directly from the takeoff from the pressure tank. Such a system would also include two gate valves at the pressure tank, back-flow prevention, filter, pressure regulator, timer clock (six-station), and a six-station manifold with solenoid valves, plus miscellaneous fittings, pipe, and wire.

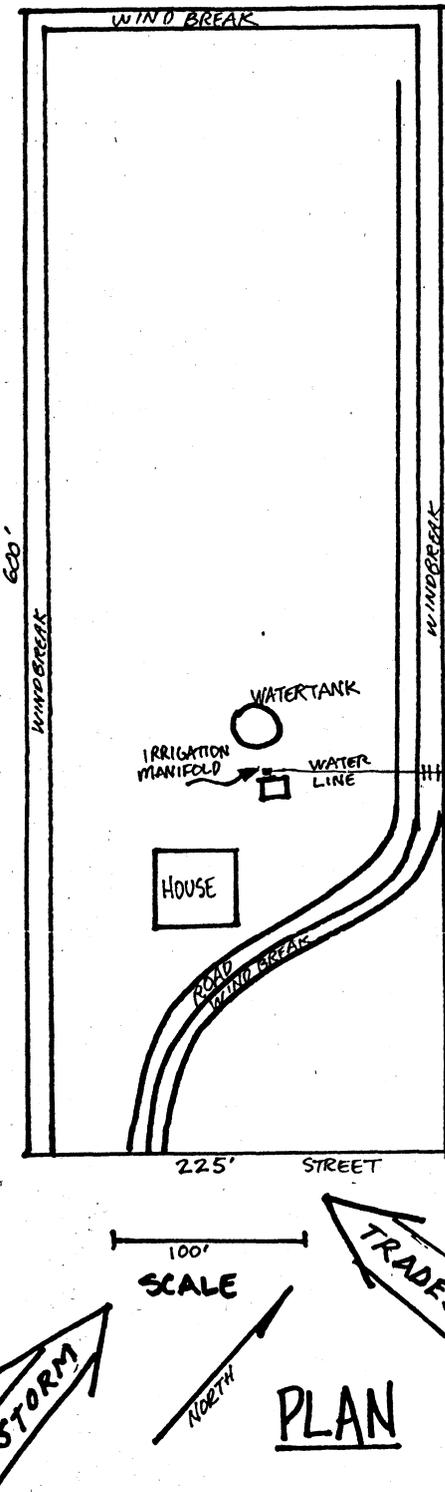
A parts list and estimated prices would be included here.

#### Estimated Costs for Phase One

I have provided the client with a detailed cost run-down for installation of windbreak and irrigation system. (Not shown)

#### Future Phases

Future development should be based on household needs, how intensively client wants to cultivate the land, and what economic returns are required. The site has excellent potential for growing heat-loving and xerophytic (drought-tolerant) food crops and herbs. In addition to growing certain crops, the site is appropriate for drying herbs and fruit, and it may well serve client's need for



Planting into rock pockets mimics natural processes  
Photos by Peter Bar



Roof catchment provides water for drip irrigation. Ayurvedic herbs.

Returning to the six principles listed above for developing the site, I would like to mention several aspects which should be considered for future phases.

**Creating Beneficial Microclimate:** After a wind/privacy break is established around the property, trees which offer a light shade canopy should be planted to shelter a small lawn area and the home garden as well as orchard areas.

**Using Existing Microclimate:** In addition to exploiting favorable planting sites, there may be a need to bulldoze and roll certain areas, especially the loose a'a on the north edge of the property.

**Water Resource Conservation:** Assuming county water will not be available for several years, a second 12,500-gallon tank should be installed on site. A simple greywater system making use of sink, shower, and laundry water should be considered, to direct household water into the landscape. Such a system could be installed as a simple set of PVC pipes underground for around \$500. A more elaborate septic system would make use of all household wastewater, but would cost several thousand dollars more.

**Appropriate Choice of Plant Species:**

Xerophytic plants are the best bet for establishing an oasis on site. I have a list of useful xerophytic plants, which you may consider for future plantings.

**Timing and Placement:** Windbreak and shade should be established as soon as feasible so as to alleviate stress on subsequent plantings.

**Accumulation of Organic Matter:** I recommend using approximately 15% of the orchard area (possibly the orchard edge) for growing vigorous nitrogen-fixing trees such as *Gliricidia sepium* or *Albizia lebbek* as an on-site source of

fertilizer and mulch. Properly managed, these trees will provide a steady supply of nutrient-rich mulch.

In conclusion, I encourage the client to call me with any questions or comments concerning the design report. △

*Craig Elevitch designs permacultures and farms macadamia nuts and coffee on the Island of Hawai'i. He may be reached through Hawa'iki Permaculture Services, 75-5260 Mamalahoa Highway, Holualoa, HI 96725, ph. 808-326-4670.*

## Organic Soil Amendments for Tree Establishment

Simon Hodge

The addition of organic materials to amenity tree planting pits has become standard practice. However, experiments to evaluate a number of commonly used organic soil amendments have shown no consistent benefit from their use. Money spent on these materials, particularly peat, could be better spent on comprehensive site preparation and a better level of after care.

### Introduction

In *Sylva*, John Evelyn (1678) recommended that tree planting pits dug in summer be filled with straw, which was then burned. The resultant potash rich ash washed into the soil before the tree was planted in the dormant season. Victorian landscape gardeners used available organic material (e.g. leaf mould and well rotted manure) as soil improvers, even in relatively undisturbed soils on country estates. In the 20th century the use of peat predominates for pit planting due to its availability, ease of handling and sterility.

This Technical Update Sheet discusses research to evaluate the use of peat, bark, and farmyard manure; materials that continue to be commonly specified for use in amenity tree planting schemes.

### Background

Previous experiments gave no consistency in tree and shrub response to organic amendments. Skride (1985) noted a reduction in the growth of *Forsythia x intermedia* and *Deutzia scabra* when grown in bark compost amended soil. Whitcomb (1986) reports the same from an experiment using Silver maple (*Acer saccharinum*). Wagner (1982) found the growth of *Zelkova spp.* was reduced by soil amendment with peat in

one experiment, but increased in another, while growth of Mulberry (*Morus spp.*) was increased in two similar experiments. A trial with *Pittosporum tobira* showed a positive root growth response to the use of peat in the backfill after six months, but after 12 months root and shoot dry weights were unaffected by soil amendment. In a similar trial with *Juniperus chinensis*, no response to amendment after six months was detected, but there was an increased shoot dry weight after 12 months where no fertilizer was added (Anon, 1981).

There is growing concern that peat is a limited resource and, as such, should be conserved in order to protect peatland habitats and maintain supplies for uses where there is no alternative.

### Experimental Results

Five experiments examine the use of organic ameliorants in varying proportions with soil as a planting pit backfill. Despite covering a range of species, site and soil types, four of these experiments showed no significant benefit from the use of peat. Only one experiment, on a roadside cutting with heavy clay soil using hawthorn (*Crataegus monogyna*) showed a significant benefit from the use of peat, both in terms of tree survival and growth. In this experiment, however, 50 per cent and 80 per cent peat in the planting pit gave no better survival than 20 per cent and only slightly better growth. In contrast, ash (*Fraxinus excelsior*) and Norway maple (*Acer platanoides*) showed reduced diameter growth with 50% peat compared to 20% peat in planting pit backfill or the control.

Neither pulverised bark nor farmyard manure at 20% of backfill yielded any significant benefit to tree survival or

growth in either heavy clay or a light sandy soil.

#### Discussion

The precise explanation for the results of each experiment described are not known. However, the characteristics of the most commonly used soil amendments (coarse texture, high carbon/nitrogen ratio, large water holding capacity at low moisture tensions, but small water holding capacity at high moisture tensions) and general observation indicate possible explanations.

In clay, silt, and loam soils, soil disturbance and the addition of peat leads to an increase in porosity in backfill material compared to the surrounding undisturbed soil. As a conse-

### The Last Lay of the Wood Elf

The tower is not lonely in the marsh, water touching stone,  
Islands of trees move at night.

Moss bedded charms and rings of magic dance,  
Small decorations returning; leaf mold becomes oak trunk.

Walking the bridge, soft touch of mist and fog beside my cloak,  
And home is all around; woodfern and desire, dreams.

This oak stands so boldly by the path,  
And has seen two centuries pass.  
The woods behind show boles but half the bulk.  
Many have tramped its roots,  
Scarred the trunk with blaze and bill tack.  
Now few walk with the deer in shadows;  
This old way, a stone's throw west of roar and fowl machine.

I beg of you please, these trees are my trust;  
I am husbandman, keeper of shadows.  
Why violate this forest, or rape silence with shot;  
You are well fed, your estate is kept close;  
Plant there hazel and beech, leave us be.

I live now in yesteryears, and meadow, brake and forest,  
Quietly tending the steady increment of duff and sod.  
Clear waters grace the village.  
Surely there is little need of grinding industry.  
The lost fertility is not the irreparable loss;  
The people have lost their love.  
Better they leave this life they no longer cherish.

Instead, beg for care, identify the spiral:  
The slow cyclic gain with promised sustenance  
That you would cut down so carelessly.  
Walk with me, sense the wonders  
That augment and swell with patience and gentleness.  
Do you forget your children's children?

This tower sits quiet by the woods,  
I am built of stone and beam.  
Morning wakes me, to respond with smoke and steam,  
So small a flame, the trees do not tremble.  
I am built of trout and reed.

The evening leads me home, to hearth and bed,  
I am of toil and wonder.  
With seed and nut I mold my bread.  
Leave me be and all my parts,  
I lay in moss and mushroom laceways.

Reproduced from *Greenward Ho! Herbal Home Remedies: An Ecological Approach to Sustainable Health*, ©Tom Ward 1990.

quence, at times of high rainfall the planting pit tends to become water-logged, and in drier conditions planting pit material can be actually less moisture retentive than the surrounding soil. When this is the case, plant water stress may occur while the surrounding unamended soil is still quite moist.

Both of these problems are accentuated by the poor planting practices of using a very high percentage of peat in the backfill due to the scattering and loss of backfill material during planting pit excavation and of inadequate mixing of peat with the backfill.

Organic soil amendments may adversely affect nutrient supply to the newly planted tree for several years after application due to their high carbon/nitrogen ratio. Soil nutrients, particularly nitrogen, are utilized by soil micro-organisms as populations grow during the process of organic matter breakdown. On freely draining sites even use of farmyard manure can cause similar problems as the nutrients in the manure are rapidly leached, leaving the straw to be broken down and creating a short-term nitrogen demand. Application of a high nitrogen slow release fertilizer at the beginning of the second growing season after planting (Patch et al, 1984) may alleviate this problem on all but the most free draining soils.

#### Conclusions

Recent experiment results generally show that, as planting pit backfill amendments, peat and other organic materials tested are unlikely to yield benefits to tree establishment. Bulky organic matter in backfill material around newly planted trees should not be used prescriptively on every site. The conditions on each site should be assessed and appropriate treatments adopted.

Soil ameliorants such as those discussed above should not be used in an attempt to alleviate the effects of poor site preparation, plants, or planting practices. Resources for tree establishment are better used on comprehensive site preparation before planting, the purchase of the best quality planting stock available and through weed control (Davies, 1987), than on soil amendments for use in the planting pit.

Before prescriptions for planting pit amendment can be prepared for all site and soil types, more research is needed. This should also improve understanding of the interaction between bulk organic materials, soil conditions and root growth. △

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# Water Conservation in the Home

**Karen & Daniel S. Howell**

The plight of California entering its fifth year of below-normal precipitation has gone unnoticed and unheeded by much of the country. Mandatory rationing and drastic reductions (up to 50% for residential use and 75% for agriculture) face the Golden State. But the rest of the country is not far behind. We are exhausting our ground water supplies at an alarming rate and 40% of the domestic wells are already contaminated. The average household uses something in the range of 0.5 acre-foot of water per year, some 150,000 gallons. (See Figure 1)

**Per Capita U.S. Domestic Water Use  
60 Gallons per Day**

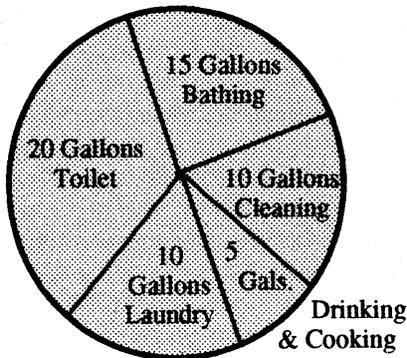


Figure 1

Prior to delivery, up to 20% of water is lost in transit. Urge your elected officials to repair city and state water systems.

In the permaculture community we are, or should be, aware of our impact on our environment, water being an integral part. I applaud Guy Baldwin's article, "Rainwater Collection from Roofs,"<sup>1</sup> in which he dispels the myths associated with using rainwater. And I noted his suggestion of five gallons per person per day, which, by the way, is our consumption at the Running Rain Society (see Figure 2), but I wonder if the general public has the skills needed to accomplish this low figure. What follows is a standard list of water conservation practices to help reduce your usage.\*

1. Install sink faucet aerators and low-flow shower heads. (See Comparison Chart)
2. Take showers, not baths, and limit time to five minutes or less. Try getting wet, then shutting off water to soap and scrub, then rinsing. Share your bath.
3. Do not let water run in the sink.

Use a glass or close the drain.

4. Install low flush toilets, or use a dam in your present toilet tank.
5. Use water-efficient appliances, and operate only when full.
6. Use greywater for plants /garden.#
7. Use phosphate-free and biodegradable soaps and detergents.
8. Collect rainwater.\*\*
9. Repair leaks and drips.
10. Plant natives and other plants that need little or no watering. Use mulch. Reduce or eliminate lawns.
11. Shorten the distance from hot water heaters to sinks, tubs or showers, or save the outflowing cold water prior to hot emerging.
12. Flush toilet after bowel movement but allow urine to accumulate. Don't use toilet as a trash receptacle. Try greywater flush.\*\*

To achieve further reduction requires fundamental changes in water use philosophy, and may not be possible under existing laws.\*\* The following is a list of techniques used to achieve ultra-conservative use as illustrated in Figure 2.

1. Take fewer baths and showers and share the water.
2. Try sponge baths and rinse.
3. Pre-rinse dishes in greywater and wash by hand in a measured amount every day.
4. Use a composting toilet or treated ground disposal.\*\*
5. Pre-soak clothes in greywater. Do laundry by hand or in a tub washer.\*\*
6. Set water limits for specific chores: i.e., use a bucket of greywater to wash car and rinse with a bucket of clean, a glass of water to brush teeth, a gallon to wash dishes, etc.

**Runoff Farmstyle  
5 Gallons per Day**



Figure 2

75% of water used is recycled as Greywater

7. Use a solar hot water heater.
  8. Solar distill greywater to recycle.\*
- Water-use philosophy starts with the precept that clean water is precious. Be conscious when you use it. If ultra-conservative use were in practice, it would be possible for a family of four to be comfortable with a rainfall of only six inches off a 2,000 sq. ft. roof, or 7,500 gallons a year. So, even in this year of drought, with five inches of rainfall from October through January, 1991, California residents could stretch existing supplies without hardship.

"Man did not weave the web of life, he merely is a strand in it. Whatever he does to the web he does to himself." — Chief Seattle 1852.

\* Achieving five gpd may not be possible in most situations.  
\*\* Check local regulations and lobby for legalization.

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**Device Comparison Chart**

Device	Standard	Improved
Toilet	5-7 gals.	1 qt.-3 gals.
Shower	5-10 gpm	1.1-3 gpm
Kitchen Faucet	5 gpm	1.5 gpm
Automatic Washer	27-54 g/load	16-20 g/lb
Automatic Dishwash.	8-16 g/load	7.5 gal/load

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# The Permaculture Activist

## Index, Volume I, No. 1 -- Volume VII, No.1

*Some clues to the use of this index: Entries are cited by volume, number, and page, e.g. 6.3.14 means volume VI, number 3, page 14. A table of corresponding issue numbers after the current system may be found on page 38. Plant, animal, and insect species are indexed in a separate section, beginning on page 22.*

*Generic references to plants, trees, grasses, forests, etc. will be found in the main index. Where known, plant species are indexed by botanical or Latin name. Common plant names are referred to corresponding botanical entries. Animals are arranged alphabetically by common name. Insects are listed by both botanical and common names.*

*U.S. place names are referenced by state postal code (CA=California, etc.) The word "species" is abbreviated sp or spp.*

*Citations to the first page of an issue, e.g. 5.3.1, especially if topical, are often indicative of the theme or major content of an issue or lead article.*

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# Urban Foodsheds

Arthur Getz

*This article begins a series examining the structure of our food system and how it might evolve to become more responsive to the needs of both farmers and consumers.*

We can learn a great deal by asking the question, "Where is our food coming from, and how it is getting to us?" In order to picture how local and regional food supply systems work, I have found useful the image of a "foodshed". A foodshed, like a watershed, is the area that is defined by a structure of supply. I like the term because it suggests the concept of the need to protect a source. Common sense and past experience have shown us the wisdom of conserving a watershed area, and I believe we may be in the process of extending similar concepts to our food system.

As in watershed protection, this will require specific geographic and ecological knowledge of its dimensions, condition, and stability for it to be safeguarded and enhanced.

We have in North America a most elaborate system capable of almost eliminating the concept of seasons. Even very perishable fruits like strawberries can be ours in January, provided we are willing to pay for them, and so our most rudimentary map of a foodshed might cover the globe, or resemble an octopus with long tentacles extending out from a large urban supermarket to remote tropical plantations, vast Midwestern grain acreage, and California irrigated valleys of fruits and vegetables.

Food distribution follows more abstract rules than watershed flows. Typically what determines where a food item appearing in a store comes from are variables like the price, or availability against demand. The crux of the matter is that the total cost of this way of moving food is not reflected in the purchase price and that there are hidden costs involved.

If the complexity and extension of the food supply system eludes initial attempts to capture what a foodshed looks like, it may still be measurable if one could watch a border over which food is passing. Beginning about ten years ago, a project which analyzed the relative

food self-sufficiency of individual states was carried out under the name "Cornucopia Project." A model for assembling the data for state-by-state food audits was developed by the Rodale Press, of Emmaus, Pennsylvania, and many private groups and universities participated in doing this analysis locally.

Using the state line as a border to define flow, these reports obtained production and consumption data as well as dollar figures on the "imports" and "exports" of basic agricultural commodities, processed foods, and meats, and traced the equivalent retail values leaving or staying in the local economy. A 1982 study of Ohio's food system described the state as being in "the condition of a food colony" importing 57% its food, often purchased as processed foods, while exporting grains such as corn and soybeans typically as raw materials, and often to volatile international markets. Including the multiplier effect these money flows involve, Ohio was calculated to be losing around \$12 billion annually.

Studies have drawn attention to the energy costs of such an elaborate distribution system. One recurring statistic is that the average food item travels 1300 miles before reaching its final destination, with an estimate of total U.S. transport costs for food in 1986 at over \$21 billion. A 1984 study on "Energy and Agriculture" found that hidden transportation costs, especially maintenance costs for roadways, were not included in this figure. Other consequences of the dependence upon distant sources for food include vulnerability to disruptions such as fuel shortages or trucking strikes, and the lack of support for local farmers.

How consumers have been responsible for the reshaping of foodsheds is a more subjective and indirect process of change. Consumers are increasingly making distinctions about the taste, freshness, and safety of foods, which also are concerns related to the origins of their food, and their familiarity with what goes on in the fields.

Farmers' markets, like the one I used to visit when I lived in the suburbs of Washington, D.C., are now hard to move around in for the crowds that they draw. These are the places that one could go for the chicken that tastes like chicken, or the tomato that tastes like a tomato, although

increasingly, success is tied to how early one gets to sleep the night before.

People are becoming much more health conscious, and their eating habits are clearly shifting away from red meat: meanwhile, the vegetarian fare at restaurants and fast food establishments has become considerably more varied and appealing.

Returning to the U.S. after several years based in Asia, I was surprised to see organic produce sold in some of the larger supermarkets. It still isn't that easy to find organic produce, though. The demand seems to have outstripped the supply in many places. And estimates are that the proportion of organic produce in the food supply, now at about 1%, won't approach 10% of the total for years to come.

Obviously all of this change in the lower reaches of these foodsheds has been due to corresponding changes happening "upstream." An interesting pair of reports has me trying to substantiate what is being claimed about the pattern that foodsheds have and of what will take place in the future.

I came across an article published in 1989 by long-time writer on agricultural topics, Gene Logsdon, entitled, "The Future: More Farmers, Not Fewer," that struck me as being optimistic, and well argued. His perception is that there is a new breed of farmers emerging that has urban roots and environmental values, and that these farmers are doing well in the marketplace.

They are what he would call "guerrilla marketers" or specialty farmers who don't fit the conventional mold of large-scale monocrop farming. By farming smaller pieces of land more intensively, these farmers are avoiding many of the pitfalls associated with large land holdings, large machinery investments, and interest payments to match. These include "u-pick" operations, where consumers come to harvest the crop...or the direct supply to consumers through regular farmer's markets and to restaurant food buyers seeking higher quality than what the retail food markets can provide. Some farmers are getting a premium price for organically produced crops. (Ed. Note: see "Permaculture and the Greenhouse Effect," Activist #23.) Logsdon asserts that this is a growing trend...that smaller farms and market gardens are on the increase, and that food freshness, taste, and safety, are motivating people to go to extra effort and greater expense. Megafarms, he con-

tends, can't supply the quality that people are seeking, and don't have the advantages of economy of scale such as manufacturing has, when "all the costs are considered." Under these circumstances "it is cheaper to raise a zucchini in your garden than on your mega-farm."

His sense is that this fits an historical pattern, that as societies become more dense, the result has been more numerous and smaller-scaled farms. Small scale farmer-gardeners are simply following this pattern in marshalling entrepreneurial skills to attract the attention of supermarkets with products they are best suited to provide, such as exotic vegetables and value-added items like edible flower salads. Gene Logsdon shares the view with author Jane Jacobs, who in her book *The Economy of Cities*, inverts the conventional wisdom that rural economic bases begat urban centers: "...Quite the opposite is true...rural economies including agricultural work are directly built on city economies and city work."

The general idea suggests that the demand for fresher, safer foods, more exotic crops, and even pressure to treat farm animals differently, stems from urban values, and that owing to a historical "I made you" relationship, these urban generated demands will have to be considered seriously by the rural sector.

Although willing to become convinced by this, I didn't feel that I was on to something until I found some supporting analysis, this time from the USDA's Economic Research Service. While in Washington, I met Ralph Heimlich, one of the authors of a report entitled "Metropolitan Agriculture: Farming in the City's Shadow".

Through this work I found that land use and development patterns are changing in American metropolitan areas, in a way that has a significant impact on agriculture. The character of this growth is pressing demographers to stretch the prior definition of "metropolitan" that the Census Bureau has used.

A predominantly homogenous pattern of tight rings of suburban development typical of the late '50s and '60s has, in the last ten to twenty years, given way to a more dispersed pattern of clumped growth, of clusters of structures and expanded small towns that preserve more open space than the preceding pattern.

As the report describes it, the new growth was "occurring beyond the existing metropolitan fringe in areas with no urban centers comparable to the growth nodes of earlier decades. And unlike the

earlier development pattern, which took land out of farm use, the new development patterns allowed more land to be kept in farms."

If we could consider the city as a giant cellular organism, it would appear as if the outer edge has now a very different message guiding its expansion. Rather than continue outward with the tight layers like the annual growth rings of trees, the new message is to preserve the areas that are being expanded into, in some of its original rural form. The source of this message is what I find most interesting to contemplate...those choosing to inhabit the outer edge are no longer solely dependent upon or satisfying their needs through the urban core:

"Development has been moving away from the cities in a dispersed, low-density pattern. In contrast to earlier suburban patterns, the new development does not border central urban areas and can often preserve open spaces, farmland, and existing small towns by encompassing, but not replacing them. Space remains for agriculture in this new settlement pattern, although some changes in existing farm operations may be required."

While exploring the implications of this emerging pattern, I've been led to wonder what ethic is guiding individuals to make these decisions that, in total, add up to a statistically visible phenomenon...Mentioned within the report was the tendency for these new inhabitants to become guardians of the surrounding countryside: being drawn to this more open environment they in turn become involved in farmland preservation measures and otherwise seek to restrict subsequent land development.

Although if urban expansion were to continue steadily, this might be ultimately unsuccessful as an overall strategy, the window of opportunity it creates is very timely. For it is this "metropolitan" area with holes in it that are wide enough to farm that is giving the ex-urban farmers that Gene Logsdon is writing about the chance to take advantage of their proximity to urban areas and do their guerrilla marketing. Perhaps they are even one and the same person that makes this outward migration and attempts to become a member of this new ex-urban farming class. In this scenario, previously untenable agricultural holdings are also likely to get a new lease on life, as a farmer still wishing to stay in farming could sell off some of his or her lands and utilize those earnings to intensify and recapitalize operations.

The ERS report lists constraints on these new urban farmers as "increased vandalism, restrictions on spraying and farm odors, higher land values, and decreases in feed, seed, and fertilizer dealers supplying farmers" while those viewed more positively are "access to specialized markets and off-farm employment, higher farm equity, and political support for farmland protection measures."

These developments would be interesting cultural anecdotes unless they showed some measure of impact greater than emerging new sports or hobbies. That appears to be the case. Metro farms apparently accounted for 29% of total sales in agriculture (and 33% of crop and nursery product sales) in a 1982 Census of Agriculture, while using just 18% of the total cropland, and averaged twice the dollar per acre farm sales figure as for nonmetro farms.

While most of this analysis is based on a merging of population figures from the 1980 census, a 1985 agricultural census, and natural resource inventory data, it will be interesting to see if the 1990 census shows this to be a growing trend, as traditionally rural areas are gathered up into the redefined Metropolitan statistical areas and new urban foodsheds have the opportunity to take shape.  $\Delta$

*—In the next issue we will look at a Japanese example of partnership between producers and consumers which is leading to the empowerment of both.*

*Arthur Getz is a Permaculture teacher and a Fellow with the Institute of Current World Affairs at Hanover, New Hampshire, who for the past several years has made a comparative study of community supported agriculture in the United States, Japan, and W. Europe. He lives with his family near Tokyo.*

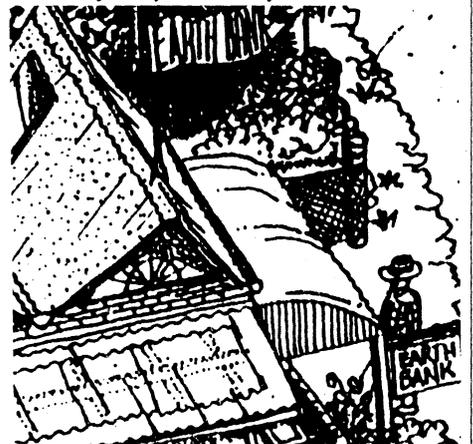


illustration by Andrew Jeeves

# BURNOUT—a potential fate of committed people

## Bill Mollison

Burnout is a state of deep fatigue, depression, and despair that follows on too-intensive and long-protracted periods of work in many areas of long-term problems; it is most likely where volunteers work in areas of human suffering and misery, such as are found in slum areas and tribal reserves, or in war.

Symptoms range from (in the extreme) suicidal impulse, or inability to make decisions, withdrawal into isolation, savage or antisocial behavior, or extreme risk-taking; minor symptoms are alcoholism, heavy smoking, drug-taking, sudden tearful episodes, and an erosion of the sense of self-preservation.

Similar syndromes are those of "survivor-guilt" following catastrophes where family, friends, or neighbors are killed or injured, and the psychoses of war. Particularly prone are those who are involved in the "front line" of aid programs, medical rescue missions, or catastrophe relief, but long-maintained aid to distressed people (or distressed environments) eventually evokes the syndrome.

Exacerbating factors are those of facing successions of anxious, shocked, dying or helpless people (and being unable to help all or even very many of them); constant demands and very few "gifts" of attention to oneself eventually leads to an aversion to facing people, who may come in the end to mean "trouble," or certainly not comfort, unless they are themselves in good heart.

This problem arises most often among aid workers or volunteers leading a materially or socially-deprived life, much of it spent in remote areas, among foreign cultures, and very often in problem areas, with a low cash resource base. There is seldom enough money or resources in problem areas, and the almost everyday surreal juxtaposition of the greedy, affluent, and consumptive wealthy with eroded lands and hungry people is even more depressing, so that the looted artifacts of aging cultures and the rapacious exploitation of poor peoples is everywhere around one in the value-free socialites of the "west," where even the "new age" preach wealth consciousness, not frugality consciousness, and thus oppress the earth itself, and its peoples.

Burnout needs to be avoided by long rest periods every 4-18 months, and a

recharge of optimism from friends, lovers, and unspoiled nature or wilderness. Even so, once subject to burnout, it is harder to get up the morale to "go back in"; hence the concept of "tours of duty" in wars, limited to a few missions.

Several of us in Permaculture have various states of this depressing psychosis, often compounded by illnesses or malnutrition while on fieldwork, by personal debt, or broken relationships, often brought on by the work itself.

I write this short account to warn others of the possibility that they may one day suffer if they return too frequently to areas of human need; and to stress the great need for many more of us not only to share the load—"fresh troops"—but to care for those who are heavily involved—to form back-up or support services for those on the line.

It is as hard to pull out of tough work as it is to go in, and those people who care are easily over-exploited; only when enough of us are recruited to equally share the stress, and to raise the morale

of others are we likely to both come closer to solving problems and to survive with lesser damage, so that our first survival priority is to recruit others—and especially to train others in the areas of need, or to get good back-up teams in the field.

Curiously, the stress caused by insatiable questions and challenges is a feature of the "new age" west; traditional societies protect, care for, and rest their teachers; we exploit them, call on them for help, when they are most in need. Our true friends smooth our path, prepare places for us to rest awhile, and comfort us in stress. We all of us have a few such precious friends, often themselves "burn-out cases."

Think about this, and be alert if you are to be effective; at present we are a stressed group of guerillas rather than a large enough force to rest its numbers. Train others.

My love to my fellow warriors, men and women of good heart. △

## Plants in Permaculture: The Horseradish Tree

Franklin W. Martin

**Names:** *Moringa oleifera*, horseradish tree, drumstick tree.

**Principal Use:** Year-round production as a highly nutritious green-leafed vegetable.

**Brief Description:** Small to medium-sized tree (can be maintained as a hedge), with tripinnate leaves, clusters of white flowers, long, three-sided pods, and marble-sized, round seeds.

**Climatic Adaptation:** Best adapted to the hot tropics (frost sensitive), in areas of low rainfall. Tolerant of the hot, humid tropics, of drought, and of beach (salt) conditions, but not of root flooding.

**Yields:**

**Food:** Leaves, flowers and young pods cooked. Root as a condiment. Seeds roasted.

**Feed:** Animals must learn the new taste  
**Other products:** Seeds are crushed in water to remove turbidity. Seeds contain a useful lubricating oil, sometimes used in cooking (high in oleic acid). Seeds contain a sharp-tasting alkaloid, nuclein.



Mature tree of *Moringa oleifera*

# PINE NUTS

Rob Goodell

*"Thou wast that all to me, love,  
For which my soul did pine —" Poe*

There's no sense at all in pursuing the fruit of the ancient pine cone if you view our present agribusiness monopoly as one of life's inevitables like death and taxes. Unless you happen to be a nut lover or are addicted to pesto, this could be a boring story. But if you view history more dynamically, complete with dramatic reversals, the Seven Plagues of Egypt, recession, depression, and even worse, then the tale of this ancient nut may take on new meaning.

Pines, as the premier species of the Conifer (Cone Bearers) order, have universal appeal. Anyone living in the temperate forest zones of the planet knows them well. In the mountains of California, bristlecone pines now thrive that were in middleage when Jesus lay in swaddling clothes. Pines are among evolution's exquisite survivors, varied in form (biggest, tallest, most widespread), and therefore, most economically valued.

## Horseradish Tree, cont'd.

### Suitability for Special Purposes:

Living fence: excellent, propagated from large stakes.

Hedge: excellent, if heavily pruned.

Barrier plant: very good.

Living trellis: poor.

Windbreak: fair, too small, may be used in combination with other species.

Shade: fair, not dense.

Erosion control: poor.

Earthworks: poor.

Alleycropping: good, if heavily pruned.

Animal shelter: poor.

Nitrogen fixation: probably not.

Lumber: no, the wood is very soft.

Fuel: excellent amounts, poor quality.

**Culture:** Plant in container or on site from large seeds or 3-4 ft. cuttings.

Water requirements normal at first, low later. Nutrient conditions need not be special. Growth is rapid. Prune frequently to size and shape. For leaf production, increase soil fertility and water.

**Special Problems:** none described.

**Toxic Characteristics:** none described.

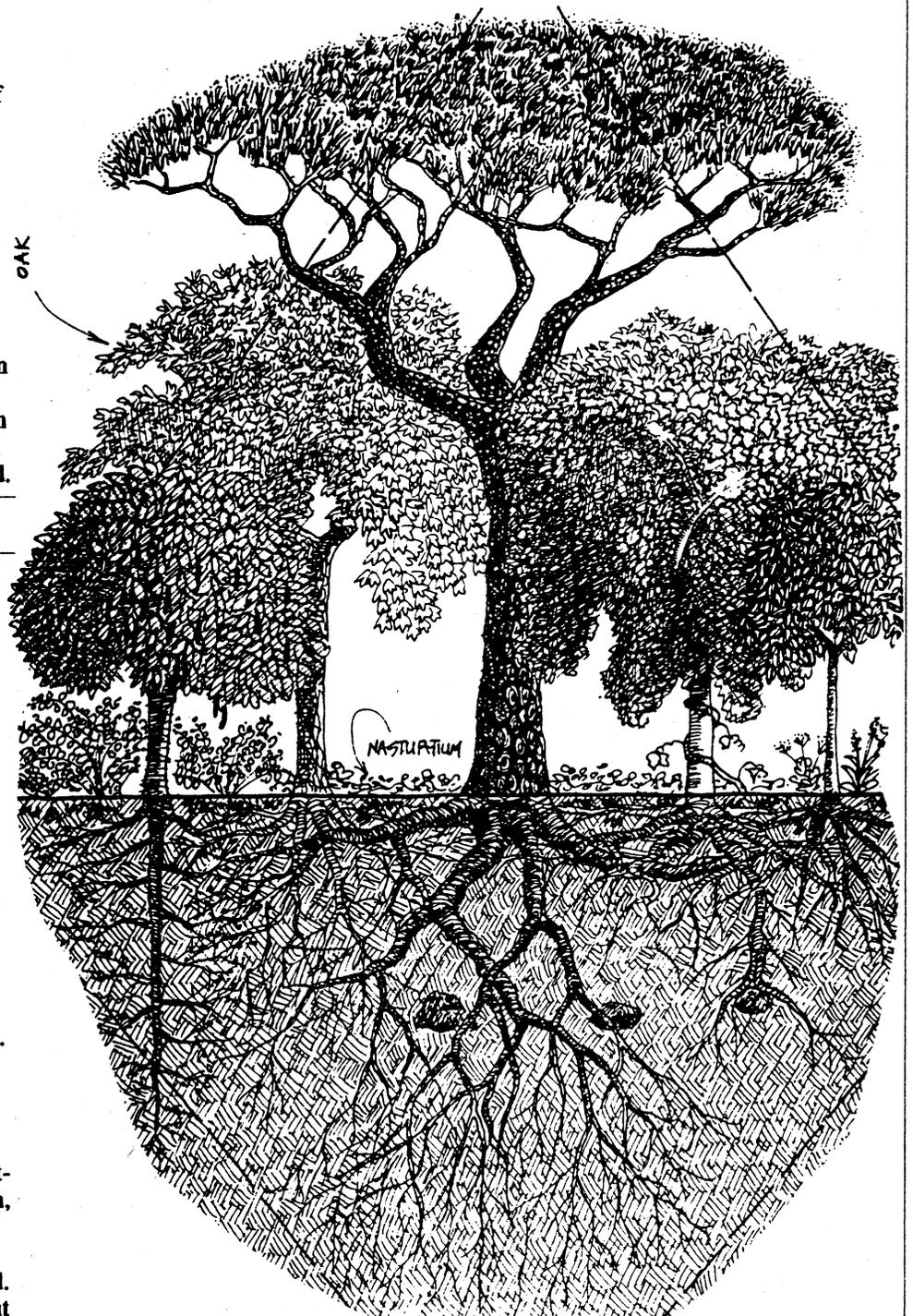
**Other:** Many medicinal uses throughout the tropics.

Pine trees refuse to turn their back on the sun; their specialty is solar collection; they are a *sempre* evergreen. The Monterey pines I planted ten years ago from seedling tubes with no babying, are now pushing sixty feet and giving Davey's Tree Service lots of business!

We find pines on all the Northern continents from the Arctic Circle to equatorial mountains. They have been transplanted to nearly every country. They often grow where nothing else can, in-

vading lava flows, steep rocky mountains, and desert plains. It is said that pines grow in desolation—but once established, the landscape remains no longer desolate, unless it be a mechanized, monotonous, manmade pine plantation.

On larger acreages, pines probably represent the most successful reforestation plant available. Pines tolerate the worst of soils, drought, and climatic stress—in fact they thrive! John Muir first pointed out that large conifers don't



Stone Pine showing plant stacking above and below ground.

Illustration by Andrew Jeeves

necessarily require abundant moisture for establishment, but create a high water table by their presence.

One man initiated a planting of pines (*P. Pinaste*) and scotch broom over 12,500 acres of sand dunes along the Bay of Biscay coast in France. The entire region was thus reclaimed from desolate dunes in one lifetime. Then came the dreadful human greed. The trees were taken for turpentine, fuel, timber for the dark satanic coal mines, and for endless railroad ties, until lastly farming ate away the manmade forest.

Living within the sylvan setting of Mendocino County, we at times don't see the pine tree's whole potential for the board feet of forest. The short range goal in forestry is to take and if one could say there is a long range goal at all, it would also be to take.

The Pomo Indians of California, and native peoples from Asia, India, Southern Europe, and Mexico also saw pines as a food resource. In *Tree Crops: A Permanent Agriculture*, J. Russell Smith claims that pine nuts were second only to coconuts in use for human subsistence. Pines certainly formed an important staple,

especially where acorns were not plentiful. Pine nuts are still available in stores, but caution, they have a limited shelf life and now cost about eight bucks a pound.

The local favorite for nut production is the Digger Pine (*P. sabiniana*). The Digger Pine is named after the Digger Indians, those lowly native people who would stoop to gather cones and nuts and seek sustenance in buried root crops; perhaps they even got earth on their hands. Sturtevant's observation, in *Edible Plants of the World*, is revealing of cultural perception, "Thousands of beings, red-skinned but human, look to the (pine) tree for their winter stores of food." The Digger pine because of its blue gray needles lightly veiling the cone-studded trunk, has a pleasing ghostly appearance. You can see through a dense stand of Digger Pines as if, even in dominance, the tree does not need to take all the light. This pine ranges from Mt. Shasta to the San Bernadino mountains, from coastal mountains to the Sierra foothills. Locally it is prolific around Hopland and east along Highway 20 into the Central Valley. It prefers elevations of 400-500' or higher. The

one I planted 10 years ago near Boonville is quite vigorous and last year bore a small cone. It takes these pines 10-20 years to unfold their fruit. I'm into it—planted at least 100 more recently.

The cone of *sabiniana* is one of the largest with the seeds corresponding in size. The Coulter Pine (*P. coulteri*) is the largest with cones from 10-14" and seeds approaching the size of almonds! The Digger nuts are generally 3/4" long. Cones, which may hang on the tree for years, mature around September of the second season when nuts fall freely for several weeks. The nuts are encased in a hard shell.

As competition with four-legged and winged creatures is no problem, the seeds can be gathered from the ground as they fall. Local Indians climbed trees and used deer antlers lashed to poles to assure a timely and complete harvest. However, I must report that scores of beings, white-skinned but human, have looked to this tree for harvest, and confounded by gathering techniques for the aloof nut, have taken to the chain saw, providing a one-time harvest for the technologically superior but impatient creature.

The Indians most often roasted the cones over a fire where the seeds were soon freed. This seasonal harvest undoubtedly provided the people with a great celebration of song and dance, as well as nutrient bounty to see them through the winter. The Indians also mashed the shell and nuts together and added it to their pinole, a high protein staple that kept very well, made of fruits and seeds. *Sabiniana* herself is very fire-resistant but as with so many of the natives, not cow-resistant in the young stage and now losing ground.

Another option for pine seed collection is to rob a rodent's nest, but that seems a bit of a squirrely thing to do. Fresh cones can also be placed in a ventilated non-plastic bag where the seeds will gradually drop free. Freezing the seeds is another modern option.

For most people, the range of edible pine nuts adaptable to their backyards is quite extensive. Seeds of the smaller less productive Bishop pine were important to the coastal Kashaya Pomos. The Sugar Pine (*P. lambertina*) is supposedly the world's tallest pine at 270' which might also make it the world's highest nut. You might have to content yourself with the tree's white globules of sugary pitch, which is a candy to some but also has cathartic properties of volcanic force.

continued, next page

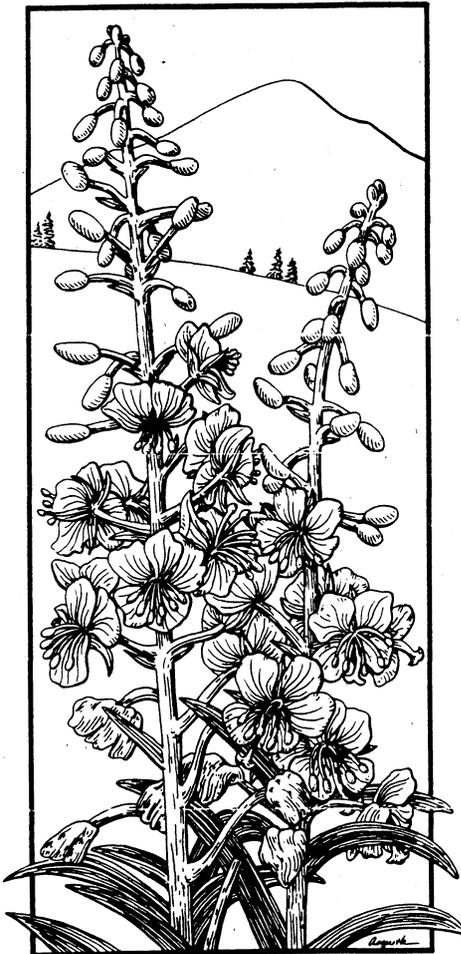
## Book Review

### *Nectar and Pollen Plants of Oregon & the Pacific Northwest* Burgett, Stringer, and Johnson

Of interest to permaculture designers is a new illustrated dictionary of plants useful to honeybees, *Nectar and Pollen Plants of Oregon and the Pacific Northwest*, by D. M. Burgett, B. A. Stringer and L. D. Johnson. The authors have among them many years of experience in apiculture, plant taxonomy, and teaching.

Each of the concise, illustrated entries includes the plant's common and botanical names, plant family, growth habit, bloom period, flower color(s), nectar and/or pollen production, distribution, and remarks. Flowers are also listed by color in a separate table. The extensive bibliography contains many useful references for those requiring more specific identification of plants or additional reading. The comprehensive index, containing common and scientific names, makes all listings easy to find in the text.

The book is available from Honeystone Press, P.O. Box 511, Blodgett OR 97326. Cost per copy is \$11.95 post paid.



# Book Review: Making Paper Go Round - A Wordless Book

Papermaking is easy and fun. And when the fibre source is waste paper it's cheap, even easier, and cares for the environment—it bypasses tree cropping for paper pulp, uses a "waste" and so decreases the volume of material in rubbish dumps, and helps keep streets clean. Most of the equipment and materials needed for papermaking you'll find around your home or in your neighborhood; some you might need to make.

At the recent Permaculture meetings in Nepal lots of us got to make our own paper. Pamela Gray brought her box of tricks: wood-framed screens, cloths, boards, clamps, buckets, used paper, a sample book, and copies of a booklet without words, only drawings. The booklet, called "Making Paper Go Round - hands-on recycling" is designed to be used by people of any age and any language background. Even when the

## Pine Nuts, continued

Italian Stone Pine (*P. pineas*) is a good tree with an umbrella-like crown which makes harvesting from below easy, at least for the first few years. There is one in Capitol Square, Sacramento that is 92' x 118' and growing.

The Torrey Pine (*P. torreyana*) is native to a small coastal zone just north of San Diego and one other very small stand in remote Russia. Its magnificence lies both in its beauty and in its nuts.

There is more to pines than nuts and lumber of course: turpentine, aromatic oils, homeopathic medicine, resins, and spruce pine beer which was the preferred anti-scorbutic medicine of many a sailor. The Northeast Indians made an analogous drink adding maple syrup for the catalyst. Getting high with pines (remember juniper berries of the pine family are used in making gin), could be a worthwhile subject for further research.

Pinyon, Digger, Coulter, and even Torrey Pines are often available through the Forest Service and major reforestation nurseries. The cost of the seedlings is minimal (less than a dollar) and the planting, a midwinter joy. Deer and rodent predation can be a problem as can drought, but the vast majority of my plantings have survived with little or no follow-up. Your reward for taking this ancient perennial tree crop and becoming the propagating agent is all that trees have to offer the earth. △

papermaking workshop wasn't on, people just followed the instructions or got the children to help them. Basically, used paper is torn up and soaked in water, beaten to a pulp, mixed with more water, sieved with a flat screen, turned onto a cloth, pressed, and then dried by the sun. All sorts of things add to each piece's uniqueness—flowers, leaves, sparkles, other colored pulps, old greeting cards, etc.

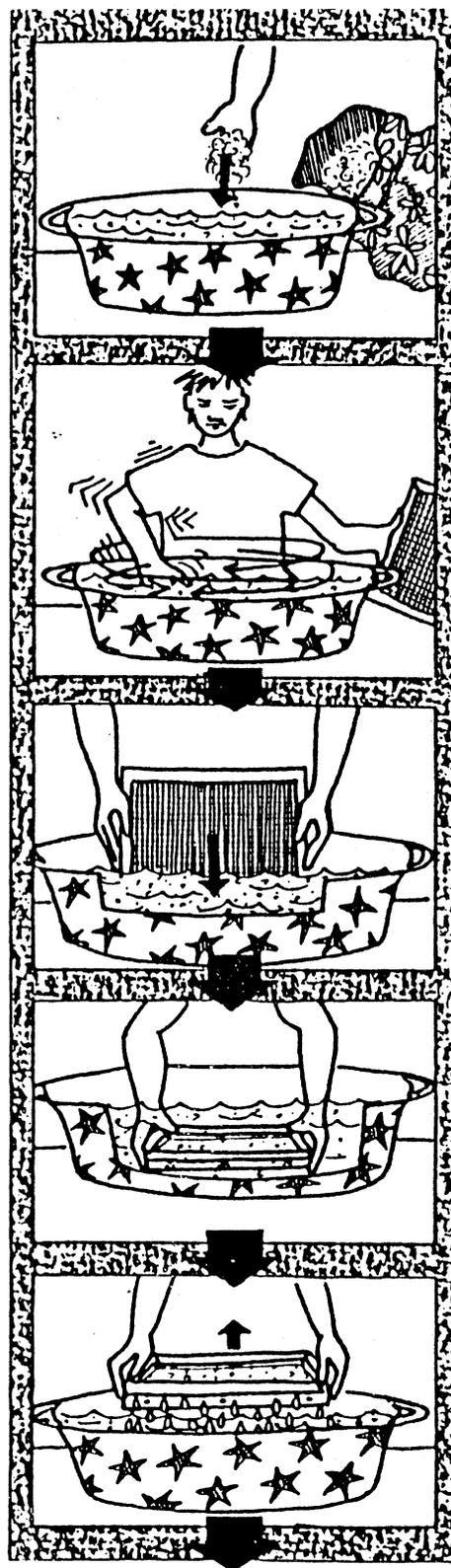
The 12-page booklet is about to be published, now that the draft has incorporated feedback from people at the Conference workshops. Each booklet has a hand-made 100% recycled cover and the inside pages (machine-made recycled paper) form a fold-out chart. Inside the back cover are samples of some creative effects that you can make; and there are some political drawings—one shows the value and multi-function of trees, another shows soil degeneration from the cutting of forests, and the last shows the increasing amount of waste resources that get dumped. All the drawings are black on grey but most children (and big children) will want to color them in!

The cost of the booklet for Northerners has not yet been set—probably around A\$10; however, single copies are free to residents of countries that get northern development aid money (unless they want to buy the booklet). Booklets will be available from the author and publisher, Pamela Gray, PO Box 38, Milton, NSW 2538 Australia.

Pam and some other activists in Sydney set up a small paper recycling business called Paper-Go-Round about four years ago. The main work is collecting waste paper and cardboard from smallish business and government offices and selling it to a cardboard manufacturer. Businesses and offices pay A\$15 or A\$20 (depending on their locality) for each wool-bale (huge sack) of paper collected. Some of the paper is kept aside for hand-making paper and cards or teaching papermaking in the workshop or at schools and community centers around the country. The workshop is also a community facility where people can "rent" the equipment and space for a few hours of paper-making. The most recent Paper-Go-Round venture is making the papermaking "screens" (molds and decks). Paper-Go-Round people also use their experience and skills to lobby governments and the paper and forest

industries about paper and paper recycling issues. △

Paper-Go-Round, PO Box 388, Rozelle NSW 2039 Australia



# Permaculture Educational Programs

## Central Rocky Mountain 5th Annual PC Design Course

### Design Course at Peaceable Kingdom, Texas

**Dates:** November 11-24, 1991  
**Location:** Washington, Texas  
**Instructors:** Larry Santoyo, Nancy Rush, Pliny Fisk.

Larry, Director and founder of Great Northwest Permaculture, has done more than 10 years of professional work in environmental education and natural resource protection. He has taught permaculture design courses across the West and in British Columbia, including a program he developed at Prescott College in Arizona, which is the second permaculture course in the country to be accepted for college credit.

Nancy has worked on organic farms in Australia and done designs and taught courses in Hawaii, but has especially focused on permaculture solutions for Texas and the Southern Great Plains. She will teach the permaculture basics: sheet mulch, circle gardens, water storage, chicken forage, orchards and other "Zone 1 & 2" essentials.

Pliny, a permaculture systems specialist

with an international reputation, has done systems designs for the Indian Nations, worked with the indigenous peoples of Nicaragua, been a delegate for sustainable development in the Soviet Union, and done a large number of projects in Texas. Pliny is the founder and co-director of the Center for Maximum Potential Building Systems in Austin. He is currently working with the City of Austin to create guidelines for viable systems to manage energy, water, solid wastes, and building materials.

**Cost:** \$660 includes meals, and the text *Permaculture: A Practical Guide for A Sustainable Future* by Bill Mollison. Students will be provided with group lodging at no extra charge. \$725 after November 1st. An advance deposit of \$150 will hold your place. Places are limited.

**Contact:** Peaceable Kingdom School  
PO Box 313  
Washington TX 77880  
409-878-2353.

**Dates:** October 19-31, 1991

**Location:** At Jerome's market garden operation, Basalt Mtn, Colorado, 8 acres of remote mountain terrain at 7000'.

**Description:** The course will emphasize permaculture as applied to market gardening, desert homesteading using water harvesting strategies, and the use of trees for environmental restoration. Special workshops on wild and medicinal plants (including field trip), the making of tinctures and salves, and straw-bale construction will augment the standard material. Students will construct a solar-heated straw-bale composting privy as a hands-on project during the course.

Colleen Cabot, a member of the IPC4 curriculum revision committee, will be writing hands-on curriculum during the course for submission to the International Permaculture Guild and IPC5.

**Instructors:** Jerome Osentowski, Michael Pilarski, Dan Howell, Allison Peck, Penny Hoover, Susan Mullen.

**Cost:** \$500 to \$600 sliding scale - includes all organic meals, camping curriculum materials and field trips. \$100 deposit required for registration. Limited to 25 participants. Some scholarships are available.

**Contact:** Jerome Osentowski  
PO Box 631  
Basalt CO 81621  
303-927-4158

### Permaculture Courses, Nepal Nepal Community Support Group

**Dates:** Sept 26th-October 10th, 1991  
**Location:** Kathmandu, Nepal  
**Instructors:** Prasad Chhetry, Chris Evans

NECOS is an organization set up to promote and pursue Permaculture ethics and principles in the application of rural and urban strategies for sustainable development. The standard design course is taught worldwide, with a theme of "Strategies for Developing Nations." It is highly relevant to government and non-governmental planners, policy makers, technicians, farmers, and volunteers in Third World programs.

The primary objective of the course is to bring together an informal network of individuals and organizations who are working towards similar ends, and who can use the principles and techniques taught and exchanged at the course in their current and/or planned work. A further objective is then to present concepts which can be understood, accepted, and implemented by farmers and other target groups without risk, in order to help in the attainment of basic needs while sustaining the environment, and thus providing the foundation for self-determined growth. Next course will be in Spring, 1992 in Nepal.

**Cost:** US\$200-400 sliding scale (Fees also support Third World students.)

**Contact:** Nepal Community Support Group (NECOS), PO Box 3724, Kathmandu, Nepal, fax 977-1-225277.

### 2d Annual PC Teachers Reunion

**Dates:** March 13th to 15th, 1992  
**Location:** The Lodge at Gearhart's Little Beach, Gearhart OR  
**Contact:** Jude Hobbs  
1661 Willamette Street  
Eugene OR 97401

### Six-Weekend Design Course: Gap Mtn, New Hampshire

**Dates:** Sept. 14-15 & 28-29, Oct. 12-14 & 26-27, Nov. 9-10 & 23-24  
**Description:** This in-depth course will cover the principles and practices of permaculture design using lecture, discussion, interactive, and hands-on approaches: philosophy, ethics and principles of permaculture; basic design methods and skills, including design process, design drawing techniques, and observation; working with patterns in nature; understanding and adapting to climate and landform; utilizing water in the landscape: harvesting, storage, efficient use, and releasing it clean; use of tree crops, aquaculture, and animal forage systems for food production; social and economic structures.

Design teams can work on projects of differing scales from homestead to small village including designs for retrofit and new construction. Completion of the course will result in certification as a Permaculture Design Trainee and familiarity with skills and ideas useful for evolving an enduring lifestyle.

**Instructors:** Dave Jacke, Doug Clayton  
Dave Jacke has worked as a landscaper, forestry planner, environmental educator and

carpenter, and since 1984 has consulted on a wide range of projects, from house siting and retrofit design for residences to townwide groundwater mapping, and various landscape construction projects. His major focus has been wastewater system design, both conventional and alternative. Dave has organized and led a number of permaculture conferences and workshops since 1986.

Doug Clayton worked for two years in the "Whole Life Systems" program at the Farallones Institute's Rural Center in Occidental, CA. While at Farallones, he gained a range of appropriate technology skills, including solar heating, greywater treatment systems, composting privies, organic gardening, etc. He has spent twelve years designing and building passive solar homes and greenhouses, and has contributed to two books on solar construction. He has focused the last ten years on permaculture homesteading at Gap Mtn.

**Cost:** \$575  
**Contact:** Gap Mountain Permaculture  
9 Old County Road  
Jaffrey NH 03452  
603-532-6877

## Three Week Permaculture Design Course in Florida

**Dates:** October 19-Nov 9, 1991

**Location:** Granary Whole Foods Inc.,  
1738 Kingsley Ave., Orange Park, FL 32073

**Description:** The course includes sections on ecological design principles, design application of appropriate technologies, and economic, social and legal considerations in Permaculture design. Themes treated include energy, nutrient cycles, cultivated systems, potential catastrophes, water buildings, urban permaculture, alternative economics, and bio-regionalism. Students form teams and design the course site, a health food store located in an urban setting. Its design will include elements of urban permaculture, extensive plantings for food and shelter, water catchment, energy conservation, marketing, and further development of the store and site as a learning center and permaculture demonstration. Course graduates will be certified as

## Urban Permaculture Design Course in Houston

**Dates:** Six weekends beginning Feb. 28-Mar. 1, 1992, continuing April 11-13, May 15-17, June 26-28, July 31-Aug. 2, and concluding Sept. 11-13, 1992.

Anne K. Devlin-Firth will teach a series of six weekend workshops on urban permaculture beginning February 28-March 1, 1992. Taken together the 114-hour series will fulfill the requirement for certification under the permaculture design training program. All of the standard 72-hour curriculum will be covered. The additional 42 hours will allow students time for hands-on projects. The series evolved to meet the needs of busy city dwellers juggling work, family, and community involvements, but still wishing to obtain permaculture design certification.

Students will pursue projects of their own choosing at home, as well as complete work on a class project. Hands-on work will include setting up a Local Exchange Trading System (L.E.T.S.), building a spiral herb garden from salvaged bricks, installing a free-standing "tree-pot" pond, grafting practice with willow sticks, building various levels for correcting front and side yard swales on the design site, and building two solar ovens. The graduation feast, weather permitting, will be cooked in the newly-built ovens.

Instructors will include guest speakers on grafting, community gardens, integrated pest management, ecocity architecture, Third World economics, and successful local and native species.

**Contact:** Anne K. Devlin-Firth, 213 E. 24th St., Houston, TX 77008.

Permaculture Design Apprentices and registered with the Permaculture Institute.

**Instructor:** Dan Hemenway, editor and publisher of *The International Permaculture Solutions Journal*, will lead this full three-week course.

**Cost:** \$600 with limited scholarships available/no charge to Native Americans of the region. Limited to 20 registrants.

**Accommodations, Food, Child Care:** There are area hotels and/or homes to stay in with some limited camping available at the Granary. Food is available at local restaurants and at our deli. Call Julie at 904-269-5909 or write about child care and housing/tenting availability.

**Contact:** Send SASE for a pre-registration packet to Elfin Permaculture, 7781 Lenox Av, Jacksonville FL 32221, USA

## Running Rain Society: 2-Day Water Harvesting Workshop

**Dates:** November 9-10, 1991

**Location:** Datil, NM

**Description:** This two-day workshop, hosted by Running Rain Society, will address water resource enhancement through reforestation, aquifer recharge, microcatchment, and hands-on swale exercise. Dryland gardening techniques and strategies using only rainwater will be emphasized.

**Contact:** Daniel and Karen Howell  
POB 74, Datil NM 87821  
505-772-2634.

## "Gifting One Another" EPC6 Conference in Tennessee

The 6th Annual Eastern Permaculture Conference, with the theme "Gifting One Another," will be held October 11-13 at Standing Stone State Park near Livingston, Tennessee.

There will be presentations, workshops, and discussions on various aspects of sustainable living—keyline, solar, alternative economics, bioshelters, etc.—a trade show, an auction, and more. The fee, \$75 before October 1, \$80 after, includes meals and bunk (no linens) Friday evening through Monday morning.

A pre-conference field day and Introduction to Permaculture lecture at Earth Advocates Permaculture Research Facility on October 11, for \$20, includes lunch. A post-conference tour of local permaculture-related nurseries is planned for October 14.

For more information, contact Adam and Sue Turtle, EPC '91, Rte 3, Box 624, Livingston, TN 38570.

## Introduction to Permaculture Two Feathers Farm, Colorado

**Date:** October 5, 1991

**Location:** Two Feathers Farm,  
Longmont, CO.

**Instructor:** Charlotte Neyland

**Cost:** \$40 Preregistration is required. Send name, address, phone number and \$10 non-refundable deposit for each participant.

**Contact:** Two Feathers,  
7907 Ute Highway  
Longmont CO 80503-9231  
303-682-0742.

## Belize PC Design Courses

**Dates:** Feb. 21-March 8, 1992

**Location:** Toledo, Belize

**Instructors:** Michael Pilarski  
Chuck Marsh

**Contact:** Friends of the Trees  
PO Box 1068  
Tonasket WA 98855  
509-476-3678

## Oregon Permaculture Design Course

**Dates:** Feb. 16th-March 1st, 1992

**Location:** Lost Valley Conference Ctr.  
Dexter, OR

**Instructors:** Rick Valley, Tom Ward  
Jude Hobbs

**Contact:** Jude Hobbs,  
1661 Willamette Street  
Eugene OR 97401

## Village Permaculture Course Wisconsin's Driftless Region

**Date:** June, 1992

**Location:** West Lima, Wisconsin

**Description:** In the wooded hills of Wisconsin's unglaciated Driftless Region, the unincorporated town of West Lima is ready for reinhabitation. This course will emphasize appropriate strategies for village and community development.

**Instructors:** Michael Pilarski  
Chris Evans

**Cost:** \$550-650 sliding scale  
**Contact:** Friends of the Trees  
PO Box 1068  
Tonasket WA 98855  
509-476-3678

## Regional Reports

### Low Input, High Output Scottish Hills

Our Scottish, so-called scientific experts maintain that it is not economically viable to drain and make fertile our largely peat hills and bogs, or to grow most of our native trees and shrubs on them. Yet I've proven on a large scale that it can all be done cheaply and simply just by encouraging earthworms, moles, and clover.

I've made most of a 100-acre blanket peat bog highly fertile by this method, and will soon have improved about 1000 acres of hill. Both sheep and cattle now graze on my peat bog regularly, where they previously considered the pasture to be worthless.

I've already more than doubled the farm stocking rate, whilst increasing the lambing percentage (117% in 1988) and vastly increasing game and wildlife—by cheaply developing natural, self-renewing, sustainable energy, where there was little available previously, rather than by exploiting expensive and finite world resources. And I believe the lambing percentage will go up to at least 150% when the whole hill is improved.

It is now self-evident from what I've done here that without cultivation, artificial drainage, or artificial nitrogen we can make any Scottish hill highly fertile and well drained, and establish about 30 species of native trees and shrubs—just by correction of Ca and P deficiencies and surface spreading of earthworms and clover.

We dare to criticize Third World countries for cutting down tropical forests, yet we cut down the Caledonian Forest to survive, and were only saved by our temperate climate. Our grazing animals, cultivation, and chemicals have killed off, or are restricting a lot of native flora and associated fauna and are preventing natural recolonization, so we ought to be actively introducing native trees, shrubs, and wild flowers.

Most sheep on hill farms are suffering from lack of proper quality nutrition throughout their stay. When aged hill ewes, which have probably produced 75% lambing under hill conditions, are sent off to better lowland, they usually show their genetic potential by producing twins.

World-wide, peat is a vast and as yet largely under-utilized source of energy. I've shown that earthworms can cheaply and effectively release this energy for farming and forestry, saving oil used to produce artificial nitrogen. Together with clover, they produce at least 200 lbs. of nitrogen per acre a year. Once both are established, they keep on providing this energy with little input. Scottish peat bogs are potentially just as productive as Cambridgeshire fen peats, some of which I understand have been degraded to

bedrock by current farming practices. Generally peat is being destructively mined, rather than sustainably cropped.

I've produced dramatic results with earthworms and clover here on peat, but they will of course produce 200 lbs. of nitrogen per acre per year on any soil where proper consideration is given to the soil organic matter. It is worrying, to say the least, that our scientists can pour chemical fungicides, pesticides, weedkillers, and growth-promoting substances on our soils without, as far as I know, any proper checks to see the long term effects on earthworms.

With clover and earthworms now having made most of this farm into probably the first truly fertile Scottish hill; with most of a 100-

acre deep peat bog highly fertile, well drained, and covered with an ever increasing depth of best quality peat humus; with a large rushy peat bog mainly transformed into well drained, fertile, clover-rich pasture; together with six acres of woodland established as coppice-with-standards and growing a large variety of suitable native trees and shrubs, where only spruce was supposed to grow—I feel it is time the experts were made to face facts. △

*This article is an excerpt of a larger paper by the same name. Bruce Marshall lives with five others on 1500 acres at Tocher Knowe, a permaculture site established in 1978. He may be contacted at Tocher Knowe, West Linton, Peebleshire EH46 7HB BRITAIN.*

### Children's Permaculture Foundation

The newly-launched Children's Permaculture Foundation of New Zealand is looking for members and for funding possibilities for their work, according to Robyn McCurdy.

Their primary purpose is to provide the structures, resources, and personnel so children may be taught relevant skills and attitudes to prepare them to be co-creators, implementors, and caretakers of sustainable and productive ecosystems, for the benefit of all.

Other objectives are: to support the establishment of permaculture learning centers and demonstration sites; to train permaculture teachers of children; to create a permaculture curriculum for children, and to encourage its introduction into schools; to develop and publish resource materials; to hold children's classes, workshops, and camps; to teach children plant propagation, environmental restoration, and revegetation skills with a permaculture approach.

Other aims are: to sponsor international exchanges of permaculture students; to encourage the formation of local, regional, and national groups supportive of the foundation to (1) exchange skills and information, and (2) gather and distribute plant and other material resources; to develop and maintain links with organizations with complementary aims; to operate ethical businesses which support children's permaculture, education, and work; and to hold trust property for the advancement of its objectives.

The major current project is the producing of children's resource material on permaculture themes. More writers are needed.

Membership is by donation, but should cover mailing costs of "keeping in touch." Benefits include subscription to the semi-annual newsletter, discounts on resource materials, and possible use of the "umbrella" of the foundation for specific projects. Individuals or groups interested in becoming members may write to Children's Permaculture Foundation, c/o R. McCurdy and D. Simpson, Otakou R.D.2., Dunedin, Aotearoa/New Zealand.

### Perma... What?

#### Perma...CULTURE in the Kootenays

Gregoire Lamoureux

The prime directive of Permaculture: "The only ethical decision is to take responsibility for our own existence and that of our children. Make it now." —Bill Mollison.

Cooperation, not competition, is the very basis of existing life systems and of future survival. The three main ethical principles are: Care for the Earth, Care for people, Give away surplus. (Always pick up hitch-hikers!)

Permaculture, the Lazy People's work, use thoughtful observation rather than mindless labor. Turn waste to resources, problems into assets. Work with nature, not against it.

Knowing that permaculture is permanent agriculture, I was happy to experience more about permanent culture. It is funny that culture is defined as "cultivation of the soil, the raising of animals or the growing of plants"—and, "The totality of socially transmitted behaviors characteristic of a people."

If we are to survive, we need not only an abundant garden, but also an abundant sustainable social culture. We have to learn to live more and more together, multiplying the exchange of material, energy, and work between ourselves, our neighbors, our friends, and even our enemies. If we want alternatives to be available, we have to organize and link, to circulate the information, the material, and the energy so that everyone has access to it.

Coming back from a permaculture design course in Oregon, I feel the energy and support to realize what I have been thinking of doing for a long time. So I am organizing an "Introduction to Permaculture" weekend workshop in my community to get people together to create a network, to exchange ideas and materials, and to support specific projects. From there we can learn what is being produced in our own bioregion, make that information available, and then fill in the important elements.

For comments or information, write to Kootenay Permaculture (KooP), Gregoire Lamoureux, Box 43, Winlaw, B.C., CANADA V0G 2J0.

# The Permaculture Network-- 1992 Designers Directory: A Questionnaire

Permaculture emphasizes relative location, energy conservation and production, and local resources and competences. We are a network of many individuals, but taken together we represent a large-scale phenomenon.

What you know and what you produce are valuable--the demand for PC is huge.

## The Gift Must Always Move...

The *Permaculture Activist* encourages Design Course graduates and readers to **CONTRIBUTE TO THE NETWORK:**

We would like curriculum vitae (c.v.) from everyone living in N. America who has completed a design course. We will compile this information and publish it as *The 1992 Permaculture Designers Directory*.

Please copy this page and send it to your friends and acquaintances who should be listed. The 1987 edition of this Directory listed over 400 individuals, a large portion of the 450-some known graduates at that time. We imagine the number has doubled since.

Please read and respond to the questionnaire below. Feel free to enclose a resume, business card, or professional brochure.

We make referrals. Return the completed form to us by Jan. 1, 1992.

We anticipate a price for the completed Directory of \$13.50, postpaid. Contributors to the directory may buy at the pre-publication price by sending \$10.00 to:

**The Permaculture Activist  
P.O. Box 3630  
Kailua-Kona HI 96745 USA**

U.S. funds please. Airmail extra, (U.S., Canada, Mexico-\$2; W. Hemisphere-\$3; Europe-\$5; Asia, Africa, Pacific-\$7).

## TELL US ABOUT YOURSELF...

Name  
Date, location, and teacher(s) of Permaculture Course you completed  
Telephone: Home, Work, Fax, Email...  
Business or Organization  
Address  
Occupation  
Group Affiliations / Special Licenses  
What land do you own or manage?  
Bioregion. Any organizing activity?

## PRODUCTS & SERVICES?

you provide for Permaculture:

Farm/garden products  
Tree Crops, Animals  
Fresh market vegetables  
Nursery Products or Seed

Non-edible farm or forestry products  
Farmers: how do you market?  
Manufactured items  
Wholesalers: what do you handle?  
Retailers: what do you carry?  
Design or Consulting services  
Organizing Activity  
Publications  
Other services, products or work related to Permaculture (paid or unpaid).

## OTHER SKILLS of use to Permaculture

Wildcraft: fishing, hunting, trapping, sailing, tracking, seed collecting, navigation,  
Cultivating skills: gardening, propagation, forestry, soil conservation, irrigation design, PC implementation, edible landscaping,  
Building skills: plumbing, electrical, glazing, carpentry, masonry, roofing,  
Crafts: woodworking, ceramics, weaving, papermaking, clothing, thatching, tannery, dyeing, jewelry, metalwork, leatherwork, stitchery and needlework, knitting, netmaking, boatbuilding, glassblowing, distillery, brewing, vintnery,

Human and Animal Care: health services, nutrition, cooking, veterinary, animal breeding, beekeeping,

Communications skills: writing, graphic arts, drafting, foreign languages, public speaking, teaching,

Information skills: legal, interviewing, journalism, computer database, library, research,

Design & Technical skills: alternative/appropriate technology & energy, surveying, architecture, engineering,

Organizational skills: organizing co-operatives, business operations, manufacturing, entrepreneurial, etc.

## COMMENTS OR SUGGESTIONS?

Do permaculture design and teaching empower people and landscapes?  
What tools are needed for successful design work? For implementation?  
What cultural adaptations are required for sustainable land use in your region?  
What support business, groups, or sources, do you need to sustain permaculture as your livelihood?  
Are there particular products and services you need but cannot find?  
Can you feed & house other people if they contribute to your farm/homestead/business?  
What knowledge, resources, and skills can you offer to the network that will help others implement PC?

# PERMACULTURE COMMUNICATIONS

*Permaculture I & II*: \$16.50 each

*Permaculture: A Practical Guide For A Sustainable Future*: A new iteration of Bill Mollison's definitive permaculture design manual with improved cloth binding and a new price, covering all aspects of property design and natural farming techniques. It includes: Trees • Microclimate & broadscale techniques • Species selection, placement & management • Multipurpose shelterbelt, forage woodlot & orchard systems • Plant succession & Ecology • Home gardens • Zone & sector design • Revegetation and Afforestation • Arid- & humid-land methods & strategies • Wildlife and Rangeland mgmt • Soil conservation & rehabilitation of degraded lands • Water & irrigation systems • Earthworks: terraces, swales, dams & canals • Recycling/waste disposal • Bioregional organization • Land access strategies • Community finance • Village development • Business strategies • Ethical values for a new world--and more!  
**\$34.95 + \$3 p & h per book. Cloth, 576pp w/ 130 color photos & hundreds of illustrations.**

*Permaculture, Journal of the International Permaculture Association* - Back issues--an incredible reference on permaculture! Issues #7 - #35, \$5. ea. #31 indexes all back issues.

*Subtropical Fruits - A Compendium of Needs and Uses*, 2-color poster, 26"x30", lists 100 species/varieties of subtropical fruit trees, vines, and shrubs. Great for nurseries, farmers, and home orchardists. Info on fruit characteristics, climatic tolerance, plant uses, cultural requirements, maturity times. \$14.00

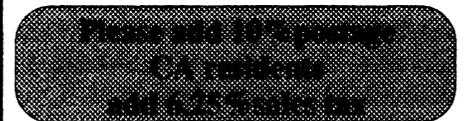
*Permaculture Designers Directory*, 1987 edition lists 450 graduates of Permaculture Design Courses in N. America with bio info, skills, resources, svcs. offered. Cost: \$6.00.

*Perspectives on Plant Symbiosis*: \$2.50;  
*Symbiont Inoculation Strategies for the Nursery*: \$3.50. Both: \$5. Michael Crofoot. Covering: • nitrogen-fixing bacteria • mycorrhizal fungi • their symbiotic interactions w/ plant roots • methods for the plant propagator

## Other Titles:

Designing your Edible Landscape	
Robert Kourik	16.95
Ferrocement Water Tanks, Watt	11.25
Fireplaces (Kern, Magers)	7.00
1988 Int'l Green Front Report, Pilarski	7.00
More Water for Arid Lands (N. A.S.)	8.50
Stone Masonry (Kern, et al)	8.95
The Earth-Sheltered (Kern & Mullan)	9.95
Owner-Built Home	
The Natural Way of Farming, Fukuoka	15.95
The Road Back to Nature	17.95
The Ohlone Way, Malcolm Margolin	6.95
The Owner Built Homestead, Kern	9.95
The Owner Builder & the Code	
Kern, Kogon, Thallon	5.00
Water for Every Farm, P.A. Yeomans	20.00

**Permaculture Communications,  
P.O. Box 101, Davis, CA 95617**



## Allied Groups

### Alliance for a Paving Moratorium

Believing that paving is the enemy of wildlife and of the human species, the Fossil Fuels Action people are proposing a national moratorium on paving new roads and parking lots. According to the first issue of their newsletter *Paving Moratorium Update*, this proposal has met with the biggest news media response in their 27 months of operation.

"To continue that monumental process which we have termed the Conservation Revolution," explains the newsletter, "we must have a clear objective. Our staff, directors and advisors are energized to make a difference via the Alliance for a Paving Moratorium. The potential is great! Welcome to the Alliance!

"More than half of our roads are made of asphalt—residue from oil refining. Roads are made from oil and our oil habit runs on roads. Despite the amazing uses to which oil is put, it has been our ticket to disaster: smog, roads, vehicle-crash deaths. Our oil, automobile, and road industry interests are a juggernaut that despite the high ideals of our nation now demands bloodshed as our energy policy.

"We must all now work to stop new roads. So much relates to roads—it would be difficult to destroy the planet without them. The impact roads have on wildlife—killing animals and fragmenting habitats of animal, plant, and insect species—is incalculable. Add damage to the earth's crust, erosion and water pollution, and now we are talking about a grand-daddy of environmental disasters. If that is overstating the case, add the related air pollution and we have a highway to the maltransformation of Earth and its climate.

"Practically speaking, roadbuilding takes money from commuter rail and Amtrak. A raging public safety issue is trucks, their heavy, long trailers and their often toxic, radioactive loads. For those concerned with shrinking our military and its budget, a paving moratorium throws a monkey wrench into military plans to expand and to buy and use more public lands. Saying "No" to more roads begins to reverse the tragic trends brought about by the anti-rail conspiracy that dismantled electric rail trolley systems in 40 cities beginning in the 1930s and '40s.

"Can every environmentalist rally around a demand to end new roads and parking lots? Yes! Where that step leads is intriguing to contemplate, and seems to many a rather revolutionary idea. At a time when the average person is coming to believe that the planet is being destroyed, it is becoming obvious that every village should not be made into a place to commute to or from. Roads, ironically, at our stage in history, don't bring people together when their result is conges-

tion and isolation. What brings people together is a community-based, family-based way of life. Security will come from self-reliance, not from superhighways conveying petroleum-produced food from afar. Is our problem in the Persian Gulf or in our own fossil-fuels infrastructure? Are not our real enemies ourselves as developers and wasters?"

*Killing Roads*—a tabloid published earlier this year by the Earth First! Biodiversity Project discusses in detail the national and state forest (and other public lands) roads and their damage. Freedom of Information Act instructions are supplied for road closure efforts. Copies of this well-researched resource and of the Paving Moratorium Update are available from Fossil Fuels Policy Action Institute, P.O. Box 8558, Fredericksburg, VA 22404.

### Appropriate Technology Magazine Addresses Third World Needs

The Dutch quarterly magazine *AT-source* publishes articles in the field of technology and development to help local organizations in the Third World.

The March, 1991 issue contained a mini-special on vegetable gardening dealing with: preconditions for vegetable gardening, nutritional advantages of vegetables and fruits, extension, and practical solutions for input problems.

Also in that issue was a mini-special on mobility aids: conditions for success, about orthopaedic shoes, and about the production process of wheel-chairs. Single features included one on wooden ox-cart bearings and one on building a wind pump. A bibliography and list of references completed the issue.

*AT-source* is published in both English and French. Subscriptions from *AT-source*, PO Box 41, 6700 AA Wageningen, The Netherlands. DFL. 35.00/year (4 issues).

### Subtropical Fruits: A Compendium of Needs and Uses

Max O. Lindegger

A 2-color poster, 26"x30", lists 100 species and varieties of subtropical fruit from Abiu to Wampee, alphabetically by botanic family, with tolerances, plant and fruit products, characteristics, cultural requirements, bearing season, and remarks. Bibliography. An invaluable aid to the permaculture designer.

\$14.00 postpaid

The Permaculture Activist  
PO Box 3630  
Kailua-Kona 96745 USA

### Apprenticeship in Ecological Horticulture Univ. of California, Santa Cruz

Each April through September, the Agroecology Program UC Extension, Santa Cruz, offers an extension training course in organic gardening and farming. In the 6-month residential Apprenticeship in Ecological Horticulture, April 6-October 2, 1992 at the UCSC Farm and Garden, emphasis is on hands-on learning with instruction in organic horticultural methods (soil fertility, cultivation, composting, propagation, irrigation, greenhouse); cultivar requirements (vegetables, herbs, flowers, fruits); pest and disease considerations and marketing. Both garden and field-scale production are included.

Application deadline: December 5, 1991

Tuition: \$1,500 (includes books, tools and living expenses) (Students can live on the 29-acre farm in their own tents free of charge.. Annually, two tuition waivers are offered to minority/systematically disadvantaged individuals.

For further information, contact: Apprenticeship, Box F, Agroecology Program, University of California, Santa Cruz, CA 95064, 408-459-2321.

### ICRAF Tree Database

In the words of M. R. Rao, senior scientist at the International Council for Research in Agroforestry (ICRAF), "In addition to meticulous species selection, the design of hedgerow-intercropping systems requires a careful assessment of trade-offs between the positive and negative effects of trees in each specific environment." ICRAF maintains a multipurpose tree and shrub database which includes information on 11,000 species. The listing includes species identified to combine good growth with minimum competitiveness and adaptability to problem soils.

Researchers can request a database listing of species specific to their needs. ICRAF asks that the following details be specified in any database search request:

- Planting site location, including longitude, latitude, and elevation; mean annual rainfall, monthly rainfall distribution, and indications of rainfall reliability; mean annual maximum and minimum temperatures, absolute minimum temperature, and frost occurrence.
  - Soil characteristics, including texture, reaction, occurrence of waterlogging or alkalinity, soil depth, and FAO/UNESCO classification.
  - Any special features or problems associated with the planting site.
  - Anticipated tree propagation and management procedures.
  - Products and services desired from the tree.
- ICRAF cannot supply seed or vegetative propagation material of any kind. Contact ICRAF at ICRAF House, P.O. Box 30677, Nairobi, Kenya.

# Letters

## London to Africa

Dear Peter,

Despite events in the Gulf these are exciting times. I'm thinking a lot about how to use the increased awareness that an oil war will bring. Once the dust settles, sustainability will be even higher on everyone's agenda. Also, exciting times with Nepal conference at hand, and Bill Mollison, and some of my PC friends coming to UK after the conference.

I am employed at Friends of the Earth, mainly on mundane recycling projects, but that lets me develop my resources, permaculture knowledge, etc. I am also on Email at FOE. My "address" is gn:foeprojects.

One year ago now I was in Botswana, and wrote an article on some innovative work that the PC Institute of Botswana was doing with the "Bushmen" in the Kalahari. I know Bill M. has been there during 1990 to teach another course.

I'd also appreciate a copy of *The Activist* which featured Mr. Mazibuko of the Africa Tree Centre, Natal, RSA. I read it in Botswana—and wrote to Mr. Mazibuko. Since then, I have been able to raise some money here for the centre, and I have a friend who is going to S. Africa shortly. I hope she'll get to visit the centre and give us an update. It's in an area where there's been a lot of trouble, but it's so good to have someone taking a permaculture approach to some of SA's problems.

Best wishes and peaceful thoughts,  
Ian Lilington  
London

## Where the Buffalo Roam...

Dear Peter,

*The Activist* just arrived and it's music to my ears, if such can be. Thanks loads. I hope there really will be an infusion of the ecocity and permaculture ideas into one another. What many who are both critics and supporters of Urban Ecology often miss (though they will say almost mechanically because it makes sense, that density and diversity working together are part of the answer) is the wonderful richness of biology that becomes possible if city planning, architecture and planting go hand in hand, all based on natural principles. You expressed that fusion beautifully in your "From the Editor" column. Never seen better.

As ecocity thinking and permaculture principles should be wedded, so we should also think in terms of

ecologically healthy development and restoration of nature and agricultural all in one image, and ultimately, in an international ecological rebuilding program. I'm writing up something on that right now, in the hopes that governments from city to national to UN scale will be stimulated to 1) acknowledge a world crisis in the way we build, and 2) begin far-reaching programs to deal with it—with new Departments of Ecological Development, supporting "Restoration Development Projects" funding experimental projects as a matter of strategic security, and more.

One of the most exciting new developments in a long time is called "Buffalo Commons." For 150 years the US government has promoted settling and farming in Wyoming, Idaho, Montana, and the Dakotas. The area has sucked money from the rest of the states to promote wheat, oats, and other grains, and has sucked out peoples' dreams too. The last 30 years, farmers have drifted back to ecologically richer areas. Fences rusting away, schools empty, whole towns closed down. Ranchers moved in, then spread out farther from one another. Some are raising buffalo since the area is too harsh even for cattle. Now a proposal is on the table for a free range from Colorado and Kansas all the way to Canada with spots of development and farming, like islands in the prairie sea. Imagine the fences down over so vast an area, the islands of permaculture villages and small cities that could fit gracefully into that magnificent, austere landscape.

Richard Register  
Urban Ecology  
PO Box 10144  
Berkeley, CA 94709

## Travellers Tips

Dear Peter,

Here's a jet lag preventative. Take a strong, brown grocery sack and cut out innersoles. Insert these New Age Dr. Scholl's in your shoes and say goodbye to jet lag. The tip is from actor Michael York who wears a lot of brown paper between England and the States. He says he doesn't know why it works, it just does. I have had friends act as guinea pigs on trips to Egypt, California, and Japan—all with favorable results.

Anne K Devlin-Firth  
213 E 24th Street  
Houston, TX 7708-2519

## Still got those Sugar Blues

Dear Permaculture Activist:

I am a founding member of a "grassroots" organization concerned with social, economic, and environmental issues in the Third World.

Our first project is in W. Africa.

# Permaculture Books

*Introduction to Permaculture*, Bill Mollison w/Rene Mia Slay (1991) 198 pp. paper. illus. The basic argument for permanent agriculture honed to a keen edge by a dozen years' teaching and thousands of demonstrations. How to feed and house yourself in any climate with least use of land, energy, and repetitive labor. If you talk permaculture, you need this book. Supercedes PC 1&2. 23.00

*Permaculture: A Practical Guide for a Sustainable Future*, Mollison (1990) 576pp. cloth. 450 illus. + 130 color photos, N. Amer. reprint of *The Permaculture Designers' Manual*. Global treatment of cultivated ecosystems. Resource for all landscapes and climates. 40.00

*The Best of Permaculture: A Collection*, Max Lindegger & Robert Tap, eds. (1986) 136 pp. paper. illus. Choice examples from around the world: PC, building biology, urban forestry, land restoration. 15.00

*Conceptual Permaculture Report: Crystal Waters Village*, Lindegger & Tap. (1989) 80pp. pap. illus. Advanced proposal for an agricultural economy at the 1st PC village in Australia. Original work. 22.50

*Crystal Waters Permaculture Village Owner's Manual*, 2nd ed. Nascimanere. (1990) 54pp. pap. illus. Nuts and bolts for the owner/builder. Passive solar design; hard-to-find info on rammed earth, sod roofs, pole construction, building biology. Subtropical focus. 11.00

*Western Permaculture Man'l*, ed. David Brown. 160pp. pap. illus. "A significant contribution to the development and explanation of permaculture"—David Holmgren. Ethics, ecology, design, technology, silviculture, animals—10 yrs work by the PC Assn. of W. Australia. 14.00

*Designing and Maintaining Your Edible Landscape Naturally*, Robt. Kourik. (1986) 370 pp. pap. illus + 19 color photos. Permaculture in the home garden. Mulch gardens, double digging, root zones, intercropping, pruning, companion crops, natural pest control. 17.00

*City Food, Crop Selection in Third World Cities*, Isabel Wade (1986) 54pp. pap. illus. Efficient food production with limited resources. Treats many tropical fruits, nuts, & vegetables not familiar to N. Americans: cultivation, food values, planting calendars; common & botanic names & uses for 100+ crops; extensive biblio. 7.50

*EcoCity Berkeley: Building Cities for a Healthy Future*, Richard Register. (1987). 140pp. pap. illus. Valuable and visionary view of Berkeley and the Bay area 25, 50, and 120 years in the future. Scenarios of ecological city transformation. Design for city regions. 11.00

*EcoCity Conference 1990: Report of the 1st Intl Conference*, Urban Ecology. 128 pp. pap. illus. 150 presenters on 80 topics. Communities, design, transport, workplace, wilderness, cohousing, recycling, cultural models, new towns—a feast of examples. Directory of resources. 7.00

*The Man Who Planted Trees*, Jean Giono. (1985) 56pp. paper. 20 woodcuts. Beautifully illustrated by Michael McCurdy. 6.95

*Dwellers in the Land: The Bioregional Vision*, Kirkpatrick Sale. (1985) 217pp. paper. A sourcebook for much of the current bioregional movement. His vision of a community-based governance points to a new paradigm for politics appropriate to permaculture. 13.00

*Directory of Intentional Communities 1990-91*, 312 pp. pap. illus. 300+ N. American and 50+ int'l communities, 200 alternative resources and services, 35 articles on community living. Comprehensive, exciting survey of a maturing movement for cultural transformation. 12.00

*Cornucopia: A Sourcebook of Edible Plants*, Stephen Facciola. (1990). 678 pp. paper. Lists over 3,000 species with all commercially available named cultivars, sources of seed, plants, descriptions, uses, cultural notes, food products; indexed by common name, families, and genera. A monumental work useful to every designer/gardener. 36.00

Prices subject to change

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- I, 2 Nov. '85 Fruit & Nut Trees
- II, 1 Feb. '86 Garden Design
- II, 2 May '86 IPC 2 & PC Design Courses
- II, 3 Aug. '86 Int'l PC Conference Program
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The area is stricken hard with poverty and a poor infrastructure. However, because the country is not yet "over-populated" and has a few of the basic resources, the people have not dipped below the poverty level, as it is in some neighboring countries. As the population grows, and begins to consume the limited resources, starvation will replace the general poverty that exists today.

In this particular case, we feel that by bolstering the local economy, we can help improve the education system, encourage family planning and assist the general welfare of the community. By bolstering the local economy I mean creating an appropriate, inexpensive, yet ecological means of generating income.

The area has been exploited in the past for cocoa, coffee, and sugar cane. It has, since colonial days, managed to seek its own identity, but still falls a victim to the world economy.

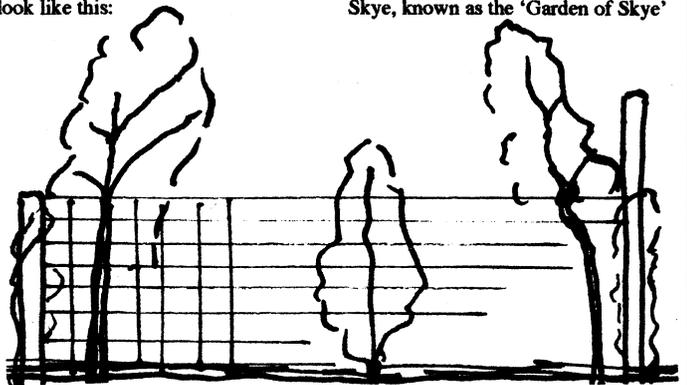
What we at Friendship Projects are attempting to do is organize and build a small-scale, low-input cane sugar processing plant, not to produce sugar for export, but to supply local needs. Sugar cane grows abundantly here, yet the people must pay extortionate prices for imported sugar. The plant would create jobs, build self-esteem among the villagers, and go toward a more sustainable future for all in general. It is absolutely necessary to integrate the agricultural methods and the actual cane processing with respect to the natural environment.

So any input, feedback, references would be greatly appreciated. Thank you from myself, Friendship Projects, Inc. and the friendly people of Sao Tome and Principe.

Sincerely,  
 John Coffman  
 c/o Friendship Projects, Inc.  
 PO Box 1003  
 Dutch Harbor, AK 99692

**ReFood Redux**

Dear Editor:  
 "Re Food-forestation," appearing in issue #23 should read "diameter," not circumference in the second paragraph, #1. After 3-4 years, it might look like this:



Pioneer spp. on rim, browsed and battered on edges, climax sp. in center beginning to gain size. Whole cluster about ready to have fence moved. Not a steadily growing cone as in the drawing printed.

Rick Valley  
 3328 SE Kelly  
 Portland, OR 97202

**Elaeagnus Feeds Man and Soil**

Dear Editor:

I have been doing a lot with N-fixing fruit producers of *Elaeagnus* family—especially Autumn Olive which we like fresh or as juice and jam (good substitute for cranberry). The relationships of interplanting N-fixers with non-fixers is especially interesting—much heavier nodulation where roots meet, nitrogen leaking from roots. And sometimes the growing together of the two plant roots is such that people can't tell which is which.

Conventional wisdom is that it is the foliage, etc. from the nitrogen fixer that enriches the soil making the non-fixer grow faster. I think there are things going on in the soil between roots that we don't yet know about. Anyway, it's a great way to get nitrogen to plants without fouling ground water.

Sincerely,  
 Hector Black  
 Hidden Springs Nursery  
 Rt. #14, Box 159  
 Cookeville, TN 38501

**Opportunities in Scotland**

Greetings,

I have owned Rupha Phoil for seven years—with an increasing feeling that I was just "minding" it until someone came along with a similar vision to help implement it. I discovered Permaculture last year and knew that "this was it"!

I have now, however, got to implement a rescue plan. Due to my finances, my bank has given me three months to come up with something. I know this will get things moving!

"Rupha Phoil is a well-wooded promontory near the Mallaig ferry terminal on the Sleat peninsula of Skye, known as the 'Garden of Skye'

because of its deep peat soils and mild climate. Trees on site include Scots pine, larch, oak, beech, rowan, and coppiced birch, plus exotic conifers. Deer graze the undulating areas of grassland, heather, bracken, peat bog, and salt marsh. Backed by cliffs, with caves and gullies, the rocky sea shore and offshore islets provide a haven for seals, sea otters and birds such as herons and arctic terns.

"The site lends itself to research over a whole range of permaculture principles and to that end a team of trainee architects have designed an autonomous energy efficient house/study center to be built on a south facing slope overlooking the Sound of Sleat. Plans include a wind generator, rain water harvesting (there's plenty!), wood/peat heating, solar energy conservatory, and reed bed sewage system. There is scope for woodland craftwork and further accommodation. The sunken garden area, incorporating natural soil reconditioning methods, will accommodate tender and sub-tropical species. Water storage ponds fed by contour swales will be integrated into an aquaforestry system.

"The future might see local sheep breeds grazing the meadow and saltings, foraging pigs to clear bracken, free range poultry, small-scale shellfish culture and traditional building methods. Much of the land will remain wilderness.

"The Vision:

- The creation of a land trust.

- A permaculture education retreat based on the concept of living in harmony with nature.

- A great Scottish garden!"

As the Rubha was previously McDonald land and is surrounded by Clan Donald enterprises—a castle, visitor centre, an arboretum, restaurant, craft shop, etc.—I have managed to interest Lady Clare McDon-

ald in helping set up a trust with Godfrey (her husband, "Lord of the Isles") as trustee. To make the Rubha into a Permaculture Institute, of which we have none yet in Britain, we need more trustees, or people with money and vision who would be interested in sharing in this venture.

At the moment, most of the produce on Skye and the Western Isles is imported from Glasgow. Common belief holds that crops won't grow in the acid soils there. This is not so (see pg. 34), but we need to prove this to the locals. "No-work growing" on permaculture principles would indeed be popular up there as the inhabitants have a hard but relatively peaceful life close to the earth in a beautiful environment. Nature is still unspoilt there—a true wilderness!

I work for the Permaculture office in Devon, earn a paltry sum, but also work for the planet by healing my fellows. Bill Mollison has spoken of "burnout." I empathize strongly with this, and I'm working on various psychotherapies to enable us to overcome personal and eco-despair. Permaculture must now encompass deep ecology in its teachings. The women in Permaculture increasingly bring this in—a little right brainwork to balance our men on the left!

We are collating articles on permaculture from around the world. We would be most grateful for input. Contact Permaculture UK at Cuming Farm, Buckfastleigh, Devon, TQ11 0LP Britain.

Thinking of you reading this half a world away amid blue skies and surf does me good.

For the earth,  
Sandy (Alexandra Mary Masson)  
Hatchland Bridge Cot., Rattery,  
So. Brent, Devon, Britain TQ10 9LL  
Ph. 0364-72958.

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### Books and Publications

AT LAST! *Greenward Ho! An ecological approach to sustainable health*, is in print. \$35 ppd from Tom Ward POB 1282 Ashland OR 97520.

Magazine for homesteaders! Covering: bees, health, gardening, and much, much more... Free information for a stamp. *Farming Uncle* ©, 2917 Grand Concourse, #CNG90, Bronx NY 10468.

TECHNICAL BULLETIN on Gap Mountain Permaculture "Mouldering" Toilet Describes basic functioning, design considerations and construction details for cold climate privy. \$12 ppd from Dave Jacke, 9 Old County Rd, Jaffrey NH 03452.

Portable Dwelling Info-letter: about living in tents, yurts, domes, trailers, boats, remote cabins, other mobile or quickly-made shelters plus plans for simple, low-cost low-impact comforts and conveniences. Sample \$1. Box 190-pa, Philomath OR 97370.

### Green Goods

8 x 5/4" KD T&G cedar siding 50 cents/bf varied lengths + 2 cedar windows \$40 each. Tim, 808-966-7151.

### Feed & Seed

GARLIC for sale. Alan McGraw. Box 1382, Jacksonville, OR 97530, 503-899-1696.

### Help Wanted

Seeking mature person to caretake house and greenhouses on Basalt Mountain, Colorado. Dec '91-April '92 while Jerome's on sabbatical. Housing in exchange for maintaining cover crops and greenhouse perennials. Exclusive mtn. setting, permaculture library, skiing, hot springs, grow your own salad. Contact Jerome Osentowski, Box 631, Basalt, CO 81621, 303-927-4158.

One Peaceful World seeks volunteers to travel to the Soviet Union to help organic farmers in Pushkin. Soviet authorities will pay all expenses but airfare. Contact Alex Jack, One Peaceful World, Box 10, Becket MA 01223, 413-623-5742.

### Apprenticeships

Ohio State University's Sustainable Agriculture Program seeks six summer interns. For more information and applications, contact Kamyar Enshayan or Jeff Dickinson, Sustainable Agriculture Program, Ohio State, 1735 Neil Ave., Columbus OH 43210, 614-292-3786.

The Howell Living History Farm offers ten-week internships in draft animal power to people interested in international agriculture development. Contact Robert Flory, Howell Living History Farm, RR2, Box 187, Hunter Rd., Titusville NJ 08560, (609) 737-3299.

Maine Organic Farmers and Gardeners Assn. seeks apprentices to work from May to September, possibly longer in some cases. Contact Bill Thayer, Placement Coordinator, Box 520, West Bay Rd., Gouldsboro ME 04607, 207-963-7771.

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# CALENDAR

**Sept. 14-Nov. 24, 1991. Jaffrey, NH. Six-weekend Permaculture Design Course.** Contact Gap Mountain Permaculture, 9 Old County Rd., Jaffrey NH 03452, 603-532-6877. pg. 32.

**September 26-October 10, 1991. Kathmandu, Nepal. Permaculture Design Course.** Contact: Nepal Community Support Group (NECOS), PO Box 3724, Kathmandu, Nepal, fax 977-1-225277. pg. 32.

**October 3-9, 1991. Island of Hawai'i. PC Teachers Training Course.** Contact Permaculture Hawaii, PO Box 5167, Kailua-Kona, HI 96745, 808-929-9028.

**October 5, 1991. Longmont, CO. One-Day Introduction to Permaculture.** Contact Two Feathers Farm, 7907 Ute Hwy, Longmont, CO 80503-9231, 303-682-0742. pg. 33.

**October 6-9, 1991. Indianapolis, IN. 2nd Annual Symposium.** New Crops: Exploration, Research, Commercialization. Contact

Continuing Education Business Office, Rm 110, Stewart Ctr, Purdue Univ., West Lafayette IN 47907.

**October 11-13, 1991. Standing Stone State Park TN. 6th Annual Eastern Permaculture Conference.** Contact Earth Advocates, Rte 3, Box 674, Livingston, TN 38570. pg.33.

**October 18-Nov. 9, 1991. Orange Park FL. Three-Week Permaculture Design Course.** Contact Elfin Permaculture, 7781 Lenox Ave., Jacksonville FL 32221 USA. pg. 33.

**October 19-31, 1991. Basalt CO. 5th Annual Permaculture Design Course.** Contact Jerome Osentowski, PO Box 631, Basalt CO 81621. pg. 32.

**November 9-10, 1991. Datil NM. Two-day Water Harvesting Workshop.** Contact Running Rain Society, PO Box 74, Datil, NM 87821, 505-772-2634. pg. 33.

**November 11-24, 1991. Washington, TX. Permaculture Design Course.** Contact Peaceable Kingdom School. PO Box 313, Washington TX 77880, 409-878-2353. pg. 32.

**February 16-March 1, 1992. Dexter OR. Permaculture Design Course.** Contact: Jude Hobbs, 1661 Willamette Street, Eugene, OR 97401. pg. 33.

**February 21-March 8, 1992. Toledo, Belize. Permaculture Design Course.** Contact Friends of the Trees PO Box 1068, Tonasket WA 98855, 590-476-3679. pg. 33.

**March 13th-15th, 1992. Gearhart OR. 2nd Annual Permaculture Teachers Reunion.** Contact Jude Hobbs, 1661 Willamette Street, Eugene OR 97401. pg. 32.

**June 1992. West Lima, WI. Permaculture Design Course.** Contact Friends of the Trees, PO Box 1068, Tonasket WA 98855, 509-476-3678. pg. 33.

**June 19-20, 1992. Stockton CA. World Conference on Solar Cooking, Use and Technology Worldwide.** Contact Univ. of the Pacific, 102 Khoury Hall, Stockton CA 95211, USA 209-946-2377, fax 209-946-3086.

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Tabard Farm, a certified organic farm, offers food, lodging, and stipend for 1991 season for farm workers/apprentices. Contact Susan Peterson, c/o Tabard Farm, Rt 1, Box 2444, Middletown VA 22645, 703-869-5815.

### Situations Wanted

Seeking graduate programs & internships in Permaculture and related subjects. Western US preferred. Write: Ed Self, 365 S 39th, Boulder, CO 80303.

"TERRA NOVA" ecological Landscaping seeks networking with

person involved in landscaping with ecology in mind. Terra Nova, attn: Ken Foster, Box 677, Santa Cruz CA 95061-0677.

### Goods Wanted

I need any old *Mother Earth News* issues. Send to Bryco, 702 S. McDonough St., Decatur GA 30030. Remember 3rd World urban appropriate technology.

Seeking contact with successful growers, patient persisting planters, information, leads, rumors, myths, or legends regarding cultivation of watermelons during the rainy season (Dec-May) in subtropical So. Pacific island-like bioregion, specifically the Fiji. Please contact Kevin Conner-

ton, 740 Adrian Way, San Rafael CA 94903 USA 415-491-4809.

### Communities

Opportunity available for community-minded, spiritually-oriented persons interested in creating PC on beautiful oceanfront Guatemalan land. Contact: Zig at 402-624-5835 or write to Rt.2, Mead NB 68041.

Join us in developing a model small-scale PC community in a pristine fertile valley on Hawai'i Island. We are a diverse team of multi-talented professionals committed to PCethics: care for the earth, care for people, dispersal of surpluses. Our plan includes community financial self-reliance through projects including educational training, farming & food

processing, ecotourism, and retreats. The time is right to develop, model, and teach social and agricultural solutions, and we will hit the ground running. Write: Ka'ili'ula Ohana Corporation, 75-5260 Mamalahoa Hwy, Holualoa, HI 96725

### Services Offered

Scientific editing/writing services. Journals, books, grants, articles, popular press. Draft to proofs. Eight years' experience. Butchart Designs, 11033 Evanston N., Seattle WA 98133, 206-363-2327.

ELFIN Permaculture Design Associates offers permaculture design & consulting services in all regions. Contact: Dan Hemenway 7781 Lenox Av. Jacksonville FL 32221 USA.

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